Regulatory Analysis Form

(Completed by Promulgating Agency)

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INDEPENDENT REGULATORY REVIEW COMMISSION

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(1) Agency:
Environmental Protection

(2) Agency Number: 7
Identification Number: 559

IRRC Number: 3274

(3) PA Code Cite: 25 Pa. Code Chapter 145, Subchapter E

(4) Short Title: CO_2 Budget Trading Program

(5) Agency Contacts (List Telephone Number and Email Address):

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(6) Type of Rulemaking (check applicable box):

- ☐ Proposed Regulation
- ☒ Final Regulation
- ☐ Final Omitted Regulation
- ☐ Emergency Certification Regulation;
- ☐ Certification by the Governor
- ☐ Certification by the Attorney General

(7) Briefly explain the regulation in clear and nontechnical language. (100 words or less)

The Environmental Quality Board (Board) amends Chapter 145 (relating to interstate pollution transport reduction) to read as set forth in Annex A. This final-form rulemaking would add Subchapter E (relating to CO_2 budget trading program) to establish a program to limit the emissions of carbon dioxide (CO_2) from fossil fuel-fired electric generating units (EGUs) located in this Commonwealth, with a nameplate capacity equal to or greater than 25 megawatts (MWe). This final-form rulemaking includes a declining annual CO_2 emissions budget, which starts at 78,000,000 tons in 2022 and ends at 58,085,040 tons in 2030. This is anticipated to reduce CO_2 emissions in this Commonwealth by 31% compared to 2019. This final-form rulemaking would result in CO_2 emission reductions from sources within this Commonwealth of 97—227 million short tons by 2030, improving the health and welfare and the environment of this Commonwealth, including communities most impacted by marginal air quality. This final-form rulemaking would also establish the Commonwealth's participation in the Regional Greenhouse Gas Initiative (RGGI), a regional CO_2 Budget Trading Program.

(8) State the statutory authority for the regulation. Include specific statutory citation.

This final-form rulemaking is authorized under section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P.S. § 4005(a)(1)), which grants the Board the authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. Section 6.3(a) of the APCA (35 P.S. § 4006.3(a)) also authorizes the Board by regulation to establish fees to support the air pollution control program authorized by this act and not covered by fees required by section 502(b) of the Clean Air Act (CAA) (42 U.S.C.A. § 7661a(b)).

(9) Is the regulation mandated by any federal or state law or court order, or federal regulation? Are there any relevant state or federal court decisions? If yes, cite the specific law, case or regulation as well as, any deadlines for action.

While this final-form rulemaking is not mandated by any Federal or State law or court order, CO_2 is a regulated air pollutant under the APCA and the Federal CAA. This Commonwealth's courts have found that the regulation of air pollution has long been a valid public interest. *See e.g., Bortz Coal Co., v. Commonwealth,* 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.,* 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation,* 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce greenhouse gas (GHG) emissions, including CO_2. *Wolf v. Funk,* 144 A.3d 228, 250 (Pa. Cmwlth. 2016). In *Massachusetts v. EPA*, 549 U.S. 497 (2007) the U.S. Supreme Court recognized that similarly broad language in the CAA authorized the United States Environmental Protection Agency (EPA) to regulate CO_2 emissions under the CAA.

On December 15, 2009, under CAA section 202(a)(1), (42 U.S.C.A. § 7521(a)(1)), the EPA issued an "Endangerment Finding," that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015). On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO_2, from EGUs endanger public health and welfare and cause or contribute to climate change.

On October 3, 2019, Governor Tom Wolf signed Executive Order 2019-07, *Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions*,[1] codified at 4 Pa. Code §§ 7a.181—7a.183, which directed the Department to use its existing authority under the APCA to develop a rulemaking to abate, control, or limit CO_2 emissions from fossil fuel-fired electric power generators. This final-form rulemaking establishes a CO_2 budget consistent in stringency to that established by the states participating in RGGI ("participating states"), provides for the annual or more frequent auction of CO_2 emissions allowances through a market-based mechanism, and is sufficiently consistent with the RGGI Model Rule such that CO_2 allowances may be traded with holders of allowances from other states.

While the Department developed this final-form rulemaking under the direction of Executive Order 2019-07, the Board has the authority to promulgate this final-form rulemaking under the APCA. Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth, which is inclusive of controlling CO_2 pollution. CO_2 falls under the definition of "air pollution" in section 3 of the APCA (35 P.S. § 4003). The Board has the authority under section 5(a)(1) of the APCA to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. As mentioned in the response to question 10, numerous sources,

[1] Executive Order 2019-07, *Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions*, October 3, 2019, https://www.oa.pa.gov/Policies/eo/Documents/2019-07.pdf.

including the EPA, the Penn State University, the U.S. Global Change Research Program (USGCRP) and the International Panel on Climate Change (IPCC), have confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO_2 is also a GHG and the largest contributor to climate change. Thus, regulating sources of CO_2 emissions is necessary to protect the public health and welfare from harmful air pollution and address climate change.

(10) State why the regulation is needed. Explain the compelling public interest that justifies the regulation. Describe who will benefit from the regulation. Quantify the benefits as completely as possible and approximate the number of people who will benefit.

According to data from the United States Energy Information Administration (EIA), this Commonwealth generates the fifth most CO_2 emissions from EGUs in the country.[2] Since CO_2 emissions are a major contributor to regional climate change impacts, the Department developed this final-form rulemaking to establish this Commonwealth's participation in a regional approach that significantly reduces CO_2 emissions and this Commonwealth's contribution to regional climate change.

The purpose of this final-form rulemaking is to reduce anthropogenic emissions of CO_2, a GHG, and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth. This final-form rulemaking would reduce CO_2 emissions from sources within this Commonwealth and establish the Commonwealth's participation in RGGI, a regional CO_2 Budget Trading Program aimed at reducing CO_2 emissions from the power sector. This final-form rulemaking would establish a CO_2 Budget Trading Program for this Commonwealth which is capable of linking with similar regulations in the participating states. These independently promulgated and implemented CO_2 Budget Trading Program regulations together make up the regional CO_2 Budget Trading Program or "RGGI."

This final-form rulemaking would effectuate least cost CO_2 emission reductions for the years 2022 through 2030. The declining CO_2 Emissions Budget in this final-form rulemaking directly results in CO_2 emission reductions of around 20 million short tons in this Commonwealth as well as emission reductions across the broader PJM regional electric grid. However, the Department projects that 97—227 million short tons of CO_2 that would have been emitted over the next decade will not be emitted by sources within this Commonwealth by this Commonwealth's participation in RGGI.

If this Commonwealth participates in RGGI in 2022, combined with the other participating states and based on gross domestic product (GDP), RGGI would be equal to the third largest economy in the world. When viewed from this collective impact, the CO_2 emission reductions achieved by the participating states are even more significant. Reductions in CO_2 emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO_2 emission reductions may decrease costs from extreme weather events and climate-related ailments that also result in increased health care costs, as well as missed school and workdays due to illness.

The CO_2 emission reductions accomplished through implementation of this final-form rulemaking would benefit the health and welfare of the approximately 12.8 million residents and the numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of climate change causing air pollution resulting from the regulated sources.

[2] EIA, Energy-Related Carbon Dioxide Emissions by State, 2005-2016, February 27, 2019, https://www.eia.gov/environment/emissions/state/analysis/.

Climate Change Impacts and the Greenhouse Effect

Like every state in the country, this Commonwealth has already begun to experience adverse impacts from climate change, such as higher temperatures, changes in precipitation, and frequent extreme weather events, including large storms, flooding, heat waves, heavier snowfalls, and periods of drought. These impacts could alter the many fundamental assumptions about climate that are intrinsic to this Commonwealth's infrastructure, governments, businesses and the stewardship of its natural resources and environment. If not properly accounted for, changes in climate could result in more frequent road washouts, higher likelihood of power outages, and shifts in economic activity, among other significant impacts. Climate change can also affect vital determinants of health such as clean air, safe drinking water, sufficient food and secure shelter. These vital determinants are particularly affected by the increased extreme weather events, in addition to decreased air quality and an increase in illnesses transmitted by food, water, and disease carriers such as mosquitos. If these impacts are to be avoided, GHG emissions must be reduced expeditiously.

The impacts of climate change are vast and what was predicted ten years ago is being confirmed today. Climate change is being caused by the emission and atmospheric concentration of GHGs, namely, but not exclusively, CO_2. Scientists have confirmed that increased CO_2 emissions from human activity are causing changes to global climate. Of all the actively publishing climate scientists, 97% agree that climate warming trends over the past century are extremely likely due to human activities. Major scientific institutions including the U.S. National Academy of Sciences, the USGCRP, the American Medical Association, the American Association for the Advancement of Science, and many others endorse this position. In the Fifth Assessment Report of the IPCC released in 2014, the IPCC concluded that, "human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history."[3]

While CO_2 is a necessary element of life on Earth and acts as a fundamental aspect of nearly every critical system on the planet, CO_2 in high concentrations in the atmosphere leads to the greenhouse effect. The greenhouse effect occurs when CO_2 (and other GHG) molecules absorb solar energy and re-emit infrared energy back to the Earth's surface. This absorption and re-emitting of infrared energy is what makes certain gases trap heat in the lower atmosphere, not allowing it to go back out to space. The greenhouse effect disrupts the normal process whereby solar energy is absorbed at the Earth's surface and is radiated back through the atmosphere and back to space. Maintaining the surface temperature of the Earth depends on this balance of incoming and outgoing solar radiation.[4]

Global temperatures are increasing due to the greenhouse effect. Significantly changing the global temperature has impacts to every other weather and climate cycle occurring across the world. For instance, global average sea level, which has risen by about 7–8 inches since 1900 (with about 3 inches of that increase occurring since 1993), is expected to rise at least several inches in the next 15 years and by 1–4 feet by 2100.[5] The impacts of increased GHGs in the atmosphere, including extreme weather and catastrophic natural disasters, have become more frequent and more intense. Extreme weather events also contribute to deaths from extreme heat or cold exposure and lost work hours due to illness. The World Health Organization expects climate change to cause around 250,000 additional deaths globally per year between 2030-2050, with additional direct damage costs to health estimated to be around $2-4 billion per

[3] IPCC, Climate Change 2014: Synthesis Report, Contribution of Working Groups I, II and III to the *Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2014, https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf

[4] National Aeronautics and Space Administration, "The Causes of Climate Change," https://climate.nasa.gov/causes/.

[5] U.S. Climate Resilience Toolkit, Sea Level Rise, September 19, 2019, https://toolkit.climate.gov/topics/coastal/sea-level-rise.

year by 2030.[6] Based on the overwhelming scientific evidence, these harms are likely to increase in number and severity unless aggressive steps are taken to reduce GHG emissions.

Climate Change Impacts Assessments

Since 2009, the Department has released Climate Change Impacts Assessments, as required under the Pennsylvania Climate Change Act (71 P.S. §§ 1361.1—1361.8), which have underscored the critical need to take action to reduce GHG emissions and address climate change. On May 5, 2021, the Department with support from ICF and Penn State University, released the most recent Pennsylvania Climate Impacts Assessment.[7] The 2021 Pennsylvania Climate Impacts Assessment found that the average annual temperature Statewide will continue to rise and is expected to increase by 5.9°F (3.3°C) by midcentury compared to a baseline period of 1971-2000. Additionally, this Commonwealth could experience more total average rainfall, occurring in less frequent but heavier rain events. Extreme rainfall events are projected to increase in magnitude, frequency, and intensity, while drought conditions are also expected to occur more frequently due to more extreme, but less frequent precipitation patterns.

There will also be more frequent and intense extreme heat events with temperatures expected to reach at least 90°F on 37 days per year on average across the State, up from the 5 days during the baseline period. Days reaching temperatures above 95°F and 100°F will become more frequent as well. These increasing temperatures will continue to alter the growing season and increase the number of days that individuals and businesses will have to run air conditioning. As heat waves become increasingly common, individuals will be more susceptible to health and economic risks. This is particularly true for vulnerable populations, including low-income populations, the elderly, pregnant women, people with certain mental illnesses, outdoor workers, and those with cardiovascular conditions. Most notable from the 2021 Pennsylvania Climate Impacts Assessment is that climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As shown by all of the Pennsylvania Climate Change Impacts Assessments, climate risks and related impacts in Pennsylvania could be severe, potentially causing increased infrastructure disruptions, higher risks to public health, economic impacts, and other changes, unless actions are taken by the Commonwealth to avoid and reduce the consequences of climate change.

In April 2020, the Environment and Natural Resources Institute at Penn State University released an updated Climate Change Impacts Assessment[8] for the Department, which states that the expected disruptions to this Commonwealth's climate and impacts on this Commonwealth's climate sensitive sectors remain as dire as presented in the 2015 Climate Change Impacts Assessment. The 2015 Climate Change Impacts Assessment[9] found that this Commonwealth has undergone a long-term warming of more than

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[6] World Health Organization, *Climate change and health*, February 1, 2018, https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health.

[7] ICF and The Pennsylvania State University, 2021 Pennsylvania Climate Impacts Assessment, May 2021, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=3667348&DocName=PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%202021.PDF%20%20%3cspan%20style%3D%22color:green%3b%22%3e%3c/span%3e%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e%204/30/2023.

[8] Environment and Natural Resources Institute of The Pennsylvania State University, 2020 Pennsylvania Climate Change Impacts Assessment Update, April 2020, http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/ClimateChange/2020ClimateChangeImpactsAssessmentUpdate.pdf.

[9] Environment and Natural Resources Institute of The Pennsylvania State University, 2015 Pennsylvania Climate Impacts Assessment Update, May 2015, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=5002&DocName=2015%20PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%20UPDATE.PDF%20.

1.8°F over the prior 110 years, and that due to increased GHG emissions, current warming trends are expected to increase at an accelerated rate with average temperatures projected to increase an additional 5.4 degrees by 2050. This warming will have potential adverse impacts related to agriculture, forests, aquatic ecosystems, water resources, wildlife and public health across this Commonwealth. In this Commonwealth, average annual precipitation has increased by approximately 10% over the past 100 years and, by 2050, is expected to increase by an additional 8%, with a 14% increase during the winter season. In particular, climate change will worsen air quality relative to what it would otherwise be, causing increased respiratory and cardiac illness. Air quality impacts from climate change are due to the combination of pollutants emitted from anthropogenic sources and weather conditions. Climate change can potentially also worsen water quality, affecting health through consumption of diminished quality drinking water and through contact with surface waters during outdoor recreation. The risk of injury and death from extreme weather events could also increase as a consequence of climate change. Additionally, climate change could affect the prevalence and virulence of air-borne infectious diseases such as influenza.

In 2009, the Department released its first Climate Change Impacts Assessment[10] which showed that this Commonwealth was already experiencing some of the harmful effects of climate change. That same year, under CAA section 202(a)(1), 42 U.S.C.A. § 7521(a)(1), the EPA issued an "Endangerment Finding," that six GHGs — CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride — endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015). On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO_2, from EGUs endanger public health and welfare and cause or contribute to climate change. Additionally, the EPA's Endangerment Findings are further reinforced by the findings of the USGCRP's Fourth National Climate Assessment (NCA4) which is consistent with the Commonwealth's 2015, 2020, and 2021 Climate Change Impacts Assessments. While these Federal studies inform the Department's decision to regulate CO_2 emissions within this Commonwealth, they are not determinative because this final-form rulemaking is being promulgated by the Board under the authority of the APCA, not the CAA.

On November 23, 2018, the USGCRP released the NCA4,[11] a scientific assessment of the national and regional impacts of natural and human-induced climate change. The NCA4 represents the work of over 300 government and non-government experts, led by experts within the EPA, the U.S. Department of Energy and eleven other federal agencies. The NCA4 shows how the impacts of climate change are already occurring across the country and emphasizes that future risks from climate change will depend on the decisions made today. It is worth noting that the NCA4 mentions that the Northeast region is a model for other states, as it has traditionally been a leader in GHG mitigation action.

[10] Environment and Natural Resources Institute of The Pennsylvania State University, 2009 Pennsylvania Climate Impacts Assessment Update, June 29, 2009, http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/7000-BK-DEP4252%5B1%5D.pdf.

[11] USGCRP, Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II, 2018, https://nca2018.globalchange.gov/.

By 2035, the NCA4 projects that the Northeast will see the largest temperature increase in the country of more than 3.6°F on average higher than the preindustrial era.[12] This would occur as much as two decades before global average temperatures reach a similar milestone. The changing climate of the Northeast threatens the health and public welfare of its residents and will lead to health-related impacts and costs, including additional deaths, emergency room visits and hospitalizations, higher risk of infectious diseases, lower quality of life and increased costs associated with healthcare utilization. Mosquitoes, fleas and ticks and the diseases they carry have been a particular concern in the Northeast in recent years. Scientists have linked these diseases, specifically tick-related Lyme disease, to climate change.

Climate change also threatens to reverse the advances in air quality that the states in the Northeast, including this Commonwealth, have worked so hard to achieve over the past couple of decades. In particular, climate change will increase levels of ground-level ozone pollution in the Northeast through changes in weather and increased ozone precursor emissions. Ozone is an irritant and repeated exposure to ozone pollution for both healthy people and those with existing conditions may cause a variety of adverse health effects, including difficulty in breathing, chest pains, coughing, nausea, throat irritation and congestion. In addition, people with bronchitis, heart disease, emphysema, asthma and reduced lung capacity may have their symptoms exacerbated by ozone pollution. Asthma, in particular, is a significant and growing threat to children and adults in this Commonwealth. The NCA4 refers to this as a "climate penalty" and projects it could cause hundreds more ozone pollution-related deaths per year.

Over the past several decades, the Department has made substantial progress in decreasing ground-level ozone pollution in this Commonwealth, including limiting precursor emissions. However, Bucks, Chester, Delaware, Montgomery and Philadelphia counties are designated as marginal nonattainment areas for the 2015 ozone national ambient air quality standards (NAAQS). See 83 FR 25776 (June 4, 2018). There is still more work that needs to be done to reduce emissions in these nonattainment areas and to avoid backsliding on the improvements to air quality across this Commonwealth. An increase in ground-level ozone levels due to climate change would interfere with continued attainment of the ozone NAAQS, hinder progress in marginal nonattainment areas and put public health and welfare at risk.

Along with these overall impacts, multiple sectors in this Commonwealth can expect to see specific negative impacts from climate change.

Health

Climate change will impact human health in a number of ways. It will likely increase ground-level ozone, small airborne particulates, and pollen and mold concentrations. Ozone is an irritant that causes respiratory issues, aggravates asthma, causes respiratory infections, and increases mortality. Higher plant growth, more pollen produced by each plant, increased allergenicity of the pollen grains, and a longer pollen season can also be expected. In this Commonwealth, mosquito and tick-borne diseases are spreading to new communities and regions and impacting people's lives.[13] According to a recent Penn State University study,[14] since 2000, this Commonwealth has had the highest number of total Lyme disease cases

[12] *Id.* at Chapter 18: Northeast.

[13] Environment and Natural Resources Institute of The Pennsylvania State University, 2015 Pennsylvania Climate Impacts Assessment Update, May 2015, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=5002&DocName=2015%20PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%20UPDATE.PDF%20.

[14] Pennsylvania State University, More than 100 years of data show Pennsylvania tick population shift, May 3, 2019, https://phys.org/news/2019-05-years-pennsylvania-population-shift.html.

nationwide. Increased deer tick prevalence throughout this Commonwealth is related to climate change and shifts in land use because winters are no longer cold enough to kill off tick populations.

Vulnerable populations across this Commonwealth will be at a higher risk for heat related death. People with heart failure, the elderly, and those without access to air conditioning will all be increasingly exposed to more frequent and intense heat waves. One study found that if temperatures increase another 3 degrees, cities like Philadelphia will see hundreds more deaths per year than if warming is limited to 1 degree.[15]

Repeated exposure to ozone pollution for both healthy people and those with existing conditions may cause a variety of adverse health effects including difficulty breathing, chest pains, coughing, nausea, throat irritation, and congestion. In addition, people with bronchitis, heart disease, emphysema, asthma, and reduced lung capacity may have their symptoms exacerbated by ozone pollution. Asthma is a significant and growing threat to children and adults in this Commonwealth. The threat of asthma is particularly pronounced in Philadelphia, which has especially high asthma prevalence and hospitalization rates – affecting approximately one out of four children in West Philadelphia alone. Asthma disproportionately affects African Americans and those below or near the poverty line, highlighting key environmental justice considerations for pollution control.[16] Reduced ambient concentrations of ground-level ozone would reduce the incidences of hospital admissions for respiratory ailments including asthma and improve the quality of life for residents of this Commonwealth.[17]

According to the NCA4, climate-driven changes in weather, human activity and natural emissions are all expected to impact future air quality across the United States. Many emission sources of GHGs also emit air pollutants that harm human health. Controlling these common emission sources would both mitigate climate change and have immediate benefits for air quality and human health. The energy sector, which includes energy production, conversion, and use, accounts for 84% of GHG emissions as well as 80% of emissions of oxides of nitrogen (NO_x) and 96% of sulfur dioxide (SO_2). Specifically, mitigating GHGs can lower emissions of particulate matter (PM), ozone and PM precursors, and other hazardous pollutants, reducing the risks to human health from air pollution.

Agriculture

In addition to causing adverse human and animal health effects, high levels of ground-level ozone affect vegetation and ecosystems, leading to reductions in agricultural crop and commercial forest yields by destroying chlorophyll; reducing growth and survivability of tree seedlings; and increasing plant susceptibility to disease, pests, and other environmental stresses, including harsh weather. In long-lived species, these effects may become evident only after several years or even decades and have the potential for long-term adverse impacts on forest ecosystems.[18]

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[15] University of Bristol, Adjusting carbon emissions to the Paris climate commitments would prevent thousands of heat-related deaths, June 5, 2019, http://www.bristol.ac.uk/news/2019/june/heat-related-deaths-.html.

[16] EPA Region 3, EPA Mid-Atlantic Recognizes First Asthma Community Champion, May 2021, https://www.epa.gov/newsreleases/epa-mid-atlantic-recognizes-first-asthma-community-champion.

[17] EPA, Health Effects of Ground-Level Ozone, http://web.archive.org/web/20160220023128/http://www3.epa.gov/airquality/ozonepollution/health.html.

[18] Environment and Natural Resources Institute of The Pennsylvania State University, 2013 Pennsylvania Climate Impacts Assessment Update, October 2013, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=6806&DocName=PA%20DEP%20CLIMATE%20IMPACT%20ASSESSMENT%20UPDATE.PDF%20%20%3Cspan%20style%3D%22color%3Agreen%3B%22%3E%3C%2Fspan%3E%20%3Cspan%20style%3D%22color%3Ablue%3B%22%3E%3C%2Fspan%3E.

Similar to various public health pressures, the agricultural, food, and water systems this Commonwealth depends on for survival are also under threat by climate change. The increase in precipitation and its variability could lead to higher plant disease, increased risk of flooding, difficulty in the timing of planting, and increased demand for irrigation. Extreme temperatures will stress grain crops and fruit crops that flower in the summer months (such as grapes). To adapt, this Commonwealth's wineries may choose to plant European varieties of grapes, which tend to do better in warmer climates, but this would also lead to increases in the cost of wine.[19]

This Commonwealth's dairy production will also experience challenges from reduced milk yields, a result of heat stress on cows. Farmers may see additional capital expenditures necessary for cooling systems to reduce the heat stress on cows. The same is true for poultry and egg production. Investments in insulation, ventilation, fans, and air conditioning will be necessary to prevent heat stress to the birds. Currently, a large portion of poultry and hog production takes place in warmer, southern states like North Carolina and Georgia, showing that these production processes can still be viable with the increased costs of cooling. However, there may be a northward movement of these animals, bringing with them an increase in nutrient production and further stressing our obligations for water quality improvements.[20]

High levels of ground-level ozone also affect animals including pets, livestock, and wildlife, in ways similar to humans. Reduced ambient concentrations of ground-level ozone would improve the quality of life of animals, preserve this Commonwealth's biodiversity, and reduce veterinary costs to farmers and citizens with pets.

Forests & Recreation

Climate change is already having an impact on forests around the world and this Commonwealth's diverse and productive forests will likely also see impacts. Tree species are expected to shift to higher latitudes and elevations for suitable habitat. Mortality rates are expected to increase, and regeneration is expected to decline. Rising temperatures increase insect reproductive rates, making pest outbreaks more destructive and harder to control. Additionally, pests that impact the forests of southern states could make their way into this Commonwealth's forests.

Outdoor recreation in this Commonwealth will also be impacted by climate change. Stream flows in the summer could be reduced and negatively affect sport fishing. Swimming in lakes and rivers could be limited by poor water quality, the result of higher temperatures, low summer flows, and nutrient and pathogen loadings. These combinations of circumstances can lead to harmful algal blooms.

Warmer winter temperatures and reduced snowfall will negatively impact snow-based recreation. This Commonwealth's ski resorts will experience shorter seasons, higher snow making costs, and lower profits as a consequence of climate change. Research also suggests that dispersed winter recreation, such as cross-country skiing and snowmobiling, will decline because of less snowfall and fewer extended periods of cold weather.[21]

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[19] *Id.*

[20] Environment and Natural Resources Institute of The Pennsylvania State University, 2009 Pennsylvania Climate Impacts Assessment Update, June 29, 2009, http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/7000-BK-DEP4252%5B1%5D.pdf.

[21] Environment and Natural Resources Institute of The Pennsylvania State University, 2015 Pennsylvania Climate Impacts Assessment Update, May 2015, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=5002&DocName=2015%20PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%20UPDATE.PDF%20.

Infrastructure

Extreme weather events can affect the reliability of energy delivery. Hurricanes, polar vortexes, and ice storms can damage infrastructure. Increased cooling demands can also stress energy delivery systems during times of high demand and could lead to electrical blackouts. Planning for distributed generation to provide electricity in the event of natural disaster related outages becomes necessary.

The Commonwealth's infrastructure system has recently experienced major impacts from increased precipitation and the resultant landslides, as 2018 was the wettest year on record.[22] In just one year, PennDOT saw over $125 million in emergency expenses to replace damaged infrastructure and cash-strapped local municipalities are dealing with the same budget-busting issues. Adding to that financial stress, many flooding events are so localized that they do not qualify for Federal assistance, so homeowners, business owners, and local and state agencies must bear the brunt of repair costs.

Water Resources

The Department predicts higher flood potential due to more precipitation and intensified risks to water resources that are already stressed. Other potential impacts are decreased water quality, urban flooding, decreased water supplies for urban areas, and irrigation. Warmer temperatures may mean less winter thermal stress on fish, but higher summer temperatures could have an impact on salmon spawning. More severe storm events and dry periods will change flow patterns, resulting in major changes to the channel morphology and aquatic habitat. The largest negative impact may be in lost biodiversity as fish and other species' populations shift northward.

Additionally, the Department predicts that water temperatures in the summer could increase 2.7 to 3.5 degrees. This warming will cause a decrease in the solubility of oxygen and an increase in respiration rates, resulting in decline of the dissolved oxygen concentration. By mid-century, the sea level will increase by 0.4 meters. Coupled with the projected summer stream flow decrease of 19%, a modest increase of salinity is expected to occur.[23] Salinity is an important defining characteristic of the Delaware estuary, regulating floral and faunal distributions and affecting human use of the estuary. While salinity is a threat, the predicted sea-level rise has the potential to drown the already-stressed wetlands if their growth rates are less than the rates of the rise.[24]

Immediate Action is Needed to Address this Commonwealth's Contribution to Climate Change

Given the urgency of the climate crisis, including the significant impacts on this Commonwealth, the Board determined that concrete, economically sound and immediate steps to reduce GHG emissions are needed. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment. Based on the most recent data from the EPA's State Inventory Tool, in 2017, this Commonwealth generated net GHG emissions equal to 233.20 million metric tons CO_2 equivalent (MMTCO2e) Statewide, the vast majority of which are CO_2 emissions. In the context of the world, this Commonwealth's

[22] National Weather Service: National Oceanic and Atmospheric Administration, 2018 in Context: Record Precipitation across Pennsylvania, https://www.weather.gov/ctp/RecordPrecip2018.

[23] Environment and Natural Resources Institute of The Pennsylvania State University, 2015 Pennsylvania Climate Impacts Assessment Update, May 2015, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=5002&DocName=2015%20PENNSYLVANIA%20CLIMATE%20IMPACTS%20ASSESSMENT%20UPDATE.PDF%20.

[24] *Id.*

electricity generation sector alone emits more CO_2 than many entire countries including Greece, Sweden, Israel, Singapore, Austria, Peru and Portugal.[25]

Historically, the electricity generation sector has been the leading source of CO_2 emissions in this Commonwealth. Based upon data contained in the Department's 2020 GHG Inventory, 29% of this Commonwealth's total GHG emissions are produced by the electricity generation sector.[26] The Department's GHG inventory and related information is available at https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx. In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix, resulting from market forces and the establishment of alternative energy goals, and energy efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced.

However, looking forward, the Department projects CO_2 emissions from the electricity generating sector will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. The Three Mile Island nuclear power plant already closed on September 20, 2019, amounting to a loss of 818 MW of carbon free generation. However, the modeling conducted for this final-form rulemaking predicts no further nuclear power plants retirements through 2030 with implementation of this final-form rulemaking. Without this final-form rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure. In fact, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

Further, the Department's Climate Action Plan predicts that total and net GHG emissions (including emissions sinks) will increase by 4% and 5%, respectively, from 2015 to 2050.[27] Additionally, the most recent GHG Inventory indicates that in 2017 GHG emissions in this Commonwealth increased, widening the gap between current emissions and reductions necessary to avoid the worst impacts of climate change.[28]

This final-form rulemaking is necessary to ensure CO_2 emissions continue to decrease and at a rate that shields this Commonwealth from the worst impacts of climate change. RGGI plays an important role in providing a platform whereby this Commonwealth can reduce CO_2 emissions using a market-based approach. As the electricity generation sector remains one of the leading sources of CO_2 in this Commonwealth, it is imperative that emissions continue to decrease from that sector.

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[25] Joint Research Centre, European Commission, "JRC Science for Policy Report: Fossil CO_2 emissions of all world countries," 2020, https://publications.jrc.ec.europa.eu/repository/handle/JRC121460.

[26] Environment and Natural Resources Institute of The Pennsylvania State University, 2020 Pennsylvania Climate Change Impacts Assessment Update, April 2020, http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/ClimateChange/2020ClimateChangeImpactsAssessmentUpdate.pdf.

[27] Pennsylvania Department of Environmental Protection, 2018 Pennsylvania Climate Action Plan: Strategies and actions to reduce and adapt to climate change, April 29, 2019, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

[28] Pennsylvania Department of Environmental Protection, 2020 Pennsylvania Greenhouse Gas Inventory Report, July 2020, https://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/2020/Pennsylvania%202020%20GHG%20Inventory%20Report.pdf

The Commonwealth's GHG Emission Reduction Goals

It is for these reasons that on January 8, 2019, Governor Tom Wolf signed Executive Order 2019-01, *Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance*, codified at 4 Pa. Code §§ 5.1001—5.1009.[29] This Executive Order set the first ever climate change goal for this Commonwealth to reduce net GHG emissions from 2005 levels by 26% by 2025 and 80% by 2050. These climate change goals align this Commonwealth with the reduction targets under the Paris Agreement aimed at keeping global temperature rise below the 2-degree Celsius threshold. According to climate experts, the 2-degree Celsius threshold is the level beyond which dire global consequences would occur, including sea level rise, superstorms and crippling heat waves.

On April 29, 2019, the Department issued a Pennsylvania Climate Action Plan that identified GHG emission trends and baselines in this Commonwealth and recommended cost-effective strategies for reducing or offsetting GHG emissions. The Department's Climate Action Plans are available at https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx. The Climate Action Plan determined that reducing the overall carbon intensity of the electricity generated in this Commonwealth is one of the most critical strategies for reducing GHG emissions. The Climate Action Plan also identified many different strategies and actions that all Pennsylvanians can take to combat climate change. According to the Climate Action Plan, one of the most cost-effective emissions reduction strategies is to limit CO_2 emissions through an electricity sector cap and trade program. This Commonwealth participating in a cap and trade program is expected to result in the largest near-term reduction in emissions and was deemed cost-effective relative to the social cost of carbon. The Climate Action Plan modeled a cap and trade program that requires a carbon cap equal to a 30% reduction from 2020 CO_2 emissions levels by 2030, which is equivalent to RGGI stringency.

On October 3, 2019, Governor Tom Wolf signed Executive Order 2019-07, *Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions*, codified at 4 Pa. Code §§ 7a.181—7a.183,[30] which directed the Department to use its existing authority under the APCA to develop a rulemaking to abate, control or limit CO_2 emissions from fossil fuel-fired electric power generators. The Executive Order also directed the Department to present a proposed rulemaking to the Board by July 31, 2020. On June 22, 2020, Governor Wolf amended the Executive Order to extend the deadline to September 15, 2020. As directed by the Executive Order, this final-form rulemaking establishes a CO_2 budget consistent in stringency to that established by the participating states, provides for the annual or more frequent auction of CO_2 emissions allowances through a market-based mechanism, and is sufficiently consistent with the RGGI Model Rule such that allowances may be traded with holders of allowances from other states.

Considering that this Commonwealth has the fifth leading CO_2 emitting electricity generation sector[31] in the country, this final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG emissions. Although this final-form rulemaking will not solve global climate change, it will aid this Commonwealth in addressing its share of the impact, joining other states and countries that are addressing their own impacts. The statutory authority for this final-form rulemaking, the APCA, is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of

[29] Executive Order 2019-01, *Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance*, January 8, 2019, https://www.governor.pa.gov/newsroom/executive-order-2019-01-commonwealth-leadership-in-addressing-climate-change-and-promoting-energy-conservation-and-sustainable-governance/.

[30] Executive Order 2019-07, *Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions*, October 3, 2019, https://www.oa.pa.gov/Policies/eo/Documents/2019-07.pdf.

[31] EIA, Energy-Related CO_2 Emission Data Tables, March 2, 2021, https://www.eia.gov/environment/emissions/state/.

public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. In order to be proactive, this final-form rulemaking is needed to address this Commonwealth's contributions to climate change, particularly CO_2 emissions. The Board determined to address CO_2 emissions through a regional initiative because regional cap and trade programs have proven to be beneficial and cost-effective at reducing air pollutant emissions. In fact, this Commonwealth has and continues to participate in successful regional cap and trade programs.

History and Success of this Commonwealth's Participation in Cap and Trade Programs

In the 1990 CAA Amendments, the United States Congress determined that the use of market-based principles, such as emissions banking and trading are effective ways of achieving emission reductions.[32] According to the EPA, emissions trading programs are best implemented when the environment and public health concerns occur over a relatively large geographic area and effectively designed emissions trading programs provide flexibility for individual emissions sources to tailor their compliance path to their needs.[33] The EPA has also determined that reducing emissions using a market-based system provides regulated sources with the flexibility to select the most cost-effective approach to reduce emissions and has proven to be a highly effective way to achieve emission reductions, meet environmental goals, and improve human health.[34] In contrast to traditional command and control regulatory methods that establish specific emissions limitations and technology use with limited or no flexibility, cap and trade programs harness the economic incentives of the market to reduce pollution. The Board has a decades-long history of promulgating regulations that have established this Commonwealth's participation in successful cap and trade programs.

Beginning in 1995, this Commonwealth participated in the first national cap and trade program in the United States, the Acid Rain Program, which was established under Title IV of the 1990 CAA Amendments and required, in part, major emission reductions of SO_2 through a permanent cap on the total amount emitted by EGUs.[35] For the first time, the Acid Rain Program introduced a system of allowance trading that used market-based incentives to reduce pollution. The Acid Rain Program reduced SO_2 emissions by 14.5 million tons (92%) from 1990 levels and 16.0 million tons (93%) from 1980 levels.[36] The undisputed success of achieving significant emission reductions in a cost-effective manner led to the application of the market-based cap and trade tool for other regional environmental problems.

From 1999 to 2002, this Commonwealth participated in the Ozone Transport Commission's (OTC) NO_x Budget Program, an allowance trading program designed to reduce summertime NO_x emissions from EGUs to reduce ground-level ozone, which included all the current states participating in RGGI.[37] According to the OTC's NO_x Budget Program 1999-2002 Progress Report,[38] NO_x Budget Program units

[32] See 42 U.S.C.A. §§ 7651—7651o.
[33] See generally, 63 FR 57356 (October 27, 1998).
[34] See 63 FR 57356, 57458.
[35] See 24 Pa.B. 5899 (November 26, 1994) and 25 Pa. Code § 127.531 (relating to special conditions related to acid rain).
[36] EPA, 2018 Power Sector Programs Progress Report, 2018, https://www3.epa.gov/airmarkets/progress/reports/pdfs/2018_full_report.pdf.
[37] See 27 Pa.B. 5683 (November 1, 1997) and 25 Pa. Code §§ 123.101—123.121 (relating to NO_x Allowance Requirements).
[38] OTC, NO_x Budget Program 1999-2002 Progress Report, https://nepis.epa.gov/Exe/ZyNET.exe/P1002LY4.TXT?ZyActionD=ZyDocument&Client=EPA&Index=2000+Thru+2005&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C00thru05%5CTxt%5C00000017%5CP1002LY4.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-

successfully reduced ozone season NO_x emissions in 2002 by nearly 280,000 tons, or about 60%, from 1990 baseline levels, achieving greater reductions than required each year of the program.[39] Based on the success of the OTC's NO_x Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NO_x cap and trade program under the NO_x SIP Call, which closely resembled the OTC NO_x Budget Program.[40] The EPA again noted the cost savings of achieving emissions reductions through trading. The EPA's regional NO_x cap and trade program was adopted by the Board on September 23, 2000 to reduce NO_x emissions Statewide.[41]

Beginning in 2009, the EPA's NO_x Budget Trading Program was replaced by the Clean Air Interstate Rule (CAIR) trading program, covering 28 eastern states, which required further summertime NO_x reductions from the power sector as well as SO_2 reductions. Finally, in 2015 CAIR was replaced by the Cross-State Air Pollution Rule trading program.

Specifically, the Board promulgated the NO_x Budget Trading Program in Chapter 145, Subchapter A (relating to NO_x Budget Trading Program) and the CAIR NO_x and SO_2 Trading Programs in Chapter 145, Subchapter D (relating to CAIR NO_x and SO_2 Trading Programs).[42] Although those cap and trade program regulations were promulgated in response to initiatives at the Federal level, both subchapters were promulgated under the broad authority of section 5(a)(1) of the APCA, as is this final-form rulemaking. The statutory authority granted to the Board under section 5(a)(1) of the APCA is broad and unrestrictive related to the adoption of any rule or regulation for the "prevention, control, reduction and abatement of air pollution." The comprehensive scope of this directive provides the Board with the discretion to promulgate a trading program to reduce CO_2 emissions from fossil fuel-fired EGUs in this Commonwealth.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a cooperative regional market-based cap-and-trade program designed to reduce CO_2 emissions from fossil fuel-fired EGUs. RGGI is currently composed of eleven northeastern and Mid-Atlantic states, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and Virginia. Since its inception on January 1, 2009, RGGI has utilized a market-based mechanism to cap and cost-effectively reduce CO_2 emissions that cause climate change. Because CO_2 from large fossil fuel-fired EGUs is a major contributor to regional climate change, the participating states developed a regional approach to address CO_2 emissions. This regional approach resulted in a Model Rule applicable to fossil fuel-fired EGUs with a nameplate capacity equal to or greater than 25 MWe.

RGGI is implemented in the participating states through each state's independent CO_2 Budget Trading Program regulations, based on the Model Rule, which link together. It is also important to note that States do not execute a multistate agreement or compact to participate in RGGI, and States may withdraw from participation at any time. There is also no central RGGI authority as States jointly oversee the program.

&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=hpfr&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL

[39] The Progress Report is available on the EPA's webpage for the National Service Center for Environmental Publications, https://nepis.epa.gov.

[40] 63 FR 57356.

[41] See 30 Pa.B. 4899 (September 23, 2000) and 25 Pa. Code Chapter 145, Subchapter A (relating to NO_x Budget Trading Program).

[42] See 30 Pa.B. 4899 and 38 Pa.B. 1705. See also 25 Pa. Code Chapter 145, Subchapter A (relating to NO_x Budget Trading Program) and 25 Pa. Code Chapter 145, Subchapter D (relating to CAIR NO_x and SO_2 Trading Programs).

The key piece to become a "participating state," as the term is defined under § 145.302 (relating to definitions), is the establishment of a corresponding regulation as part of the CO_2 Budget Trading Program. As defined under § 145.302, the "CO_2 Budget Trading Program" is a multi-state CO_2 air pollution control and emissions reduction program established under this final-form rulemaking and corresponding regulations in other participating states as a means of reducing emissions of CO_2 from CO_2 budget sources. For this Commonwealth to participate in RGGI, the Board is promulgating this final-form rulemaking which is consistent with the Model Rule.

RGGI is a "cap and trade" program that sets a regulatory limit on CO_2 emissions from fossil fuel-fired EGUs and permits trading of CO_2 allowances to effect cost efficient compliance with the regulatory limit. RGGI is also referred to as a "cap and invest" program, because unlike traditional cap and trade programs, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The first prong involves a declining CO_2 emissions budget and the second prong is investment of the proceeds resulting from the auction of CO_2 allowances to further reduce CO_2 emissions.

Benefits of RGGI Participation

Cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO_2 pollution by over 45% since 2009, while experiencing per capita Gross Domestic Product growth and reduced energy costs.[43] The program design of RGGI would enable the Board to regulate CO_2 emissions from the power sector in a way that is least-cost and economically efficient thereby driving long-term investments in cleaner sources of energy.

Part of what makes RGGI economically efficient is that it is a regional program, which allows EGUs to achieve least-cost compliance by buying and selling allowances in multistate auctions or in the secondary market. RGGI CO_2 allowances are fungible across the participating states, meaning that though this Commonwealth has an established allowance budget for each year, this Commonwealth's allowances are available to meet the compliance obligations in any other RGGI state and vice versa at the option of the regulated sources. Therefore, CO_2 emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to continue to signal entrance and exit of generation. Though each state has its own annual allocation, compliance occurs at the regional level rather than on a state-by-state basis. In this respect the market assists in achieving least cost compliance for all participating states.

Another benefit of participating in multistate auctions run by RGGI, Inc. is that RGGI, Inc. has retained the services of an independent market monitor to monitor the auction, CO_2 allowance holdings, and CO_2 allowance transactions, among other activities. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude, or otherwise manipulate prices in the auction and/or the secondary market, making recommendations regarding proposed market rule changes to

[43] Analysis Group, The Economic Impacts of The Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States: Review of RGGI's Third Three-Year Compliance Period (2015-2017), April 17, 2018, https://www.analysisgroup.com/globalassets/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_april_2018.pdf

improve the efficiency of the market for RGGI Allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor will monitor bidder behavior in each auction and report to the participating states any activities that may have a material impact on the efficiency and performance of the auction. The participating states, through RGGI, Inc., release a Market Monitor Report shortly after each CO_2 allowance auction. The report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids, and a summary of bid prices, showing the minimum, maximum, average and clearing price and the allowances awarded.

RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs.[44]

A recent report from the Acadia Center, a nonprofit organization committed to advancing the clean energy future, entitled "The Regional Greenhouse Gas Initiative: Ten Years in Review," shows that CO_2 emissions from covered sources in the participating states have decreased 47%, which is 90% faster than in the rest of country. The participating states were able to achieve that significant reduction while the gross domestic product grew by 47%, outpacing the rest of the country by 31%. RGGI has also driven substantial reductions in harmful co-pollutants, making the region's air cleaner and its people healthier. Additionally, proceeds from RGGI auctions generated nearly $3.3 billion in state investments from 2009 to 2019.[45]

For comparison, according to the Department's 2020 GHG Inventory Report from 2005 to 2016, this Commonwealth reduced its net emissions by 33.5% while the participating states reduced covered sources CO_2 pollution over 45% over the same period. Additionally, this was achieved while the region's per-capita GDP has continued to grow- highlighting the synergies between environmental protection and economic development.

Emissions Reductions

The design of the CO_2 Budget Trading Program within this final-form rulemaking ensures emissions from the electricity generation sector are decreased over time. Between 2022 and 2030, the program's CO_2 emissions budget will decrease 19,914,960 tons, equal to a reduction of 25.532%, as shown in Table 1. However, to capture the full extent of the benefits of this final-form rulemaking it is critical to compare this Commonwealth's annual emissions with this final-form rulemaking and without it from 2022 to 2030.

[44] *Id.*

[45] Acadia Center, "The Regional Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf.

Table 1. Pennsylvania CO_2 Emissions Budget Through 2030.

Year	Budget	Decline (Tonnage)	Annual Decline (Percentage)
2022	78,000,000	2,489,370	-3.19%
2023	75,510,630	2,489,370	-3.30%
2024	73,021,260	2,489,370	-3.41%
2025	70,531,890	2,489,370	-3.53%
2026	68,042,520	2,489,370	-3.66%
2027	65,553,150	2,489,370	-3.80%
2028	63,063,780	2,489,370	-3.95%
2029	60,574,410	2,489,370	-3.11%
2030	58,085,040	2,489,370	-4.11%
2022-2030 Total Reduction		**19,914,960**	**-25.532%**
-25.532% reduction from 2022		**58,085,040**	
Total tonnage reduction		**19,914,960**	
Annual tonnage reduction		**2,489,370**	

In order to analyze the full extent of CO_2 emission reductions due to this final-form rulemaking, the Department utilized the Integrated Planning Model (IPM) to compare this Commonwealth's CO_2 emissions, among other attributes, with implementation of this final-form rulemaking and without implementation of this final-form rulemaking. IPM is a dynamic model of the United States power sector that can determine least-cost solutions of meeting energy and peak demand requirements. The model considers a number of key operating or regulatory constraints, such as emission limits, transmission capabilities and constraints, renewable generation requirements, fuel market constraints, etc. IPM can perform integrated analysis and can project wholesale power prices, CO_2 allowance prices, and CO_2 emissions in an optimal and internally consistent manner. It is also particularly suited to evaluating the impacts of environmental regulations and policies.

IPM is well-suited to consider complex treatment of emission regulations involving trading, banking and traditional command-and-control emission policies. Because of the model's endogenous treatment of natural gas, coal and biomass fuel markets, it is fully capable of analyzing policies that directly affect these markets. A detailed unit-level database of every grid-connected EGU in the United States is the fundamental input to IPM. The model represents power markets through model regions that are geographical entities with distinct characteristics. Wholesale power prices, fuel prices, emission allowance prices, and renewable energy credits are all estimated endogenously in an integrated fashion.

The IPM analysis produced two results for this final-form rulemaking. The first is a "Reference Case" based on this final-form rulemaking not being implemented in this Commonwealth or business as usual. The second is a "Policy Case" based on this final-form rulemaking being implemented in this Commonwealth and the auction proceeds being invested in efforts to further reduce air pollution. Comparing these two cases, the Department estimates that this Commonwealth will experience CO_2 emission reductions of 97—227 million short tons from sources within this Commonwealth over the decade as a direct result of participation in RGGI. This results in CO_2 reductions in this Commonwealth and a net benefit to the entire PJM region. The Department's modeling shows that this Commonwealth makes these significant emission reductions while maintaining historic electric generation levels, enhancing this Commonwealth's status as a leading net energy exporter, creating economic

opportunities and reducing long-term wholesale energy prices. This modeling effort will be referred to as the "2020 modeling."

In 2021, the Department used the IPM model to conduct an updated analysis with updated inputs. The updated inputs included the most recent projections for natural gas prices, regional electricity demand, expected power plant closures and openings, policy changes in this Commonwealth and other states, technology costs, and other minor updates that changed since the Department conducted a modeling analysis in 2020. This modeling effort will be referred to as the "2021 modeling."

Similar to the 2020 modeling, the Department used the IPM model to produce two results, a "Reference Case" and a "Policy Case," to evaluate the various metrics in this Commonwealth with this final-form rulemaking in effect compared to this final-form rulemaking not in effect between 2021-2030.

The 2021 modeling confirmed many of the trends and findings identified in the 2020 modeling. Specifically, the 2021 modeling projected a range of 97-227 million short tons of CO_2 will not be emitted by sources within this Commonwealth over the decade as a result of this final-form rulemaking. The 2021 modeling does not include all the results that the 2020 modeling did, including projected co-pollutant emissions, health benefits, and broader economic metrics. Additionally, the 2021 modeling does not factor in how program proceeds are invested, while the 2020 modeling assumed strategic investments were made back into the energy sector. Nonetheless, both the 2020 modeling and the 2021 modeling efforts are useful indicators to evaluate implementation of this final-form rulemaking and both will be referenced throughout this document. All modeling results are available publicly at https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx.

Health Benefits of this Final-form Rulemaking

This final-form rulemaking would provide public health benefits due to the expected reductions in emissions of CO_2 and the ancillary emission reductions or co-benefits of SO_2 and NO_x reductions. The Department's 2020 modeling projects cumulative emission reductions of 112,000 tons of NO_x and around 67,000 tons of SO_2 over the decade. Further reducing NO_x and SO_2 emissions is beneficial to public health, because NO_x and SO_2 contribute to several health problems.

Short-term exposure to SO_2 emissions can be harmful to public health because it impacts the ability to breathe especially in children and those with asthma.[46] NO_x can also cause irritation in the respiratory system. In particular, long-term exposure to elevated NO_x levels may contribute to asthma, and potentially increase susceptibility to respiratory infections and lead to increased hospital admissions.[47]

NO_x and SO_2 emissions are also major contributors to PM pollution, which is a mixture of microscopic solid and liquid droplets that are suspended in the air. The smaller the size of the particle, the more damaging it is to human health. $PM_{2.5}$, which is particulate matter that is particularly damaging as the particles are small enough to get deep into the lungs, and perhaps even enter the bloodstream. Children are at increased risk of health impacts from PM as their lungs are still developing, and PM can exacerbate asthma or acute respiratory disease. Elevated levels of PM will also aggravate adults with COPD, asthma, coronary artery disease, or congestive heart failure. When particle levels in the air are high, older adults are more likely to be hospitalized, and death from aggravated heart or lung disease may occur.[48]

[46] EPA, Sulfur Dioxide (SO_2) Pollution, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#what%20is%20so2.
[47] EPA, Particulate Pollution and Your Health, September 2003, https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1001EX6.txt.
[48] *Id.*

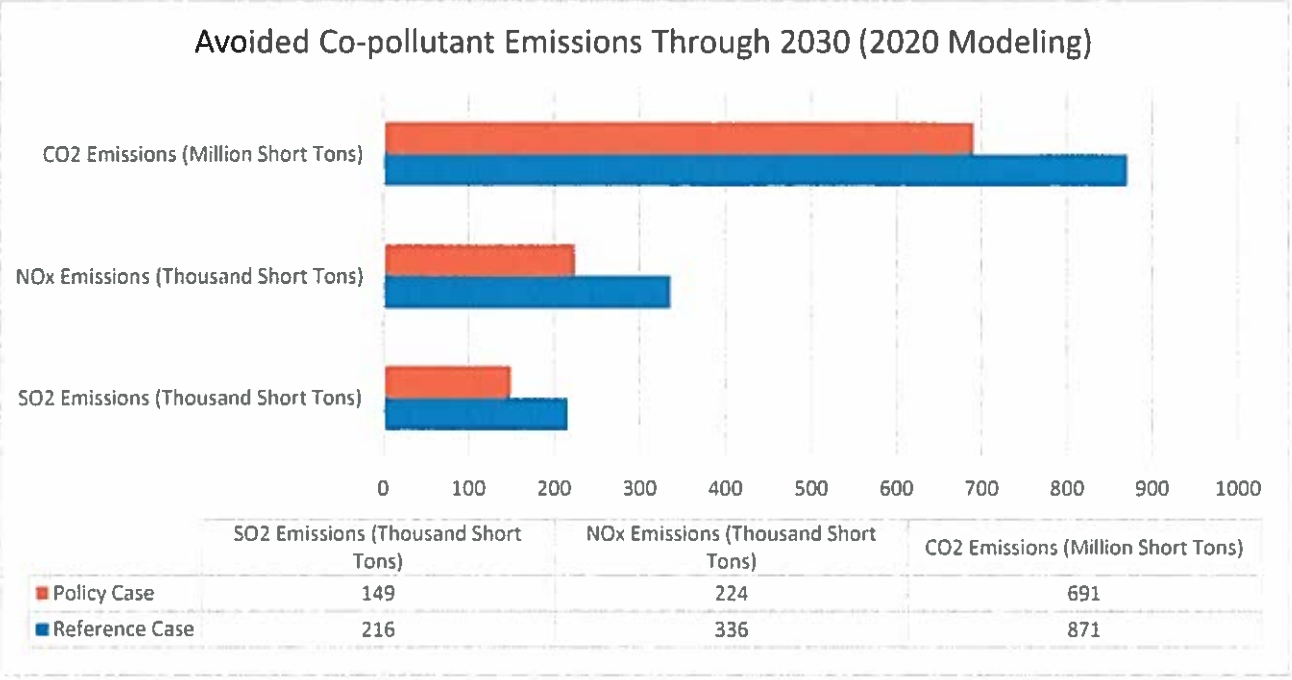
NO_x emissions also contribute to the formation of ground-level ozone. When ozone occurs at ground level it presents a serious air quality problem in many parts of the United States, including this Commonwealth. Ground level ozone is formed when pollutants emitted from a variety of sources, including power plants, react with sunlight. Ozone negatively affects human health as it irritates the respiratory system, reduces lung function, aggravates asthma, and inflames and damages the lining of the lungs.[49] Those especially at risk from ground-level ozone exposure are children, adults who are active outdoors, and those with underlying respiratory issues such as asthma.

A 2017 independent study by Abt Associates, a global research firm focused on health and environmental policy, on the "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014" showed that participating states gained significant health benefits in the first six years of RGGI implementation alone. From 2009-2014, the participating states avoided around 24% of CO_2 emissions that would have otherwise been emitted during that period, resulting in around $5 billion in avoided health related costs.[50] Since this final-form rulemaking would lead to a 31% reduction of projected CO_2 emissions, or avoided emissions, over the next decade, this Commonwealth is likely to see similar gains in health benefits.

A recent study led by researchers from the Columbia Center for Children's Environmental Health at Columbia University Mailman School of Public Health ("Columbia study"), published on July 29, 2020, on the "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative" indicates that the health benefits from RGGI are even more significant than estimated in 2017 by Abt Associates. The Columbia study concluded that the co-pollutant reductions resulting from RGGI have provided considerable child health benefits to participating and neighboring states. In particular, between 2009-2014, RGGI resulted in an estimated 537 avoided cases of childhood asthma, 112 avoided preterm births, 98 avoided cases of autism spectrum disorder, and 56 avoided cases of term low birthweight. Those child health benefits also have significant economic value, estimated at $199.6–358.2 million between 2009 and 2014 alone. However, the researchers note that the actual health benefits are even greater than estimated because the analysis does not capture the future health benefits related to reductions in childhood PM2.5 exposure and mitigating climate change, such as fewer heat-related illnesses or cases of vector-borne disease to which children are especially vulnerable.[51]

[49] EPA, Health Effects of Ground-Level Ozone, http://web.archive.org/web/20160220023128/http://www3.epa.gov/airquality/ozonepollution/health.html.
[50] Abt Associates, "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014," January 2017, https://www.abtassociates.com/sites/default/files/files/Projects/executive%20summary%20RGGI.pdf.
[51] Frederica Perera, David Cooley, Alique Berberian, David Mills, and Patrick Kinney, "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative," Environmental Health Perspectives, Vol. 128, No. 7, July 2020, https://ehp.niehs.nih.gov/doi/10.1289/EHP6706.

Figure 1. CO_2, NO_x and SO_2 Emission Reductions Comparison (2020 Modeling).



	SO2 Emissions (Thousand Short Tons)	NOx Emissions (Thousand Short Tons)	CO2 Emissions (Million Short Tons)
Policy Case	149	224	691
Reference Case	216	336	871

Benefit-per-Ton (BPT) Methodology

To calculate the public health benefits of avoided emissions, the Department used the EPA's Regional Benefit-per-Ton (BPT) methodology.[52] This approach applies an average benefit per ton derived from modeling of benefits of specific air quality scenarios. The EPA's benefit-per-ton approach "relies on estimates of human health responses to exposure to PM and ozone obtained from the peer-reviewed scientific literature."[53] These estimates are then used in conjunction with emissions reductions or avoided emissions to conduct health impact and economic benefit assessments.

Specifically, to calculate benefits of avoided emissions, the Department multiplied the benefit-per-ton estimates (using the 3% discount rate) by the corresponding emission reductions that were generated from the power sector modeling for this final-form rulemaking. This methodology relies on two U sets of co-efficient for calculations, from two cohort studies. The Krewski calculation serves as the lower bound and the Lepeule calculation as the upper bound of projected impacts. As this final-form rulemaking spans the timeframe of 2022 to 2030, so does the analysis of the health benefits due to avoided emissions. However, the emission reductions from this final-form rulemaking will provide benefits that extend well beyond 2030. Based on these calculations, the public health benefits to this Commonwealth of avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

Table 2. Public Health Benefits of Emissions Reductions.

Avoided Emissions	Krewski (low-end)	Lepeule (high-end)
Benefits of Avoided SO_2 Emissions	$2,415,130,517	$5,458,234,159
Benefits of Avoided NOx Emissions	$372,171,575	$840,749,945
TOTAL	$2,787,302,092	$6,298,984,104

Incidence-per-Ton (BPT) Methodology

The Department used the EPA's Regional Incidence-per-Ton (IPT) methodology which calculates total avoided incidences of major health issues and avoided lost work and school days due to reduced emissions. Again, to calculate reduced incidences of avoided emissions, we multiplied the incidence-per-ton estimates (using the 3% discount rate) by the corresponding 2020 modeling emission reductions that were generated from the power sector modeling for this final-form rulemaking. Again, using the Krewski and Lepeule incidence co-efficients as the lower and upper bound respectively.[54]

Based on an assumption that 188 million tons of CO_2 emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking.

Table 3. Avoided Premature Deaths by 2030 from emissions reductions from this regulation.

	Avoided Deaths by 2030
Krewski	282
Lepeule	639

Children and adults alike will suffer less from respiratory illnesses. The methodology projects 31,000 fewer incidences of upper and lower respiratory symptoms which will lead to reduced emergency department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well. The methodology projects over 83,000 avoided lost workdays due to health impacts.

Table 4. Avoided Health Impacts by 2030 from emission reductions from this regulation.[55]

Incidences per Ton (IPT)	**Avoided Incidences Through 2030**
Emergency department visits for asthma	335
Acute bronchitis (age 8–12)	1,011
Lower respiratory symptoms	12,898
Upper respiratory symptoms	18,458
Minor restricted-activity days	495,487
Lost workdays (age 18–65)	83,639
Asthma exacerbation (age 6–18)	45,299
Hospital Admissions, Respiratory	211
Hospital Admissions, Cardiovascular	258

[52] EPA, Regulatory Impact Analysis for the Clean Power Plan Final Rule, October 2015, https://www3.epa.gov/ttnecas1/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf.
[53] *Id.*
[54] EPA, Co-efficients for the Eastern Region for both the IPT and BPT Methodologies can be found in the Regulatory Impact Analysis for the Clean Power Plan Final Rule, October 2015, https://www3.epa.gov/ttnecas1/docs/ria/utilities_ria_final-clean-power-plan-existing-units_2015-08.pdf.
[55] *Id.*

Investment of Auction Proceeds Benefits Consumers and the Economy

The proceeds generated from this final-form rulemaking would be invested into programs that would reduce air pollution and create positive economic impacts in this Commonwealth. The Department plans to develop a draft plan for public comment outlining reinvestment options separate from this final-form rulemaking. However, the Department conducted modeling to estimate the economic impacts of this final-form rulemaking. The Department analyzed the net economic benefits of the program investments using the Regional Economic Model, Inc. model (REMI). The extensive economic modeling will help the Department determine the best ways to invest the auction proceeds in this Commonwealth to maximize emission reductions and economic benefits. The modeling anticipates that in the first year of participation in RGGI, hundreds of millions of dollars in auction proceeds will be generated for the use in the elimination of air pollution in this Commonwealth. The auction proceeds would be spent on programs related to the regulatory goal, and the Department modeled a scenario in which the proceeds are invested in energy efficiency, renewable energy and GHG abatement.

The proceeds will aid this Commonwealth in the transition toward a clean energy economy. In 2015, the EPA noted that the energy market was moving toward cleaner sources of energy and states needed to make plans for and invest in the next generation of power production, particularly considering that current assets and infrastructure were aging. By strategically investing the proceeds, this Commonwealth can help ensure that, as new investments are being made, they are integrated with the need to address GHG pollution from the electric generation sector. See 80 FR 64661, 64678 (October 23, 2015). These energy transitions are occurring both in this Commonwealth and Nationally.

Nationally, the last ten years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005, electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline dramatically. In 2010, coal generation represented 47% of this Commonwealth's generation portfolio and is expected to decline to roughly 1% of this Commonwealth's generation portfolio in 2030.[56] This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI. Anticipating the need for transition, for these communities and employees, auction proceeds can be used to mitigate these impacts and assist communities and families through the energy transition. This could include repowering of the existing coal-fired power plants to natural gas, investments in worker training or other community-based support programs.

The Department would invest a portion of the proceeds in energy efficiency initiatives because energy efficiency is a low-cost resource for achieving CO_2 emission reductions while reducing peak demand and ultimately reducing electricity costs. Lower energy costs create numerous benefits across the economy, allowing families to invest in other priorities and businesses to expand. Energy efficiency savings can be achieved cost-effectively by upgrading appliances and lighting, weatherizing and insulating buildings, upgrading HVAC and improving industrial processes. Additionally, all consumers benefit from energy efficiency programs, not just direct program participants because focused investment in energy efficiency can lower peak electricity demand and can decrease overall electricity costs which results in savings for all energy consumers. Additionally, energy efficiency projects are labor-intensive which create local jobs and

[56] EIA, State Electricity Profiles 2010, January 2012, www.eia.gov/electricity/state/archive/sep2010.pdf.

boost local economy. For instance, projects involving home retrofits directly spur employment gains in the housing and construction industries.

Investing a portion of the auction proceeds into energy efficiency initiatives is also crucial to addressing the impacts of climate change on consumers. According to the NCA4, rising temperatures are projected to reduce the efficiency of power generation while increasing energy demands, resulting in higher electricity costs. Energy efficiency will help lessen those impacts by putting downward pressure on both demand and electricity costs.

Historically, the participating states have invested a significant portion of their auction proceeds in energy efficiency programs. According to RGGI's 2018 Investment Report,[57] over the lifetime of the installed measures, the investments made in energy efficiency in 2018 alone are projected to save participants over $1.2 billion on energy bills, providing benefits to more than 115,000 participating households and 1,200 participating businesses. The investments are also projected to further avoid the release of 1.4 million short tons of CO_2 pollution.

The Department would also invest a portion of the proceeds in clean and renewable electricity generation, such as energy derived from clean or zero emissions sources including geothermal, hydropower, solar and wind. Clean and renewable energy systems reduce reliance on fossil fuels and provide climate resilience benefits, including reduced reliance on centralized power. They also offer the opportunity to save money on electricity costs by installing on-site renewable energy and also reduce power lost through transmission and distribution. Investing in clean and renewable projects will help this Commonwealth meet its climate goals, drive in-state investments and job creation, and lessen the pressure on the CO_2 allowance budget by generating more electricity without additional emissions.

The participating states invested 19% of their 2018 auction proceeds in clean and renewable energy projects. Over the lifetime of the projects installed in 2018, these investments are projected to offset about $600 million in energy expenses for households and businesses. The investments are also projected to avoid the release of 1.9 million short tons of CO_2 emissions.[58]

The Department would also invest a portion of the proceeds in GHG abatement initiatives. GHG abatement includes a broad category of projects encompassing other ways of reducing GHGs, apart from energy efficiency and clean and renewable energy. Examples of potential programs in this Commonwealth include abandoned oil and gas well plugging, electric vehicle infrastructure, carbon capture, utilization and storage, combined heat and power, energy storage, repowering projects and vocational trainings, among others.

For reference, in 2018, an estimated 20% of RGGI investments were made in GHG abatement programs and projects. For the duration of the project lifetime, those investments are expected to avoid over 1.2 million short tons of CO_2 emissions across the region.[59]

In the 2020 modeling, the Department modeled an investment scenario with 31% of annual proceeds for energy efficiency, 32% for renewable energy and 31% for GHG abatement, and 6% for any programmatic costs related to the oversight of the CO_2 Budget Trading Program (5% for the Department and 1% for

[57] RGGI, Inc., The Investment of RGGI Proceeds in 2018, July 2020, https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2018.pdf.
[58] *Id.*
[59] *Id.*

RGGI, Inc). These programmatic costs are in line with the historical amounts reserved by the participating states.

The results of the 2020 modeling show that this final-form rulemaking will not only combat climate change and improve air quality for residents, but also be of positive economic value to this Commonwealth. The modeling estimates that from 2022 to 2030, this final-form rulemaking would lead to an increase in Gross State Product (GSP) of $1.9 billion and a net increase of over 30,000 jobs in this Commonwealth. The Department's 2020 modeling also indicates that investments from this final-form rulemaking would spur an addition of 9.4 gigawatts (GW) of renewable energy and result in a load reduction of 29 terawatt hours of electricity from energy efficiency projects.

(11) Are there any provisions that are more stringent than federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulations.

There is not a corresponding federal regulation that reduces CO_2 emissions from fossil fuel-fired EGUs through a CO_2 budget trading program. Therefore, this final-form rulemaking will be more stringent than federal requirements.

In 2009, under CAA section 202(a)(1), (42 U.S.C.A. § 7521(a)(1)), the EPA issued an "Endangerment Finding," that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015).

On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO_2, from EGUs endanger public health and welfare and cause or contribute to climate change. Additionally, the EPA's Endangerment Findings are further reinforced by the findings of the USGCRP's NCA4 which is consistent with the Commonwealth's 2015, 2020, and 2021 Climate Change Impacts Assessments. While these Federal studies inform the Department's decision to regulate CO_2 emissions within this Commonwealth, they are not determinative because this final-form rulemaking is being promulgated by the Board under the authority of the APCA, not the CAA.

The Board has the authority to promulgate this final-form rulemaking under the APCA. Specifically, section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. The purpose of the APCA is expansive because it seeks "to protect the air resources of the Commonwealth to the degree necessary for the ... protection of public health, safety and well-being of its citizens ..." See 35 P.S. § 4002(a). When the APCA was enacted, the General Assembly was concerned with air pollution generally and that it be remedied no matter what the source. *Id.* This is shown by the broad scope of the definitions of "air contamination," "air pollution" and "air contamination source" under section 3 of the APCA (35 P.S. § 4003). The broad language in the APCA shows an over-all legislative policy to provide

regulatory flexibility to the Board to address a pollutant like CO_2 proven to be inimical to public health and welfare and to be a key contributor to climate change. Therefore, this final-form rulemaking is consistent with the legislative intent and purpose under the APCA.

Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth, which is inclusive of controlling CO_2 pollution. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. Additionally, there is a significant body of scientific literature to show that CO_2 meets the definition of air pollution under the APCA. As mentioned previously, numerous sources, including the EPA, the Penn State University, the USGCRP and the IPCC, have confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO_2 is also a GHG and the largest contributor to climate change.

Section 5(a)(1) of the APCA also provides the Board with authority to regulate CO_2 emitted from fossil fuel-fired EGUs in this Commonwealth. Since the EGUs regulated under this final-form rulemaking emit CO_2, they fall within the definition of "air contamination source" under section 3 of the APCA, which is "[a]ny place, facility or equipment, stationary or mobile, at, from or by reason of which there is emitted into the outdoor atmosphere any air contaminant." As noted previously, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Accordingly, regulating CO_2 emissions from fossil fuel-fired EGUs is necessary to protect public health and welfare from harmful air pollution and to address climate change.

In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.*

As this final-form rulemaking would limit CO_2 pollution by regulating CO_2 emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

Furthermore, the auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority

under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA.

Under RGGI, regulated EGUs are required to purchase one CO_2 allowance per ton of CO_2 they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions are then provided back to the participating states. The purchase of CO_2 allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO_2 emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO_2 emissions from EGUs.

As provided under section 9.2(a) of the APCA (35 P.S. § 4009.2(a)), this Commonwealth's auction proceeds will be held in a subaccount within the Clean Air Fund, which is administered by the Department "for the use in the elimination of air pollution." Section 9.2(a) of the APCA authorizes the Department to establish separate accounts in the Clean Air Fund as may be necessary or appropriate to implement the requirements of the APCA. Under section 9.2(a) of the APCA, the Board was required to adopt a regulation for the management and use of the money in the Clean Air Fund. The Board adopted Chapter 143 (relating to disbursements from the Clean Air Fund) to provide for the monies paid into the Clean Air Fund to be disbursed at the discretion of the Secretary for use in the elimination of air pollution. See 25 Pa. Code § 143.1(a) (relating to general). Under § 143.1(b), the full and normal range of activities of the Department are considered to contribute to the elimination of air pollution, including purchase of contractual services and payment of the costs of a public project necessary to abate air pollution.

Lastly, Section 5(a)(1) of the APCA provides the Board with authority to establish a CO_2 Budget Trading Program through this final-form rulemaking. As mentioned previously, this Commonwealth has and continues to participate in cap and trade programs. Specifically, the Board promulgated the NO_x Budget Trading Program in Chapter 145, Subchapter A (relating to NO_x Budget Trading Program) and the CAIR NO_x and SO_2 Trading Programs in Chapter 145, Subchapter D (relating to CAIR NO_x and SO_2 Trading Programs). See 30 Pa.B. 4899 (September 23, 2000) and 38 Pa.B. 1705 (April 12, 2008). Although those cap and trade program regulations were promulgated in response to initiatives at the Federal level, both subchapters were promulgated under the broad authority of section 5(a)(1) of the APCA, as is this final-form rulemaking. The statutory authority granted to the Board under section 5(a)(1) of the APCA is broad related to the adoption of any rule or regulation for the "prevention, control, reduction and abatement of air pollution." The comprehensive scope of this directive provides the Board with the discretion to promulgate a trading program to reduce CO_2 emissions from fossil fuel-fired EGUs in this Commonwealth.

Given the urgency of the climate crisis, including the significant impacts to this Commonwealth, the Board determined that this final-form rulemaking is necessary to help achieve the significant reductions in CO_2 emissions necessary to avoid the worst impacts of climate change. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment.

(12) How does this regulation compare with those of the other states? How will this affect Pennsylvania's ability to compete with other states?

There are eleven states currently participating in RGGI, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and Virginia. Since all the participating states' regulations are based on the RGGI Model Rule, this final-form rulemaking is very similar to the regulations in the participating states, with modifications made to accommodate the unique aspects of this Commonwealth's power sector.

Comparison with RGGI Participating States

As mentioned previously, the participating states developed a Model Rule to use as the framework for each state's independent CO_2 Budget Trading Program regulation. The development of the RGGI Model Rule was supported by an extensive regional stakeholder process that engaged the regulated community, environmental non-profits and other organizations with technical expertise in the design of cap and trade programs. The Board is familiar with the structure of the RGGI Model Rule, because it was drafted based on the language in the EPA's NO_x Budget Trading Program rule in 40 CFR Part 96 (relating to NO_x budget trading program and CAIR NO_x and SO_2 trading programs for state implementation plans), which the Board used as a model for Chapter 145, Subchapter A.

States that participate in RGGI develop regulations that are compatible with the RGGI Model Rule to ensure consistency among the individual programs. Key areas of compatibility include alignment of the main program elements, stringency of the CO_2 allowance budgets and consistency of regulatory language. This consistency is necessary to ensure the fungibility of CO_2 allowances across the participating states, which supports the regional trading of CO_2 allowances and the use of a CO_2 allowance issued in one participating state for compliance by a regulated source in another participating state.

This final-form rulemaking therefore adopts the main program elements of the RGGI Model Rule, including the definitions, applicability, standard regulatory requirements, monitoring and reporting requirements, the CO_2 Allowance Tracking System (COATS), the emissions containment reserve (ECR), the cost containment reserve (CCR) and the CO_2 emissions offset project provisions. The CO_2 allowance budgets in this final-form rulemaking are sufficiently stringent to align with RGGI's goal of reducing CO_2 emissions by 30% from 2020 to 2030. This final-form rulemaking also contains regulatory language consistent with the RGGI, Inc. auction platform, the online platform used to sell CO_2 allowances. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO_2 Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc.

Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the Department's implementation of this final-form rulemaking.

Each participating state's regulation provides for the distribution of CO_2 allowances from its CO_2 allowance budget. The majority of CO_2 allowances are distributed at auction and each CO_2 allowance sold at auction returns proceeds from the sale to that state to invest in energy efficiency, renewable energy, and GHG abatement programs. Some states have elected to designate a limited amount of CO_2 allowances to

be "set-aside" in a designated account and distributed to advance individual state policy goals and objectives. Since this final-form rulemaking is consistent with the RGGI Model Rule, the Commonwealth's CO_2 allowances will have equal value to CO_2 allowances held in the other participating states, meaning they may be freely acquired and traded across the region.

Although CO_2 allocation provisions may vary from state to state, to be consistent with the RGGI Model Rule each participating state allocates a minimum of 25% of its CO_2 allowance budget to a general account from which CO_2 allowances will be sold or distributed in order to provide funds for energy efficiency measures, renewable or noncarbon-emitting energy technologies, and CO_2 emissions abatement technologies, as well as programmatic costs. Consistent with the RGGI Model Rule, this final-form rulemaking establishes a general account from which CO_2 allowances will be sold or distributed, which is labeled as the Department's air pollution reduction account. Each year, the Department will allocate CO_2 allowances representing 100% of the tons of CO_2 emitted from the Commonwealth's CO_2 allowance budget to the air pollution reduction account, except for the CO_2 allowances that the Department has set aside for a designated purpose as discussed in the following section. CO_2 allowances in the air pollution reduction account will be sold or distributed in order to provide funds for use in the elimination of air pollution and programmatic costs.

While this final-form rulemaking is sufficiently consistent with the Model Rule and corresponding regulations in the participating states, the Board, in the exercise of its own independent rulemaking authority, also accounts for the unique environmental, energy and economic intricacies of this Commonwealth. This provides the Board the flexibility to limit CO_2 emissions from fossil fuel-fired EGUs in a way that aligns with the other participating states, while tailoring this final-form rulemaking to this Commonwealth's energy markets. In this final-form rulemaking, the Board made modifications from the language in the Model Rule to include permitting requirements and definitions specific to this Commonwealth, as well as stylistic changes. The Board also made adjustments to the language, including the adjustment for banked allowances and control periods, to reflect the timing of this Commonwealth's participation in RGGI. In addition to these modifications, there are six main areas in which this final-form rulemaking differs from the Model Rule.

First, under § 145.306(b)(3) (relating to standard requirements), the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. The Board received several comments that requested monitoring of the air quality impacts of this final-form rulemaking and in particular an assessment of any impacts on environmental justice communities. The Department also heard concerns about potential impacts on environmental justice communities from members of EJAB. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

Second, under § 145.342(i) (relating to CO_2 allowance allocations), the Department will set aside 12,800,000 CO_2 allowances at the beginning of each year for waste coal-fired units located in this

Commonwealth. The amount of the set aside increased in this final-form rulemaking from 9,300,000 CO_2 allowances at proposed to account for one of the waste coal-fired units remaining in operation and to provide additional compliance assistance. One waste coal-fired unit had originally indicated it was shutting down operations when the Department was developing the proposed rulemaking. Since that waste coal-fired unit will remain in operation, its legacy emissions are now included in this final-form rulemaking. Legacy emissions, as defined under § 145.302, for that waste coal-fired unit amount to 1.18 million tons of CO_2 or 1.18 million CO_2 allowances. The Department added the 1.18 million to the proposed set-aside amount of 9.3 million and further adjusted the value to provide additional compliance assistance. Given recent policy changes impacting the waste coal industry, including the recent legislative adjustment to Tier II of the Alternative Energy Portfolio Standards Act (73 P.S. §§ 1648.1—1648.9), the Department also made an adjustment in this final-form rulemaking to the definition of "legacy emissions." Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. Including a slightly higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses. The Department took into consideration all comments submitted pertaining to the waste coal set-aside and made the determination to maintain the set-aside provision and make an adjustment to the definition of legacy emissions that was included in the proposed rulemaking. The Department made this determination because waste coal-fired units provide an environmental benefit of reducing the amount of waste coal piles in this Commonwealth.

Reducing waste coal piles is a significant environmental issue in this Commonwealth, because waste coal piles cause air and water pollution, as well as safety concerns. Waste coal-fired units burn waste coal to generate electricity, thereby reducing the size, number and impacts of these piles otherwise abandoned and allowed to mobilize and negatively impact air and water quality in this Commonwealth. In recent years, waste coal-fired units have struggled to compete in the energy market, due in part to low natural gas prices, and several units have shut down or announced anticipated closure dates. Given the environmental benefit provided, the Board determined that it is necessary to encourage owners or operators of waste coal-fired units to continue burning waste coal to generate electricity. This legacy environmental issue from this Commonwealth's long history of coal mining further underscores why it is vital to not leave additional environmental issues, like climate change, for future generations to solve.

By providing a set aside, as opposed to an exemption, the CO_2 emissions from waste coal-fired units are included in this Commonwealth's CO_2 emissions budget and owners or operators of waste coal-fired units are still required to satisfy compliance of all the regulatory requirements in this final-form rulemaking. After reviewing the last 10 years of CO_2 emission data from waste coal-fired units, the Department determined that the CO_2 allowance set aside should be equal to the total of each waste coal-fired unit's highest year of CO_2 emissions from that 10-year period, referred to as "legacy emissions." That total is 12,800,000 tons of CO_2 emissions. Thus, the Department will set aside 12,800,000 CO_2 allowances annually. Each year, the Department will allocate the CO_2 allowances directly to the compliance accounts of the waste coal-fired units equal to the unit's actual emissions. However, if the waste coal-fired units emit over 12,800,000 tons of CO_2 emissions sector-wide in any year, then the units must acquire the remaining CO_2 allowances needed to satisfy their compliance obligation.

Third, under § 145.342(j), the Department will set aside CO_2 allowances for a strategic use allocation. By April 1 of each calendar year, the Department will allocate any undistributed CO_2 allowances from the

waste coal set-aside to the strategic use set-aside account. Given the possibility that waste coal fired-units may emit less than 12.8 million tons of CO_2 each year, the Department could be left with undistributed CO_2 allowances. Under the strategic use set-aside, the Department will allocate these undistributed CO_2 allowances directly to eligible projects that result in GHG emission reductions. Eligible projects include those that implement energy efficiency measures, implement renewable or noncarbon-emitting energy technologies, or develop innovative greenhouse gas emissions abatement technologies. In response to comments received, in this final-form rulemaking, the Department adjusted the strategic use set-aside provision to further clarify the process to apply for CO_2 allowances. The owner of an eligible project will need to submit a complete strategic use application to the Department. At a minimum the application must specify how the project will result in GHG emission reductions, the number of CO_2 allowances requested, and the calculations and supporting data used to determine the emission reductions. After verifying that the information in the application is complete and accurate, the Department will determine the number of CO_2 allowances to distribute based on the emission reductions achieved. The Department will then distribute CO_2 allowances upon completion of the eligible project and will not award CO_2 allowances to an eligible project that is required under law, regulation, or court order.

Fourth, under § 145.342(k), the Department will set-aside CO_2 allowances for combined heat and power units. The proposed rulemaking included a set-aside provision for cogeneration units, which also covered combined heat and power (CHP) systems. In this final-form rulemaking, the Department changed the name of the set-aside from "cogeneration" to "combined heat and power." This change was made to clarify that it is CHP units that will be qualified for CO_2 allowances under the set-aside provision. A CHP unit is defined as an electric-generating unit that simultaneously produces both electricity and useful thermal energy. Due to the efficiency and environmental benefits that CHP units provide; the Department understands that it is beneficial to incentivize new CHP buildout in this Commonwealth. In addition, incentivizing future CHP units provides economic development benefits and can be a significant factor for manufacturers and other industrial, commercial or institutional facilities looking to expand operations within or to this Commonwealth. In fact, the most recent Pennsylvania Climate Action Plan recognized the benefits and importance of incentivizing CHP. In the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a CHP unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO_2 emissions by an amount equal to the CO_2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances, then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60% on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit

must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility. Unlike the waste coal set-aside, the Department would not distribute CO_2 allowances directly to the unit, but rather retire CO_2 allowances on behalf of the unit to reduce its compliance obligation. The owner or operator of a unit requiring additional CO_2 allowances to satisfy the CO_2 requirements under § 145.306(c) shall transfer CO_2 allowances for compliance deductions to the compliance account of the unit.

Fifth, under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Board provides additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. A CHP unit that supplies less than 15% of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10% of annual gross generation to the electric grid. The Board is including this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

Lastly, this final-form rulemaking includes §§ 145.401—145.409 (relating to CO_2 allowance auctions) outlining the procedure for auctioning CO_2 allowances, which is not contained in the RGGI Model Rule. Several participating states have also added auction procedure language to their CO_2 Budget Trading Program regulations or developed separate auction regulations. By including the auction procedure in this final-form rulemaking, the Board seeks to ensure that auction participants fully understand the auction process and the associated requirements.

In § 145.401 (relating to auction of CO_2 allowances), the Board includes a provision for the Department to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. As discussed throughout this RAF, participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, the Board also states that if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

Competition in Interstate Electricity Market

This Commonwealth generates more electricity than it consumes, exporting the remaining electricity to other states within PJM. States within PJM compete with one another in interstate electricity markets. State level policies can impact that market unevenly as generators may have varying costs depending on their location.

Not all states within PJM participate in RGGI, so generators in non-participating states may have different costs associated with electricity generation. The Department conducted an analysis evaluating possible impacts on this Commonwealth's ability to compete in the interstate electricity generation market if this final-form rulemaking is implemented.

In the 2020 modeling, the Department found that this Commonwealth will continue to export electricity to other states and this Commonwealth's total generation is not eroded as a result of RGGI participation. In fact, if the auction proceeds are invested in the energy sector, the 2020 modeling estimates that total electricity exports from this Commonwealth will be higher by 2030 with this final-form rulemaking than without it. Further, any price differential resulting from the addition of the CO_2 allowance price is not significant enough to cause EGUs to close and reopen in surrounding states. EGUs in this Commonwealth have historically maintained a competitive advantage regarding natural gas prices due to the proximity to the Marcellus and Utica shale formations. Even with the price adder of the CO_2 allowance price, the modeling shows that natural gas generation in this Commonwealth continues to be extremely competitive.[60] As shown in Table 5 below, 2021 modeling confirms this Commonwealth's power prices (capacity and energy) remain competitive in the region when compared to the current and future power prices of the participating states.

Table 5. Firm Power Prices, 2021 Modeling (2017 $/MWh).

	2020	2022	2025	2028	2030
MA	$ 49.3	$ 48.2	$ 37.9	$ 37.4	$ 32.9
CT	$ 44.8	$ 42.3	$ 33.6	$ 33.9	$ 34.5
ME	$ 40.1	$ 41.6	$ 35.0	$ 35.5	$ 34.2
NH	$ 40.9	$ 40.9	$ 33.8	$ 34.9	$ 34.6
RI	$ 49.2	$ 45.6	$ 36.8	$ 38.7	$ 41.0
VT	$ 43.9	$ 44.8	$ 38.4	$ 39.0	$ 38.1
NY	$ 35.6	$ 42.6	$ 39.6	$ 34.6	$ 31.1
CT	$ 33.0	$ 38.3	$ 34.6	$ 35.2	$ 34.8
MD	$ 30.9	$ 34.3	$ 32.6	$ 33.2	$ 33.4
VA	$ 28.4	$ 32.9	$ 32.1	$ 32.4	$ 32.4
NJ	$ 34.2	$ 36.2	$ 32.3	$ 32.6	$ 31.8
11-state RGGI	$ 39.1	$ 40.7	$ 35.1	$ 35.2	$ 34.4
PA	$ 26.2	$ 30.5	$ 30.5	$ 31.4	$ 31.3

[60] ICF, Energy Assessment Report for the Commonwealth of Pennsylvania, April 2019, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1451239&DocName=ENERGY%20ASSESSMENT%20REPORT%20FOR%20THE%20COMMONWEALTH%20OF%20PENNSYLVANIA.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

(13) Will the regulation affect any other regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations.

No other regulations of the Department or other state agencies are affected by this final-form rulemaking.

(14) Describe the communications with and solicitation of input from the public, any advisory council/group, small businesses and groups representing small businesses in the development and drafting of the regulation. List the specific persons and/or groups who were involved. ("Small business" is defined in Section 3 of the Regulatory Review Act, Act 76 of 2012.)

As required under the Regulatory Review Act (RRA) (71 P.S. §§ 745.1—745.15) and further emphasized by Executive Order 2019-07, the Department conducted a robust public outreach effort including the business community, energy producers, energy suppliers, organized labor, environmental groups, low-income and environmental justice advocates and others to ensure that the development and implementation of this program results in reduced emissions, economic gains and consumer savings. The Department, working with the Public Utility Commission (PUC), engaged with PJM Interconnection to promote the integration of the CO_2 Budget Trading program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage. The Department also met with various stakeholders to receive additional input on this final-form rulemaking on numerous occasions throughout the development process. In particular, the Department met with environmental groups, residents, businesses, legislators, owners and operators of affected sources, industry groups and environmental justice stakeholders during the development of this final-form rulemaking.

Additionally, the Department consulted with the Air Quality Technical Advisory Committee (AQTAC), the Citizens Advisory Council (CAC), the Small Business Compliance Advisory Committee (SBCAC), and the Environmental Justice Advisory Board (EJAB) throughout the development of this final-form rulemaking.

Air Quality Technical Advisory Committee (AQTAC)

AQTAC was established under section 7.6 of the APCA (35 P.S. § 4007.6) to provide technical advice at the request of the Department on policies, guidance and regulations. On December 12, 2019, the Department presented concepts to AQTAC on a potential rulemaking to participate in RGGI. The Department returned to AQTAC on February 13, 2020, to discuss the preliminary draft proposed Annex A. At the April 16, 2020, AQTAC meeting, the Department provided a brief update on the development of the draft proposed rulemaking. In response to requests from committee members for more opportunities to learn about the CO_2 Budget Trading Program, on April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The meeting was held by means of a webinar and over 225 members of the public were able to listen to the modeling results. Individuals interested in hearing the modeling results can also watch the meeting at any time through a link on the Department's web site.

On May 7, 2020, the draft proposed rulemaking was presented to AQTAC for review and technical advice before the Department moved the draft proposed rulemaking forward to the Board for consideration. The meeting was held by means of a webinar and over 200 members of the public had the opportunity to listen to the discussion and to request to provide comments. The AQTAC members were divided on whether to

submit a formal letter of concurrence on the draft proposed rulemaking and ultimately declined to do so without a majority decision.

On April 8, 2021, the Department presented an update on this final-form rulemaking to AQTAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 17, 2021, at a special AQTAC meeting, the Department presented this final-form rulemaking and updated power sector modeling results. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. The supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

The opportunity to provide public comment on the draft proposed rulemaking to AQTAC members was provided on three occasions, at the February 13, 2020, April 16, 2020, and May 7, 2020, AQTAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to AQTAC members was provided on April 8, 2021, and May 17, 2021.

Citizens Advisory Council (CAC)

Under section 7.6 of the APCA, the Department is required to consult with CAC in the development of the Department's regulations and State Implementation Plans. On November 19, 2019, the Department presented concepts to CAC on a potential rulemaking to participate in RGGI. The Department returned to CAC on February 18, 2020, for an informational presentation on a preliminary draft proposed Annex A. On April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The Department also conferred with CAC's Policy and Regulatory Oversight Committee concerning the draft proposed rulemaking on May 8, 2020. At the May 19, 2020, CAC meeting, the draft proposed rulemaking was presented to CAC for review before the Department moved the draft proposed rulemaking forward to the Board for consideration. The CAC members ultimately declined to submit a formal letter of concurrence with the Department's recommendation to move the draft proposed rulemaking forward to the Board for consideration.

On April 20, 2021, the Department presented an update on this final-form rulemaking to CAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to CAC. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. Again, the supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

The opportunity to provide public comment on the draft proposed rulemaking to CAC members was provided on three occasions, at the November 19, 2019, February 18, 2020, and May 19, 2020, CAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to CAC members was provided on April 20, 2021, and May 19, 2021.

Small Business Compliance Advisory Committee (SBCAC)

Under section 7.8 of the APCA (35 P.S. § 4007.8), the SBCAC is required to review and advise the Department on rulemakings which affect small business stationary sources. The Department provided informational presentations on the draft proposed rulemaking to SBCAC on January 22, 2020, and April 22, 2020. On July 22, 2020, the Department presented the draft proposed rulemaking to SBCAC for review and advice on the potential small business stationary source impact of the draft proposed rulemaking. During the presentation, the Department mentioned that it had estimated that ten small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with the draft proposed rulemaking. Of those ten sources, seven were estimated to be waste coal-fired power plants. The Department also mentioned that it had included in the draft proposed rulemaking a CO_2 allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. The SBCAC ultimately voted not to concur with the Department's recommendation to move the draft proposed rulemaking forward to the Board.

On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to SBCAC. During the presentation, the Department mentioned that it had estimated that now twelve small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with this final-form rulemaking. Of those twelve sources, eight were estimated to be waste coal-fired power plants. The Department also mentioned that, in the final-form rulemaking, it had retained the CO_2 allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. After the Department answered the members' remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. In light of the SBCAC vote in opposition to the draft proposed rulemaking, the members' support of this final-form rulemaking is particularly significant.

Environmental Justice Advisory Board (EJAB)

Additionally, the Department provided an informational presentation on the draft proposed rulemaking to EJAB on May 21, 2020, and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group throughout 2020. On July 16, 2020, the Department participated in a discussion with EJAB members centered around recommendations to the Department regarding RGGI. This conversation continued at the August 11, 2020, meeting and resulted in recommendations shared with the Department regarding RGGI program implementation in addition to review and discussion of the draft RGGI equity principles, developed in conjunction with the Advisory Committee. Discussion and consultation with EJAB regarding the draft RGGI Equity Principles continued during the November 17, 2020, meeting.

On May 20, 2021, the Department provided a presentation on the final rulemaking and updated power sector modeling, specifically highlighting environmental justice and equity concerns and how these were addressed in the rulemaking and would be addressed in an investment plan. The Delta Institute, with whom the Department collaborated to conduct outreach and research in communities impacted by this final-form rulemaking, also presented their findings and recommendations for the Department's efforts in affected communities. The Department also provided an opportunity to present public comments at this meeting. While EJAB did not vote on the draft proposed rulemaking in 2020, the EJAB members decided to vote unanimously in support of the Department moving this final-form rulemaking forward to the Board.

Other Advisory Committees

The Department also provided informational presentations on the draft proposed rulemaking to the Climate Change Advisory Committee on February 25, 2020, and the Oil and Gas Technical Advisory Board on May 20, 2020. Additionally, the Department provided updates to these committees on this final-form rulemaking.

(15) Identify the types and number of persons, businesses, small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012) and organizations which will be affected by the regulation. How are they affected?

Under § 145.304 (relating to applicability) of this final-form rulemaking, the owner or operator of a fossil-fuel-fired EGU with a nameplate capacity equal to or greater than 25 MWe that sends more than 10% of its annual gross generation to the electric grid will have a compliance obligation. These regulated EGUs are referred to as "CO_2 budget units" and a facility that includes one or more CO_2 budget units is a "CO_2 budget source." Under § 145.306 (relating to standard requirements) of this final-form rulemaking, the owner or operator of each CO_2 budget source will be required to have a permit under Chapter 127 (relating to construction, modification, reactivation and operation of sources) which incorporates the requirements of the CO_2 Budget Trading Program. The owner or operator will be required to operate the CO_2 budget source and each CO_2 budget unit at the source in compliance with the permit.

Based on the most recent data from the EPA's Clean Air Market Division, the EIA and the Department's emission inventory, the Department estimates that as of the end of 2020, 63 CO_2 budget sources (facilities) with 150 CO_2 budget units (EGUs) would have a compliance obligation under this final-form rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the time this final-form rulemaking is implemented. The Department projects based on announced closures and future firm capacity builds that in 2022, there will be 66 CO_2 budget sources with 158 CO_2 budget units with a compliance obligation under this final-form rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99% of this Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking.

The Department used the North American Industry Classification System (NAICS) codes for the subject industry sectors to develop lists of potentially affected entities. The NAICS identifies the industry as Electric Bulk Power Transmission and Control (NAICS code 221112 and 221121), Other Electric Power Generation (NAICS code 221118), Electric Power Distribution (NAICS code 221122), and Paper (except Newsprint) Mills facility (NAICS code 322121). The Department provided these NAICS codes to the Pennsylvania Small Business Development Center's Environmental Management Assistance Program (EMAP) with a request for a list of entities in each classification. EMAP provided the Department with a list of 58 facility owners or operators identified by NAICS code 221112, three facility owners or operators identified by NAICS code 221121, one facility owner or operator identified by NAICS code 221118, one facility owner or operator identified by NAICS code 221122, and three facility owners or operators identified by NAICS code 322121, for a total of 66 potentially affected entities. Under the U.S. Small Business Administration (SBA) Small Business Size Regulations under 13 CFR Chapter 1, Part 121, the small business-size standard in number of employees for each of these NAICS classifications is 750 employees. The Department determined that twelve of these potentially affected entities may be small businesses by that definition. Of these twelve entities, eight are waste coal facilities, for which a set-aside provision has been established to assist these facilities with most if not all of their compliance obligation under this final-form rulemaking.

Within the participating states and under this final-form rulemaking, the owner or operator of a CO_2 budget unit must obtain one CO_2 allowance for each ton of CO_2 emitted from the CO_2 budget unit each year. The owner or operator may use a CO_2 allowance issued by any participating state to demonstrate compliance with any state's regulation, including this final-form rulemaking. RGGI operates on three-year control periods for compliance, meaning full compliance is evaluated at the end of each three-year control period. As described under § 145.306(c), at the end of a control period, the owner or operator is required as a permit condition to hold enough CO_2 allowances in their compliance account to cover the CO_2 budget source's CO_2 emissions during the period. The owner or operator must also show interim control period compliance during each of the first two calendar years of a control period. During each interim control period, the owner or operator must hold CO_2 allowances equal to 50% of CO_2 emissions in the compliance account for the CO_2 budget source. As outlined under § 145.355 (relating to compliance), at the end of the control period or interim control period, CO_2 allowances will be deducted from each CO_2 budget source's compliance account to cover each of the CO_2 budget unit's CO_2 emissions at the source for the control period or interim control period.

All owners or operators of CO_2 budget sources are required to open a compliance account in COATS in order to transfer and hold CO_2 allowances for compliance purposes. The Department will use COATS to determine compliance with this final-form rulemaking by comparing the covered emissions of a CO_2 budget source with the CO_2 allowances held in its compliance account. COATS is a publicly accessible platform that records and tracks data for each state's CO_2 Budget Trading Program, including the transfer of CO_2 allowances that are offered for sale by the participating states and purchased in the quarterly auctions. On the COATS website, the public can view and download reports of RGGI program data and CO_2 allowance market activity. COATS is used to allocate, award and transfer CO_2 allowances, to certify and provide CO_2 allowances for compliance-related tasks, and to register and submit applications and reports for offset projects.

Under § 145.352 (establishment of accounts) of this final-form rulemaking, any person may apply to open a general account for the purpose of holding and transferring CO_2 allowances by submitting a complete application for a general account to the Department or its agent. A general account can be used for the receipt, transfer, and banking of CO_2 allowances in COATS, but unlike a compliance account, it does not provide for the CO_2 allowance compliance deduction process outlined in this final-form rulemaking. A compliance account is associated with an electric generation facility regulated under a state CO_2 Budget Trading Program, a CO_2 budget source. These accounts are used for compliance with the requirements of each state's CO_2 Budget Trading Program. Only one compliance account will be assigned to each CO_2 budget source. An applicant must have either a general or compliance account to participate in CO_2 allowance auctions. CO_2 allowances can be "banked" meaning they may be held for future compliance as they have no expiration date.

CO_2 allowances may be acquired through purchases in quarterly multistate auctions, through secondary markets, or by obtaining CO_2 offset allowances. Once a CO_2 allowance is purchased in an auction, it can then be resold in the secondary market. The secondary market assists with compliance by allowing CO_2 allowances to be traded in between quarterly auctions. As previously mentioned, every auction is overseen by an independent market monitor. Trading in the secondary market is also monitored by an independent market monitor in order to identify anticompetitive conduct. The quarterly multistate auction process continues each consecutive year of the CO_2 Budget Trading Program with fewer CO_2 allowances distributed into the auctions by the participating states each year.

Of the twelve potentially affected entities that may qualify as small businesses per the U.S. Small Business Administration definition, eight are waste coal facilities. These waste coal facilities will not need to purchase CO_2 allowances, as long as the waste coal-fired units do not emit over 12,800,000 tons of CO_2 emissions sector-wide in any year. The remaining four facilities will need to acquire CO_2 allowances in quarterly auctions, secondary markets, or by obtaining CO_2 offset allowances through the completion of offset projects, as described above. The Department's modeling projects that a CO_2 allowance will cost $3.24 (2017$) in 2022, so the estimated cost for these facilities in 2022 will be their CO_2 emissions multiplied by that allowance price.

There could also be minimal costs beyond the cost of purchasing CO_2 allowances. The Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal as this final-form rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this final-form rulemaking is already in existence at the regulated source and the necessary emissions data is currently reported to the EPA. There may be minimal programmatic costs related to the submittal of compliance certification reports and auction, account and offset project related forms. The RGGI auction services provider estimates that the owner, operator or authorized representative on their behalf, will need to spend approximately 16 hours for the initial auction participation (including opening a COATS account, registration, and training). In subsequent auctions, the estimate drops to about 4-8 hours for each auction. Therefore, after the initial auction, the total hourly commitment from one employee of each affected facility is estimated to be an average of 24 hours per year.

RGGI Provides Regulatory Certainty

Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO_2 allowance prices are predictable. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the CCR and ECR. The CCR process triggers additional CO_2 allowances to be offered for sale in the case of higher than projected emissions reduction costs. Similarly, states implementing the ECR, including this Commonwealth, will withhold CO_2 allowances from the auction to secure additional emissions reductions if prices fall below the established trigger price, so that the ECR will only trigger if emission reduction costs are lower than projected. This provides predictability in terms of the cost of compliance for covered entities. CO_2 allowances may also be purchased through the secondary market when costs are low and held for future compliance years.

Offsets

As an additional compliance option under this final-form rulemaking, owners or operators of CO_2 budget sources may complete an offset project to reduce or avoid atmospheric loading of CO_2 or CO_2 equivalent (CO_2e) emissions. CO_2e refers to the quantity of a given GHG, other than CO_2, multiplied by its global warming potential. By completing an offset project, the owner or operator will generate CO_2 offset allowances which can be used to offset a portion of the CO_2 budget source's emissions. A CO_2 offset allowance is equivalent to a CO_2 allowance, however a CO_2 offset allowance represents a project-based GHG emission reduction outside of the electric generation sector. This project must be in addition to not in place of an existing legal requirement. Under § 145.355(a)(3) of this final-form rulemaking, consistent with the RGGI Model Rule and the regulations in the participating states, the number of CO_2 offset allowances available to be deducted for compliance purposes may not exceed 3.3% of the CO_2 budget source's CO_2 emissions for a control period or interim control period.

As described under § 145.395 (relating to CO_2 emissions offset project standards), the three eligible offset categories include landfill methane capture and destruction projects, projects that sequester carbon due to reforestation, improved forest management or avoided conversion, and projects that avoid methane emissions from agricultural manure management operations. Each of the three offsets categories are designed to further reduce or sequester emissions of CO_2 or methane within the northeast region. In the RGGI Model Rule, the participating states cooperatively developed prescriptive regulatory requirements for each of the offset categories that have been incorporated into this final-form rulemaking. These requirements ensure that awarded CO_2 offset allowances represent CO_2e emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent.

Under § 145.393 (relating to general requirements) of this final-form rulemaking, offset projects must be located in this Commonwealth or partly in this Commonwealth and partly within one or more of the participating states, provided that the majority of the CO_2e emission reductions or carbon sequestration occur in this Commonwealth. Massachusetts, New Hampshire, Rhode Island and Virginia have determined not to award CO_2 offset allowances, but CO_2 budget sources located within those states may use CO_2 offset allowances awarded by a participating state, including this Commonwealth. By recognizing CO_2e emission reductions and carbon sequestration outside the electric generation sector and this Commonwealth's CO_2 emissions budget offset projects provide compliance flexibility and create opportunities for low-cost emission reductions and other co-benefits across various sectors. Thus, including offset projects in this final-form rulemaking provides two crucial benefits, an additional compliance option for owners or operators and the potential for this Commonwealth to further reduce GHG emissions.

Compliance Assistance Plan

The Department will continue to educate and assist the public and the regulated community in understanding the final-form requirements and how to comply with them throughout the rulemaking process. The Department will continue to work with the Department's provider of Small Business Stationary Source Technical and Environmental Compliance Assistance. These services are currently provided by EMAP of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, Section 507 of the CAA (42 U.S.C.A. § 7661f) and authorized by the Pennsylvania Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209).

In addition to providing one-on-one consulting assistance and on-site assessments, EMAP also operates a toll-free phone line to field questions from this Commonwealth's small businesses, as well as businesses wishing to start up in, or relocate to, this Commonwealth. EMAP operates and maintains a resource-rich environmental assistance website and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

(16) List the persons, groups or entities, including small businesses, that will be required to comply with the regulation. Approximate the number that will be required to comply.

The owner or operator of a fossil-fuel-fired EGU with a nameplate capacity equal to or greater than 25 MWe that sends more than 10% of its annual gross generation to the electric grid will have a compliance obligation under this final-form rulemaking.

Based on the most recent data from the EPA's Clean Air Market Division, the EIA and the Department's emission inventory, the Department estimates that as of the end of 2020, 63 CO_2 budget sources (facilities) with 150 CO_2 budget units (EGUs) would have a compliance obligation under this final-form rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the time this final-form rulemaking is implemented. The Department projects based on announced closures and future firm capacity builds that in 2022, there will be 66 CO_2 budget sources with 158 CO_2 budget units with a compliance obligation under this final-form rulemaking.

About twelve of these potentially affected facilities may meet the definition of small business as defined in Section 3 of the Regulatory Review Act (71 P.S. § 745.3). Of these twelve potential facilities, eight of them are classified as waste coal facilities. This final-form rulemaking includes a waste-coal set aside provision to assist these facilities with compliance by providing up to 12.8 million CO_2 allowances each year.

The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99% of this Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking. The number and type of facilities that will be affected by this final-form rulemaking are listed below in Table 6.

Table 6. Affected Facilities and EGUs By Fuel Type.

Category	Facilities (2020)	EGUs (2020)	Facilities (2022)	EGUs (2022)
Coal	6	13	5	12
Waste Coal	11	15	10	14
Natural Gas Combined Cycle	24	60	28	67
Natural Gas Single Cycle	14	41	14	41
Oil/Gas Boiler	4	11	4	11
Combined Heat & Power	4	10	5	13
Total	63	150	66	158

(17) Identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor communities and other public and private organizations. Evaluate the benefits expected as a result of the regulation.

Owners or operators of fossil fuel-fired EGUs, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe that send more than 10% of annual gross generation to the electric grid will have a compliance obligation under this final-form rulemaking. While those with a compliance obligation are limited, the benefits of this final-form rulemaking will accrue to all residents of this Commonwealth.

The CO_2 emission reductions resulting from this final-form rulemaking are substantial and are the catalyst needed to meet the climate goals for this Commonwealth, as outlined in Executive Order 2019-01, to reduce net GHG emissions Statewide by 26% by 2025 from 2005 levels and by 80% by 2050 from 2005 levels. A predicted reduction from the Department's 2021 modeling of approximately 11 million metric tons of CO_2 per year due to this Commonwealth's potential participation in RGGI provides significant

assurance that along with prudent investments of auction proceeds and other GHG abatement activities, this Commonwealth will remain on track to reach the 2025 net GHG reduction goal.

The participating states together, including this Commonwealth, will achieve regional CO_2 emissions reductions of 30% by 2030. According to data from the World Bank, by 2022, based on GDP, the participating states would comprise the third largest economy in the world.[61] These CO_2 emission reductions are even more significant when viewed from this collective impact. Reductions in CO_2 emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO_2 emission reductions may decrease costs from extreme weather events and climate-related ailments that also result in increased health care costs.

The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. This leakage has no bearing on the environmental, health or economic benefits of this final-form rulemaking, and merely means that a portion of the emissions reductions achieved within this Commonwealth may shift to other states or areas without carbon pricing. Additionally, this final-form rulemaking will result in a net emissions reduction of 28 million tons of CO_2 across the broader PJM region through 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the Federal Energy Regulatory Commission (FERC) and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

Benefits of this Final-Form Rulemaking

Environmental and Health Benefits

As documented above, this final-form rulemaking would effectuate least cost CO_2 emission reductions for the years 2022 through 2030. The declining CO_2 Emissions Budget in this final-form rulemaking directly results in CO_2 emission reductions of around 20 million short tons in this Commonwealth as well as emission reductions across the broader PJM regional electric grid. However, the Department projects that 97—227 million short tons of CO_2 that would have been emitted within this Commonwealth over the next decade are avoided by this Commonwealth's participation in RGGI. Additionally, this final-form rulemaking will result in a net emissions reduction of 28 million tons of CO_2 across the broader PJM region through 2030.

While the benefits of the cumulative CO_2 emission reductions will be tremendous. The Department also estimates that this final-form rulemaking will lead to a reduction of co-pollutants. Based on the

[61] The World Bank, Calculation based on GDP (current US$), 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD.

Department's 2020 modeling, this final-form rulemaking would provide public health benefits due to the expected reductions in emissions of CO_2 and the ancillary emission reductions or co-benefits of SO_2 and NO_x reductions. The Department's modeling projects cumulative emission reductions of 112,000 tons of NO_x and around 67,000 tons of SO_2 over the decade.

These co-pollutant reductions are significant because NO_x and SO_2 pollution leads to several public health issues. For instance, short-term exposure to SO_2 emissions can be harmful to public health because it impacts the ability to breathe especially in children and those with asthma.[62] NO_x can also cause irritation in the respiratory system. In particular, long-term exposure to elevated NO_x levels may contribute to asthma, and potentially increased susceptibility to respiratory infections and lead to increased hospital admissions.[63]

Based on an assumption that 188 million tons of CO_2 emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking.

Children and adults alike will suffer less from respiratory illnesses. The methodology projects 31,000 fewer incidences of upper and lower respiratory symptoms which will lead to reduced emergency department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well. The methodology projects over 83,000 avoided lost workdays due to health impacts.

The public health benefits to this Commonwealth of these avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

Economic Benefits

The results of this modeling show there is an increase in employment as a result of this final-form rulemaking in every year from 2023 through 2030. Cumulatively, the modeling scenario results show an increase of over 30,000 job-years through 2030 and 67,387 job-years through 2050. There are continued increases in employment beyond 2030 through 2050 due to lingering benefits of this final-form rulemaking; primarily due to electric bill savings from energy efficiency and distributed generation installed with 20-year equipment lifetimes. The modeling also shows an increase in GSP that trends similarly to employment. This final-form rulemaking is expected to lead to an increase in GSP of $1.9 billion between now and 2030.

All impacts in the modeling scenario are very small in the context of this Commonwealth's entire economy. Annual changes in employment range from -0.03% to 0.07%, GSP from -0.06% to 0.07%, and cumulatively both are less than a 0.05% increase in 2030 or 2050. Disposable personal income results are slightly negative through 2030 but do increase between 2030 and 2050 as shown by the cumulative increase in undiscounted disposable income of $7.2 billion ($3.6 billion with a 3% discount rate) through 2050. It is important to note that the decrease in disposable income out to 2030 is overall very small, equal to approximately $8.50 per year for someone on a $50,000 salary. Up until 2030 there are two countervailing impacts to disposable income with positive pressure from the increase in economic activity in the economy as evidenced by the increased jobs and GSP as well as electric bill savings associated with energy efficiency and distributed generation. However, there are some short-term price impacts to

[62] EPA, Sulfur Dioxide (SO_2) Pollution, https://www.epa.gov/so2-pollution/sulfur-dioxide-basics#what%20is%20so2.
[63] EPA, Particulate Pollution and Your Health, September 2003, https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1001EX6.txt.

ratepayers due to this final-form rulemaking as well as from revenue decoupling though these trends reverse in the future.

Investment of Auction Proceeds

Auction proceeds are available to the Department to be invested in programs and projects that would further eliminate air pollution in this Commonwealth.

For the purposes of modeling the impacts of investing the proceeds, assumptions were made that the proceeds would be distributed to support the program so that 31% are invested in energy efficiency, 32% in renewable energy and 31% in GHG abatement with 6% remaining to cover any costs related to management of the CO_2 Budget Trading Program, 5% for the Department and 1% for RGGI, Inc. The modeling estimates auction proceeds to be from $171 million to $330 million annually.

The results of the modeling show that this final-form rulemaking will not only combat climate change and improve air quality, but also provide positive economic value to this Commonwealth. These results align with the numerous published studies highlighting the corresponding positive financial and economic impacts of RGGI participation.

Additionally, 2020 economic modeling indicates that these investments not only spur economic benefits but also result in the addition of 9.4 GW of renewable energy and load reduction of 29 TWh of electricity from energy efficiency projects. This addition of carbon free generation and reduction in electricity demand would further bolster the benefits of this final-form rulemaking. This increases the amount of electricity exported from this Commonwealth, further drives down emissions and compliance costs for facilities, and results in a reduction of electricity prices in 2029 below what they would have been without this final-form rulemaking. This is consistent with the electricity prices in the participating states, which since the beginning of the RGGI program have not seen an increase in electricity costs.

By using auction proceeds to invest in energy efficiency and renewable energy programs, this will help offset any potential increased costs to electricity prices by decreasing peak demand and offering low cost electricity to the grid. In fact, the Acadia Center conducted an analysis of electricity costs for all states that participated in RGGI compared to states in the rest of the country and found that electricity prices in RGGI states have fallen by 5.7% while prices have increased in the rest of the country by 8.6%.[64]

Table 7. Pennsylvania Auction Proceeds through 2030.

Year	PA Effective Budget	CO_2 Allowance Price	Total Auction Proceeds
2022	57,884,281	$3.24	$187,312,734
2023	55,643,848	$3.30	$183,394,622
2024	53,403,415	$3.36	$179,267,370
2025	51,162,982	$3.42	$174,924,582
2026	48,922,549	$3.49	$170,550,488
2027	46,682,116	$3.55	$165,937,032

[64]Acadia Center, "The Regional Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf.

2028	44,441,683	$3.62	$161,076,497
2029	42,201,250	$3.45	$145,489,052
2030	39,960,817	$3.28	$131,039,637

The process for modeling the auction proceeds involved three broad sets of inputs to the REMI model: investment changes in the power sector as a result of this final-form rulemaking, ratepayer impacts as a result of this final-form rulemaking, and impacts from investment of the auction proceeds. Outputs of investment changes in the power sector consist of investments in new generation, retirements, and changes to variable and fixed operating and maintenance costs, fuel inputs, and price impacts. Ratepayer impacts are associated with changes in wholesale electricity prices due to this final-form rulemaking (CO_2 allowance price impact) and investment of auction proceeds (e.g., price changes from load reductions).

For investment of auction proceeds, each investment category (energy efficiency, renewable energy, GHG abatement) has associated investments that are funded by the costs associated with the CO_2 allowance price (i.e., impacts to electricity prices in the power sector that occur due to this final-form rulemaking). In addition, the Department assumed leverage ratios whereby investment of the auction proceeds incentivizes additional private dollars for investment. This private funding has associated opportunity costs that are modeled in REMI. Private (e.g., households and business) budgets are assumed to be fixed and modeling investment in one category (e.g., energy efficiency) requires giving up investments in business as usual activities.

Impact to the Regulated Community

Owners or operators of fossil fuel-fired EGUs, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe that send more than 10% of annual gross generation to the electric grid will have a compliance obligation under this final-form rulemaking. Conversely, a fossil fuel-fired EGU, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe that sends more than 15% of annual gross generation to the electric grid will have a compliance obligation if it is interconnected to a commercial, industrial or institutional facility.

Based on historic data, the Department anticipates that on January 1, 2022 there will be 66 facilities, operating 158 individual EGUs that may have a compliance obligation under this final-form rulemaking. The individual EGU number is greater than the number of facilities as many facilities have more than one EGU. Each qualifying EGU has a potential compliance obligation under this final-form rulemaking. While 66 facilities may potentially have a compliance obligation, each individual facility needs to determine whether they have a compliance obligation and for which of their EGUs. Some of these facilities may have a compliance obligation for some or all of their EGUs and some may modify processes, run times or employ additional efficiency measures that may exclude them from a compliance obligation all together, or merely reduce covered emissions.

These covered EGUs are then required to acquire one CO_2 allowance per ton of CO_2 they emit. There are exceptions to this, for example if the EGU qualifies for one of the limited exemptions contained in this final-form rulemaking excluding certain EGUs based on the amount of electricity that is sold to the grid. Furthermore, the Department established three set-aside programs through which qualifying entities can receive an allocation of CO_2 allowances to assist with all or a portion of their compliance obligation. Of the 66 facilities potentially subject to this final-form rulemaking, 10 waste coal facilities qualify for the waste coal set-aside and potentially 5 facilities qualify for the combined heat and power set-aside.

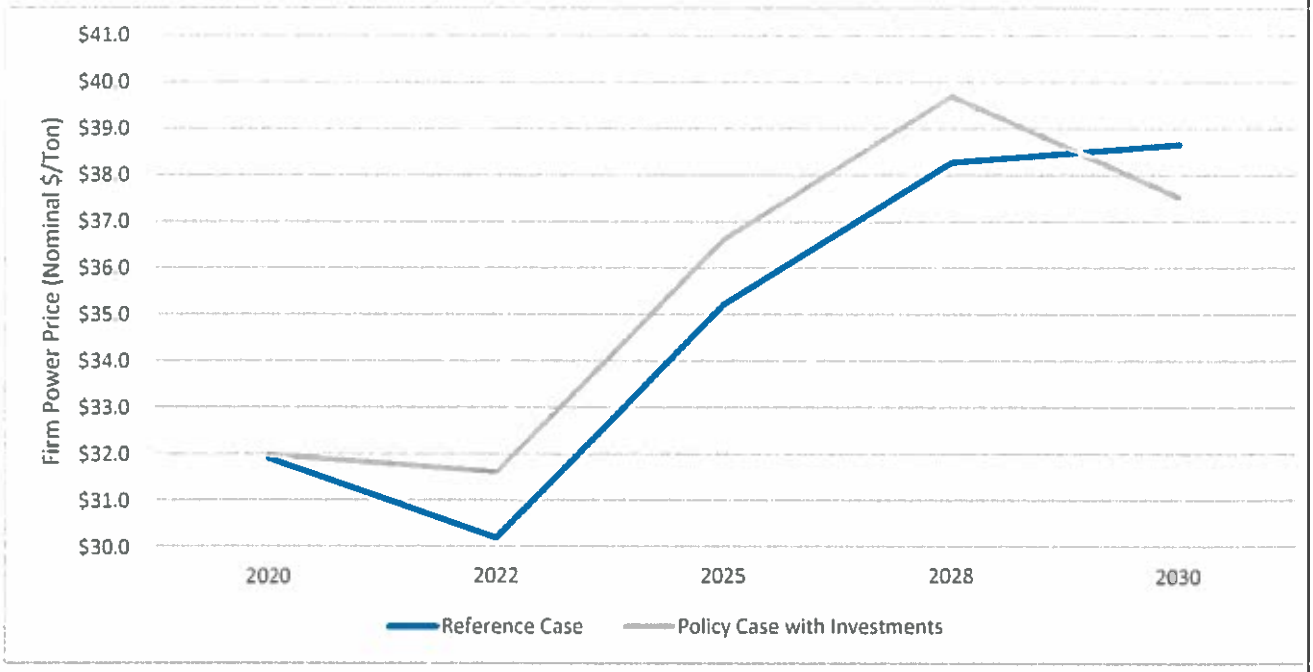
These regulated facilities have flexibility as to how they acquire CO_2 allowances necessary for compliance. The majority of regulated entities will likely acquire the CO_2 allowances through the multistate quarterly auctions. Additionally, there is an extremely active secondary market through which CO_2 allowances can also be bought and sold. Finally, this final-form rulemaking includes an offset provision, whereby CO_2 offset allowances can be assigned to eligible projects that further offset GHG emissions, outside of the electricity sector, which can be used for compliance with this final-form rulemaking.

The amount of fees estimated to be paid by the regulated community is a function of the CO_2 allowance price and this Commonwealth's "effective budget," which is the amount of CO_2 allowances that the Department will have remaining in its budget after deducting CO_2 allowances from the air pollution reduction account for the set aside allocations and the ECR. The Department's 2021 modeling estimates this amount to be around $187 million in 2022 and around $131 million in 2030 from the sale of CO_2 allowances in multistate auctions as seen in Table 7 above.

Electric Consumer Impact

According to the Department's 2020 modeling, this Commonwealth's projected firm power prices after implementation of this final-form rulemaking are expected to be lower than prices would be without this final-form rulemaking, as seen in Figure 2.

Figure 2. Comparison of Firm Power Prices Through 2030 (2020 Modeling).



Based on the Department's 2021 modeling, it can be expected that at least 25% of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are estimated at 51,000 gigawatt hours (GWh), representing 25% of this Commonwealth's 2022 electricity generation of 201,221 GWh.[65] As a result, without factoring in the strategic investment of auction

[65] Pennsylvania PUC, Electric Power Outlook for Pennsylvania 2017-2022, August 2018, www.puc.state.pa.us/General/publications_reports/pdf/EPO_2018.pdf.

proceeds, the remaining 75% of the costs or $149 million would be borne by this Commonwealth. This percentage is also dependent on the CO_2 emissions intensity of the exported generation.

According to the EIA, the major components of the United States' average price of electricity in 2020 were 56% generation, 31% distribution and 13% transmission costs.[66] This final-form rulemaking would only impact the generation portion of a consumer electric bill, which is a little more than half of the bill. The Department's 2021 modeling estimates that in 2022, wholesale energy prices will be 2.4% higher with RGGI participation. That amounts to a roughly 1.2% increase in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

The average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source.[67] Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2% in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this final-form proposed rulemaking were not implemented.

Based on information contained within the PUC's 2020 Rate Comparison Report,[68] a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PA PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

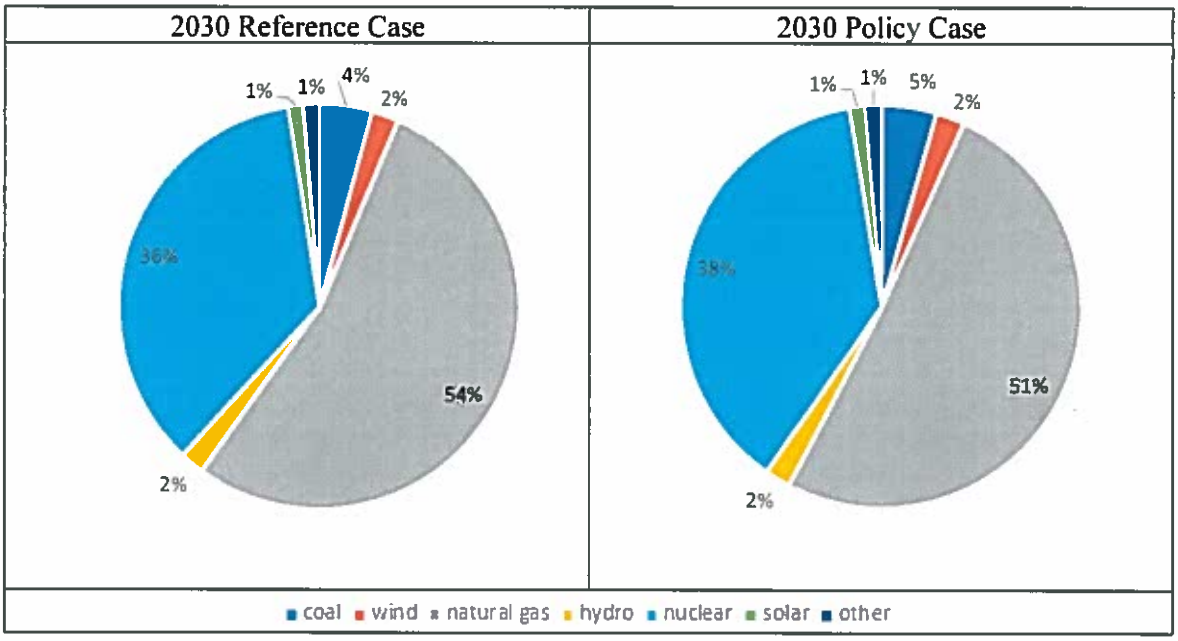
Further, this Commonwealth's electricity generation mix has changed significantly over time. In 2010, coal accounted for approximately 47% of this Commonwealth's generation and natural gas accounted for approximately 15%. By 2019, coal accounted for approximately 17% of this Commonwealth's generation and natural gas accounted for approximately 43%, mainly due to the relatively low price of natural gas as a

[66] EIA, Electricity explained: Factors affecting electricity prices, Major components of the U.S. average price of electricity, 2020, https://www.eia.gov/energyexplained/electricity/prices-and-factors-affecting-prices.php.
[67] Pennsylvania PUC, 2018 Collections Data for the Major Electric and Gas Companies- Chapter 14 Biennial Report, January 15, 2020, http://www.puc.pa.gov/General/publications_reports/pdf/Chapter14-Biennial_2018RCD.pdf.
[68] Pennsylvania PUC, 2020 Rate Comparison Report. https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf.

fuel source.[69] The notable shift in the power generation mix from 2010 to 2019 highlights that the electricity generation sector is dynamic and can change over time without impacts to the overall economic health of the industry and this Commonwealth.

The modeling results show that even without accounting for the proceed investments, the electricity generation sector will not be significantly changed by this final-form rulemaking. The Department projects that the differences of this Commonwealth's electricity generation mix between the Policy Case and Reference Case by 2030 is minimal, as seen in Figure 3. Even without this final-form rulemaking, the amount of coal generation will experience a precipitous decline by 2025. Although the trajectories vary, by 2025 there will be marginal differences in the amount of coal generation in this Commonwealth with or without this final-form rulemaking. As this coal-fired generation retires, new generation from natural gas and renewables will more than compensate for the lost coal generation.

Figure 3. Comparison of Pennsylvania Energy Generation (2021 Modeling).



Energy Sector Employment[70]

The historical changes to the energy sector have shown that when power generation shifts so does employment. Within the energy sector, there have been employment shifts and trends occurring over time across this Commonwealth showing the most growth in clean energy employment and slower, or negative, growth in fossil fuel energy employment.

The energy sector is a large employer of workers in this Commonwealth and one of the fastest growing employment sectors. From 2017 to 2019, this Commonwealth had a total of 269,031 traditional energy jobs, defined as jobs in electric power generation, transmission, distribution, and storage, as well as fuels,

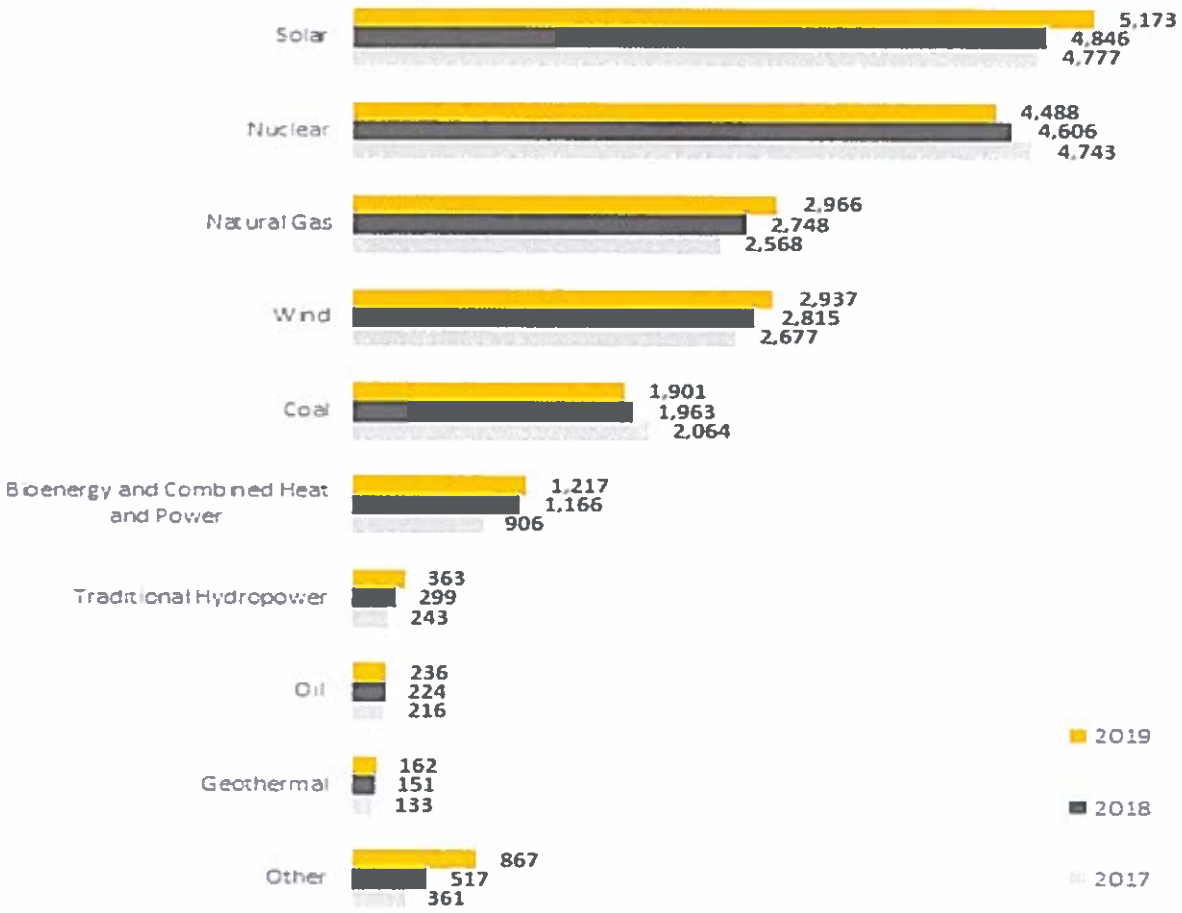
[69] EIA, State Profile and Energy Estimates: Pennsylvania, 2019, https://www.eia.gov/state/analysis.php?sid=PA.
[70] BW Research Partnership. 2020 Pennsylvania Energy Employment Report and 2020 Pennsylvania Clean Energy Employment Report, https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/EnergyEfficiency_Environment_and_EconomicsInitiative/Pages/Workforce-Development.aspx.

energy efficiency and motor vehicles. These jobs accounted for 4.5% of the overall Statewide workforce. Additionally, energy and energy-related employment has continued to grow over the last two years. Since 2017, traditional energy jobs have grown by 7.6%, or 8,306 new workers. Between 2018 and 2019 alone, traditional energy employment grew by 5.2%, or 5,757 jobs. In fact, energy jobs are growing faster than the overall labor market. In contrast, total jobs in this Commonwealth have grown by only 0.8% between 2018 and 2019 compared to 5.2% in the energy sector as a whole.

Looking more specifically at employment within the energy sector, natural gas electric power generation jobs have grown since 2017 as this Commonwealth has increased its natural gas electricity generation capacity. Since 2010, this Commonwealth's share of electricity generation from natural gas has more than doubled, while the share of coal has declined by more than half. In general, natural gas is becoming an increasingly larger share of the energy production mix in the United States. Between 2014 and 2018, natural gas production in America grew by 18.6%, and over the last two decades, natural gas production has grown by 61.2% across the country.

Coal jobs have declined by 3.3% since 2017 due to the decrease in coal generation, a nationwide phenomenon as the country moves away from coal-fueled electric power generation to cleaner burning sources. In general, coal generation jobs across the United States have decreased by 14.1%, shedding 13,132 jobs. At the same time, coal production across America has declined by 24.3% since 2014. Coal production in this Commonwealth between December 2018 and December 2019 alone declined by 21%. In comparison of employment in technologies across the energy sector, employment in coal accounted for less than wind, natural gas, nuclear and solar- with 1,901 coal jobs remaining across this Commonwealth at the end of 2019.

Figure 4. Pennsylvania Electric Power Generation Employment by Sub-Technology, 2017-2019.



This Commonwealth is also home to a significant nuclear generation workforce; this sector employs 4,488 workers. However, nuclear employment has declined by 5.7% since 2017, shedding 256 jobs. A number of the job losses in nuclear generation are likely attributable to the closure of the Three Mile Island nuclear generation facility in September 2019. However, nuclear facilities are bolstered through this final-form rulemaking because the facilities are zero-carbon emitters. This means that the facilities will not need to factor in the price of emitting CO_2 when bidding into the electricity market. In fact, in early 2020, Energy Harbor, the owner of the Beaver Valley Nuclear Plant, specifically cited this final-form rulemaking as a primary reason for withdrawing the deactivation notice previously issued for the facility. Since the Beaver Valley Nuclear Plant will continue operating, the jobs related to the facility will be retained.

Looking at overall energy jobs by fuel type, as shown in Table 8, clean energy, defined as energy efficiency, clean energy generation, alternative transportation, clean grid and storage, and clean fuels, employs over 97,000 workers, and represents 36% of employment in this Commonwealth's energy sector. Clean energy jobs have grown by 7,800 jobs since 2017, an increase of 8.7%, slightly outpacing traditional energy jobs, which have grown 7.6%. Some fuel sectors, such as natural gas, declined in job growth since 2017. By comparison, overall job growth in this Commonwealth was 0.8% between 2018 and 2019.

Table 8. Change in Pennsylvania Jobs by Fuel Type 2017 vs 2019.[71]

	Clean Energy	Natural Gas	Petroleum	Coal
Number of Jobs in PA	97,186	23,738	23,690	10,350
Job growth since 2017	+8.7%	-7.4%	+14.9%	-3.3%

Energy efficiency represents the majority of all clean energy jobs in this Commonwealth; these businesses employ 71,443 workers and employment has grown by 9.4% since 2017. Following energy efficiency, clean energy generation firms comprise 15% of total clean energy jobs. Clean energy generation firms have grown by 6.5% since 2017, creating 893 jobs for a total of 14,594 workers.

The overall proportion of clean energy jobs compared to total Statewide employment in this Commonwealth is 1.6%, comparable to New York's clean energy economy, where 1.7% of total jobs are clean energy workers. However, clean energy employment concentration in this Commonwealth is lower compared to other participating states like Massachusetts (3.5%) or Rhode Island (3.4%), signifying the potential employment growth opportunities in this Commonwealth.

Solar workers account for the largest proportion of energy generation workers in this Commonwealth and the largest share of clean energy generation workers, 35.4% of the clean energy generation labor force or 5,173 jobs. Unlike the rest of the country, solar jobs have been growing in this Commonwealth since 2017. Between 2017 and 2019, solar employment grew by 8.3% across the state from 4,777 workers to 5,173 workers at the end of 2019. By contrast, nationwide solar jobs declined by 1.2% over the same time period. The continued growth in solar jobs for this Commonwealth is likely the result of an increase in annual installations between 2018 and 2019. In 2018, this Commonwealth installed just under 60 MW of residential, non-residential, and utility-scale solar capacity. In 2019, annual installed capacity reached about 70 MW.

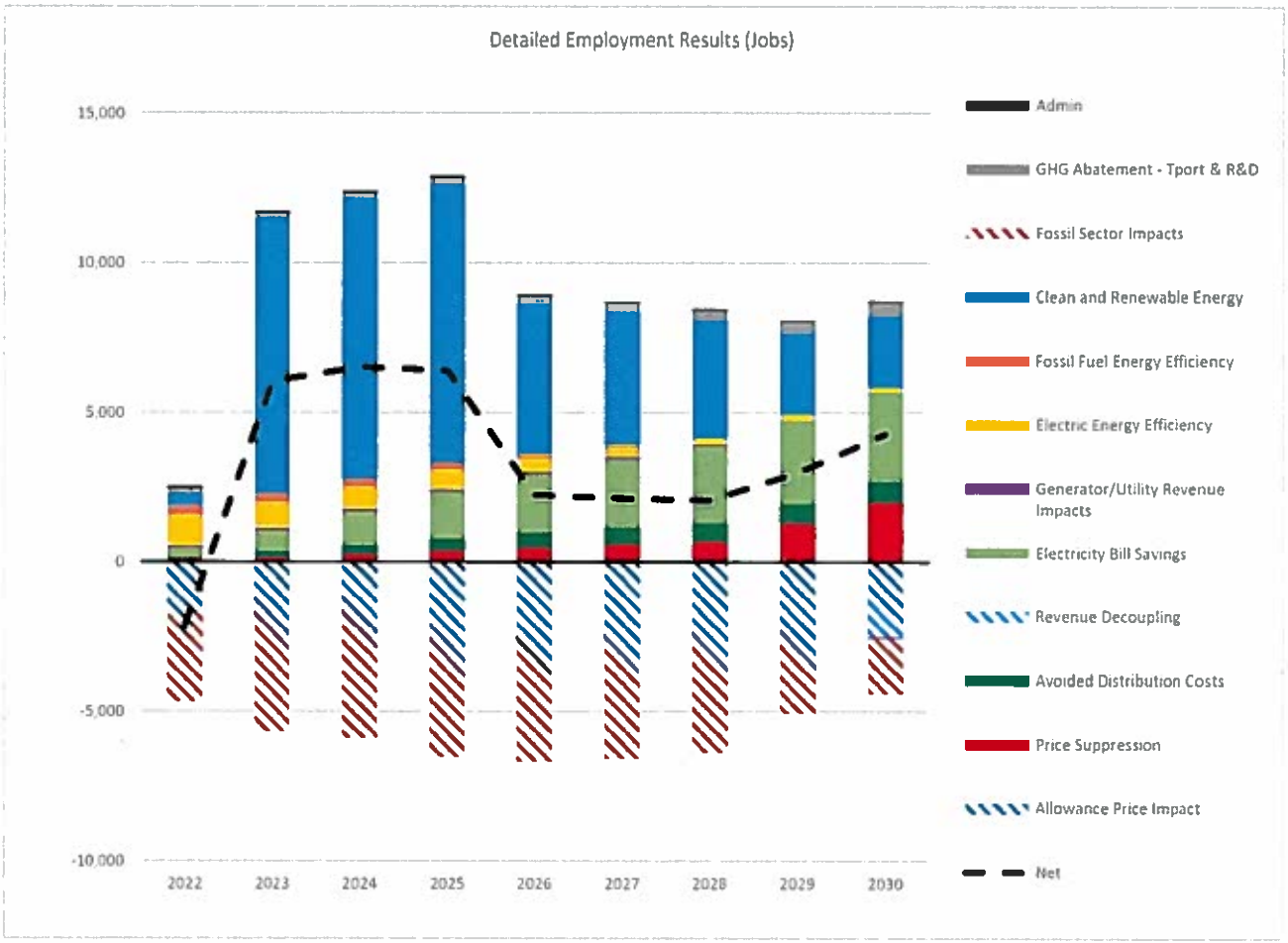
Wind energy firms continue to grow employment in this Commonwealth. The state's 2,937 wind energy generation workers account for 2.6% of all wind energy jobs across the United States. These businesses grew by 9.7% since 2017, creating 259 new clean energy jobs across this Commonwealth. Wind energy generation job growth comes alongside increased wind capacity in this Commonwealth. Since 2013, wind energy has become the largest renewable source of electricity generation, accounting for 36% of this Commonwealth's renewable electricity capacity in 2018. With significant resources along the Appalachian Mountain crests and the shoreline of Lake Erie, this Commonwealth currently boasts 726 installed wind turbines with over 1,400 MW of generating capacity. Furthermore, this Commonwealth is home to 29 manufacturing facilities that produce wind turbines, blades, towers, and other components related to wind energy technologies.

Bioenergy and CHP, traditional hydropower, low-impact hydropower, and geothermal generation technologies account for 13.7% of this Commonwealth's clean energy generation workforce and have collectively resulted in 494 new jobs since 2017, the majority of which can be attributed to the bioenergy and CHP industry. In fact, this Commonwealth is among one of the top 12 states in the country for electricity generated from biomass resources.

[71] *Id.*

The Department's modeling shows that reinvestment of auction proceeds into the energy sector will result in a net benefit to this Commonwealth. Employment contractions occurring in the coal industry, are more than countered by immense growth in clean and renewable energy, and energy efficiency sectors. The 2020 modeling estimates that from 2022 to 2030, this final-form rulemaking would lead to an increase in GSP of $1.9 billion and a net increase of over 30,000 jobs in this Commonwealth as seen in Figure 5.

Figure 5. Pennsylvania Net Jobs by Sector Through 2030.



This final-form rulemaking provides an opportunity to assist residents of this Commonwealth impacted by changes in the energy sector, as this Commonwealth and the rest of the country transitions to a new energy future. Without this final-form rulemaking, many jobs, specifically at coal-fired power plants will be lost without any opportunities for assistance to ensure there is an equitable transition for workers in all energy sectors.

(18) Explain how the benefits of the regulation outweigh any cost and adverse effects.

The implementation of this final-form rulemaking will have climate, environmental and health benefits. While there is a cost associated with implementation, the benefits far outweigh any costs.

This final-form rulemaking is needed to reduce CO_2 emissions in this Commonwealth.

This Commonwealth has established Statewide goals to reduce GHG emissions by 26% by 2025 and 80% by 2050 in comparison to 2005 levels. While this Commonwealth has achieved reductions from all sectors, including the power sector, more is needed to meet these goals, set to avoid the worst impacts of climate change. This Commonwealth's participation in RGGI would provide significant assurance that prudent investments of the auction proceeds coupled with other GHG abatement activities will allow this Commonwealth to remain on track to reach the 2025 reduction goal. Without the reductions associated with the implementation of this this final-form rulemaking, this Commonwealth will fail to reach even the interim GHG reduction goal established for this Commonwealth.

While emissions from the generation sector have decreased since 2008, the current trajectory of emissions reductions in the power sector is not sustainable. There are few remaining coal-fired EGUs, which based on updated modeling are anticipated to cease most if not all generation by 2025. The air emissions gains that were realized through fuel switching (coal to natural gas) and replacing aging coal-fired facilities with new natural gas plants have mostly occurred. Moving forward, a new approach is needed to achieve further reductions. Historic trends provide no guarantee of what the emissions profile for this Commonwealth's electricity sector will look like in the future.

A more accurate projection of future emissions can be seen by modeling the power sector with and without this final-form rulemaking in effect. The modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO_2 reductions from sources within the Commonwealth between 2022 and 2030. These emissions reductions are going to occur in this Commonwealth and are not tied to or dependent on actions by other surrounding states. When this Commonwealth implements this final-form rulemaking, significant CO_2 emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts.

Although the methodology to determine climate and environmental impacts are complicated, calculating the health benefits is quite simple. The Department calculated the health impacts associated with the emissions reductions stemming from the implementation of this final-form rulemaking using the EPA's Benefit-per-Ton (BPT) and Incidence-per-Ton (IPT) methodology. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. This equates to a range of $232—$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_x and $PM_{2.5}$) and exclude the additional benefits provided from the reduction in CO_2 emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The analysis conducted by Penn State's Center for Energy Law and Policy estimated the health benefits of this Commonwealth's participation in RGGI to be on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Implementation of this final-form rulemaking does come with increased costs, in terms of impacts on electricity prices. Updated modeling shows that the impact on wholesale power prices is estimated to be 2.42% in 2022 and 1.73% by 2030. These minimal prices impacts are exclusive of the price suppressing impacts of any investments to be made in the energy sector using the auction proceeds.

Expanding the focus on emissions reductions outside of this Commonwealth and across a broader region, for example, the PJM Interconnection, the regional transmission organization consisting of parts of 13 states and the District of Columbia, the emissions reductions remain despite concerns about emissions leakage. The potential for an evaluation of leakage has been a focus of PJM since the creation of RGGI as

PJM has some member states that participate in RGGI (have a carbon price) and some that do not (have no carbon price). In order to more thoroughly study the potential for leakage and the magnitude of that leakage, PJM created the Carbon Pricing Senior Task Force (CPSTF). This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

Lastly, the Department's economic modeling shows that even with consideration of these electricity price increases, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the GSP. This analysis incorporates any projected decreases to local or state tax revenue or indirect impacts economic due to decreased production or economic activity in certain sectors, such as the fossil-fuel industry. While implementation of this final-form rulemaking is not without cost; the economic and health the economic benefits are considerable and far outweigh any implementation costs.

(19) Provide a specific estimate of the costs and/or savings to the regulated community associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

This final-form rulemaking applies to owners or operators of fossil fuel-fired EGUs, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe. This final-form rulemaking is designed to effectuate least cost CO_2 emission reductions for the years 2022 through 2030 within this Commonwealth. In addition to purchasing CO_2 allowances and completing offset projects to generate CO_2 offset allowances, CO_2 budget units may reduce their compliance obligations by reducing CO_2 emissions through other alternatives such as heat rate improvements, fuel switching and co-firing of biofuels.

To comply with this final-form rulemaking, each CO_2 budget unit within this Commonwealth will need to acquire CO_2 allowances equal to its CO_2 emissions. If CO_2 allowances are purchased through the multistate auctions, the owner or operator of a CO_2 budget unit will pay the auction CO_2 allowance price. As mentioned previously, reserved CO_2 CCR allowances can be released into the auction if allowance prices exceed predefined price levels, meaning emission reduction costs are higher than projected. The total cost of purchasing allowances will therefore vary per unit based on how much CO_2 the unit emits and the allowance price. The owner or operator may also purchase CO_2 allowances on the secondary market where they could potentially purchase CO_2 allowances at a price lower than the multistate auction allowance price. CO_2 allowances also have no expiration date and can be acquired and banked to defray future compliance costs.

Since the Department will allocate CO_2 allowances to waste coal-fired units each year up to 12,800,000 allowances sector-wide, waste coal-fired units will incur minimal compliance costs. Owners or operators of waste coal-fired units will only need to purchase CO_2 allowances if the set-aside amount is exceeded. However, waste coal-fired units still must comply with the other components of this final-form rulemaking, including incorporating the CO_2 budget trading program requirements into their permits.

The requirements established by this final-form rulemaking will require the owner or operator to submit a complete application for a new, renewed or modified permit and pay the associated fee. The application must be submitted by the later of 6 months after the effective date of this final-form rulemaking or 12 months before the date on which the CO_2 budget source, or a new unit at the source, commences operation.

The Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal as this final-form rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this final-form rulemaking is already in existence at the regulated source and the necessary emissions data is currently reported to the EPA. There may be minimal programmatic costs related to the submittal of compliance certification reports and auction, account, and offset project related forms. The RGGI auction services provider estimates that the owner, operator or representative on their behalf, will need to spend approximately 16 hours for the initial auction participation (including opening a COATS account, registration, and training). In subsequent auctions, the estimate drops to about 4-8 hours for each subsequent auction. Therefore, after the initial auction, the total hourly commitment from one employee of each affected facility is estimated to be an average 24 hours per year. The exact cost for each affected facility varies widely depending on type of employee the affected facility dedicates to managing this effort.

Compliance costs will vary by CO_2 budget unit as the amount of CO_2 emitted is the primary driver of compliance costs. Overall CO_2 emissions are impacted by operational decisions such as run time, and by emissions intensity which varies by fuel type, and abatement technology employed. Additionally, certain sources may be eligible for set-aside allowances at no cost.

In 2022, this Commonwealth's CO_2 emissions from CO_2 budget sources are estimated to be 61 million short tons. Given the 3-year compliance schedule, all 61 million CO_2 allowances will not need to be purchased in the first year. The total amount of CO_2 allowances available will decline as the amount of CO_2 emissions in this Commonwealth decline.

As CO_2 budget sources would need one allowance for each ton of CO_2 emitted, the owners or operators would need to acquire 61 million CO_2 allowances at the estimated 2022 allowance price of $3.24 (2017$/Ton). If these CO_2 allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be approximately $198 million. The CO_2 budget sources would then most likely incorporate this compliance cost into their offer price for electricity. The price of electricity is then passed onto electric consumers. However, that does not mean that $198 million will be passed onto this Commonwealth's electric consumers.

As detailed in the response to Question 17, the average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source.[72] Residential bills will increase by an estimated 1.2% in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity costs savings. This means

[72] Pennsylvania PUC, 2018 Collections Data for the Major Electric and Gas Companies- Chapter 14 Biennial Report, January 15, 2020, http://www.puc.pa.gov/General/publications_reports/pdf/Chapter14-Biennial_2018RCD.pdf.

electric consumers will see greater electric bill savings in the future then if this final-form rulemaking were not implemented.

The Department's 2021 modeling estimates that in 2022 wholesale energy prices will be 2.4% higher with RGGI participation. That amounts to a roughly 1.2% increase in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

Based on information contained within the PUC's 2020 Rate Comparison Report,[73] a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

(20) Provide a specific estimate of the costs and/or savings to the local governments associated with compliance, including any legal, accounting or consulting procedures which may be required. Explain how the dollar estimates were derived.

It is not anticipated that local governments will incur any compliance costs as a result of this final-form rulemaking.

(21) Provide a specific estimate of the costs and/or savings to the state government associated with the implementation of the regulation, including any legal, accounting, or consulting procedures which may be required. Explain how the dollar estimates were derived.

State government does not operate any CO_2 budget sources that would be covered under this final-form rulemaking. Any State government costs would involve costs to the Department, including permit engineer review time for permit applications as a result of any new or modified permits needed to comply with this final-form rulemaking. It is anticipated that these costs will be offset by the auction proceeds.

(22) For each of the groups and entities identified in items (19)-(21) above, submit a statement of legal, accounting or consulting procedures and additional reporting, recordkeeping or other paperwork, including copies of forms or reports, which will be required for implementation of the regulation and an explanation of measures which have been taken to minimize these requirements.

No new legal, accounting or consulting procedures are contained in this final-form rulemaking. The recordkeeping and reporting requirements for owners and operators of applicable sources under this final-form rulemaking are minimal because the records required are in line with the records already required to be kept for emission inventory purposes and for other Federal and State requirements. To minimize the

[73] Pennsylvania PUC, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf.

burden of these requirements, the Department allows electronic submission of most planning, reporting and recordkeeping forms required by this final-form rulemaking.

COATS is an electronic platform, developed, implemented and maintained by RGGI, Inc. on behalf of the participating states, that records and tracks CO_2 emission data for each state's CO_2 Budget Trading Program. The emissions data that owners or operators report to the EPA's Clean Air Markets Division system flows through to COATS. COATS is also the platform used for each state's compliance process, meaning it is used by the participating states, including this Commonwealth, to record allocations, deductions and transfers of CO_2 allowances. Additionally, COATS allows offset project sponsors to register offset projects and submit offset project Consistency Applications and Monitoring and Verification Reports to the participating states.

(22a) Are forms required for implementation of the regulation?

Yes

(22b) If forms are required for implementation of the regulation, **attach copies of the forms here.** If your agency uses electronic forms, provide links to each form or a detailed description of the information required to be reported. **Failure to attach forms, provide links, or provide a detailed description of the information to be reported will constitute a faulty delivery of the regulation.**

There are fourteen forms required for the implementation of this regulation, all of which are outlined below and included as attachments.

1. CO_2 Budget Unit Application
2. CHP CO_2 Allowance Retirement Application Form
3. Strategic Use Application Form
4. Compliance Certification Form
5. Quarterly Report Form
6. Operating Permit Modification Application
7. Offset Project Consistency Applications
    a. Landfill Methane Capture and Destruction
    b. Methane Emissions from Agricultural Manure
    c. U.S. Forest Service Reforestation
8. Accreditation of Independent Verifier
9. RGGI Auction Qualification Application
10. RGGI Bidder User Access Application
11. RGGI-COATS General Account Request Form
12. RGGI-COATS User Login Request Form

(23) In the table below, provide an estimate of the fiscal savings and costs associated with implementation and compliance for the regulated community, local government, and state government for the current year and five subsequent years.

The table below includes the projected costs to the regulated community of purchasing CO_2 allowances at estimated CO_2 allowance prices and emission levels. This does not include the minimal costs of monitoring, recordkeeping, reporting and auction participation. The numbers represented in this table mirror the numbers in Table 7, however this table represents the information in fiscal years instead of calendar years.

	Current FY (20/21)	FY +1 (21/22)	FY +2 (22/23)	FY +3 (23/24)	FY +4 (24/25)	FY +5 (25/26)
SAVINGS:	$	$	$	$	$	$
Regulated Community	0.00	0.00	0.00	0.00	0.00	0.00
Local Government	0.00	0.00	0.00	0.00	0.00	0.00
State Government	0.00	0.00	0.00	0.00	0.00	0.00
Total Savings	0.00	0.00	0.00	0.00	0.00	0.00
COSTS:						
Regulated Community	0.00	82,924,928	166,497,256	167,787,622	169,068,734	170,435,547
Local Government	0.00	0.00	0.00	0.00	0.00	0.00
State Government	0.00	0.00	0.00	0.00	0.00	0.00
Total Costs	0.00	82,924,928	166,497,256	167,787,622	169,068,734	170,435,547
REVENUE LOSSES:						
Regulated Community	0.00	0.00	0.00	0.00	0.00	0.00
Local Government	0.00	0.00	0.00	0.00	0.00	0.00
State Government	0.00	0.00	0.00	0.00	0.00	0.00
Total Revenue Losses	0.00	0.00	0.00	0.00	0.00	0.00

(23a) Provide the past three-year expenditure history for programs affected by the regulation.

Program	FY -3 (17/18)	FY -2 (18/19)	FY -1 (19/20)	Current FY (20/21)
Environmental Program Management (161-10382)	$29,413,000	$30,932,000	$28,420,000	$32,041,000
Clean Air Fund Major Emission Facilities (215-20077)	$17,480,000	$16,067,000	$17,878,000	$20,801,000
Clean Air Fund Mobile and Area Facilities (233-20084)	$8,727,000	$7,205,000	$9,369,000	$11,290,000

(24) For any regulation that may have an adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), provide an economic impact statement that includes the following:

(a) An identification and estimate of the number of small businesses subject to the regulation.

As described in the response to Question 15, EMAP provided the Department with a list of entities in this Commonwealth identified as Electric Bulk Power Transmission and Control (NAICS code 221112 and 221121), Other Electric Power Generation (NAICS code 221118), Electric Power Distribution (NAICS code 221122), and Paper (except Newsprint) Mills facility (NAICS code 322121). The Department provided these NAICS codes to the Pennsylvania Small Business Development Center's EMAP with a request for a list of entities in each classification. EMAP provided the Department with a list of 59 facility owners and operators identified by NAICS code 221112, three facility owners or operators identified by NAICS code 221121, one facility owner or operator identified by NAICS code 221118, one facility owner or operator identified by NAICS code 221122, and three facility owners or operators identified by NAICS code 322121, for a total of 62 potentially affected entities. Under the U.S. SBA Small Business Size Regulations under 13 CFR Chapter 1, Part 121, the small business-size standard in number of employees for each of these NAICS classifications is 750 employees. The Department determined that twelve of these potentially subject entities may be small businesses by that definition.

This final-form rulemaking may also apply to owners or operators of other facilities that have not yet been identified.

(b) The projected reporting, recordkeeping and other administrative costs required for compliance with the final-form regulation, including the type of professional skills necessary for preparation of the report or record.

The recordkeeping and reporting requirements for owners or operators of affected facilities are minimal because most of the records required are in line with the records already required to be kept for emission inventory purposes and for other federal and state requirements. The owners and operators of affected facilities are familiar with the existing requirements for reporting and recordkeeping for their industry and have the professional and technical skills needed for compliance with these final-form requirements. No special skills are required, and the Department only anticipates minimal programmatic costs.

The Department plans to educate and assist the public and the regulated community in understanding the requirements and how to comply with them.

(c) A statement of probable effect on impacted small businesses.

The Department expects that the impact on small businesses will be minimal. Of the twelve potential small businesses identified, the majority are waste coal fired facilities. This final-form rulemaking would establish a waste-coal set aside account to assist these facilities with compliance by providing up to 12.8 million CO_2 allowances each year.

Small businesses would not be unduly burdened by this final-form rulemaking. Overall, small businesses would likely be impacted positively as a result of this final-form rulemaking, due to the benefits provided by the RGGI proceed investments. The potential funding programs could allow for more access to energy efficiency and renewable energy projects and investments in clean transportation options. For instance, if the Commonwealth decides to fund an orphan and abandoned well plugging program with RGGI

proceeds, the conventional oil and gas industry would benefit from the additional work being offered. Additionally, many renewable energy firms are considered small businesses, which could benefit from a rooftop solar program.

The Department plans to educate and assist the public and the regulated community in understanding the requirements and how to comply with them. The Department will continue to work with the Department's provider of Small Business Stationary Source Technical and Environmental Compliance Assistance. These services are currently provided by EMAP of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, Section 507 of the CAA (42 U.S.C.A. § 7661f) and authorized by the Pennsylvania Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209). In addition to providing one-on-one consulting assistance and on-site assessments, EMAP also operates a toll-free phone line to field questions from this Commonwealth's small businesses, as well as businesses wishing to start up in, or relocate to, Pennsylvania. EMAP operates and maintains a resource-rich environmental assistance website and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

(d) A description of any less intrusive or less costly alternative methods of achieving the purpose of the final-form regulation.

There are no less intrusive or less costly alternative regulatory provisions available.

(25) List any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, the elderly, small businesses, and farmers.

Provisions for Covered Facilities

The Board developed a special provision for waste coal-fired units located in this Commonwealth, 8 out of 12 of which currently appear to meet the definition of small business as defined under Section 3 of the Regulatory Review Act (71 P.S. § 745.3). As discussed in the response to question 12, the Department will set aside 12,800,000 CO_2 allowances at the beginning of each year for waste coal-fired units located in this Commonwealth. The Board is establishing this waste coal set-aside in this final-form rulemaking because in addition to electricity generation, waste coal-fired units provide an environmental benefit of reducing air and water pollution caused by the remaining waste coal piles in this Commonwealth.

While this Commonwealth's participation in RGGI will have tangible health, environmental and economic benefits, the inclusion of the waste coal set-aside has the additional benefit of avoiding unintended impacts to this generation sector, so that the environmental benefits of continuing to remediate this Commonwealth's legacy waste coal piles may continue. For context, since 1988 a total of 160.7 million tons of waste coal has been removed and burned to generate electricity, with an additional 200 million tons of coal ash beneficially used at mine sites. One of the important environmental benefits that waste coal ash provides is the neutralization of acid mine drainage, due to the use of limestone as an emission reduction additive during the combustion process. Of this Commonwealth's over 13,000 acres of waste coal piles cataloged by the Department, 3,700 acres have been reclaimed with roughly 9,000 acres remaining. Additionally, of the piles that remain, approximately 40 of them have ignited, and continually burn which significantly impacts local air quality as well as the Commonwealth's efforts to meet and maintain compliance with the NAAQS.

The Board also developed a special provision for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. Under this final-form rulemaking, units that serve an electricity generator with have a nameplate capacity equal to or greater than 25MWe and that send more than 10% of their electricity to the grid have a compliance obligation. However, a CHP unit that supplies less than or equal to 15% of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, may take a limited exemption from most of the requirements under this final-form rulemaking. In particular, the facility will not be required to obtain CO_2 allowances. The exemption is referred to as limited because the restriction on electricity supply must be included and complied with as a condition in the facility's permit and the facility must comply with the requirement to report annual gross generation to the Department under § 145.305(c). By increasing the applicability threshold by as much as 5% for eligible CHP units, the Board is providing industrial, institutional or commercial facilities that have installed on-site electric generation to support production at the facility with an opportunity to be exempted from this final-form rulemaking.

For those CHP units that do trigger a compliance requirement under this final-form rulemaking, the Board established a CHP set-aside provision to retire CO_2 allowances on behalf of qualifying CHP units. As discussed in the response to question 12, the Department included two tiers for the retirement of CO_2 allowances from the CHP set-aside account. Under the first tier, applicable CHP units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, applicable CHP units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

Incentivizing future CHP units provides economic development benefits and can be a significant factor for manufacturers and other industrial, commercial or institutional facilities looking to expand operations within or to this Commonwealth. The set-aside and limited exemption for CHP will benefit existing systems while encouraging new installations in this Commonwealth. CHP units use energy efficiently by simultaneously producing electricity and useful thermal energy from the same fuel source. CHP captures the wasted heat energy that is typically lost through power generation, using it to provide cost-effective heating and cooling to factories, businesses, universities and hospitals. CHP units are able to use less fuel compared to other fossil fuel-fired EGUs to produce a given energy output. Less fuel being burned results in fewer air pollutant emissions, including CO_2 and other GHGs. In addition to reducing emissions, CHP benefits the economy and businesses by improving manufacturing, industrial, commercial or institutional competitiveness through increased energy efficiency and providing a way for businesses to reduce energy costs while enhancing energy reliability. Because CHP units are interconnected with a facility, the electricity consumed on-site is not reduced due to line losses, and climate change resiliency is increased.

Special Provisions for Environmental Justice, Low Income and Minority Communities

In the Preamble to this final-form rulemaking, the Board included a set of equity principles to indicate that the Commonwealth is committed to striving to develop a power sector carbon-reduction program and investment strategy that embodies the four principles. These equity principles advance the Department's commitment to equity and were developed by the Department with input from environmental justice stakeholders, including EJAB. First, the Commonwealth will strive to inclusively gather public input using multiple methods of engaging the public, especially environmental justice communities and meaningfully consider that input in making decisions related to the design and implementation of the power sector

carbon-reduction program and disseminate any final decisions that are made that affect such impacted communities in a timely manner. Second, the Commonwealth will strive to protect public health, safety and welfare, mitigating any adverse impacts on human health, especially in environmental justice communities and seek to ensure environmental and structural racism are not replicated in the engagement process. Third, the Commonwealth will strive to work equitably and with intentional consideration to distribute environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution. As part of this third principle, the Commonwealth will seek to address legacy impacts related to emissions and pollution in vulnerable populations and among environmental justice communities. The Commonwealth will also develop and provide data about emissions in environmental justice communities to inform the investment process. Lastly, as part of the third principle, the Commonwealth will strive to provide access to investment programs for all members of the community, especially low-income communities.

To help ensure that measures taken through this final-form rulemaking do not disproportionately impact the most vulnerable residents in this Commonwealth, the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. The Board received several comments that requested monitoring of the air quality impacts of this final-form rulemaking and in particular an assessment of any impacts on environmental justice communities. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

Additionally, the Department is focused on developing a strategy for the reinvestment of auction proceeds that ensures an equitable distribution of beneficial projects across this Commonwealth, with a focus on benefits for low-income consumers, environmental justice communities and communities impacted by this Commonwealth's transition to a new energy future. The potential use of the auction proceeds includes targeted weatherization and energy efficiency services to reduce energy use and costs for households and businesses, training opportunities related to energy efficiency and renewable energy careers, and the retention of jobs through repowering coal-fired facilities to natural gas, among others.

Since around 20% of CO_2 emissions from fossil fuel-fired EGUs in this Commonwealth are located in Environmental Justice areas, residents in these communities will directly benefit from the localized emission reductions from power plants located in their communities. These include reductions in CO_2, SO_2 and NO_x emissions and reduced formation of ground level ozone. Additional consideration for reinvestment opportunities will be given to Bucks, Chester, Delaware, Montgomery and Philadelphia counties as they are designated as marginal nonattainment areas for the 2015 ozone NAAQS, a standard that will become more difficult to attain with future climate change impacts.

As previously mentioned, vulnerable populations across this Commonwealth, including children, the elderly, those with pre-existing health conditions especially respiratory and communities of color are those most affected by diminished air quality. These groups are also those who have the most to gain from avoiding the worst impacts of climate change while improving the air and water quality in this Commonwealth.

Consideration of Farming & Agricultural Operations

While there is not a special provision for farming and agricultural operations, this final-form rulemaking will provide assistance to meet the particular needs of this group which has been negatively impacted by climate change. The reductions in ambient concentrations of ground-level ozone and other harmful air pollutants as a result of this final-form rulemaking will help aid farmers by improving the quality of life of animals, preserving this Commonwealth's biodiversity, and reducing veterinary costs. High levels of ground-level ozone affect animals including pets, livestock, and wildlife, in ways similar to the impact on humans described in response to question 10. Similar to various public health pressures, the agricultural, food, and water systems that Pennsylvanians depend on for survival are under threat by climate change. The increase in precipitation and its variability could lead to increased incidences of plant disease, increased risk of flooding and difficulty in the timing of planting, and increased demand for irrigation. This Commonwealth's dairy production will also experience challenges from reduced milk yields, a result of heat stress on cows. The CO_2 emission and co-pollutant reductions accomplished through implementation of this final-form rulemaking are needed to reduce the amount of climate change causing pollution resulting from fossil fuel-fired EGUs and negatively impacting this Commonwealth's farming and agricultural operations.

(26) Include a description of any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected.

The Department has not considered alternative regulatory provisions for this final-form rulemaking and this Commonwealth's participation in RGGI is the least burdensome acceptable alternative to limit CO_2 emissions from fossil fuel-fired EGUs. However, the Department included a provision in this final-form rulemaking to retain the flexibility to conduct a Pennsylvania-run auction in case the benefits of the multistate auctions diminish in the future.

While the Department could have developed a traditional command and control regulation to reduce CO_2 emissions from fossil fuel-fired EGUs, that would not be the most advantageous or economically beneficial method to control CO_2 emissions in this Commonwealth. Further, the Department was directed through Executive Order 2019-07 to develop a regulation to reduce CO_2 emissions from fossil fuel-fired EGUs through a cap and trade program.

Benefits of cap and trade v. traditional command and control

As noted by the EPA in its "Guide to Designing and Operating a Cap and Trade Program for Pollution Control," cap and trade programs provide several benefits and advantages over more traditional approaches to environmental regulation. By establishing an emissions budget, cap and trade programs can provide a greater level of environmental certainty than other environmental policy options. The regulated sources, across the region, must procure allowances to cover emissions or risk being penalized for lack of compliance. Traditional command and control regulations, on the other hand, tend to rely on variable emission rates and often only regulate existing or new sources. However, under cap and trade programs, new and existing sources must comply with the emissions budget. A cap and trade program may also encourage sources to achieve emission reductions in anticipation of future compliance, resulting in the earlier achievement of environmental and human health benefits. In fact, the Department's modeling shows that this is occurring as this Commonwealth prepares to participate in RGGI in 2022.

The EPA also noted that banking of allowances, which this final-form rulemaking allows, provides an additional incentive to reduce emissions earlier than required. Banking provides flexibility by allowing sources to save unused allowances for use in a later compliance period when the emissions budget is lower and the costs to reduce emissions may be higher. With command-and control, the regulating authority specifies sector-wide technology and performance standards that each of the affected sources must meet, whereas cap and trade provides sources with the flexibility to choose the technologies that minimize their costs while achieving the emissions target. Cap and trade programs also provide more accountability than a command and control program. Under this final-form rulemaking and other cap and trade programs, sources must account for every ton of emissions they emit by acquiring allowances. Command and control programs tend to rely on periodic inspections and assumptions that control technology is functioning properly to show compliance.[74]

This final-form rulemaking employs an efficient and market-based solution to achieve a reduction in CO_2 emissions from the electricity generation sector in this Commonwealth. This is further bolstered by the 2019 update to the Pennsylvania Climate Action Plan which determined that one of the most cost-effective emissions reduction strategies is to limit CO_2 emissions through an electricity sector cap and trade program. Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO_2 allowance prices and compliance costs are feasible. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the CCR and ECR. The CCR process triggers additional CO_2 allowances to be offered for sale in the case of higher than projected CO_2 allowance costs. Similarly, states implementing the ECR, including this Commonwealth, would withhold CO_2 allowances from the auction to secure additional emissions reductions if prices fall below the established trigger price. This provides predictability in terms of the cost of compliance for covered entities. CO_2 allowances may also be purchased through the secondary market and may be held for future compliance years as they have no expiration.

Benefits of RGGI participation

As previously mentioned, cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO_2 pollution by over 45% since 2009, while experiencing per capita GDP growth and reduced energy costs. The program design of RGGI would enable the Board to regulate CO_2 emissions from the power sector in a way that is economically efficient thereby driving long-term investments in cleaner sources of energy.

Part of what makes RGGI economically efficient is that it is a regional cap and invest program, which allows EGUs to achieve least-cost compliance by buying and selling allowances in a multistate auction or in regional secondary markets. RGGI CO_2 allowances are fungible across the participating states, meaning that though this Commonwealth would have an established allowance budget for each year, this Commonwealth's allowances are available to meet the compliance obligations in any other RGGI state and vice versa at the option of the regulated sources. Therefore, CO_2 emissions from this Commonwealth's

[74] EPA, Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control, EPA430-B-03-002, June 2003, www.epa.gov/sites/production/files/2016-03/documents/tools.pdf.

power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to continue to signal entrance and exit of generation. Though each state has its own annual allocation, compliance occurs at the regional level rather than on a state-by-state basis. In this respect, the market assists in achieving least cost compliance for all participating states.

Another benefit of participating in multistate auctions run by RGGI, Inc. is that RGGI, Inc. has retained the services of an independent market monitor to monitor the auction, CO_2 allowance holdings, and CO_2 allowance transactions, among other activities. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude or otherwise manipulate prices in the auction or the secondary market, or both, making recommendations regarding proposed market rule changes to improve the efficiency of the market for RGGI CO_2 allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor will monitor bidder behavior in each auction and report to the participating states any activities that may have a material impact on the efficiency and performance of the auction. The participating states, through RGGI, Inc., release a Market Monitor Report shortly after each CO_2 allowance auction. The Market Monitor Report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids and a summary of bid prices, showing the minimum, maximum, average and clearing price and the CO_2 allowances awarded.

RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. See Analysis Group, "The Economic Impacts of the Regional Greenhouse Gas Initiative on Northeast and Mid-Atlantic States," https://www.analysisgroup.com/Insights/cases/the-economic-impacts-of-the-regional-greenhouse-gas-initiative-on-northeast-and-mid-atlantic-states/.

A recent report from the Acadia Center, a nonprofit organization committed to advancing the clean energy future, entitled "The Regional Greenhouse Gas Initiative: Ten Years in Review," shows that CO_2 emissions from power plants in the participating states have decreased 47%, which is 90% faster than in the rest of country. The participating states were able to achieve that significant reduction while the GDP grew by 47%, outpacing the rest of the country by 31%.

RGGI has also driven substantial reductions in harmful co-pollutants, making the region's air cleaner and its people healthier. Additionally, proceeds from RGGI auctions generated nearly $3.3 billion in state investments from 2009 to 2019. See Acadia Center, "The Regional Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf.

For comparison, according to the Department's 2020 GHG Inventory Report from 2005 to 2016, this Commonwealth reduced its net emissions by 33.5% while the participating states reduced CO_2 pollution from covered sources by over 45% over the same period. Additionally, this reduction was achieved while the region's per-capita GDP has continued to grow, highlighting the synergies between environmental protection and economic development.

Additionally, this final-form rulemaking may create economic opportunities for clean energy businesses. By establishing a cost for emitting CO_2, and pricing this externality into the energy market, the CO_2 Budget Trading Program will provide a market incentive for developing and deploying technologies that improve the fuel efficiency of electric generation, generate electricity from non-carbon emitting resources, reduce CO_2 emissions from combustion sources and encourage carbon capture and sequestration. The energy efficiency sector is the largest component of all energy jobs in this Commonwealth and the renewable energy sector contains some of the fastest growing jobs in the country.

Consideration of other alternatives

Beyond comparison to traditional command and control, the Department considered this final-form rulemaking in relation to other alternatives, including continuing to allow EGUs to emit CO_2 emissions unabated as well as designing this final-form rulemaking in which affected facilities are given allowances instead of having to purchase them. First, the status quo will not achieve the emissions reductions needed to protect public health and the environment, nor are current measures adequate to address climate change. The Department's modeling effort as mentioned above included two separate modeling tracks, the first of which is (a) the reference case which reflects business-as-usual with no regulatory or policy changes, and (b) the policy case which is reflective of the impacts of this final-form rulemaking. In comparing these modeling scenarios, without this final-form regulation, Pennsylvanians will experience between 97-227 million more tons of CO_2 than with this regulation. Additionally, residents of this Commonwealth will not benefit from improved air quality or realize the economic, job impacts or health benefits that result from this final-form regulation.

Furthermore, rather than benefitting from implementation of this final-form regulation- there will be a deleterious impact on the environment, health and the economy without this meaningful and decisive action. Business-as-usual or status quo does not address climate change in a meaningful way. While there may be emissions reductions in the future, they do not occur at the rate or level at which is required to avoid the worst impacts of climate change. Additionally, as a Commonwealth we will not be capable of honoring our commitment to address climate change and will fall short of meeting the interim 2025 greenhouse gas reduction goal for Pennsylvania.

In consideration of giving allowances to affected facilities instead of facilities needing to purchase them, that would also not be as effective as this final-form rulemaking. If this final-form rulemaking is not compatible with the RGGI program, it will be less effective at reducing CO_2 emissions in a cost-effective manner. Part of what makes RGGI economically efficient is that it is a regional program, allowing for EGUs to achieve least cost compliance by buying and selling CO_2 allowances whether in multistate auctions or in the secondary market. CO_2 allowances are fungible, meaning that though this Commonwealth has an established CO_2 allowance budget for each year, this Commonwealth's CO_2 allowances are available to meet the compliance obligations in any other participating state and vice versa. Therefore, emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to signal entrance and exit of generation. In this respect, the market assists in achieving least cost compliance for all participating states. Furthermore, strategic investments of the auction proceeds within this Commonwealth reduce GHG emissions even further than this Commonwealth's annual CO_2 allowance budget alone. Lastly, if those strategic investments are made in energy efficiency, ratepayers in this Commonwealth could experience cost savings by 2030 compared to not implementing this final-form rulemaking.

Pennsylvania-run CO_2 Allowance Auction Alternative

This final-form rulemaking includes a provision for the Department to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. As discussed in this final-form rulemaking, participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Department provides for flexibility in case the benefits of the multistate auctions diminish in the future.

(27) In conducting a regulatory flexibility analysis, explain whether regulatory methods were considered that will minimize any adverse impact on small businesses (as defined in Section 3 of the Regulatory Review Act, Act 76 of 2012), including:

a) The establishment of less stringent compliance or reporting requirements for small businesses.

Less stringent compliance and reporting requirements are not established under this final-form rulemaking. However, this final-form rulemaking includes a waste-coal set aside provision to assist waste coal-fired facilities with compliance by providing up to 12.8 million CO_2 allowances. The Department has estimated that 8 waste coal-fired facilities are small businesses. The Department has also established a small business assistance program that is available to provide confidential assistance to small businesses.

b) The establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses.

Establishment of a less stringent compliance schedule or deadline for small businesses is not possible. The compliance schedules and deadlines in this final-form rulemaking align with the regulations in the participating states and follow a 3-year control period for compliance. The Department has established a small business assistance program that is available to provide confidential assistance to the small businesses.

c) The consolidation or simplification of compliance or reporting requirements for small businesses.

Compliance and reporting requirements are the same for all affected facilities. The Department has established a small business assistance program that is available to provide confidential assistance to the small businesses.

d) The establishment of performance standards for small businesses to replace design or operational standards required in the regulation.

This final-form rulemaking does not include performance standards for any regulated facilities.

e) The exemption of small businesses from all or any part of the requirements contained in the regulation.

This final-form rulemaking does not exempt owners or operators of small businesses.

(28) If data is the basis for this regulation, please provide a description of the data, explain in detail how the data was obtained, and how it meets the acceptability standard for empirical, replicable and testable data that is supported by documentation, statistics, reports, studies or research. Please submit data or supporting materials with the regulatory package. If the material exceeds 50 pages, please provide it in a searchable electronic format or provide a list of citations and internet links that, where possible, can be accessed in a searchable format in lieu of the actual material. If other data was considered but not used, please explain why that data was determined not to be acceptable.

The data supporting the Department's IPM and REMI analysis can be found on the Department's website at https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx. A presentation entitled "Modeling Results Presentation" located on that webpage provides supplemental information about the modeling. Additionally, relevant data files are located on that webpage, labeled as "Reference Case Results" and "Policy Case Results."

The data supporting this Commonwealth's GHG emissions can be found on the Department's website at https://www.dep.pa.gov/Citizens/climate/Pages/GHG-Inventory.aspx.

Data supporting comparisons amongst states in CO_2 emissions can be found at https://www.eia.gov/. Data supporting GHG equivalencies can be found using https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

(29) Include a schedule for review of the regulation including:

A. The length of the public comment period:	69 days
B. The date or dates on which any public meetings or hearings were held:	December 8, 9, 10, 11 and 14, 2020
C. The expected date of delivery of the final-form regulation:	Quarter 3, 2021
D. The expected effective date of the final-form regulation:	Upon publication in the *Pennsylvania Bulletin*
E. The expected date by which compliance with the final-form regulation will be required:	January 1, 2022
F. The expected date by which required permits, licenses or other approvals must be obtained:	1 year after the effective date

(30) Describe the plan developed for evaluating the continuing effectiveness of the regulations after its implementation.

The Board is not establishing a sunset date for this final-form rulemaking, since it is needed for the Department to carry out its statutory authority. The Department will closely monitor this final-form rulemaking after promulgation as a final-form rulemaking in the *Pennsylvania Bulletin* for its effectiveness and recommend updates to the Board as necessary.

Through RGGI, Inc., the Department will utilize the expertise of an independent market monitor to monitor the multistate auctions, CO_2 allowance holdings and CO_2 allowance transactions, among other activities in order to ensure this final-form rulemaking is maintaining its effectiveness. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude, or otherwise manipulate prices in the auction and the secondary market, making recommendations regarding proposed market rule changes to improve the efficiency of the market for CO_2 allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor will monitor bidder behavior in each auction and report to the participating states any activities that may have a material impact on the efficiency and performance of the auction. The participating states, through RGGI, Inc., release a Market Monitor Report shortly after each multistate auction. The report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids, and a summary of bid prices, showing the minimum, maximum, average and clearing price and the CO_2 allowances awarded.

Further, the participating states conduct comprehensive, periodic "program reviews" to consider program successes, impacts and design elements. In particular, during program review, participating states may revise the RGGI Model Rule, adjust the multistate auction process and develop new goals for the CO_2 Budget Trading Program. The program review also includes an extensive regional stakeholder process that engages the regulated community, environmental groups, consumer and industry advocates and other interested stakeholders.

The participating states have completed 3 program reviews since program implementation in 2009, and the next program review is scheduled to begin in late Summer/early Fall of 2021. In 2021, RGGI Inc. announced[75] that RGGI states will be publishing a preliminary Program Review Schedule in late summer of 2021. Included in this review will be listening sessions held throughout the fall 2021 and winter of 2021/2022 to solicit widespread feedback. Based on that input and feedback, RGGI states will develop program review objectives and embark upon policy deliberations and technical analyses in 2022. Upon implementation of this final-form rulemaking, this Commonwealth would participate in the periodic program reviews to ensure this final-form rulemaking is implemented effectively.

[75] RGGI States Look Ahead to Third Program Review, February 2, 2021 https://www.rggi.org/sites/default/files/Uploads/Program-Review/2-2-2021/Program_Review_Initial_Statement.pdf.

CDL-1

FACE SHEET
FOR FILING DOCUMENTS
WITH THE LEGISLATIVE REFERENCE BUREAU

(Pursuant to Commonwealth Documents Law)

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Independent Regulatory Review Commission

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Copy below is hereby approved as to form and legality Attorney General

By
(Deputy Attorney General)

DATE OF APPROVAL

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-559

DATE OF ADOPTION July 13, 2021

BY

TITLE PATRICK MCDONNELL
CHAIRPERSON

EXECUTIVE OFFICER CHAIRPERSON OR SECRETARY

Copy below is hereby approved as to form and legality Executive or Independent Agencies

BY

July 26, 2021
DATE OF APPROVAL

(Deputy General Counsel)
~~(Chief Counsel—Independent Agency)~~
(Strike inapplicable title)

☐ Check if applicable No Attorney General Approval or objection within 30 days after submission

NOTICE OF FINAL RULEMAKING

DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD

CO_2 Budget Trading Program

25 Pa. Code Chapter 145

FINAL-FORM RULEMAKING
ENVIRONMENTAL QUALITY BOARD
[25 PA. CODE CH. 145]

CO_2 Budget Trading Program

The Environmental Quality Board (Board) amends Chapter 145 (relating to interstate pollution transport reduction) to add Subchapter E (relating to CO_2 budget trading program) to establish a program to limit the emissions of carbon dioxide (CO_2) from fossil fuel-fired electric generating units (EGU) located in this Commonwealth, with a nameplate capacity equal to or greater than 25 megawatts (MWe) as set forth in Annex A.

This final-form rulemaking was adopted by the Board at its meeting of July 13, 2021.

A. *Effective Date*

This final-form rulemaking will be effective upon publication in the *Pennsylvania Bulletin.*

B. *Contact Persons*

For further information, contact Virendra Trivedi, Chief, Division of Permits, Bureau of Air Quality, Rachel Carson State Office Building, P.O. Box 8468, Harrisburg, PA 17105-8468, (717) 783-9476; or Jennie Demjanick, Assistant Counsel, Bureau of Regulatory Counsel, Rachel Carson State Office Building, P.O. Box 8464, Harrisburg, PA 17105-8464, (717) 787-7196. Persons with a disability may use the Pennsylvania AT&T Relay Service, (800) 654-5984 (TDD users) or (800) 654-5988 (voice users). This final-form rulemaking is available on the Department of Environmental Protection's (Department) web site at www.dep.pa.gov (select "Public Participation," then "Environmental Quality Board").

C. *Statutory Authority*

This final-form rulemaking is authorized under section 5(a)(1) of the Air Pollution Control Act (APCA) (35 P.S. § 4005(a)(1)), which grants the Board the authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. Section 6.3(a) of the APCA (35 P.S. § 4006.3(a)) also authorizes the Board by regulation to establish fees to support the air pollution control program authorized by the APCA and not covered by fees required by section 502(b) of the Clean Air Act (CAA) (42 U.S.C.A. § 7661a(b)).

D. *Background and Purpose*

The purpose of this final-form rulemaking is to reduce anthropogenic emissions of CO_2, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth. This final-form rulemaking would reduce CO_2 emissions from sources within this Commonwealth and establish the Commonwealth's participation in the Regional Greenhouse Gas Initiative (RGGI), a regional

CO_2 Budget Trading Program. This final-form rulemaking would establish a CO_2 Budget Trading Program for this Commonwealth which is capable of linking with similar regulations in states participating in RGGI (participating states). These independently promulgated and implemented CO_2 Budget Trading Program regulations together make up the regional CO_2 Budget Trading Program or RGGI.

This final-form rulemaking would effectuate least cost CO_2 emission reductions for the years 2022 through 2030. The declining CO_2 Emissions Budget in this final-form rulemaking directly results in CO_2 emission reductions of around 20 million short tons in this Commonwealth as well as emission reductions across the broader PJM regional electric grid. However, the Department projects that 97—227 million short tons of CO_2 that would have been emitted by EGUs in this Commonwealth over the next decade are avoided by participation in RGGI. According to data from the United States Energy Information Administration (EIA), this Commonwealth generates the fifth most CO_2 emissions from EGUs in the country. Since CO_2 emissions are a major contributor to regional climate change impacts, the Department developed this final-form rulemaking to establish this Commonwealth's participation in a regional approach that significantly reduces CO_2 emissions and this Commonwealth's contribution to regional climate change.

RGGI equity principles

Throughout the development and implementation of this final-form rulemaking, the Commonwealth is committed to striving to develop a power sector carbon-reduction program and investment strategy, through RGGI, that embodies a set of equity principles. These equity principles advance the Department's commitment to equity and were developed by the Department with input from environmental justice stakeholders, including the Department's Environmental Justice Advisory Board (EJAB). First, the Commonwealth will strive to inclusively gather public input using multiple methods of engaging the public, especially environmental justice communities and meaningfully consider that input in making decisions related to the design and implementation of the power sector carbon-reduction program and disseminate any final decisions that are made that affect such impacted communities in a timely manner. Second, the Commonwealth will strive to protect public health, safety and welfare, mitigating any adverse impacts on human health, especially in environmental justice communities and seek to ensure environmental and structural racism are not replicated in the engagement process. Third, the Commonwealth will strive to work equitably and with intentional consideration to distribute environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution. As part of this third principle, the Commonwealth will seek to address legacy impacts related to emissions and pollution in vulnerable populations and among environmental justice communities. The Commonwealth will also develop and provide data about emissions in environmental justice communities to inform the investment process. The development of an Annual Air Quality Impact Assessment is discussed further under the subsection titled "Modifications from RGGI Model Rule." Lastly, as part of the third principle, the Commonwealth will strive to provide access to investment programs for all members of the community, especially low-income communities.

Climate change impacts and the greenhouse effect

Like every state in the country, this Commonwealth has already begun to experience adverse impacts from climate change, such as higher temperatures, changes in precipitation and frequent extreme weather events, including large storms, flooding, heat waves, heavier snowfalls and periods of drought. These impacts could alter the many fundamental assumptions about climate that are intrinsic to this Commonwealth's infrastructure, governments, businesses and the stewardship of its natural resources and environment. If not properly accounted for, changes in climate could result in more frequent road washouts, higher likelihood of power outages, and shifts in economic activity, among other significant impacts. Climate change can also affect vital determinants of health such as clean air, safe drinking water, sufficient food and secure shelter. These vital determinants are particularly affected by the increased extreme weather events, in addition to decreased air quality and an increase in illnesses transmitted by food, water, and disease carriers such as mosquitos and ticks. If these impacts are to be avoided, GHG emissions must be reduced expeditiously.

The impacts of climate change are vast and what was predicted 10 years ago is being confirmed today. Climate change impacts are being caused by the emission and atmospheric concentration of GHGs, namely, but not exclusively, CO_2. Scientists have confirmed that increased CO_2 emissions from human activity are causing changes to global climate. Ninety-seven percent of the actively publishing climate scientists agree that climate warming trends over the past century are extremely likely due to human activities. Major scientific institutions including the United States National Academy of Sciences, the United States Global Change Research Program (USGCRP), the American Medical Association, the American Association for the Advancement of Science, and many others endorse this position. In the Fifth Assessment Report of the International Panel on Climate Change (IPCC) released in 2014, the IPCC concluded that, "human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history." See IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

While CO_2 is a necessary element of life on Earth and acts as a fundamental aspect of nearly every critical system on the planet, CO_2 in high concentrations in the atmosphere leads to the greenhouse effect. The greenhouse effect occurs when CO_2 (and other GHG) molecules absorb solar energy and re-emit infrared energy back to the Earth's surface. This absorption and re-emitting of infrared energy is what makes certain gases trap heat in the lower atmosphere, not allowing it to go back out to space. The greenhouse effect disrupts the normal process whereby solar energy is absorbed at the Earth's surface and is radiated back through the atmosphere and back to space. Maintaining the surface temperature of the Earth depends on this balance of incoming and outgoing solar radiation. See the National Aeronautics and Space Administration, "The Causes of Climate Change," https://climate.nasa.gov/causes/.

Global temperatures are increasing due to the greenhouse effect. Significantly changing the global temperature has impacts to every other weather and climate cycle occurring across the world. For instance, global average sea level, which has risen by about 7-8 inches since 1900 (with about 3 inches of that increase occurring since 1993), is expected to rise at least several

inches in the next 15 years and by 1—4 feet by 2100. The impacts of increased GHGs in the atmosphere, including extreme weather and catastrophic natural disasters, have become more frequent and more intense. Extreme weather events also contribute to deaths from extreme heat or cold exposure and lost work hours due to illness. The World Health Organization expects climate change to cause around 250,000 additional deaths globally per year between 2030—2050, with additional direct damage costs to health estimated to be around $2—$4 billion per year by 2030. Based on the overwhelming scientific evidence, these harms are likely to increase in number and severity unless aggressive steps are taken to reduce GHG emissions.

Climate change impacts assessments

Since 2009, the Department has released Climate Change Impacts Assessments, as required under the Pennsylvania Climate Change Act (71 P.S. §§ 1361.1—1361.8), which have underscored the critical need to take action to reduce GHG emissions and address climate change. The Department's climate change impact assessments are available at https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx. On May 5, 2021, the Department with support from ICF and Penn State University, released the most recent Pennsylvania Climate Impacts Assessment. The 2021 Pennsylvania Climate Impacts Assessment found that the average annual temperature Statewide will continue to rise and is expected to increase by 5.9°F (3.3°C) by midcentury compared to a baseline period of 1971-2000. Additionally, this Commonwealth could experience more total average rainfall, occurring in less frequent but heavier rain events. Extreme rainfall events are projected to increase in magnitude, frequency, and intensity, while drought conditions are also expected to occur more frequently due to more extreme, but less frequent precipitation patterns.

There will also be more frequent and intense extreme heat events with temperatures expected to reach at least 90°F on 37 days per year on average across the State, up from the 5 days during the baseline period. Days reaching temperatures above 95°F and 100°F will become more frequent as well. These increasing temperatures will continue to alter the growing season and increase the number of days that individuals and businesses will have to run air conditioning. As heat waves become increasingly common, individuals will be more susceptible to health and economic risks. This is particularly true for vulnerable populations, including low-income populations, the elderly, pregnant women, people with certain mental illnesses, outdoor workers, and those with cardiovascular conditions. Most notable from the 2021 Pennsylvania Climate Impacts Assessment is that climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As shown by all of the Pennsylvania Climate Change Impacts Assessments, climate risks and related impacts in Pennsylvania could be severe, potentially causing increased infrastructure disruptions, higher risks to public health, economic impacts, and other changes, unless actions are taken by the Commonwealth to avoid and reduce the consequences of climate change.

In April 2020, the Environment and Natural Resources Institute at Penn State University released an updated Climate Change Impacts Assessment for the Department, which states that the expected disruptions to this Commonwealth's climate and impacts on this Commonwealth's climate sensitive sectors remain as dire as presented in the 2015 Climate Change Impacts Assessment. The 2015 Climate Change Impacts Assessment found that this Commonwealth has

undergone a long-term warming of more than 1.8°F over the prior 110 years, and that due to increased GHG emissions, current warming trends are expected to increase at an accelerated rate with average temperatures projected to increase an additional 5.4 degrees by 2050. This warming will have potential adverse impacts related to agriculture, forests, aquatic ecosystems, water resources, wildlife and public health across this Commonwealth. In this Commonwealth, average annual precipitation has increased by approximately 10% over the past 100 years and, by 2050, is expected to increase by an additional 8%, with a 14% increase during the winter season. In particular, climate change will worsen air quality relative to what it would otherwise be, causing increased respiratory and cardiac illness. Air quality impacts from climate change are due to the combination of pollutants emitted from anthropogenic sources and weather conditions. Climate change can potentially also worsen water quality, affecting health through consumption of diminished quality drinking water and through contact with surface waters during outdoor recreation. The risk of injury and death from extreme weather events could also increase as a consequence of climate change. Additionally, climate change could affect the prevalence and virulence of air-borne infectious diseases such as influenza.

In 2009, the Department released its first Climate Change Impacts Assessment which showed that this Commonwealth was already experiencing some of the harmful effects of climate change. That same year, under CAA section 202(a)(1), (42 U.S.C.A. § 7521(a)(1)), the United States Environmental Protection Agency (EPA) issued an "Endangerment Finding," that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015). On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO_2, from EGUs endanger public health and welfare and cause or contribute to climate change. Additionally, the EPA's Endangerment Findings are further reinforced by the findings of the USGCRP's Fourth National Climate Assessment (NCA4) which is consistent with the Commonwealth's 2015, 2020, and 2021 Climate Change Impacts Assessments. While these Federal studies inform the Department's decision to regulate CO_2 emissions within this Commonwealth, they are not determinative because this final-form rulemaking is being promulgated by the Board under the authority of the APCA, not the CAA.

On November 23, 2018, the USGCRP released the NCA4, a scientific assessment of the National and regional impacts of natural and human-induced climate change. See United States Global Change Research Program, "Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II," (D.R. Reidmiller et al. eds., 2018),

https://nca2018.globalchange.gov/. The NCA4 represents the work of over 300 government and non-government experts, led by experts within the EPA, the United States Department of Energy and 11 other Federal agencies. The NCA4 shows how the impacts of climate change are already occurring across the country and emphasizes that future risks from climate change will depend on the decisions made today. It is worth noting that the NCA4 mentions that the Northeast region is a model for other states, as it has traditionally been a leader in GHG mitigation action.

By 2035, the NCA4 projects that the Northeast will see the largest temperature increase in the country of more than 3.6°F on average higher than the preindustrial era. This would occur as much as 2 decades before global average temperatures reach a similar milestone. The changing climate of the Northeast threatens the health and public welfare of its residents and will lead to health-related impacts and costs, including additional deaths, emergency room visits and hospitalizations, higher risk of infectious diseases, lower quality of life and increased costs associated with healthcare utilization. Mosquitoes, fleas and ticks and the diseases they carry have been a particular concern in the Northeast in recent years. Scientists have linked these diseases, specifically tick-related Lyme disease, to climate change.

Climate change also threatens to reverse the advances in air quality that the states in the Northeast, including this Commonwealth, have worked so hard to achieve over the past few decades. In particular, climate change will increase levels of ground-level ozone pollution in the Northeast through changes in weather and increased ozone precursor emissions. Ozone is an irritant and repeated exposure to ozone pollution for both healthy people and those with existing conditions may cause a variety of adverse health effects, including difficulty in breathing, chest pains, coughing, nausea, throat irritation and congestion. In addition, people with bronchitis, heart disease, emphysema, asthma and reduced lung capacity may have their symptoms exacerbated by ozone pollution. Asthma, in particular, is a significant and growing threat to children and adults in this Commonwealth. The threat of asthma is particularly pronounced in Philadelphia, which has especially high asthma prevalence and hospitalization rates – affecting approximately one out of four children in West Philadelphia alone. Asthma disproportionately affects African Americans and those below or near the poverty line, highlighting key environmental justice considerations for pollution control. See U.S. EPA Region 3, EPA Mid-Atlantic Recognizes First Asthma Community Champion, May 2021, https://www.epa.gov/newsreleases/epa-mid-atlantic-recognizes-first-asthma-community-champion. The NCA4 refers to this reversal as a "climate penalty" and projects it could cause hundreds more ozone pollution-related deaths per year.

Over the past several decades, the Department has made substantial progress in decreasing ground-level ozone pollution in this Commonwealth, including limiting precursor emissions. However, Bucks, Chester, Delaware, Montgomery and Philadelphia counties are designated as marginal nonattainment areas for the 2015 ozone national ambient air quality standards (NAAQS). See 83 FR 25776 (June 4, 2018). There is still more work that needs to be done to reduce emissions in these nonattainment areas and to avoid backsliding on the improvements to air quality across this Commonwealth. An increase in ground-level ozone levels due to climate change would interfere with continued attainment of the ozone NAAQS, hinder progress in marginal nonattainment areas and put public health and welfare at risk.

Immediate action is needed to address this Commonwealth's contribution to climate change

Given the urgency of the climate crisis, including the significant impacts on this Commonwealth, the Board determined that concrete, economically sound and immediate steps to reduce GHG emissions are necessary. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment. Based on the most recent data from the EPA's State Inventory Tool, in 2018, this Commonwealth generated net GHG emissions equal to 227.04 million metric tons CO_2 equivalent ($MMTCO_2e$) Statewide, the vast majority of which are CO_2 emissions. In the context of the world, this Commonwealth's electricity generation sector alone emits more CO_2 than many entire countries including Greece, Sweden, Israel, Singapore, Austria, Peru and Portugal. See Joint Research Centre, European Commission, "JRC Science for Policy Report: Fossil CO_2 emissions of all world countries," 2020, https://publications.jrc.ec.europa.eu/repository/handle/JRC121460.

Historically, the electricity generation sector has been the leading source of CO_2 emissions in this Commonwealth. Based upon data contained in the Department's 2020 GHG Inventory, 29% of this Commonwealth's total GHG emissions are produced by the electricity generation sector. The Department's GHG inventory and related information is available at https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx. In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix, resulting from market forces and the establishment of alternative energy goals, and energy efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation and electric power sectors has reduced.

However, looking forward, the Department projects CO_2 emissions from the electricity generating sector will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. The Three Mile Island nuclear power plant already closed on September 20, 2019, amounting to a loss of 818 MW of carbon free generation. However, the modeling conducted for this final-form rulemaking predicts no further nuclear power plant retirements through 2030 with implementation of this final-form rulemaking. Without this final-form rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure. In fact, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

This final-form rulemaking is necessary to ensure CO_2 emissions continue to decrease and at a rate that shields this Commonwealth from the worst impacts of climate change. RGGI plays an important role in providing a platform whereby this Commonwealth can reduce CO_2 emissions using a market-based approach. As the electricity generation sector remains one of the leading sources of CO_2 in this Commonwealth, it is imperative that emissions continue to decrease from that sector.

The Commonwealth's GHG emission reduction goals

On January 8, 2019, Governor Tom Wolf signed Executive Order 2019-01, Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance, codified at 4 Pa. Code §§ 5.1001—5.1009. This Executive Order set the first ever climate change goal for this Commonwealth to reduce net GHG emissions from 2005 levels by 26% by 2025 and 80% by 2050. These climate change goals align this Commonwealth with the reduction targets under the Paris Agreement aimed at keeping global temperature rise below the 2-degree Celsius threshold. According to climate experts, the 2-degree Celsius threshold is the level beyond which dire global consequences would occur, including sea level rise, superstorms and crippling heat waves.

On April 29, 2019, the Department issued a Pennsylvania Climate Action Plan that identified GHG emission trends and baselines in this Commonwealth and recommended cost-effective strategies for reducing or offsetting GHG emissions. The Department's climate action plans are available at https://www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx. The Climate Action Plan determined that reducing the overall carbon intensity of the electricity generated in this Commonwealth is one of the most critical strategies for reducing GHG emissions. The Climate Action Plan also identified many different strategies and actions that all Pennsylvanians can take to combat climate change. According to the Climate Action Plan, one of the most cost-effective emissions reduction strategies is to limit CO_2 emissions through an electricity sector cap and trade program. This Commonwealth participating in a cap and trade program is expected to result in the largest near-term reduction in emissions and was deemed cost-effective relative to the social cost of carbon. The Climate Action Plan modeled a cap and trade program that requires a carbon cap equal to a 30% reduction from 2020 CO_2 emissions levels by 2030, which is equivalent to RGGI stringency.

On October 3, 2019, Governor Tom Wolf signed Executive Order 2019-07, Commonwealth Leadership in Addressing Climate Change through Electric Sector Emissions Reductions, codified at 4 Pa. Code §§ 7a.181—7a.183, which directed the Department to use its existing authority under the APCA to develop a rulemaking to abate, control or limit CO_2 emissions from fossil fuel-fired electric power generators. This Executive Order also directed the Department to present a proposed rulemaking to the Board by July 31, 2020. On June 22, 2020, Governor Tom Wolf amended this Executive Order to extend the deadline to September 15, 2020. As directed by this Executive Order, this final-form rulemaking establishes a CO_2 budget consistent in stringency to that established by the participating states, provides for the annual or more frequent auction of CO_2 emissions allowances through a market-based mechanism, and is sufficiently consistent with the RGGI Model Rule such that CO_2 allowances may be traded with holders of allowances from other states.

Considering that this Commonwealth has the fifth leading CO_2 emitting electricity generation sector in the country, this final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG emissions. Although this final-form rulemaking will not solve global climate change, it will aid this Commonwealth in addressing its share of the impact, joining other states and countries that are addressing their own impacts. The statutory authority for this final-form rulemaking, the APCA, is built on a precautionary principle to protect the air

resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. To be proactive, this final-form rulemaking is needed to address this Commonwealth's contributions to climate change, particularly CO_2 emissions. The Board determined to address CO_2 emissions through a regional initiative because regional cap and trade programs have proven to be beneficial and cost-effective at reducing air pollutant emissions. In fact, this Commonwealth has and continues to participate in successful regional cap and trade programs.

History and success of this Commonwealth's participation in cap and trade programs

In the 1990 CAA Amendments, the United States Congress determined that the use of market-based principles, such as emissions banking and trading are effective ways of achieving emission reductions. See 42 U.S.C.A. §§ 7651-7651o. According to the EPA, emissions trading programs are best implemented when the environment and public health concerns occur over a relatively large geographic area and effectively designed emissions trading programs provide flexibility for individual emissions sources to tailor their compliance path to their needs. See generally, 63 FR 57356 (October 27, 1998). The EPA has also determined that reducing emissions using a market-based system provides regulated sources with the flexibility to select the most cost-effective approach to reduce emissions and has proven to be a highly effective way to achieve emission reductions, meet environmental goals, and improve human health. 63 FR at 57458. In contrast to traditional command and control regulatory methods that establish specific emissions limitations and technology use with limited or no flexibility, cap and trade programs harness the economic incentives of the market to reduce pollution. The Board has a decades-long history of promulgating regulations that have established this Commonwealth's participation in successful cap and trade programs.

Beginning in 1995, this Commonwealth participated in the first national cap and trade program in the United States, the Acid Rain Program, which was established under Title IV of the 1990 CAA Amendments and required, in part, major emission reductions of sulfur dioxide (SO_2) through a permanent cap on the total amount emitted by EGUs. See 24 Pa.B. 5899 (November 26, 1994) and 25 Pa. Code § 127.531 (relating to special conditions related to acid rain). For the first time, the Acid Rain Program introduced a system of allowance trading that used market-based incentives to reduce pollution. The Acid Rain Program reduced SO_2 emissions by 14.5 million tons (92%) from 1990 levels and 16.0 million tons (93%) from 1980 levels. Information related to the Acid Rain Program is available at https://www.epa.gov/airmarkets/progress. The undisputed success of achieving significant emission reductions in a cost-effective manner led to the application of the market-based cap and trade tool for other regional environmental problems.

From 1999 to 2002, this Commonwealth participated in the Ozone Transport Commission's (OTC) NO_x Budget Program, an allowance trading program designed to reduce summertime NO_x emissions from EGUs to reduce ground-level ozone, which included all the current states participating in RGGI. See 27 Pa.B. 5683 (November 1, 1997) and 25 Pa. Code §§ 123.101—123.121 (relating to NO_x Allowance Requirements). According to the OTC's NO_x Budget Program 1999—2002 Progress Report, NO_x Budget Program units successfully reduced ozone

season NO_x emissions in 2002 by nearly 280,000 tons, or about 60%, from 1990 baseline levels, achieving greater reductions than required each year of the program. The Progress Report is available on the EPA's webpage for the National Service Center for Environmental Publications, https://nepis.epa.gov. Based on the success of the OTC's NO_x Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NO_x cap and trade program under the NO_x SIP Call, which closely resembled the OTC NO_x Budget Program. 63 FR 57356. The EPA again noted the cost savings of achieving emissions reductions through trading. The EPA's regional NO_x cap and trade program was adopted by the Board on September 23, 2000 to reduce NO_x emissions Statewide. See 30 Pa.B. 4899 (September 23, 2000) and 25 Pa. Code Chapter 145, Subchapter A (relating to NO_x Budget Trading Program).

Beginning in 2009, the EPA's NO_x Budget Trading Program was replaced by the Clean Air Interstate Rule (CAIR) trading program, covering 28 eastern states, which required further summertime NO_x reductions from the power sector as well as SO_2 reductions. See 70 FR 25162 (May 12, 2005). The Board adopted the CAIR program in 2008. See 38 Pa.B. 1705 (April 12, 2008) and 25 Pa. Code Chapter 145, Subchapter D (relating to CAIR NO_x and SO_2 Trading Programs). Finally, in 2015, CAIR was replaced by the Cross-State Air Pollution Rule trading program.

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a cooperative regional market-based cap-and-trade program designed to reduce CO_2 emissions from fossil fuel-fired EGUs. RGGI is currently composed of eleven northeastern and Mid-Atlantic states, including Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and Virginia. Since its inception on January 1, 2009, RGGI has utilized a market-based mechanism to cap and cost-effectively reduce CO_2 emissions that cause climate change. Because CO_2 from large fossil fuel-fired EGUs is a major contributor to regional climate change, the participating states developed a regional approach to address CO_2 emissions. This regional approach resulted in a Model Rule applicable to fossil fuel-fired EGUs with a nameplate capacity equal to or greater than 25 MWe.

RGGI is implemented in the participating states through each state's independent CO_2 Budget Trading Program regulations, based on the Model Rule, which link together. It is also important to note that States do not execute a multistate agreement or compact to participate in RGGI, and States may withdraw from participation at any time. There is also no central RGGI authority as States jointly oversee the program. The key piece to becoming a "participating state," as the term is defined under § 145.302 (relating to definitions), is the establishment of a corresponding regulation as part of the CO_2 Budget Trading Program. As defined under § 145.302, the "CO_2 Budget Trading Program" is a multi-state CO_2 air pollution control and emissions reduction program established under this final-form rulemaking and corresponding regulations in other participating states as a means of reducing emissions of CO_2 from CO_2 budget sources. For this Commonwealth to participate in RGGI, the Board is promulgating this final-form rulemaking which is consistent with the Model Rule.

RGGI is a "cap and trade" program that sets a regulatory limit on CO_2 emissions from fossil fuel-fired EGUs and permits trading of CO_2 allowances to effect cost efficient compliance with

the regulatory limit. RGGI is also referred to as a "cap and invest" program, because unlike traditional cap and trade programs, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The first prong is a declining CO_2 emissions budget and the second prong involves investment of the proceeds resulting from the auction of CO_2 allowances to further reduce CO_2 emissions.

CO_2 emissions budget and CO_2 allowance budget

Each participating state establishes its own annual CO_2 emissions budget which sets the total amount of CO_2 emitted from fossil fuel-fired EGUs in a year. What is commonly referred to as the "RGGI cap" on emissions is a reference to the total of all the state CO_2 emissions budgets. This final-form rulemaking includes a declining annual CO_2 emissions budget, which starts at 78,000,000 tons in 2022 and ends at 58,085,040 tons in 2030. This is anticipated to reduce CO_2 emissions in this Commonwealth by 31% compared to 2019. The declining annual CO_2 emissions budget is equivalent to the CO_2 allowance budget, which is the number of CO_2 allowances available each year. A CO_2 allowance represents a limited authorization by the Department or a participating state under the CO_2 Budget Trading Program to emit up to one ton of CO_2. The number of CO_2 allowances available each year decreases along with the CO_2 emissions budget.

One of the benefits of participating in a regional market-based program is that CO_2 allowances are fungible across the participating states. This means that regulated sources within this Commonwealth may, at their option, purchase or sell CO_2 allowances with other regulated sources inside or outside of this Commonwealth. Although this Commonwealth has an established CO_2 allowance budget for each year, this Commonwealth's CO_2 allowances are available to meet the compliance obligations in any other participating state and vice versa at the option of those regulated sources. Therefore, CO_2 emissions from this Commonwealth's power sector are not "capped" by the CO_2 emissions budget, meaning they are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This provides additional compliance flexibility and the regional market assists in achieving least cost compliance for all participating states.

Authority to limit CO_2 emissions and to participate in RGGI through this final-form rulemaking

The Board has the authority to promulgate this final-form rulemaking under the APCA. Specifically, section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. The purpose of the APCA is expansive because it seeks "to protect the air resources of the Commonwealth to the degree necessary for the ... protection of public health, safety and well-being of its citizens ..." See 35 P.S. § 4002(a). When the APCA was enacted, the General Assembly was concerned with air pollution generally and that it be remedied no matter what the source. *Id.* This is shown by the broad scope of the definitions of "air contamination," "air pollution" and "air contamination source" under section 3 of the APCA (35 P.S. § 4003). The broad language in the APCA shows an over-all legislative policy to provide regulatory flexibility to the Board to address a pollutant like CO_2 proven to be inimical to public health and welfare and to be a key contributor to climate change. Therefore, this final-form rulemaking is consistent with the legislative intent and purpose under the APCA.

Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth, which is inclusive of controlling CO_2 pollution. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. Additionally, there is a significant body of scientific literature to show that CO_2 meets the definition of air pollution under the APCA. As mentioned previously, numerous sources, including the EPA, the Penn State University, the USGCRP and the IPCC, have confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO_2 is also a GHG and the largest contributor to climate change.

Section 5(a)(1) of the APCA also provides the Board with authority to regulate CO_2 emitted from fossil fuel-fired EGUs in this Commonwealth. Since the EGUs regulated under this final-form rulemaking emit CO_2, they fall within the definition of "air contamination source" under section 3 of the APCA, which is "[a]ny place, facility or equipment, stationary or mobile, at, from or by reason of which there is emitted into the outdoor atmosphere any air contaminant." As noted previously, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Accordingly, regulating CO_2 emissions from fossil fuel-fired EGUs is necessary to protect public health and welfare from harmful air pollution and to address climate change.

In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.*

As this final-form rulemaking would limit CO_2 pollution by regulating CO_2 emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

Furthermore, the auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the

authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA.

Under RGGI, regulated EGUs are required to purchase one CO_2 allowance per ton of CO_2 they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions are then provided back to the participating states. The purchase of CO_2 allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO_2 emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO_2 emissions from EGUs.

As provided under section 9.2(a) of the APCA (35 P.S. § 4009.2(a)), this Commonwealth's auction proceeds will be held in a subaccount within the Clean Air Fund, which is administered by the Department "for the use in the elimination of air pollution." Section 9.2(a) of the APCA authorizes the Department to establish separate accounts in the Clean Air Fund as may be necessary or appropriate to implement the requirements of the APCA. Under section 9.2(a) of the APCA, the Board was required to adopt a regulation for the management and use of the money in the Clean Air Fund. The Board adopted Chapter 143 (relating to disbursements from the Clean Air Fund) to provide for the monies paid into the Clean Air Fund to be disbursed at the discretion of the Secretary for use in the elimination of air pollution. See 25 Pa. Code § 143.1(a) (relating to general). Under § 143.1(b), the full and normal range of activities of the Department are considered to contribute to the elimination of air pollution, including purchase of contractual services and payment of the costs of a public project necessary to abate air pollution.

Lastly, Section 5(a)(1) of the APCA provides the Board with authority to establish a CO_2 Budget Trading Program through this final-form rulemaking. As mentioned previously, this Commonwealth has and continues to participate in cap and trade programs. Specifically, the Board promulgated the NO_x Budget Trading Program in Chapter 145, Subchapter A (relating to NO_x Budget Trading Program) and the CAIR NO_x and SO_2 Trading Programs in Chapter 145, Subchapter D (relating to CAIR NO_x and SO_2 Trading Programs). See 30 Pa.B. 4899 (September 23, 2000) and 38 Pa.B. 1705 (April 12, 2008). Although those cap and trade program regulations were promulgated in response to initiatives at the Federal level, both subchapters were promulgated under the broad authority of section 5(a)(1) of the APCA, as is this final-form rulemaking. The statutory authority granted to the Board under section 5(a)(1) of the APCA is broad related to the adoption of any rule or regulation for the "prevention, control, reduction and

abatement of air pollution." The comprehensive scope of this directive provides the Board with the discretion to promulgate a trading program to reduce CO_2 emissions from fossil fuel-fired EGUs in this Commonwealth.

Consistent with framework of the RGGI Model Rule

As mentioned previously, the participating states developed a Model Rule to use as the framework for each state's independent CO_2 Budget Trading Program regulation. The development of the RGGI Model Rule was supported by an extensive regional stakeholder process that engaged the regulated community, environmental nonprofits and other organizations with technical expertise in the design of cap and trade programs. The Board is familiar with the structure of the RGGI Model Rule, because it was drafted based on the language in the EPA's NO_x Budget Trading Program rule in 40 CFR Part 96 (relating to NO_x budget trading program and CAIR NO_x and SO_2 trading programs for state implementation plans), which the Board used as a model for Chapter 145, Subchapter A.

States that participate in RGGI develop regulations that are compatible with the RGGI Model Rule to ensure consistency among the individual programs. Key areas of compatibility include alignment of the main program elements, stringency of the CO_2 allowance budgets and consistency of regulatory language. This consistency is necessary to ensure the fungibility of CO_2 allowances across the participating states, which supports the regional trading of CO_2 allowances and the use of a CO_2 allowance issued in one participating state for compliance by a regulated source in another participating state.

This final-form rulemaking therefore adopts the main program elements of the RGGI Model Rule, including the definitions, applicability, standard regulatory requirements, monitoring and reporting requirements, the CO_2 Allowance Tracking System (COATS), the emissions containment reserve, the cost containment reserve and the CO_2 emissions offset project provisions. The CO_2 allowance budgets in this final-form rulemaking are sufficiently stringent to align with RGGI's goal of reducing CO_2 emissions by 30% from 2020 to 2030. This final-form rulemaking also contains regulatory language consistent with the RGGI, Inc. auction platform, the online platform used to sell CO_2 allowances. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO_2 Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc.

Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the Department's implementation of this final-form rulemaking.

Each participating state's regulation provides for the distribution of CO_2 allowances from its CO_2 allowance budget. The majority of CO_2 allowances are distributed at auction and each CO_2

allowance sold at auction returns proceeds from the sale to that state to invest in energy efficiency, renewable energy and GHG abatement programs. Some states have elected to designate a limited amount of CO_2 allowances to be "set-aside" in a designated account and distributed to advance individual state policy goals and objectives. Since this final-form rulemaking is consistent with the RGGI Model Rule, the Commonwealth's CO_2 allowances will have equal value to the CO_2 allowances held in the other participating states, meaning they may be freely acquired and traded across the region.

Although CO_2 allocation provisions may vary from state to state, to be consistent with the RGGI Model Rule each participating state allocates a minimum of 25% of its CO_2 allowance budget to a general account from which CO_2 allowances will be sold or distributed to provide funds for energy efficiency measures, renewable or noncarbon-emitting energy technologies, and CO_2 emissions abatement technologies, as well as programmatic costs. Consistent with the RGGI Model Rule, this final-form rulemaking establishes a general account from which CO_2 allowances will be sold or distributed, which is labeled as the Department's air pollution reduction account. Each year, the Department will allocate CO_2 allowances representing 100% of the tons of CO_2 emitted from the Commonwealth's CO_2 allowance budget to the air pollution reduction account, except for the CO_2 allowances that the Department has set aside for a designated purpose as discussed in the following section. CO_2 allowances in the air pollution reduction account will be sold or distributed to provide funds for use in the elimination of air pollution and programmatic costs.

Modifications from RGGI Model Rule

While this final-form rulemaking is sufficiently consistent with the Model Rule and corresponding regulations in the participating states, the Board, in the exercise of its own independent rulemaking authority, also accounts for the unique environmental, energy and economic intricacies of this Commonwealth. This provides the Board the flexibility to limit CO_2 emissions from fossil fuel-fired EGUs in a way that aligns with the other participating states, while tailoring this final-form rulemaking to this Commonwealth's energy markets. In this final-form rulemaking, the Board made modifications from the language in the Model Rule to include permitting requirements and definitions specific to this Commonwealth, as well as stylistic changes. The Board also made adjustments to the language, including the adjustment for banked allowances and control periods, to reflect the timing of this Commonwealth's participation in RGGI. In addition to these modifications, there are six main areas in which this final-form rulemaking differs from the Model Rule.

First, under § 145.306(b)(3) (relating to standard requirements), the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. The Board received several comments that requested monitoring of the air quality impacts of this final-form rulemaking and in particular an assessment of any impacts on environmental justice communities. The Department also heard concerns about potential impacts on environmental justice communities from members of EJAB. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this

Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

Second, under § 145.342(i) (relating to CO_2 allowance allocations), the Department will set aside 12,800,000 CO_2 allowances at the beginning of each year for waste coal-fired units located in this Commonwealth. The amount of the set aside increased in this final-form rulemaking from 9,300,000 CO_2 allowances at proposed to account for one of the waste coal-fired units remaining in operation and to provide additional compliance assistance. One waste coal-fired unit had originally indicated it was shutting down operations when the Department was developing the proposed rulemaking. Since that waste coal-fired unit will remain in operation, its legacy emissions are now included in this final-form rulemaking. Legacy emissions, as defined under § 145.302, for that waste coal-fired unit amount to 1.18 million tons of CO_2 or 1.18 million CO_2 allowances. The Department added the 1.18 million to the proposed set-aside amount of 9.3 million and further adjusted the value to provide additional compliance assistance. Given recent policy changes impacting the waste coal industry, including the recent legislative adjustment to Tier II of the Alternative Energy Portfolio Standards Act, the Department also made an adjustment in this final-form rulemaking to the definition of "legacy emissions." Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. Including a slightly higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses. The Department took into consideration all comments submitted pertaining to the waste coal set-aside and made the determination to maintain the set-aside provision, and make an adjustment to the definition of legacy emissions that was included in the proposed rulemaking. The Department made this determination because waste coal-fired units provide an environmental benefit of reducing the amount of waste coal piles in this Commonwealth.

Reducing waste coal piles is a significant environmental issue in this Commonwealth, because waste coal piles cause air and water pollution, as well as safety concerns. Waste coal-fired units burn waste coal to generate electricity, thereby reducing the size, number and impacts of these piles otherwise abandoned and allowed to mobilize and negatively impact air and water quality in this Commonwealth. In recent years, waste coal-fired units have struggled to compete in the energy market, due in part to low natural gas prices, and several units have shut down or announced anticipated closure dates. Given the environmental benefit provided, the Board determined that it is necessary to encourage owners or operators of waste coal-fired units to continue burning waste coal to generate electricity. This legacy environmental issue from this

Commonwealth's long history of coal mining further underscores why it is vital to not leave additional environmental issues, like climate change, for future generations to solve.

By providing a set aside, as opposed to an exemption, the CO_2 emissions from waste coal-fired units are included in this Commonwealth's CO_2 emissions budget and owners or operators of waste coal-fired units are still required to satisfy compliance of all the regulatory requirements in this final-form rulemaking. After reviewing the last 10 years of CO_2 emission data from waste coal-fired units, the Department determined that the CO_2 allowance set aside should be equal to the total of each waste coal-fired unit's highest year of CO_2 emissions from that 10-year period, referred to as "legacy emissions." That total is 12,800,000 tons of CO_2 emissions. Thus, the Department will set aside 12,800,000 CO_2 allowances annually. Each year, the Department will allocate the CO_2 allowances directly to the compliance accounts of the waste coal-fired units equal to the unit's actual emissions. However, if the waste coal-fired units emit over 12,800,000 tons of CO_2 emissions sector-wide in any year, then the units must acquire the remaining CO_2 allowances needed to satisfy their compliance obligation.

Third, under § 145.342(j), the Department will set aside CO_2 allowances for a strategic use allocation. By April 1 of each calendar year, the Department will allocate any undistributed CO_2 allowances from the waste coal set-aside to the strategic use set-aside account. Given the possibility that waste coal-fired units may emit less than 12.8 million tons of CO_2 each year, the Department could be left with undistributed CO_2 allowances. Under the strategic use set-aside, the Department will allocate these undistributed CO_2 allowances directly to eligible projects that result in GHG emission reductions. Eligible projects include those that implement energy efficiency measures, implement renewable or noncarbon-emitting energy technologies, or develop innovative greenhouse gas emissions abatement technologies. In response to comments received, in this final-form rulemaking, the Department adjusted the strategic use set-aside provision to further clarify the process to apply for CO_2 allowances. The owner of an eligible project will need to submit a complete strategic use application to the Department. At a minimum the application must specify how the project will result in GHG emission reductions, the number of CO_2 allowances requested, and the calculations and supporting data used to determine the emission reductions. After verifying that the information in the application is complete and accurate, the Department will determine the number of CO_2 allowances to distribute based on the emission reductions achieved. The Department will then distribute CO_2 allowances upon completion of the eligible project and will not award CO_2 allowances to an eligible project that is required under law, regulation, or court order.

Fourth, under § 145.342(k), the Department will set-aside CO_2 allowances for combined heat and power units. The proposed rulemaking included a set-aside provision for cogeneration units, which also covered combined heat and power (CHP) systems. In this final-form rulemaking, the Department changed the name of the set-aside from "cogeneration" to "combined heat and power." This change was made to clarify that it is CHP units that will be qualified for CO_2 allowances under the set-aside provision. A CHP unit is defined as an electric-generating unit that simultaneously produces both electricity and useful thermal energy. Due to the efficiency and environmental benefits that CHP units provide; the Department understands that it is beneficial to incentivize new CHP buildout in this Commonwealth. In addition, incentivizing future CHP units provides economic development benefits and can be a significant factor for manufacturers and other industrial facilities looking to expand operations within or to this

Commonwealth. In fact, the most recent Pennsylvania Climate Action Plan recognized the benefits and importance of incentivizing CHP. In the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a CHP unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO_2 emissions by an amount equal to the CO_2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances, then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60% on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility. Unlike the waste coal set-aside, the Department would not distribute CO_2 allowances directly to the unit, but rather retire CO_2 allowances on behalf of the unit to reduce its compliance obligation. The owner or operator of a unit requiring additional CO_2 allowances to satisfy the CO_2 requirements under § 145.306(c) shall transfer CO_2 allowances for compliance deductions to the compliance account of the unit.

Fifth, under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Board provides additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. A CHP unit that supplies less than 15% of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10% of annual gross

generation to the electric grid. The Board is including this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

Lastly, this final-form rulemaking includes §§ 145.401—145.409 (relating to CO_2 allowance auctions) outlining the procedure for auctioning CO_2 allowances, which is not contained in the RGGI Model Rule. Several participating states have also added auction procedure language to their CO_2 Budget Trading Program regulations or developed separate auction regulations. By including the auction procedure in this final-form rulemaking, the Board seeks to ensure that auction participants fully understand the auction process and the associated requirements.

In § 145.401 (relating to auction of CO_2 allowances), the Board includes a provision for the Department to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. As discussed further under section G, participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, the Board also states that if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

Compliance and the RGGI CO_2 Allowance Tracking System (COATS)

Under § 145.304 (relating to applicability), the owner or operator of a fossil-fuel-fired EGU with a nameplate capacity equal to or greater than 25 MWe that sends more than 10% of its annual gross generation to the electric grid will have a compliance obligation. These regulated EGUs are referred to as "CO_2 budget units" and a facility that includes one or more CO_2 budget units is a "CO_2 budget source," as defined under § 145.302. Under § 145.306, the owner or operator of each CO_2 budget source will be required to have a permit under Chapter 127 (relating to construction, modification, reactivation and operation of sources) which incorporates the requirements of the CO_2 Budget Trading Program. The owner or operator will be required to operate the CO_2 budget source and each CO_2 budget unit at the source in compliance with the permit.

Based on the most recent data from the EPA's Clean Air Market Division, the EIA and the Department's emission inventory, the Department estimates that as of the end of 2020, 63 CO_2

budget sources (facilities) with 150 CO_2 budget units would have a compliance obligation under this final-form rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the time this final-form rulemaking is implemented. The Department projects based on announced closures and future firm capacity builds that in 2022, there will be 66 CO_2 budget sources with 158 CO_2 budget units with a compliance obligation under this final-form rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99% of this Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking.

Within the participating states and under this final-form rulemaking, the owner or operator of a CO_2 budget unit must obtain one CO_2 allowance for each ton of CO_2 emitted from the CO_2 budget unit each year. The owner or operator may use a CO_2 allowance issued by any participating state to demonstrate compliance with any state's regulation, including this final-form rulemaking. RGGI operates on 3-year control periods for compliance, meaning full compliance is evaluated at the end of each 3-year control period. As described under § 145.306(c), at the end of a control period, the owner or operator is required as a permit condition to hold enough CO_2 allowances in their compliance account to cover the CO_2 budget source's CO_2 emissions during the period. The owner or operator must also show interim control period compliance during each of the first two calendar years of a control period. During each interim control period, the owner or operator must hold CO_2 allowances equal to 50% of CO_2 emissions in the compliance account for the CO_2 budget source. As outlined under § 145.355 (relating to compliance), at the end of the control period or interim control period, CO_2 allowances will be deducted from each CO_2 budget source's compliance account to cover each of the CO_2 budget unit's CO_2 emissions at the source for the control period or interim control period.

All owners or operators of CO_2 budget sources are required to open a compliance account in COATS to transfer and hold CO_2 allowances for compliance purposes. The Department will use COATS to determine compliance with this final-form rulemaking by comparing the covered emissions of a CO_2 budget source with the CO_2 allowances held in its compliance account. COATS is a publicly accessible platform that records and tracks data for each state's CO_2 Budget Trading Program, including the transfer of CO_2 allowances that are offered for sale by the participating states and purchased in the quarterly auctions. On the COATS web site, the public can view and download reports of RGGI program data and CO_2 allowance market activity. COATS is used to allocate, award and transfer CO_2 allowances, to certify and provide CO_2 allowances for compliance-related tasks, and to register and submit applications and reports for offset projects.

Under § 145.352 (relating to establishment of accounts), any person may apply to open a general account for the purpose of holding and transferring CO_2 allowances by submitting a complete application for a general account to the Department or its agent. A general account can be used for the receipt, transfer and banking of CO_2 allowances in COATS, but unlike a compliance account, it does not provide for the CO_2 allowance compliance deduction process outlined in this final-form rulemaking. A compliance account is associated with an electric generation facility regulated under a state CO_2 Budget Trading Program, a CO_2 budget source.

These accounts are used for compliance with the requirements of each state's CO_2 Budget Trading Program. Only one compliance account will be assigned to each CO_2 budget source. An applicant must have either a general or compliance account to participate in CO_2 allowance auctions. CO_2 allowances can be "banked" meaning they may be held for future compliance as they have no expiration date.

CO_2 allowances may be acquired through purchases in quarterly multistate auctions, through secondary markets, or by obtaining CO_2 offset allowances. Once a CO_2 allowance is purchased in an auction, it can then be resold in the secondary market. The secondary market assists with compliance by allowing CO_2 allowances to be traded in between quarterly auctions. As previously mentioned, every auction is overseen by an independent market monitor. Trading in the secondary market is also monitored by an independent market monitor to identify anticompetitive conduct. The quarterly multistate auction process continues each consecutive year of the CO_2 Budget Trading Program with fewer CO_2 allowances distributed into the auctions by the participating states each year.

As provided under section 4 of the Environmental Hearing Board Act (35 P.S. § 7514) persons adversely affected by a final Department action have the opportunity to appeal that action to the Environmental Hearing Board.

Offsets

As an additional compliance option under this final-form rulemaking, owners or operators of CO_2 budget sources may complete an offset project to reduce or avoid atmospheric loading of CO_2 or CO_2 equivalent (CO_2e) emissions. CO_2e refers to the quantity of a given GHG, other than CO_2, multiplied by its global warming potential. By completing an offset project, the owner or operator will generate CO_2 offset allowances which can be used to offset a portion of the CO_2 budget source's emissions. A CO_2 offset allowance is equivalent to a CO_2 allowance, however a CO_2 offset allowance represents a project-based GHG emission reduction outside of the electric generation sector. This project must be in addition to not in place of an existing legal requirement. Under § 145.355(a)(3), consistent with the RGGI Model Rule and the regulations in the participating states, the number of CO_2 offset allowances available to be deducted for compliance purposes may not exceed 3.3% of the CO_2 budget source's CO_2 emissions for a control period or interim control period.

As described under § 145.395 (relating to CO_2 emissions offset project standards), the three eligible offset categories include landfill methane capture and destruction projects, projects that sequester carbon due to reforestation, improved forest management or avoided conversion, and projects that avoid methane emissions from agricultural manure management operations. Each of the three offset categories are designed to further reduce or sequester emissions of CO_2 or methane within the northeast region. In the RGGI Model Rule, the participating states cooperatively developed prescriptive regulatory requirements for each of the offset categories that have been incorporated into this final-form rulemaking. These requirements ensure that awarded CO_2 offset allowances represent CO_2e emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent.

Under § 145.393 (relating to general requirements), offset projects must be located in this Commonwealth or partly in this Commonwealth and partly within one or more of the participating states, provided that the majority of the CO_2e emission reductions or carbon sequestration occurs in this Commonwealth. Massachusetts, New Hampshire, Rhode Island and Virginia have determined not to award CO_2 offset allowances, but CO_2 budget sources located within those states may use CO_2 offset allowances awarded by a participating state, including this Commonwealth. By recognizing CO_2e emission reductions and carbon sequestration outside the electric generation sector and this Commonwealth's CO_2 emissions budget, offset projects provide compliance flexibility and create opportunities for low-cost emission reductions and other co-benefits across various sectors. Thus, including offset projects in this final-form rulemaking provides two crucial benefits, an additional compliance option for owners or operators and the potential for this Commonwealth to further reduce GHG emissions.

Auction proceeds

The auction proceeds are an integral part to carrying out the purpose of this final-form rulemaking, which is to reduce anthropogenic emissions of CO_2, a greenhouse gas, from CO_2 budget sources in a manner that is protective of public health, welfare and the environment. By requiring the attainment of CO_2 allowances, this final-form rulemaking establishes a monetary obligation per ton of CO_2 emitted from a CO_2 budget source. The value of CO_2 allowances is used to further support the CO_2 Budget Trading Program and reduce GHG emissions and any associated costs related to achieving the emission reduction goals. The CO_2 allowances purchased in the multistate auctions generate proceeds that are provided back to the participating states, including this Commonwealth, for investment in initiatives that will further reduce CO_2 emissions. The fee amounts generated each year is a function of the CO_2 allowance budget and the CO_2 allowance price. Each participating state determines how best to invest auction proceeds to provide public health benefits and further reduce GHG emissions. Historically, RGGI-funded programs, including energy efficiency, clean and renewable energy, GHG abatement and direct bill assistance programs, have saved consumers money and helped support businesses, all with a net positive economic impact. The investment of auction proceeds is discussed further under section G.

Benefits

In addition to decreasing CO_2 emissions and addressing this Commonwealth's contribution to regional climate change impacts, this final-form rulemaking would provide numerous co-benefits to public health and welfare and the environment. The co-benefits include job creation and worker training, decreased incidences of asthma, respiratory illness and hospital visits, avoidance of premature deaths, avoidance of lost work and school days due to illness and future electric bill savings. This Commonwealth will also see a decrease in harmful NO_x, SO_2 and particulate matter (PM) emissions, as well as ground level ozone pollution. This will particularly benefit those most often impacted by marginal air quality, such as low income and environmental justice communities. Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from the novel coronavirus (COVID-19). As such, reductions in CO_2 emissions are even more significant now more than ever before. The COVID-19 pandemic has resulted in a renewed focus on climate change, local air quality impacts, and opportunities for

economic development, all areas where RGGI participation can provide value. The benefits of this final-form rulemaking are discussed further under section G.

RGGI provides regulatory certainty

This final-form rulemaking provides regulatory certainty for CO_2 budget sources in this Commonwealth. Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO_2 allowance prices are predictable. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the Cost Containment Reserve (CCR) and Emissions Containment Reserve (ECR). The CCR process triggers additional CO_2 allowances to be offered for sale in the case of higher than projected emissions reduction costs. Similarly, states implementing the ECR, including this Commonwealth, will withhold CO_2 allowances from the auction to secure additional emissions reductions if prices fall below the established trigger price, so that the ECR will only trigger if emission reduction costs are lower than projected. This provides predictability in terms of the cost of compliance for covered entities. CO_2 allowances may also be purchased through the secondary market when costs are low and held for future compliance years.

Public outreach

As required under the Regulatory Review Act (RRA) (71 P.S. §§ 745.1—745.15) and further emphasized by Executive Order 2019-07, the Department conducted a robust public outreach effort including the business community, energy producers, energy suppliers, organized labor, environmental groups, low-income and environmental justice advocates and others to ensure that the development and implementation of this program results in reduced emissions, economic gains and consumer savings. The Department, working with the Public Utility Commission (PUC), engaged with PJM Interconnection to promote the integration of the CO_2 Budget Trading program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage. The Department also met with various stakeholders to receive additional input on this final-form rulemaking on numerous occasions throughout the development process. In particular, the Department met with environmental groups, residents, businesses, legislators, owners and operators of affected sources, industry groups and environmental justice stakeholders during the development of this final-form rulemaking.

Additionally, the Department consulted with the Air Quality Technical Advisory Committee (AQTAC), the Citizens Advisory Council (CAC), the Small Business Compliance Advisory Committee (SBCAC), and the Environmental Justice Advisory Board (EJAB) throughout the development of this final-form rulemaking.

Air Quality Technical Advisory Committee (AQTAC)

AQTAC was established under section 7.6 of the APCA (35 P.S. § 4007.6) to provide technical advice at the request of the Department on policies, guidance and regulations. On December 12, 2019, the Department presented concepts to AQTAC on a potential rulemaking to participate in RGGI. The Department returned to AQTAC on February 13, 2020, to discuss the

preliminary draft proposed Annex A. At the April 16, 2020, AQTAC meeting, the Department provided a brief update on the development of the draft proposed rulemaking. In response to requests from committee members for more opportunities to learn about the CO_2 Budget Trading Program, on April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The meeting was held by means of a webinar and over 225 members of the public were able to listen to the modeling results. Individuals interested in hearing the modeling results can also watch the meeting at any time through a link on the Department's web site.

On May 7, 2020, the draft proposed rulemaking was presented to AQTAC for review and technical advice before the Department moved the draft proposed rulemaking forward to the Board for consideration. The meeting was held by means of a webinar and over 200 members of the public had the opportunity to listen to the discussion and to request to provide comments. The AQTAC members were divided on whether to submit a formal letter of concurrence on the draft proposed rulemaking and ultimately declined to do so without a majority decision.

On April 8, 2021, the Department presented an update on this final-form rulemaking to AQTAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 17, 2021, at a special AQTAC meeting, the Department presented this final-form rulemaking and updated power sector modeling results. After the Department answered the members' remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. The supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

The opportunity to provide public comment on the draft proposed rulemaking to AQTAC members was provided on three occasions, at the February 13, 2020, April 16, 2020, and May 7, 2020, AQTAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to AQTAC members was provided on April 8, 2021, and May 17, 2021.

Citizens Advisory Council (CAC)

Under section 7.6 of the APCA, the Department is required to consult with CAC in the development of the Department's regulations and State Implementation Plans. On November 19, 2019, the Department presented concepts to CAC on a potential rulemaking to participate in RGGI. The Department returned to CAC on February 18, 2020, for an informational presentation on a preliminary draft proposed Annex A. On April 23, 2020, the Department presented on and provided the modeling results associated with the draft proposed rulemaking in a Special Joint Informational Meeting of AQTAC and CAC. The Department also conferred with CAC's Policy and Regulatory Oversight Committee concerning the draft proposed rulemaking on May 8, 2020. At the May 19, 2020, CAC meeting, the draft proposed rulemaking was presented to CAC for review before the Department moved the draft proposed rulemaking forward to the Board for consideration. The CAC members ultimately declined to submit a formal letter of concurrence with the Department's recommendation to move the draft proposed rulemaking forward to the Board for consideration.

On April 20, 2021, the Department presented an update on this final-form rulemaking to CAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to CAC. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. Again, the supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

The opportunity to provide public comment on the draft proposed rulemaking to CAC members was provided on three occasions, at the November 19, 2019, February 18, 2020, and May 19, 2020, CAC meetings. Additionally, the opportunity to provide public comment on this final-form rulemaking to CAC members was provided on April 20, 2021, and May 19, 2021.

Small Business Compliance Advisory Committee (SBCAC)

Under section 7.8 of the APCA (35 P.S. § 4007.8), the SBCAC is required to review and advise the Department on rulemakings which affect small business stationary sources. The Department provided informational presentations on the draft proposed rulemaking to SBCAC on January 22, 2020, and April 22, 2020. On July 22, 2020, the Department presented the draft proposed rulemaking to SBCAC for review and advice on the potential small business stationary source impact of the draft proposed rulemaking. During the presentation, the Department mentioned that it had estimated that ten small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with the draft proposed rulemaking. Of those ten sources, seven were estimated to be waste coal-fired power plants. The Department also mentioned that it had included in the draft proposed rulemaking a CO_2 allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. The SBCAC ultimately voted not to concur with the Department's recommendation to move the draft proposed rulemaking forward to the Board.

On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to SBCAC. During the presentation, the Department mentioned that it had estimated that now twelve small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with this final-form rulemaking. Of those twelve sources, eight were estimated to be waste coal-fired power plants. The Department also mentioned that, in the final-form rulemaking, it had retained the CO_2 allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. After the Department answered the members' remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. In light of the SBCAC vote in opposition to the draft proposed rulemaking, the members' support of this final-form rulemaking is particularly significant.

Environmental Justice Advisory Board (EJAB)

Additionally, the Department provided an informational presentation on the draft proposed rulemaking to EJAB on May 21, 2020, and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group throughout 2020. On July 16, 2020, the Department participated in a discussion with EJAB members centered around recommendations to the Department regarding RGGI. This conversation continued at the August 11, 2020, meeting and resulted in recommendations shared with the Department regarding RGGI program implementation in addition to review and discussion of the draft RGGI equity principles, developed in conjunction with the Advisory Committee. Discussion and consultation with EJAB regarding the draft RGGI Equity Principles continued during the November 17, 2020, meeting.

On May 20, 2021, the Department provided a presentation on the final rulemaking and updated power sector modeling, specifically highlighting environmental justice and equity concerns and how these were addressed in the rulemaking and would be addressed in an investment plan. The Delta Institute, with whom the Department collaborated to conduct outreach and research in communities impacted by this final-form rulemaking, also presented their findings and recommendations for the Department's efforts in affected communities. The Department also provided an opportunity to present public comments at this meeting. While EJAB did not vote on the draft proposed rulemaking in 2020, the EJAB members decided to vote unanimously in support of the Department moving this final-form rulemaking forward to the Board.

Other Advisory Committees

The Department also provided informational presentations on the draft proposed rulemaking to the Climate Change Advisory Committee on February 25, 2020, and the Oil and Gas Technical Advisory Board on May 20, 2020. Additionally, the Department provided updates to these committees on this final-form rulemaking.

E. *Summary of Final-Form Rulemaking and Changes from Proposed to Final-Form Rulemaking*

General provisions

§ 145.301. Purpose

This section establishes the purpose of the CO_2 Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

§ 145.302. Definitions

This section establishes definitions for the following terms: "account number," "acid rain emissions limitation," "acid rain program," "adjustment for banked allowances," "administrator," "agent," "air pollution reduction account," "allocate or allocation," "allocation year," "allowance

auction or auction," "ascending price, multiple-round auction," "attribute," "attribute credit," "automated data acquisition and handling system," "award," "beneficial interest," "bidder," "boiler," "CEMS—continuous emission monitoring system," "COATS—CO_2 allowance tracking system," "COATS account," "CO_2 allowance," "CO_2 allowance auction or auction," "CO_2 allowance deduction or deduct CO_2 allowances," "CO_2 allowances held or hold CO_2 allowances," "CO_2 allowance price," "COATS account," "CO_2 allowance transfer deadline," "CO_2 authorized account representative," "CO_2 authorized alternate account representative," "CO_2 budget emissions limitation," "CO_2 budget permit condition," "CO_2 budget source," "CO_2 Budget Trading Program," "CO_2 budget unit," "CO_2 CCR allowance or CO_2 cost containment reserve allowance," "CO_2 CCR trigger price or CO_2 cost containment reserve trigger price," "CO_2 ECR allowance or CO_2 emissions containment reserve allowance," "CO_2 ECR trigger price or CO_2 emissions containment reserve trigger price," "CO_2e—CO_2 equivalent," "CO_2 offset allowance," "combined heat and power set-aside account," "combined heat and power unit," "combined cycle system," combustion turbine," "commence commercial operation," "commence operation," "compliance account," "control period," "decay rate," "descending price, multiple-round auction," "discriminatory price, sealed-bid auction," "electronic submission agent," "eligible biomass," "excess emissions," "excess interim emissions," "general account," "GWP—global warming potential," "gross generation," "interim control period," "legacy emissions," "life-of-the-unit contractual arrangement," "maximum potential hourly heat input," "minimum reserve price," "monitoring system," "nameplate capacity," "notice of CO_2 allowance auction," "operator," "owner," "participating state," "Pennsylvania CO_2 budget trading program adjusted budget," "Pennsylvania CO_2 budget trading program base budget," "qualified participant," "receive or receipt of," "recordation, record or recorded," "reserve price," "reviewer," "source," "strategic use set-aside account," "ton or tonnage," "total useful energy," "undistributed CO_2 allowance," "uniform-price, sealed-bid auction," "unit," "unit operating day," "unsold CO_2 allowance," "useful thermal energy," "waste coal," "waste coal-fired," and "waste coal set-aside account." These defined terms are used in the substantive provisions of Subchapter E.

This section is amended at final-form rulemaking to modify the definition of "allocate or allocation" by replacing the term "cogeneration" with "combined heat and power." The Board also modified the definition of "cogeneration set-aside account" at final-form to change it to "combined heat and power set-aside account" and to reflect the changes made to the combined heat and power set-aside provision under § 145.342(k). The Board also modified the definition of "cogeneration unit" to change it to "combined heat and power unit" and to clarify the production requirements for the electric-generating unit. The Board modified the definition of "control period" to remove the part of the definition that indicates when Pennsylvania will participate in the CO_2 Budget Trading Program. The Board modified the definition of "legacy emissions" to remove the language related to the 5-year period beginning January 1, 2015, and replace it with the 10-year period beginning January 1, 2010. The Board modified the definition of "minimum reserve price" by removing the price for calendar year 2020 and adding the price for calendar year 2021. The Board modified the definition of "strategic use set-aside account" to reflect the changes made to the strategic use set-aside provision under § 145.342(j). The Board also added a definition for the term "total useful energy." The Board slightly modified the definition of "undistributed CO_2 allowance" to reflect the proper verb tense. The Board modified the definition of "useful thermal energy" to add that the energy may come in the form of air. The Board modified the definition of "waste coal" to indicate that the term "waste coal" is defined

within the definition of "alternative energy sources" under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2).

§ 145.303. Measurements, abbreviations and acronyms

This section establishes the measurements, abbreviations and acronyms used in Subchapter E.

No change is made to this section from proposed to final-form rulemaking.

§ 145.304. Applicability

This section establishes that this final-form rulemaking would apply to the owner or operator of a CO_2 budget unit that, at any time on or after January 1, 2005, served or serves an electricity generator with a nameplate capacity equal to or greater than 25 MWe. A CO_2 budget source is any source that includes one or more CO_2 budget unit.

This section is amended at final-form rulemaking to remove the provision under subsection (a) indicating that applicable CO_2 budget units are in operation at any time on or after January 1, 2005 in response to comments that the date is unnecessary and may cause confusion.

§ 145.305. Limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions

This section establishes a limited exemption as well as compliance requirements for a CO_2 budget source that has a permit issued by the Department containing a condition restricting the supply of the CO_2 budget unit's annual electrical output to the electric grid to no more than 10% of the annual gross generation of the unit, or restricting the supply less than or equal to 15% of its annual total useful energy to any entity other than the industrial, institutional or commercial facility to which the CO_2 budget source is interconnected.

This section is amended at final-form rulemaking to remove the language under subsection (a) indicating that the interconnected facility has to be a manufacturing facility and to instead broaden the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. This amendment was made based on comments received that the prior exemption language was too narrow. This section is also amended to replace the January 1, 2022 commencement dates under subsection (c)(5) with an editor's note indicating that the commencement date shall be January 1, 2022, or the date of publication of the final-form rulemaking in the *Pennsylvania Bulletin*, whichever is later.

§ 145.306. Standard requirements

This section establishes the standard permit, monitoring, CO_2, excess emissions and recordkeeping and reporting requirements. This section also proposes to establish liability for the CO_2 authorized account representative and the owner or operator of a CO_2 budget source or CO_2 budget unit.

This section is amended at final-form rulemaking to add a provision under subsection (b)(3) for the Department to use the emissions measurements recorded and reported under Article III to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will publish notice of the availability of a report of the emissions measurements and the determination in the *Pennsylvania Bulletin* on an annual basis, including the baseline air emissions data and the annual emissions measurements. This provision was added in response to comments received recommending that the Department ensure that this final-form rulemaking does not disproportionately impact environmental justice and low-income communities in this Commonwealth.

This section is also amended to replace the January 1, 2022 start date under subsection (c) for CO_2 budget units to be subject to the CO_2 requirements with an editor's note indicating that the start date will either be January 1, 2022, or the first day of the next calendar quarter following the date of publication of the final-form rulemaking in the *Pennsylvania Bulletin*, whichever is later.

§ 145.307. Computation of time

This section establishes the computation of any time period scheduled under the CO_2 Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

CO_2 authorized account representative for a CO_2 budget source

§ 145.311. Authorization and responsibilities of the CO_2 authorized account representative

This section establishes the authorization and responsibilities of the CO_2 authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.312. CO_2 authorized alternate account representative

This section establishes the requirements for the designation of no more than one CO_2 authorized alternate account representative to act on behalf of the CO_2 authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.313. Changing the CO_2 authorized account representative and the CO_2 authorized alternate account representative; changes in the owner or operator

This section establishes the process and requirements for changing the CO_2 authorized account representative or the CO_2 authorized alternate account representative. This section also proposes to establish the process and requirements for changes in the owner or operator.

No change is made to this section from proposed to final-form rulemaking.

§ 145.314. Account certificate of representation

This section establishes the elements of a complete account certificate of representation for a CO_2 authorized account representative or a CO_2 authorized alternate account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.315. Objections concerning the CO_2 authorized account representative

This section establishes the procedure for objections concerning the CO_2 authorized account representative.

No change is made to this section from proposed to final-form rulemaking.

§ 145.316. Delegation of authority to make electronic submissions and review information in COATS

This section establishes a provision for a CO_2 authorized account representative, or a CO_2 authorized alternate account representative to delegate their authority to make an electronic submission in COATS.

No change is made to this section from proposed to final-form rulemaking.

Permits

§ 145.321. General requirements for a permit incorporating CO_2 Budget Trading Program requirements

This section establishes the requirement for each CO_2 budget source to have a permit issued under Chapter 127 that incorporates the CO_2 Budget Trading Program requirements.

No change is made to this section from proposed to final-form rulemaking.

§ 145.322. Submission of an application for a new, renewed or modified permit incorporating CO_2 Budget Trading Program requirements

This section establishes the process and deadlines for the CO_2 authorized account representative to submit a complete permit application to the Department.

No change is made to this section from proposed to final-form rulemaking.

§ 145.323. Contents of an application for a permit incorporating CO_2 Budget Trading Program requirements

This section establishes the required contents of a complete permit application.

No change is made to this section from proposed to final-form rulemaking.

Compliance certification

§ 145.331. Compliance certification report

This section establishes the requirement for a CO_2 authorized account representative of a CO_2 budget source to submit to the Department a compliance certification report for each control period. The section proposes to include the required contents of the report and compliance certification.

No change is made to this section from proposed to final-form rulemaking.

§ 145.332. Department action on compliance certifications

This section establishes a provision for the Department or its agent's review of compliance certifications, the ability to conduct independent audits of submissions and to deduct or transfer CO_2 allowances based on the information in the compliance certification.

No change is made to this section from proposed to final-form rulemaking.

CO_2 allowance allocations

§ 145.341. Pennsylvania CO_2 Budget Trading Program base budget

This section establishes the Pennsylvania CO_2 Budget Trading Program declining base budget for the years 2022 through 2030 and each succeeding calendar year. For example, for 2022, if Pennsylvania is a participating state on January 1, 2022, the Pennsylvania CO_2 Budget Trading Program base budget is 78,000,000 tons. By 2030 and each succeeding calendar year, the Pennsylvania CO_2 Budget Trading Program base budget is 58,085,040 tons.

This section was amended at final-form rulemaking to add quarterly provisions under subsection (a) for the 2022 Pennsylvania CO_2 Budget Trading Program Base Budget if Pennsylvania is a participating state after January 1, 2022. If Pennsylvania is a participating state after January 1, 2022, but before or on April 1, 2022, then the Pennsylvania CO_2 Budget Trading Program Base Budget is 57,954,000 Tons. If Pennsylvania is a participating state after April 1, 2022, but before or on July 1, 2022, then the Pennsylvania CO_2 Budget Trading Program Base Budget is 40,716,000 Tons. If Pennsylvania is a participating state after July 1, 2022, but before or on October 1, 2022, then the Pennsylvania CO_2 Budget Trading Program Base Budget is 18,564,000 Tons.

§ 145.342. CO_2 allowance allocations

Subsection (a) establishes that the Department will allocate CO_2 allowances representing 100% of the tons for each allocation year from the Pennsylvania CO_2 Budget Trading Program base budget to the air pollution reduction account, less those allowances set aside each allocation year.

Subsection (b) establishes the Department's set-aside accounts for waste coal, strategic use and combined heat and power. Subsection (b) was amended at final-form rulemaking to replace the term "cogeneration" with "combined heat and power" to account for the name change of the set-aside account under § 145.342(k).

Subsection (c) establishes the Pennsylvania CO_2 Budget Trading Program adjusted budget for each allocation year. Subsection (c) was amended at final-form rulemaking to clarify that the provision is applicable to each allocation year and to remove the language distinguishing allocation year 2022.

Subsection (d) establishes the CCR allocation and the process by which the Department will allocate CO_2 CCR allowances, separate from and additional to the Pennsylvania CO_2 Budget Trading Program base budget to the air pollution reduction account.

Subsection (e) establishes the emissions containment reserve (ECR) and the process by which the Department will convert and transfer any CO_2 allowances that have been withheld from any auction into the Pennsylvania ECR account.

Subsection (f) establishes a provision for the Department to determine whether to make an adjustment for banked allowances and the formula to be used.

Subsection (g) establishes a provision for the Department to establish the Pennsylvania CO_2 Budget Trading Program adjusted budget for an allocation year and the formula to be used.

Subsection (h) establishes a provision to require the Department to publish notice in the *Pennsylvania Bulletin* of the CO_2 Budget Trading Program adjusted budget for the allocation year, if the Department determines to adjust the budget for banked allowances.

Subsection (i) establishes the process for the waste coal set-aside allocation, including the establishment of a general account, allowance transfers, compliance allocation, an exception or exceedance of legacy emissions or 12,800,000 tons during a calendar year, and the set-aside termination. This subsection applies to waste coal-fired units located in this Commonwealth that commenced operation on or before the effective date of this final-form rulemaking, that are subject to the CO_2 Budget Trading Program requirements.

Subsection (i) was amended at final-form rulemaking to clarify that the allowance transfer and compliance allocation under subsection (i)(3) and (i)(4) occur each calendar year except for 2022. This subsection was also amended to increase the total amount of legacy emissions under subsection (i)(5) from 9,300,000 tons on proposed to 12,800,000 tons on final-form rulemaking.

This amendment was made due to the changes to the definition of legacy emissions under § 145.301. This amount better reflects the operation levels of the waste coal-fired units in this Commonwealth and accounts for the CO_2 emissions from an additional waste coal-fired unit in the calculation for the total amount of legacy emissions.

Subsection (j) establishes the process for the strategic use set-aside allocation, including the establishment of a general account, allowance transfers, allocation to eligible projects, the strategic use application, CO_2 allowance determination, general requirements, use of CO_2 allowances, and the transfer or retirement of CO_2 allowances. The strategic use set-aside allocation will consist of undistributed CO_2 allowances from the waste coal set-aside account.

Subsection (j) was amended at final-form rulemaking to clarify the allocation of CO_2 allowances to eligible projects under subsection (j)(3) by adding a requirement for eligible projects to be located in Pennsylvania and result in a GHG emission reduction benefit. The Board also removed language under subsection (j)(3)(i)-(iii) pertaining to the allocation to eligible projects for clarification purposes because the language was unnecessary and could cause confusion. Subsection (j) was also amended at final-form rulemaking to add the process for a strategic use application under subsection (j)(4). The Board clarified that owners of eligible projects must submit an application that includes at a minimum the information required by the Department. This includes documentation that the project will result in GHG emission reductions, identification of the general account, specification of the number of CO_2 allowances requested, and the calculations and supporting data used to determine the GHG emission reductions. Subsection (j) was also amended at final-form rulemaking to add the process for the final CO_2 allowance determination by the Department, general requirements for eligibility, the use of CO_2 allowances by the owner of an eligible project, and the transfer or retirement of CO_2 allowances at the end of each control period under subsection (j)(5)—(8).

Subsection (k) establishes the process for the combined heat and power set-aside allocation, including applicability, the establishment of a general account, the CO_2 allowance retirement, the required CO_2 allowance retirement application, the CO_2 allowance retirement determination, and the retirement and transfer of CO_2 allowances.

Subsection (k) was amended at final-form rulemaking to change the name of the set-aside from "cogeneration" to "combined heat and power." This change was made to clarify that it is combined heat and power units that will be qualified for CO_2 allowances under the set-aside provision. The term "cogeneration" could have included units that are less efficient and environmental beneficial than the narrower category of "combined heat and power" units that the Department intended to cover under the set aside provision. The Board also clarified under subsection (k)(1) that for a unit to be applicable, it must be located in Pennsylvania and subject to the CO_2 Budget Trading Program requirements in this final-form rulemaking.

Subsection (k) was also amended at final-form rulemaking to include two options under subsection (k)(3) for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first option, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing useful thermal energy and electricity during each allocation year. Under the second option, which was included in the proposed rulemaking,

applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year.

As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Board added in this final-form rulemaking under subsection (k)(4) that if the unit is requesting total retirement of CO_2 allowances, the unit must submit an application including documentation that the useful thermal energy is at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60% on an annual basis. In this final-form rulemaking, the Board included calculations for a unit to determine the percentage of useful thermal and energy and the percentage of overall efficiency. The Board also added in this final-form rulemaking under subsection (k)(4) that if the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility. In this final-form rulemaking, the Board also included language under subsection (k)(5) indicating that it will retire CO_2 allowances on behalf of the units based on the satisfaction of the application requirements. The Board also added in this final-form rulemaking under subsection (k)(5) that the owner or operator of a unit requiring additional CO_2 allowances to satisfy the CO_2 requirements shall transfer CO_2 allowances for compliance deductions to the compliance account of the unit. Lastly, the Board added under subsection (k)(6) that it will retire CO_2 allowances from the set-aside account in an amount equal to the determination for each unit at the end of each interim control period, in addition to the end of each control period.

§ 145.343. Distribution of CO_2 allowances in the air pollution reduction account

This section establishes a description for how the Department will distribute CO_2 allowances held in the air pollution reduction account. With the exception of CO_2 allowances held in a set-aside account, the Department will make available all CO_2 allowances for purchase or auction each allocation year. The proceeds of the auction will be used in the elimination of air pollution in accordance with the APCA and Chapter 143 and for programmatic costs associated with the CO_2 Budget Trading Program.

This section was amended at final-form rulemaking to replace the term "cogeneration" under subsections (a) and (d) with the term "combined heat and power" to account for the name change of the set-aside account under § 145.342(k).

CO_2 allowance tracking system

§ 145.351. CO_2 Allowance Tracking System (COATS) accounts

This section establishes a description for the nature and function of compliance and general accounts. Compliance accounts are only for CO_2 budget sources, while any person may have a general account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.352. Establishment of accounts

This section establishes a provision for the establishment of a compliance account by the Department or its agent upon receipt of a complete account certificate of representation. This proposed section also provides for any person to apply to open a general account by submitting a complete application to the Department or its agent that includes the required contents listed in this proposed section. This proposed section establishes the requirements for the authorization of a CO_2 authorized account representative, changing a CO_2 authorized account representative or a CO_2 authorized alternate account representative, changes in persons with ownership interest, objections concerning a CO_2 authorized account representative, delegation by a CO_2 authorized account representative and a CO_2 authorized alternate account representative, and account identification.

No change is made to this section from proposed to final-form rulemaking.

§ 145.353. COATS responsibilities of CO_2 authorized account representative and CO_2 authorized alternate account representative

This section establishes a provision that allows submissions to the Department or its agent pertaining to a COATS account to be only submitted by the CO_2 authorized account representative or CO_2 authorized alternate account representative for the account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.354. Recordation of CO_2 allowance allocations

This section establishes the deadlines for the Department or its agent to record and assign a serial number to the CO_2 allowances allocated for the air pollution reduction account, the waste coal set-aside account, the strategic use set-aside account and the cogeneration set-aside account.

This section was amended at final-form rulemaking to add under subsection (a) that the recordation of CO_2 allowances allocated for the air pollution reduction account will occur by January 1 of each calendar year except for 2022. This section was also amended at final-form rulemaking to replace the term "cogeneration" under subsection (b) with the term "combined heat and power" to account for the name change of the set-aside account under § 145.342(k).

§ 145.355. Compliance

This section establishes the requirements for allowances available for compliance deduction, deductions for compliance, allowance identification, deductions for excess emissions, recordation of deductions and action by the Department on submissions.

No change is made to this section from proposed to final-form rulemaking.

§ 145.356. Banking

This section establishes a provision to allow a CO_2 allowance that is held in a compliance account or a general account to be banked or in other words to remain in the account until the CO_2 allowance is deducted or transferred.

No change is made to this section from proposed to final-form rulemaking.

§ 145.357. Account error

This section establishes a provision to allow the Department or its agent to correct and notify a CO_2 authorized account representative of an error in a COATS account.

No change is made to this section from proposed to final-form rulemaking.

§ 145.358. Closing of general accounts

This section proposes to allow the CO_2 authorized account representative of a general account to instruct the Department or its agent to close a general account and for a general account that shows no activity for 1 year or more and does not contain any CO_2 allowances to be closed. This proposed section also describes the notification procedure for the closure.

No change is made to this section from proposed to final-form rulemaking.

CO_2 allowance transfers

§ 145.361. Submission of CO_2 allowance transfers

This section establishes the requirements for a CO_2 authorized account representative to submit a CO_2 allowance transfer to the Department for recordation.

No change is made to this section from proposed to final-form rulemaking.

§ 145.362. Recordation

This section establishes the requirements and process for the Department to record a CO_2 allowance transfer.

No change is made to this section from proposed to final-form rulemaking.

§ 145.363. Notification

This section establishes the processes for notification of recordation and non-recordation of a CO_2 allowance transfer and allows for the resubmission of a CO_2 allowance transfer for recordation.

No change is made to this section from proposed to final-form rulemaking.

Monitoring, reporting and recordkeeping requirements

§ 145.371. General monitoring requirements

This section establishes the monitoring requirements that an owner or operator or CO_2 authorized account representative of a CO_2 budget unit must comply with, including applicable sections of 40 CFR Part 75 (relating to continuous emission monitoring). This section also includes the requirements for installation, certification and data accounting, compliance dates for recording, reporting and quality-assuring data from the monitoring system, reporting data and prohibitions.

This section was amended at final-form rulemaking to replace the July 1, 2021 and January 1, 2022 dates under paragraph (2) with blanks along with editor's notes indicating that the dates are based on the date of publication of the final-form rulemaking. Instead of July 1, 2021, the date will be 180 days prior to the date of publication. Instead of January 1, 2022, the date will be either January 1, 2022, or the date of publication.

§ 145.372. Initial certification and recertification procedures

This section establishes the conditions for an exemption from the initial certification requirements, the applicability of recertification, the process for petitions, the certification and recertification requirements, the approval process for initial certification and recertification, the procedures for loss of certification, initial certification and recertification procedures for low mass emissions units and certification and recertification procedures for an alternative monitoring system.

No change is made to this section from proposed to final-form rulemaking.

§ 145.373. Out-of-control periods

This section establishes the quality assurance requirements and the audit decertification procedure.

No change is made to this section from proposed to final-form rulemaking.

§ 145.374. Notifications

This section establishes the requirement for a CO_2 authorized account representative for a CO_2 budget unit to submit written notice to the Department and the Administrator in accordance with 40 CFR 75.61 (relating to notifications).

No change is made to this section from proposed to final-form rulemaking.

§ 145.375. Recordkeeping and reporting

This section establishes the recordkeeping and reporting requirements including monitoring plans, certification applications and quarterly reports.

This section was amended at final-form rulemaking to remove language under subsection (d) pertaining to when a quarterly report must be submitted based on the date of commencement of commercial operation because it was unnecessary, and the rest of the section provides sufficient information.

§ 145.376. Petitions

This section establishes the process and requirements for submitting a petition to the Department or the EPA Administrator requesting approval to apply an alternative monitoring requirement.

No change is made to this section from proposed to final-form rulemaking.

§ 145.377. CO_2 budget units that co-fire eligible biomass

This section establishes reporting and data calculation requirements for the CO_2 authorized account representative of a CO_2 budget unit that co-fires eligible biomass as a compliance mechanism under the CO_2 Budget Trading Program.

No change is made to this section from proposed to final-form rulemaking.

Auction of CO_2 CCR and ECR allowances

§ 145.381. Purpose

This section establishes a provision to allow the Department or its agent to specify additional information in the auction notice for each auction, including the time and location of the auction, auction rules, registration deadlines and any additional information deemed necessary or useful.

No change is made to this section from proposed to final-form rulemaking.

§ 145.382. General Requirements

This section establishes the required contents of an auction notice. This section also includes tables with the CCR trigger price and the ECR trigger price for the years 2023 through 2030. This section also establishes the process for the sale of CCR allowances, implementation of the reserve price and withholding ECR allowances form an auction.

No change is made to this section from proposed to final-form rulemaking.

CO_2 emissions offset projects

§ 145.391. Purpose

This section establishes a provision to allow the Department to award CO_2 offset allowances to sponsors of CO_2 emissions offset projects that have reduced or avoided atmospheric loading of CO_2, CO_2e or sequestered carbon. CO_2 offset allowances must be real, additional, verifiable, enforceable and permanent within the framework of a standards-based approach.

No change is made to this section from proposed to final-form rulemaking.

§ 145.392. Definitions

This section establishes definitions for the following terms: "AEPS—Alternative energy portfolio standards," "anerobic digester," "anaerobic digestion," "anaerobic storage," "biogas," "conflict of interest," "forest offset project," "forest offset project data report," "forest offset protocol," "independent verifier," "intentional reversal," "market penetration rate," "offset project," "project commencement," "project sponsor," "regional-type anaerobic digester," "reporting period," "reversal," "system benefit fund," "total solids," "unintentional reversal," "verification" and "volatile solids." These proposed defined terms are used in the substantive provisions of §§ 145.391—145.397 (relating to CO_2 emissions offset projects).

No change is made to this section from proposed to final-form rulemaking.

§ 145.393. General requirements

This section establishes the requirements for an offset project to qualify for the award of CO_2 offset allowances, including the three eligible offset project types, offset project location requirements, the project sponsor, general additionality requirements, maximum allocation periods for offset projects, offset project audits, as well as ineligibility of an offset project due to noncompliance.

No change is made to this section from proposed to final-form rulemaking.

§ 145.394. Application process

This section establishes the requirement for a project sponsor to establish a general account and to submit a consistency application, including the deadlines and required contents of the consistency application and the process for the Department's action on consistency applications.

No change is made to this section from proposed to final-form rulemaking.

§ 145.395. CO_2 emissions offset project standards

This section establishes the eligibility, offset project description, calculation and monitoring and verification requirements for the categories of offset projects, landfill methane capture and

destruction, sequestration of carbon due to reforestation, improved forest management or avoided conversion and avoided methane emissions from agricultural manure management operations.

No change is made to this section from proposed to final-form rulemaking.

§ 145.396. Accreditation of independent verifiers

This section establishes the standards for accreditation of independent verifiers, the required contents of an application for accreditation, the process for Department action on applications for accreditation, reciprocity of independent verifiers across participating states and the required conduct of an accredited verifier.

No change is made to this section from proposed to final-form rulemaking.

§ 145.397. Award and Recordation of CO_2 offset allowances

This section establishes the process for awarding and recording CO_2 offset allowances. This section also proposes to establish the deadlines for submittal of monitoring and verification reports, the required contents of monitoring and verification reports, the prohibition against filing monitoring and verification reports in more than one participating state and the process for Department action on monitoring and verification reports.

This section was amended at final-form rulemaking to replace the January 1, 2022 and June 30, 2022 dates under subsection (c) with blanks along with editor's notes indicating that the dates are based on the date of publication of the final-form rulemaking. Instead of June 30, 2022, the date will be either June 30, 2022, or 180 days after the date of publication, whichever is later. Instead of January 1, 2022, the date will be either January 1, 2022, or the date of publication, whichever is later.

CO_2 allowance auctions

§ 145.401. Auction of CO_2 allowances

This section establishes that the Department will participate in a multistate CO_2 allowance auction in coordination with other participating states. However, the Department may determine to conduct a Pennsylvania-run auction if the conditions for participating in a multistate auction are no longer met. The Department may delegate implementation and administrative support for any CO_2 allowance auction and retains its authority to enforce compliance with the CO_2 Budget Trading Program and control over the proceeds.

No change is made to this section from proposed to final-form rulemaking.

§ 145.402. Auction format

This section establishes the format of a CO_2 allowance auction, the lot of CO_2 allowances and the reserve price.

No change is made to this section from proposed to final-form rulemaking.

§ 145.403. Auction timing and CO_2 allowance submission schedule

This section establishes the timing of a CO_2 allowance auction, the availability of CO_2 allowances held in the air pollution reduction account and the requirement for an auction to include a CCR reserve and trigger price.

This section was amended at final-form rulemaking to replace the term "cogeneration" with the term "combined heat and power" under subsection (b) to account for the name change of the set-aside account under § 145.342(k).

§ 145.404. Auction notice

This section establishes the requirement for notice to be provided of each CO_2 allowance auction and the required contents of the notice.

No change is made to this section from proposed to final-form rulemaking.

§ 145.405. Auction participant requirements

This section establishes the eligibility requirements to participate in a CO_2 allowance auction as a bidder.

No change is made to this section from proposed to final-form rulemaking.

§ 145.406. Auction participant qualification

This section establishes the requirement for the submittal of a qualification application, the deadline for submittal, the required contents of a qualification application, the process for Department review of a qualification application and changes in qualification status.

No change is made to this section from proposed to final-form rulemaking.

§ 145.407. Submission of financial security

This section establishes the requirement for a qualified applicant to provide financial security to the Department to participate in a CO_2 allowance auction as a bidder and the process for requesting return of the financial security.

No change is made to this section from proposed to final-form rulemaking.

§ 145.408. Bid submittal requirements

This section establishes the requirements and limitations of bid submittals.

No change is made to this section from proposed to final-form rulemaking.

§ 145.409. Approval of auction results

This section establishes the requirement for an independent monitor to observe the conduct and outcome of each auction and issue a report to the Department. If the Department approves the outcome of an auction based on the contents of the report, the Department will transfer and record the CO_2 allowances to successful bidders and make available the auction clearing price and the number of CO_2 allowances sold in the auction.

No change is made to this section from proposed to final-form rulemaking.

F. *Summary of Comments and Responses on the Proposed Rulemaking*

The Board adopted the proposed rulemaking at its meeting on September 15, 2020. On November 7, 2020, the proposed rulemaking was published for a 69-day comment period at 50 Pa.B. 6212 (November 7, 2020). Ten public hearings were held virtually with two each day on December 8, 9, 10, 11 and 14, 2020. Over 445 persons provided verbal testimony, including several in Spanish translation. The comment period closed on January 14, 2021. The Board received comments from 14,038 commentators including the House and Senate Environmental Resources and Energy Committees (ERE Committees), members of the Pennsylvania Legislature and the Independent Regulatory Review Commission (IRRC). The majority of the commentators expressed their support of the CO_2 Budget Trading Program, noting the success of cap and trade programs in reducing emissions and the health, environmental and economic benefits that can be achieved through this final-form rulemaking. The comments received on the proposed rulemaking are summarized in this section and are addressed in a comment and response document which is available on the Department's website.

During the comment period, the Board sought comment specifically on potential approaches for the implementation of this final-form rulemaking that would address equity and environmental justice concerns in this Commonwealth. The Board received comments requesting that the Department monitor for any local air quality impacts resulting from this final-form rulemaking in environmental justice areas. The Board also received comments requesting that a portion of the auction proceeds be spent on projects located in environmental justice communities. Additionally, the Board received comments requesting that the Department continue to engage in public outreach with environmental justice communities throughout the implementation of this final-form rulemaking. In response to these comments, the Department developed three Equity Principles which have been incorporated under section D of this Preamble. The Equity Principles consist of inclusively gathering and meaningfully considering input from environmental justice community members, mitigating any adverse impacts on human health in environmental justice communities, and distributing environmental and economic benefits of auction proceeds in communities that have been disproportionately

impacted by air pollution. The Board also added language to this final-form rulemaking indicating that the Department will assess air emissions data each year to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. Additionally, the Department is committed to allocating a portion of the auction proceeds to further eliminate air pollution in environmental justice communities.

During the comment period, the Board also sought comment on potential approaches that would assist the transition of workers and communities in a just and equitable manner as this Commonwealth continues on a path to cleaner electricity generation. The Board received comments expressing concern about the dependence certain communities have on fossil fuel-fired EGUs. Commentators noted that school districts, small businesses, municipalities, parks & recreation areas and other community pillars depend on the economic productivity of these facilities. The concern is particularly acute in areas containing a concentrated number of fossil fuel-fired EGUs.

Many commentators implied that this final-form rulemaking would be the singular cause of economic challenges to fossil fuel-fired EGUs, specifically coal-fired EGUs, while other commentators recognized that these facilities are projected to cease operations in the near future with or without the implementation of this final-form rulemaking. Nonetheless, commentators acknowledged the economic impact of these facilities and recognized a need to both create a transition plan and invest auction proceeds in these communities. Specifically, commentators recommended a transition plan that includes economic diversification and workforce development that will lead to immediate job transition for workers employed at facilities expected to close in the near future. Commentators also recommended using auction proceeds as authorized under the APCA to invest in these communities in ways that would provide for job training and economic growth.

In response to these comments, the Department partnered with the Delta Institute, a nonprofit organization that has worked with communities to solve complex environmental challenges since 1998, to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers and the surrounding communities. The Delta Institute is engaging with fossil fuel communities to understand the interdependence with large fossil fuel-fired EGUs, as well as surrounding communities, and to explore potential economic diversification strategies. Included in this engagement is discussions with community members representing nonprofit organizations, labor, workforce development boards, research institutions, regional planning commissions, universities, private citizens, utility providers, community organizations, industry groups, economic development entities, consumer advocates, environmental justice stakeholders, and many others representing all the regions of this Commonwealth, including communities with significant employment in the fossil fuel sector. The Delta Institute's efforts, in coordination with the Department, will culminate in the development of a set of Guiding Principles and a final strategy document that will be used to guide the Department's implementation of this final-form rulemaking, including the investment of auction proceeds in projects that benefit communities dependent on fossil fuel-fired EGUs.

During the comment period, the Board also sought comment on ways to appropriately address the benefits of cogeneration in this Commonwealth, including the allocation of CO_2 allowances similar to the waste coal set-aside provision. The Board received comments requesting that the cogeneration set-aside, now the combined heat and power set-aside, be expanded to include more than useful thermal energy or electricity provided to a co-located facility. In response to comments, the Board included two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account in this final-form rulemaking. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

Numerous members of the General Assembly expressed their support of this final-form rulemaking and this Commonwealth's participation in RGGI. Some even highlighted that polling consistently shows that more than 70% of Pennsylvanians strongly support action on climate change and that this final-form rulemaking has diverse support from businesses and institutions to environmental nonprofits and health organizations. Members also stressed that it is crucial to address climate change, lower emissions of harmful air pollutants, particularly given the COVID-19 pandemic, and consider environmental justice concerns. They noted that RGGI has proven successful and that RGGI participation will provide a multitude of benefits to public health, safety, and welfare, as well as benefits to the environment and the economy. In particular, they stated that participating in RGGI will spur additional investments in renewable energy throughout this Commonwealth, ensuring that this Commonwealth's vital position in national energy markets is maintained. They also emphasized that reducing CO_2 emissions from the power generation sector would improve the environment for this Commonwealth's citizens and make this Commonwealth a more sustainable and innovative place in the future. In response, the Board acknowledges these comments and thanks the members for their support.

IRRC asks the Board to explain whether the regulation is in the public interest, particularly given the House and Senate ERE Committee objections noted in their disapproval letters, which are discussed below and addressed in the comment and response document.

In response, the Board explains how this final-form rulemaking is in the public interest. As required under section 745.5b of the RRA (71 P.S. §§ 745.5b), to determine whether a regulation is in the public interest, IRRC must first determine whether the agency has the statutory authority to promulgate the regulation and whether the regulation conforms to the intent of the General Assembly when it enacted the enabling statute. As discussed previously, the Board has the authority to promulgate this final-form rulemaking under section 5(a)(1) of the APCA. Additionally, this final-form rulemaking is consistent with the purpose of the APCA and the intent of the General Assembly. That is, to, among other things, protect the air resources of the Commonwealth to the degree necessary for the protection of public health, safety, and well-

being of its citizens. 35 P.S. § 4004(a)(i). Moreover, several members of the General Assembly, including minority members of the ERE committees, provided supportive comments, specifically noting that the Board has the authority under the APCA to promulgate this final-form rulemaking and that it is in the public interest.

In determining whether a regulation is in the public interest, IRRC also must consider the additional criteria for review of regulations outlined under section 745.5b(b) of the RRA. The Board explains below how this final-form rulemaking satisfies the review criteria in detailed responses to comments and specifically notes the following. First, this final-form rulemaking will have a positive economic and fiscal impact on this Commonwealth. For example, the economic modeling conducted for this final-form rulemaking shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and spur further economic growth in this Commonwealth as it will result in an additional $1.9 billion to the Gross State Product. Second, this final-form rulemaking protects the public health, safety and welfare and the environment from harmful CO_2 pollution from fossil fuel-fired EGUs. For instance, the Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Third, the requirements of this final-form rulemaking are both reasonable and feasible. One of the most cost-effective emissions reduction strategies to limit CO_2 emissions is through an electricity sector cap and trade program. Fourth, this final-form rulemaking does not represent a policy decision of such a substantial nature that it requires legislative review. That is, the General Assembly has already provided the Board with broad authority to promulgate this final-form rulemaking. Fifth, the Board has responded to the comments, objections and recommendations of the ERE committees in this final-form rulemaking and associated comment and response document. Where warranted, changes were made to this final-form rulemaking in response to those comments. Sixth, the Board and the Department complied with the RRA and IRRC's regulations throughout the rulemaking process. Seventh, this final-form rulemaking is supported by a plethora of acceptable data and an extensive modeling effort as discussed throughout this preamble. Finally, while there is not a less costly or less intrusive method of achieving the goal of this final-form rulemaking, since a cap and trade program is the most effective means of reducing CO_2 emissions, provisions are included in this final-form rulemaking to address any impact on small business stationary sources.

Further, the Commonwealth Court has found that the regulation of air pollution has long been a valid public interest. See e.g., *Bortz Coal Co., v. Commonwealth*, 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.*, 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation*, 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce GHG emissions, including CO_2. *Wolf v. Funk*, 144 A.3d 228, 250 (Pa. Cmwlth. 2016).

1. Comments, objections or recommendations of the House and Senate ERE committees.

IRRC noted that under the RRA, the comments, objections or recommendations of a Legislative Committee is one of the criteria that IRRC must consider when determining if a

regulation is in the public interest. In response, the specific comments, objections, and recommendations noted by IRRC will be addressed in turn, below.

a. The Board has the statutory authority under the APCA to promulgate this final-form rulemaking.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the Board lacks statutory authority under the APCA (35 P.S. § 4001—40015) to promulgate the regulation.

In response, the Board has the authority to promulgate this final-form rulemaking under the APCA. Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth for the protection of public health, safety and the environment. Section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.* As this final-form rulemaking would limit CO_2 pollution by regulating CO_2 emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

b. The auction proceeds are a fee under the APCA.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the proceeds generated through the auction procedures of the rulemaking and RGGI are not a fee under the APCA, but rather an illegal tax.

In response, the auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. There is also existing case law that supports the conclusion that auction proceeds are a fee, including *National Biscuit Company v. Philadelphia*, 98 A.2d 182 (Pa. 1953) and *White v. Com. Medical Professional Liability,* 571 A.2d 9 (Pa. Cmwlth. 1990).

Under RGGI, regulated EGUs are required to purchase one CO_2 allowance per ton of CO_2 they emit through multistate auctions or on the secondary market. The proceeds of the multistate

auctions and the secondary market are then provided back to the participating states. The purchase of CO_2 allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO_2 emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO_2 emissions from EGUs.

Moreover, none of the eleven participating states consider their CO_2 budget trading program regulations, or the RGGI program overall, as establishing a tax. Also, no court has determined that RGGI amounts to a tax. Recently in *California Chamber of Commerce v. State Air Res. Bd.*, 10 Cal. App. 5th 604, 650, 216 Cal. Rptr. 3d 694, 728 (2017), the California court determined that the California Air Resource Board's cap and invest program did not create a tax.

c. The virtual public hearings were held in accordance with the APCA.

The House and Senate ERE Committees objected to this final-form rulemaking stating the Department violated the APCA's mandate for public hearings to be held in impacted communities. They also noted that citizens without internet access or broadband capability were excluded from participating in the virtual hearings that were held. A few other commentators also believe that the APCA requires the Board to hold in-person public hearings.

In response, the APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentators and legislators seem to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Board disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or

internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish translation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

d. This final-form rulemaking will have a positive fiscal impact on this Commonwealth's economy.

The House and Senate ERE Committees objected to this final-form rulemaking stating it will have a negative fiscal impact on this Commonwealth's economy. In particular, they argue that the coal industry, fossil-fuel-fired EGUs, large industrial users of electricity, small businesses, labor unions and individuals will be harmed financially.

In response, the Board explains that the implementation of this final-form rulemaking will provide public health, environmental and economic benefits to this Commonwealth. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. This equates to a range of $232—$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NOx, SO_x and $PM_{2.5}$) and exclude the additional benefits provided from the reduction in CO_2 emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The economic modeling conducted shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, an independent study by Penn State's Center for Environmental Law and Policy confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. See Penn State Center for Energy Law and Policy, Prospects for Pennsylvania in the Regional Greenhouse Gas Initiative Working Paper, December 2020, https://sites.psu.edu/celp/files/2021/01/CELP_RGGI.pdf. In particular, the Penn State study indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefits to the power sector within this Commonwealth. This study determined that economic benefits to electricity market participants include the higher net profits to the generation sector (additional revenue arising from higher wholesale electricity prices less new costs from the purchase of CO_2 allowances) and CO_2 allowance proceeds accruing to CO_2 allowance holders. Economic costs predominantly reflect the higher costs of purchasing bulk power by load-serving entities and direct access consumers in the PJM regional electricity market. This analysis is narrower in scope than the Department's modeling but remains demonstrative of the positive economic impacts of this final-form rulemaking.

In 2010, coal generation accounted for 47% of the energy generated in this Commonwealth and by 2019, coal generation had decreased to 17%. The Department's modeling indicates that this trend will continue with the majority of coal generation (with the exception of waste coal) ceasing by 2025. This is the current trajectory of coal which has been on the decline for decades, and in 2014 was finally usurped by natural gas as the leading source of energy generation in this Commonwealth. These impacts are not resulting from RGGI participation as they will occur regardless of the implementation of this final-form rulemaking. However, RGGI participation presents an opportunity to assist transitioning communities, which would not exist without this final-form rulemaking.

While fossil fuel-fired EGUs subject to this final-form rulemaking will have costs associated with the purchase of CO_2 allowances, in most cases this minimal cost will be passed onto consumers. Cost impacts as a result of implementation of this final-form rulemaking are minimal and are less than the typical seasonal swing in electricity prices. Wholesale power prices ($/MWh) are expected to be no more than 2.4% higher in 2022 and no more than 1.7% higher by 2030. These prices reflect the cost of a cap-and-trade program and are not reflective of the investment of the auction proceeds. Significant investments of the auction proceeds in the energy sector in this Commonwealth will have a price suppressing impact further decreasing any potential price impacts.

Additionally, based on information contained within the PUC's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania PUC, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

The Board understands the concerns that have been expressed regarding impacts on employees in this Commonwealth's energy sector. As mentioned previously, while there will be expansion and contraction within the energy sector as a result of implementation of this final-form rulemaking, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs. The Department has partnered with the Delta Institute to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers, and the surrounding communities. This will assist the Department in identifying community-driven ways to assist this Commonwealth's transition to a cleaner energy economy.

e. CO2 is an "air pollutant" as defined under the APCA, and despite leakage, this final-form rulemaking will significantly reduce GHG emissions.

The House and Senate ERE Committees objected to this final-form rulemaking stating CO_2 is not an "air pollutant" as defined by the APCA. They stated that the proposal does not prevent or reduce greenhouse gases because generation will shift to fossil-fuel-fired EGUs in other states and emissions from those EGUs will pollute the environment of the Commonwealth. This is referred to as leakage. Any reduction of pollution would be insignificant; thus, this final-form rulemaking fails to meet the APCA's standard that regulations must produce a meaningful reduction of "air pollution."

In response, the Board finds that CO_2 is in fact a regulated "air pollutant." Section 5(a)(1) of the APCA provides the Board with authority to regulate CO_2 emissions. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021).

While there is a potential for leakage as outlined in the Department's modeling for this final-form rulemaking, this potential leakage does not undermine the value of the significant benefits that will accrue to this Commonwealth and its residents as a result of this final-form rulemaking. The potential for CO_2 reductions in this Commonwealth by 2030 ranges from 97 million to 227 million tons. These emissions reductions will occur in this Commonwealth despite any generation changes that may occur in other states. The meaningful reductions of air pollution stemming from this final-form rulemaking have also been confirmed by independent power sector modeling conducted by PJM and the Penn State Center for Energy Law and Policy. The Department further discusses the topic of leakage below.

f. The modeling used by EQB to justify this final-form rulemaking is up to date, takes into account "leakage," and provides an accurate estimate of the economic impact of this final-form rulemaking.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the modeling used by the Board to justify the rulemaking is outdated and does not provide an accurate estimate of the economic impact that the rulemaking will have. They also state that the modeling does not account for leakage.

The Board received thoughtful comments and feedback on the 2020 power sector modeling results through the Department's extensive advisory committee meetings, webinars, and the public comment period. The Board understood the concerns raised and wanted to make sure the modeling was as current as possible to ensure that all the provisions of this final-form rulemaking, specifically the starting CO_2 allowance budget, were still appropriate when this final-form rulemaking is implemented in 2022. Additionally, the Board wanted to verify previous conclusions based on the modeling. For this final-form rulemaking, the Department conducted additional power sector modeling which verified earlier modeling conclusions, confirming the 78 million CO_2 allowance budget for 2022, and the significant potential for CO_2 emissions reductions in this Commonwealth. The updated modeling also showed that in comparison to the previous 2020 round of modeling, impacts on natural gas generation, this Commonwealth's energy exports, and electricity prices are even less than the slight impacts anticipated by the previous modeling. Furthermore, the modeling confirmed that the retirement of coal-fired EGUs in this Commonwealth will occur within a shorter time horizon. According to the updated modeling, most of the coal-fired generation in this Commonwealth will cease by 2025 in no part due to this final-form rulemaking, but rather decreased demand for electricity resulting in part from the COVID-19 pandemic and its impacts on the energy markets.

The Department's modeling used IPM, the Integrated Planning Model, which provides long-term projections of plant dispatch, capacity expansion and retirement, market prices, and emissions projections for the power sector across the country. This specific analysis focused on this Commonwealth, the PJM states, and the current states participating in RGGI. The results of the modeling include electricity transmission both into and out of this Commonwealth and the larger PJM and Eastern Interconnect regions. These values allow the Department to evaluate the changes in generation, and the flows of electricity between states and across the region. It is through this data that the Department is able to evaluate the potential for and magnitude of emissions shifts within the region.

The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. This leakage has no bearing on the environmental, health or economic benefits of this final-form rulemaking, and merely means that a portion of the emissions reductions achieved within this Commonwealth may shift to other states or areas without carbon pricing. Additionally, this final-form rulemaking will result in a net emissions reduction of 28 million tons of CO_2 across the broader PJM region through 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the Federal Energy Regulatory Commission (FERC) and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of

the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

Although there is the potential for leakage as confirmed in both the original and updated modeling results, this leakage does not undermine the benefits of this final-form rulemaking to this Commonwealth, nor to the broader PJM region and Eastern Interconnection. The Department's modeling has not only accounted for leakage, but Department staff have actively engaged with stakeholders, PJM Interconnection and electricity generators specifically to discuss options for leakage mitigation.

g. This final-form rulemaking should proceed despite announcements of Federal climate change policies.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the Federal government is moving forward with climate change policies. In response, while the current Federal Administration is currently in the process of developing climate change policies, there is no guarantee that those policies will come to fruition. For instance, the Obama Administration's regulation to control GHG emissions from existing fossil fuel-fired EGUs, commonly known as the Clean Power Plan, was stayed by the United States Supreme Court and later repealed and replaced by the Trump Administration's ACE rule. The Board contends that addressing the impacts of climate change is too pressing of an issue to wait any longer. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment.

h. The benefits of this final-form rulemaking outweigh potential costs, including during the time of the COVID-19 pandemic.

The House and Senate ERE Committees objected to this final-form rulemaking stating that the potential costs of the rulemaking outweigh any meaningful benefits that may result from it, especially during the time of the COVID-19 pandemic.

Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from COVID-19. The current pandemic underscores the need for further emissions reductions. See Harvard University Study "Fine particulate matter and COVID-19 mortality in the United States: A national study on long-term exposure to air pollution and COVID-19 mortality in the United States", 2020, https://projects.iq.harvard.edu/covid-pm.

The implementation of this final-form rulemaking will have climate, environmental and health benefits. While there is a cost associated with implementation, the benefits far outweigh any costs. Although the methodology to determine climate and environmental impacts are complicated, calculating the health benefits is quite simple. The Department calculated the health impacts associated with the emissions reductions stemming from the implementation of this final-form rulemaking using the EPA's Benefit-per-Ton (BPT) and Incidence-per-Ton (IPT) methodology. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. This equates to a range of $232—$525 million annually and is an extremely

conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_x and $PM_{2.5}$) and exclude the additional benefits provided from the reduction in CO_2 emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The analysis conducted by Penn State's Center for Energy Law and Policy estimated the health benefits of this Commonwealth's participation in RGGI to be on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Implementation of this final-form rulemaking does come with increased costs, in terms of impacts on electricity prices. Updated modeling shows that the impact on wholesale power prices is estimated to be 2.42% in 2022 and 1.73% by 2030. These minimal prices impacts are exclusive of the price suppressing impacts of any investments to be made in the energy sector using the auction proceeds.

The Department's economic modeling shows that even with consideration of these electricity price increases, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. While implementation of this final-form rulemaking is not without cost; the economic and health the economic benefits are considerable and far outweigh any implementation costs.

2. This final-form rulemaking does not represent a policy decision of such a substantial nature that it requires legislative review.

IRRC questions whether the regulation represents a policy decision of such a substantial nature that it requires legislative review. IRRC also notes that a Senate letter signed by 29 members states the following: "The proposed regulation joining Pennsylvania to RGGI represents the single, most significant energy policy reform since the deregulation of electric generation in the 1990's." IRRC also mentions the passage of HB 2025 and that ten of the 11 states that currently participate in RGGI have done so with specific authority granted by their respective legislative branches. Additionally, IRRC notes that three advisory committees declined to support the proposed rulemaking. IRRC asks the Board to explain why it is appropriate to implement this carbon trading program through executive order and the rulemaking process instead of the legislative process.

In response, this final-form rulemaking is not a policy decision of such a substantial nature that it requires legislative review. The General Assembly provided the Board with broad authority to regulate sources of air pollution under the APCA. This final-form rulemaking directly falls within that statutory grant of authority as CO_2 emissions cause harmful air pollution. The APCA does not limit the Board in how it may regulate a source of pollution. This is shown by the Board's history of promulgating different types of regulations, including command and control and cap and trade regulations under the broad authority of section 5(a)(1) of the APCA. If House Bill 2025 had not been vetoed by the Governor, it would have taken away the Board's existing statutory authority to regulate CO_2 emissions. The bill went beyond preventing this Commonwealth from participating in RGGI to prohibit the Board from promulgating any regulation to address CO_2 emissions unless and until the General Assembly passed future authorizing legislation. This would have been extremely detrimental to the

Department's efforts to address GHG emissions and climate change impacts. However, as explained previously, the General Assembly provided the Board with the authority to promulgate this final-form rulemaking through the expansive language in the APCA.

Through Executive Order 2019-07, Governor Tom Wolf directed the Department to develop and present to the Board a rulemaking to abate, control, or limit CO_2 emissions from fossil-fuel-fired EGUs, as authorized by the APCA. In other words, the Department was directed to use its existing statutory authority, the APCA, to implement this final-form rulemaking. The Executive Order was an indication from the Governor that addressing CO_2 emissions from the electricity sector is necessary. However, this final-form rulemaking is not being implemented under the Executive Order as it is being implemented under the APCA, specifically sections 5(a)(1) and 6.3(a).

Although most of the participating states were directed to participate in RGGI through specific legislation, that does not necessarily mean that their environmental agencies lacked regulatory authority. It is more of an indication of the willingness to address climate change in those states. Furthermore, as discussed previously, four of the Department's advisory committees voted to support the Department's recommendation to move this final-form rulemaking forward to the Board. This includes the three advisory committees, AQTAC, SBCAC and CAC, which had voted against supporting the proposed rulemaking.

3. This final-form rulemaking sufficiently protects public health, safety and welfare and this Commonwealth's natural resources.

IRRC notes that some commentators have provided suggestions for amending the regulation to provide further environmental protections. These suggestions include: modifying or eliminating set-aside allowances for certain industries; inclusion of data collection mechanisms to ensure emissions are not shifted to generation facilities that fall below the 25 megawatt threshold of the rulemaking because the facilities could have a negative impact on environmental justice communities; and ensuring that imported power does not contribute to leakage. IRRC also encourages the Board to consider all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of the Commonwealth and its natural resources and meeting the goal of this rulemaking.

The Board has considered all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of this Commonwealth and its natural resources and meeting the goal of this final-form rulemaking. The Board made the following changes to this final-form rulemaking in response to comments. The Board increased the value of the waste coal set-aside in response to comments received to account for the continued operation of one waste coal-fired unit and to better reflect the operation levels of the waste coal-fired units in this Commonwealth. The waste-coal set-aside was increased from 9.3 million CO_2 allowances in the proposed rulemaking to 12.8 million CO_2 allowances in this final-form rulemaking.

The Board received extensive comments on the cogeneration set-aside and made changes in response to those comments. Additionally, commentators expressed the potential for unintended

consequences in the form of emissions increases potentially by disincentivizing the operation of current cogeneration facilities and the addition of future facilities. The Board was asked to clarify what was meant by cogeneration and to expand the set-aside to cover the full emissions of facilities that meet certain emissions criteria. In response, the Board clarified that its intent was to be inclusive of CHP units and as a result changed the name of the set-aside to clarify that it was not applicable to all cogeneration, but specifically to CHP units as defined in this final-form rulemaking. Additionally, the Board responded to the request for an expanded set-aside by including two tiers for qualifying CHP units to apply for CO_2 allowances to be retired on their behalf.

Commentators also requested additional clarification on the functioning of the strategic use set-aside. In response, the Department clarified the objectives for the set-aside, provided additional specifics on the types of qualifying projects and outlined the application process by which an entity could submit a project for consideration to the Department. The Board also received comments that the scope of the limited exemption from the applicability requirements was too narrow and that the term manufacturing facility should be replaced with "industrial, institutional or commercial" facility. The Board made this change in this final-form rulemaking in response to comments.

There were concerns expressed during the comment period regarding the impact of cap and trade programs on environmental justice communities. Environmental justice and other stakeholders specifically requested that the Department closely monitor the impacts of this final-form rulemaking on air quality in this Commonwealth, particularly in environmental justice communities. In response, the Board added a provision for an annual air quality impacts assessment in this final-form rulemaking. In response to comments received both prior to and during the public comment period, the Department, in partnership with external stakeholders developed equity principles for this final-form rulemaking. Through the establishment of these principles and their implementation, the Department pledged to inclusively gather public input on the rule and mitigate any adverse impacts with a focus on Environmental Justice communities.

The Board also received comments urging additional flexibility in terms of the implementation date for this final-form rulemaking. Some commentators requested that the Board consider a mid-year start date if January 1, 2022 is not possible to avoid a delay in implementation until January 1 of the following year. In response, the Board added quarterly CO_2 allowance budgets for 2022 which identify the starting CO_2 allowance budget for the beginning of each quarter. These budgets are based on the starting CO_2 allowance budget of 78 million CO_2 allowances and allocated to each quarter based on the seasonal emissions distributions during the past five years. For example, rather than assigning a value of 25% to each quarter, the value for each quarter is calculated based on historic emissions. The Department relied on actual historic emissions from the past five years to properly assign a quarterly emissions value.

4. The Board has the statutory authority to promulgate this final-form rulemaking.

IRRC asks the Board to consider all of the arguments on both sides of the statutory authority issues and provide a point-by-point analysis of why this proposal is within the statutory authority

granted by the APCA and also consistent with the intent of the General Assembly when that statute was enacted.

The Board has provided a point-by-point analysis of its statutory authority and explained how this final-form rulemaking is consistent with the intent of the General Assembly under the subsection titled *Authority to limit CO_2 emissions and to participate in RGGI through this final-form rulemaking*. Specifically, the Board explained how Section 5(a)(1) of the APCA provides the Board with broad authority to promulgate regulations for the "prevention, control, reduction and abatement of air pollution." The Board also explained in that subsection how CO_2 is included in the definition of "air pollutant" under section 3 of the APCA. Additionally, the Board explained how the auction proceeds are a fee authorized under Section 6.3(a), and not an illegal tax as some commentators have claimed. Further, the Board addresses leakage concerns in detailed responses below.

Members of the General Assembly and others have argued that the Department is violating section 4(24) of the APCA by not submitting the interstate air pollution control compact or agreement to the General Assembly. Section 4(24) of the APCA provides that the Department shall "cooperate with the appropriate agencies of the United States or of other states or any interstate agencies with respect to the control, prevention, abatement and reduction of air pollution, and where appropriate formulate interstate air pollution control compacts or agreements for the submission thereof to the General Assembly." See 35 P.S. § 4004(24). However, as states do not sign any sort of agreement or compact to participate in RGGI, there is no agreement to submit to the General Assembly under section 4(24) of the APCA. Instead, the key piece to becoming a "participating state," as the term is defined in this final-form rulemaking, is the establishment of a corresponding regulation as part of the CO_2 Budget Trading Program. While this final-form rulemaking provides for this Commonwealth's participation in RGGI by establishing a corresponding regulation, it does not amount to an agreement or compact subject to legislative approval.

RGGI is also not an interstate air pollution control compact. Instead it is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a "participating state," meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

Moreover, the APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentators and legislators seem to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Board disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region. For this final-form rulemaking, the Board satisfied the public

hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide.

5. This final-form rulemaking is consistent with the intent of the General Assembly.

IRRC questions whether the regulation is consistent with the intent of the General Assembly. The commentator notes that the current balance of the Clean Air Fund is approximately $26 million dollars and that the Department anticipates that this rulemaking will raise over $2 billion dollars between 2022 and 2030. IRRC is concerned that the General Assembly did not contemplate or envision the Clean Air Fund growing to that amount and that it could be spent at the discretion of the Secretary under the guidance provided by a regulation (Chapter 143) promulgated over 40 years ago. IRRC asks the Board to explain how this process of collecting proceeds and distributing funds of this magnitude is consistent with the intent of the General Assembly when the APCA was enacted.

As the Board explained under the subsection titled *Authority to limit CO_2 emissions and to participate in RGGI through this final-form rulemaking*, this final-form rulemaking is consistent with the intent of the General Assembly. The Board is acting within the existing statutory authority granted by the General Assembly. Section 6.3(a) of the APCA provides the Board with broad authority to establish fees to support the air pollution control program authorized by the APCA and not covered by fees required by section 502(b) of the Clean Air Act. As provided under section 9.2(a) of the APCA, all auction proceeds will be used to support the elimination of air pollution and in furtherance of the purpose of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

IRRC notes that many of the commentators that support this final-form rulemaking provided suggestions on how the auction proceeds could be allocated. Some of the suggestions would appear to be outside of the parameters established by 25 Pa. Code Chapter 143. IRRC agrees with comments submitted by the Pennsylvania Office of Consumer Advocate that suggest the DEP should "seek further authority" to allow for a broader use of the auction proceeds. Alternatively, IRRC suggests that the Department could initiate a rulemaking to amend existing Chapter 143 to allow for a broader use of the proceeds.

In response, the Board and the Department are not planning on seeking further authority for the use of the auction proceeds as the authority provided under section 9.2(a) of the APCA is quite broad. Section 9.2(a) allows the Department to use fees to further eliminate air pollution in this Commonwealth. As required under section 9.2(a) of the APCA, the Board adopted Chapter 143 to further provide for the management and use of the money in the Clean Air Fund. Section 143.1(a) states that "monies paid into the Clean Air Fund may be disbursed at the discretion of the Secretary for use in the elimination of air pollution." See 25 Pa. Code § 143.1(a). Under § 143.1(b), the "full and normal range of activities" of the Department are considered to contribute to the elimination of air pollution. See 25 Pa. Code § 143.1(b). Section 143.1(b) also includes a nonexclusive list of purposes that the Clean Air Fund monies can be used for, including the purchase of contractual services and payment of the costs of a public project

necessary to abate air pollution. Section 143.1(b) therefore specifically provides for the Department to both use the auction proceeds to invest in projects that further reduce GHG emissions and to contract with RGGI, Inc. for administrative and technical support services. For these reasons, the Board and the Department do not find it necessary to seek further authority or to initiate a rulemaking to amend Chapter 143. However, if the General Assembly enacts legislation that extends the Department's authority to use the auction proceeds, the Department would be able to further assist transitioning workers and environmental justice communities.

6. Need for this final-form rulemaking; Economic or fiscal impact.

IRRC questions whether the regulation is needed and asks the Board to address the economic and fiscal impact. IRRC notes that questions raised about the need for this final-form rulemaking are numerous but revolve around two main issues. The first, as noted by the Senate ERE Committee, is the fact that CO_2 emissions from fossil-fuel power generation in this Commonwealth have been reduced by 38% since 2008. This reduction trend is likely to continue because of the price of natural gas and the development of renewable energy. Second, the rulemaking will push the generation of electricity to states like West Virginia and Ohio that do not participate in RGGI. If these states increase their production of fossil-fuel-generated electricity, as predicted by some commentators, the overall health benefits to this region of the country, and Pennsylvania specifically, will be minimal and come at a steep economic cost.

This final-form rulemaking is needed to reduce CO_2 emissions in this Commonwealth. This Commonwealth has established Statewide goals to reduce GHG emissions economy-wide by 26% by 2025 and 80% by 2050 in comparison to 2005 levels. While this Commonwealth has achieved reductions from all sectors, including the power sector, more is needed to meet these goals, set to avoid the worst impacts of climate change. This Commonwealth's participation in RGGI would provide significant assurance that prudent investments of the auction proceeds coupled with other GHG abatement activities will allow this Commonwealth to remain on track to reach the 2025 reduction goal. Without the reductions associated with the implementation of this final-form rulemaking, this Commonwealth will fail to reach even the interim GHG reduction goal established for this Commonwealth.

While emissions from the generation sector have decreased since 2008, the current trajectory of emissions reductions in the power sector is not sustainable. There are few remaining coal-fired EGUs, which based on updated modeling are anticipated to cease most if not all generation by 2025. The air emissions gains that were realized through fuel switching (coal to natural gas) and replacing aging coal-fired facilities with new natural gas plants have mostly occurred. Moving forward a new approach is needed to achieve further reductions. Historic trends provide no guarantee of what the emissions profile for this Commonwealth's electricity sector will look like in the future. For example, electricity generation is very sensitive to the costs of inputs, the major input of which is fuel. As this Commonwealth has seen over the last year, the COVID-19 pandemic led to an increase in natural gas prices, in turn generating electricity with natural gas became more expensive and in response production of electricity using coal as an input increased. In turn this led to an increase in emissions in this Commonwealth. Even though demand for electricity decreased, the method and fuel from which that electricity has being created was more energy and emissions intensive leading to increased emissions even when the overall demand for electricity had decreased. The energy market is very dynamic, and historic

emissions trends and profiles are not indicative of future trends, not without concrete targets and goals regarding emissions reductions. RGGI is a proven market-based program, and one that recognizes that CO_2 emissions from fossil fuel-fired EGUs exist, and the cost of this pollution should be factored into the price of that electricity. This allows us to value the real cost of electricity generation when the cost of these emissions is factored in and helps position this Commonwealth to remain competitive in an ever-evolving energy market where clean energy is highly valued both in this Commonwealth and in the other states to which we export electricity.

The Department's power sector modeling indicates a potential for emissions and generation leakage, meaning that some of the emissions decrease in this Commonwealth tied to decreased generation in this Commonwealth may be made up for by increased generation in other states across the region. This shift most often occurs between states that have implemented carbon pricing programs (like RGGI) and those states that do not have carbon pricing. The modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO_2 reductions between 2022 and 2030. These emissions reductions are going to occur in this Commonwealth and are not tied to or dependent on actions by other surrounding states. When this Commonwealth implements this final-form rulemaking, significant CO_2 emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Penn State's study projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of this regulation, and again are not tied to decisions by outside actors.

Where leakage becomes a consideration is when the focus on emissions reductions is outside of this Commonwealth and across a broader region, for example, the PJM Interconnection, the regional transmission organization consisting of parts of 13 states and the District of Columbia. The potential for an evaluation of leakage has been a focus of PJM since the creation of the RGGI as PJM has some member states that participate in RGGI (have a carbon price) and some that do not (have no carbon price). In order to more thoroughly study the potential for leakage and the magnitude of that leakage, PJM created the Carbon Pricing Senior Task Force (CPSTF). This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and also the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. See PJM Interconnection, Issue Charge of the Carbon Pricing Senior Task Force, 2019, www.pjm.com/-/media/committees-groups/task-forces/cpstf/postings/issue-charge.ashx?la=en. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

In addition to the modeling conducted by the Department and PJM, the report by the Penn State Center for Energy Law and Policy also addresses leakage. Their associated modeling confirms the potential for leakage, and bolsters results from PJM and the Department in confirming that despite leakage, CO_2 emissions in the multi-state PJM region decline following this Commonwealth participating in RGGI. Though some emissions may shift to other states, the potential increases in other states' emissions do not absorb the emissions reductions occurring in this Commonwealth. This Commonwealth's EGUs with close proximity to abundant and inexpensive natural gas have a competitive advantage over similar operations in other states. While some other states may experience some increased emissions, again any increase in emissions in the region is out measured by the decrease in this Commonwealth, thereby resulting in net benefits across the region. Additionally, these leakage estimates and models are based on current and predicted market conditions based on existing laws and policies, exclusive of any further regional or National action on carbon pricing which would minimize or entirely eliminate the potential for leakage.

The Department compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report and all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf.

IRRC agrees that the goal of reducing GHGs through RGGI and this final-form rulemaking is laudable. However, IRRC mentions that the declining emissions from fossil-fuel-fired EGUs that has occurred over recent years without participation in RGGI and the leakage that will occur if this Commonwealth does join RGGI raises the question of whether this final-form rulemaking, and its potential benefits, are needed compared to the potential negative fiscal impact that is predicted by the Committees, certain legislators and some members of the regulated community. To assist IRRC in determining if the rulemaking is in the public interest, IRRC asks the Board to explain why the benefits of the rulemaking outweigh the costs associated with its implementation.

The benefits of this final-form rulemaking far exceed any associated costs. According to the Department's 2021 Pennsylvania Climate Impacts Assessment, climate change is already having a negative impact on this Commonwealth with wide-ranging economic impacts, from disruptions to recreation and tourism to agriculture and infrastructure service disruptions. Furthermore, climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As this Commonwealth works to reduce its climate risks, steps should be taken to ensure that these inequitable impacts are addressed, and that efforts to address climate change do not inadvertently exacerbate inequities. The harm is already being felt by this Commonwealth's most vulnerable residents, and we must not delay implementation as this final-form rulemaking is clearly in the public interest. As mentioned above, failure to implement this final-form rulemaking, or even a delay in implementation will cause this Commonwealth to miss its 2025 interim GHG reduction goal with concerns regarding the trajectory toward meeting the 2050 goal.

As CO_2 budget sources would need one allowance for each ton of CO_2 emitted, the owners or operators would need to acquire 61 million CO_2 allowances at the estimated 2022 allowance price of $3.24 (2017 $/Ton). If these CO_2 allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be $198 million. The CO_2 budget sources would then most likely incorporate this compliance cost into their offer price for electricity. The price of electricity is then passed onto electric consumers. However, that does not mean that $198 million will be passed onto this Commonwealth's electric consumers as 25% of this Commonwealth's electricity is sold out of state.

Even if assuming the $198 million is the annual price tag of the program, which as explained above is an over estimation, the resulting public health benefits alone are estimated to be higher at $232—$525 million annually. The value of partial benefits already exceeds the cost of the program, and this does not account for the total environmental, health and economic benefits of CO_2 reductions, nor does it include the benefits of the reinvestment of the quarterly auction proceeds, a major economic driver.

The independent Penn State study also confirms that the climate benefits for this Commonwealth exceed the monetary costs of participation in RGGI. Penn State's analysis projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Looking at the benefits even through the narrow lens of health benefits, the benefits exceed the costs with additional benefits accruing from the reinvestment of the auction proceeds. This is consistent with the actual results of participation for the existing participating states over the last decade.

7. This final-form rulemaking is supported by acceptable data.

IRRC questions whether the regulation is supported by acceptable data. IRRC also notes that commentators have raised concerns about the modeling employed by the Board to quantify the economic and health benefits of the rulemaking. They question if the data considered is acceptable and appropriate. First and foremost, commentators are concerned that the underlying assumptions and data used for the modeling have not been made available to the public. IRRC urges the Board to share the underlying assumptions and data used for its modeling and address the following issues to demonstrate the validity of the data upon which the regulation is based:

a) Emissions reductions in the Commonwealth have been overstated because of leakage; therefore, the monetized health benefits are also overstated.
b) The modeling compares cumulative data for the time from 2019-2030, but the Commonwealth will not join RGGI until 2022.
c) The model uses an estimate of future natural gas prices which could be much lower than predicted.
d) The model does not account for new natural gas generation, but it does account for new renewable generation.
e) The modeling was conducted before New Jersey and Virginia joined RGGI.
f) The actual cost of buying an allowance will be higher than projected.
g) The modeling fails to account for the economic downturn related to the COVID-19 pandemic.

h) The model fails to account for the expansion of other federal and state regulations and initiatives that impact the production and distribution of electricity.

In response, the Department has been transparent in terms of the modeling and the inputs and assumptions that went into the modeling, both for the original 2020 modeling and the updated 2021 modeling runs as well. The underlying data and assumptions are sound, and the Department's modeling aligns with the real-world benefits that have accrued to the RGGI participating states. All modeling results, assumptions and raw data have been made available to the public through the Department's website in several areas and has been presented and discussed with thousands of stakeholders through the course of this rulemaking. The Department has also held individual meetings with stakeholders and the modeling contractor when requested to make sure that all questions and inquiries regarding the modeling were thoroughly answered. The modeling information posted to the Department's website consists of comprehensive spreadsheets containing all the assumptions and raw data upon which the Department's analyses and conclusions were based.

The Department also compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report, all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at www.dep.pa.gov/RGGI.

The Board addresses the issues noted by IRRC and other commentators individually below in a)—h) to demonstrate the validity of the data upon which this final-form rulemaking is based.

a) In response, the modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO_2 reductions between 2022 and 2030. The Department's modeling indicates what emissions reductions will occur in this Commonwealth. These are not based on regional benefits, but State benefits alone. When this Commonwealth implements this final-form rulemaking, significant CO_2 emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Penn State's study projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of implementation of this final-form rulemaking, and if anything, the Department's health benefits are understated.

b) In response, when evaluating the impacts of RGGI participation on the power sector, there are two separate modeling runs or scenarios. The first scenario, the Reference Case or Business-as-Usual Case projects what this Commonwealth's power sector will look like in the future without this Commonwealth's participation in RGGI, and the Policy Case or the RGGI case projects what this Commonwealth's power sector will look like with RGGI participation. These two modeling cases are then compared to help project the impacts of RGGI participation on electric transmission and generation and electric sector emissions, among others in this Commonwealth. When this modeling was first completed in 2020 for the proposed rulemaking,

the most recent year of available data was 2019. Therefore, the 2019 data was included in the 2020 round of modeling. While the time period for the IPM analysis was 2019 through 2030, the modeling specifically provided projections for 2020, 2022, 2025, 2028, and 2030. When the modeling was updated in early 2021 for this final-form rulemaking, the most recent year of available data was 2020. Therefore, the 2020 data was included in the 2021 round of modeling and as such the time period for the updated IPM analysis was 2020 through 2030.

The time period for the IPM analysis includes years prior to the implementation of this final-form rulemaking for two reasons. First, as stated, the only available data for each round of modeling was either 2019 or 2020. Second, the Policy Case assumes this final-form rulemaking will be in effect in 2022, so the modeling needs to account for certain assumptions, for example legal or policy requirements that are projected to change, in years before 2022. This accounts for any differences between the Reference Case and the Policy Case in years prior to 2022. Lastly, these assumptions are not only a factor in the Department's modeling, but can also be seen by the functioning of the actual energy market. For example, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

c) In response, the modeling includes natural gas prices that are the average of the Annual Energy Outlook (AEO) Reference Case and the High Gas Resources Case which are published annually by the EIA. The AEO Reference Case is used as a starting point, and then averaged with the High Gas Resources Case because of this Commonwealth's location within the shale region. This hybrid method is used because neither the AEO Reference Case nor the AEO High Gas Resources Case are singularly representative of gas prices in this Commonwealth. Averaged together, the two cases provide as accurate a forecast as possible for modeling purposes. However, the Board notes that these are forecasted prices and there is a possibility that future prices could vary.

d) In response, the modeling accounts for all available data for new generation within this Commonwealth and the surrounding states despite the fuel source. The specific list of projects that were included as firm capacity additions for this Commonwealth is included in the publicly available modeling results on the "Assumptions Overview- Firm Capacity Changes in PA" tab on the Department's RGGI webpage located at www.dep.pa.gov/RGGI. In the 2020 power sector modeling, the Department included 3,131 MW of new natural gas combined cycle capacity and 251 MW of new solar generation capacity.

e) In response, in the Reference Case for the modeling, RGGI was modeled as an 11-state program including the 9 states participating in RGGI at the end of 2019 — Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island, Vermont, New York, Delaware, and Maryland. Additionally, New Jersey and Virginia were included in the modeling as projected to begin participation on January 1, 2020, and January 1, 2021, respectively. In particular, the starting CO_2 allowance budget for New Jersey was input at 18 million short tons, and the starting CO_2 allowance budget for Virginia was input at 27.16 million short tons. The IPM Policy Case uses similar assumptions as the Reference Case with the key difference that it assumes that this Commonwealth will begin participation in RGGI on January 1, 2022.

f) In response, the RGGI auction clearing prices in late 2020 and early 2021 had a higher price compared to the projected CO_2 allowance prices in the Department's 2020 modeling. The difference between projected CO_2 allowance prices and actual CO_2 allowance prices can be due to a number of factors, including the end of the RGGI three-year control period, the change of the Federal administration, the fact that Virginia began participating in RGGI at the start of 2021, among others. The IPM model generates a CO_2 allowance price based on actual market fundamentals, including the projected supply and demand of CO_2 allowances during the modeling period. However, the model does not take into account behavioral considerations that impact auction bidder behavior and expectations. Bidder expectations can influence the CO_2 allowance price, and therefore lead to a difference from the projected CO_2 allowance price.

g) In response, the Board and the Department received comments and feedback on the power sector modeling through our extensive advisory committee meetings, webinars, public hearings, and the formal public comment period. Understanding the concerns that were raised, the Department conducted a second round of modeling to ensure that the modeling was as up to date as possible, specifically to confirm that the starting CO_2 allowance budget for 2022 and other components of this final-form rulemaking were still appropriate. In February of 2021, the Department updated the power sector modeling assumptions and inputs previously included in the 2020 round of modeling. These assumptions and inputs include the following: updated PJM electricity demand forecast, 2021 AEO Natural Gas Prices, updated capacity additions and retirements, updated technology costs and revisions to State law and policies which encompasses the new in-state generation requirement for Tier II resources under the Alternative Energy Portfolio Standards Act (73 P.S. §§ 1648.1—1648.8).

Most notably, the main difference in the modeling assumptions between 2020 and 2021 was the demand forecast for electricity. As a direct impact of the COVID-19 pandemic, the projections for the future demand of electricity are below the 2020 projections made prior to the onset of the pandemic. In sum, while the original 2020 modeling did not account for the impacts of the COVID-19 pandemic, the updated 2021 modeling conducted for this final-form rulemaking includes those impacts.

h) In response, the IPM model properly takes into account the expansion of other Federal and State regulations and initiatives that impact the production and distribution of electricity. IPM is a dynamic linear programming model that generates optimal decisions under the assumption of perfect foresight. It determines the least-cost method of meeting energy and peak demand requirements over a specified period. In its solution, the model considers several key operating or regulatory constraints that are placed on the power, emissions and fuel markets. The constraints include, but are not limited to, emission limits, transmission capabilities, renewable generation requirements and fuel market constraints. The model is designed to accommodate complex treatment of emission regulations involving trading, banking and special provisions affecting emission allowances, as well as traditional command-and-control emission policies. The specific Federal and State laws and policies that are included in the modeling runs are outlined on the "Assumptions Overview" tab on the Department's RGGI webpage located at www.dep.pa.gov/RGGI, the very first tab located in each of the modeling results files.

8. This final-form rulemaking will not have a negative economic or fiscal impact to this Commonwealth.

IRRC notes that there is no consensus on how this final-form rulemaking will affect the economy of this Commonwealth. IRRC asks the Board to review the concerns of those commentators that have raised issues related to the effect on the economy and provide updated and revised information in the RAF related to the potential economic and fiscal impact of this final-form rulemaking. In particular, commentators believe that the requirement to purchase allowances by coal and older natural gas-fired EGUs will result in those units becoming uneconomical to operate. As a result, these EGUs will close, impacting the coal mining industry of this Commonwealth and hundreds of small businesses and labor unions that support those industries. Another concern is that the price of electricity will increase. The price that electric utilities pay for electricity from fossil fuel-fired generators will increase and the additional cost will be passed on to residential, commercial and industrial rate payers. Low-income residents and those economically affected by the COVID-19 pandemic, small businesses and large industrial users will be impacted. Large industrial users of electricity may base a decision to locate or relocate a business based on the price of electricity in this Commonwealth. Additionally, IRRC mentions that commentators also note that local governments where the coal-related industries and small businesses operate will be negatively impacted because of the tax loss that will result from the rulemaking. One commentator has stated that the fiscal impact of the rulemaking will be the loss of over 8,000 jobs, the loss of $2.82 billion in total economic impact, the loss of $539 million in employee compensation, and the loss of $34.2 million in state and local tax revenue. However, other commentators believe any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

In response, the Department's updated 2021 modeling shows that most if not all the coal-fired generation in this Commonwealth, except for waste coal-fired facilities, will cease generation by 2025. These are the results of the Business-as-Usual or Reference case which does not take into consideration the impacts of this Commonwealth's participation in RGGI on the power sector. Notably, this is a divergence from the results of the Business-as-Usual or Reference case from the 2020 modeling which had projected that coal generation was expected to cease by 2030, though this Commonwealth's participation in RGGI and the associated CO_2 allowance price were previously shown to accelerate these retirements to some extent.

As explained in detail in prior responses, the Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and an addition of $1.9 billion to the Gross State Product, a measurement of the value of the State's economy, indicating economic growth. The Department's modeling incorporates any impacts to economic activity, divestment and loss of tax base that would occur as a result of this final-form rulemaking. Further, the Department's modeling projects this Commonwealth will continue to have lower electricity prices than nearly all of the participating states from 2022-2030, demonstrating the continued advantage of operating a business in this Commonwealth relative to nearby states.

Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even

those calculated by the Department. Penn State indicates that between 2022 and 2030, this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. In sum, RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

The Board agrees with other commentators that any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

9. This final-form rulemaking complies with the provisions of the RRA.

IRRC requests additional information and more complete answers to the following sections of the RAF, in addition to the more thorough analysis regarding potential fiscal or economic impact requested. First, Section 17 of the RAF asks an agency to identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor organizations and other public and private organizations. It also asks an agency to evaluate the benefits expected as a result of the regulation. The Board provides a detailed explanation of the expected environmental, health and economic benefits of the regulation for society as a whole. It also provides a dollar estimate of the potential cost to residential customers in terms of monthly electricity bills. However, the explanation does not provide a similar estimate for small businesses and other businesses. IRRC asks the Board to provide that information in the RAF submitted with the final regulation. Second, Section 19 of the RAF asks an agency to estimate any costs or savings to the regulated community associated with legal, accounting or consulting procedures. IRRC asks the Board to estimate the cost associated with an owner or operator having an account representative required to participate in allowance auctions under RGGI.

In response, the Board added supplementary information to the responses to sections 17 and 19 of the RAF. The Board particularly added more detail regarding the estimates for small businesses and other businesses. Additionally, potential costs and savings to the regulated community are discussed in more detail in the RAF, including the estimated cost associated with an owner or operator having an account representative required to participate in the multistate auctions under RGGI.

10. This final-form rulemaking will not negatively impact small businesses and provisions have been made to assist small business stationary sources with compliance.

IRRC questions whether a less costly or less intrusive alternative method of achieving the goal of the regulation has been considered for the regulation impacting small businesses. IRRC asks the Board to consider the following options, and if it decides to proceed with the current rulemaking, provide an explanation of why these alternatives are not appropriate. First suggestion is do nothing: A comment letter signed by 40 Representatives of the General Assembly states that the current regulatory environment and existing market forces have already significantly reduced CO_2 emissions in the Commonwealth. The "status quo is a far less costly and intrusive method than RGGI at achieving tremendous reductions in carbon emissions." Second, the letter states the Department could achieve its objective with a "gradually declining CO_2 emissions budget without the exorbitant costs proposed by this submission." This could be accomplished by calculating a price to auction emissions that would cover the cost needed to administer RGGI.

As mentioned in the Board's prior responses, status quo will not achieve the emissions reductions needed to protect public health and the environment, nor are current measures adequate to address climate change. The Department's modeling effort as mentioned above included two separate modeling runs, the first of which is (a) the reference case which reflects business-as-usual with no regulatory or policy changes, and (b) the policy case which is reflective of the impacts of this final-form rulemaking. In comparing these modeling scenarios, without this final-form rulemaking in place, this Commonwealth will emit 97—227 million tons of CO_2 more than with the implementation of this final-form rulemaking. Additionally, residents of this Commonwealth will not benefit from improved air quality or realize the economic, job impacts or health benefits that result from this final-form rulemaking.

Furthermore, rather than benefitting from implementation of this final-form rulemaking, there will be a deleterious impact on the environment, health and the economy without this meaningful and decisive action. Business-as-usual or status quo does not address climate change in a meaningful way. While there may be emissions reductions in the future, they do not occur at the rate or level at which is required to avoid the worst impacts of climate change. Additionally, as a Commonwealth we will not be capable of honoring our commitment to address climate change and will fall short of meeting the interim 2025 GHG reduction goal.

Part of what makes RGGI economically efficient is that it is a regional program, allowing for EGUs to achieve least cost compliance by buying and selling CO_2 allowances whether in multistate auctions or in the secondary market. CO_2 allowances are fungible, meaning that though this Commonwealth has an established CO_2 allowance budget for each year, this Commonwealth's CO_2 allowances are available to meet the compliance obligations in any other participating state and vice versa. Therefore, emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to signal entrance and exit of generation. In this respect, the market assists in achieving least cost compliance for all participating states. Furthermore, strategic investments of the auction proceeds within this Commonwealth reduce GHG emissions even further than this Commonwealth's annual CO_2 allowance budget alone.

11. Implementation procedures for the set-aside provisions and limited exemption.

IRRC asks the Board to respond to technical comments for and against the set-aside provisions and comments requesting full exemptions instead of set-asides. Additionally, IRRC asks the Board to respond to technical comments suggesting ways to improve the implementation of the set-asides and exemptions.

Each state has the authority and discretion as to how CO_2 allowances are treated which is memorialized in each state's CO_2 Budget Trading Program regulation. Allocation of the CO_2 allowances is just one mechanism through which states further public policy goals. For example, each state must decide how to make the CO_2 allowances available. In addition to states offering CO_2 allowances for sale through the multistate auctions, most participating states also opt to have set-aside accounts. These states specifically carve out or "set aside" a portion of the state's CO_2 allowance budget to assist certain sectors with part or all of their compliance obligations or allow other sectors to monetize the CO_2 allowances for further investment.

In this final-form rulemaking, the Board has provided three set-aside options, which are discussed in detail in this preamble. First, the Board is setting aside CO_2 allowances to assist this Commonwealth's waste coal generation sector with compliance with this final-form rulemaking. While waste coal facilities are not exempt from this final-form rulemaking, the Department will oversee the sector's compliance using CO_2 allowances that have specifically been carved out or "set aside" for this purpose. In other words, the compliance costs for waste coal-fired EGUs will be minimal.

At the beginning of each compliance year, the Department will set-aside CO_2 allowances for the waste coal facilities, thereby eliminating the need for the facilities to purchase these allowances in either the multistate auctions or on the secondary market. The waste coal set-aside is equal to 12.8 million tons of CO_2 emissions, an increase from the 9.3 million as outlined in the proposed rulemaking, in response to comments received during the public comment period. Some commentators requested an increase in the set-aside allocation to allow for future expansion of the waste coal industry, while others requested that the set aside allocation be reduced or completely eliminated. In response, the Department slightly increased the value of the set-aside to account for a facility previously marked for closure that will now remain in operation and to better reflect the operation levels of the waste coal-fired units in this Commonwealth.

Much like the comments received on the waste coal-set aside, the Board received comments asking for both the expansion and elimination of the cogeneration (now CHP) set-aside. Furthermore, commentators asked for clarification as to what facilities would qualify for the set-aside and how those calculations would be performed. In response to comments, the Board changed the name and description of the set-aside to clarify that the specific type of cogeneration facilities the set-aside covers are CHP facilities.

Some commentators requested the elimination of the CHP set-aside, indicating the anti-competitive nature of this set-aside. In response, the Board notes that facilities that would qualify for this set-aside are not strictly electricity producers in the plainest sense but have on-site generation that is feeding an interconnected facility. In other words, while these facilities do have some electricity that is sold to the grid, that is not the key focus of their business model nor is the

amount of electricity sold to the grid in a volume that allocation of CO_2 allowances would create an anti-competitive environment.

Comments were also made requesting that the Board expand the value of the CHP set-aside to account not only for a portion of the qualifying facility's compliance obligation, but to account for all of a qualifying facility's compliance obligation. Commentators indicated that without a full set-aside the Department may be creating a disincentive for existing CHP facilities to operate efficiently and a potential disincentive for the future buildout of additional CHP facilities. The commentators emphasized that this runs counter to the recommendations outlined in the Department's Climate Action Plan and the PUC's Policy Statement on Combined Heat and Power. Commentators indicated that any disincentive for these facilities to operate at anything, but peak efficiency was undermining the environmental benefits of CHP and may lead to other facilities with higher emissions intensity generating the lost electricity.

In response, the Board developed a two-tier approach to the CHP set-aside whereby facilities meeting strict efficiency criteria may be eligible for a full set-aside while other qualifying CHP facilities that do not meet those criteria may qualify for the partial set-aside. This allows for efficient operation of existing CHP facilities and does not interfere with the potential for future buildout of CHP in this Commonwealth.

The Board received comments asking that rather than depositing undistributed CO_2 allowances from the waste coal set-aside account into the strategic use set-aside account, that the strategic use set-aside account have its own independent CO_2 allowance allocation. In response, the Board notes that the Department has the flexibility in future years to deposit CO_2 allowances into the strategic use set-aside if the undistributed CO_2 allowances are not sufficient to support activity in this set-aside account. Because the Department has this flexibility already, the Board decided to maintain the allowance allocation structure as proposed.

Furthermore, comments were received asking that the Board add a new set-aside or modify the strategic use set-aside to develop a Voluntary Renewable Energy Set-aside akin to those established by a few of the participating states. In response, the Board elected to keep the strategic use set-aside as proposed, with some clarifications to explain that renewable and other non-emitting energy technologies would qualify for allocation of allowances under the strategic use set-aside. Rather than restrict the types of projects that would qualify for allowances, the Board has elected to keep the broader, more inclusive nature of the strategic use set-aside.

The Board also received comments requesting that the process by which applicants could apply for allowance allocations be more clearly outlined in the regulation. The Board responded with modifications to the regulation clearly outlining the set-aside application process and requirements. An additional requirement was added clarifying that CO_2 allowances are distributed upon the completion of a project which is not legally required. Projects that are completed for compliance purposes or as the result of settlements do not qualify for an allocation of allowances under the strategic use set-aside account.

IRRC asks the Board to consider delaying the implementation of the rulemaking for one year. IRRC suggests that this additional time would allow the regulated community an opportunity to

adjust their business plans to account for the potential increased costs associated with this Commonwealth joining RGGI.

The Board understands the concerns expressed by IRRC and other commentators; however, this Commonwealth cannot wait any longer to address CO_2 emissions from fossil-fuel fired EGUs. On October 3, 2019, it was announced that the Department was going to begin this rulemaking process, which provided more than two years' notice to the regulated community of the forthcoming regulation. As has been stated above, further delay would compromise this Commonwealth's ability to meet the GHG emissions reductions goals, and cause harm to public health and the environment which the Department is responsible for protecting under the APCA. Furthermore, due to the nature of compliance in the RGGI program, the first real compliance deadline occurs more than a year after the anticipated January 1, 2022 start date, further extending the compliance horizon for covered facilities.

RGGI operates on a three-year compliance schedule whereby only partial compliance is required within the first two years, and then full compliance is required after the end of the third year. The current RGGI three-year compliance period began in 2021, so 2021 and 2022 are interim compliance years while 2023 is a full compliance year. What this means is that facilities only need to acquire 50% of the necessary CO_2 allowances during the interim compliance years, but need to hold 100% of CO_2 allowances for the entire three-year control period by March 1 of the following year.

For example, while January 1, 2022 or the first day of the next calendar quarter following publication is the date upon which the CO_2 requirements begin for this Commonwealth, the first compliance deadline is not until more than a year later on March 1, 2023 with full compliance not required until March 1, 2024 providing ample time to comply.

12. Provisions of this final-form rulemaking were amended for clarity.

IRRC says the applicability provision under § 145.304 is unclear because it does not specify that only units that are operating would have to comply with the regulation. IRRC suggests that the final regulation be amended to improve the clarity of this requirement. In response, the Board amended § 145.304 to remove the language related to a unit operating at any time on or after January 1, 2005 to clarify that only fossil fuel-fired EGUs currently operating in this Commonwealth need to comply with this final-form rulemaking.

IRRC is concerned that § 145.314 does not require the owner or operator of a unit to verify anything. Section 145.314 specifies what must be included in a complete account certificate of representation for a CO_2 authorized account representative or a CO_2 authorized alternate account representative. IRRC recommends that the final-form regulation be amended to require the owner or operator of a unit to sign or verify in some manner that the representative is authorized to represent their interests under the CO_2 budget trading program.

In response, the Board notes that in addition to the language pertaining to the account representatives in § 145.314, there is language in § 145.311 providing that "the representative of the CO_2 budget source shall be selected by an agreement binding on the owner or operator of the source and all CO_2 budget units at the source and must act in accordance with the certificate of

representation under § 145.314." Additionally, the owner or operator should already have a designated representative who submits data to the EPA on behalf of the owner or operator. To participate in COATS, a representative of the CO_2 budget source must complete a Certificate of Representation form and submit the form to the EPA. The account representative listed on the form for a CO_2 budget source must match the representative for that facility in the EPA's Clean Air Market Division system. The regulatory language in sections 145.311 and 145.314 is also consistent with the existing language in the Board's NO_x Budget Trading Program regulation in 25 Pa. Code Chapter 145, Subchapter A and the RGGI Model Rule.

G. *Benefits, Costs and Compliance*

The CO_2 emission reductions accomplished through implementation of this final-form rulemaking would benefit the health and welfare of the approximately 12.8 million residents and the numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of climate change causing pollution resulting from the regulated sources.

Reduction of CO_2 emissions

This final-form rulemaking includes a CO_2 emission budget which declines by approximately 20 million short tons from 2022 to 2030 within this Commonwealth. However, this Commonwealth projects to reduce its CO_2 emissions from EGUs within this Commonwealth by between 97 million short tons and 227 million short tons as a direct result of participation in RGGI. This results in CO_2 reductions in this Commonwealth and a net benefit to the entire PJM region. The Department's modeling shows that this Commonwealth makes these significant emission reductions while maintaining historic electric generation levels, enhancing this Commonwealth's status as a leading net energy exporter and creating economic opportunities.

The CO_2 emission reductions resulting from this final-form rulemaking are substantial and are the catalyst needed to meet the climate goals for this Commonwealth, as outlined in Executive Order 2019-01, to reduce net GHG emissions Statewide by 26% by 2025 from 2005 levels and by 80% by 2050 from 2005 levels. A predicted reduction from the 2021 modeling of approximately 11 million metric tons of CO_2 per year due to this Commonwealth's potential participation in RGGI provides significant assurance that along with prudent investments of auction proceeds and other GHG abatement activities, this Commonwealth will remain on track to reach the 2025 net GHG reduction goal.

While efforts to model impacts of this final-form rulemaking focused on this Commonwealth, the impacts on the participating states in the PJM region, which consists of all or parts of 13 states and the District of Columbia, were also considered. Historically, the RGGI program has experienced some emissions leakage. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Despite the leakage, this Commonwealth's participation in RGGI would result in a net emissions reduction of 28 million tons of CO_2 across PJM for the period between 2021 and 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the FERC, and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

The participating states together, including this Commonwealth, will achieve regional CO_2 emissions reductions of 30% by 2030. According to data from the World Bank, by 2022 based on Gross Domestic Product (GDP), the participating states would comprise the third largest economy in the world. See The World Bank, Calculation based on GDP (current US$), 2019, https://data.worldbank.org/indicator/NY.GDP.MKTP.CD. These CO_2 emission reductions are even more significant when viewed from this collective impact. Reductions in CO_2 emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO_2 emission reductions may decrease costs from extreme weather events and climate-related ailments that also result in increased health care costs.

Health benefits of this final-form rulemaking

According to the NCA4, climate-driven changes in weather, human activity and natural emissions are all expected to impact future air quality across the United States. Many emission sources of GHGs also emit air pollutants that harm human health. Controlling these common emission sources would both mitigate climate change and have immediate benefits for air quality and human health. The energy sector, which includes energy production, conversion, and use, accounts for 84% of GHG emissions as well as 80% of emissions of NO_x and 96% of SO_2. Specifically, mitigating GHGs can lower emissions of SO_2, NO_x, PM, ozone and PM precursors, and other hazardous pollutants, reducing the risks to human health from air pollution.

While this final-form rulemaking requires CO_2 emission reductions, co-pollutants will also be reduced, because multiple pollutants are emitted from fossil fuel-fired EGUs. While the benefits of the cumulative CO_2 emission reductions will be tremendous, the Department also estimates that this final-form rulemaking will lead to a reduction of co-pollutants as well. Based on the 2020 modeling, this final-form rulemaking would provide public health benefits due to the expected reductions in emissions of CO_2 and the ancillary emission reductions or co-benefits of SO_2 and NO_x reductions. The Department's 2020 modeling projects cumulative emission reductions of 112,000 tons of NO_x and around 67,000 tons of SO_2 over the decade.

The Department used the EPA's Regional Incidence-per-Ton methodology which calculates total avoided incidences of major health issues, and calculation of avoided lost work and school days due to reduced emissions. Based on an assumption that 188 million tons of CO_2 emissions

are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking. Children and adults alike will suffer less from respiratory illnesses, 30,000 less incidences of upper and lower respiratory symptoms which leads to reduced emergency department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well which results in over 83,000 avoided lost workdays due to health impacts. The public health benefits to this Commonwealth of these avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

A 2017 independent study by Abt Associates, a global research firm focused on health and environmental policy, on the "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009—2014" showed that participating states gained significant health benefits in the first 6 years of RGGI implementation alone. From 2009—2014, the participating states avoided around 24% of CO_2 emissions that would have otherwise been emitted during that period, resulting in around $5 billion in avoided health related costs. See Abt Associates, "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009—2014," January 2017, https://www.abtassociates.com/sites/default/files/files/Projects/executive%20summary%20RGGI.pdf. Since this final-form rulemaking would lead to a 31% reduction of projected CO_2 emissions, or avoided emissions, over the next decade, this Commonwealth is likely to see similar gains in health benefits.

A recent study led by researchers from the Columbia Center for Children's Environmental Health at Columbia University Mailman School of Public Health (Columbia study), published on July 29, 2020, on the "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative" indicates that the health benefits from RGGI are even more significant than estimated in 2017 by Abt Associates. The Columbia study concluded that the co-pollutant reductions resulting from RGGI have provided considerable child health benefits to participating and neighboring states. In particular, between 2009—2014, RGGI resulted in an estimated 537 avoided cases of childhood asthma, 112 avoided preterm births, 98 avoided cases of autism spectrum disorder and 56 avoided cases of term low birthweight. Those child health benefits also have significant economic value, estimated at $199.6—$358.2 million between 2009 and 2014 alone. However, the researchers note that the actual health benefits are even greater than estimated because the analysis does not capture the future health benefits related to reductions in childhood $PM_{2.5}$ exposure and mitigating climate change, such as fewer heat-related illnesses or cases of vector-borne disease to which children are especially vulnerable. See Frederica Perera, David Cooley, Alique Berberian, David Mills and Patrick Kinney, "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative," Environmental Health Perspectives, Vol. 128, No. 7, July 2020, https://ehp.niehs.nih.gov/doi/10.1289/EHP6706.

Benefits of continued waste coal pile remediation

While this Commonwealth's participation in RGGI will have tangible health, environmental and economic benefits, the inclusion of the waste coal set-aside has the additional benefit of

avoiding unintended impacts to this generation sector, so that the environmental benefits of continuing to remediate this Commonwealth's legacy waste coal piles may continue. For context, since 1988 a total of 160.7 million tons of waste coal has been removed and burned to generate electricity, with an additional 200 million tons of coal ash beneficially used at mine sites. One of the important environmental benefits that waste coal ash provides is the neutralization of acid mine drainage, due to the use of limestone as an emission reduction additive during the combustion process. Of this Commonwealth's over 13,000 acres of waste coal piles cataloged by the Department, 3,700 acres have been reclaimed with roughly 9,000 acres remaining. Additionally, of the piles that remain, approximately 40 of them have ignited, and continually burn which significantly impacts local air quality as well as the Commonwealth's efforts to meet and maintain compliance with the NAAQS.

Benefits of CHP

As discussed previously, this final-form rulemaking provides a set-aside and limited exemption for CHP which will benefit existing systems while encouraging new installations in this Commonwealth. CHP units use energy efficiently by simultaneously producing electricity and useful thermal energy from the same fuel source. CHP captures the wasted heat energy that is typically lost through power generation, using it to provide cost-effective heating and cooling to factories, businesses, universities and hospitals. CHP units are able to use less fuel compared to other fossil fuel-fired EGUs to produce a given energy output. Less fuel being burned results in fewer air pollutant emissions, including CO_2 and other GHGs. In addition to reducing emissions, CHP benefits the economy and businesses by improving manufacturing competitiveness through increased energy efficiency and providing a way for businesses to reduce energy costs while enhancing energy reliability. Because CHP units are interconnected with a facility, the electricity consumed on-site is not reduced due to line losses, and climate change resiliency is increased.

Benefits of RGGI participation

As previously mentioned, cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO_2 pollution by over 45% since 2009, while experiencing per capita GDP growth and reduced energy costs. The program design of RGGI would enable the Board to regulate CO_2 emissions from the power sector in a way that is economically efficient thereby driving long-term investments in cleaner sources of energy.

Part of what makes RGGI economically efficient is that it is a regional cap and invest program, which allows EGUs to achieve least-cost compliance by buying and selling allowances in a multistate auction or in regional secondary markets. RGGI CO_2 allowances are fungible across the participating states, meaning that though this Commonwealth would have an

established allowance budget for each year, this Commonwealth's allowances are available to meet the compliance obligations in any other RGGI state and vice versa at the option of the regulated sources. Therefore, CO_2 emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to continue to signal entrance and exit of generation. Though each state has its own annual allocation, compliance occurs at the regional level rather than on a state-by-state basis. In this respect, the market assists in achieving least cost compliance for all participating states.

Another benefit of participating in multistate auctions run by RGGI, Inc. is that RGGI, Inc. has retained the services of an independent market monitor to monitor the auction, CO_2 allowance holdings, and CO_2 allowance transactions, among other activities. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude or otherwise manipulate prices in the auction or the secondary market, or both, making recommendations regarding proposed market rule changes to improve the efficiency of the market for RGGI CO_2 allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor will monitor bidder behavior in each auction and report to the participating states any activities that may have a material impact on the efficiency and performance of the auction. The participating states, through RGGI, Inc., release a Market Monitor Report shortly after each CO_2 allowance auction. The Market Monitor Report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids and a summary of bid prices, showing the minimum, maximum, average and clearing price and the CO_2 allowances awarded.

RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. See Analysis Group, "The Economic Impacts of the Regional Greenhouse Gas Initiative on Northeast and Mid-Atlantic States," https://www.analysisgroup.com/Insights/cases/the-economic-impacts-of-the-regional-greenhouse-gas-initiative-on-northeast-and-mid-atlantic-states/.

A recent report from the Acadia Center, a nonprofit organization committed to advancing the clean energy future, titled "The Regional Greenhouse Gas Initiative: Ten Years in Review," shows that CO_2 emissions from power plants in the participating states have decreased 47%, which is 90% faster than in the rest of country. The participating states were able to achieve that significant reduction while the GDP grew by 47%, outpacing the rest of the country by 31%.

RGGI has also driven substantial reductions in harmful co-pollutants, making the region's air cleaner and its people healthier. Additionally, proceeds from RGGI auctions generated nearly $3.3 billion in state investments from 2009 to 2019. See Acadia Center, "The Regional

Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf.

For comparison, according to the Department's 2019 GHG Inventory Report from 2005 to 2016, this Commonwealth reduced its net emissions by 33.5% while the participating states reduced CO_2 pollution from covered sources by over 45% over the same period. Additionally, this reduction was achieved while the region's per-capita GDP has continued to grow, highlighting the synergies between environmental protection and economic development.

Additionally, this final-form rulemaking may create economic opportunities for clean energy businesses. By establishing a cost for emitting CO_2, and pricing this externality into the energy market, the CO_2 Budget Trading Program will provide a market incentive for developing and deploying technologies that improve the fuel efficiency of electric generation, generate electricity from non-carbon emitting resources, reduce CO_2 emissions from combustion sources and encourage carbon capture and sequestration. The energy efficiency sector is the largest component of all energy jobs in this Commonwealth and the renewable energy sector contains some of the fastest growing jobs in the country.

Investment of auction proceeds benefits consumers and the economy

The proceeds generated from this final-form rulemaking would be invested into programs that would reduce air pollution and create positive economic impacts in this Commonwealth. The Department plans to develop a draft plan for public comment outlining reinvestment options separate from this final-form rulemaking. However, the Department conducted modeling to estimate the economic impacts of this final-form rulemaking. The Department analyzed the net economic benefits of the program investments using the Regional Economic Model, Inc. model. The extensive economic modeling will help the Department determine the best ways to invest the auction proceeds in this Commonwealth to maximize emission reductions and economic benefits. The modeling anticipates that in the first year of participation in RGGI, hundreds of millions of dollars in auction proceeds will be generated for the use in the elimination of air pollution in this Commonwealth. The auction proceeds would be spent on programs related to the regulatory goal, and the Department modeled a scenario in which the proceeds are invested in energy efficiency, renewable energy and GHG abatement.

The proceeds will aid this Commonwealth in the transition toward a clean energy economy. In 2015, the EPA noted that the energy market was moving toward cleaner sources of energy and states needed to make plans for and invest in the next generation of power production, particularly considering that current assets and infrastructure were aging. By strategically investing the proceeds, this Commonwealth can help ensure that, as new investments are being made, they are integrated with the need to address GHG pollution from the electric generation sector. See 80 FR 64661, 64678 (October 23, 2015). These energy transitions are occurring both in this Commonwealth and Nationally.

Nationally, the last 10 years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005,

electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline dramatically. In 2010, coal generation represented 47% of this Commonwealth's generation portfolio and is expected to decline to roughly 1% of this Commonwealth's generation portfolio in 2030. This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI. Anticipating the need for transition, for these communities and employees, auction proceeds can be used to mitigate these impacts and assist communities and families through the energy transition. This could include repowering of the existing coal-fired power plants to natural gas, investments in worker training or other community-based support programs.

The Department would invest a portion of the proceeds in energy efficiency initiatives because energy efficiency is a low-cost resource for achieving CO_2 emission reductions while reducing peak demand and ultimately reducing electricity costs. Lower energy costs create numerous benefits across the economy, allowing families to invest in other priorities and businesses to expand. Energy efficiency savings can be achieved cost-effectively by upgrading appliances and lighting, weatherizing and insulating buildings, upgrading HVAC and improving industrial processes. Additionally, all consumers benefit from energy efficiency programs, not just direct program participants because focused investment in energy efficiency can lower peak electricity demand and can decrease overall electricity costs which results in savings for all energy consumers. Additionally, energy efficiency projects are labor-intensive which create local jobs and boost local economy. For instance, projects involving home retrofits directly spur employment gains in the housing and construction industries.

Investing a portion of the auction proceeds into energy efficiency initiatives is also crucial to addressing the impacts of climate change on consumers. According to the NCA4, rising temperatures are projected to reduce the efficiency of power generation while increasing energy demands, resulting in higher electricity costs. Energy efficiency will help lessen those impacts by putting downward pressure on both demand and electricity costs.

Historically, the participating states have invested a significant portion of their auction proceeds in energy efficiency programs. According to RGGI's 2018 Investment Report, over the lifetime of the installed measures, the investments made in energy efficiency in 2018 alone are projected to save participants over $1.2 billion on energy bills, providing benefits to more than 115,000 participating households and 1,200 participating businesses. The investments are also projected to further avoid the release of 1.4 million short tons of CO_2 pollution. See RGGI, Inc., The Investment of RGGI Proceeds in 2018, July 2020, https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2018.pdf.

The Department would also invest a portion of the proceeds in clean and renewable electricity generation, such as energy derived from clean or zero emissions sources including geothermal, hydropower, solar and wind. Clean and renewable energy systems reduce reliance on fossil fuels and provide climate resilience benefits, including reduced reliance on centralized power. They also offer the opportunity to save money on electricity costs by installing onsite renewable energy and also reduce power lost through transmission and distribution. Investing in clean and

renewable projects will help this Commonwealth meet its climate goals, drive in-State investments and job creation, and lessen the pressure on the CO_2 allowance budget by generating more electricity without additional emissions.

The participating states invested 19% of their 2018 auction proceeds in clean and renewable energy projects. Over the lifetime of the projects installed in 2018, these investments are projected to offset about $600 million in energy expenses for households and businesses. The investments are also projected to avoid the release of 1.9 million short tons of CO_2 emissions.

The Department would also invest a portion of the proceeds in GHG abatement initiatives. GHG abatement includes a broad category of projects encompassing other ways of reducing GHGs, apart from energy efficiency and clean and renewable energy. Examples of potential programs in this Commonwealth include abandoned oil and gas well plugging, electric vehicle infrastructure, carbon capture, utilization and storage, combined heat and power, energy storage, repowering projects and vocational trainings, among others.

For reference, in 2018, an estimated 20% of RGGI investments were made in GHG abatement programs and projects. For the duration of the project lifetime, those investments are expected to avoid over 1.2 million short tons of CO_2 emissions across the region.

In the 2020 modeling, the Department modeled an investment scenario with 31% of annual proceeds for energy efficiency, 32% for renewable energy and 31% for GHG abatement, and 6% for any programmatic costs related to administration and oversight of the CO_2 Budget Trading Program (5% for the Department and 1% for RGGI, Inc). These programmatic costs are in line with the historical amounts reserved by the participating states.

The results of the 2020 modeling show that this final-form rulemaking will not only combat climate change and improve air quality, but also provide positive economic value to this Commonwealth. The modeling estimates that from 2022 to 2030, this final-form rulemaking would lead to an increase in Gross State Product of $1.9 billion and a net increase of over 30,000 jobs in this Commonwealth. The Department's modeling also indicates that investments from this final-form rulemaking would spur an addition of 9.4 gigawatts of renewable energy and result in a load reduction of 29 terawatt hours of electricity from energy efficiency projects.

Benefits of cap and trade v. traditional command and control

In 2003, the EPA issued "A Guide to Designing and Operating a Cap and Trade Program for Pollution Control," in which the EPA detailed the benefits of cap and trade programs and the advantages they provide over more traditional approaches to environmental regulation. By establishing an emissions budget, cap and trade programs can provide a greater level of environmental certainty than other environmental policy options. The regulated sources, across the region, must procure allowances to cover emissions or risk being penalized for lack of compliance. Traditional command and control regulations, on the other hand, tend to rely on variable emission rates and usually only regulated existing or new sources. However, under cap and trade programs, new and existing sources must comply with the emissions budget. A cap and trade program may also encourage sources to achieve emission reductions in anticipation of

future compliance, resulting in the earlier achievement of environmental and human health benefits. In fact, the Department's modeling shows that this is occurring as this Commonwealth prepares to participate in RGGI in 2022.

The EPA also noted in the guide that banking of allowances, which this final-form rulemaking allows, provides an additional incentive to reduce emissions earlier than required. Banking provides flexibility by allowing sources to save unused allowances for use in a later compliance period when the emissions budget is lower and the costs to reduce emissions may be higher. With command and control, the regulating authority specifies sector-wide technology and performance standards that each of the affected sources must meet, whereas cap and trade provides sources with the flexibility to choose the technologies that minimize their costs while achieving their emission target. Cap and trade programs also provide more accountability than a command and control program. Under this final-form rulemaking and other cap and trade programs, sources must account for every ton of emissions they emit by acquiring allowances. On the other hand, command and control programs tend to rely on periodic inspections and assumptions that control technology is functioning properly to show compliance. See EPA, "Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control," June 2003, EPA430-B-03-002, https://www.epa.gov/sites/production/files/2016-03/documents/tools.pdf.

Compliance costs

This final-form rulemaking applies to owners or operators of fossil fuel-fired EGUs, within this Commonwealth, with a nameplate capacity equal to or greater than 25 MWe. This final-form rulemaking is designed to effectuate least cost CO_2 emission reductions for the years 2022 through 2030 within this Commonwealth. In addition to purchasing CO_2 allowances and completing offset projects to generate CO_2 offset allowances, CO_2 budget units may reduce their compliance obligations by reducing CO_2 emissions through other alternatives such as heat rate improvements, fuel switching and co-firing of biofuels.

To comply with this final-form rulemaking, each CO_2 budget unit within this Commonwealth will need to acquire CO_2 allowances equal to its CO_2 emissions. If CO_2 allowances are purchased through the multistate auctions, the owner or operator of a CO_2 budget unit will pay the auction allowance price, currently around $5 per ton, for each ton of CO_2 the unit emits. As mentioned previously, reserved CO_2 CCR allowances can be released into the auction if allowance prices exceed predefined price levels, meaning emission reduction costs are higher than projected. The total cost of purchasing allowances will therefore vary per unit based on how much CO_2 the unit emits and the allowance price. The owner or operator may also purchase CO_2 allowances on the secondary market where they could potentially purchase CO_2 allowances at a price lower than the RGGI allowance price. CO_2 allowances also have no expiration date and can be acquired and banked to defray future compliance costs.

Since the Department will allocate CO_2 allowances to waste coal-fired units each year up to 12,800,000 CO_2 allowances sector-wide, waste coal-fired units will incur minimal compliance costs. Owners or operators of waste coal-fired units will only need to purchase CO_2 allowances if the set-aside amount is exceeded. However, waste coal-fired units still have to comply with the

other components of the regulation, including incorporating the CO_2 budget trading programs into their permits.

This final-form rulemaking will require the owner or operator of an applicable source to submit a complete application for a new, renewed or modified permit and pay the associated fee. The application must be submitted by the later of 6 months after the effective date of the final-form rulemaking or 12 months before the date on which the CO_2 budget source, or a new unit at the source, commences operation.

The Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal as this final-form rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this final-form rulemaking is already in existence at the regulated source and the necessary emissions data is currently reported to the EPA. There may be minimal programmatic costs related to the submittal of compliance certification reports and auction, account, and offset project related forms.

Compliance costs will vary by CO_2 budget unit as the amount of CO_2 emitted is the primary driver of compliance costs. Overall CO_2 emissions are impacted by operational decisions such as run time, and by emissions intensity which varies by fuel type, and abatement technology employed. Additionally, certain sources may be eligible for set-aside allowances at no cost.

In 2022, this Commonwealth's CO_2 emissions from CO_2 budget sources are estimated to be 61 million short tons. Given the 3-year compliance schedule, all 61 million CO_2 allowances will not need to be purchased in the first year. The total amount of CO_2 allowances available will decline as the amount of CO_2 emissions in this Commonwealth decline.

As CO_2 budget sources would need one allowance for each ton of CO_2 emitted, the owners or operators would need to acquire 61 million CO_2 allowances at the estimated 2022 allowance price of $3.24 (2017$/Ton). If these CO_2 allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be approximately $198 million. The CO_2 budget sources would then most likely incorporate this compliance cost into their offer price for electricity. The price of electricity is then passed onto electric consumers. However, that does not mean that $198 million will be passed onto this Commonwealth's electric consumers.

Electric consumer impact

Based on the Department's 2021 modeling, it can be expected that at least 25% of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are estimated at 51,000 gigawatt hours (GWh), representing 25% of this Commonwealth's 2022 electricity generation of 201,221 GWh. As a result, without factoring in the strategic investment of auction proceeds, the remaining 75% of the cost of compliance or $149 million would be borne by this Commonwealth. This percentage is also dependent on the CO_2 emissions intensity of the exported generation.

According to the EIA, the major components of the United States' average price of electricity in 2020 were 56% generation, 31% distribution and 13% transmission costs. See EIA, Electricity explained: Factors affecting electricity prices, Major components of the U.S. average price of electricity, 2020, https://www.eia.gov/energyexplained/electricity/prices-and-factors-affecting-prices.php. This final-form rulemaking would only impact the generation portion of a consumer electric bill, which is a little more than half of the bill. The Department's 2021 modeling estimates that in 2022, wholesale energy prices will be 2.4% higher with RGGI participation. That amounts to a roughly 1.2% increase in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

The average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source. Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2% in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this final-form rulemaking were not implemented.

Additionally, based on information contained within the PUC's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania PUC, 2020 Rate Comparison Report. https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

Compliance assistance plan

The Department will continue to educate and assist the public and the regulated community in understanding the requirements and how to comply with them throughout the rulemaking

process. The Department will continue to work with the Department's provider of Small Business Stationary Source Technical and Environmental Compliance Assistance. These services are currently provided by the Environmental Management Assistance Program (EMAP) of the Pennsylvania Small Business Development Centers. The Department has partnered with EMAP to fulfill the Department's obligation to provide confidential technical and compliance assistance to small businesses as required by the APCA, section 507 of the CAA (42 U.S.C.A. § 7661f) and authorized by the Small Business and Household Pollution Prevention Program Act (35 P.S. §§ 6029.201—6029.209).

In addition to providing one-on-one consulting assistance and onsite assessments, EMAP also operates a toll-free phone line to field questions from small businesses in this Commonwealth, as well as businesses wishing to start up in, or relocate to, this Commonwealth. EMAP operates and maintains a resource-rich environmental assistance web site and distributes an electronic newsletter to educate and inform small businesses about a variety of environmental compliance issues.

Paperwork requirements

The recordkeeping and reporting requirements for owners and operators of applicable sources under this final-form rulemaking are minimal because the records required align with the records already required to be kept for emission inventory purposes and for other Federal and State requirements.

H. *Pollution Prevention*

The Pollution Prevention Act of 1990 (42 U.S.C.A. §§ 13101—13109) established a National policy that promotes pollution prevention as the preferred means for achieving State environmental protection goals. The Department encourages pollution prevention, which is the reduction or elimination of pollution at its source, through the substitution of environmentally friendly materials, more efficient use of raw materials and the incorporation of energy efficiency strategies. Pollution prevention practices can provide greater environmental protection with greater efficiency because they can result in significant cost savings to facilities that permanently achieve or move beyond compliance.

This final-form rulemaking would help ensure that the citizens of this Commonwealth would benefit from reduced emissions of CO_2 from regulated sources. Reduced levels of CO_2 would promote healthful air quality and ensure the continued protection of the environment and public health and welfare.

I. *Sunset Review*

The Board is not establishing a sunset date for this final-form rulemaking, since it is needed for the Department to carry out its statutory authority. If published as a final-form regulation in the *Pennsylvania Bulletin*, the Department will closely monitor its effectiveness and recommend updates to the Board as necessary.

J. *Regulatory Review*

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on October 21, 2020, the Department submitted a copy of the notice of proposed rulemaking, published at 50 Pa.B. 6212, to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees for review and comment.

Under section 5(c) of the Regulatory Review Act, IRRC and the House and Senate Committees were provided with copies of the comments received during the public comment period, as well as other documents when requested. In preparing this final-form rulemaking, the Department has considered all comments from IRRC, the House and Senate Committees and the public.

Under section 5.1(j.2) of the Regulatory Review Act (71 P.S. § 745.5a(j.2)), on DATE, 2021, this final-form rulemaking was deemed approved by the House and Senate Committees. Under section 5.1(e) of the Regulatory Review Act, IRRC met on DATE, 2021, and approved this final-form rulemaking.

K. *Findings of the Board*

The Board finds that:

(1) Public notice of proposed rulemaking was given under sections 201 and 202 of the act of July 31, 1968 (P.L. 769, No. 240) (45 P.S. §§ 1201 and 1202) and regulations promulgated thereunder at 1 Pa. Code §§ 7.1 and 7.2 (relating to notice of proposed rulemaking required; and adoption of regulations).

(2) At least a 60-day public comment period was provided as required by law and all comments were considered.

(3) This final-form rulemaking does not enlarge the purpose of the proposed rulemaking published at 50 Pa.B. 6212.

(4) These regulations are reasonably necessary and appropriate for administration and enforcement of the authorizing acts identified in Section C of this order.

L. *Order of the Board*

The Board, acting under the authorizing statutes, orders that:

(a) The regulations of the Department, 25 Pa. Code Chapter 145, are amended to read as set forth in Annex A.

(b) The Chairperson of the Board shall submit this final-form regulation to the Office of General Counsel and the Office of Attorney General for review and approval as to legality and form, as required by law.

(c) The Chairperson of the Board shall submit this final-form regulation to IRRC and the House and Senate Committees as required by the Regulatory Review Act (71 P.S. §§ 745.1—745.14).

(d) The Chairperson of the Board shall certify this final-form regulation and deposit it with the Legislative Reference Bureau as required by law.

(e) This final-form regulation shall take effect immediately upon publication in the *Pennsylvania Bulletin*.

PATRICK McDONNELL,
Chairperson

Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE III. AIR RESOURCES

CHAPTER 145. INTERSTATE POLLUTION TRANSPORT REDUCTION

Subchapter E. CO_2 BUDGET TRADING PROGRAM

(*Editor's Note*: Sections 145.301—145.409 are proposed to be added and are printed in regular type to enhance readability.)

GENERAL PROVISIONS

Sec.

§ 145.301. Purpose.

This subchapter establishes the Pennsylvania component of the CO_2 Budget Trading Program, which is designed to reduce anthropogenic emissions of CO_2, a greenhouse gas, from CO_2 budget sources in a manner that is protective of public health, welfare and the environment.

§ 145.302. Definitions.

The following words and terms, when used in this subchapter, have the following meanings, unless the context clearly indicates otherwise:

Account number—The identification number given by the Department or its agent to each CO_2 Allowance Tracking System (COATS) account.

Acid rain emissions limitation—A limitation on emissions of sulfur dioxide or NO_x under the Acid Rain Program under Title IV of the Clean Air Act (42 U.S.C.A. §§ 7651—7651o).

Acid Rain Program—A multi-state sulfur dioxide and NO_x air pollution control and emission reduction program established by the Administrator under Title IV of the Clean Air Act and 40 CFR Parts 72—78.

Adjustment for banked allowances—An adjustment that may be applied to the Pennsylvania CO_2 Budget Trading Program base budget for an allocation year to address CO_2 allowances held in general and compliance accounts, including compliance accounts established under the CO_2 Budget Trading Program, but not including accounts opened by participating states, that are in addition to the aggregate quantity of emissions from all CO_2 budget sources in all of the participating states at the end of the control period immediately preceding the allocation year and as reflected in the CO_2 Allowance Tracking System on March 15 of the year following the control period.

Administrator—The Administrator of the EPA or the Administrator's authorized representative.

Agent—A qualified entity that may assist the Department with technical and administrative support functions in accordance with the requirements of this subchapter.

Air pollution reduction account—The general account established by the Department from which CO_2 allowances will be sold or distributed to provide funds for use in the elimination of air pollution in accordance with the act and Chapter 143 (relating to disbursements from the clean air fund) and the administration of the Pennsylvania component of the CO_2 Budget Trading Program.

Allocate or *allocation*—The determination by the Department of the number of CO_2 allowances to be recorded in the compliance account of a CO_2 budget source, the waste coal set-aside account, the strategic use set-aside account, the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account, the air pollution reduction account, or the general account of the sponsor of an approved CO_2 emissions offset project.

Allocation year—A calendar year for which the Department allocates or awards CO_2 allowances under §§ 145.341 and 145.391—145.397 (relating to Pennsylvania CO_2 trading program base budget; and CO_2 emissions offset projects). The allocation year of each CO_2 allowance is reflected in the unique identification number given to the allowance under § 145.354(c) (relating to recordation of CO_2 allowance allocations).

Allowance auction or *auction*—A bidding process in which the Department or its agent offers CO_2 allowances for sale.

Ascending price, multiple-round auction—A bidding process that starts with an opening price that increases each round by predetermined increments. In each round, a bidder offers the quantity of CO_2 allowances the bidder is willing to purchase at the posted price. Rounds continue as long as demand exceeds the quantity of CO_2 allowances offered for sale. At the completion of the final round, CO_2 allowances will be allocated by one of three methods:

(i) At the final price to remaining bidders and unsold CO_2 allowances to be withheld for a future auction.

(ii) At the penultimate price, first to final round bidders and then to bidders in the penultimate round in chronological order of bid during the penultimate round for all remaining CO_2 allowances.

(iii) According to an alternative mechanism designed to effectuate the objectives of this subchapter.

Attribute—A characteristic associated with electricity generated using a particular renewable fuel, such as its generation date, facility geographic location, unit vintage, emissions output, fuel, state program eligibility, or other characteristic that can be identified, accounted for and tracked.

Attribute credit—A unit that represents the attributes related to one megawatt-hour of electricity generation.

Automated Data Acquisition and Handling System—The component of the continuous emissions monitoring system, or other emissions monitoring system approved for use under § 145.371 (relating to general monitoring requirements), designed to interpret and convert individual output signals from pollutant concentration monitors, flow monitors, diluent gas monitors and other component parts of the monitoring system to produce a continuous record of the measured parameters in the measurement units required by § 145.371.

Award—The determination by the Department of the number of CO_2 offset allowances to be recorded in the general account of a project sponsor under § 145.397 (relating to award and recordation of CO_2 offset allowances). Award is a type of allocation.

Beneficial interest—A profit, benefit or advantage resulting from the ownership of a CO_2 allowance.

Bidder—A qualified participant who has met the requirements of §§ 145.405 and 145.406 (relating to auction participant requirements; and auction participant qualification) and has been determined by the Department to be eligible to participate in a specified CO_2 allowance auction under § 145.406.

Boiler—An enclosed fossil or other fuel-fired combustion device used to produce heat and to transfer heat to recirculating water, steam or other medium.

CEMS—continuous emissions monitoring system—The equipment required under § 145.371 to sample, analyze, measure and provide, by means of readings recorded at least once every 15 minutes, using an automated data acquisition and handling system, a permanent record of stack gas volumetric flow rate, stack gas moisture content, and oxygen or carbon dioxide concentration, as applicable, in a manner consistent with 40 CFR Part 75 (relating to continuous emission monitoring) and § 145.371. The following systems are types of continuous emissions monitoring systems required under § 145.371.

(i) A flow monitoring system, consisting of a stack flow rate monitor and an automated data acquisition and handling system and providing a permanent, continuous record of stack gas volumetric flow rate, in standard cubic feet per hour.

(ii) A nitrogen oxides emissions rate (or NO_x-diluent) monitoring system, consisting of a NO_x pollutant concentration monitor, a diluent gas (CO_2 or O_2) monitor, and an automated data acquisition and handling system and providing a permanent, continuous record of NO_x concentration, in parts per million, diluent gas concentration, in percent CO_2 or O_2; and NO_x emissions rate, in pounds per million British thermal units (lb/MMBtu).

(iii) A moisture monitoring system, as defined in 40 CFR 75.11(b)(2) (relating to specific provisions for monitoring SO_2 emissions) and providing a permanent, continuous record of the stack gas moisture content, in percent H_2O.

(iv) A carbon dioxide monitoring system, consisting of a CO_2 pollutant concentration monitor (or an oxygen monitor plus suitable mathematical equations from which the CO_2 concentration is derived) and an automated data acquisition and handling system and providing a permanent, continuous record of CO_2 emissions, in percent CO_2.

(v) An oxygen monitoring system, consisting of an O_2 concentration monitor and an automated data acquisition and handling system and providing a permanent, continuous record of O_2, in percent O_2.

COATS—CO_2 allowance tracking system—

(i) A system by which the Department or its agent records allocations, deductions and transfers of CO_2 allowances under the CO_2 Budget Trading Program.

(ii) The system may also be used to track all of the following:

(A) CO_2 emissions offset projects.

(B) CO_2 allowance prices.

(C) Emissions from affected sources.

COATS account—An account established by the Department or its agent for purposes of recording the allocation, holding, transferring or deducting of CO_2 allowances. The tracking

system may also be used to track CO_2 offset allowances, CO_2 allowance prices and emissions from affected sources.

CO_2 allowance—A limited authorization by the Department or a participating state under the CO_2 Budget Trading Program to emit up to 1 ton of CO_2, subject to all applicable limitations contained in this subchapter.

CO_2 allowance auction or *auction*—The sale of CO_2 allowances through competitive bidding as administered in accordance with §§ 145.401—145.409 (relating to CO_2 allowance auctions).

CO_2 allowance deduction or *deduct CO_2 allowances*—The permanent withdrawal of CO_2 allowances by the Department or its agent from a COATS compliance account to account for one of the following:

(i) The number of tons of CO_2 emitted from a CO_2 budget source for a control period or an interim control period, determined in accordance with § 145.371.

(ii) The forfeit or retirement of CO_2 allowances as provided by this subchapter.

CO_2 allowances held or *hold CO_2 allowances*—The CO_2 allowances recorded by the Department or its agent or submitted to the Department or its agent for recordation, in accordance with §§ 145.351 and 145.361 (relating to CO_2 Allowance Tracking System (COATS) accounts; and submission of CO_2 allowance transfers), in a COATS account.

CO_2 allowance price—The price for CO_2 allowances in the CO_2 Budget Trading Program for a particular time period as determined by the Department, calculated based on a volume-weighted average of transaction prices reported to the Department, and taking into account prices as reported publicly through reputable sources.

CO_2 allowance transfer deadline—Midnight of the March 1 occurring after the end of the relevant control period and each relevant interim control period or, if that March 1 is not a business day, midnight of the first business day thereafter and is the deadline by which CO_2 allowances must be submitted for recordation in a CO_2 budget source's compliance account in order for the source to meet the CO_2 requirements of § 145.306(c) (relating to standard requirements) for the control period and each interim control period immediately preceding the deadline.

CO_2 authorized account representative—

(i) For a CO_2 budget source and each CO_2 budget unit at the source, the person who is authorized by the owner or operator of the source and all CO_2 budget units at the source, in accordance with § 145.311 (relating to authorization and responsibilities of the CO_2 authorized account representative), to represent and legally bind each owner and operator in matters pertaining to the CO_2 Budget Trading Program.

(ii) For a general account, the person who is authorized under §§ 145.351—145.358 to transfer or otherwise dispose of CO_2 allowances held in the general account.

CO_2 authorized alternate account representative—

(i) For a CO_2 budget source and each CO_2 budget unit at the source, the alternate person who is authorized by the owner or operator of the source and all CO_2 budget units at the source, in accordance with § 145.311, to represent and legally bind each owner and operator in matters pertaining to the CO_2 Budget Trading Program.

(ii) For a general account, the alternate person who is authorized under §§ 145.351—145.358 to transfer or otherwise dispose of CO_2 allowances held in the general account.

CO_2 budget emissions limitation—For a CO_2 budget source, the tonnage equivalent, in CO_2 emissions in a control period or an interim control period, of the CO_2 allowances available for compliance deduction for the source for a control period or an interim control period.

CO_2 budget permit condition—The portion of the permit issued by the Department under Chapter 127 (relating to construction, modification, reactivation and operation of sources) to the owner or operator of a CO_2 budget source which specifies the CO_2 Budget Trading Program requirements applicable to the CO_2 budget source.

CO_2 budget source—A facility that includes one or more CO_2 budget units.

CO_2 Budget Trading Program—A multi-state CO_2 air pollution control and emissions reduction program established under this subchapter and corresponding regulations in other participating states as a means of reducing emissions of CO_2 from CO_2 budget sources.

CO_2 budget unit—A unit that is subject to the CO_2 Budget Trading Program requirements under § 145.304 (relating to applicability).

CO_2 CCR allowance or *CO_2 cost containment reserve allowance*—A CO_2 allowance that is offered for sale at an auction by the Department for the purpose of containing the cost of CO_2 allowances.

CO_2 CCR trigger price or *CO_2 cost containment reserve trigger price*—The minimum price at which CO_2 CCR allowances are offered for sale by the Department or its agent at an auction.

CO_2 ECR allowance or *CO_2 emissions containment reserve allowance*—A CO_2 allowance that is withheld from sale at an auction by the Department for the purpose of additional emission reduction in the event of lower than anticipated emission reduction costs.

CO_2 ECR trigger price or *CO_2 emissions containment reserve trigger price*—The price below which CO_2 allowances will be withheld from sale by the Department or its agent at an auction.

CO_2e—CO_2 equivalent—The quantity of a given greenhouse gas multiplied by its global warming potential.

CO_2 offset allowance—A CO_2 allowance that is awarded to the sponsor of a CO_2 emissions offset project under § 145.397 and is subject to the relevant compliance deduction limitations of § 145.355(a)(3) (relating to compliance).

Combined cycle system—A system comprised of one or more combustion turbine, heat recovery steam generator and steam turbine configured to improve overall efficiency of electricity generation or steam production.

~~*Cogeneration*~~ ***COMBINED HEAT AND POWER*** *set-aside account*—A general account established by the Department for the allocation of CO_2 allowances ~~**for retirement**~~ in an amount **SUFFICIENT TO RETIRE CO_2 ALLOWANCES** equal to ~~**the adjustment of the compliance obligation of a cogeneration unit**~~ **THE CO_2 EMISSIONS FROM COMBINED HEAT AND POWER UNITS** under § 145.342(k) (relating to CO_2 allowance allocations).

~~*Cogeneration*~~ ***COMBINED HEAT AND POWER*** *unit*—An electric-generating unit that simultaneously produces both ~~**electric**~~ **ELECTRICITY** and useful thermal energy ~~**from the same primary energy facility**~~.

Combustion turbine—An enclosed fossil or other fuel-fired device that is comprised of a compressor, if applicable, a combustor and a turbine, and in which the flue gas resulting from the combustion of fuel in the combustor passes through the turbine, rotating the turbine.

Commence commercial operation—With regard to a unit that serves a generator, to have begun to produce steam, gas or other heated medium used to generate electricity for sale or use, including test generation.

(i) For a unit that is a CO_2 budget unit under § 145.304 on the date the unit commences commercial operation, the date shall remain the unit's date of commencement of commercial operation even if the unit is subsequently modified, reconstructed or repowered.

(ii) For a unit that is not a CO_2 budget unit under § 145.304 on the date the unit commences commercial operation, the date the unit becomes a CO_2 budget unit under § 145.304 is the unit's date of commencement of commercial operation.

Commence operation—To have begun any mechanical, chemical or electronic process, including, with regard to a unit, start-up of the unit's combustion chamber.

(i) For a unit that is a CO_2 budget unit under § 145.304 on the date of commencement of operation, the date shall remain the unit's date of commencement of operation even if the unit is subsequently modified, reconstructed or repowered.

(ii) For a unit that is not a CO_2 budget unit under § 145.304 on the date of commencement of operation, the date the unit becomes a CO_2 budget unit under § 145.304 shall be the unit's date of commencement of operation.

Compliance account—A COATS account, established by the Department or its agent for a CO_2 budget source under § 145.351, that holds CO_2 allowances available for use by the owner or operator of the source for a control period and each interim control period for the purpose of meeting the CO_2 requirements of § 145.306(c).

Control period—A 3-calendar-year period. The fifth control period~~, which is the first control period in which Pennsylvania will participate in the CO_2 Budget Trading Program,~~ is from January 1, 2021, through December 31, 2023, inclusive. Each subsequent sequential 3-calendar-year period is a separate control period.

Decay rate—The amount of a gas removed from the atmosphere over a number of years.

Descending price, multiple-round auction—An auction that starts with a high provisional price, which falls in each round by predetermined increments. In each round, a bidder can lock in the purchase of some number of CO_2 allowances at the current provisional price and wait for the price to fall. Rounds continue so long as the number of CO_2 allowances locked-in is less than the quantity of CO_2 allowances offered for sale.

Discriminatory price, sealed-bid auction—A single-round, sealed-bid auction in which a bidder may submit multiple bids for CO_2 allowances at different prices. The price paid by winning bidders with the highest bids for CO_2 allowances is their own bid price.

Electronic submission agent—The person who is delegated authority by a CO_2 authorized account representative or a CO_2 authorized alternate account representative to make an electronic submission to the Department or its agent under this subchapter.

Eligible biomass—

(i) Sustainably harvested woody and herbaceous fuel sources that are available on a renewable or recurring basis, including dedicated energy crops and trees, agricultural food and feed crop residues, aquatic plants, unadulterated wood and wood residues, animal wastes, other clean organic wastes not mixed with other solid wastes, biogas and other neat liquid biofuels derived from these fuel sources.

(ii) This term does not include old growth timber.

Excess emissions—The amount of CO_2 emissions, in tons, emitted by a CO_2 budget source during a control period that exceeds the CO_2 budget emissions limitation for the source.

Excess interim emissions—The amount of CO_2 emissions, in tons, emitted by a CO_2 budget source during an interim control period multiplied by 0.50 that exceeds the CO_2 budget emissions limitation for the source.

General account—A COATS account established by the Department under § 145.351 that is not a compliance account.

GWP—Global Warming Potential—

(i) A measure of the radiative efficiency or heat-absorbing ability of a particular gas relative to that of CO_2 after taking into account the decay rate of each gas relative to that of CO_2.

(ii) GWPs used in this subchapter are consistent with the values used in the Intergovernmental Panel on Climate Change, Fifth Assessment Report.

Gross generation—The electrical output in MWe at the terminals of the generator.

Interim control period—A calendar-year period, during each of the first and second calendar years of each control period. The first interim control period for the fifth control period starts on January 1, 2021, and ends on December 31, 2021, inclusive. The second interim control period for the fifth control period starts on January 1, 2022, and ends on December 31, 2022, inclusive. Each successive 3-year control period will have 2 interim control periods, comprised of each of the first 2 calendar years of that control period.

Legacy emissions—The amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the ~~5-year~~ **10-YEAR** period beginning January 1, ~~2015~~ **2010**, through December 31, 2019, as determined by the Department.

Life-of-the-unit contractual arrangement—A unit participation power sales agreement under which a customer reserves, or is entitled to receive, a specified amount or percentage of nameplate capacity or associated energy from any specified unit under a contract for:

(i) The life of the unit.

(ii) A cumulative term of no less than 30 years, including a contract that permits an election for early termination.

(iii) A period equal to or greater than 25 years or 70% of the economic useful life of the unit determined as of the time the unit is built, with option rights to purchase or release some portion of the nameplate capacity and associated energy generated by the unit at the end of the period.

Maximum potential hourly heat input—An hourly heat input used for reporting purposes when a unit lacks certified monitors to report heat input. If the unit intends to use 40 CFR Part 75, Appendix D (relating to optional SO_2 emissions data protocol for gas-fired and oil-fired units) to report heat input, this value shall be calculated, in accordance with 40 CFR Part 75, using the maximum fuel flow rate and the maximum gross calorific value. If the unit intends to use a flow monitor and a diluent gas monitor, this value shall be reported, in accordance with 40 CFR Part 75, using the maximum potential flow rate and either the maximum CO_2 concentration in percent CO_2 or the minimum O_2 concentration in percent O_2.

Minimum reserve price—The price for calendar year ~~2020~~ **2021** is ~~$2.32~~ **$2.38**. Each calendar year thereafter, the minimum reserve price shall be 1.025 multiplied by the minimum reserve price from the previous calendar year, rounded to the nearest whole cent.

Monitoring system—A monitoring system that meets the requirements of this subchapter, including a CEMS, an excepted monitoring system or an alternative monitoring system.

Nameplate capacity—The maximum electrical output in MWe that a generator can sustain over a specified period of time when not restricted by seasonal or other de-ratings as measured in accordance with the United States Department of Energy standards.

Notice of CO_2 allowance auction—The notification for a specific auction or auctions issued under § 145.404 (relating to auction notice).

Operator—A person who operates, controls or supervises a CO_2 budget unit or a CO_2 budget source and shall include, but not be limited to, a holding company, utility system or plant manager of the unit or source.

Owner—Any of the following persons:

(i) A holder of any portion of the legal or equitable title in a CO_2 budget unit or a CO_2 budget source.

(ii) A holder of a leasehold interest in a CO_2 budget unit or a CO_2 budget source, other than a passive lessor, or a person who has an equitable interest through such lessor, whose rental payments are not based, either directly or indirectly, upon the revenues or income from the CO_2 budget unit.

(iii) A purchaser of power from a CO_2 budget unit under a life-of-the-unit contractual arrangement in which the purchaser controls the dispatch of the unit.

(iv) With respect to any general account, a person who has an ownership interest with respect to the CO_2 allowances held in the general account and who is subject to the binding agreement for the CO_2 authorized account representative to represent that person's ownership interest with respect to CO_2 allowances.

Participating state—A state that has established a corresponding regulation as part of the CO_2 Budget Trading Program.

Pennsylvania CO_2 Budget Trading Program adjusted budget—The annual amount of CO_2 tons available in Pennsylvania for allocation in a given allocation year, in accordance with the CO_2 Budget Trading Program, determined in accordance with § 145.342. CO_2 offset allowances allocated to project sponsors and CO_2 CCR allowances offered for sale at an auction are separate from and additional to CO_2 allowances allocated from the Pennsylvania CO_2 Budget Trading Program adjusted budget.

Pennsylvania CO_2 Budget Trading Program base budget—The annual amount of CO_2 tons available in Pennsylvania for allocation in a given allocation year, in accordance with the CO_2 Budget Trading Program and as specified in § 145.341. CO_2 offset allowances allocated to project sponsors and CO_2 CCR allowances offered for sale at an auction are separate from and additional to CO_2 allowances allocated from the Pennsylvania CO_2 Budget Trading Program base budget.

Qualified participant—A person who has submitted a qualification application under § 145.406(a) and that the Department determines to be qualified to participate in CO_2 allowance auctions under § 145.406(e).

Receive or *receipt of*—When referring to the Department or its agent, to come into possession of a document, information or correspondence, whether sent in writing or by authorized electronic transmission, as indicated in an official correspondence log, or by a notation made on the document, information or correspondence, by the Department or its agent in the regular course of business.

Recordation, record or *recorded*—With regard to CO_2 allowances, the movement of CO_2 allowances by the Department or its agent from one COATS account to another, for purposes of allocation, transfer or deduction.

Reserve price—The minimum acceptable price for each CO_2 allowance offered for sale in a specific auction. The reserve price at an auction is either the minimum reserve price or the CCR trigger price, as specified in § 145.382 (relating to general requirements).

Reviewer—The individual who is delegated authority by a CO_2 authorized account representative or a CO_2 authorized alternate account representative to review information in COATS under this subchapter.

Source—A governmental, institutional, commercial or industrial structure, installation, plant, building or facility that emits or has the potential to emit any air pollutant. A source, including a source with multiple units, shall be considered a single facility.

Strategic use set-aside account—A general account established by the Department for the distribution of CO_2 allowances to ~~encourage and foster promotion of~~ **REDUCE GREENHOUSE GAS EMISSIONS THROUGH** energy efficiency measures, ~~promotion of~~ renewable or noncarbon-emitting energy technologies~~, stimulation or reward of investment in the development of innovative carbon emissions~~ **OR INNOVATIVE GREENHOUSE GAS EMISSIONS** abatement technologies with significant ~~carbon~~ **GREENHOUSE GAS** reduction potential.

Ton or *tonnage*—A short ton that is 2,000 pounds or 0.9072 metric ton.

***TOTAL USEFUL ENERGY*—THE SUM OF USEFUL THERMAL ENERGY AND GROSS GENERATION.**

Undistributed CO_2 allowance—A CO_2 allowance originally allocated to a set-aside account ~~as~~ under § 145.342 that ~~were~~ **WAS** not distributed.

Uniform-price, sealed-bid auction—A single-round, sealed-bidding process in which a bidder may submit multiple bids at different prices. The price paid by all successful bidders will be uniform and equal to the highest rejected bid price.

Unit—A fossil fuel-fired stationary boiler, combustion turbine or combined cycle system.

Unit operating day—A calendar day in which a unit combusts any fuel.

Unsold CO_2 allowance—A CO_2 allowance that has been made available for sale in an auction conducted by the Department or its agent, but not sold.

Useful thermal energy—

(i) Energy in the form of direct heat, steam, hot water, **AIR** or other thermal form **WHICH IS** applied for a useful purpose in an industrial, institutional or commercial process.

(ii) This term does not include steam made available for electricity production.

Waste coal—The coal disposed or abandoned prior to July 31, 1982, or disposed of thereafter in a permitted coal refuse disposal site regardless of when disposed of and used to generate electricity, as defined **IN THE DEFINITION OF "ALTERNATIVE ENERGY SOURCES"** under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2).

Waste coal-fired—The combustion of waste coal or, if in combination with any other fuel, waste coal comprises 75% or greater of the annual heat input on a Btu basis. Facilities combusting waste coal shall use at a minimum a circulating fluidized bed boiler and be outfitted with a limestone injection system and a fabric filter particulate removal system.

Waste coal set-aside account—A general account established by the Department for the allocation of CO_2 allowances in an amount sufficient to provide CO_2 allowances equal to the legacy emissions from all waste coal-fired units under § 145.342(i).

§ 145.303. Measurements, abbreviations and acronyms.

Measurements, abbreviations and acronyms used in this subchapter are defined as follows:

CH_4—methane.

hr—hour.

lb—pounds.

MMBtu—Million Btu.

MW—megawatt.

MWe—megawatt electrical.

§ 145.304. Applicability.

(a) *CO_2 budget unit.* Beginning _____ (*Editor's Note*: The blank refers to the effective date of this rulemaking, when published as a final-form rulemaking.), this subchapter applies to an owner or operator of a unit that~~, at any time on or after January 1, 2005, served or~~ serves an electricity generator with a nameplate capacity equal to or greater than 25 MWe.

(b) *CO_2 budget source.* Any source that includes one or more CO_2 budget units shall be a CO_2 budget source, subject to the requirements of this subchapter.

§ 145.305. Limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions.

(a) *Exemption.* Notwithstanding § 145.304 (relating to applicability), a CO_2 budget source that has a permit issued by the Department containing a condition restricting the supply of the CO_2 budget unit's annual electrical output to the electric grid to no more than 10% of the annual gross generation of the unit, or restricting the supply less than or equal to 15% of its annual total useful energy to any entity other than the ~~manufacturing~~ **INDUSTRIAL, INSTITUTIONAL OR COMMERCIAL** facility to which the CO_2 budget source is interconnected and which complies with subsection (c), shall be exempt from the requirements of this subchapter, except for the provisions of this section, §§ 145.302, 145.303, and 145.307 (relating to definitions; measurements, abbreviations and acronyms; and computation of time) and, if applicable because of the allocation of CO_2 allowances during the pre-exemption time period, §§ 145.341, 145.351 and 145.361 (relating to Pennsylvania CO_2 Budget Trading Program base budget; CO_2 Allowance Tracking System (COATS) accounts; and submission of CO_2 allowance transfers).

(b) *Effective date.* The exemption under subsection (a) shall become effective as of the January 1 on or after the date on which the restriction on the percentage of annual gross generation that may be supplied to the electric grid and the provisions in the permit required under subsection (a) become final.

(c) *Compliance.*

(1) The owner or operator of a CO_2 budget unit exempt under subsection (a) shall comply with the restriction on the percentage of annual gross generation that may be supplied to the electric grid described in subsection (a).

(2) The owner or operator of a CO_2 budget unit exempt under subsection (a) shall report to the Department the amount of annual gross generation and the amount of annual gross generation supplied to the electric grid during the calendar year by the following March 1.

(3) For a period of 10 years from the date the records are created, the owner or operator of a CO_2 budget unit exempt under subsection (a) shall retain, at the source that includes the unit, records demonstrating that the conditions of the permit under subsection (a) were met. The Department may, in writing, extend the 10-year period for keeping records, at any time prior to the end of the period. The owner or operator bears the burden of proof that the unit met the restriction on the percentage of annual gross generation that may be supplied to the electric grid.

(4) The owner or operator and, to the extent applicable, the CO_2 authorized account representative of a CO_2 budget unit exempt under subsection (a) shall comply with the requirements of this subchapter concerning all time periods for which the exemption is not in effect, even if the requirements arise, or must be complied with, after the exemption takes effect.

(5) A CO_2 budget unit exempt under subsection (a) will lose its exemption, on the earlier of the following dates:

(i) The restriction on the percentage of annual gross generation that may be supplied to the electric grid described in subsection (a) is removed from the unit's permit or otherwise becomes no longer applicable in any year that commences on or after ~~January 1, 2022~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**

(ii) The unit fails to comply or the owner or operator fails to meet their burden of proving that the unit is complying with the restriction on the percentage of annual gross generation that may be supplied to the electric grid described in subsection (a) during any year that commences on or after ~~January 1, 2022~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**

(6) A unit that loses its exemption in accordance with paragraph (c)(5) shall be subject to the requirements of this subchapter. For the purposes of this subchapter, the unit shall be treated as commencing operation on the date the unit loses its exemption.

§ 145.306. Standard requirements.

(a) *Permit requirements.*

(1) The owner or operator of each CO_2 budget source shall have a CO_2 budget permit condition in their permit required under Chapter 127 (relating to construction, modification, reactivation and operation of sources) and shall submit to the Department the following:

(i) A complete application for a new, renewed or modified permit under § 145.323 (relating to contents of an application for a permit incorporating CO_2 Budget Trading Program requirements) in accordance with the deadlines specified in § 145.322 (relating to submission of an application for a new, renewed or modified permit incorporating CO_2 Budget Trading Program requirements).

(ii) Any supplemental information that the Department determines is necessary to review the permit application and issue or deny a permit, permit renewal or permit modification that includes CO_2 Budget Trading Program requirements.

(2) The owner or operator of each CO_2 budget source required to have a permit under Chapter 127 shall ensure that the permit incorporates the requirements of the CO_2 Budget Trading Program and shall operate the CO_2 budget source and each CO_2 budget unit at the source in compliance with the permit.

(b) *Monitoring requirements.*

(1) The owner or operator and, to the extent applicable, the CO_2 authorized account representative of each CO_2 budget source and each CO_2 budget unit at the source, shall comply with the monitoring requirements of §§ 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements).

(2) The Department will use the emissions measurements recorded and reported in accordance with §§ 145.371—145.377 to determine the unit's compliance with the CO_2 requirements under subsection (c).

(3) THE DEPARTMENT WILL USE THE EMISSIONS MEASUREMENTS RECORDED AND REPORTED TO THE DEPARTMENT UNDER THIS ARTICLE TO DETERMINE WHETHER AREAS OF THIS COMMONWEALTH HAVE BEEN DISPROPORTIONATELY IMPACTED BY INCREASED AIR POLLUTION AS A RESULT OF IMPLEMENTATION OF THIS SUBCHAPTER. THE DEPARTMENT WILL PUBLISH NOTICE OF THE AVAILABILITY OF A REPORT OF THE EMISSIONS MEASUREMENTS AND THE DETERMINATION IN THE *PENNSYLVANIA BULLETIN* ON AN ANNUAL BASIS. THE REPORT WILL INCLUDE THE FOLLOWING:

(i) BASELINE AIR EMISSIONS DATA FROM EACH CO_2 BUDGET UNIT FOR THE CALENDAR YEAR PRIOR TO THE YEAR PENNSYLVANIA BECOMES A PARTICIPATING STATE.

(ii) ANNUAL EMISSIONS MEASUREMENTS RECORDED AND REPORTED TO THE DEPARTMENT FROM EACH CO_2 BUDGET UNIT.

(c) *CO_2 requirements.* A CO_2 budget unit shall be subject to the CO_2 requirements starting on ~~**January 1, 2022**~~ **_____ (EDITOR'S NOTE: THE BLANK REFERS TO JANUARY 1, 2022, OR THE FIRST DAY OF THE NEXT CALENDAR QUARTER FOLLOWING THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**, or the date on which the unit commences operation, whichever is later.

(1) For the purpose of determining compliance with subsection (c)(2), total tons for a control period or an interim control period shall be calculated as the sum of all recorded hourly

emissions or the tonnage equivalent of the recorded hourly emissions rates, in accordance with §§ 145.371—145.377. The Department will round total CO_2 emissions to the nearest whole ton, so that any fraction of a ton equal to or greater than 0.50 ton is deemed to equal 1 ton and any fraction of a ton less than 0.50 ton is deemed to equal zero tons.

(2) The owner or operator of each CO_2 budget source and each CO_2 budget unit at the source shall, as of the CO_2 allowance transfer deadline, hold CO_2 allowances available for compliance deductions under § 145.355 (relating to compliance), in the source's compliance account, as follows:

(i) For a control period, the amount of CO_2 allowances held shall be no less than the total CO_2 emissions for the control period from all CO_2 budget units at the source, less the CO_2 allowances deducted to meet the requirements of subsection (c)(2)(ii), with respect to the previous 2 interim control periods, as determined in accordance with §§ 145.351—145.358 (relating to CO_2 allowance tracking system) and §§ 145.371—145.377.

(ii) For an interim control period, the amount of CO_2 allowances held shall be no less than the total CO_2 emissions for the interim control period from all CO_2 budget units at the source multiplied by 0.50, as determined in accordance with §§ 145.351—145.358 and 145.371—145.377.

(3) Each ton of CO_2 emitted in excess of the CO_2 budget emissions limitation for a control period shall constitute a separate violation of this subchapter and the act.

(4) Each ton of excess interim emissions shall constitute a separate violation of this subchapter and the act.

(5) CO_2 allowances shall be held in, deducted from, or transferred among COATS accounts in accordance with §§ 145.341—145.343 (relating to CO_2 allowance allocations), 145.351—145.358, and 145.361—145.363 (relating to CO_2 allowance transfers) and 145.397 (relating to award and recordation of CO_2 offset allowances).

(6) A CO_2 allowance shall not be deducted, to comply with the requirements under subsection (c), for a control period or interim control period that ends prior to the year for which the CO_2 allowance was allocated.

(7) A CO_2 offset allowance shall not be deducted, to comply with the requirements under subsection (c), beyond the applicable percent limitations in § 145.355(a)(3).

(8) A CO_2 allowance is a limited authorization by the Department or a participating state to emit 1 ton of CO_2 in accordance with the CO_2 Budget Trading Program. No provision of the CO_2 Budget Trading Program, this subchapter, an application for a new, renewed or modified permit to incorporate the requirements of the CO_2 Budget Trading Program, a permit that includes the requirements of the CO_2 Budget Trading Program, or any provision of law shall be construed to limit the authority of the Department or a participating state to terminate or limit the authorization.

(9) A CO_2 allowance under the CO_2 Budget Trading Program does not constitute a property right.

(d) *Excess emissions requirements.* The owner or operator of a CO_2 budget source that has excess emissions in any control period or excess interim emissions for any interim control period shall do the following:

(1) Forfeit the CO_2 allowances required for deduction under § 145.355(d)(1) and (2).

(2) Pay any fine, penalty or assessment or comply with any other remedy imposed under § 145.355(d)(3).

(e) *Recordkeeping and reporting requirements.*

(1) Except as provided in subsection (e)(1)(i), the owner or operator of the CO_2 budget source and each CO_2 budget unit at the source shall maintain at a central location and provide upon request by the Department the following documents for 10 years from the date the document is created. This period may be extended for cause, at any time prior to the end of 10 years, in writing by the Department.

(i) The account certificate of representation for the CO_2 authorized account representative for the CO_2 budget source and each CO_2 budget unit at the source and all documents that demonstrate the truth of the statements in the account certificate of representation, in accordance with § 145.314 (relating to account certificate of representation). The certificate and documents shall be retained beyond the 10-year period until the documents are superseded because of the submission of a new account certificate of representation changing the CO_2 authorized account representative.

(ii) The emissions monitoring information, in accordance with §§ 145.371—145.377 and 40 CFR 75.57 (relating to general recordkeeping provisions).

(iii) Copies of all reports, compliance certifications and other submissions and all records made or required under the CO_2 Budget Trading Program.

(iv) Copies of the documents used to complete an application for a new or modified permit that incorporates the requirements of the CO_2 Budget Trading Program and any submission under the CO_2 Budget Trading Program or to demonstrate compliance with the requirements of the CO_2 Budget Trading Program.

(2) The CO_2 authorized account representative of a CO_2 budget source and each CO_2 budget unit at the source shall submit the reports and compliance certifications required under this subchapter, including the requirements under §§ 145.331 and 145.332 (relating to compliance certification report; and Department action on compliance certifications).

(f) *Liability.*

(1) Except as provided under § 127.403 (relating to permitting of sources operating lawfully without a permit), a permit revision may not excuse any violation of the requirements of this subchapter that occurs prior to the date that the revision takes effect.

(2) Any provision of this subchapter that applies to a CO_2 authorized account representative shall apply to the owner or operator of the source and of the CO_2 budget units at the source.

(3) Any provision of this subchapter that applies to a CO_2 budget source shall also apply to the owner or operator of the source and of the CO_2 budget units at the source.

(4) Any provision of this subchapter that applies to a CO_2 budget unit shall also apply to the owner or operator of the unit.

(g) *Effect on other authorities.* No provision of this subchapter, a permit application or a permit shall be construed as exempting or excluding the owner or operator and, to the extent applicable, the CO_2 authorized account representative, from compliance with any provision of the act, the Clean Air Act or the regulations promulgated under the Clean Air Act or the act.

§ 145.307. Computation of time.

(a) Unless otherwise stated, any time period scheduled, under the CO_2 Budget Trading Program, to begin on the occurrence of an act or event shall begin on the day the act or event occurs.

(b) Unless otherwise stated, any time period scheduled, under the CO_2 Budget Trading Program, to begin before the occurrence of an act or event shall be computed so that the period ends the day before the act or event occurs.

(c) Unless otherwise stated, if the final day of any time period, under the CO_2 Budget Trading Program, falls on a weekend or a State or Federal holiday, the time period shall be extended to the next business day.

CO_2 AUTHORIZED ACCOUNT REPRESENTATIVE FOR A CO_2 BUDGET SOURCE

Sec.

§ 145.311. Authorization and responsibilities of the CO_2 authorized account representative.

(a) Except as provided under § 145.312 (relating to CO_2 authorized alternate account representative), each CO_2 budget source, including all CO_2 budget units at the source, shall have only one CO_2 authorized account representative, with regard to all matters under the CO_2 Budget Trading Program concerning the source or any CO_2 budget unit at the source.

(b) The CO_2 authorized account representative of the CO_2 budget source shall be selected by an agreement binding on the owner or operator of the source and all CO_2 budget units at the source and must act in accordance with the certificate of representation under § 145.314 (relating to account certificate of representation).

(c) Upon receipt by the Department or its agent of a complete account certificate of representation under § 145.314, the CO_2 authorized account representative of the source shall represent and, by their representations, actions, inactions or submissions, legally bind each owner and operator of the CO_2 budget source represented and each CO_2 budget unit at the source in all matters pertaining to the CO_2 Budget Trading Program, notwithstanding any agreement between the CO_2 authorized account representative and the owner or operator. The owner or operator shall be bound by any decision or order issued to the CO_2 authorized account representative by the Department or a court regarding the source or unit.

(d) The Department will issue a permit that incorporates the requirements of the CO_2 Budget Trading Program and establish a COATS account for a CO_2 budget source only after the Department or its agent has received a complete account certificate of representation under § 145.314 for a CO_2 authorized account representative of the source and the CO_2 budget units at the source.

(e) Each submission under the CO_2 Budget Trading Program shall be submitted, signed and certified by the CO_2 authorized account representative for each CO_2 budget source on behalf of which the submission is made. Each submission shall include the following certification statement by the CO_2 authorized account representative:

"I am authorized to make this submission on behalf of the owner or operator of the CO_2 budget sources or CO_2 budget units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties under 18 Pa.C.S. § 4904 for submitting false statements and information or omitting required statements and information."

(f) The Department or its agent will accept or act on a submission made on behalf of the owner or operator of a CO_2 budget source or a CO_2 budget unit only if the submission has been made, signed and certified in accordance with subsection (e).

§ 145.312. CO_2 authorized alternate account representative.

(a) An account certificate of representation may designate only one CO_2 authorized alternate account representative who may act on behalf of the CO_2 authorized account representative. The agreement by which the CO_2 authorized alternate account representative is selected shall include a procedure for authorizing the CO_2 authorized alternate account representative to act instead of the CO_2 authorized account representative.

(b) Upon receipt by the Department or its agent of a complete account certificate of representation under § 145.314 (relating to account certificate of representation), any representation, action, inaction or submission by the CO_2 authorized alternate account representative shall be deemed to be a representation, action, inaction or submission by the CO_2 authorized account representative.

(c) Except in this section and §§ 145.311(a), 145.313, 145.314 and 145.352, whenever the term "CO_2 authorized account representative" is used in this subchapter, the term shall include the CO_2 authorized alternate account representative.

§ 145.313. Changing the CO_2 authorized account representative and the CO_2 authorized alternate account representative; changes in the owner or operator.

(a) *Changing the CO_2 authorized account representative.* The CO_2 authorized account representative may be changed at any time upon receipt by the Department or its agent of a superseding complete account certificate of representation under § 145.314 (relating to account certificate of representation). Notwithstanding a change, the representations, actions, inactions and submissions by the previous CO_2 authorized account representative or CO_2 authorized alternate account representative prior to the time and date when the Department or its agent receives the superseding account certificate of representation shall be binding on the new CO_2 authorized account representative and the owner or operator of the CO_2 budget source and the CO_2 budget units at the source.

(b) *Changing the CO_2 authorized alternate account representative.* The CO_2 authorized alternate account representative may be changed at any time upon receipt by the Department or its agent of a superseding complete account certificate of representation under § 145.314. Notwithstanding a change, the representations, actions, inactions and submissions by the previous CO_2 authorized alternate account representative prior to the time and date when the Department or its agent receives the superseding account certificate of representation shall be binding on the new CO_2 authorized alternate account representative and the owner or operator of the CO_2 budget source and the CO_2 budget units at the source.

(c) *Changes in the owner or operator.*

(1) If a new owner or operator of a CO_2 budget source or a CO_2 budget unit is not included in the list of owners and operators submitted in the account certificate of representation, the new owner or operator shall be deemed to be subject to and bound by the account certificate of representation, the representations, actions, inactions and submissions of the CO_2 authorized account representative and any CO_2 authorized alternate account representative of the source or unit, and the decisions, orders, actions and inactions of the Department, as if the new owner or operator were included in the list.

(2) Within 30 days following any change in the owner or operator of a CO_2 budget source or a CO_2 budget unit, including the addition of a new owner or operator, the CO_2 authorized account representative or CO_2 authorized alternate account representative shall submit a revision to the account certificate of representation amending the list of owners and operators to include the change.

§ 145.314. Account certificate of representation.

(a) A complete account certificate of representation for a CO_2 authorized account representative or a CO_2 authorized alternate account representative shall include the following elements in a format prescribed by the Department or its agent:

(1) Identification of the CO_2 budget source and each CO_2 budget unit at the source for which the account certificate of representation is submitted.

(2) The name, address, e-mail address and telephone number of the CO_2 authorized account representative and any CO_2 authorized alternate account representative.

(3) A list of the owners and operators of the CO_2 budget source and of each CO_2 budget unit at the source.

(4) The following certification statement by the CO_2 authorized account representative and any CO_2 authorized alternate account representative:

"I certify that I was selected as the CO_2 authorized account representative or CO_2 authorized alternate account representative, as applicable, by an agreement binding on the owner or operator of the CO_2 budget source and each CO_2 budget unit at the source. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of the owner or operator of the CO_2 budget source and of each CO_2 budget unit at the source and that each owner and operator shall be fully bound by my representations, actions, inactions, or submissions and by any decision or order issued to me by the Department or a court regarding the source or unit."

(5) The signature of the CO_2 authorized account representative and any CO_2 authorized alternate account representative and the dates signed.

(b) Unless otherwise required by the Department or its agent, documents of agreement referred to in the account certificate of representation shall not be submitted to the Department or

its agent. The Department and its agent are not under any obligation to review or evaluate the sufficiency of documents of agreement, if submitted.

§ 145.315. Objections concerning the CO_2 authorized account representative.

(a) Once a complete account certificate of representation under § 145.314 (relating to account certificate of representation) has been submitted and received, the Department and its agent will rely on the account certificate of representation unless the Department or its agent receives a superseding complete account certificate of representation under § 145.314.

(b) Except as provided in § 145.313(a) or (b) (relating to changing the CO_2 authorized account representative and the CO_2 authorized alternate account representative; changes in the owners and operators), an objection or other communication submitted to the Department or its agent concerning the authorization, or any representation, action, inaction or submission of the CO_2 authorized account representative will not affect any representation, action, inaction or submission of the CO_2 authorized account representative or the finality of a decision or order by the Department or its agent under the CO_2 Budget Trading Program.

(c) The Department and its agent will not adjudicate any private legal dispute concerning the authorization or any representation, action, inaction or submission of a CO_2 authorized account representative, including private legal disputes concerning the proceeds of CO_2 allowance transfers.

§ 145.316. Delegation of authority to make electronic submissions and review information in COATS.

(a) A CO_2 authorized account representative or a CO_2 authorized alternate account representative may delegate, to one or more persons, their authority to make an electronic submission to the Department or its agent under this subchapter.

(b) To delegate authority to make an electronic submission to the Department or its agent, the CO_2 authorized account representative or CO_2 authorized alternate account representative must submit to the Department or its agent a notice of delegation, in a format prescribed by the Department that includes the following:

(1) The name, address, e-mail address and telephone number of the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative.

(2) The name, address, e-mail address and telephone number of each electronic submission agent.

(3) For each electronic submission agent, a list of the type of electronic submissions under subsection (a) for which authority is delegated.

(4) The following certification statements by the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative:

(i) "I agree that any electronic submission to the Department or its agent that is by the electronic submission agent identified in this notice of delegation and of a type listed for the electronic submission agent in this notice of delegation and that is made when I am a CO_2 authorized account representative or CO_2 authorized alternate account representative and before this notice of delegation is superseded by another notice of delegation under subsection (d) shall be deemed to be an electronic submission by me."

(ii) "Until this notice of delegation is superseded by another notice of delegation under subsection (d), I agree to maintain an e-mail account and to notify the Department or its agent immediately of any change in my e-mail address unless all delegation authority by me under this subsection is terminated."

(c) A notice of delegation submitted under subsection (b) will be effective, with regard to the CO_2 authorized account representative or CO_2 authorized alternate account representative identified in the notice, upon receipt of the notice by the Department or its agent and until receipt by the Department or its agent of a superseding notice of delegation by the CO_2 authorized account representative or CO_2 authorized alternate account representative. The superseding notice of delegation may replace any previously identified electronic submission agent, add a new electronic submission agent or eliminate entirely any delegation of authority.

(d) Any electronic submission covered by the certification under subsection (b)(4) and made in accordance with a notice of delegation effective under subsection (b) shall be deemed to be an electronic submission by the CO_2 authorized account representative or CO_2 authorized alternate account representative submitting the notice of delegation.

(e) A CO_2 authorized account representative or a CO_2 authorized alternate account representative may delegate, to one or more persons, their authority to review information in COATS under this subchapter.

(f) To delegate authority to review information in COATS under subsection (e), the CO_2 authorized account representative or CO_2 authorized alternate account representative must submit to the Department or its agent a notice of delegation, in a format prescribed by the Department that includes the following:

(1) The name, address, e-mail address and telephone number of the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative.

(2) The name, address, e-mail address and telephone number of each reviewer.

(3) For each reviewer, a list of the type of information under subsection (e) for which authority is delegated.

(4) The following certification statements by the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative:

(i) "I agree that any information that is reviewed by the reviewer identified in this notice of delegation and of a type listed for the information accessible by the reviewer in this notice of delegation and that is made when I am a CO_2 authorized account representative or CO_2 authorized alternate account representative and before this notice of delegation is superseded by another notice of delegation under subsection (g) shall be deemed to be a review by me."

(ii) "Until this notice of delegation is superseded by another notice of delegation under subsection (g), I agree to maintain an e-mail account and to notify the Department or its agent immediately of any change in my e-mail address unless all delegation authority by me under this subsection is terminated."

(g) A notice of delegation submitted under subsection (f) shall be effective, with regard to the CO_2 authorized account representative or CO_2 authorized alternate account representative identified in the notice, upon receipt of the notice by the Department or its agent and until receipt by the Department or its agent of a superseding notice of delegation by the CO_2 authorized account representative or CO_2 authorized alternate account representative. The superseding notice of delegation may replace any previously identified reviewer, add a new reviewer or eliminate entirely any delegation of authority.

PERMITS

Sec.

§ 145.321. General requirements for a permit incorporating CO_2 Budget Trading Program requirements.

(a) Except as provided under § 127.403 (relating to permitting of sources operating lawfully without a permit), each CO_2 budget source must have a permit issued by the Department under Chapter 127 (relating to construction, modification, reactivation and operation of sources).

(b) The permit for each CO_2 budget source shall contain all applicable CO_2 Budget Trading Program requirements.

§ 145.322. Submission of an application for a new, renewed or modified permit incorporating CO_2 Budget Trading Program requirements.

(a) For any CO_2 budget source, the owner or operator shall submit a complete permit application under Chapter 127 (relating to construction, modification, reactivation and operation of sources) incorporating the CO_2 Budget Trading Program requirements in this subchapter to the Department by the later of the following:

(1) 6 months after _____ (*Editor's Note*: The blank refers to the effective date of this rulemaking, when published as a final-form rulemaking.)

(2) 12 months before the date on which the CO_2 budget source, or a new unit at the source, commences operation.

(b) If the Department approves the incorporation of CO_2 Budget Trading Program requirements into a permit, the Department will establish permit conditions in the permit that will enable the Department to readily verify whether emissions from the source operations meet the requirements of this subchapter. Such permit conditions will set forth replicable procedures, including monitoring, source emissions testing and recordkeeping and reporting procedures, sufficient to ensure that emissions are quantified and recorded and that compliance with the emissions limitation under this subchapter is enforceable.

§ 145.323. Contents of an application for a permit incorporating CO_2 Budget Trading Program requirements.

A complete permit application shall include the following concerning the CO_2 budget source for which the application is submitted, in a format prescribed by the Department:

(1) Identification of the CO_2 budget source, including plant name and the Office of Regulatory Information Systems or facility code assigned to the source by the Energy Information Administration of the United States Department of Energy, if applicable.

(2) Identification of each CO_2 budget unit at the CO_2 budget source.

(3) The standard requirements under § 145.306 (relating to standard requirements).

(4) The compliance certification requirements under § 145.331 (relating to compliance certification report).

(5) The compliance requirements under § 145.355 (relating to compliance).

(6) The monitoring, recordkeeping and reporting requirements under §§ 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements).

COMPLIANCE CERTIFICATION

Sec.

§ 145.331. Compliance certification report.

(a) *Applicability and deadline.* For each control period, except for an interim control period, in which a CO_2 budget source is subject to the CO_2 requirements of § 145.306(c) (relating to standard requirements), the CO_2 authorized account representative of the source shall submit a compliance certification report to the Department by March 1 following the relevant control period.

(b) *Contents of report.* The CO_2 authorized account representative shall include in the compliance certification report under subsection (a) the following:

(1) Identification of the CO_2 budget source and each CO_2 budget unit at the source.

(2) At the CO_2 authorized account representative's option, the serial numbers of the CO_2 allowances that are to be deducted from the source's compliance account under § 145.355 (relating to compliance) for the control period or an interim control period, including the serial numbers of any CO_2 offset allowances that are to be deducted subject to the limitations of § 145.355(a)(3).

(3) The compliance certification under subsection (c).

(c) *Compliance certification.* In the compliance certification report under subsection (a), the CO_2 authorized account representative shall certify, based on reasonable inquiry of those persons with primary responsibility for operating the source and the CO_2 budget units at the source in compliance with the CO_2 Budget Trading Program, whether the source and each CO_2 budget unit at the source for which the compliance certification is submitted was operated during the calendar years covered by the report in compliance with the requirements of the CO_2 Budget Trading Program, including the following:

(1) Whether the CO_2 budget source was operated in compliance with the CO_2 requirements of § 145.306(c).

(2) Whether the monitoring plan applicable to each unit at the source has been maintained to reflect the actual operation and monitoring of the unit and contains the information necessary to attribute CO_2 emissions to the unit, in accordance with §§ 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements).

(3) Whether all the CO_2 emissions from the units at the source were monitored or accounted for through the missing data procedures and reported in the quarterly monitoring reports, including whether conditional data were reported in the quarterly reports in accordance with §§ 145.371—145.377. If conditional data were reported, the owner or operator shall indicate whether the status of all conditional data has been resolved and all necessary quarterly report resubmissions have been made.

(4) Whether the facts that form the basis for certification under §§ 145.371—145.377 of each monitor at each unit at the source, or for using an excepted monitoring method or alternative monitoring method approved under §§ 145.371—145.377, if any, have changed.

(5) If a change is required to be reported under subsection (c)(4), specify the nature of the change, the reason for the change, when the change occurred and how the unit's compliance status was determined subsequent to the change, including what method was used to determine emissions when a change mandated the need for monitor recertification.

§ 145.332. Department action on compliance certifications.

(a) The Department or its agent may review and conduct independent audits concerning any compliance certification or any other submission under the CO_2 Budget Trading Program and make appropriate adjustments of the information in the compliance certification or other submission.

(b) The Department or its agent may deduct CO_2 allowances from or transfer CO_2 allowances to a CO_2 budget source's compliance account based on the information in the compliance certification or other submission, as adjusted under subsection (a).

CO_2 ALLOWANCE ALLOCATIONS

Sec.

§ 145.341. Pennsylvania CO_2 Budget Trading Program base budget.

(a) For 2022, **IF PENNSYLVANIA IS A PARTICIPATING STATE ON JANUARY 1, 2022,** the Pennsylvania CO_2 Budget Trading Program base budget is 78,000,000 tons. **IF PENNSYLVANIA IS A PARTICIPATING STATE AFTER JANUARY 1, 2022, THEN THE PENNSYLVANIA CO_2 BUDGET TRADING PROGRAM BASE BUDGET FOR 2022 WILL BE ONE OF THE FOLLOWING:**

(1) IF PENNSYLVANIA IS A PARTICIPATING STATE AFTER JANUARY 1, 2022, BUT BEFORE OR ON APRIL 1, 2022, THEN THE PENNSYLVANIA CO_2 BUDGET TRADING PROGRAM BASE BUDGET IS 57,954,000 TONS.

(2) IF PENNSYLVANIA IS A PARTICIPATING STATE AFTER APRIL 1, 2022, BUT BEFORE OR ON JULY 1, 2022, THEN THE PENNSYLVANIA CO_2 BUDGET TRADING PROGRAM BASE BUDGET IS 40,716,000 TONS.

(3) IF PENNSYLVANIA IS A PARTICIPATING STATE AFTER JULY 1, 2022, BUT BEFORE OR ON OCTOBER 1, 2022, THEN THE PENNSYLVANIA CO_2 BUDGET TRADING PROGRAM BASE BUDGET IS 18,564,000 TONS.

(b) For 2023, the Pennsylvania CO_2 Budget Trading Program base budget is 75,510,630 tons.

(c) For 2024, the Pennsylvania CO_2 Budget Trading Program base budget is 73,021,260 tons.

(d) For 2025, the Pennsylvania CO_2 Budget Trading Program base budget is 70,531,890 tons.

(e) For 2026, the Pennsylvania CO_2 Budget Trading Program base budget is 68,042,520 tons.

(f) For 2027, the Pennsylvania CO_2 Budget Trading Program base budget is 65,553,150 tons.

(g) For 2028, the Pennsylvania CO_2 Budget Trading Program base budget is 63,063,780 tons.

(h) For 2029, the Pennsylvania CO_2 Budget Trading Program base budget is 60,574,410 tons.

(i) For 2030 and each succeeding calendar year, the Pennsylvania CO_2 Budget Trading Program base budget is 58,085,040 tons.

§ 145.342. CO_2 allowance allocations.

(a) *General allocations.* The Department will allocate CO_2 allowances representing 100% of the tons for each allocation year from the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341 (relating to Pennsylvania CO_2 Budget Trading Program base budget) to the air pollution reduction account, less those CO_2 allowances set aside each allocation year under subsection (b).

(b) *Set-aside allocations.*

(1) *Waste coal set-aside account.* The Department will allocate CO_2 allowances to a waste coal set-aside account for each allocation year from the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341, as provided under subsection (i).

(2) *Strategic use set-aside account.* The Department will allocate undistributed CO_2 allowances to the strategic use set-aside account for each allocation year from the waste coal set-aside account, as provided under subsection (j).

(3) ~~*Cogeneration*~~ ***COMBINED HEAT AND POWER*** *set-aside account.* The Department will allocate CO_2 allowances to a ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account for each allocation year from the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341, as provided under subsection (k).

(c) *CO_2 allowances available for allocation.* ~~**For the allocation year 2022 and each succeeding calendar year**~~ **FOR EACH ALLOCATION YEAR,** the Pennsylvania CO_2 Budget Trading Program adjusted budget shall be the maximum number of CO_2 allowances available for allocation in a given allocation year, except for CO_2 offset allowances and CO_2 CCR allowances. In any year in which there is no adjusted budget, the adjusted budget shall equal the base budget.

(d) *Cost Containment Reserve (CCR) allocation.* To contain the cost of CO_2 allowances, the Department will allocate CO_2 CCR allowances, separate from and additional to the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341, to the air pollution reduction account. The Department will allocate CO_2 CCR allowances by doing the following:

(1) The Department will initially allocate CCR allowances for calendar year 2022 in an amount equal to 10% of the Pennsylvania CO_2 Budget Trading Program base budget for 2022 set forth in § 145.341(a).

(2) On or before January 1, 2023, and on or before January 1 of each calendar year thereafter, the Department will allocate current vintage year CCR allowances equal to 10% of the Pennsylvania CO_2 Budget Trading Program base budget for the calendar year and withdraw the number of CO_2 CCR allowances that remain in the air pollutant reduction account at the end of the prior calendar year.

(e) *Emissions Containment Reserve (ECR) Withholding.* To provide additional emissions reductions in the event of lower than anticipated emissions reduction costs, the Department will convert and transfer any CO_2 allowances that have been withheld from any auction into the Pennsylvania ECR account. The Department will withhold CO_2 ECR allowances by doing the following:

(1) If the condition in § 145.382(d)(1) (relating to general requirements) is met at an auction, then the maximum number of CO_2 ECR allowances that will be withheld from that auction will be equal to 10% of the Pennsylvania CO_2 Budget Trading Program base budget for that calendar year minus the total quantity of CO_2 ECR allowances that have been withheld from any prior auction in that calendar year. Any CO_2 ECR allowances withheld from an auction will be transferred into the Pennsylvania ECR account.

(2) CO_2 allowances that have been transferred into the Pennsylvania ECR account will remain in the Pennsylvania ECR account as CO_2 ECR allowances and not be withdrawn.

(f) *Adjustment for banked allowances.* The Department may determine whether any adjustments for banked allowances will be made by using the following formula:

$$ABA = ((A - AE)/Y) \times RS\%$$

Where:

ABA = The adjustment for banked allowances quantity in tons.

A (adjustment) = The total quantity of CO_2 allowances of vintage years held in general and compliance accounts, including compliance accounts established under the CO_2 Budget Trading Program, but not including accounts opened by participating states, as reflected in COATS.

AE (adjustment emissions) = The total quantity of emissions from all CO_2 budget sources in all participating states, reported under the CO_2 Budget Trading Program as reflected in COATS prior to the year of the adjustment.

RS% = The Commonwealth's adjustment year budget divided by the adjustment year regional budget.

Y = The time period in years over which the adjustment occurs.

(g) *CO_2 Budget Trading Program adjusted budget.* The Department may establish the Pennsylvania CO_2 Budget Trading Program adjusted budget for an allocation year by the following formula:

AB = BB − ABA

Where:

AB = The Pennsylvania CO_2 Budget Trading Program adjusted budget.

BB = The Pennsylvania CO_2 Budget Trading Program base budget.

ABA = The adjustment for banked allowances quantity in tons.

(h) If the Department determines to adjust the budget for banked allowances under subsections (f) and (g), the Department will publish in the *Pennsylvania Bulletin* the CO_2 Budget Trading Program adjusted budget for the allocation year.

(i) *Waste coal set-aside allocation.* The waste coal set-aside allocation will consist of tons from the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341, as applicable. The Department will administer the waste coal set-aside account in accordance with the following:

(1) *Applicability.* This subsection applies to waste coal-fired units located in Pennsylvania that commenced operation on or before _____ (*Editor's Note*: The blank refers to the effective date of this rulemaking, when published as a final-form rulemaking.), that are subject to the CO_2 Budget Trading Program requirements under § 145.304 (relating to applicability).

(2) *General account.* The Department will open and manage a general account for the waste coal set-aside account.

(3) *Allowance transfer.* ~~By~~ **EXCEPT FOR 2022, BY** March 1 of each calendar year, the Department may transfer a portion of the CO_2 allowances allocated to the air pollution reduction account to the waste coal set-aside account in an amount equal to legacy emissions from waste coal-fired units applicable under subsection (i)(1). The Department has determined that the total amount of legacy emissions equal ~~9,300,000~~ **12,800,000** tons.

(4) *Compliance allocation.* Except for **2022 AND** a year with an exceedance of legacy emissions under subsection (i)(5), by March 1 of each calendar year, the Department will allocate CO_2 allowances from the waste coal set-aside account to the compliance account of each waste coal-fired unit in an amount equal to the actual number of CO_2 emissions in tons emitted from the waste coal-fired unit during the previous year.

(i) After allocating CO_2 allowances under subsection (i)(4), the Department will transfer any undistributed CO_2 allowances from the waste coal set-aside account to the strategic use set-aside account.

(ii) CO_2 allowances allocated under this subsection must only be used for compliance with the CO_2 budget emissions limitation for the waste coal-fired unit. The sale or transfer of CO_2 allowances from the unit's compliance account will be considered a violation of this subchapter.

(5) *Exception for exceedance of legacy emissions.* If the total actual CO_2 emissions from waste coal-fired units exceed ~~9,300,000~~ **12,800,000** tons during a calendar year, the Department will account for the exceedance as follows:

(i) By February 15 of the year following the exceedance, the Department will determine the difference between each unit's legacy emissions and the unit's actual emissions during the previous year.

(ii) By February 15 of the year following the exceedance, the Department will allocate CO_2 allowances from the waste coal set-aside account to the compliance account of each waste coal-fired unit in an amount equal to the actual number of CO_2 emissions in tons emitted from the waste coal-fired unit during the previous year minus the exceedance of legacy emissions.

(iii) After the allocation under subsection (i)(5)(ii), if there are CO_2 allowances remaining in the waste coal set-aside account, the Department may distribute CO_2 allowances to each waste coal-fired unit requiring CO_2 allowances to meet the CO_2 requirements under § 145.306(c) (relating to standard requirements) in an amount proportionate to the exceedance.

(iv) By the CO_2 allowance transfer deadline of the year following the exceedance, the owner or operator of each waste coal-fired unit requiring additional CO_2 allowances to satisfy the CO_2 requirements under § 145.306(c) must transfer CO_2 allowances for compliance deductions under § 145.355 (relating to compliance) to the compliance account of the unit.

(6) *Set-aside termination.* If no CO_2 allowances are allocated under subsection (i)(4) in any calendar year due to the fact that there were no actual CO_2 emissions from waste coal-fired units subject to this subsection, then the CO_2 allowances remaining in the waste coal set-aside account will be transferred to the strategic use set-aside account. No additional CO_2 allowances will be allocated to the waste coal set-aside account under subsection (i)(3) and the Department will close the waste coal set-aside account.

(j) *Strategic use set-aside allocation.* The strategic use set-aside allocation will consist of undistributed CO_2 allowances from the waste coal set-aside account. The Department will administer the strategic use set-aside account in accordance with the following:

(1) *General account.* The Department will open and manage a general account for the strategic use set-aside account.

(2) *Allowance transfer.* By April 1 of each calendar year, the Department will transfer undistributed CO_2 allowances allocated to the waste coal set-aside account to the strategic use set-aside account.

(3) *Allocation to eligible projects.* The Department may distribute CO_2 allowances from the strategic use set-aside account ~~for the use in the elimination of air pollution~~ **TO ELIGIBLE PROJECTS LOCATED IN PENNSYLVANIA THAT RESULT IN A GREENHOUSE GAS EMISSION REDUCTION BENEFIT** including the following:

(i) ~~Encourage and foster promotion~~ **IMPLEMENTATION** of energy efficiency measures.

(ii) ~~Promotion~~ **IMPLEMENTATION** of renewable or noncarbon-emitting energy technologies.

(iii) ~~Stimulation or reward of investment in the development~~ **DEVELOPMENT** of innovative ~~carbon~~ **GREENHOUSE GAS** emissions abatement technologies with significant ~~carbon~~ **GREENHOUSE GAS** reduction potential.

(4) *STRATEGIC USE APPLICATION.* TO APPLY FOR CO_2 ALLOWANCES, THE OWNER OF AN ELIGIBLE PROJECT SHALL SUBMIT TO THE DEPARTMENT A COMPLETE APPLICATION, IN A FORMAT PRESCRIBED BY THE DEPARTMENT, THAT INCLUDES THE FOLLOWING:

(i) DOCUMENTATION THAT THE PROJECT WILL RESULT IN GREENHOUSE GAS EMISSION REDUCTIONS.

(ii) IDENTIFICATION OF THE GENERAL ACCOUNT FOR THE ELIGIBLE PROJECT.

(iii) SPECIFICATION OF THE NUMBER OF CO_2 ALLOWANCES BEING REQUESTED.

(iv) THE CALCULATIONS AND SUPPORTING DATA USED TO DETERMINE THE GREENHOUSE GAS EMISSION REDUCTIONS AND AN EXPLANATION OF THE DATA AND THE METHODS ON WHICH THE CALCULATIONS ARE BASED.

(5) *CO_2 ALLOWANCE DETERMINATION.* AFTER VERIFYING THAT THE INFORMATION SUBMITTED IN THE APPLICATION UNDER PARAGRAPH (j)(4) IS COMPLETE AND ACCURATE, THE DEPARTMENT WILL DETERMINE THE NUMBER OF CO_2 ALLOWANCES TO DISTRIBUTE BASED ON THE GHG EMISSION REDUCTIONS ACHIEVED. THE DEPARTMENT WILL DISTRIBUTE THE ALLOTED CO_2 ALLOWANCES UPON COMPLETION OF THE ELIGIBLE PROJECT.

(6) *GENERAL REQUIREMENTS.* THE DEPARTMENT WILL NOT AWARD CO_2 ALLOWANCES TO AN ELIGIBLE PROJECT THAT IS REQUIRED UNDER ANY LOCAL, STATE OR FEDERAL LAW, REGULATION, OR ADMINISTRATIVE OR JUDICIAL ORDER.

(7) *USE OF CO_2 ALLOWANCES.* THE OWNER OF AN ELIGIBLE PROJECT MAY SELL, TRANSFER OR SUBMIT A WRITTEN REQUEST TO THE DEPARTMENT TO RETIRE ALLOCATED CO_2 ALLOWANCES.

(8) *TRANSFER OR RETIREMENT OF CO_2 ALLOWANCES.* AT THE END OF EACH CONTROL PERIOD, THE DEPARTMENT MAY RETIRE OR TRANSFER TO THE AIR POLLUTION REDUCTION ACCOUNT ANY UNDISTRIBUTED CO_2 ALLOWANCES FROM THE STRATEGIC USE SET-ASIDE ACCOUNT.

(k) ~~*Cogeneration*~~ ***COMBINED HEAT AND POWER*** *set-aside allocation.* The ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside allocation will consist of tons from the Pennsylvania CO_2 Budget Trading Program base budget set forth in § 145.341, as applicable. The Department will administer the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account in accordance with the following:

(1) *Applicability.* ~~The Department will adjust the compliance obligation of a CO_2 budget unit that is a cogeneration unit for which a complete application has been filed under subsection (k)(3).~~ **THIS SUBSECTION APPLIES TO COMBINED HEAT AND POWER UNITS LOCATED IN PENNSYLVANIA THAT ARE SUBJECT TO THE CO_2 BUDGET TRADING PROGRAM REQUIREMENTS UNDER § 145.304 (RELATING TO APPLICABILITY).**

(2) *General account.* The Department will open and manage a general account for the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account.

(3) *CO_2 ALLOWANCE RETIREMENT.* THE DEPARTMENT WILL RETIRE CO_2 ALLOWANCES FOR A CO_2 BUDGET UNIT THAT IS A COMBINED HEAT AND POWER UNIT. BASED ON INFORMATION PROVIDED UNDER PARAGRAPH (k)(4),

THE CO_2 AUTHORIZED ACCOUNT REPRESENTATIVE OF A CO_2 BUDGET UNIT MAY REQUEST ONE OF THE FOLLOWING:

(i) RETIREMENT OF CO_2 ALLOWANCES EQUAL TO THE TOTAL AMOUNT OF CO_2 EMITTED AS A RESULT OF PROVIDING USEFUL THERMAL ENERGY OR ELECTRICITY, OR BOTH, DURING THE ALLOCATION YEAR.

(ii) RETIREMENT OF CO_2 ALLOWANCES EQUAL TO THE PARTIAL AMOUNT OF CO_2 EMITTED AS A RESULT OF SUPPLYING USEFUL THERMAL ENERGY OR ELECTRICITY, OR BOTH, TO AN INTERCONNECTED INDUSTRIAL, INSTITUTIONAL OR COMMERCIAL FACILITY DURING THE ALLOCATION YEAR.

~~(3)~~ (4) ~~*Compliance obligation adjustment*~~ *CO_2 ALLOWANCE RETIREMENT application.* By January 30 of the year following the allocation year for which the~~ compliance obligation adjustment~~ **RETIREMENT OF CO_2 ALLOWANCES** is being requested, the CO_2 authorized account representative seeking the ~~compliance obligation adjustment~~ **RETIREMENT OF CO_2 ALLOWANCES** for a ~~cogeneration~~ **COMBINED HEAT AND POWER** unit shall submit to the Department a complete application, in a format prescribed by the Department, that includes the following:

(i) Documentation that the CO_2 budget unit is a ~~cogeneration~~ **COMBINED HEAT AND POWER** unit **THAT SATISIFES THE APPLICABILITY UNDER SUBSECTION (k)(1).**

(ii) Identification of the compliance account for the CO_2 budget unit.

(iii) Identification of the allocation year for which ~~an adjustment~~ **THE RETIREMENT OF CO_2 ALLOWANCES** request is being made.

(iv) Specification of the amount of the ~~adjustment~~ **RETIREMENT OF CO_2 ALLOWANCES** being requested, as determined under subsection (k)~~(4)~~ **(5).**

(v) The calculations and supporting data used to determine the ~~compliance obligation adjustment~~ **AMOUNT OF THE RETIREMENT OF CO_2 ALLOWANCES** being requested and an explanation of the data and the methods on which the calculations are based.

(vi) IF THE CO_2 BUDGET UNIT IS REQUESTING RETIREMENT OF CO_2 ALLOWANCES UNDER SUBPARAGRAPH (k)(3)(i), THEN THE APPLICATION MUST INCLUDE THE FOLLOWING:

(A) DOCUMENTATION THAT THE USEFUL THERMAL ENERGY IS AT LEAST 25% OF THE TOTAL ENERGY OUTPUT OF THE COMBINED HEAT AND POWER UNIT ON AN ANNUAL BASIS.

(B) DOCUMENTATION THAT THE OVERALL EFFICIENCY OF THE COMBINED HEAT AND POWER UNIT IS AT LEAST 60% ON AN ANNUAL BASIS.

(C) THE PERCENTAGE OF USEFUL THERMAL ENERGY AND OVERALL EFFICIENCY MUST BE CALCULATED AS FOLLOWS:

PERCENTAGE OF UTE = UTE / (UTE + TEO) x 100

OE = ((UTE + TEO) / HI) x 100

Where:

UTE = USEFUL THERMAL ENERGY (MMBtu)

OE = OVERALL EFFICIENCY

TEO = TOTAL ELECTRICAL OUTPUT (MMBtu) = GG x 3.412

GG = GROSS GENERATION (MWe)

HI = TOTAL HEAT INPUT (MMBtu)

(vii) IF THE CO_2 BUDGET UNIT IS REQUESTING RETIREMENT OF CO_2 ALLOWANCES UNDER SUBPARAGRAPH (k)(3)(ii), THEN THE APPLICATION MUST INCLUDE DOCUMENTATION OF THE AMOUNT OF USEFUL THERMAL ENERGY OR ELECTRICITY, OR BOTH, SUPPLIED TO AN INTERCONNECTED INDUSTRIAL, INSTITUTIONAL OR COMMERCIAL FACILITY.

~~(4)~~ **(5)** ~~*Compliance obligation adjustment*~~ ***CO_2 ALLOWANCE RETIREMENT*** *determination.* After verifying that the information submitted in the application under paragraph (k)~~(3)~~ **(4)** is complete and accurate, the Department will determine the ~~compliance obligation adjustment for~~ **NUMBER OF CO_2 ALLOWANCES TO RETIRE ON BEHALF OF** a CO_2 budget unit that meets the applicability requirements under paragraph (k)(1) ~~based on the CO_2 emissions from the CO_2 budget unit during the allocation year for which an adjustment request is being submitted. The Department will adjust the compliance obligation by reducing the total CO_2 emissions by an amount equal to the CO_2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to the co-located facility during the allocation year. The compliance obligation will include CO_2 emissions associated with the production of electricity that is supplied to a regional electric grid, transmission and related distribution systems and the cogeneration unit will be responsible for securing CO_2 allowances for those emissions.~~ **AND THE APPLICATION REQUIREMENTS UNDER PARAGRAPH (k)(4).**

(i) FOR A CO_2 BUDGET UNIT THAT MEETS THE APPLICATION REQUIREMENTS UNDER SUBPARAGRAPH (k)(4)(vi), THE DEPARTMENT WILL RETIRE THE NUMBER OF CO_2 ALLOWANCES EQUAL TO THE AMOUNT OF CO_2 THAT IS EMITTED AS A RESULT OF PROVIDING USEFUL THERMAL ENERGY OR ELECTRICITY, OR BOTH, DURING THE ALLOCATION YEAR.

(ii) FOR A CO_2 BUDGET UNIT THAT MEETS THE APPLICATION REQUIREMENTS UNDER SUBPARAGRAPH (k)(4)(vii), THE DEPARTMENT WILL RETIRE THE NUMBER OF CO_2 ALLOWANCES EQUAL TO THE AMOUNT OF USEFUL THERMAL ENERGY OR ELECTRICITY, OR BOTH, SUPPLIED TO AN INTERCONNECTED INDUSTRIAL, INSTITUTIONAL OR COMMERICAL FACILITY DURING THE ALLOCATION YEAR.

(iii) THE OWNER OR OPERATOR OF EACH CO_2 BUDGET UNIT REQUIRING ADDITIONAL CO_2 ALLOWANCES TO SATISFY THE CO_2 REQUIREMENTS UNDER § 145.306(c) SHALL TRANSFER CO_2 ALLOWANCES FOR COMPLIANCE DEDUCTIONS UNDER § 145.355 (RELATING TO COMPLIANCE) TO THE COMPLIANCE ACCOUNT OF THE UNIT.

~~(5)~~ **(6)** *Retirement and transfer of CO_2 allowances.* At the end of each control period **OR INTERIM CONTROL PERIOD**, the Department will retire CO_2 allowances from the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account in an amount equal to the ~~CO_2 emissions deducted from one or more compliance obligations under subsection (k)(4)~~ **DETERMINATION UNDER SUBSECTION (k)(5) FOR EACH CO_2 BUDGET UNIT**. The Department will transfer any remaining CO_2 allowances to the air pollution reduction account to be available for auction.

§ 145.343. Distribution of CO_2 allowances in the air pollution reduction account.

(a) Except for the CO_2 allowances allocated to the waste coal set-aside account under § 145.342(i) (relating to CO_2 allowance allocations), the strategic use set-aside account under § 145.342(j) and the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account under § 145.342(k), the Department will make all CO_2 allowances for an allocation year that are held in the air pollution reduction account for that allocation year available for purchase or auction by no later than the December 31 of the calendar year that corresponds to that allocation year.

(b) The Department will administer the air pollution reduction account so that CO_2 allowances will be sold in a transparent allowance auction. The proceeds of the auction will be used in the elimination of air pollution in accordance with the act and Chapter 143 (relating to disbursements from the Clean Air Fund) and for programmatic costs associated with the CO_2 Budget Trading Program.

(c) The Department or its agent, will not be obligated to sell any CO_2 allowances for less than the reserve price.

(d) The Department may transfer to the air pollution reduction account undistributed or unsold CO_2 allowances at the end of each control period, including CO_2 allowances allocated to the waste coal set-aside account under § 145.342(i), the strategic use set-aside account under § 145.342(j) and the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account under § 145.342(k).

CO_2 ALLOWANCE TRACKING SYSTEM

Sec.

§ 145.351. CO_2 Allowance Tracking System (COATS) accounts.

(a) *Nature and function of compliance accounts.* Consistent with § 145.352(a) (relating to establishment of accounts), the Department or its agent will establish one compliance account for each CO_2 budget source. Allocations of CO_2 allowances under §§ 145.341—145.343 (relating to CO_2 allowance allocations) and deductions or transfers of CO_2 allowances under §§ 145.332, 145.355 and 145.357 (relating to Department action on compliance certifications; compliance; and account error) or §§ 145.361—145.363 (relating to of CO_2 allowance transfers) will be recorded in the compliance accounts.

(b) *Nature and function of general accounts.* Consistent with § 145.352(b), the Department or its agent will establish, upon request, a general account for any person. Transfers of CO_2 allowances under §§ 145.361—145.363 will be recorded in the general account.

§ 145.352. Establishment of accounts.

(a) *Compliance accounts.* Upon receipt of a complete account certificate of representation under § 145.314 (relating to account certificate of representation), the Department or its agent will establish a compliance account for each CO_2 budget source for which the account certificate of representation was submitted.

(b) *General accounts.*

(1) Any person may apply to open a general account for the purpose of holding and transferring CO_2 allowances by submitting a complete application for a general account to the Department or its agent that includes the following:

(i) The name, mailing address, e-mail address and telephone number of the CO_2 authorized account representative and any CO_2 authorized alternate account representative.

(ii) The organization name and type of organization.

(iii) A list of all persons subject to a binding agreement for the CO_2 authorized account representative or any CO_2 authorized alternate account representative to represent their ownership interest with respect to the CO_2 allowances held in the general account.

(iv) The following certification statement by the CO_2 authorized account representative and any CO_2 authorized alternate account representative:

"I certify that I was selected as the CO_2 authorized account representative or the CO_2 authorized alternate account representative by an agreement that is binding on all persons who have an ownership interest with respect to CO_2 allowances held in the general account. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of all persons and that each person shall be fully bound by my representations, actions, inactions or submissions and by any order or decision issued to me by the Department or its agent or a court regarding the general account."

(v) The signature of the CO_2 authorized account representative and any CO_2 authorized alternate account representative and the dates signed.

(vi) Unless otherwise required by the Department or its agent, documents of agreement referred to in the application for a general account should not be submitted to the Department or its agent. The Department and its agent are not under any obligation to review or evaluate the sufficiency of any documents of agreement, if submitted.

(2) *Authorization of CO_2 authorized account representative.*

(i) Upon receipt by the Department or its agent of a complete application for a general account under subsection (b)(1), the Department or its agent will establish a general account for the person for whom the application is submitted.

(ii) The CO_2 authorized account representative and any CO_2 authorized alternate account representative for the general account shall represent and, by their representations, actions, inactions or submissions, legally bind each person who has an ownership interest with respect to CO_2 allowances held in the general account in all matters pertaining to the CO_2 Budget Trading Program, notwithstanding an agreement between the CO_2 authorized account representative or any CO_2 authorized alternate account representative and the person. This person shall be bound by any order or decision issued to the CO_2 authorized account representative or any CO_2

authorized alternate account representative by the Department or its agent or a court regarding the general account.

(iii) Any representation, action, inaction or submission by any CO_2 authorized alternate account representative shall be deemed to be a representation, action, inaction or submission by the CO_2 authorized account representative.

(iv) Each submission concerning the general account shall be submitted, signed and certified by the CO_2 authorized account representative or any CO_2 authorized alternate account representative for the persons having an ownership interest with respect to CO_2 allowances held in the general account. Each submission shall include the following certification statement by the CO_2 authorized account representative or any CO_2 authorized alternate account representative:

"I am authorized to make this submission on behalf of the persons having an ownership interest with respect to the CO_2 allowances held in the general account. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties under 18 Pa.C.S. § 4904 for submitting false statements and information or omitting required statements and information."

(v) The Department or its agent will accept or act on a submission concerning the general account only if the submission has been made, signed and certified in accordance with subsection (b)(2)(iv).

(3) *Changing CO_2 authorized account representative and CO_2 authorized alternate account representative; changes in persons with ownership interest.*

(i) The CO_2 authorized account representative or the CO_2 authorized alternate account representative for a general account may be changed at any time upon receipt by the Department or its agent of a superseding complete application for a general account under subsection (b)(1). Notwithstanding a change, the representations, actions, inactions and submissions by the previous CO_2 authorized account representative, or the previous CO_2 authorized alternate account representative, prior to the time and date when the Department or its agent receives the superseding application for a general account shall be binding on the new CO_2 authorized account representative or the new CO_2 authorized alternate account representative and the persons with an ownership interest with respect to the CO_2 allowances in the general account.

(ii) A revision of ownership listing shall include the following:

(A) If a new person having an ownership interest with respect to CO_2 allowances in the general account is not included in the list of persons in the application for a general account, the new person shall be deemed to be subject to and bound by the application for a general account, the representations, actions, inactions and submissions of the CO_2 authorized account representative and any CO_2 authorized alternate account representative, and the decisions, orders,

actions and inactions of the Department or its agent, as if the new person were included in the list.

(B) Within 30 days following any change in the persons having an ownership interest with respect to CO_2 allowances in the general account, including the addition or deletion of persons, the CO_2 authorized account representative or any CO_2 authorized alternate account representative shall submit a revision to the application for a general account amending the list of persons having an ownership interest with respect to the CO_2 allowances in the general account to include the change.

(4) *Objections concerning CO_2 authorized account representative.*

(i) Once a complete application for a general account under subsection (b)(1) has been submitted and received, the Department or its agent will rely on the application until a superseding complete application for a general account under subsection (b)(3)(i) is received by the Department or its agent.

(ii) Except as provided in subsections (b)(3)(i) and (ii), no objection or other communication submitted to the Department or its agent concerning the authorization, or any representation, action, inaction or submission of the CO_2 authorized account representative or any CO_2 authorized alternate account representative for a general account will affect any representation, action, inaction or submission of the CO_2 authorized account representative or any CO_2 authorized alternate account representative or the finality of any decision or order by the Department or its agent under the CO_2 Budget Trading Program.

(iii) The Department or its agent will not adjudicate a private legal dispute concerning the authorization or any representation, action, inaction or submission of the CO_2 authorized account representative or any CO_2 authorized alternate account representative for a general account, including private legal disputes concerning the proceeds of CO_2 allowance transfers.

(5) *Delegation by CO_2 authorized account representative and CO_2 authorized alternate account representative.*

(i) A CO_2 authorized account representative or a CO_2 authorized alternate account representative may delegate, to one or more persons, their authority to make an electronic submission to the Department or its agent under § 145.361 (relating to submission of CO_2 allowance transfers).

(ii) To delegate authority to make an electronic submission to the Department or its agent in accordance with subsection (b)(5)(1), the CO_2 authorized account representative or CO_2 authorized alternate account representative must submit to the Department or its agent a notice of delegation, in a format prescribed by the Department that includes the following:

(A) The name, address, e-mail address and telephone number of the CO_2 authorized account representative or CO_2 authorized alternate account representative.

(B) The name, address, e-mail address and telephone number of each electronic submission agent.

(C) For each electronic submission agent, a list of the type of electronic submissions under subsection (b)(5)(I) for which authority is delegated.

(D) The following certification statements by the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative:

(I) "I agree that any electronic submission to the Department or its agent that is by an electronic submission agent identified in this notice of delegation and of a type listed for the electronic submission agent in this notice of delegation and that is made when I am a CO_2 authorized account representative or CO_2 authorized alternate account representative before this notice of delegation is superseded by another notice of delegation under 25 Pa. Code § 145.352(b)(5)(ii) shall be deemed to be an electronic submission by me."

(II) "Until this notice of delegation is superseded by another notice of delegation under 25 Pa. Code § 145.352(b)(5)(ii), I agree to maintain an e-mail account and to notify the Department or its agent immediately of any change in my e-mail address unless all delegation authority by me under subparagraph (b)(5)(ii) is terminated."

(iii) A notice of delegation submitted under subsection (b)(5)(ii) shall be effective, with regard to the delegating CO_2 authorized account representative or CO_2 authorized alternate account representative identified in the notice, upon receipt of the notice by the Department or its agent and until receipt by the Department or its agent of a superseding notice of delegation by the CO_2 authorized account representative or CO_2 authorized alternate account representative. The superseding notice of delegation may replace any previously identified electronic submission agent, add a new electronic submission agent, or eliminate entirely any delegation of authority.

(iv) Any electronic submission covered by the certification in subsection (b)(5)(ii)(D) and made in accordance with a notice of delegation effective under subsection (b)(5)(ii) shall be deemed to be an electronic submission by the CO_2 authorized account representative or CO_2 authorized alternate account representative submitting the notice of delegation.

(c) *Account identification.* The Department or its agent will assign a unique identifying number to each account established under subsection (a) or subsection (b).

§ 145.353. COATS responsibilities of CO_2 authorized account representative and CO_2 authorized alternate account representative.

Following the establishment of a COATS account, the submissions to the Department or its agent pertaining to the account, including submissions concerning the deduction or transfer of CO_2 allowances in the account, shall be made only by the CO_2 authorized account representative or CO_2 authorized alternate account representative for the account.

§ 145.354. Recordation of CO_2 allowance allocations.

(a) **EXCEPT FOR 2022, ~~By~~ BY** January 1 of each calendar year, the Department or its agent will record the CO_2 allowances allocated for the air pollution reduction account under § 145.342(a) (relating to CO_2 allowance allocations).

(b) By January 1 of each calendar year, the Department or its agent will record the CO_2 allowances allocated for the waste coal set-aside account under § 145.342(b)(1), for the strategic use set-aside account under § 145.342(b)(2) and for the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account under § 145.342(b)(3) for the year after the last year for which CO_2 allowances were previously allocated to the set-aside account.

(c) The Department or its agent will assign each CO_2 allowance a serial number that will include digits identifying the year for which the CO_2 allowance is allocated.

§ 145.355. Compliance.

(a) *Allowances available for compliance deduction.* The CO_2 allowances are available to be deducted for compliance with the CO_2 requirements under § 145.306(c) (relating to standard requirements) for a control period or an interim control period only if the CO_2 allowances meet the following:

(1) The CO_2 allowances, other than CO_2 offset allowances, are allocated for a prior control period, the same control period or the interim control period for which the allowances will be deducted.

(2) The CO_2 allowances are held in the CO_2 budget source's compliance account as of the CO_2 allowance transfer deadline for that control period or the interim control period or are transferred into the compliance account by a CO_2 allowance transfer correctly submitted for recordation under § 145.361 (relating to submission of CO_2 allowance transfers) by the CO_2 allowance transfer deadline for that control period or the interim control period.

(3) For CO_2 offset allowances, the number of CO_2 offset allowances available to be deducted in order for a CO_2 budget source to comply with the CO_2 requirements under § 145.306(c) for a control period or an interim control period may not exceed 3.3% of the CO_2 budget source's CO_2 emissions for that control period or 3.3% of 0.50 times the CO_2 budget source's CO_2 emissions for an interim control period, as determined in accordance with §§ 145.351—145.358 (relating to CO_2 allowance tracking system) and 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements).

(4) The CO_2 allowances are not necessary for deductions for excess emissions for a prior control period under subsection (d).

(b) *Deductions for compliance.* Following the recordation, in accordance with § 145.362 (relating to recordation), of CO_2 allowance transfers submitted for recordation in the CO_2 budget source's compliance account by the CO_2 allowance transfer deadline for a control period or

interim control period, the Department or its agent will deduct CO_2 allowances available under subsection (a) to cover the source's CO_2 emissions for the control period or interim control period, as follows:

(1) Until the amount of CO_2 allowances deducted equals the number of tons of total CO_2 emissions, or 0.50 times the number of tons of total CO_2 emissions for an interim control period, less any CO_2 emissions attributable to the burning of eligible biomass, determined in accordance with §§ 145.371—145.377, from all CO_2 budget units at the CO_2 budget source for the control period or interim control period.

(2) Until there are no more CO_2 allowances remaining in the compliance account that are available to be deducted under subsection (a), if there are insufficient CO_2 allowances to complete the deductions in subsection (b)(1).

(c) *Allowance identification.*

(1) The CO_2 authorized account representative for a CO_2 budget source's compliance account may identify by serial number the CO_2 allowances to be deducted from the compliance account for emissions or excess emissions for a control period or an interim control period in accordance with subsection (b) or subsection (d). The identification shall be made in the compliance certification report submitted in accordance with § 145.331 (relating to compliance certification report).

(2) The Department or its agent will deduct CO_2 allowances for a control period or an interim control period from the CO_2 budget source's compliance account, in the absence of an identification or in the case of a partial identification of available CO_2 allowances by serial number under subsection (c)(1), in the following order:

(i) CO_2 offset allowances subject to the relevant compliance deduction limitations under subsection (a)(3) will be deducted in chronological order. In the event that some, but not all, CO_2 offset allowances from a particular allocation year are to be deducted, CO_2 offset allowances will be deducted by serial number, with lower serial number allowances deducted before higher serial number allowances.

(ii) CO_2 allowances, other than CO_2 offset allowances, that are available for deduction under subsection (a) will be deducted in chronological order. In the event that some, but not all, CO_2 allowances from a particular allocation year are to be deducted, CO_2 allowances will be deducted by serial number, with lower serial number allowances deducted before higher serial number allowances.

(d) *Deductions for excess emissions.*

(1) After making the deductions for compliance under subsection (b), the Department or its agent will deduct from the CO_2 budget source's compliance account a number of CO_2 allowances, equal to 3 times the number of the CO_2 budget source's excess emissions.

(2) If the compliance account does not contain sufficient CO_2 allowances to cover 3 times the number of the CO_2 budget source's excess emissions, the CO_2 budget source shall immediately transfer CO_2 allowances into its compliance account in an amount equal to 3 times the number of the CO_2 budget source's excess emissions. No CO_2 offset allowances may be deducted to account for the source's excess emissions.

(3) A CO_2 allowance deduction required under subsection (d)(1) will not affect the liability of the owner or operator of the CO_2 budget source or the CO_2 budget units at the source for any fine, penalty or assessment, or their obligation to comply with any other remedy, for the same violation, as ordered under the Clean Air Act or the act. The following guidelines will be followed by the Department in assessing fines, penalties or other obligations:

(i) For purposes of determining the number of days of violation, if a CO_2 budget source has excess emissions for a control period or an interim control period, each day in the control period or an interim control period constitutes a day of violation unless the owner or operator of the unit demonstrates that a lesser number of days should be considered.

(ii) Each ton of excess emissions is a separate violation.

(e) *Recordation.* The Department or its agent will record in the appropriate compliance account all deductions from the account under subsections (b)—(d).

(f) *Action by the Department on submissions.*

(1) The Department may review and conduct independent audits concerning any submission under the CO_2 Budget Trading Program and make appropriate adjustments of the information in the submissions.

(2) The Department may deduct CO_2 allowances from or transfer CO_2 allowances to a CO_2 budget source's compliance account based on information in the submissions, as adjusted under subsection (f)(1).

§ 145.356. Banking.

A CO_2 allowance that is held in a compliance account or a general account will remain in the account until the CO_2 allowance is deducted or transferred under § 145.332, § 145.355, § 145.357 or §§ 145.361—145.363.

§ 145.357. Account error.

The Department or its agent may correct any error in a COATS account. Within 10 business days of making the correction, the Department or its agent will notify the CO_2 authorized account representative for the account.

§ 145.358. Closing of general accounts.

(a) The CO_2 authorized account representative of a general account may instruct the Department or its agent to close the account by submitting a statement requesting deletion of the account from COATS and by correctly submitting for recordation under § 145.361 (relating to submission of CO_2 allowance transfers) a CO_2 allowance transfer of all CO_2 allowances in the account to one or more other COATS account.

(b) If a general account shows no activity for 1 year or more and does not contain any CO_2 allowances, the Department or its agent may notify the CO_2 authorized account representative for the account that the account will be closed in COATS following 30 business days after the notice is sent. The Department or its agent will close the account after the 30-day period unless before the end of the 30-day period the Department or its agent receives a correctly submitted transfer of CO_2 allowances into the account under § 145.361 or a statement submitted by the CO_2 authorized account representative requesting that the account should not be closed. The Department or its agent will have sole discretion to determine if the owner or operator of the unit demonstrated that the account should not be closed.

CO_2 ALLOWANCE TRANSFERS

Sec.

§ 145.361. Submission of CO_2 allowance transfers.

The CO_2 authorized account representatives seeking recordation of a CO_2 allowance transfer shall submit the transfer to the Department or its agent. The CO_2 allowance transfer shall include the following, in a format prescribed by the Department:

(1) The numbers identifying the accounts of the transferor and transferee.

(2) A specification by serial number of each CO_2 allowance to be transferred.

(3) The printed name and signature of the CO_2 authorized account representative of the transferor account and the date signed.

(4) The date of the completion of the last sale or purchase transaction for the CO_2 allowance, if any.

(5) The purchase or sale price of the CO_2 allowance that is the subject of a sale or purchase transaction under paragraph (4).

§ 145.362. Recordation.

(a) Within 5 business days of receiving a CO_2 allowance transfer, except as provided in subsection (b), the Department or its agent will record a CO_2 allowance transfer by moving each CO_2 allowance from the account of the transferor to the account of the transferee as specified by the request, if the following are met:

(1) The transfer is correctly submitted under § 145.361 (relating to submission of CO_2 allowance transfers).

(2) The account of the transferor includes each CO_2 allowance identified by serial number in the transfer.

(b) A CO_2 allowance transfer into or out of a compliance account that is submitted for recordation following the CO_2 allowance transfer deadline and that includes any CO_2 allowance allocated for a control period or interim control period prior to or the same as the control period or interim control period to which the CO_2 allowance transfer deadline applies will not be recorded until after completion of the process in § 145.355(b) (relating to compliance).

(c) A CO_2 allowance transfer submitted for recordation that fails to meet the requirements of subsection (a) will not be recorded.

§ 145.363. Notification.

(a) *Notification of recordation.* Within 5 business days of recordation of a CO_2 allowance transfer under § 145.362 (relating to recordation), the Department or its agent will notify each party to the transfer. Notice will be given to the CO_2 authorized account representative of the account of the transferor and the CO_2 authorized account representative of the account of the transferee.

(b) *Notification of non-recordation.* Within 10 business days of receipt of a CO_2 allowance transfer that fails to meet the requirements of § 145.362(a), the Department or its agent will notify the CO_2 authorized account representative of the account of the transferor and the CO_2 authorized account representative of the account of the transferee of the following:

(1) A decision not to record the transfer.

(2) The reasons for the non-recordation.

(c) *Resubmission.* Nothing in this section precludes the resubmission of a CO_2 allowance transfer for recordation following notification under subsection (b).

MONITORING, REPORTING AND RECORDKEEPING REQUIREMENTS

Sec.

§ 145.371. General monitoring requirements.

The owner or operator, and to the extent applicable, the CO_2 authorized account representative of a CO_2 budget unit, shall comply with the monitoring, recordkeeping and reporting requirements as provided in this section and §§ 145.372—145.377 and all applicable sections of 40 CFR Part 75 (relating to continuous emission monitoring). Where referenced in §§ 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements), the monitoring requirements of 40 CFR Part 75 shall be adhered to in a manner consistent with the purpose of monitoring and reporting CO_2 mass emissions under this subchapter. For purposes of complying with these requirements, the definitions in § 145.302 (relating to definitions) and in 40 CFR 72.2 (relating to definitions) apply, and the terms "affected unit," "designated representative" and "continuous emissions monitoring system" in 40 CFR Part 75 shall be replaced by the terms "CO_2 budget unit," "CO_2 authorized account representative" and "continuous emissions monitoring system," respectively, as defined in § 145.302. For units not subject to an acid rain emissions limitation, the term "Administrator" in 40 CFR Part 75 shall be replaced with "the Administrator, Department or its agent." The owner or operator of a CO_2 budget unit who monitors a unit that is not a CO_2 budget unit pursuant to the common, multiple or bypass stack procedures in 40 CFR 75.72(b)(2)(ii) (relating to determination of NO_x mass emissions for common stack and multiple stack configurations) or 40 CFR 75.16(b)(2)(ii)(B) (relating to special provisions for monitoring emissions from common, bypass, and multiple stacks for SO_2 emissions and heat input determinations) as pursuant to 40 CFR 75.13 (relating to specific provisions for monitoring CO_2 emissions) for purposes of complying with this subchapter, shall monitor and report CO_2 mass emissions from a unit that is not a CO_2 budget unit in accordance with the monitoring, reporting and recordkeeping requirements for a CO_2 budget unit under §§ 145.371—145.377.

(1) *Requirements for installation, certification and data accounting.* The owner or operator of each CO_2 budget unit must meet the following:

(i) Install all monitoring systems necessary to monitor CO_2 mass emissions in accordance with 40 CFR Part 75, except for equation G-1. This includes all systems required to monitor CO_2 concentration, stack gas flow rate, O_2 concentration, heat input and fuel flow rate, in accordance with 40 CFR Part 75, Subpart H (relating to NO_x mass emissions provisions).

(ii) Successfully complete all certification tests required under § 145.372 (relating to initial certification and recertification procedures) and meet all other provisions of this subchapter and 40 CFR Part 75 applicable to the monitoring systems under paragraph (1)(i).

(iii) Record, report and quality-assure the data from the monitoring systems under paragraph (1)(i).

(2) *Compliance dates.* The owner or operator of a CO_2 budget unit shall meet the monitoring system certification and other requirements of paragraph (1) and shall record, report and quality-assure data from the monitoring systems under paragraph (1)(i) according to the following schedule:

(i) Except for a CO_2 budget unit under paragraph (2)(ii), a CO_2 budget unit that commences commercial operation before ~~**July 1, 2021**~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO THE DATE 180 DAYS PRIOR TO THE PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*.)**, shall comply with this section and §§ 145.372—145.377 by ~~**January 1, 2022**~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**.

(ii) A CO_2 budget unit that commences commercial operation on or after ~~**July 1, 2021**~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO THE DATE 180 DAYS PRIOR TO THE PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*.)**, shall comply with the requirements of this section and §§ 145.372—145.377 by the later of the following dates:

(A) ~~**January 1, 2022**~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**.

(B) The earlier of:

(I) 90-unit operating days after the date on which the unit commences commercial operation.

(II) 180 calendar days after the date on which the unit commences commercial operation.

(iii) The owner or operator of a CO_2 budget unit for which construction of a new stack or flue installation is completed after the applicable deadline under paragraph (2)(i) or (2)(ii) by the earlier of:

(A) 90-unit operating days after the date on which emissions first exit to the atmosphere through the new stack or flue.

(B) 180 calendar days after the date on which emissions first exit to the atmosphere through the new stack or flue.

(3) *Reporting data.*

(i) Except as provided in paragraph (3)(ii), the owner or operator of a CO_2 budget unit that does not meet the applicable compliance date set forth in paragraph (2) for any monitoring system under paragraph (1)(i) shall, for each monitoring system, determine, record and report maximum potential, or as appropriate minimum potential, values for CO_2 concentration, CO_2 emissions rate, stack gas moisture content, fuel flow rate, heat input and any other parameter required to determine CO_2 mass emissions under 40 CFR 75.31(b)(2) or 40 CFR 75.31(c)(3) (relating to initial missing data procedures), or 40 CFR Part 75, Appendix D, Section 2.4 (relating to optional SO_2 emissions data protocol for gas-fired and oil-fired units), as applicable.

(ii) The owner or operator of a CO_2 budget unit that does not meet the applicable compliance date set forth in paragraph (2)(iii) for any monitoring system under paragraph (1)(i) shall, for each monitoring system, determine, record and report substitute data using the applicable missing data procedures in 40 CFR Part 75, Subpart D (relating to missing data substitution procedures) or Appendix D, instead of the maximum potential, or as appropriate minimum potential, values for a parameter if the owner or operator demonstrates that there is continuity between the data streams for that parameter before and after the construction or installation under paragraph (2)(iii).

(A) A CO_2 budget unit subject to an acid rain emissions limitation that qualifies for the optional SO_2, NO_x and CO_2 emissions calculations for low mass emissions (LME) units under 40 CFR 75.19 (relating to optional SO_2, NO_x, and CO_2 emissions calculation for low mass emissions (LME) units) and report emissions for the acid rain program using the calculations under 40 CFR 75.19, shall also use the CO_2 emissions calculations for LME units under 40 CFR 75.19 for purposes of compliance with this subchapter.

(B) A CO_2 budget unit subject to an acid rain emissions limitation that does not qualify for the optional SO_2, NO_x and CO_2 emissions calculations for LME units under 40 CFR 75.19, shall not use the CO_2 emissions calculations for LME units under 40 CFR 75.19 for purposes of compliance with this subchapter.

(C) A CO_2 budget unit not subject to an acid rain emissions limitation shall qualify for the optional CO_2emissions calculation for LME units under 40 CFR 75.19, if the unit emits less than 100 tons of NO_x annually and no more than 25 tons of SO_2 annually.

(4) *Prohibitions.*

(i) An owner or operator of a CO_2 budget unit may not use an alternative monitoring system, alternative reference method or another alternative for the required CEMS without having obtained prior written approval in accordance with § 145.376 (relating to petitions).

(ii) An owner or operator of a CO_2 budget unit may not operate the unit so as to discharge, or allow to be discharged, CO_2 emissions to the atmosphere without accounting for the emissions in accordance with the applicable provisions of this subchapter and 40 CFR Part 75.

(iii) An owner or operator of a CO_2 budget unit may not disrupt the CEMS, a portion thereof or another approved emissions monitoring method, and thereby avoid monitoring and recording CO_2 mass emissions discharged into the atmosphere, except for periods of recertification or periods when calibration, quality assurance testing or maintenance is performed in accordance with the applicable provisions of this subchapter and 40 CFR Part 75.

(iv) An owner or operator of a CO_2 budget unit may not retire or permanently discontinue use of the CEMS, any component thereof or another approved emissions monitoring system under this subchapter, except under one of the following circumstances:

(A) The owner or operator is monitoring emissions from the unit with another certified monitoring system approved, in accordance with the applicable provisions of this subchapter and 40 CFR Part 75, by the Department for use at the unit that provides emissions data for the same pollutant or parameter as the retired or discontinued monitoring system.

(B) The CO_2 authorized account representative submits notification of the date of certification testing of a replacement monitoring system in accordance with § 145.372(d)(3)(i) (relating to initial certification and recertification procedures).

§ 145.372. Initial certification and recertification procedures.

(a) *Exemption.* The owner or operator of a CO_2 budget unit shall be exempt from the initial certification requirements for a monitoring system under § 145.371(1)(i) (relating to general monitoring requirements) if the following conditions are met:

(1) The monitoring system has been previously certified in accordance with 40 CFR Part 75 (relating to continuous emission monitoring).

(2) The applicable quality-assurance and quality-control requirements of 40 CFR 75.21 (relating to quality assurance and quality control requirements) and 40 CFR Part 75, Appendix B (relating to quality assurance and quality control procedures) and Appendix D (relating to optional SO_2 emissions data protocol for gas-fired and oil-fired units) are fully met for the certified monitoring system described in subsection (a)(1).

(b) *Applicability.* The recertification provisions of this section shall apply to a monitoring system under § 145.371(1)(i) that is exempt from initial certification requirements under subsection (a).

(c) *Petitions.* Notwithstanding subsection (a), if the Administrator approved a petition under 40 CFR 75.72(b)(2)(ii) or 40 CFR 75.16(b)(2)(ii)(B) (relating to determination of NO_x mass emissions for common stack and multiple stack configurations; and special provisions for monitoring emissions from common, bypass, and multiple stacks for SO_2 emissions and heat input determinations) as pursuant to 40 CFR 75.13 (relating to specific provisions for monitoring CO_2 emissions) for apportioning the CO_2 emissions rate measured in a common stack or a petition under 40 CFR 75.66 (relating to petitions to the administrator) for an alternative requirement in 40 CFR Part 75, the CO_2 authorized account representative shall submit the petition to the Department under § 145.376(a) (relating to petitions) to determine if the approval applies under the CO_2 Budget Trading Program.

(d) *Certification and recertification.* Except as provided in subsection (a), the owner or operator of a CO_2 budget unit shall comply with the initial certification and recertification procedures for a CEMS and an excepted monitoring system under 40 CFR Part 75, Appendix D and under § 145.371(1)(i). The owner or operator of a CO_2 budget unit that qualifies to use the low mass emissions excepted monitoring methodology in 40 CFR 75.19 (relating to optional SO_2, NO_x, and CO_2 emissions calculation for low mass emissions (LME) units) or that qualifies to use an alternative monitoring system under 40 CFR Part 75, Subpart E (relating to alternative monitoring systems) shall comply with the procedures in subsection (e) or subsection (f), respectively.

(1) *Requirements for initial certification.* The owner or operator of a CO_2 budget unit shall ensure that each CEMS required under § 145.371(1)(i), including the automated data acquisition and handling system, successfully completes all of the initial certification testing required under 40 CFR 75.20 (relating to initial certification and recertification procedures) by the applicable deadlines specified in § 145.371(2). In addition, whenever the owner or operator installs a monitoring system to meet the requirements of this subchapter in a location where no monitoring system was previously installed, initial certification in accordance with 40 CFR 75.20 is required.

(2) *Requirements for recertification.*

(i) Whenever the owner or operator makes a replacement, modification or change to a certified CEMS under § 145.371(1)(i) that the Administrator or the Department determines significantly affects the ability of the system to accurately measure or record CO_2 mass emissions or to meet the quality-assurance and quality-control requirements of 40 CFR 75.21 or 40 CFR Part 75, Appendix B, the owner or operator shall recertify the monitoring system according to 40 CFR 75.20(b).

(ii) For a system using stack measurements including stack flow, stack moisture content, CO_2 or O_2 monitors, whenever the owner or operator makes a replacement, modification or change to the flue gas handling system or the unit's operation that the Administrator or the Department determines to significantly change the flow or concentration profile, the owner or operator shall recertify the CEMS according to 40 CFR 75.20(b).

(3) *Approval process for initial certification and recertification.*

(i) *Notification of certification.* The CO_2 authorized account representative shall submit to the Department and the appropriate EPA Regional Office a written notice of the dates of certification in accordance with § 145.374 (relating to notifications).

(ii) *Certification application.* The CO_2 authorized account representative shall submit to the Department a certification application for each monitoring system required under 40 CFR 75.63 (relating to initial certification or recertification application). A complete certification application shall include the information specified in 40 CFR 75.63.

(iii) *Provisional certification data.* The provisional certification date for a monitor shall be determined in accordance with 40 CFR 75.20(a)(3). A provisionally certified monitor may be used under the CO_2 budget Trading Program for a period not to exceed 120 days after receipt by the Department of the complete certification application for the monitoring system or component thereof under subsection (d)(3)(ii). Data measured and recorded by the provisionally certified monitoring system or component thereof, in accordance with the requirements of 40 CFR Part 75, will be considered valid quality-assured data (retroactive to the date and time of provisional certification), if the Department does not invalidate the provisional certification by issuing a notice of disapproval within 120 days of receipt of the complete certification application by the Department.

(iv) *Certification application approval process.* The Department will issue a written notice of approval or disapproval of the certification application to the owner or operator within 120 days of receipt of the complete certification application under subsection (d)(3)(ii). If the Department does not issue the notice within the 120-day period, each monitoring system which meets the applicable performance requirements of 40 CFR Part 75 and is included in the certification application will be deemed certified for use under the CO_2 Budget Trading Program.

(A) *Approval notice.* If the certification application is complete and shows that each monitoring system meets the applicable performance requirements of 40 CFR Part 75, the Department will issue a written notice of approval of the certification application within 120 days of receipt.

(B) *Incomplete application notice.* If the certification application is not complete, the Department will issue a written notice of incompleteness that sets a date by which the CO_2 authorized account representative must submit the additional information required to complete the certification application. If the CO_2 authorized account representative does not comply with the notice of incompleteness by the specified date, then the Department may issue a notice of disapproval under subsection (d)(3)(iv)(C). The 120-day review period may not begin prior to receipt of a complete certification application.

(C) *Disapproval notice.* If the certification application shows that any monitoring system or component thereof does not meet the performance requirements of 40 CFR Part 75, or if the certification application is incomplete and the requirement for disapproval under subsection (d)(3)(iv)(B) is met, then the Department will issue a written notice of disapproval of the certification application. Upon issuance of the notice of disapproval, the provisional certification is invalidated by the Department and the data measured and recorded by each uncertified

monitoring system or component thereof will not be considered valid quality-assured data beginning with the date and hour of provisional certification. The owner or operator shall follow the procedures for loss of certification in subsection (d)(3)(v) for each monitoring system or component thereof which is disapproved for initial certification.

(D) *Audit decertification.* The Department may issue a notice of disapproval of the certification status of a monitor in accordance with § 145.373(b) (relating to out-of-control periods).

(v) *Procedures for loss of certification.* If the Department issues a notice of disapproval of a certification application under subsection (d)(3)(iv)(C) or a notice of disapproval of certification status under subsection (d)(3)(iv)(D), the following apply:

(A) The owner or operator shall substitute the following values, for each disapproved monitoring system, for each hour of unit operation during the period of invalid data beginning with the date and hour of provisional certification and continuing until the time, date and hour specified under 40 CFR 75.20(a)(5)(i) or 40 CFR 75.20(g)(7):

(I) For a unit using or intending to monitor for CO_2 mass emissions using heat input or for a unit using the low mass emissions excepted methodology under 40 CFR 75.19, the maximum potential hourly heat input of the unit.

(II) For a unit intending to monitor for CO_2 mass emissions using a CO_2 pollutant concentration monitor and a flow monitor, the maximum potential concentration of CO_2 and the maximum potential flow rate of the unit under 40 CFR Part 75, Appendix A, Section 2.1 (relating to specifications and test procedures).

(B) The CO_2 authorized account representative shall submit a notification of certification retest dates and a new certification application in accordance with subsections (d)(3)(i) and (ii).

(C) The owner or operator shall repeat all certification tests or other requirements that were failed by the monitoring system, as indicated in the Department's notice of disapproval, no later than 30-unit operating days after the date of issuance of the notice of disapproval.

(e) *Initial certification and recertification procedures for low mass emissions units using the excepted methodologies under § 145.371(3)(ii).* The owner or operator of a unit qualified to use the low mass emissions excepted methodology under § 145.371(3)(ii) shall meet the applicable certification and recertification requirements of 40 CFR 75.19(a)(2), 40 CFR 75.20(h) and this section. If the owner or operator of the unit elects to certify a fuel flow meter system for heat input determinations, the owner or operator shall also meet the certification and recertification requirements in 40 CFR 75.20(g).

(f) *Certification and recertification procedures for an alternative monitoring system.* The CO_2 authorized account representative of each unit for which the owner or operator intends to use an alternative monitoring system approved by the Administrator and, if applicable, by the

Department under 40 CFR Part 75, Subpart E shall comply with the applicable notification and application procedures of 40 CFR 75.20(f).

§ 145.373. Out-of-control periods.

(a) *Quality assurance requirements.* Whenever a monitoring system fails to meet the quality assurance and quality control requirements or data validation requirements of 40 CFR Part 75 (relating to continuous emission monitoring), data shall be substituted using the applicable procedures in 40 CFR Part 75, Subpart D (relating to missing data substitution procedures) or Appendix D (relating to optional SO_2 emissions data protocol for gas-fired and oil-fired units).

(b) *Audit decertification.* Whenever both an audit of a monitoring system and a review of the initial certification or recertification application reveal that any monitoring system should not have been certified or recertified because it did not meet a particular performance specification or other requirement under § 145.372 (relating to initial certification and recertification procedures) or the applicable provisions of 40 CFR Part 75, both at the time of the initial certification or recertification application submission and at the time of the audit, the Department will issue a notice of disapproval of the certification status of the monitoring system. For the purposes of this paragraph, an audit shall be either a field audit or an audit of any information submitted to the Department or the Administrator. By issuing the notice of disapproval, the Department revokes prospectively the certification status of the monitoring system. The data measured and recorded by the monitoring system will not be considered valid quality-assured data from the date of issuance of the notification of the revoked certification status until the date and time that the owner or operator completes subsequently approved initial certification or recertification tests for the monitoring system. The owner or operator shall follow the initial certification or recertification procedures in § 145.372 for each disapproved monitoring system.

§ 145.374. Notifications.

The CO_2 authorized account representative for a CO_2 budget unit shall submit written notice to the Department and the Administrator in accordance with 40 CFR 75.61 (relating to notifications).

§ 145.375. Recordkeeping and reporting.

(a) *General provisions.* The CO_2 authorized account representative shall comply with the recordkeeping and reporting requirements in this section, the applicable recordkeeping and reporting requirements under 40 CFR 75.73 (relating to recordkeeping and reporting) and with the requirements of § 145.311(e) (relating to authorization and responsibilities of the CO_2 authorized account representative).

(b) *Monitoring plans.* The owner or operator of a CO_2 budget unit shall submit a monitoring plan in the manner prescribed in 40 CFR 75.62 (relating to monitoring plan submittals).

(c) *Certification applications.* The CO_2 authorized account representative shall submit an application to the Department within 45 days after completing all CO_2 monitoring system initial

certification or recertification tests required under § 145.372 (relating to initial certification and recertification procedures) including the information required under 40 CFR 75.63 (relating to initial certification or recertification application) and 40 CFR 75.53(g) and (h) (relating to monitoring plan).

(d) *Quarterly reports*. The CO_2 authorized account representative shall submit quarterly reports, as follows:

(1) The CO_2 mass emissions data for the CO_2 budget unit, in an electronic format prescribed by the Administrator unless otherwise prescribed by the Administrator or the Department for each calendar quarter. ~~**beginning with one of the following:**~~

~~**(i) For a unit that commenced commercial operation before January 1, 2022 the calendar quarter covering January 1, 2022, through March 31, 2022.**~~

~~**(ii) For a unit that commenced commercial operation on or after January 1, 2022, the calendar quarter corresponding to, the earlier of the date of provisional certification or the applicable deadline for initial certification under § 145.371(2) (relating to general monitoring requirements).**~~

(2) The CO_2 authorized account representative shall submit each quarterly report to the Administrator and the Department or its agent within 30 days following the end of the calendar quarter covered by the report. Quarterly reports shall be submitted in the manner specified in 40 CFR Part 75, Subpart H (relating to NO_x mass emissions provisions) and 40 CFR 75.64 (relating to quarterly reports).

(i) Quarterly reports shall be submitted for each CO_2 budget unit, or group of units using a common stack, and shall include all the data and information required in 40 CFR Part 75, Subpart G (relating to reporting requirements) except for opacity, heat input, NO_x and SO_2 provisions.

(3) The CO_2 authorized account representative shall submit to the Administrator or the Department a compliance certification in support of each quarterly report based on reasonable inquiry of those persons with primary responsibility for ensuring that all the unit's emissions are correctly and fully monitored. The certification shall state that the following conditions have been met:

(i) The monitoring data submitted were recorded in accordance with the applicable requirements of this subchapter and 40 CFR Part 75 (relating to continuous emission monitoring), including the quality assurance procedures and specifications.

(ii) For a unit with add-on CO_2 emissions controls and for all hours where data are substituted in accordance with 40 CFR 75.34(a)(1) (relating to units with add-on emission controls), the add-on emissions controls were operating within the range of parameters listed in the quality assurance/quality control program under 40 CFR Part 75, Appendix B (relating to quality

assurance and quality control procedures) and the substitute values do not systematically underestimate CO_2 emissions.

(iii) The CO_2 concentration values substituted for missing data under 40 CFR Part 75, Subpart D (relating to missing data substitution procedures) do not systematically underestimate CO_2 emissions.

§ 145.376. Petitions.

(a) Except as provided in subsection (c), the CO_2 authorized account representative of a CO_2 budget unit that is subject to an acid rain emissions limitation may submit a petition to the Administrator under 40 CFR 75.66 (relating to petitions to the administrator) and to the Department requesting approval to apply an alternative to any requirement of 40 CFR Part 75 (relating to continuous emission monitoring).

(b) Application of an alternative to any requirement of 40 CFR Part 75 is in accordance with this subchapter only to the extent that the petition is approved in writing by the Administrator and subsequently approved in writing by the Department.

(c) The CO_2 authorized account representative of a CO_2 budget unit that is not subject to an acid rain emissions limitation may submit a petition to the Administrator under 40 CFR 75.66 and to the Department requesting approval to apply an alternative to any requirement of 40 CFR Part 75. Application of an alternative to any requirement of 40 CFR Part 75 is in accordance with this subchapter only to the extent that the petition is approved in writing by the Administrator and subsequently approved in writing by the Department.

(d) In the event that the Administrator declines to review a petition under subsection (c), the CO_2 authorized account representative of a CO_2 budget unit that is not subject to an acid rain emissions limitation may submit a petition to the Department requesting approval to apply an alternative to any requirement of §§ 145.371—145.377 (relating to monitoring, reporting and recordkeeping requirements)). That petition shall contain all of the relevant information specified in 40 CFR 75.66. Application of an alternative to any requirement of §§ 145.371—145.377 is in accordance with §§ 145.371—145.377 only to the extent that the petition is approved in writing by the Department.

(e) The CO_2 authorized account representative of a CO_2 budget unit that is subject to an acid rain emissions limitation may submit a petition to the Administrator under 40 CFR 75.66 and to the Department requesting approval to apply an alternative to a requirement concerning any additional CEMS required under the common stack provisions of 40 CFR 75.72 (relating to determination of NO_x mass emissions for common stack and multiple stack configurations) or a CO_2 concentration CEMS used under 40 CFR 75.71(a)(2) (relating to specific provisions for monitoring NO_x and heat input for the purpose of calculating NO_x mass emissions). Application of an alternative to any requirement is in accordance with §§ 145.371—145.377 only to the extent the petition is approved in writing by the Administrator and subsequently approved in writing by the Department.

§ 145.377. CO_2 budget units that co-fire eligible biomass.

(a) The CO_2 authorized account representative of a CO_2 budget unit that co-fires eligible biomass as a compliance mechanism under this subchapter shall report the following information to the Department or its agent for each calendar quarter:

(1) For each shipment of solid eligible biomass fuel fired at the CO_2 budget unit:

(i) The total eligible biomass fuel input, on an as-fired basis, in pounds.

(ii) The moisture content, on an as-fired basis, as a fraction by weight.

(2) For each distinct type of gaseous eligible biomass fuel fired at the CO_2 budget unit:

(i) The density of the biogas, on an as-fired basis, in pounds per standard cubic foot.

(ii) The moisture content of the biogas, on an as-fired basis, as a fraction by total weight.

(iii) The total eligible biomass fuel input, in standard cubic feet.

(3) For each distinct type of eligible biomass fuel fired at the CO_2 budget unit:

(i) The dry basis carbon content of the fuel type, as a fraction by dry weight.

(ii) The dry basis higher heating value, in MMBtu per dry pound.

(iii) The total dry basis eligible biomass fuel input, in pounds, calculated in accordance with subsection (b).

(iv) The total eligible biomass fuel heat input, in MMBtu, calculated in accordance with subsection (d)(1).

(v) A chemical analysis, including heating value and carbon content.

(4) The total amount of CO_2 emitted from the CO_2 budget unit due to firing eligible biomass fuel, in tons, calculated in accordance with subsection (c).

(5) The total amount of heat input to the CO_2 budget unit due to firing eligible biomass fuel, in MMBtu, calculated in accordance with subsection (d)(2).

(6) A description and documentation of the monitoring technology employed, and a description and documentation of the fuel sampling methodology employed, including sampling frequency and carbon ash testing.

(b) An owner or operator of a CO_2 budget unit shall calculate and submit to the Department or its agent on a quarterly basis the total dry weight for each distinct type of eligible biomass fired

by the CO_2 budget unit during the reporting quarter. The total dry weight shall be determined for each fuel type as follows:

(1) For solid fuel types:

$$F_j = \sum_{i=1}^{m} (1 - M_i) \times F_i$$

Where:

Fj = Total eligible biomass dry basis fuel input (lbs) for fuel type j.

Fi = Eligible biomass as fired fuel input (lbs) for fired shipment i.

Mi = Moisture content (fraction) for fired shipment i.

i = Fired fuel shipment.

j = Fuel type.

m = Number of shipments.

(2) For gaseous fuel types:

Fj = Dj × Vj × (1—Mj)

Where:

Fj = Total eligible biomass dry basis fuel input (lbs) for fuel type j.

Dj = Density of biogas (lbs/scf) for fuel type j.

Vj = Total volume (scf) for fuel type j.

Mj = Moisture content (fraction) for fuel type j.

j = Fuel type.

(c) CO_2 emissions due to firing of eligible biomass shall be determined as follows:

(1) For any full calendar quarter during which no fuel other than eligible biomass is combusted at the CO_2 budget unit, as measured and recorded in accordance with §§ 145.371—145.376 (relating to monitoring, reporting and recordkeeping requirements) or for any full calendar quarter during which fuels other than eligible biomass are combusted at the CO_2 budget unit, as determined using the following equation:

$$CO_2\ tons = \sum_{j=1}^{n} F_j \times C_j \times O_j \times \frac{44}{12} \times 0.0005$$

Where:

CO_2 tons = CO_2 emissions due to firing of eligible biomass for the reporting quarter.

Fj = Total eligible biomass dry basis fuel input (lbs) for fuel type j, as calculated in subsection (b).

Cj = Carbon fraction (dry basis) for fuel type j.

Oj = Oxidation factor for eligible biomass fuel type j, derived for solid fuels based on the ash content of the eligible biomass fired and the carbon content of this ash, as determined under subsection (a)(3)(v); for gaseous eligible biomass fuels, a default oxidation factor of 0.995 may be used.

44/12 = The number of tons of carbon dioxide that are created when 1 ton of carbon is combusted.

0.0005 = The number of short tons which is equal to 1 pound.

j = Fuel type.

n = Number of distinct fuel types.

(d) Heat input due to firing of eligible biomass for each quarter shall be determined as follows:

(1) For each distinct fuel type:

Hj = Fj × HHVj

Where:

Hj = Heat input (MMBtu) for fuel type j.

Fj = Total eligible biomass dry basis fuel input (lbs) for fuel type j, as calculated in subsection (b).

HHVj = Higher heating value (MMBtu/lb), dry basis, for fuel type j, as determined through chemical analysis.

j = Fuel type.

(2) For all fuel types:

$$Heat\ input\ MMBtu = \sum_{j=1}^{n} H_j$$

Where:

Hj = Heat input (MMBtu) for fuel type j.

j = Fuel type.

n = Number of distinct fuel types.

AUCTION OF CO_2 CCR AND ECR ALLOWANCES

Sec.

§ 145.381. Purpose.

The following requirements shall apply to each allowance auction. The Department or its agent may specify additional information in the auction notice for each auction. This additional information may include the time and location of the auction, auction rules, registration deadlines and any additional information deemed necessary or useful.

§ 145.382. General requirements.

(a) In the auction notice for each auction, the Department or its agent shall include the following:

(1) The number of CO_2 allowances offered for sale at the auction, not including any CO_2 CCR allowances.

(2) The number of CO_2 CCR allowances that will be offered for sale at the auction if the condition in subsection (b)(1) is met.

(3) The minimum reserve price for the auction.

(4) *The CCR trigger price for the auction.* The CCR trigger price in calendar year 2022 shall be $13.91. Each calendar year after 2022, the CCR trigger price shall be 1.07 multiplied by the CCR trigger price from the previous calendar year, rounded to the nearest whole cent, as shown in Table 1.

Table 1. CO_2 CCR Trigger Price

2023	2024	2025	2026	2027	2028	2029	2030
$14.88	$15.92	$17.03	$18.22	$19.50	$20.87	$22.33	$23.89

(5) The maximum number of CO_2 allowances that may be withheld from sale at the auction if the condition in subsection (d)(1) is met.

(6) *The ECR trigger price for the auction.* The ECR trigger price in calendar year 2022 shall be $6.42. Each calendar year after 2022, the ECR trigger price shall be 1.07 multiplied by the ECR trigger price from the previous calendar year, rounded to the nearest whole cent, as shown in Table 2.

Table 2. CO_2 ECR Trigger Price

2023	2024	2025	2026	2027	2028	2029	2030
$ 6.87	$ 7.35	$ 7.86	$ 8.41	$ 9.00	$ 9.63	$10.30	$11.02

(b) For the sale of CO_2 CCR allowances, the Department or its agent will do the following:

(1) CO_2 CCR allowances will only be sold at an auction in which the total demand for allowances, above the CCR trigger price, exceeds the number of CO_2 allowances available for purchase at the auction, not including any CO_2 CCR allowances.

(2) If the condition in subsection (b)(1) is met at an auction, then the number of CO_2 CCR allowances offered for sale by the Department or its agent at the auction will be equal to the number of CO_2 CCR allowances in the air pollution reduction account at the time of the auction.

(3) After all of the CO_2 CCR allowances in the air pollution reduction account have been sold in a given calendar year, no additional CO_2 CCR allowances will be sold at any auction for the remainder of that calendar year, even if the condition in subsection (b)(1) is met at an auction.

(4) At an auction in which CO_2 CCR allowances are sold, the reserve price for the auction shall be the CCR trigger price.

(5) If the condition in subsection (b)(1) is not satisfied, no CO_2 CCR allowances will be offered for sale at the auction and the reserve price for the auction will be equal to the minimum reserve price.

(c) The Department or its agent will implement the reserve price in the following manner:

(1) No CO_2 allowances will be sold at any auction for a price below the reserve price for that auction.

(2) If the total demand for CO_2 allowances at an auction is less than or equal to the total number of CO_2 allowances made available for sale in that auction, then the auction clearing price for the auction shall be the reserve price.

(d) For the withholding of CO_2 ECR allowances from an auction, the Department or its agent will do the following:

(1) CO_2 ECR allowances will only be withheld from an auction if the demand for allowances would result in an auction clearing price that is less than the ECR trigger price prior to the withholding from the auction of any ECR allowances.

(2) If the condition in subsection (d)(1) is met at an auction, then the maximum number of CO_2 ECR allowances that may be withheld from that auction will be equal to the quantity in § 145.342(e)(1) (relating to CO_2 allowance allocations) minus the total quantity of CO_2 ECR allowances that have been withheld from any prior auction in that calendar year. The Department will transfer any CO_2 ECR allowances withheld from an auction into the Pennsylvania ECR Account.

CO_2 EMISSIONS OFFSET PROJECTS

Sec.

§ 145.391. Purpose.

The Department may award CO_2 offset allowances to sponsors of CO_2 emissions offset projects that have reduced or avoided atmospheric loading of CO_2, CO_2e or sequestered carbon as demonstrated in accordance with the applicable provisions of §§ 145.391—145.397 (relating to CO_2 emissions offset projects). The requirements of §§ 145.391—145.397 seek to ensure that CO_2 offset allowances awarded represent CO_2 equivalent emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent within the framework of a standards-based approach. Subject to the relevant compliance deduction limitations of § 145.355(a)(3) (relating to compliance), CO_2 offset allowances may be used by any CO_2 budget source for compliance purposes.

§ 145.392. Definitions.

The following words and terms, when used in §§ 145.391—145.397 (relating to CO_2 emissions offset projects), have the following meanings, unless the context clearly indicates otherwise:

AEPS—Alternative energy portfolio standards—Standards establishing that a certain amount of energy sold from alternative energy sources, as defined under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2), is included as part of the sources of electric generation by electric utilities within this Commonwealth.

Anaerobic digester—A device that promotes the decomposition of organic material to simple organics and gaseous biogas products, in the absence of elemental oxygen, usually accomplished by means of controlling temperature and volume, and that includes a methane recovery system.

Anaerobic digestion—The decomposition of organic material including manure brought about through the action of microorganisms in the absence of elemental oxygen.

Anaerobic storage—Storage of organic material in an oxygen-free environment, or under oxygen-free conditions, including holding tanks, ponds and lagoons.

Biogas—Gas resulting from the decomposition of organic matter under anaerobic conditions, the principle constituents of which are methane and carbon dioxide.

Conflict of interest—A situation that may arise with respect to an individual in relation to any specific project sponsor, CO_2 emissions offset project or category of offset projects, such that the individual's other activities or relationships with other persons or organizations render or may render the individual incapable of providing an impartial certification opinion, or otherwise compromise the individual's objectivity in performing certification functions.

Forest offset project—An offset project involving reforestation, improved forest management or avoided conversion.

Forest offset project data report—The report prepared by a project sponsor each year that provides the information and documentation required by §§ 145.391—145.397 or the forest offset protocol.

Forest offset protocol—The protocol titled "Regional Greenhouse Gas Initiative Offset Protocol U.S. Forest Projects," published by the participating states on June 12, 2013.

Independent verifier—An individual that has been approved by the Department or its agent to conduct verification activities.

Intentional reversal—Any reversal caused by a forest owner's negligence, gross negligence or willful intent, including harvesting, development and harm to the area within the offset project boundary.

Market penetration rate—A measure of the diffusion of a technology, product or practice in a defined market, as represented by the percentage of annual sales for a product or practice, or as a percentage of the existing installed stock for a product or category of products, or as the percentage of existing installed stock that utilizes a practice.

Offset project—

(i) All equipment, materials, items or actions directly related to the reduction of CO_2e emissions or the sequestration of carbon specified in a consistency application submitted under § 145.394 (relating to application process).

(ii) This term does not include equipment, materials, items or actions unrelated to an offset project reduction of CO_2e emissions or the sequestration of carbon but occurring at a location where an offset project occurs, unless specified in § 145.395 (relating to CO_2 emissions offset project standards).

Project commencement—

(i) For an offset project involving physical construction, other work at an offset project site or installation of equipment or materials, the date of the beginning of the activity.

(ii) For an offset project that involves the implementation of a management activity or protocol, the date on which the activity is first implemented or the protocol is first utilized.

(iii) For an offset project involving reforestation, improved forest management or avoided conversion, the date specified in section 3.2 of the forest offset protocol.

Project sponsor—The sponsor of an offset project under §§ 145.391—145.397.

Regional-type anaerobic digester—An anaerobic digester using feedstock from more than one agricultural operation or importing feedstock from more than one agricultural operation.

Reporting period—The period of time covered by a forest offset project data report. The first reporting period for a forest offset project in an initial crediting period may consist of 6 to 24 consecutive months; all subsequent reporting periods in an initial crediting and all reporting periods in any renewed crediting period must consist of 12 consecutive months.

Reversal—A greenhouse gas emission reduction or greenhouse gas removal enhancement for which CO_2 offset allowances have been issued that is subsequently released or emitted back into the atmosphere due to any intentional or unintentional circumstance.

System benefit fund—Any fund collected directly from retail electricity or natural gas ratepayers.

Total solids—The total of all solids in a sample, including the total suspended solids, total dissolved solids and volatile suspended solids.

Unintentional reversal—Any reversal, including, wildfires, insects or disease that is not the result of the forest owner's negligence, gross negligence or willful intent.

Verification—The confirmation by an independent verifier that certain parts of a CO_2 emissions offset project consistency application and measurement, monitoring or verification report conforms to the requirements of §§ 145.391—145.397.

Volatile solids—The fraction of total solids that is comprised primarily of organic matter as defined in EPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020).

§ 145.393. General requirements.

(a) *Eligibility*. To qualify for the award of CO_2 offset allowances, offset projects shall satisfy all the applicable requirements of §§ 145.391—145.397 (relating to CO_2 emissions offset projects).

(1) *Offset project types*. The following types of offset projects are eligible for the award of CO_2 offset allowances:

(i) Landfill methane capture and destruction.

(ii) Sequestration of carbon due to reforestation, improved forest management or avoided conversion.

(iii) Avoided methane emissions from agricultural manure management operations.

(2) *Offset project locations*. To qualify for the award of CO_2 offset allowances, an offset project must be located in:

(i) This Commonwealth.

(ii) Partly in this Commonwealth and partly in one or more other participating states, provided that more of the CO_2e emissions reduction or carbon sequestration due to the offset project is projected to occur in this Commonwealth than in any other participating state.

(b) *Project sponsor.* Any person may act as the sponsor of an offset project, provided that person meets the requirements under § 145.394 (relating to application process).

(c) *General additionality requirements.* Except as provided under § 145.395 (relating to CO_2 emissions offset project standards), the Department will not award CO_2 offset allowances to an offset project that meets the following:

(1) An offset project that is required under any local, state or Federal law, regulation, or administrative or judicial order. If an offset project receives a consistency determination under § 145.394 and is later required by local, state or Federal law, regulation, or administrative or judicial order, then the offset project will remain eligible for the award of CO_2 offset allowances until the end of its current allocation period but its eligibility will not be extended for an additional allocation period.

(2) An offset project that includes an electric generation component, unless the project sponsor transfers legal rights to any and all attribute credits, other than the CO_2 offset allowances awarded under § 145.397 (relating to award and recordation of CO_2 offset allowances), generated from the operation of the offset project that may be used for compliance with AEPS or a regulatory requirement, to the Department or its agent.

(3) An offset project that receives funding or other incentives from any system benefit fund or other incentives provided through revenue from the auction or sale of CO_2 allowances in the air pollution reduction account under § 145.342(a) (relating to CO_2 allowance allocations).

(4) An offset project that is awarded credits or allowances under any other mandatory or voluntary greenhouse gas program, except as described in § 145.395(b)(10).

(d) *Maximum allocation periods for offset projects.*

(1) *Maximum allocation periods.* Except as provided in subsection (d)(2), the Department may award CO_2 offset allowances under § 145.397 for an initial 10-year allocation period. At the end of the initial 10-year allocation period, the Department may award CO_2 offset allowances for a second 10-year allocation period, provided the project sponsor has submitted a consistency application under § 145.394 prior to the expiration of the initial allocation period, and the Department has issued a consistency determination under § 145.394(e)(2).

(2) *Maximum allocation period for sequestration of carbon due to reforestation, improved forest management or avoided conversion.* The Department may award CO_2 offset allowances under § 145.397 for any project involving reforestation, improved forest management or avoided conversion for an initial 25-year allocation period. At the end of the initial 25-year allocation period, or any subsequent crediting period, the Department may award CO_2 offset allowances for a subsequent 25-year allocation period, provided the project sponsor has

submitted a consistency application for the offset project under § 145.394 prior to the expiration of the initial allocation period, and the Department has issued a consistency determination under § 145.394(e)(2).

(e) *Offset project audit.* A project sponsor shall provide in writing, an access agreement to the Department granting the Department or its agent access to the physical location of the offset project to inspect for compliance with §§ 145.391—145.397.

(f) *Ineligibility due to noncompliance.*

(1) If at any time the Department determines that a project sponsor has not complied with the requirements of §§ 145.391—145.397, then the Department may revoke and retire any and all CO_2 offset allowances in the project sponsor's account.

(2) If at any time the Department determines that an offset project does not comply with the requirements of §§ 145.391—145.397, then the Department may revoke any approvals it has issued relative to the offset project.

§ 145.394. Application process.

(a) *Establishment of general account.* The sponsor of an offset project must establish a general account under § 145.352(b) (relating to establishment of accounts). All submissions to the Department required for the award of CO_2 offset allowances under §§ 145.391—145.397 (relating to CO_2 emissions offset projects) must be from the CO_2 authorized account representative for the general account of the project sponsor.

(b) *Consistency application deadlines.* A consistency application for an offset project shall be submitted, in a format prescribed by the Department and consistent with the requirements of this section by the following deadlines:

(1) For an offset project not involving reforestation, improved forest management or avoided conversion, by the date that is 6 months after the offset project is commenced.

(2) For an offset project involving reforestation, improved forest management or avoided conversion the consistency application, by the date that is one year after the offset project is commenced, except as provided under § 145.395(b)(9) (relating to CO_2 emissions offset project standards).

(3) The Department will deny any consistency application that fails to meet the deadlines in subsection (b).

(c) *Consistency application contents.* For an offset project, the consistency application must include the following:

(1) The project's sponsor's name, address, e-mail address, telephone number, facsimile transmission number and account number.

(2) The offset project description as required by the relevant provisions under § 145.395.

(3) A demonstration that the offset project meets all applicable requirements in §§ 145.391—145.397.

(4) The emissions baseline determination as required by the relevant provisions under § 145.395.

(5) An explanation of how the projected reduction or avoidance of atmospheric loading of CO_2 or CO_2e or the sequestration of carbon is to be quantified, monitored and verified as required by the relevant provisions under § 145.395.

(6) A completed consistency application agreement signed by the project sponsor that reads as follows:

"The undersigned project sponsor recognizes and accepts that the application for, and the receipt of, CO_2 offset allowances under the CO_2 Budget Trading Program is predicated on the project sponsor following all the requirements of §§ 145.391—145.397. The undersigned project sponsor holds the legal rights to the offset project or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. I understand that eligibility for the award of CO_2 offset allowances under §§ 145.391—145.397 is contingent on meeting the requirements of §§ 145.391—145.397. I authorize the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the monitoring and verification plan, has been implemented as described in this application. I understand that this right to audit shall include the right to enter the physical location of the offset project. I submit to the legal jurisdiction of the Commonwealth of Pennsylvania."

(7) A statement and certification report signed by the offset project sponsor certifying that all offset projects for which the sponsor has received CO_2 offset allowances under §§ 145.391—145.397, under the sponsor's ownership or control or under the ownership or control of any entity which controls, is controlled by, or has common control with the sponsor are in compliance with all applicable requirements of the CO_2 Budget Trading Program in all participating states.

(8) A verification report and certification statement signed by an independent verifier accredited under § 145.396 (relating to accreditation of independent verifiers) that expresses that the independent verifier has reviewed the entire application and evaluated the following in relation to the applicable requirements at § 145.393 (relating to general requirements) and § 145.395, and any applicable guidance issued by the Department:

(i) The adequacy and validity of information supplied by the project sponsor to demonstrate that the offset project meets the applicable eligibility requirements of §§ 145.393 and 145.395.

(ii) The adequacy and validity of information supplied by the project sponsor to demonstrate baseline emissions under the applicable requirements under § 145.395.

(iii) The adequacy of the monitoring and verification plan submitted under the applicable requirements under § 145.395.

(iv) Any other evaluations and statements as may be required by the Department.

(9) Disclosure of any voluntary or mandatory programs, other than the CO_2 Budget Trading Program, to which greenhouse gas emissions data related to the offset project has been or will be reported.

(d) The Department will not accept as submitted a consistency application for an offset project if a consistency application has already been submitted for the same project, or any portion of the same project, in another participating state, unless the consistency application was rejected by another participating state solely because more of the CO_2e emissions reduction or carbon sequestration resulting from the offset project is projected to occur in this Commonwealth than in any other participating state.

(e) *Department action on consistency applications.*

(1) *Completeness determination.* Within 30 days following receipt of the consistency application submitted under subsection (b), the Department will notify the project sponsor whether the consistency application is complete. A complete consistency application is one that is in a form prescribed by the Department and is determined by the Department to contain all applicable information and documentation required by §§ 145.391—145.397. In no event will a completeness determination prevent the Department from requesting additional information to make a consistency determination under subsection (e)(2).

(2) *Consistency determination.* Within 90 days of making the completeness determination under subsection (e)(1), the Department will issue a determination as to whether the offset project is consistent with the requirements of § 145.393 and this section and the requirements of the applicable offset project standard of § 145.395. For any offset project found to lack consistency with these requirements, the Department will inform the project sponsor of the offset project's deficiencies.

§ 145.395. CO_2 emissions offset project standards.

(a) *Landfill methane capture and destruction.* To qualify for the award of CO_2 offset allowances under §§ 145.391—145.397 (relating to CO_2 emissions offset projects), an offset project that captures and destroys methane from a landfill shall meet the requirements of this subsection and all other applicable requirements of §§ 145.391—145.397.

(1) *Eligibility.* An offset project shall occur at a landfill that is not subject to the New Source Performance Standards for municipal solid waste landfills, 40 CFR Part 60, Subpart Cc and Subpart WWW (relating to emission guidelines and compliance times for municipal solid waste landfills; and standards of performance for municipal solid waste landfills).

(2) *Offset project description.* The project sponsor shall provide a detailed narrative of the offset project actions to be taken, including documentation that the offset project meets the eligibility requirements of subsection (a)(1). The project narrative shall include the following:

(i) Identification of the owner or operator of the offset project.

(ii) Location and specifications of the landfill where the offset project will occur, including waste in place.

(iii) Identification of the owner or operator of the landfill where the offset project will occur.

(iv) Specifications of the equipment to be installed and a technical schematic of the offset project.

(3) *Emissions baseline determination.* The emissions baseline shall represent the potential fugitive landfill emissions of CH_4, in tons of CO_2e, as represented by the CH_4 collected and metered for thermal destruction as part of the offset project and calculated as follows:

Emissions (tons CO_2e) = $(V \times M \times (1 - OX) \times GWP)/2000$

Where:

V = volume of CH_4 collected (ft^3).

M = Mass of CH_4 per cubic foot (0.04246 lbs/ft^3 default value at 1 atmosphere, 20°C).

OX = Oxidation factor (0.10), representing estimated portion of collected CH_4 that would have eventually oxidized to CO_2 if not collected.

GWP = CO_2e global warming potential of CH_4 (28).

(4) *Calculating emissions reductions.* Emissions reductions shall be determined based on potential fugitive CH_4 emissions that would have occurred at the landfill if metered CH_4 collected from the landfill for thermal destruction as part of the offset project was not collected and destroyed. CO_2e emissions reductions shall be calculated as follows:

Emissions (tons CO_2e) = $(V \times M \times (1 - OX) \times C_{ef} \times GWP)/2000$

Where:

V = Volume of CH_4 collected (ft^3).

M = Mass of CH_4 per cubic foot (0.04246 lbs/ft^3 default value at 1 atmosphere and 20°C).

OX = Oxidation factor (0.10), representing estimated portion of collected CH_4 that would have eventually oxidized to CO_2 if not collected.

Cef = Combustion efficiency of methane control technology (0.98).

GWP = CO_2e global warming potential of CH_4 (28).

(5) *Monitoring and verification requirements.* An offset project shall employ a landfill gas collection system that provides continuous metering and data computation of landfill gas volumetric flow rate and CH_4 concentration. Annual monitoring and verification reports shall include monthly volumetric flow rate and CH_4 concentration data, including documentation that the CH_4 was actually supplied to the combustion source. Monitoring and verification is also subject to the following:

(i) As part of the consistency application, the project sponsor shall submit a monitoring and verification plan that includes a quality assurance and quality control program associated with equipment used to determine landfill gas volumetric flow rate and CH_4 composition. The monitoring and verification plan shall also include provisions for ensuring that measuring and monitoring equipment is maintained, operated and calibrated based on manufacturer recommendations, as well as provisions for the retention of maintenance records for audit purposes. The monitoring and verification plan shall be certified by an independent verifier accredited under § 145.396 (relating to accreditation of independent verifiers).

(ii) The project sponsor shall annually verify landfill gas CH_4 composition through landfill gas sampling and independent laboratory analysis using applicable EPA laboratory test methods.

(b) *Sequestration of carbon due to reforestation, improved forest management or avoided conversion.* To qualify for the award of CO_2 offset allowances under §§ 145.391—145.397, an offset project that involves reforestation, improved forest management, or avoided conversion shall meet all requirements of this subsection and the forest offset protocol, and all other applicable requirements of §§ 145.391—145.397.

(1) *Eligibility.* A forest offset project shall satisfy all eligibility requirements of the forest offset protocol and this subsection.

(2) *Offset project description.* The project sponsor shall provide a detailed narrative of the offset project actions to be taken, including documentation that the offset project meets the eligibility requirements of subsection (b)(1). The offset project description must include all information identified in sections 8.1 and 9.1 of the forest offset protocol, and any other information deemed necessary by the Department.

(3) *Carbon sequestration baseline determination.* Baseline onsite carbon stocks shall be determined as required by sections 6.1.1, 6.1.2, 6.2.1, 6.2.2, 6.2.3, 6.3.1 and 6.3.2 of the forest offset protocol, as applicable.

(4) *Calculating carbon sequestered.* Net greenhouse gas reductions and greenhouse gas removal enhancements shall be calculated as required by section 6 of the forest offset protocol. The project's risk reversal rating shall be calculated using the forest offset protocol Determination of a Forest Project's Reversal Risk Rating assessment worksheet.

(5) *Monitoring and verification requirements.* Monitoring and verification are subject to the following:

(i) Monitoring and verification reports shall include all forest offset project data reports submitted to the Department, including any additional data required by section 9.2.2 of the forest offset protocol.

(ii) The consistency application shall include a monitoring and verification plan certified by an independent verifier accredited under § 145.396 and shall consist of a forest carbon inventory program, as required by section 8.1 of the forest offset protocol.

(iii) Monitoring and verification reports shall be submitted not less than every 6 years, except that the first monitoring and verification report for reforestation projects must be submitted within 12 years of project commencement.

(6) *Forest Offset Project Data Reports.* A project sponsor shall submit a forest offset project data report to the Department for each reporting period. Each forest offset project data report must cover a single reporting period. Reporting periods must be contiguous and there must be no gaps in reporting once the first reporting period has commenced.

(7) Prior to the award of CO_2 offset allowances under § 145.397 (relating to award and recordation of CO_2 offset allowances), or to any surrender of allowances under § 145.395(b)(8)(ii)(C) (relating to CO_2 emissions offset project standards), any quantity expressed in metric tons, or metric tons of CO_2e, shall be converted to tons using the conversion factor specified in § 145.302 (relating to definitions).

(8) *Carbon sequestration permanence.* The project sponsor shall meet the following requirements to address reversals of sequestered carbon.

(i) *Unintentional reversals.* The project sponsor shall address an unintentional reversal of sequestered carbon as follows:

(A) Notify the Department of the reversal and provide an explanation for the nature of the unintentional reversal within 30 calendar days of its discovery.

(B) Submit to the Department a verified estimate of current carbon stocks within the offset project boundary within 1 year of the discovery of the unintentional reversal.

(ii) *Intentional reversals.* The project sponsor shall address an intentional reversal of sequestered carbon as follows:

(A) Notify the Department in writing of the intentional reversal and provide a written description and explanation of the intentional reversal within 30 calendar days of the intentional reversal.

(B) Submit to the Department a verified estimate of current carbon stocks within the offset project boundary within 1 year of the occurrence of an intentional reversal.

(C) If an intentional reversal occurs, and CO_2 offset allowances have been awarded to the offset project, the forest owner must surrender to the Department or its agent for retirement a quantity of CO_2 allowances corresponding to the quantity of CO_2e tons reversed within 6 months of notification by the Department.

(I) The Department will provide notification after the project sponsor has submitted a verified estimate of carbon stocks to the Department, or if the project sponsor fails to submit verified estimate of carbon stocks after 1 year has elapsed since the occurrence of the intentional reversal.

(II) If the forest owner does not surrender valid CO_2 allowances to the Department within 6 months of notification by the Department, the forest owner will be subject to enforcement action and each CO_2e equivalent ton of carbon sequestration intentionally reversed will constitute a separate violation of this subchapter and the act.

(D) *Project Termination Requirements.*

(I) The project sponsor must surrender to the Department or its agent for retirement a quantity of CO_2 allowances in the amount calculated under project termination provisions in the forest offset protocol within 6 months of project termination.

(II) If the project sponsor does not surrender to the Department or its agent a quantity of CO_2 allowances in the amount calculated under project termination provisions in the forest offset protocol within 6 months of project termination, the project sponsor will be subject to enforcement action and each CO_2 offset allowance not surrendered will constitute a separate violation of this subchapter and the act.

(iii) *Disposition of Forest Sequestration Projects After a Reversal.* The Department will terminate a forest offset project if a reversal lowers the forest offset project's actual standing live carbon stocks below its project baseline standing live carbon stocks.

(9) *Timing of forest offset projects.* The Department may award CO_2 offset allowances under § 145.397 only for forest offset projects that are initially commenced on or after January 1, 2014.

(10) *Projects that Have Been Awarded Credits by a Voluntary Greenhouse Gas Reduction Program.* The provisions of §§ 145.393(c)(4) and 145.394(b)(2) (relating to general requirements; and application process) shall not apply to forest projects that have been awarded credits under a voluntary greenhouse gas reduction program. For those projects, the number of CO_2 offset allowances will be calculated under the requirements of this subsection, without regard to quantity of credits that were awarded to the project under the voluntary program, provided that the project satisfies the following:

(i) All other general requirements of §§ 145.391—145.397, including all specific requirements of this subsection, for all reporting periods for which the project has been awarded credits under a voluntary greenhouse gas program and also intends to be awarded CO_2 offset allowances under § 145.397.

(ii) At the time of submittal of the consistency application for the project, the project sponsor submits forest offset data reports and a monitoring and verification report covering all reporting periods for which the project has been awarded credits under a voluntary greenhouse gas program and also intends to be awarded CO_2 offset allowances under § 145.397. Forest offset data reports and monitoring and verification reports must meet all requirements of subsections (b)(5) and (6).

(iii) The voluntary greenhouse gas program has published information to allow the Department to verify the information included in the consistency application and the consistency application includes information sufficient to allow the Department to determine the following:

(A) The offset project has met all legal and contractual requirements to allow it to terminate its relationship with the voluntary greenhouse gas program and the termination has been completed.

(B) The project sponsor or voluntary greenhouse gas program has cancelled or retired all credits that were awarded for carbon sequestration that occurred during the time periods for which the project intends to be awarded CO_2 offset allowances under § 145.397, and the credits were cancelled or retired for the sole purpose of allowing the project to be awarded CO_2 offset allowances under § 145.397.

(c) *Avoided methane emissions from agricultural manure management operations.* To qualify for the award of CO_2 offset allowances under §§ 145.391—145.397, an offset project that captures and destroys methane from animal manure and organic food waste using anaerobic digesters shall meet the requirements of this subsection and all other applicable requirements of §§ 145.391—145.397.

(1) *Eligibility.* To be eligible for CO_2 offset allowances, an offset project under this subsection shall:

(i) Consist of the destruction of that portion of methane generated by an anaerobic digester that would have been generated in the absence of the offset project through the uncontrolled anaerobic storage of manure or organic food waste.

(ii) Employ only manure-based anaerobic digester systems using livestock manure as the majority of digester feedstock, defined as more than 50% of the mass input into the digester on an annual basis. Organic food waste used by an anaerobic digester shall only be that which would have been stored in anaerobic conditions in the absence of the offset project.

(2) *Exceptions to the general requirements.* The provisions of § 145.393(c)(2) and (3) shall not apply to an agricultural manure management offset project that meets the following:

(i) The offset project is located in a participating state that has a market penetration rate for anaerobic digester projects of 5% or less. The market penetration determination shall utilize the most recent market data available at the time of submission of the consistency application under § 145.394 and shall be determined as follows:

$MP\ (\%) = MG_{AD} / MG_{STATE}$

Where:

MG_{AD} = Average annual manure generation for the number of dairy cows and swine serving all anaerobic digester projects in the applicable state at the time of submission of a consistency application under § 145.394.

MG_{STATE} = Average annual manure production of all dairy cows and swine in the participating state at the time of submission of a consistency application under § 145.394.

(ii) The offset project is located at a farm with 4,000 or less head of dairy cows, or a farm with equivalent animal units, assuming an average live weight for dairy cows in pounds per cow of 1,400 pounds, or, if the project is a regional-type anaerobic digester, total annual manure input to the digester is designed to be less than the average annual manure produced by a farm with 4,000 or less head of dairy cows, or a farm with equivalent animal units, assuming an average live weight for dairy cows in pounds per cow of 1,400 pounds.

(3) *Offset project description.* The project sponsor shall provide a detailed narrative of the offset project actions to be taken, including documentation that the offset project meets the eligibility requirements of subsection (c)(1). The offset project narrative shall include the following:

(i) Identification of the owner or operator of the offset project.

(ii) Location and specifications of the facility where the offset project will occur.

(iii) Identification of the owner or operator of the facility where the offset project will occur.

(iv) Specifications of the equipment to be installed and a technical schematic of the offset project.

(v) Location and specifications of the facilities from which anaerobic digester influent will be received, if different from the facility where the offset project will occur.

(4) *Emissions baseline determination.* The emissions baseline shall represent the potential emissions of the CH_4 that would have been produced in a baseline scenario under uncontrolled anaerobic storage conditions and released directly to the atmosphere in the absence of the offset project.

(i) Baseline CH_4 emissions shall be calculated as follows:

$E_b = (V_m \times M)/2000 \times GWP$

Where:

E_b = Potential CO_2e emissions due to calculated CH_4 production under site-specific anaerobic storage and weather conditions (tons).

V_m = Volume of CH_4 produced each month from decomposition of volatile solids in a baseline uncontrolled anaerobic storage scenario under site-specific storage and weather conditions for the facility at which the manure or organic food waste is generated (ft^3).

M = Mass of CH_4 per cubic foot (0.04246 lb/ft^3 default value at one atmosphere and 20°C).

GWP = Global warming potential of CH_4 (28).

(ii) The estimated amount of volatile solids decomposed each month under the uncontrolled anaerobic storage baseline scenario in kilograms (kg) shall be calculated as follows:

$VS_{dec} = VS_{avail} \times f$

Where:

VS = Volatile solids as determined from the equation:

$VS = M_m \times TS\% \times VS\%$

Where:

M_m = Mass of manure or organic food waste produced per month (kg).

TS% = Concentration (%) of total solids in manure or organic food waste as determined through EPA 160.3 testing method (EPA Method Number 160.3, Methods for the Chemical Analysis of Water and Wastes (EPA/600/4-79/020)).

VS% = Concentration (%) of volatile solids in total solids as determined through EPA 160.4 testing method (EPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes (EPA/600/4-79/020)).

VS_{avail} = Volatile solids available for decomposition in manure or organic food waste storage each month as determined from the equation:

$VS_{avail} = VS_p + 1/2\ VS_{in} - VS_{out}$

Where:

VS_p = Volatile solids present in manure or organic food waste storage at beginning of month (left over from previous month) (kg).

VS_{in} = Volatile solids added to manure or organic food waste storage during the course of the month (kg). The factor of 1/2 is multiplied by this number to represent the average mass of volatile solids available for decomposition for the entire duration of the month.

VS_{out} = Volatile solids removed from the manure or organic food waste storage for land application or export (assumed value based on standard farm practice).

f = van't Hoff-Arrhenius factor for the specific month as determined using the equation below. Using a base temperature of 30°C, the equation is as follows:

$$f = \exp\{[E(T_2 - T_1)]/[(GC \times T_1 \times T_2)]\}$$

Where:

f = Conversion efficiency of VS to CH_4 per month.

E = Activation energy constant (15,175 cal/mol).

T_2 = Average monthly ambient temperature for facility where manure or organic food waste is generated (converted from degrees Celsius to degrees Kelvin) as determined from the nearest National Weather Service certified weather station (if reported temperature °C > 5 °C; if reported temperature °C < 5 °C, then f = 0.104).

T_1 = 303.15 (30°C converted to °K).

GC = Ideal gas constant (1.987 cal/K mol).

(iii) The volume of CH_4 produced in cubic feet (ft^3) from decomposition of volatile solids shall be calculated as follows:

$$V_m = (VS_{dec} \times B_o) \times 35.3147$$

Where:

V_m = Volume of CH_4 (ft^3).

VS_{dec} = Volatile solids decomposed (kg).

B_o = Manure or organic food waste type-specific maximum methane generation constant (m^3 CH_4/kg VS decomposed). For dairy cow manure, B_o = 0.24 m^3 CH_4/kg VS decomposed. The methane generation constant for other types of manure shall be those cited at the EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990—2010, Annex 3, Table A 180 (EPA, February 2017), unless the project sponsor proposes an alternate methane generation constant

and that alternate is approved by the Department. If the project sponsor proposes to use a methane generation constant other than the ones found in the previously-cited reference, the project sponsor must provide justification and documentation to the Department.

(5) *Calculating emissions reductions.* Emissions reductions shall be calculated as follows:

$ER_t = E_b - E_p$

Where:

ER_t = CO_2e emissions reductions due to project activities (tons).

E_b = Potential CO_2e emissions due to calculated CH_4 production under site-specific anaerobic storage and weather conditions (tons).

E_p = CO_2e emissions due to project activities additional to baseline (tons), including manure transportation, flaring, venting and effluent management.

(6) *Transport CO_2 emissions.* Emissions reductions may not exceed the potential emissions of the anaerobic digester, as represented by the annual volume of CH_4 produced by the anaerobic digester, as monitored under subsection (c)(5). CO_2 emissions due to transportation of manure and organic food waste from the site where the manure and organic food waste was generated to the anaerobic digester shall be subtracted from the emissions calculated under subsection (c)(4)(i)—(iii). Transport CO_2 emissions shall be determined through one of the following methods:

(i) Documentation of transport fuel use for all shipments of manure and organic food waste from off-site to the anaerobic digester during each reporting year and a log of transport miles for each shipment. Off-site is defined as a location that is not contiguous with the property where the anaerobic digester is located. CO_2 emissions shall be determined through the application of an emissions factor for the fuel type used. If this option is chosen, the following emissions factors shall be applied as appropriate:

(A) Diesel fuel: 22.912 lbs. CO_2/gallon.

(B) Gasoline: 19.878 lbs. CO_2/gallon.

(C) Other fuel: submitted emissions factor approved by the Department.

(ii) Documentation of total tons of manure and organic food waste transported from off-site for input into the anaerobic digester during each reporting year, as monitored under subsection (c)(7)(i), and a log of transport miles and fuel type used for each shipment. CO_2 emissions shall be determined through the application of a ton-mile transport emission factor for the fuel type used. If this option is chosen, the following emissions factors shall be applied as appropriate for each ton of manure delivered and multiplied by the number of miles transported:

(A) Diesel fuel: 0.131 lb. CO_2 per ton-mile.

(B) Gasoline: 0.133 lb. CO_2 per ton-mile.

(C) Other fuel: submitted emissions factor approved by the Department.

(7) *Monitoring and verification requirements.* An offset project shall employ a system that provides metering of biogas volumetric flow rate and determination of CH_4 concentration. Annual monitoring and verification reports shall include monthly biogas volumetric flow rate and CH_4 concentration determination. Monitoring and verification shall also meet the following:

(i) If the offset project is a regional-type anaerobic digester, manure and organic food waste from each distinct source supplying to the anaerobic digester shall be sampled monthly to determine the amount of volatile solids present. Any emissions reduction will be calculated according to mass of manure and organic food waste in kilograms (kg) being digested and percentage of volatile solids present before anaerobic digestion, consistent with the requirements under subsection (c)(4) and subsection (c)(7)(iii) and apportioned accordingly among sources. The project sponsor shall provide supporting material and receipts tracking the monthly receipt of manure and organic food waste in kilograms (kg) used to supply the anaerobic digester from each supplier.

(ii) If the offset project includes the anaerobic digestion of organic food waste eligible under subsection (c)(1)(ii), organic food waste shall be sampled monthly to determine the amount of volatile solids present before anaerobic digestion, consistent with the requirements at sub-section (c)(4) and subsection (c)(7)(iii), and apportioned accordingly.

(iii) The project sponsor shall submit a monitoring and verification plan as part of the consistency application that includes a quality assurance and quality control program associated with equipment used to determine biogas volumetric flow rate and CH_4 composition. The monitoring and verification plan shall be specified in accordance with the applicable monitoring requirements listed in Table 3. The monitoring and verification plan shall also include provisions for ensuring that measuring and monitoring equipment is maintained, operated and calibrated based on manufacturer's recommendations, as well as provisions for the retention of maintenance records for audit purposes. The monitoring and verification plan shall be certified by an independent verifier accredited under § 145.396.

Table 3. Monitoring requirements

Parameter	Measurement Unit	Frequency of Sampling	Sampling Methods
Influent flow (mass) into the digester	Kilograms (kg) per month (wet mass)	Monthly total into the digester	In descending order of preference: 1) Recorded mass 2) Digester influent pump flow 3) Livestock population and application of American Society of Agricultural and

			Biological Engineers (ASABE) standard (ASAE D384.2, March 2005)
Influent total solids concentration (TS)	Percent (of sample)	Monthly, depending upon recorded variations	EPA Method Number 160.3, Methods for the Chemical Analysis of Water and Wastes (EPA/600/4-79/020)
Influent volatile solids (VS) concentration	Percent (of TS)	Monthly, depending upon recorded variations	EPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes (EPA/600/4-79/020)
Average monthly ambient temperature	Temperature °C	Monthly (based on farm averages)	Closest National Weather Service—certified weather station
Volume of biogas produced by digester	Standard cubic feet (scf)	Continuous, totalized monthly	Flow meter
Methane composition of biogas produced by digester	Percent (of sample)	Quarterly	Bag sampling and third party laboratory analysis using applicable EPA test methods

§ 145.396. Accreditation of independent verifiers.

(a) *Standards for accreditation.* An independent verifier may be accredited by the Department to provide verification services as required of a project sponsor under this subchapter, provided that an independent verifier meets all the requirements of this section.

(1) *Verifier minimum requirements.* Each accredited independent verifier shall demonstrate knowledge of the following:

(i) Utilizing engineering principles.

(ii) Quantifying greenhouse gas emissions.

(iii) Developing and evaluating air emissions inventories.

(iv) Auditing and accounting principles.

(v) Information management systems.

(vi) The requirements of this subchapter.

(vii) Such other qualifications as may be required by the Department to provide competent verification services as required for individual offset categories under § 145.395 (relating to CO_2 emissions offset project standards).

(2) *Organizational qualifications.* An accredited independent verifier shall demonstrate that they meet the following:

(i) No direct or indirect financial relationship, beyond a contract for provision of verification services, with any offset project developer or project sponsor.

(ii) Employ staff with professional licenses, knowledge and experience appropriate to the specific category of offset projects under § 145.395 that they seek to verify.

(iii) Hold a minimum of $1 million of professional liability insurance. If the insurance is in the name of a related entity, the verifier shall disclose the financial relationship between the verifier and the related entity, and provide documentation supporting the description of the relationship.

(iv) Implementation of an adequate management protocol to identify potential conflicts of interest with regard to an offset project, offset project developer or project sponsor, or any other party with a direct or indirect financial interest in an offset project that is seeking or has been granted approval of a consistency application under § 145.394(e) (relating to application process), and remedy any conflicts of interest prior to providing verification services.

(3) *Pre-qualification of verifiers.* The Department may require prospective verifiers to successfully complete a training course, workshop or test developed by the Department or its agent, prior to submitting an application for accreditation.

(b) *Application for accreditation.* An application for accreditation shall not contain any proprietary information and shall include the following:

(1) The applicant's name, address, e-mail address, telephone number and facsimile transmission number.

(2) Documentation that the applicant has at least 2 years of experience in each of the knowledge areas specified at subsection (a)(1)(i)—(v), and as may be required under subsection (a)(1)(vii).

(3) Documentation that the applicant has successfully completed the requirements at subsection (a)(3), as applicable.

(4) A sample of at least one work product that provides supporting evidence that the applicant meets the requirements at subsections (a)(1) and (2). The work product shall have been produced, in whole or part, by the applicant and shall consist of a final report or other material provided to a client under contract in previous work. For a work product that was jointly

produced by the applicant and another entity, the role of the applicant in the work product shall be clearly explained.

(5) Documentation that the applicant holds professional liability insurance as required under subsection (a)(2)(iii).

(6) Documentation that the applicant has implemented an adequate management protocol to address and remedy any conflict of interest issues that may arise, as required under subsection (a)(2)(iv).

(c) *Department action on applications for accreditation.* The Department will approve or deny a complete application for accreditation within 45 days after submission. Upon approval of an application for accreditation, the independent verifier shall be accredited for a period of 3 years from the date of application approval.

(d) *Reciprocity.* Independent verifiers accredited in other participating states may be deemed to be accredited in this Commonwealth, at the discretion of the Department.

(e) *Conduct of an accredited verifier.*

(1) Prior to engaging in verification services for an offset project sponsor, the accredited verifier shall disclose all relevant information to the Department to allow for an evaluation of potential conflict of interest with respect to an offset project, offset project developer or project sponsor. The accredited verifier shall disclose information concerning its ownership, past and current clients, related entities, as well as any other facts or circumstances that have the potential to create a conflict of interest.

(2) An accredited verifier shall have an ongoing obligation to disclose to the Department any facts or circumstances that may give rise to a conflict of interest with respect to an offset project, offset project developer or project sponsor.

(3) The Department may reject a verification report and certification statement from an accredited verifier, submitted as part of a consistency application required under § 145.394(b) or submitted as part of a monitoring and verification report submitted under § 145.397(b) (relating to award and recordation of CO_2 offset allowances), if the Department determines that the accredited verifier has a conflict of interest related to the offset project, offset project developer or project sponsor.

(4) The Department may revoke the accreditation of a verifier at any time for the following:

(i) Failure to fully disclose any issues that may lead to a conflict of interest situation with respect to an offset project, offset project developer or project sponsor.

(ii) The verifier is no longer qualified due to changes in staffing or other criteria.

(iii) Negligence or neglect of responsibilities pursuant to the requirements of this subchapter.

(iv) Intentional misrepresentation of data or other intentional fraud.

§ 145.397. Award and Recordation of CO_2 offset allowances.

(a) *Award of CO_2 offset allowances.* Following the issuance of a consistency determination under § 145.394(e)(2) (relating to application process) and the approval of a monitoring and verification report under the provisions of subsection (f), the Department will award one CO_2 offset allowance for each ton of demonstrated reduction in CO_2 or CO_2e emissions or sequestration of CO_2.

(b) *Recordation of CO_2 offset allowances.* After CO_2 offset allowances are awarded under subsection (a)(1), the Department will record the CO_2 offset allowances in the project sponsor's general account.

(c) *Deadlines for submittal of monitoring and verification reports.*

(1) For an offset project undertaken prior to ~~January 1, 2022~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**, the project sponsor shall submit the monitoring and verification report covering the pre-2022 period by ~~June 30, 2022~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JUNE 30, 2022, OR THE DATE 180 DAYS AFTER PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**.

(2) For an offset project undertaken on or after ~~January 1, 2022~~ _____ **(*EDITOR'S NOTE*: THE BLANK REFERS TO JANUARY 1, 2022, OR THE DATE OF PUBLICATION OF THE FINAL-FORM RULEMAKING IN THE *PENNSYLVANIA BULLETIN*, WHICHEVER IS LATER.)**, the project sponsor shall submit the monitoring and verification report within 6 months following the completion of the last calendar year during which the offset project achieved CO_2e reductions or sequestration of CO_2 for which the project sponsor seeks the award of CO_2 offset allowances.

(d) *Contents of monitoring and verification reports.* For an offset project, the monitoring and verification report must include the following:

(1) The project sponsor's name, address, e-mail address, telephone number, facsimile transmission number and account number.

(2) The CO_2 emissions reduction or CO_2 sequestration determination as required by the relevant provisions of § 145.395 (relating to CO_2 emissions offset project standards), including a demonstration that the project sponsor complied with the required quantification, monitoring and verification procedures under § 145.395, as well as those outlined in the consistency application approved under § 145.394(e)(2).

(3) A signed certification statement that reads "The undersigned project sponsor hereby confirms and attests that the offset project upon which this monitoring and verification report is based is in full compliance with all of the requirements of §§ 145.391—145.397. The project sponsor holds the legal rights to the offset project or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. I understand that eligibility for the award of CO_2 offset allowances under §§ 145.391—145.397 is contingent on meeting the requirements of §§ 145.391—145.397. I authorize the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the monitoring and verification plan, has been implemented as described in the consistency application that was the subject of a consistency determination by the Department. I understand that this right to audit shall include the right to enter the physical location of the offset project and to make available to the Department or its agent any and all documentation relating to the offset project at the Department's request. I submit to the legal jurisdiction of the Commonwealth of Pennsylvania."

(4) A certification signed by the project sponsor certifying that all offset projects for which the sponsor has received CO_2 offset allowances under this subchapter or similar provisions in the rules of other participating states, under the sponsor's ownership or control or under the ownership or control of any entity which controls, is controlled by, or has common control with the sponsor are in compliance with all applicable requirements of the CO_2 Budget Trading Program in all participating states.

(5) A verification report and certification statement signed by an independent verifier accredited under § 145.396 (relating to accreditation of independent verifiers) that documents that the independent verifier has reviewed the monitoring and verification report and evaluated the following in relation to the applicable requirements at § 145.395, and any applicable guidance issued by the Department:

(i) The adequacy and validity of information supplied by the project sponsor to determine CO_2 emissions reductions or CO_2 sequestration under the applicable requirements at § 145.395.

(ii) The adequacy and consistency of methods used to quantify, monitor and verify CO_2 emissions reductions and CO_2 sequestration in accordance with the applicable requirements at § 145.395 and as outlined in the consistency application approved under § 145.394(e)(2).

(iii) The adequacy and validity of information supplied by the project sponsor to demonstrate that the offset project meets the applicable eligibility requirements under § 145.395.

(iv) Other evaluations and verification reviews as may be required by the Department.

(6) Disclosure of any voluntary or mandatory programs, other than the CO_2 Budget Trading Program, to which greenhouse gas emissions data related to the offset project has been or will be reported.

(e) *Prohibition against filing monitoring and verification reports in more than one participating state.* The Department will only accept a monitoring and verification report for an offset project that has received a consistency determination under § 145.394(e)(2) and will not

accept a monitoring and verification report for an offset project that has received a consistency determination in other participating states.

(f) *Department action on monitoring and verification reports.*

(1) A complete monitoring and verification report is one that is in an approved form and is determined by the Department to be complete for the purpose of commencing review of the monitoring and verification report. In no event shall a completeness determination prevent the Department from requesting additional information needed by the Department to approve or deny a monitoring and verification report.

(2) Within 45 days following receipt of a complete report, the Department will approve or deny a complete monitoring and verification report, in a format approved by the Department, filed with the Department under subsections (c) and (d).

CO_2 ALLOWANCE AUCTIONS

Sec.

§ 145.401. Auction of CO_2 allowances.

(a) Except as provided under subsection (b), the Department will participate in a multistate CO_2 allowance auction in coordination with other participating states based on the following:

(1) A multistate auction capability and process is in place for the participating states.

(2) The multistate auction can provide benefits to this Commonwealth that meet or exceed the benefits conferred on Pennsylvania through its own Pennsylvania-run auction process.

(3) The multistate auction process is consistent with the process described in §§ 145.401—145.409 (relating to CO_2 allowance auctions).

(4) The multistate auction process includes monitoring of each CO_2 allowance auction by an independent monitor to identify any collusion, market power or price manipulation.

(b) Should the Department find that the conditions in subsection (a) are no longer met, the Department may determine to conduct a Pennsylvania-run auction in accordance with §§ 145.341—145.343 (relating to Pennsylvania CO_2 Budget Trading Program base budget; CO_2 allowance allocations; and distribution of CO_2 allowances in the air pollution reduction account) and 145.401—145.409.

(c) The Department may delegate the implementation and administrative support functions for any CO_2 allowance auction conducted under §§ 145.401—145.409 to an agent qualified to conduct auctions, including a regional entity, provided that the agent shall perform all functions under the direction and oversight of the Department.

(d) The Department will retain its authority to enforce compliance with all sections of this subchapter and will retain control over the proceeds associated with the sale of Pennsylvania CO_2 allowances, whether sold in a multistate or Pennsylvania CO_2 allowance auction and will credit the proceeds to the Clean Air Fund established under the act.

§ 145.402. Auction format.

(a) The format of a CO_2 allowance auction will be one or more of the following:

(1) Uniform-price sealed-bid.

(2) Discriminatory-price sealed-bid.

(3) Ascending price, multiple-round.

(4) Descending price, multiple-round.

(b) CO_2 allowances will be auctioned in lots of 1,000 CO_2 allowances, unless the volume of CO_2 allowances auctioned requires an individual lot size smaller than 1,000.

(c) The Department will establish a reserve price for each CO_2 allowance auction, which will be either the minimum reserve price or the CCR trigger price, as specified under § 145.382 (relating to general requirements), Table 1 (relating to CO_2 CCR trigger price) and §§ 145.381 and 145.382 (relating to purpose; and general requirements).

§ 145.403. Auction timing and CO_2 allowance submission schedule.

(a) A CO_2 allowance auction will be held no less frequently than annually, and as frequently as the Department determines is necessary and practical to ensure the availability of CO_2

allowances to CO_2 budget units and CO_2 budget sources and to support the effective functioning of the CO_2 allowance market.

(b) Prior to the end of each control period or interim control period, the Department will make available for sale by auction, all CO_2 allowances held in the air pollution reduction account that are designated for the allocation years associated with that control period or interim control period. This will not include CO_2 allowances set aside in the waste coal set-aside account under § 145.342(i) (relating to CO_2 allowance allocations), the strategic use set-aside account under § 145.342(j) or the ~~cogeneration~~ **COMBINED HEAT AND POWER** set-aside account under § 145.342(k).

(c) The number of CO_2 allowances to be made available for sale in an auction will be disclosed in the notice of CO_2 allowance auction issued under § 145.404 (relating to auction notice).

(d) An auction of CO_2 allowances will include a CO_2 cost containment reserve and a CCR trigger price, as provided under § 145.342.

§ 145.404. Auction notice.

(a) A notice of each CO_2 allowance auction will be provided no later than 45 days prior to the date upon which the auction will be conducted.

(b) In addition to the information specified under § 145.382(a) (relating to general requirements), the notice of a CO_2 allowance auction will include the following:

(1) The date, time and location of the CO_2 allowance auction.

(2) The format for the CO_2 allowance auction.

(3) The categories of bidders who will be eligible to bid.

(4) The number and allocation years of Pennsylvania CO_2 allowances to be auctioned.

(5) The minimum reserve price.

(6) All information regarding the CO_2 cost containment reserve, required to be in the notice under § 145.382(a).

(7) The procedures for conducting the CO_2 allowance auction, including the required bid submission format and process, and information regarding financial settling of CO_2 allowance payments.

(8) All CO_2 allowance auction participation requirements.

(9) The amount and type of financial security required and instructions for submitting acceptable financial surety.

(10) Participation limits, including bidding limits that may apply to an individual bidder or a group of related bidders.

(11) Application instructions for applying to participate in the CO_2 allowance auction.

(12) Identification of a Pennsylvania auction contact person for further information.

(13) Other pertinent rules or procedures of the auction as may be required to ensure a transparent, fair and competitive auction.

§ 145.405. Auction participant requirements.

(a) To be classified by the Department as a bidder eligible to participate in a specific CO_2 allowance auction, a qualified participant must meet the following:

(1) Be a member of a category of those eligible to participate in the specified CO_2 allowance auction as indicated by the notice of CO_2 allowance auction issued under § 145.404(b) (relating to auction notice).

(2) Open and maintain a compliance account or general account, established under § 145.351 (relating to CO_2 allowance tracking system (COATS) accounts).

(3) Submit financial security, such as a bond, cash, certified funds or an irrevocable stand-by letter of credit, in a manner and form acceptable to the Department, as specified in the notice of CO_2 allowance auction issued under § 145.404(b).

(b) The Department will announce the categories of parties that are eligible to participate in a specific CO_2 allowance auction as part of the notice of the CO_2 allowance auction, provided that an owner or operator of a CO_2 budget unit located in this Commonwealth is always eligible to participate in a CO_2 allowance auction.

(c) For a CO_2 allowance auction, the following categories of parties may be eligible to participate:

(1) The owner or operator of a CO_2 budget unit located in this Commonwealth.

(2) The owner or operator of a CO_2 budget unit located in a participating state.

(3) A broker.

(4) An environmental organization.

(5) A financial or investment institution.

(6) Any other market participant, as may be specified in the notice of the CO_2 allowance auction.

§ 145.406. Auction participant qualification.

(a) A person who intends to participate in a CO_2 allowance auction shall submit a qualification application to the Department, in the form and manner specified in the notice of the CO_2 allowance auction.

(b) The deadline for submitting a qualification application will be established in the notice of the CO_2 allowance auction.

(c) As part of a qualification application, an applicant shall provide information and documentation relating to the ability and authority of the applicant to execute bids and honor contractual obligations, including the following:

(1) Identification by the applicant of either a compliance account or general account established under § 145.351 (relating to CO_2 allowance tracking system (COATS) accounts) and identification of the CO_2 authorized account representative for the compliance account or general account.

(2) Information and documentation regarding the corporate identity, ownership, affiliations and capital structure of the entity represented by the applicant.

(3) Identification of any indictment or felony conviction of the applicant or any member, director, principal, partner or officer of the entity represented by the applicant or any affiliate or related entity.

(4) Identification of any previous or pending investigation of the applicant or the entity represented by the applicant or any affiliate or related entity, with respect to any alleged violation of any rule, regulation or law associated with any commodity market or exchange.

(5) Other information and declarations as the Department determines may be required of an applicant to ensure the integrity of the CO_2 allowance auction process.

(d) The Department will determine whether a qualification application is complete, or incomplete, or otherwise deficient. If the Department determines that an application is incomplete or otherwise deficient, the applicant will be given 10 business days to provide additional information to the Department to complete the application or remedy any application deficiency.

(e) The Department will review a complete qualification application, make a determination as to whether the applicant is qualified to participate in the CO_2 allowance auction and notify the applicant in writing not later than 15 days before the CO_2 allowance auction.

(f) The Department may deny qualification to an applicant based on information submitted in a qualification application to ensure the integrity of the CO_2 allowance auction process in accordance with the requirements and procedures for auctions established under §§ 145.405, 145.407 and 145.408 (relating to auction participant requirements; submission of financial security; and bid submittal requirements).

(g) The Department may revoke the qualification status of a qualified participant, if the participant fails to comply with the applicable requirements of this subchapter, or if the Department determines that they have knowingly provided false or misleading information or withheld pertinent information from the qualification application submitted under subsection (a). The Department may also prohibit the qualified participant from participating in a future CO_2 allowance auction where the Department determines that the prior conduct could compromise the integrity of a subsequent CO_2 allowance auction.

(h) A qualified participant will remain qualified to participate in future CO_2 allowance auctions after the Department's qualification determination, provided that there has been no material change to the information supplied to the Department in the qualification application submitted under subsection (a). If there is a material change to the information in the qualification application submitted under subsection (a), the qualification status will expire as of the date of the change, pending the submission of a new qualification application under subsection (a) and a determination by the Department that the applicant is qualified to participate in a CO_2 allowance auction.

(i) Prior to each CO_2 allowance auction, a qualified participant who intends to participate in the auction shall notify the Department, through a notice of intent to bid, that they intend to participate in the upcoming CO_2 allowance auction. The notice shall be submitted to the Department by the same date as that required for submitting a qualification application established in the notice of the CO_2 allowance auction.

(j) As part of a notice of intent to bid submitted to the Department under subsection (i), a qualified participant shall notify the Department whether there has been a material change to the information supplied in the qualification application submitted under subsection (a).

§ 145.407. Submission of financial security.

(a) To participate in a CO_2 allowance auction, a qualified participant shall provide financial security to the Department, including a bond, cash, certified funds or an irrevocable stand-by letter of credit, in a form and manner prescribed by the Department in the notice of the CO_2 allowance auction.

(b) The Department will approve the qualified participant to participate as a bidder in the specified CO_2 allowance auction after the Department has approved the financial security submitted under subsection (a). The eligibility to bid in any auction shall be limited to the level of financial security provided.

(c) A qualified participant who submits financial security may request return of the financial security at any time prior to or following a CO_2 allowance auction, subject to the following limitations:

(1) A request for the return of financial security prior to a CO_2 allowance auction will result in the Department revoking approval to participate in the CO_2 allowance auction, as of the date of the request.

(2) The Department will not return the financial security if the Department has a current or pending claim to the financial security as a result of the failure of the bidder to abide by the requirements of this subchapter or to pay the full amount of a submitted bid when payment is due.

§ 145.408. Bid submittal requirements.

(a) A bidder shall submit a bid, in a form and manner prescribed by the Department, in an amount that does not exceed the amount of financial security provided to the Department.

(b) A bidder, including any affiliate or agent of the bidder, or any combination of bidders with related beneficial interests, shall purchase no more than 25% of the CO_2 allowances offered for sale in a CO_2 allowance auction. The limitation, which will not be increased by CCR allowances, will be published in the auction notice under § 145.404(b) (relating to auction notice).

(c) A bidder shall not use or employ any manipulative, misleading or deceptive practice in connection with its prequalification application or purchase of CO_2 allowances from the Department, including, any practice that contravenes or violates any applicable Federal or participating state law, rules or regulation.

(d) A bid submitted at a CO_2 allowance auction is a binding offer for the purchase of CO_2 allowances.

§ 145.409. Approval of auction results.

(a) An independent monitor, such as a certified public accounting firm or similar entity, shall observe the conduct and outcome of each auction and issue a report to the Department in accordance with professional auditing standards addressing whether the auction was conducted in accordance with the procedures and requirements under §§ 145.341—145.343 and 145.401—145.409 (relating to CO_2 allowance allocations; and CO_2 allowance auctions) and whether there was any indication of collusive behavior among auction participants or attempts at market manipulation that impacted the results of the auction.

(b) The independent monitor shall monitor allowance market data and information known to the Department, including CO_2 allowance transactions and associated pricing reported in COATS, and other relevant data and information to ensure fair competition, efficient pricing and protection against collusive or manipulative behavior in the CO_2 allowance auctions and the CO_2 Budget Trading Program.

(c) The Department may approve the outcome of a CO_2 allowance auction following the completion of the auction, based on an evaluation of the report from the independent monitor.

(d) Upon receipt and approval by the Department of the report and upon payment in full by successful bidders, the Department or its agent shall transfer and record the corresponding CO_2 allowances to the compliance or general account of each successful bidder.

(e) After the Department has approved the results of a CO_2 allowance auction, the Department will make available the auction clearing price and the number of CO_2 allowances sold in the auction.

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

APPLICATION FOR ADDING A CO_2 BUDGET SOURCE IN AN OPERATING PERMIT

Section A – Company, Facility and Contact Information		
1. Company Information/Corporation Information		
Company Name:		
Company Mailing Address:		
City:	State:	Zip Code:
Telephone Number:	E-mail Address:	
2. Plant/Facility Information		
Facility Name:		
Facility Mailing Address:		
City:	State:	Zip Code:
Telephone Number:	E-mail Address:	
Municipality:	County:	
Current Permit No.:		
Federal Employer Identification Number (EIN):		
ORIS Code:	EIA Plant Code:	
3. CO_2 Authorized Account Representative Information		
Name:	Title:	
Mailing Address:		
City:	State:	Zip Code:
Telephone Number:	E-mail Address:	
Alternate Telephone Number:		

Certification of Truth, Accuracy and Completeness by a Responsible Official

I, _____, certify under penalty of law in 18 Pa. C.S. § 4904, and 35 P.S. § 4009(b)(2) that based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate and complete.

(Signature): _____ Date: _____

Name (Print): _____ Title: _____

Section B – CO_2 Budget Unit Information		
PA DEP Source ID Number	**Source Description**	**Nameplate Capacity (MWe)**

Section C – Compliance Certification and Requirements

The CO_2 budget source and each CO_2 budget unit at the source must comply with the general provisions at 25 Pa. Code §§ 145.301—145.307, compliance requirements at 25 Pa. Code § 145.331, and monitoring, recordkeeping, and reporting requirements at 25 Pa. Code §§ 145.371—145.377.

The Department will incorporate these requirements into the facility's operating permit pursuant to 25 Pa. Code § 145.322(b).

A Compliance Certification must be submitted for the CO_2 budget source and each CO_2 budget unit at the source by March 1 following the relevant control period or initial control period (not required during an interim control period) pursuant to 25 Pa. Code § 145.331.

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

CO_2 BUDGET SOURCE ANNUAL COMBINED HEAT AND POWER APPLICATION FORM

This form satisfies the cogeneration set-aside account CO_2 Allowance Retirement application requirements pursuant to 25 Pa. Code § 145.342(k)(4). This form should be completed and submitted to the Pennsylvania Department of Environmental Protection (DEP) on or before every January 30 for the preceding allocation year.

FACILITY & AAR INFORMATION		
FACILITY INFORMATION (SOURCE)	Company Name	
	Facility Name	
	EIA Plant Code	
	Permit Number	
	U.S. DOE/EIA Unit ID	
	Facility Street Address	
	City	
	State	
	Zip Code	
	Authorized Account Representative (AAR) Information	
	AAR Name	
	COATS Account Number	
	Title	
	Street Address	
	City	
	State	
	Zip Code	
	Telephone Number	
	Email Address	

FACILITY & AAR INFORMATION (Continued)		
FACILITY INFORMATION (SOURCE)	**Alternate Authorized Account Representative (AAAR) Information**	
	AAAR Name	
	Title	
	Street Address	
	City	
	State	
	Zip Code	
	Telephone Number	
	Email Address	

COMBINED HEAT AND POWER UNIT DATA PAGE OF

For each combined heat and power unit located at the CO_2 budget source identified, enter all unit-specific information. The Unit ID entered should correspond to the CO_2 budget unit as identified in the RGGI CO_2 Allowance Tracking System (RGGI-COATS). The Nameplate Capacity (MWe) entered should reference those identified in the Account Certificate of Representation Form. Attach calculations and supporting data on additional sheets.

Allocation Year		
Source ID		
U.S. DOE/EIA Unit ID		
Did the combined heat and power unit operate in the reporting calendar year?	Yes ☐	No ☐
Nameplate capacity of unit (MWe)		
CO_2 Emissions (tons)		
Please describe why the unit is considered a combined heat and power unit. Attached additional sheets, if necessary.		
CO_2 Emissions (tons) from Production of Electricity Supplied to the Regional Electric Grid		
CO_2 Emissions (tons) from Production of Electricity not Supplied to the Regional Electric Grid		
CO_2 Emissions (tons) from Production of Useful Thermal Energy		
Annual Gross Output (MWh) of Electricity Supplied to the Regional Electric Grid		
Annual Gross Output (MWh) of Electricity not Supplied to the Regional Electric Grid		
Useful Thermal Energy (MMBtu)		

COMBINED HEAT AND POWER UNIT DATA PAGE OF

For each combined heat and power unit located at the CO_2 budget source identified, enter all unit-specific information. The Unit ID entered should correspond to the CO_2 budget unit as identified in the RGGI CO_2 Allowance Tracking System (RGGI-COATS). The Nameplate Capacity (MWe) entered should reference those identified in the Account Certificate of Representation Form. Attach calculations and supporting data on additional sheets.

For CO_2 Budget Units requesting retirement of CO_2 allowances under 25 Pa. Code § 145.342(k)(3)(i), please provide the following information.	
Percentage of Useful Thermal Energy* (Attach Calculations)	
Overall Efficiency of the Combined Heat and Power Unit* (Attach Calculations)	
CO_2 Allowance Retirement Requested (tons)	
For CO_2 Budget Units requesting partial retirement of CO_2 allowances under 25 Pa. Code § 145.342(k)(3)(ii), please provide the following information.	
CO2 Allowance Retirement Requested (tons) from Eligible Electricity and Useful Thermal Energy Supplied to an Interconnected Industrial, Institutional, or Commercial Facility	

* The Percentage of Useful Thermal Energy and Overall Efficiency must be calculated as follows:

Percentage of UTE = UTE / (UTE + TEO) x 100

OE = ((UTE + TEO) / HI) x 100

Where:

UTE = Useful Thermal Energy (MMBtu)

OE = Overall Efficiency

TEO = Total Electrical Output (MMBtu) = GG x 3.412

GG = Gross Generation (MWe)

HI = Total Heat Input (MMBtu)

CERTIFICATION STATEMENT

I certify that I was selected as the CO_2 authorized account representative of the CO_2 budget source (or alternative CO_2 authorized account representative of the CO_2 budget source, as applicable) by an agreement binding with the owners and operators of the CO_2 budget source and each CO_2 budget unit at the source. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of the owners and operators of the CO_2 budget source and of each CO_2 budget unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions and by any decision or order issued to me by the Department or court of competent jurisdiction regarding the source or unit.

I am authorized to make this submission on behalf of the owners and operators of the CO_2 budget sources or CO_2 budget units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Signature of Authorized Account Representative (AAR) or Alternate

_____

Printed Name

_____

Date

_____

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

STRATEGIC USE APPLICATION FORM

This form is used for an eligible project located in Pennsylvania to receive a distribution of CO_2 allowances to REDUCE greenhouse gas emissions through energy efficiency measures, renewable or noncarbon-emitting energy technologies, and innovative greenhouse gas emissions abatement technologies with significant greenhouse gas reduction potential pursuant to 25 Pa. Code § 145.342(j). This form should be completed and submitted to the Pennsylvania Department of Environmental Protection (DEP).

Owner Information	
Name	
Mailing Address	
City	
State	
Zip Code	
Telephone Number	
Email Address	
COATS General Account Number	
Authorized Account Representative (AAR) Information	
AAR Name	
Title	
Street Address	
City	
State	
Zip Code	
Telephone Number	
Email Address	

Project Information	
Project Name	
Project Physical Address	
City	
State	
Zip Code	
Please describe the project. Attach additional sheets, if necessary.	
Attach documentation that the project will result in greenhouse gas emission reductions.	
Number of CO_2 Allowances requested.	
Attach detailed calculations and supporting data used to determine the greenhouse gas emission reductions and an explanation of the data and the methods on which the calculations are based.	

CERTIFICATION STATEMENT

I certify that I was selected as the CO_2 authorized account representative or the CO_2 authorized alternate account representative by an agreement that is binding on all persons who have an ownership interest with respect to CO_2 allowances held in the general account. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of all persons and that each person shall be fully bound by my representations, actions, inactions or submissions and by any order or decision issued to me by the Department or its agent or a court regarding the general account.

I am authorized to make this submission on behalf of the owner or operator of the general account for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties under 18 Pa.C.S. § 4904 for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Signature of Authorized Account Representative (AAR) or Alternate

_____

Printed Name

_____

Date

_____

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

CO_2 BUDGET SOURCE COMPLIANCE CERTIFICATION FORM

This form satisfies the submittal requirements for the Compliance Certification for Pennsylvania CO_2 budget units regulated under the Pennsylvania CO_2 Budget Trading Program. This form should be completed and submitted to the Pennsylvania Department of Environmental Protection (DEP) on or before March 1 following each control period, except for an interim control period.

FACILITY & AAR INFORMATION		
FACILITY INFORMATION (SOURCE)	Company Name	
	Facility Name	
	EIA Plant Code	
	Permit Number	
	U.S. DOE/EIA Unit ID	
	Facility Street Address	
	City	
	State	
	Zip Code	
	Authorized Account Representative (AAR) Information	
	AAR Name	
	Title	
	Street Address	
	City	
	State	
	Zip Code	
	Telephone Number	
	Email Address	
Control Period Covered		

CO_2 BUDGET UNIT INFORMATION			
Source ID	CO_2 Budget Unit Description	Serial # of Allowances to be Deducted	Serial # of Offset Allowances to be Deducted

CERTIFICATION STATEMENT

Consistent with the compliance certification requirements of 25 Pa. Code § 145.331, I certify that the CO_2 budget source and each CO_2 budget unit at the source for which the compliance certification is submitted was operated during the calendar years covered by the report in compliance with the requirements of the CO_2 Budget Trading Program.

Signature of Authorized Account Representative (AAR) or Alternate

_____

Printed Name

_____

Date

_____

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

CO_2 BUDGET SOURCE QUARTERLY REPORTING FORM

This form satisfies the submittal requirements for the certification of the Quarterly Report for Pennsylvania CO_2 budget units regulated under the Pennsylvania CO_2 Budget Trading Program. This form should be completed and submitted to the Pennsylvania Department of Environmental Protection (DEP) on or before every April 30, July 30, October 30 and January 30 for the preceding calendar quarter (the calendar quarters begin on January 1, April 1, July 1 and October 1).

FACILITY & AAR INFORMATION		
FACILITY INFORMATION (SOURCE)	Company Name	
	Facility Name	
	EIA Plant Code	
	Permit Number	
	U.S. DOE/EIA Unit ID	
	Facility Street Address	
	City	
	State	
	Zip Code	
	Authorized Account Representative (AAR) Information	
	AAR Name	
	Title	
	Street Address	
	City	
	State	
	Zip Code	
	Telephone Number	
	Email Address	

QUARTERLY REPORT REQUIREMENT INFORMATION

The CO_2 authorized account representative shall submit quarterly reports, as follows:

1. The CO_2 authorized account representative shall report the CO_2 mass emissions data for the CO_2 budget unit, in an electronic format prescribed by the Administrator unless otherwise prescribed by the Administrator or the Department, for each calendar quarter.
2. The CO_2 authorized account representative shall submit each quarterly report to the Administrator and the Department or its agent within 30 days following the end of the calendar quarter covered by the report. Quarterly reports shall be submitted in the manner specified in 40 CFR Part 75, Subpart H (relating to NOx mass emissions provisions) and 40 CFR 75.64 (relating to quarterly reports). Quarterly reports shall be submitted for each CO_2 budget unit, or group of units using a common stack, and shall include all the data and information required in 40 CFR Part 75, Subpart G (relating to reporting requirements) except for opacity, heat input, NO_x and SO_2 provisions.
3. The CO_2 authorized account representative shall submit to the Administrator or the Department a compliance certification in support of each quarterly report based on reasonable inquiry of those persons with primary responsibility for ensuring that all the unit's emissions are correctly and fully monitored. The certification shall state that the following conditions have been met:

    i. The monitoring data submitted were recorded in accordance with the applicable requirements of this subchapter and 40 CFR Part 75 (relating to continuous emission monitoring), including the quality assurance procedures and specifications.

    ii. For a unit with add-on CO_2 emissions controls and for all hours where data are substituted in accordance with 40 CFR 75.34(a)(1) (relating to units with add-on emission controls), the add-on emissions controls were operating within the range of parameters listed in the quality assurance/quality control program under 40 CFR Part 75, Appendix B (relating to quality assurance and quality control procedures) and the substitute values do not systematically underestimate CO_2 emissions.

    iii. The CO_2 concentration values substituted for missing data under 40 CFR Part 75, Subpart D (relating to missing data substitution procedures) do not systematically underestimate CO_2 emissions.

CO_2 BUDGET UNIT QUARTERLY DATA PAGE OF

For each CO_2 budget unit located at the CO_2 budget source identified, enter all unit-specific information. The Unit ID entered should correspond to the CO_2 budget unit as identified in the RGGI CO_2 Allowance Tracking System (RGGI-COATS). The Nameplate Capacity (MWe) entered should reference those identified in the Account Certificate of Representation Form. For each unit, CO_2 emissions (tons) for the quarter and calendar year-to-date should be entered. The Emissions Collection and Monitoring Plan System (ECMPS) Feedback Report that is received by the facility for the submission of Quarterly Emissions Report to EPA for each unit should be attached with this form.

Reporting Quarter and Year			
Source ID			
U.S. DOE/EIA Unit ID			
Did the CO_2 budget unit operate in the reporting calendar year?	Yes ☐	No ☐	
Nameplate capacity of unit (MWe)			
Quarterly CO_2 Emissions (tons)			
Calendar Year-to-Date CO_2 Emissions (tons)			
Attached EPA ECMPS Feedback Report?	Yes ☐	No ☐	
Are the monitoring data that are submitted, recorded in accordance with the applicable requirements of 25 Pa. Code Chapter 139 and 40 CFR Part 75, including the quality assurance procedures and specifications?	Yes ☐	No ☐	
For a unit with add-on CO_2 emissions controls and for all hours where data are substituted in accordance with 40 CFR 75.34(a)(1), were the add-on emissions controls operating within the range of parameters listed in the quality assurance/quality control program under 40 CFR Part 75 Appendix B, and do the substitute values not systematically underestimate CO_2 emissions?	Yes ☐	No ☐	N/A ☐
Do the CO_2 concentration values substituted for missing data under 40 CFR Part 75 Subpart D not systematically underestimate CO_2 emissions?	Yes ☐	No ☐	N/A ☐

CERTIFICATION STATEMENT

I certify that I was selected as the CO_2 authorized account representative of the CO_2 budget source (or alternative CO_2 authorized account representative of the CO_2 budget source, as applicable) by an agreement binding with the owner or operator of the CO_2 budget source and each CO_2 budget unit at the source. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of the owners and operators of the CO_2 budget source and of each CO_2 budget unit at the source and that each such owner and operator shall be fully bound by my representations, actions, inactions, or submissions and by any decision or order issued to me by the Department or court of competent jurisdiction regarding the source or unit.

I am authorized to make this submission on behalf of the owners and operators of the CO_2 budget sources or CO_2 budget units for which the submission is made. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties under 18 Pa.C.S. § 4904 for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Signature of Authorized Account Representative (AAR) or Alternate

_____

Printed Name

_____

Date

_____

2700-PM-BAQ0027 1/2021
Application

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

FOR OFFICIAL USE ONLY

OP #: _____

Date: _____

OPERATING PERMIT MODIFICATION APPLICATION

Section 1 – General Information

1.1 Application Type

Type of permit for which application is made:

☐ Minor Modification ☐ State-Only Operating Permit

☐ Significant Modification ☐ Title V Operating Permit

Existing Operating Permit No: _____

1.2 Facility Information

Firm Name: _____ Federal Tax ID: _____

Facility Name: _____ Plant Code: _____

NAICS Code: _____ SIC Code: _____

Description of NAICS Code: _____

Description of SIC Code: _____

County: _____ Municipality: _____

Latitude: _____ Longitude: _____

Horizontal Reference Datum: _____ Horizontal Collection Method: _____ Reference Point: _____

1.3 Permit Contact Information

Name: _____ Title: _____

Address: _____

City: _____ State: _____ ZIP: _____

Telephone: _____

Email: _____

1.4 Small Business Question

Are you a small business as defined by the Pennsylvania Air Pollution Control Act? ☐ Yes ☐ No

Are you a small business as defined by the U.S. Small Business Administration? ☐ Yes ☐ No

1.5 Request for Confidentiality

Do you request any information on this application to be treated as "Confidential"? ☐ Yes ☐ No

Place confidential information on separate page(s) marked "Confidential".

In order to request confidential treatment for information in any document, you must submit a redacted version of the relevant document with the confidential information blacked out (and thus suitable for public disclosure), along with a letter of request containing a table identifying the page and line number of each redaction, along with a justification for each redacted item as to why it should be deemed confidential under the specific criteria allowed under 25 Pa. Code §127.12(d) and Section 13.2 of the APCA.

1.6 Certification of Truth, Accuracy and Completeness by a Responsible Official

I certify that, subject to the penalties of Title 18 Pa. C.S.A. Section 4904 and 35 P.S. Section 4009(b)(2), I am the responsible official having primary responsibility for the design and operation of the facilities to which this application applies and that the information provided in this application is true, accurate, and complete to the best of my knowledge, information, and belief formed after reasonable inquiry.

(Signed) _____ Date: _____

Name (Typed): _____ Title: _____

Telephone: _____

Email: _____

Section 2 – Inventory of Units Being Modified		
Unit ID No.	Unit Name	Unit Type

Section 3 – Facility Changes

Complete this section ONLY if the changes are for the entire facility. If changes are for a source or sources, skip this Section and complete Section 4 for each Source in which a change is proposed.

3.1 Describe all proposed changes to this facility:

3.2 If the proposed facility changes involve any changes in actual emissions, please complete the following table. Attach another table if needed.

Pollutant Name	CAS Number	Change in Actual Emissions (+ or -)

3.3 Anticipated date on which proposed change is scheduled to occur: _____

3.4 List the proposed revision language for the operating permit conditions. This includes all changes to the emissions, monitoring, testing, record-keeping, reporting requirements and work practice standard requirements. Write in the type of applicable requirements in the column provided. Attach another table if needed.

Citation Number	Type of Applicable Requirement	Existing Operating Permit Condition or Condition Number	Proposed Language for Permit Condition

3.5 Provide a listing of all changes in chronological order (additions and subtractions) made at a facility since the last submittal and attach it to this application. For example:

- March 2016 - Added shot blast booth 5, exempted by the attached Request for Determination.
- Dec 2017 - Installed new paint line in accordance with Plan Approval XX-XXXXX

3.6 For renewals, please review the current operating permit. If you are proposing any changes to the conditions of the permit, please provide the condition number, the requested change, and justification for the requested change.

Section 4 – Unit Information (duplicate this section for each unit as needed)

4.1 Unit Type: ☐ Combustion ☐ Incinerator ☐ Process ☐ Control Device

4.2 General Source Information (Combustion/Incinerator/Process)

a. Source ID: _____ b. Source Name: _____

c. Manufacturer: _____ d. Model No.: _____

e. Source Description: _____

f. Rated Capacity (for engines use BHP): _____ g. Installation Date: _____

h. Rated Power/Electric Output: _____

i. Exhaust Temperature: _____ Units: _____ j. Exhaust % Moisture: _____ k. Exhaust Flow Volume: _____ SCFM

4.3 General Control Device Information

a. Unit ID: _____ b. Unit Name: _____

c Used by Sources: _____

d. Type: _____

e. Pressure Drop (in. H_2O): _____ f. Capture Efficiency: _____

g. Flow Rate (specify unit): _____

h. Manufacturer: _____ i. Model No.: _____

j. Installation Date: _____

4.4 Proposed Changes to Unit

a. Describe all proposed changes to this unit:

b. If the proposed unit changes involve any changes in actual emissions, please complete the following table. Attach another table if needed.

Pollutant Name	CAS Number	Change in Actual Emissions (+ or -)

c. Anticipated date on which proposed change is scheduled to occur: _____

d. List the proposed revision language for the operating permit condition. This includes all changes to the emission, monitoring, testing, record-keeping, reporting requirements and work practice standard requirement. Write in the type of applicable requirements in the column provided. Attach another table if needed.

Citation Number	Type of Applicable Requirement	Existing Operating Permit Condition or Condition Number	Proposed Language for Permit Condition

Section 5 – Compliance Plan for the Facility			
		Yes	No
5.1	Will your facility be in compliance with all applicable requirements at the time of permit issuance and continue to comply with these requirements during the permit duration?	☐	☐
5.2	Will your facility be in compliance with all applicable requirements presently scheduled to take effect during the term of the permit?	☐	☐

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Pennsylvania CO_2 Budget Trading Program

Offset Project Consistency Application
Landfill Methane Capture and Destruction

Contents

1. Overview

To demonstrate that a landfill methane capture and destruction project qualifies for the award of CO_2 offset allowances, a Project Sponsor must submit to the Department in accordance with these instructions, a fully completed *Offset Project Consistency Application – Landfill Methane Capture and Destruction* ("*Consistency Application*"), including thecoversheet and all forms and related attachments. An incomplete *Consistency Application* will not be reviewed to determine consistency. Following these instructions will ensure that the *Consistency Application* contains all necessary information and is submitted properly.

Each Project Sponsor should review the Pennsylvania CO_2 Budget Trading Program regulations at 25 Pa Code §§ 145.391—145.397 (relating to CO_2 emissions offset projects) addressing offset projects and the award of CO_2 offset allowances. All offset application materials and other documents are available at www.dep.pa.gov/RGGI.

Before the *Consistency Application* can be completed, the Project Sponsor must establish a general account and obtain an offset project ID code through the RGGI CO_2 Allowance Tracking System (RGGI COATS). The Project Sponsor identified in the *ConsistencyApplication* must be the same as the Authorized Account Representative for the RGGI COATS general account identified in the *Consistency Application*. For information about establishing a RGGI COATS general account and offset project ID code, consult the RGGI COATS User's Guide, available at http://www.rggi-coats.org.

Key eligibility dates and application submittal requirements for offset projects are asfollows:

- For offset projects commenced on or after January 1, 2009, the *Consistency Application* must be submitted within six months after the project is commenced.
- For an offset project located solely in one participating state, the *Consistency Application* must be filed with the appropriate regulatory agency in that state.
- For an offset project located in more than one participating state, the *Consistency Application* must be filed in the participating state where the majority of the CO_2- equivalent emissions reduction or carbon sequestration due to the offset project isexpected to occur.

2. Submission Instructions

Submit one (1) complete hardcopy original *Consistency Application* as well as an electronic copy in the form of a CD disk to the Department at the location specified below. Submit hardcopies of forms requiring signatures as originally-signed copies and scan such signed forms for electronic submission. Facsimiles of the *Consistency Application* are notacceptable under any circumstances.

Pennsylvania Department of Environmental Protection
c/o Bureau of Air Quality
Rachel Carson State Office Building, P.O. Box 8468
Harrisburg, PA 17105-8468

The *Consistency Application* has three parts, as described below. Each part comprises specified forms and required documentation. The *Consistency Application* has been created asa Microsoft Word document with editable fields. Enter information directly into the fields provided or submit information or documentation as an attachment, as directed. Include headers on all attachments indicating the form to which each is attached, the offset project name, and offset project ID code.

The Project Sponsor should save an electronic copy for his or her file to serve as areference for any necessary remediation.

3. Consistency Application Forms

The *Consistency Application* includes nine (9) forms divided into three parts, as follows:

Part 1. General Information Forms

- Form 1.1 – Coversheet
- Form 1.2 – General Information
- Form 1.3 – Attestations
- Form 1.4 – Project Sponsor Agreement
- Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Part 2. Category-Specific Information and Documentation Forms

- Form 2.1 – Project Description
- Form 2.2 – Demonstration of Eligibility
- Form 2.3 – Monitoring and Verification Plan

Part 3. Independent Verification Form

- Form 3.1 – Independent Verifier Certification Statement and Report

The following instructions address each of the forms in numerical order. Note that theforms themselves include many embedded instructions.

Part 1. General Information Forms

The five (5) forms in Part 1 of the *Consistency Application* address general requirementsapplicable to landfill methane capture and destruction offset projects. Instructions for the Part 1forms are provided below.

Form 1.1 Coversheet

Enter the requested information in the editable text fields in the form.

Check the boxes to indicate which forms are being submitted. For information about entering the Project Sponsor, offset project name and offset project ID code, and RGGI COATSaccount name and number, see instructions below for Form 1.2, General Information.

Submit all forms including the Coversheet. If a required form is not submitted, the *Consistency Application* will not be considered complete for commencement of review by theDepartment.

Form 1.2 General Information

Enter the requested information in the editable text fields in the form. If a text field is notapplicable or is unanswerable, enter "NA." Note the following:

Offset Project ID Code: Enter the offset project ID code. The offset project ID code is the alphanumeric code generated when the Project Sponsor creates a record of the offset project in the RGGI CO_2 Allowance Tracking System (RGGICOATS). See the RGGI COATS User's Guide for more information about creating an offset project record in RGGI COATS, available at http://www.rggi- coats.org.

Project Information: Enter project information. The name of the offset projectshould be the same name entered by the Project Sponsor when creating a project record in RGGI COATS. The project location entered should be the primary location of the project if the project consists of actions at multiple locations. The summary narrative of the project should indicate all locations where project actions occur or will occur.

Project Sponsor: Identify the Project Sponsor and provide his or her contact information. The Project Sponsor is the natural person who is the Authorized Account Representative for the RGGI COATS general account identified in the*Consistency Application*.

Project Sponsor Organization: Provide the full legal name of the organization theProject Sponsor represents, including any alternative names under which the organization also may be doing business (e.g., John Doe Enterprises, Inc., d/b/a JDE). If the Project Sponsor is representing himself or herself as an individual, enter "NA".

RGGI COATS General Account Name and Number: Enter the RGGI COATS general account name and number. The RGGI COATS general account identified in the *Consistency Application* is the RGGI COATS account into whichany awarded CO_2 offset allowances related to the offset project will be transferred.

Form 1.3 Attestations

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

If the offset project includes an electric generation component, any and all attributecredits generated by the offset project that may be used for compliance with a renewable

portfolio standard (RPS) or other regulatory requirement (other than awarded CO_2 offset allowances), must be transferred to the Department. If applicable, attach a copy of the Attribute Credit Transfer Agreement to this form. The attached agreement must include a header that indicates the transfer agreement is attachment to Form 1.3 and includes the offset project name and offset project ID code.

Form 1.4 Project Sponsor Agreement

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

Form 1.5 Disclosure of Greenhouse Gas Emissions Data Reporting

Check the appropriate box in the form to indicate whether greenhouse gas emissions data related to the offset project have been or will be reported to any voluntary or mandatory programs, other than the CO_2 Budget Trading Program. For each program for which data have been or will be reported, provide the program name, the program type (voluntary or mandatory),program contact information (website or street address), the categories of emissions data reported, the frequency of reporting, when the reporting began or will begin, and reporting status(prior, current, future). The Project Sponsor must disclose future reporting related to current commitments made to voluntary programs as well as future reporting mandated by current statutes, regulations, or judicial or administrative orders.

Offset Project Name	*Offset Project ID Code*

Form 1.1 – Coversheet

Project Sponsor
Project Sponsor Organization
RGGI COATS General Account Name
RGGI COATS General Account Number

Each of the following forms must be submitted. Check the boxes below to indicate that thesubmitted *Consistency Application* includes each of the required forms:

- ☐ Form 1.2 – General Information
- ☐ Form 1.3 – Attestations
- ☐ Form 1.4 – Project Sponsor Agreement
- ☐ Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting
- ☐ Form 2.1 – Project Description
- ☐ Form 2.2 – Demonstration of Eligibility
- ☐ Form 2.3 – Monitoring and Verification Plan
- ☐ Form 3.1 – Independent Verifier Certification Statement and Report

Offset Project Name	Offset Project ID Code

Form 1.2 – General Information

Project Sponsor (RGGI COATS Authorized Account Representative)			
Telephone Number	Fax Number	Email Address	
Street Address			
City	State/Province	Postal Code	Country
RGGI COATS General Account Name			
RGGI COATS General Account Number			
Name of Offset Project		Application Date	
Summary Description of Offset Project			
Project City	Project County	Project State	Project Commencement Date
Project Sponsor Organization			
Primary Street Address			
City	State/Province	Postal Code	Country
Brief Description of Project Sponsor Organization			
Telephone Number		Website URL	
Independent Verifier (Company/Organization)		States Where Verifier Accredited	
Primary Street Address		Website URL	
City	State/Province	Postal Code	Country
Point of Contact for Projects			
Contact Telephone Number	Contact Fax Number	Contact Email Address	
Contact Street Address			
City	State/Province	Postal Code	Country

Offset Project Name	*Offset Project ID Code*

Form 1.3 – Attestations

The undersigned Project Sponsor certifies the truth of the following statements:

1. The offset project referenced in this *Consistency Application* is not required pursuant toany local, state, or federal law, regulation, or administrative or judicial order.
2. The offset project referenced in this *Consistency Application* has not and will not beawarded credits or allowances under any other greenhouse gas program.
3. Check the boxes that apply:

   ☐ The offset project referenced in this *Consistency Application* does not include an electric generation component.

   ☐ The offset project referenced in this *Consistency Application* does include an electric generation component. Any and all attribute credits generated by the offset project thatmay be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement, with the exception of CO_2 allowances awarded under the CO_2 Budget Trading Program, will be transferred to the Department.

   ☐ An Attribute Credit Transfer Agreement is attached.
4. The offset project referenced in this *Consistency Application* has not and will not receiveany funding or other incentives from the CO_2 Budget Trading Program auction proceeds.
5. A *Consistency Application* for the offset project or any portion of the offset project referenced in this *Consistency Application* has not been filed in any other participatingstate.
6. All offset projects for which the Project Sponsor or project sponsor organization has received CO_2 offset allowances, if any, under the Project Sponsor's or project sponsor organization's ownership or control (or under the ownership or control of any entity which controls, is controlled by, or has common control with the Project Sponsor or project sponsor organization) are in compliance with all applicable requirements of the CO_2 BudgetTrading Program in all participating states.
7. I am authorized to make this submission on behalf of the project sponsor organization. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this *Consistency Application* and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of myknowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Project Sponsor Signature	Date
Printed Name	
Title	
Organization	Notary

Offset Project Name	*Offset Project ID Code*

Form 1.4 – Project Sponsor Agreement

The undersigned Project Sponsor recognizes and accepts that the application for, and the receipt of, CO_2 offset allowances under the CO_2 Budget Trading Program is predicated on the Project Sponsor following all the requirements under 25 Pa Code §§ 145.391—145.397. The undersigned Project Sponsor holds the legal rights to the offset project,or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. The Project Sponsor understands that eligibility for the award of CO_2 offset allowance under 25 Pa Code §§ 145.391—145.397 is contingent on meeting the requirements of 25 Pa Code §§ 145.391—145.397. The Project Sponsor authorizes the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the Monitoring and Verification Plan, has been implemented as described in this application. The Project Sponsor understands that this right to audit shall include the right to enter the physical location of the offset project. The Project Sponsor submits to the legal jurisdiction of the Commonwealth of Pennsylvania.

Project Sponsor Signature

Date

Printed Name

Title

Organization

Notary

Offset Project Name	*Offset Project ID Code*

Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Check the box below that applies:

☐ No greenhouse gas emissions data related to the offset project referenced in this *Consistency Application* have been or will be reported to a voluntary or mandatory programother than the CO_2 Budget Trading Program.

☐ Greenhouse gas emissions data related to the offset project referenced in this *ConsistencyApplication* have been or will be reported to a voluntary or mandatory program other than the CO_2 Budget Trading Program. Information for all such programs to which greenhouse gas emissions data have been or will be reported is provided below.

Name of Program to which GHG Emissions Data Reported	
Check all that apply:	
☐ Reporting is currently ongoing	***Enter Frequency of Reporting***
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	***Enter Reporting Start Date***
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	***Program Website***
Categories of Emissions Data Reported	

Name of Program to which GHG Emissions Data Reported	
Check all that apply:	
☐ Reporting is currently ongoing	***Enter Frequency of Reporting***
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	***Enter Reporting Start Date***
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	***Program Website***
Categories of Emissions Data Reported	

Add extra pages as needed.

Part 2. Category-Specific Information and Documentation Forms

The three (3) forms in Part 2 of the *Consistency Application* address category-specificrequirements and documentation for landfill methane capture and destruction offset projects. Instructions for the Part 2 forms are provided below.

Form 2.1 Project Description

Attach a detailed narrative of the actions to be taken as part of the offset project. Theattached narrative must include a header that indicates it as an attachment to Form 2.1 and identifies the offset project name and offset project ID code. The narrative must include the following information:

1. Type of Project. Indicate the type of project:
   a. Flaring offset project – Landfill employs an active gas collection system. Theflaring system can utilize either an open or enclosed flare.
   b. Electricity generation offset project – Landfill gas is used as a fuel for internalcombustion engines, gas turbines, or boilers to produce electricity.
   c. Direct-use offset project – Landfill installs a system that enables an end user toutilize collected landfill gas for direct use as a valuable fuel source.
2. Project Owner and Operator Information. Provide organization legal name(s), point(s) of contact information, and physical address for the offset project owner and offset project operator. Provide organization legal name, point(s) of contact information, and physical address for the parent company if the owner or operator isa subsidiary.
3. Landfill Location and Specifications. Provide the following information and includeas an appendix to the narrative a copy of the state or local operating permit for the landfill where the offset project and landfill gas collection systemare located:
   a. Landfill location (city, state, zip code) and site I.D. number from the state or local operating permit;
   b. Types of waste accepted (municipal solid waste, non-hazardous sludge, industrial waste, construction and demolition debris, medical waste, or specifyother) as stated in the state or local operating permit;
   c. Opening year from state or local operating permit;
   d. Closing year (if applicable) or estimated date of closure from state or local operating permit or approved closure plan;
   e. Total design waste capacity (specify cubic feet or tons) from state or local operating permit;
   f. Current area (specify hectares or acres) devoted to landfilling from the state or local operating permit, or if not available, from contour maps and filling plans;

g. Average waste depth (in feet) from state or local operating permit,or if not available, from contour maps and filling plans;

h. Total waste in place from weigh scale records, most recent annual report, or other documented source;

i. Waste characteristics (food waste, wood, plastics, metal, paper, and specify other) represented as either percent of total mass or volume currently accepted, from weigh scale records of waste characterization and site-specific density records;

j. Annual quantity of accepted waste (specify cubic feet or tons) for most recent year from weigh scale records, most recent annual report, or other documented source; and

k. Average annual rainfall for location of landfill from NOAA's National ClimaticData Center (NCDC).

4. Landfill Owner and Operator Information. Provide organization legal name(s), point(s) of contact information, and physical address for the landfill owner and landfill operator. Include organization legal name, point(s) of contact information,and physical address for the parent company if the owner or operator is a subsidiary.

5. Equipment Specifications and Technical Schematic. Provide the following offset project equipment specifications:

   a. Landfill gas collection equipment and landfill gas flow and composition monitoring equipment specifications including:

      i. Type(s) of equipment and manufacturer(s);

      ii. Dates of installation;

      iii. Dates of initial calibration;

      iv. Design landfill gas flow capacity (standard cubic feet per minute);

      v. Installed landfill gas flow meter accuracy; and

      vi. Methane concentration instrument thresholds (percent by volume) andmethane concentration instrument precision and accuracy levels as specified by the manufacturer.

   b. For on-site flare projects:

      i. Type of flare(s) (open, enclosed, or specify other) and manufacturer(s); and

      ii. Design capacity of flare flow rate in standard cubic feet per minute as specified by the manufacturer.

   c. For on-site or off-site electricity generation projects:

      i. Type of electricity generation technology (reciprocating engine, gas turbine, cogeneration, microturbine, steam turbine, combined cycle, organic Rankine cycle, or specify other);

      ii. Make (or model), manufacturer, and date of installation of combustion unit;

iii. Design electricity generation capacity in units of MWe, as specified by themanufacturer;

iv. Heat rate of combustion (Btu/kWh), as specified by the manufacturer; and

v. Name, address, and point(s) of contact for each off-site purchaser of landfillgas.

d. For on-site or off-site direct-use projects:

i. Type of direct-use project (boiler, direct thermal, leachate evaporation, high-Btu quality fuel, medium-Btu quality fuel, methanol synthesis, or specify other);

ii. Make (or model), manufacturer, and date of installation of combustion unit;

iii. Pipeline length, diameter, and material type as documented by the state or local operating permit; and

iv. Name, address, and point(s) of contact for each off-site purchaser of landfillgas.

e. A technical schematic outlining the overall landfill gas capture and destruction system for the type of offset project (flare, electricity generation, or on-site or off-site direct use). The schematic must trace the landfill methane from source to destruction by combustion.

Form 2.2 Demonstration of Eligibility

Attach documentation, with state and federal identification numbers, as applicable, that indicates that the landfill from which the offset project will draw landfill gas is not subject to federal New Source Performance Standards (NSPS) for municipal solid waste landfills, 40 CFR Part 60, Subpart Cc and Subpart WWW. The documentation must include the initial design capacity report submitted to the U.S. EPA pursuant to 40 CFR 60, Subpart WWW 60.752(a) or 40 CFR 60, Subpart Cc 60.33c(d), and in accordance with 40 CFR 60, Subpart WWW 60.757(a)(2).

Note that for purposes of eligibility under 25 Pa Code § 145.395(a)(1), a MSW landfill is considered to be subject to NSPS at 40 CFR 60, Subparts Cc and WWW if thelandfill is subject to the federal emissions requirements at 40 CFR 60, Subpart Cc 60.33c(e) or Subpart WWW 60.752(b).

Each attachment must include a header that indicates it is an attachment to Form 2.2 and includes the offset project name and offset project ID code.

Form 2.3 Monitoring and Verification (M&V) Plan

Provide the Monitoring and Verification Plan (M&V Plan) as an attachment to Form 2.3. The M&V Plan must include a header that indicates it is an attachment to Form 2.3 and includesthe offset project name and offset project ID code. Check the boxes to indicate that the attached M&V Plan includes required components.

The M&V Plan must include the following:

1. Procedures for Quantifying Annual CO_2-equivalent Emissions Reductions. Specifythe data source(s) and the calculations to be used to determine emission reductions.

2. Procedures for Quantifying Annual Volume of Methane Collected. Specify the datasources and calculations to be used for quantifying in standard cubic feet (scf) annual volume of methane collected.

3. Procedures for Quantifying Mass of Methane per Cubic Foot of Methane. Specify whether the default value of 0.04246 lbs/scf at 1 atmosphere and 20° C will be used, or specify the procedures that will be used to monitor temperature and pressure, derive an alternate representative temperature, and the data sources andvalue for the appropriate mass of CH_4 per standard cubic foot of methane (lbs/scf).

4. Quality Assurance/Quality Control (QA/QC) Program for Measuring Equipment.Document the QA/QC program, including the following:
   a. Procedures for recording names and contact information for: personnel responsible for recording measurements and data entry, QA/QC managers, andthird-party analytical laboratory;
   b. Procedures for designated personnel to keep landfill gas sales records (in MMBtu or standard cubic feet), electricity sales records, records of measuredheat rate of combustion device if applicable, and records of newly installed equipment and retired equipment;
   c. Procedures for annual comparison of collected methane measured by monitoring equipment with calculated methane in landfill gas used to generate electricity or sold for direct use, noting any discrepancies;
   d. Calculation procedures for standardizing landfill gas flow that correct for documented site-specific temperature and pressure measurements. (This procedure is not necessary when using flow meters that automatically measuretemperature and pressure and express landfill gas flow in standard cubic feet); and
   e. Description of the contents of an annual quality control report describing the procedures for QA/QC of landfill gas collection and monitoring equipment duringthe reporting period and a schedule for the annual completion of such report. The report should identify findings of quarterly reviews, issues encountered, andremedial actions taken.

5. Maintenance, Operation, and Calibration of Measuring and Monitoring Equipment.Document the protocol for maintenance, operation, and calibration of measuring and monitoring equipment, including the following:

   a. Maintenance of Measuring and Monitoring Equipment. Document the protocol that will be used to ensure that the following required actions are performed anddocumented:

      i. Records are kept of landfill gas flow rate performance tests at least monthlyto ensure:

         (A) flow readings are recorded at least every 15 minutes;

         (B) the accuracy of landfill gas flow meter readings is within +/- 5 percentof manufacturer specifications; and

         (C) methane concentration instrument manufacturer specifications forprecision and accuracy are met; and

      ii. Maintenance schedules for landfill gas flow meter and methane concentration instrument (for permanent and/or portable equipment) are performed in accordance with manufacturer recommendations and specifications.

   b. Operation of Measuring and Monitoring Equipment. Document the protocol thatwill be used to ensure that the following required actions are performed and documented:

      i. Records are kept at least daily of collected landfill gas flow rates andmethane concentration;

      ii. Records are kept on a monthly basis of the number of hours that the landfillgas collection system was not in operation;

      iii. Records are kept on a monthly basis of the number of hours that the combustion device (e.g., flare, boiler, electricity generation unit) was not inoperation;

      iv. Records are kept on a monthly basis of the calculation of landfill gas flow rate standardization (in standard cubic feet per day) to correct for site- specific pressure and temperature measurements. (This procedure is not necessary when using flow meters that automatically measure temperature and pressure and express landfill gas flow in standard cubic feet);

      v. Records are kept on an annual basis of the measured heat rate of combustion of the electric generation unit(s) (in Btu/kWh) in accordance with manufacturer specifications for landfill gas, if applicable to the offsetproject; and

      vi. Records are kept on a monthly basis of the amount of landfill gascombusted in standard cubic feet (scf) in the combustion device.

   c. Calibration of Measuring and Monitoring Equipment. Document the protocol that will be used to ensure that the following required actions are performed anddocumented:

      i. Records are kept of calibration procedures for landfill gas flow monitoringequipment as specified by the manufacturer;

      ii. Records are kept of calibration procedures for permanent methane concentration measurement equipment as specified by the manufacturer;and

      iii. Calibration schedules for landfill gas flow meter and methane concentration instrument (for permanent and/or portable equipment) are maintained in accordance with manufacturer recommendations and specifications.

6. Records Retention. Document the recordkeeping protocol that will be used to maintain record keeping throughout the duration of the offset project, includingmaintenance of an electronic index of all material to be collected, and storage procedures to ensure maintenance of collected information in electronic and/or hardcopy form for the following required information:

   a. QA/QC Program for Measuring Equipment.

      i. Names and contact information for the following:

         (A) personnel responsible for recording measurements;

         (B) personnel responsible for data entry;

         (C) QA/QC managers; and

         (D) third-party analytical laboratory; and

      ii. Annual QA/QC reports and the associated findings and remedial actionstaken; and

      iii. Annual comparison of collected methane as measured by monitoring equipment with calculated methane used to generate electricity or landfillgas sold, if applicable to the offset project.

   b. Maintenance of Measuring and Monitoring Equipment.

      i. Records of all installed equipment and retired equipment related to landfillgas collection system and landfill gas combustion;

      ii. Landfill gas flow meter performance tests for each month;

      iii. Methane concentration instrument performance tests for each month; and

      iv. Maintenance schedules for landfill gas flow meter and methaneconcentration instrument.

   c. Operation of Measuring and Monitoring Equipment.

      i. Landfill gas sales records (in MMBtu or standard cubic feet of methane) orelectricity sales records (in kWh) for each month, if applicable to the offsetproject;

      ii. Landfill gas flow meter readings in at least 15-minute intervals;

      iii. Methane concentration instrument readings in at least daily intervals;

      iv. Landfill gas collection system operating hours for each month;

      v. Combustion device operating hours for each month;

      vi. Landfill gas flow meter pressure and temperature measurements for eachmonth;

      vii. Heat rate of combustion of electric generation unit(s) for reporting year, ifapplicable to the offset project; and

      viii. Methane combustion data for combustion device in at least 15- minute intervals.

d. Calibration of Measuring and Monitoring Equipment.

i. Calibration procedures and schedules for landfill gas flow meter andmethane concentration instrument (for permanent and/or portable equipment).

7. Independent Verification of Landfill Gas Methane Composition. Document the process that will be used to perform annual third-party analysis of sampled landfillgas methane composition. Provide as an appendix to the M&V Plan a copy of thecontract (with financial information redacted) for annual third-party laboratory analysis of sampled landfill gas using U.S. EPA-approved laboratory testing methods (e.g., see U.S. EPA Method 3C available at: http://www.epa.gov/ttn/emc/promgate.html). Document the protocol that will be used to ensure that the landfillgas samples will be taken at the same location as the landfill gas flow meter.

Offset Project Name	*Offset Project ID Code*

Form 2.1 – Project Description

Attach a detailed narrative of the actions to be taken as part of the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and identifies theoffset project name and offset project ID code.

Check the boxes below to indicate that the detailed narrative of the offset project includes thefollowing required information:

- ☐ 1. Type of project
- ☐ 2. Project owner and operator information
- ☐ 3. Landfill location and specifications
- ☐ 4. Landfill owner and operator information
- ☐ 5. Equipment specifications and technical schematic

Offset Project Name	*Offset Project ID Code*

Form 2.2 – Demonstration of Eligibility

Attach documentation that the offset project meets eligibility requirements. Attached documentation must include a header that indicates it is an attachment to Form 2.2 and includesthe offset project name and offset project ID code.

Check the box below to indicate that the following required documentation is attached:

☐ Documentation that the landfill methane offset project will occur at a landfill not subject to federal New Source Performance Standards (NSPS) for municipal solid waste landfills, 40 CFR Part 60 Subpart Cc and Subpart WWW. Documentation must include the initial design capacity report submitted to the U.S. EPA pursuant to 40 CFR 60, Subpart WWW 60.752(a)or 40 CFR 60, Subpart Cc 60.33c(d), and in accordance with 40 CFR 60, Subpart WWW 60.757(a)(2).

Offset Project Name	*Offset Project ID Code*

Form 2.3 – Monitoring and Verification Plan

Attach the Monitoring and Verification Plan (M&V Plan). The M&V Plan must include a headerthat indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code.

Check the boxes below to indicate that the attached M&V Plan includes the following required information:

☐ 1. Procedures for quantifying annual CO_2-equivalent emissions reductions

☐ 2. Procedures for quantifying annual volume of methane collected

☐ 3. Procedures for quantifying mass of methane per cubic feet of methane

☐ 4. Documentation of the quality assurance/quality control (QA/QC) program for measuringequipment

☐ 5. Documentation of the protocol for maintenance, operation, and calibration of measuring and monitoring equipment

☐ 6. Documentation of the protocol for records retention

☐ 7. Documentation of the process for independent verification of landfill gas methane composition

Part 3. Independent Verification Form

The form in Part 3 of the *Consistency Application* addresses the requirements and documentation related to the independent verifier certification statement and report. Instructionsfor the form in Part 3 are provided below.

Form 3.1 Independent Verifier Certification Statement and Report

An accredited independent verifier must sign and date the form. Submit the originally signed form as part of the paper hardcopy of the *Consistency Application.* Scan the signed anddated form for submission as part of the electronic version of the *Consistency Application.*

Provide the independent verifier report as an attachment to Form 3.1. The verifier reportmust include a header that indicates it is an attachment to Form 3.1 and includes the offset project name and offset project ID code.

The verifier report must document the following:

1. The verifier has reviewed the entire *Consistency Application* and evaluated thecontents of the application in relation to the applicable requirements of 25 Pa Code §§ 145.391—145.397.

2. The verifier has evaluated the adequacy and validity of information supplied by the Project Sponsor to demonstrate that the offset project meets the applicable eligibilityrequirements of 25 Pa Code § 145.393, § 145.394 and § 145.395

3. The verifier has evaluated the adequacy of the monitoring and verification plansubmitted pursuant to 25 Pa. Code § 145.395

The verifier report must include the following contents, in the order listed below:

- Cover page with report title and date
- Table of contents
- List of acronyms and abbreviations
- Executive summary
- Description of objective of report
- Identification of the client, including name, address, and other contact information
- Identification of the offset project
- Description of evaluation criteria (applicable regulatory provisions and documentation requirements specified in *Consistency Application*)
- Description of the review and evaluation process, including any site visits and interviews
- Identification of individuals performing the verification work, including the verification team leader and key personnel, and contact information for the team leader
- Description of the materials provided to the verifier by the Project Sponsor
- Evaluation conclusions and findings, including level of assurance provided

Offset Project Name	*Offset Project ID Code*

Form 3.1 – Independent Verifier Certification Statement and Report

An accredited independent verifier must sign and date Form 3.1. Attach the accredited independent verifier report. The attached verifier report must include a header that indicates itis an attachment to Form 3.1 and includes the offset project name and offset project ID code

Name of Accredited Independent Verifier

I certify that the accredited independent verifier identified above reviewed the *ConsistencyApplication*, including all forms and attachments, in its entirety, including a review of the following:

(a) The adequacy and validity of information supplied by the Project Sponsor to demonstratethat the offset project meets the applicable eligibility requirements under 25 Pa Code § 145.393, § 145.394 and § 145.395, including the required documentation that must be provided in the *Consistency Application.*

(b) The adequacy of the Monitoring and Verification Plan in accordance with the applicablerequirements of 25 Pa. Code § 145.395 including the required documentation that must be provided in the *Consistency Application.*

A verification report is attached that documents the verifier's review of the items listed aboveand includes evaluation conclusions and findings.

Verifier Representative Signature

Date

Printed Name

Title

Notary

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Pennsylvania CO_2 Budget Trading Program

Offset Project Consistency Application

Avoided Methane Emissions from Agricultural Manure Management

Contents

1. Overview

To demonstrate that an agricultural manure management offset project qualifies for theaward of CO_2 offset allowances, a Project Sponsor must submit to the Department in accordance with these instructions, a fully completed *Offset Project Consistency Application – Avoided Methane Emissions from Agricultural Manure Management* ("*ConsistencyApplication*"), including the coversheet and all forms and related attachments. An incomplete *Consistency Application* will not be reviewed to determine consistency. Following these instructions will ensure that the *Consistency Application* contains all necessary information andis submitted properly.

Each Project Sponsor should review the CO_2 Budget Trading Program regulations at 25 Pa Code §§ 145.391—145.397 (relating to CO_2 emissions offset projects) addressing offset projects and the award of CO_2 offset allowances. All offset application materials and other documents are available at www.dep.pa.gov/RGGI.

Before the *Consistency Application* can be completed, the Project Sponsor must establish a general account and obtain an offset project ID code through the RGGI CO_2 Allowance Tracking System (RGGI COATS). The Project Sponsor identified in the *ConsistencyApplication* must be the same as the Authorized Account Representative for the RGGI COATS general account identified in the *Consistency Application.* For information about establishing a RGGI COATS general account and offset project ID code, consult the RGGI COATS User's Guide, available at http://www.rggi-coats.org.

Key eligibility dates and application submittal requirements for offset projects are asfollows:

- For offset projects commenced on or after January 1, 2009, the *Consistency Application* must be submitted within six months after the project is commenced.
- For an offset project located in one participating state, the *Consistency Application* must be filed with the appropriate regulatory agency in that state.
- For an offset project located in more than one participating state, the *ConsistencyApplication* must be filed in the participating state where the majority of the CO_2- equivalent emissions reduction due to the offset project is expected to occur.

2. Submission Instructions

Submit one (1) complete hardcopy original *Consistency Application* and one (1) electronic copy in the form of a CD disk to the Department at the location specified below. Submit hardcopies of forms requiring signatures as originally-signed copies and scan such signed forms for electronic submission. Facsimiles of the *Consistency Application* are notacceptable under any circumstances.

Pennsylvania Department of Environmental Protection
c/o Bureau of Air Quality
Rachel Carson State Office Building, P.O. Box 8468
Harrisburg, PA 17105-8468

The *Consistency Application* has three parts, as described below. Each part comprises specified forms and required documentation. The *Consistency Application* has been created asa Microsoft Word document with editable fields. Enter information directly in the fields providedor submit information or documentation as an attachment, as directed. Include headers on all attachments indicating the form to which each is attached, the offset project name, and offset project ID code.

The Project Sponsor should save an electronic copy for his or her file to serve as areference for any necessary remediation.

3. Consistency Application Forms

The *Consistency Application* includes nine (9) forms divided into three parts, as follows:

Part 1. General Information Forms

- Form 1.1 – Coversheet
- Form 1.2 – General Information
- Form 1.3 – Attestations
- Form 1.4 – Project Sponsor Agreement
- Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Part 2. Category-Specific Information and Documentation Forms

- Form 2.1 – Project Description
- Form 2.2 – Demonstration of Eligibility
- Form 2.3 – Monitoring and Verification Plan

Part 3. Independent Verification Form

- Form 3.1 – Independent Verifier Certification Statement and Report

The following instructions address each of the forms in numerical order. Note that the forms themselves include many embedded instructions.

Part 1. General Information Forms

The five (5) forms in Part 1 of the *Consistency Application* address general requirementsapplicable to agricultural manure management offset projects. Instructions for the Part 1 forms are provided below.

Form 1.1 Coversheet

Enter the requested information in the editable text fields in the form.

Check the boxes to indicate which forms are being submitted. For information about entering the Project Sponsor, offset project name and offset project ID code, and RGGI COATS account name and number, see instructions below for Form 1.2, General Information.

Submit all forms including the Coversheet. If a required form is not submitted, the *Consistency Application* will not be considered complete for commencement of review by theDepartment.

Form 1.2 General Information Form

Enter the requested information in the editable text fields in the form. If a text field is notapplicable or is unanswerable, enter "NA." Note the following:

Offset Project ID Code: Enter the offset project ID code. The offset project ID code is the alphanumeric code generated when the Project Sponsor creates a record of the offset project in the RGGI CO_2 Allowance Tracking System (RGGICOATS). See the RGGI COATS User's Guide for more information about creating an offset project record in RGGI COATS, available at http://www.rggi-coats.org.

Project Information: Enter project information. The name of the offset projectshould be the same name entered by the Project Sponsor when creating a project record in RGGI COATS. The project location entered should be the primary location of the project if the project consists of actions at multiple locations. The summary narrative of the project should indicate all locations where project actions occur or will occur.

Project Sponsor: Identify the Project Sponsor and provide his or her contact information. The Project Sponsor is the natural person who is the Authorized Account Representative for the RGGI COATS general account identified in the *Consistency Application*.

Project Sponsor Organization: Provide the full legal name of the organization theProject Sponsor represents, including any alternative names under which the organization also may be doing business (e.g., John Doe Enterprises, Inc., d/b/a JDE). If the Project Sponsor is representing himself or herself as an individual, enter "NA".

RGGI COATS General Account Name and Number: Enter the RGGI COATS general account name and number. The RGGI COATS general account identified in the *Consistency Application* is the RGGI COATS account into whichany awarded CO_2 offset allowances related to the offset project will be transferred.

Form 1.3 Attestations

Check the boxes that apply and sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*. If applicable, attach a copy of the Attribute Credit Transfer Agreement to Form 1.3. The attached agreementmust include a header that indicates it is an attachment to Form 1.3 and includes the offset project name and offset project ID code.

Form 1.4 Project Sponsor Agreement

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application*. Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application*.

Form 1.5 Disclosure of Greenhouse Gas Emissions Data Reporting

Check the appropriate box in the form to indicate whether greenhouse gas emissions data related to the offset project have been or will be reported to any voluntary or mandatory programs, other than the CO_2 Budget Trading Program. For each program for which data have been or will be reported, provide the program name, the program type (voluntary or mandatory),program contact information (website or street address), the categories of emissions data reported, the frequency of reporting, when the reporting began or will begin, and reporting status(prior, current, future). The Project Sponsor must disclose future reporting related to current commitments made to voluntary programs as well as future reporting mandated by current statutes, regulations, or judicial or administrative orders.

Offset Project Name	*Offset Project ID Code*

Form 1.1 – Coversheet

Project Sponsor
Project Sponsor Organization
RGGI COATS General Account Name
RGGI COATS General Account Number

Each of the following forms must be submitted. Check the boxes below to indicate that thesubmitted *Consistency Application* includes each of the required forms:

- ☐ Form 1.2 – General Information
- ☐ Form 1.3 – Attestations
- ☐ Form 1.4 – Project Sponsor Agreement
- ☐ Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting
- ☐ Form 2.1 – Project Description
- ☐ Form 2.2 – Demonstration of Eligibility
- ☐ Form 2.3 – Monitoring and Verification Plan
- ☐ Form 3.1 – Independent Verifier Certification Statement and Report

Offset Project Name	Offset Project ID Code

Form 1.2 – General Information

Project Sponsor (RGGI COATS Authorized Account Representative)			
Telephone Number	Fax Number	Email Address	
Street Address			
City	State/Province	Postal Code	Country
RGGI COATS General Account Name			
RGGI COATS General Account Number			
Name of Offset Project		Application Date	
Summary Description of Offset Project			
Project City	Project County	Project State	Project Commencement Date
Project Sponsor Organization			
Primary Street Address			
City	State/Province	Postal Code	Country
Brief Description of Project Sponsor Organization			
Telephone Number		Website URL	
Independent Verifier (Company/Organization)		States Where Verifier Accredited	
Primary Street Address		Website URL	
City	State/Province	Postal Code	Country
Point of Contact for Projects			
Contact Telephone Number	Contact Fax Number	Contact Email Address	
Contact Street Address			
City	State/Province	Postal Code	Country

Offset Project Name	*Offset Project ID Code*

Form 1.3 – Attestations

The undersigned Project Sponsor certifies the truth of the following statements:

1. The offset project referenced in this *Consistency Application* is not required pursuant toany local, state, or federal law, regulation, or administrative or judicial order.
2. The offset project referenced in this *Consistency Application* has not and will not beawarded credits or allowances under any other greenhouse gas program.
3. Check the boxes that apply:

   ☐ The offset project referenced in this *Consistency Application* has not and will not receive any funding or othe incentives from the CO_2 Budget Trading Program auction proceeds.

   ☐ The offset project referenced in this *Consistency Application* has received or will receive funding or other incentives from the CO_2 Budget Trading Program auction proceeds.

   However, the following conditions apply:

   ☐ The offset project is located in a state with a market penetration rate for anaerobicdigester projects of 5 percent or less. Documentation that the offset project meets this criterion is attached to Form 2.2.

   ☐ The offset project is located at a farm with 4,000 or less head of dairy cows or equivalent animal units. Documentation that the offset project meets this criterion is attached to Form 2.2.

   ☐ The offset project is a regional-type digester designed for animal manure input lessthan the average annual manure produced by a farm with 4,000 or less head of dairy cows or equivalent animal units. Documentation that the offset project meetsthis criterion is attached to Form 2.2.

4. Check the boxes that apply:

   ☐ The offset project referenced in this *Consistency Application* does not include anelectric generation component.

   ☐ The offset project referenced in this *Consistency Application* does include an electricgeneration component. However, the following conditions apply:

   ☐ Any and all attribute credits generated by the offset project that may be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement, with the exception of CO_2 allowances awarded under the CO_2 Budget Trading Program, will be transferred to the Department. An Attribute Credit Transfer Agreement is attached.

   ☐ The offset project is located in a state with a market penetration rate for anaerobicdigester projects of 5 percent or less. Documentation that the offset project meets this criterion is attached to Form 2.2.

   ☐ The offset project is located at a farm with 4,000 or less head of dairy cows or equivalent animal units. Documentation that the offset project meets this criterion is attached to Form 2.2.

   ☐ The offset project is a regional-type digester designed for animal manure input lessthan the average annual manure produced by a farm with 4,000 or less head of dairy cows or equivalent animal units. Documentation that the offset project meetsthis criterion is attached to Form 2.2.

5. A *Consistency Application* for the offset project or any portion of the offset project referenced in this *Consistency Application* has not been filed in any other participating state.

6. All offset projects for which the Project Sponsor or project sponsor organization has received CO_2 offset allowances, if any, under the Project Sponsor's or project sponsor organization's ownership or control (or under the ownership or control of any entity which controls, is controlled by, or has common control with the Project Sponsor or project sponsor organization) are in compliance with all applicable requirements of the CO_2 BudgetTrading Program in all participating states.

7. I am authorized to make this submission on behalf of the project sponsor organization. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this *Consistency Application* and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of myknowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Project Sponsor Signature	Date
Printed Name	
Title	
Organization	Notary

Offset Project Name	*Offset Project ID Code*

Form 1.4 – Project Sponsor Agreement

The undersigned Project Sponsor recognizes and accepts that the application for, and the receipt of, CO_2 offset allowances under the CO_2 Budget Trading Program is predicated on the Project Sponsor following all the requirements of 25 Pa Code §§ 145.391—145.397. The undersigned Project Sponsor holds the legal rights to the offset project, or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. The Project Sponsor understands that eligibility for the award of CO_2 offset allowance under 25 Pa Code §§ 145.391—145.397 is contingent on meeting the requirements of 25 Pa Code §§ 145.391—145.397. The Project Sponsor authorizes the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the Monitoring and Verification Plan, has been implemented as described in this application. The Project Sponsor understands that this right to audit shall include the right to enter the physical location of the offset project. The Project Sponsor submits to the legal jurisdiction of the Commonwealth of Pennsylvania.

Project Sponsor Signature

Date

Printed Name

Title

Organization

Notary

Offset Project Name	*Offset Project ID Code*

Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Check the box below that applies:

☐ No greenhouse gas emissions data related to the offset project referenced in this *Consistency Application* have been or will be reported to a voluntary or mandatory programother than the CO_2 Budget Trading Program.

☐ Greenhouse gas emissions data related to the offset project referenced in this *ConsistencyApplication* have been or will be reported to a voluntary or mandatory program other than the CO_2 Budget Trading Program. Information for all such programs to which greenhouse gas emissions data have been or will be reported is provided below.

Name of Program to which GHG Emissions Data Reported	
Check all that apply:	
☐ Reporting is currently ongoing	***Enter Frequency of Reporting***
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	***Enter Reporting Start Date***
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	***Program Website***
Categories of Emissions Data Reported	

Name of Program to which GHG Emissions Data Reported	
Check all that apply:	
☐ Reporting is currently ongoing	***Enter Frequency of Reporting***
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	***Enter Reporting Start Date***
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	***Program Website***
Categories of Emissions Data Reported	

Add extra pages as needed.

Part 2. Category-Specific Information and Documentation Forms

The three (3) forms in Part 2 of the *Consistency Application* address category-specific requirements and documentation for agricultural manure management offset projects. Instructions for the Part 2 forms are provided below.

Form 2.1 Project Description

Attach a detailed narrative of the actions to be taken by the offset project. The attachednarrative must include a header that indicates it is an attachment to Form 2.1 and identifies theoffset project name and offset project ID code. The narrative must include the following information:

1. Offset Project Owner and Operator Information. Provide organization legal name(s), point(s) of contact information, and physical address for the offset projectowner and offset project operator. The owner of the offset project is the party that holds the legal rights to the offset project. The operator of the offset project is the legal entity responsible for operating, controlling, or supervising the offset project under a written agreement with the owner of the offset project.

   Provide organization legal name(s), point(s) of contact information, and physicaladdress for the parent company if the owner or operator is a subsidiary.

2. Offset Project Facility Location and Specifications. Provide the following informationabout the facility where the offset project occurs or will occur:

   - Name of the facility
   - Physical address (including city, state, zip code) of the facility
   - Organization legal name(s), address, and point(s) of contact information for the owner and operator of the facility; provide organization legal name(s), point(s) ofcontact information, and physical address for the parent company if the owner oroperator of the facility is a subsidiary
   - Specifications of the facility where the offset project is or will be located, if notone of the listed facilities at number 3 below; if one of the facilities listed at number 3 below, identify the facility

3. Influent Facility Location and Specifications. Provide the following information innarrative or table form *for each facility* that will provide influent (manure and/or organic food waste) to the anaerobic digester[1]:

   - Name of the facility
   - Physical address (including city, state, zip code) of the facility
   - Type(s) of manure and/or organic food waste influent from the facility to beadded to the digester (for manure: dairy cow, swine, specify other; for foodwaste: dairy, vegetable, fruit, meat-processing, oil-based, or specify other)
   - Type(s) of manure and/or organic food waste storage practices used prior to offset project commencement (liquid/slurry, pit below animal confinements, uncovered anaerobic lagoons, or specify other), total capacity of such storage(volume in cubic feet or gallons), and length of storage time (days)
   - Type of manure collection employed at the facility (mechanical scrape or flush)
   - Estimated manure production in pounds per day for the facility, and the waterused to clean milking parlors, barns, or other installations, in gallons per day
   - Volume of manure and/or organic food waste influent, which includes water content, produced by the facility (gallons per day); specify whether the estimateis based on water meter measurements or derived from the daily volume change in manure storage and/or organic food waste storage at the facility, in gallons per day or cubic feet per day
   - Volume of manure and/or organic food waste influent from the facility to beadded to the anaerobic digester (gallons per day)

[1] If the information requested is included in a state or local permit, the information provided in the *Consistency Application* must be consistent with that included in the permit.

4. Equipment Specifications and Project Schematic. Provide the following information in narrative or table form (information should be identical to that from a state or localpermit, if applicable):

   a. Identify the type(s) of anaerobic digester installed or to be installed as part of theoffset project:

      - Complete mix digester
      - Plug flow digester
      - Covered lagoon digester
      - Other digester type (specify)

   b. For each anaerobic digester installed or to be installed as part of the offsetproject, provide the following information:

      - Name of manufacturer
      - Date of installation
      - Design capacity (in cubic feet or gallons)
      - Hydraulic retention time (HRT) in days (HRT = Volume of digester/averagevolume of manure added per day)
      - Digester biogas collection, flow, and composition monitoring equipmentspecifications including:

        i. type(s) of equipment and manufacturer(s);

        ii. dates of installation;

        iii. dates of initial calibration;

        iv. design digester biogas flow capacity (standard cubic feet per minute);

        v. installed digester biogas flow meter accuracy;

        vi. methane concentration instrument thresholds (percent by volume) andprecision and accuracy levels as specified by the manufacturer; and

        vii. whether methane concentration instrument provides for continuous orperiodic monitoring of digester biogas.

   c. For each anaerobic digester installed or to be installed as part of the offset project, provide the following information about how methane from the digesteris utilized or will be utilized, as applicable:

      - Electricity Generation:

        i. Type of electric generation unit (internal combustion engine,microturbine, fuel cell, or specify other type);

        ii. Make or model, manufacturer, and date of installation of electricgeneration unit;

        iii. Design electricity generation capacity in MWe, as specified by themanufacturer; and

        iv. Heat rate (Btu/kWh), as specified by the manufacturer.

      - On-Site Direct Combustion:

        i. Type of combustion unit (flare, boiler, water heater, space heater, orspecify other); and

        ii. Make or model, manufacturer, and date of installation of combustion unit.

   d. Attach a technical schematic of the anaerobic digestion system that illustrates the manure flow from animal pens, food waste added (if any), collection system (whether scrape or flush), digester, gas handling system (generator, flare, boiler, or other gas utilization device), effluent storage for the digested manure, and ultimate disposal. Include mass flow of the manure, food waste, and water quantities on a daily basis. Include all mass and energy flows. Include manure and food waste flow for all facilities that will provide influent to the anaerobic digester. Figures 1 and 2 below provide illustrative examples.

Figure 1. Technical Schematic of Manure Digester System

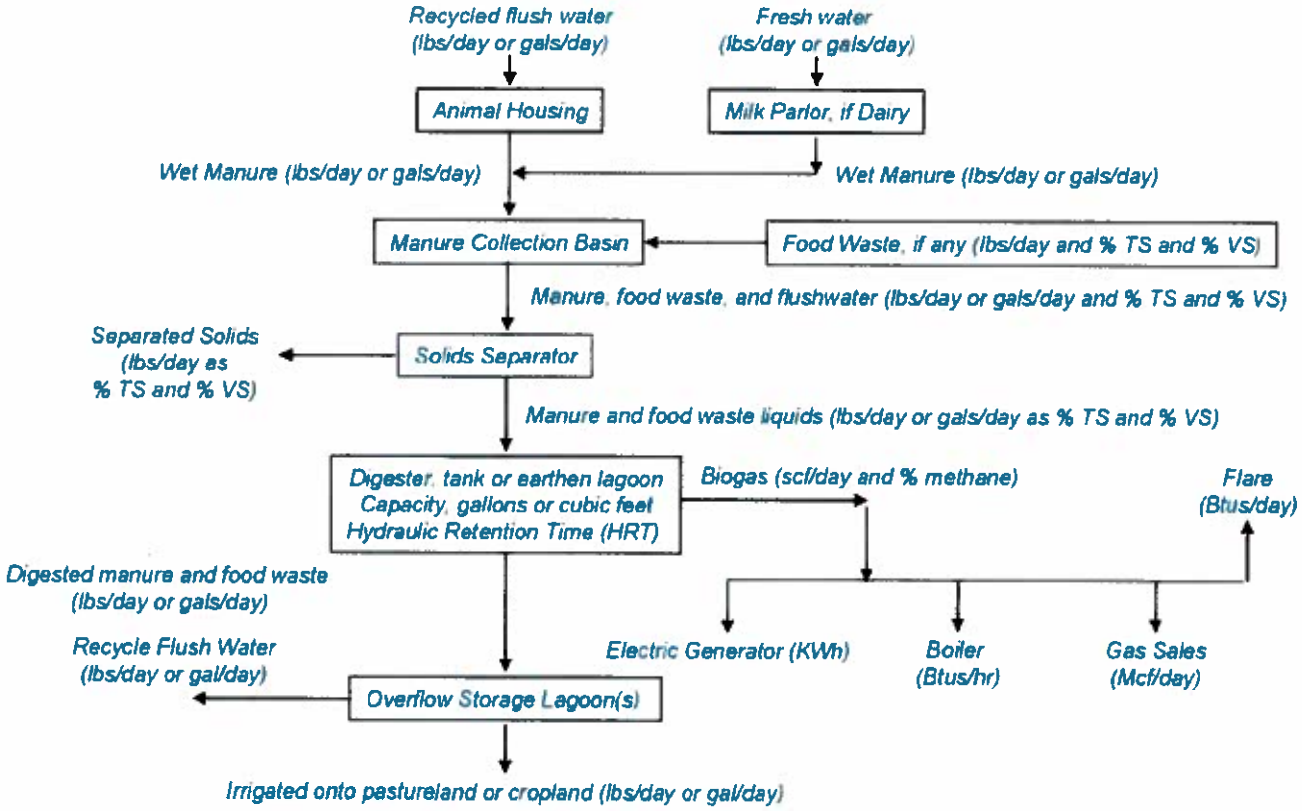
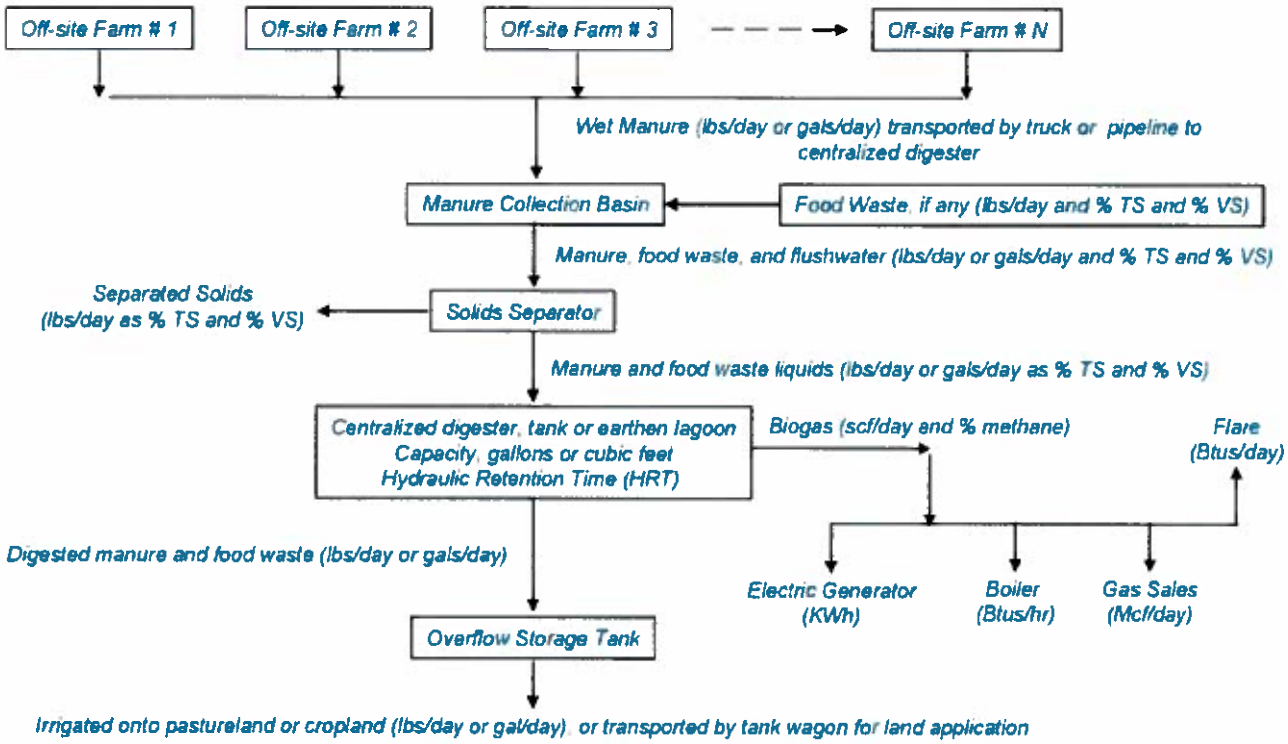


Figure 2. Technical Schematic of Centralized Digester System



Form 2.2 Demonstration of Eligibility

Attach documentation to Form 2.2 to demonstrate offset project eligibility. The attachment must include a header that indicates it is an attachment to Form 2.2 and includesthe offset project name and offset project ID code. Attached documentation must include thefollowing:

1. Demonstration of Uncontrolled Anaerobic Storage. Provide documentation for eachfacility that will provide influent to the anaerobic digester that the manure and/or organic food waste that is input into the anaerobic digester would have been stored through uncontrolled anaerobic storage in the absence of the offset project. Providethe following documentation for each facility, as follows:

   a. For a facility providing manure, provide the following:

      - A diagrammatic representation (system schematic) of the previous waste management system at the project site prior to offset project implementation.
      - Documentation that the manure was stored for at least 30 days and that the storage tank was not stirred for at least 30 days, using the following equationand historic data:
        Storage time, days = Volume of the storage tank (gallons or cubic feet) /Average daily volume of manure input (gallons or cubic feet)
      - Documentation showing that the previous manure storage facility containedmanure that had moisture content of at least 75%.

b. For a facility providing organic food waste, provide the following:

- A diagrammatic representation (system schematic) of the previous waste management system at the project site prior to offset project implementation
- Documentation that the food waste was stored for at least 30 days and thatthe storage tank was not stirred for at least 30 days, using the following equation and historic data:
  Storage time, days = Volume of the storage tank (gallons or cubic feet) /Average daily volume of food waste (gallons or cubic feet)
- Documentation showing that the previous food waste storage facilitycontained food waste that had moisture content of at least 75%.

2. Documentation of Digester System Feedstock. Provide documentation that at least50-percent of the total annual mass input into the anaerobic digester(s) that comprises the offset project consists of livestock manure. List the annual mass of manure and organic food waste influent (in pounds) that will be provided to the digester from each facility documented in Form 2.1.

3. Demonstration of Conditional Eligibility for Projects that Receive Certain Incentives or Retain Attribute Credits. If the offset project meets certain criteria outlined in this section, it may be eligible for the award of CO_2 offset allowances even if the followingconditions apply:

- The offset project received or will receive funding or other incentives from the CO_2 Budget Trading Program auction proceeds.
- The offset project contains an electric generation component and the Project Sponsor retains the legal rights to any and all attribute credits generated by theoffset project that may be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement.

If either or both of the above conditions apply, attach documentation to Form 2.2 thatdemonstrates the offset project meets *at least one* of the following criteria:

- The market penetration rate for anaerobic digester systems in the Commonwealth of Pennsylvania is five (5) percent or less;
- The offset project is located at a farm with 4,000 or less head of dairy cows orequivalent animal units; or
- The offset project is a regional-type digester designed for annual manure input equivalent to that which would be produced by a farm with 4,000 or less head ofdairy cows or equivalent animal units.

Attached documentation must include *at least one* of the following:

a. Market Penetration Rate. Provide documentation that the market penetration rate for anaerobic digesters in the Commonwealth of Pennsylvania is five (5) percent or less. The market penetration rate determination must utilize the most recent market data availableat the time of submission of the *Consistency Application*. The documentation must use the following formula:

$MP\ (\%) = (MG_{AD}/MG_{STATE}) \times 100$

where:

MG_{AD} = average annual manure generation from dairy cows and swine serving all anaerobic digester projects in the Commonwealth of Pennsylvania (in lbs. of manureper year) when the *Consistency Application* is submitted

MG_{STATE} = average annual manure generation of all dairy cows and swine in the Commonwealth of Pennsylvania (in lbs. of manure per year) when the *Consistency Application*is submitted

To determine the average annual manure generation, MG_{AD}, serving anaerobic digesters in the Commonwealth of Pennsylvania, contact the Pennsylvania Department of Agriculture for information on the population of dairy cows and swine that currently serve anaerobic digester projects in the Commonwealth of Pennsylvania. If such information is unavailable, obtain state and/or local digester project permits, which may provide information on the manure supply and/or dairy cow and swine population serving anaerobic digesters.

If the above resources do not provide information for manure generation servinganaerobic digester projects in the Commonwealth of Pennsylvania, use data of operational anaerobic digesterprojects available from the U.S. EPA AgStar Program to derive manure generation estimates for anaerobic digesters in the Commonwealth of Pennsylvania (see http://www.epa.gov/agstar/operational.html).

If the U.S. EPA AgStar[2] data indicate the Commonwealth of Pennsylvania has no operational anaerobic digesters, MG_{AD} equals zero and the market penetration criterion is met.

If the U.S. EPA AgStar data indicate operational anaerobic digesters in the Commonwealth of Pennsylvania that serve a flare or other non-electric generation use, derive an estimate of manure generated annually by the animals providing influent to the anaerobic digester using Table 1 below and U.S. EPA AgStar data of the number of animals and animal type serving the anaerobic digester.

If the U.S. EPA AgStar data indicate operational anaerobic digesters in the Commonwealth of Pennsylvania that serve an electric generator, estimate the quantity of manure influent associated with anaerobic digester projects in the Commonwealth of Pennsylvania using the following equation:

MG_{AD} (lbs. of manure per year) = [Electricity production (kWh/yr.) x Generator heat rate (Btu/kWh)/Methane heat content (Btu/scf methane)] /methane potential from manure (scf methane/lb. manure)

where:

Generator heat rate = 14,000 Btu/kWh, used by AgStar for typical digester gas fueled engine-generators

Methane heat content = 1012 Btu/scf methane

Methane potential from manure = 0.5 scf of methane per lb wet manure, a typical value for digester conversion of manure to methane according to AgStar[2].

To determine the average annual population of dairy cows and swine in the Commonwealth of Pennsylvania, use the most current National Agricultural Statistics Service USDA Census of Agriculture

Calculate the average annual manure generation of all dairy cows and swine in the Commonwealth of Pennsylvania, MG_{STATE}, using Table 1 below and the following equation:

MG_{STATE} = Population of dairy cows and swine x Pounds of manure per day peranimal x 365 days/yr.

[2] EPA, *AgStar Handbook, Appendix C, FarmWare User's Manual Version 3.0*, available at http://www.epa.gov/agstar/pdf/handbook/appendixc.pdf.

Table 1. Default Manure Excretion Rate

Type of Animal	Weight[a] (lbs)	Manure[b] Lbs./d/1000 lb. weight
Dairy		
Lactating Cow	1,332	80
Dry Cow	1,332	82
Heifer	1,049	85
Calf	260	65.8
Swine		
Sow: Lactating	436	60
Sow: Gestating	436	27.2
Nursing Pigs	35	106
Weaned Pigs	90	106
Feeder Pigs	201	63.4
Boars	400	20.5

[a] Average estimated weights from U.S. EPA, U.S. Manure Management Inventory,2004.
[b] USDA National Resource Conservation Service, Manure Production Nutrient Content Data (as excreted).
Source: U.S. EPA, *AgStar Handbook, Appendix C, FarmWare User's Manual Version3.0*, 2007, http://www.epa.gov/agstar/resources/handbook.html.

Calculate the market penetration rate (MP) in percent as described in the equation above. Demonstrate that the market penetration rate is no more than five (5) percent.

b. Size of Farm. Provide documentation that the offset project is located at a farm with 4,000 or less head of dairy cows or equivalent animal units. Use the following procedures:

   i. For an offset project located on a farm that includes only dairy cows, tabulatethe number of dairy cows on the farm to determine the head of dairy cows.

   ii. For an offset project located on a farm that includes dairy cows and/or other animal types, tabulate the number of dairy cows on the farm to determine thenumber of cow animal units, and determine the number of equivalent animal units of the other animal types as follows:

      (A) Tabulate the total weight for each animal type other than dairy cows on thefarm (in pounds).

      (B) Divide the total weight for each animal type (lbs.) by 1,400 lbs. to derive thenumber of equivalent animal units for that animal type.

      (C) Sum the number of animal units for each animal type.

   The result must demonstrate that 4,000 or less animal units are present on thefarm.

c. Input Capacity of Regional-Type Digester. If the offset project is a regional-typedigester, document that the total annual manure input supplied to the digester is designed to be less than the average annual manure produced by a farm with 4,000 or less head of dairy cows, or a farm with equivalent animal units. Providethe following:

   i. Document the annual input capacity of the anaerobic digester in pounds ofmanure per year.

   ii. Document the type of manure influent that will be provided to the anaerobicdigester from each of the facilities supplying manure to the digester and themass of such manure (lbs). (This information should be consistent with that provided in Form 2.1.)

   iii. Document the number of dairy cows or equivalent animal units required to produce the annual mass of manure that meets the annual influent capacity of the anaerobic digester. For animals other than dairy cows, divide the average animal weight (lbs.) by 1,400 lbs. to determine equivalent animal units(1,400 lbs. is the assumed default weight for a full-sized dairy cow). Documentthe data source used to estimate animal manure generation by animal type. (U.S. EPA, *AgStar Handbook, Appendix C, FarmWare User's Manual Version 3.0*, 2007, is one source of such data.)

   The total must be 4,000 or less dairy cows or equivalent animal units.

Form 2.3 Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as an attachment to Form 2.3. The attachment must include a header that indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code. The attached M&V Plan mustinclude the following information:

1. Documentation of Methane Generation Calculation Procedures. Attach a spreadsheet documenting the equations and project-specific data sources for eachinfluent-generating facility that will be used to calculate the monthly baseline methane emissions from the degradation of volatile solids during the annual reporting period, including the following:

   - Baseline emissions (short tons CO_2-equivalent)
   - Volatile solids degraded
   - Calculation of van't Hoff-Arrhenius factor ("f factor")
   - Calculation of volatile solids available for degradation
   - Calculation of mass of volatile solids available at the start of each reportingmonth
   - Calculation of mass of volatile solids available at the end of each reporting month
   - Calculation of mass of volatile solids removed from storage during each reportingmonth
   - Calculation of volume of methane produced

   The equations used must be consistent with those specified at 25 Pa. Code § 145.395(c) (See also, *Monitoring and Verification Report*, Form 2.3).The documentation of data sources must account for how facility-specific data obtained through the influent monitoring procedures specified under item number 2 below will be applied in the methane generation equations.

2. Influent Monitoring Procedures. Document the monitoring procedures to be used ateach facility providing manure and/or organic food waste influent to the anaerobic digester, including the following:

   - Monthly influent flow (in kg, wet weight) from the facility into the digester, basedon either recorded weight or derived from digester influent pump flow. Provide specified quantification procedures.
   - Monthly influent total solids concentration as a percent of a sample, using U.S. EPA Method Number 160.3, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020). Provide specified sampling proceduresand method and the testing facility to be used.
   - Monthly influent volatile solids concentration as a percent of total solids in a sample, using U.S. EPA Method Number 160.4, Methods for the Chemical Analysis of Water and Wastes (MCAWW) (EPA/600/4-79/020). Provide specifiedsampling procedures and method and the testing facility to be used.
   - Monthly average ambient temperature (degrees Celsius) based on reading fromthe nearest National Weather Service certified weather station. Provide the procedures for collecting temperature data, the location of the closest certified weather station, and the distance from the influent-generating facility.

3. Documentation of Methane Captured and Destroyed. Attach a spreadsheet documenting the calculations and project-specific data sources that will be used toquantify the annual volume of methane (in standard cubic feet) captured and destroyed by the anaerobic digester during the reporting period, including the following:

   a. If a direct continuous monitoring system is measuring methane concentration ofdigester biogas:

      - Daily methane recovery as measured in standard cubic feet of methane perday from the continuous monitoring system
      - Sum of daily methane recovery on a monthly basis
      - Sum of monthly methane recovery to obtain total annual methane recoveryfrom the digester

b. If a direct continuous monitoring system is monitoring digester biogas flow only:

- Daily digester biogas flow as measured in standard cubic feet of digesterbiogas from the continuous monitoring system
- Sum of daily digester biogas flow on a weekly basis
- Weekly methane concentration measurements (in percent by volume) usingcalibrated digester biogas analyzer
- Weekly methane recovery as measured in standard cubic feet, derived bymultiplying weekly digester biogas flow by the respective week's methaneconcentration measurement (in percent by volume)
- Sum of weekly methane recovery on a monthly basis
- Sum of monthly methane recovery to obtain total annual methane recoveryfrom the digester in standard cubic feet of methane

4. Documentation of Transport CO_2 Emissions (applicable only to regional-type digesters). If the offset project is a regional-type digester, attach a spreadsheetdocumenting the procedures to be used to quantify CO_2 emissions due to transportation of manure and organic food waste from the facilities where the manureand organic food waste were generated to the anaerobic digester during the reporting period. Specify data sources and calculations for one of the following two methods:

a. Method 1: Emission factors for type and quantity of fuel used

Identify data sources and calculations for fuel use for all shipments of manure and organic food waste from off-site facilities to the anaerobic digester during each reporting year. Specify how transport miles and quantity of fuel used for each shipment will be determined and recorded. Specify the emission factors tobe used, which may include:

- Diesel fuel: 22.912 lbs. CO_2/gallon
- Gasoline: 19.878 lbs. CO_2/gallon
- Other fuel: emission factor approved by the Department

b. Method 2: Emission factors for type of fuel by ton-mile

Identify data sources and calculations to determine total tons of manure and organic food waste transported from off-site facilities for input into the anaerobicdigester during each reporting period. Specify how transport tons, transport miles, and fuel type used for each shipment will be determined and recorded.
Specify the emission factors to be used, which may include:

- Diesel fuel: 0.131 lbs. CO_2 per ton-mile
- Gasoline: 0.133 lbs. CO_2 per ton-mile
- Other fuel: emission factor approved by the Department

5. Quality Assurance/Quality Control (QA/QC) Procedures. Document the QA/QCprocedures for equipment used to measure biogas volumetric flow and methaneconcentration, including the following:

- Procedures for recording names and contact information for the personnel responsible for project monitoring and documentation, including manure and organic food waste influent monitoring, recording of digester biogas flow and methane concentration, and identification of third-party analytical laboratoriesused to verify biogas methane composition
- Procedures for recording names and contact information for the personnelresponsible for QA/QC of project monitoring data and documentation
- Procedures, if applicable, for annual comparison of methane generated by the anaerobic digester, as measured by monitoring equipment, against estimated methane used to generate electricity, as derived from electric generation records.The recommended procedure for the estimation of methane used to generate electricity is as follows:

Annual methane recovered (scf) = [(annual kWh of electricityproduced from digester biogas methane) x (heat rate in Btu/kWh of electric generation unit)] / 1012 Btu/scf

- Procedures, if applicable, for documenting annual electricity generation andelectric generation unit heat rate
- Procedures for documenting installation and retirement of equipment formonitoring biogas volumetric flow and methane concentration
- Procedures and calculations for standardization of digester biogas flow that correct for documented site-specific temperature and pressure measurements.(This procedure is not necessary when using flow meters that automatically measure temperature and pressure, and express digester biogas flow in standard cubic feet.)
- Procedures for QA/QC of methane concentration measurements. If using gas analyzer instruments inside the digester or in the biogas collection pipe for continuous methane concentration measurement, procedures for maintenance ofthe following data:

  i. Accuracy and precision of analyzer, in accordance with manufacturerspecifications;

  ii. Proof of initial calibration (documentation provided by manufacturer);

  iii. Records of periodic instrument calibration in accordance with manufacturerinstructions;

  iv. Records of methane concentration in at least 15-minute intervals; and

  v. Records of calibration procedure followed at least once per year against agas sample with a known methane concentration in the range of 60 to 70 percent by volume.

- Procedures for quarterly third-party laboratory analysis of methane concentrationof sampled biogas using U.S. EPA-approved laboratory testing methods, including specification of the testing method to be used
- Procedures for ensuring that biogas samples will be taken at the location of thedigester biogas flow meter
- Procedures for QA/QC of influent monitoring data for each facility supplyingmanure and/or organic food waste to the anaerobic digester
- For regional-type digesters, procedures for the compilation of monthly receiptsand records of manure and/or organic food waste (in kg) received for input intothe anaerobic digester from each facility supplying manure and/or organic foodwaste influent
- For regional-type digesters, for each facility supplying organic food waste influent, procedures for ensuring that the daily food waste input to the on-site storage tank prior to shipment to the anaerobic digester is greater than 1/30 ofthe total storage tank capacity
- For regional-type digesters, for each facility supplying manure influent, procedures for ensuring that the daily manure input to the on-site storage tank orpond prior to shipment to the anaerobic digester is greater than 1/30 of the total storage tank or pond capacity
- Procedures for the compilation of an annual QA/QC report summarizing findingsof QA/QC activities conducted and any remedial actions taken

6. Documentation of Measuring and Monitoring Equipment Maintenance, Operation, and Calibration. Document the record keeping protocol that will be used to ensure that the following required actions are performed and documented for each reportingperiod:

   a. Maintenance of Measuring and Monitoring Equipment.

      - Monthly records of digester biogas flow rate performance tests to ensure: (1) flow readings are being recorded at least every 15 minutes; (2) the accuracy of digester biogas flow meter readings is within +/- 5 percent of manufacturer specifications; and (3) methane concentration instrument manufacturer specifications for precision and accuracy are met
      - Records of the type of biogas flow meter installed (differential pressure or hotwire anemometer)
      - Records of the date and location of flow meter installation
      - Records of performance of maintenance schedules for digester biogas flowmeter and methane concentration instrument in accordance with manufacturer recommendations and specifications

b. Operation of Measuring and Monitoring Equipment.

- Daily records of collected digester biogas flow rates in at least 15-minuteintervals
- Weekly records of methane concentration (if methane concentration is not continuously monitored) or daily records of methane concentration (if onsitecontinuous methane concentration analyzer is used)
- Monthly records of calculation of digester biogas flow rate standardization (instandard cubic feet per day) to correct for site-specific pressure and temperature measurements. (Note, this procedure is not necessary when using flow meters that automatically measure temperature and pressure, and express digester biogas gas flow in standard cubic feet.)
- Daily records of field data used for flow measurement standardization, including barometric pressure and biogas temperature and pressure measurements. (Note, this is not applicable when using flow meters thatautomatically measure temperature and pressure, and express digester biogas gas flow in standard cubic feet.)
- Monthly records of the number of hours the digester biogas flow meter devicewas inoperable
- Monthly records of the amount of methane combusted (in standard cubicfeet) in the combustion device
- Monthly records of electricity generation and measured heat rate, based onsource tests or derived from heat input (MMBtu) and electricity generation (KWh) (applicable to offset projects with an electric generation component)

c. Calibration of Measuring and Monitoring Equipment.

- Records of the calibration procedures conducted for the digester biogas flow meter in accordance with manufacturer specifications, but conducted not lessthan annually
- Records of the dates and results of digester biogas flow meter calibration, and the portable instrument and procedures used to check installed flow meter accuracy, including field measurements and flow calculations
- Records of the calibration procedures conducted for the methane concentration monitoring instrument. (Daily records if applicable to continuous methane concentration monitoring instrument; monthly records ifapplicable to portable methane concentration monitoring instrument.)

  Records of the dates and results of methane concentration monitoring instrument calibration, including field measurement data. (Applicable to both continuous methane concentration monitoring instrument and portablemethane concentration monitoring instrument.)

7. Record Keeping and Records Retention Protocol. Document the record keeping andrecords retention protocol that will be used to maintain documentation throughout theduration of the offset project, including maintenance of an electronic index or hardcopy of information.

   Document the record keeping protocol that will be used to ensure that the followingdocumentation for each reporting year is maintained:

   a. Influent Monitoring.

      For each facility providing manure and/or organic food waste influent to thedigester:

      - Records of monthly influent flow (in kg, wet weight) into the digester andquantification procedures used
      - Records of monthly influent total solids concentration as a percent of total solids in sample, and sampling procedures, method, and testing facility used
      - Records of monthly influent volatile solids concentration as percent of total solids in sample, and sampling procedures, method, and testing facility used
      - Records of average monthly ambient temperature, and data collectionmethod used

   b. Methane Captured and Destroyed.

      If a direct continuous monitoring system is measuring methane concentration ofrecovered digester biogas:

      - Records of daily methane recovery as measured in standard cubic feet from the continuous monitoring system

If a direct continuous monitoring system is measuring the flow of digester biogasonly:

- Records of daily digester biogas flow as measured in standard cubic feet ofdigester biogas from the continuous monitoring system
- Records of weekly methane concentration measurements (in percent byvolume) using a calibrated digester biogas analyzer

c. Transport CO_2 Emissions.

If Method 1 (see item 4.a. above) is used to document transport CO_2 emissions:

- Records of transport miles and quantity of fuel used for each shipment ofmanure or organic food waste from an off-site facility for input into the digester

If Method 2 (see item 4.b. above) is used to document transport CO_2 emissions:

- Records of tons of manure or organic food waste transported, transport miles,and fuel type used for each shipment of manure or organic food waste from an off-site facility for input into the digester

d. Quality Assurance/Quality Control (QA/QC) Program.

- Names and contact information for the personnel responsible for project monitoring and documentation
- Names and contact information for personnel responsible for QA/QC ofproject monitoring and documentation
- Annual QA/QC report and the associated findings and remedial actions taken
- Annual comparison of methane generated by the anaerobic digester, as measured by monitoring equipment, with estimated methane used to generate electricity, as derived from electric generation records (applicable tooffset projects with an electric generation component)
- Annual electricity generation and electric generation heat rate (applicable tooffset projects with an electric generation component)
- Records of installation and retirement of equipment for monitoring biogasvolumetric flow and methane concentration
- Records of monthly calculation results for standardizing digester biogas flowthat correct for documented site-specific temperature and pressure measurements. (Note, not applicable when using flow meters that automatically measure temperature and pressure, and express digester biogas flow in standard cubic feet.) Includes daily records of field data collected for flow measurement standardization, including barometric pressure and biogas temperature and pressure measurements
- Results of quarterly third-party laboratory analysis of methane concentrationof sampled biogas using U.S. EPA-approved laboratory testing methods
- Documentation that biogas samples were taken at the location of the digesterbiogas flow meter
- For regional-type digesters, monthly receipts and records of manure and organic food waste (in kg, wet weight) received for input into the anaerobicdigester from each off-site facility supplying manure and/or organic food waste influent
- For regional-type digesters, monitoring records of daily organic food waste input to storage at each off-site facility supplying manure and/or organic foodwaste influent (in mass or volume, and as a fraction of total tank storage capacity)

e. Maintenance of Measuring and Monitoring Equipment.

- Records of digester biogas flow meter performance test results for eachmonth
- Records of the type of biogas flow meter installed during the reporting period(differential pressure or hot wire anemometer)
- Records of the date and location of flow meter installation
- Records of maintenance performed on digester biogas flow meter andmethane concentration instrument

f. Operation of Measuring and Monitoring Equipment.

- Records of daily digester biogas flow rates (with flow rate recorded at leastevery 15 minutes)
- Records of weekly methane concentration (if methane concentration not continuously monitored) or records of daily methane concentration (if directcontinuous methane concentration analyzer is used)
- Records of number of hours digester biogas flow meter device wasinoperable each month
- Records of combustion device operation hours for each month
- Records of the daily amount of biogas combusted in at least 15-minute intervals

g. Calibration of Measuring and Monitoring Equipment.

- Records of digester biogas flow meter calibration results, and the portable instrument and procedures used to check installed flow meter accuracy, including field measurements and flow calculations

Offset Project Name	*Offset Project ID Code*

Form 2.1 – Project Description

Attach a detailed narrative of the actions to be taken by the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and includes thee offset project name and offset project ID code.

Check the boxes below to indicate that the following required information is included in the attached detailed project narrative:

☐ 1. Offset project owner and operator information

☐ 2. Offset project location and specifications

☐ 3. Influent facility location and specifications (for all facilities providing influent to the anaerobic digester)

☐ 4. Equipment specifications and project schematic

Offset Project Name	*Offset Project ID Code*

Form 2.2 – Demonstration of Eligibility

Attach documentation to demonstrate offset project eligibility. Each attachment must include aheader that indicates it is an attachment to Form 2.2 and includes the offset project name and offset project ID code.

A. Demonstration of Eligibility (applicable to all offset projects)

Check the boxes below to indicate that the following required documentation is attached:

☐ 1. Demonstration of uncontrolled anaerobic storage (for each facility providing influent tothe anaerobic digester)

☐ 2. Documentation of digester system feedstock (documentation that at least 50-percent ofthe total annual mass input into the anaerobic digester consists of livestock manure)

B. Demonstration of Conditional Eligibility (applicable to certain offset projects)

If the offset project meets certain specifications, it may be eligible for the award of CO_2 offsetallowances even if the following apply:

- The offset project received or will receive funding or other incentives from the CO2 Budget Trading Program auction proceeds. The offset project includes an electric generation component and the Project Sponsor or project sponsor organization retains the legal rights to any and all attribute credits generatedby the offset project that may be used for compliance with a renewable portfolio standard (RPS) or other regulatory requirement.

Check one or more of the boxes below, as appropriate, to indicate that the following documentation is attached to demonstrate conditional eligibility:

☐ 1. The market penetration rate for anaerobic digesters in the Commonwealth of Pennsylvania is five (5) percent or less

☐ 2. The offset project is located at a farm with 4,000 or less head of dairy cows or equivalentanimal units

☐ 3. The offset project is a regional-type digester designed for annual manure input less than would be produced by a farm with 4,000 or less head of dairy cows or equivalent animalunits

Offset Project Name	*Offset Project ID Code*

Form 2.3 – Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as an attachment. The attachmentmust include a header that indicates it is an attachment to Form 2.3 and includes the offsetproject name and offset project ID code.

Check the boxes below to indicate that the M&V Plan includes the following requiredinformation:

☐ 1. Documentation of Methane Generation Calculation Procedures. Spreadsheet documenting equations and project-specific data sources for each influent-generatingfacility that will be used to calculate monthly baseline methane emissions

☐ 2. Influent Monitoring Procedures. Documentation of monitoring procedures to be used ateach facility supplying manure and/or organic food waste influent to the anaerobic digester

☐ 3. Documentation of Methane Captured and Destroyed. Spreadsheet documenting calculations and project-specific data sources that will be used to quantify annualvolume of methane captured and destroyed by the anaerobic digester

☐ 4. Documentation of Transport CO_2 Emissions (only applicable to regional-type digesters). Spreadsheet documenting procedures to be used to quantify CO_2 emissions due to transportation of manure and organic food waste from facilities where the manure and organic food waste were generated to the anaerobic digester

☐ 5. Quality Assurance/Quality Control (QA/QC) Procedures. Documentation of QA/QC procedures for equipment to be used to measure biogas volumetric flow and methaneconcentration

☐ 6. Documentation of Measuring and Monitoring Equipment Maintenance, Operation, and Calibration. Documentation of record keeping protocol that will be used to ensure thatrequired actions are performed and documented

☐ 7. Record Keeping and Records Retention Protocol. Documentation of record keeping and records retention proto that will be used to maintain documentation throughoutthe duration of the offset project

Part 3. Independent Verification Form

The form in Part 3 of the *Consistency Application* addresses requirements and documentation related to the independent verifier certification statement and report. Instructionsfor the form in Part 3 are provided below.

Form 3.1 Independent Verifier Certification Statement and Report

An accredited verifier must sign and date the form. Submit the originally signed form aspart of the paper hardcopy of the *Consistency Application.* Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application.*

Provide the independent verifier report as an attachment to Form 3.1. The verifier reportmust include a header that indicates it is an attachment to Form 3.1 and includes the offset project name and offset project ID code.

The verifier report must document the following:

1. The verifier has reviewed the entire *Consistency Application* and evaluated thecontents of the application in relation to the applicable requirements of 25 Pa Code §§ 145.391—145.397.

2. The verifier has evaluated the adequacy and validity of information supplied by the Project Sponsor to demonstrate that the offset project meets the applicable eligibilityrequirements of 25 Pa Code § 145.393, § 145.394 and § 145.395.

3. The verifier has evaluated the adequacy and validity of information supplied by theProject Sponsor to demonstrate baseline emissions pursuant to the applicable requirements of 25 Pa. Code § 145.395.

4. The verifier has evaluated the adequacy of the Monitoring and Verification Plansubmitted pursuant to 25 Pa. Code § 145.395.

The verifier report must include the following contents, in the order listed below:

- Cover page with report title and date
- Table of contents
- List of acronyms and abbreviations
- Executive summary
- Description of objective of report
- Identification of the client, including name, address, and other contact information
- Identification of the offset project
- Description of evaluation criteria (applicable regulatory provisions and documentation required in the *Consistency Application*)
- Description of the review and evaluation process, including any site visits andinterviews
- Identification of individuals performing the verification work, including the verificationteam leader and key personnel, and contact information for the team leader
- Description of the materials provided to the verifier by the Project Sponsor
- Evaluation conclusions and findings, including level of assurance provided

Offset Project Name	*Offset Project ID Code*

Form 3.1 – Independent Verifier Certification Statement and Report

An accredited verifier must sign and date the form. Attach the accredited verifier report. The attached verifier report must include a header that indicates it is an attachment to Form 3.1 andincludes the offset project name and offset project ID code.

Name of Accredited Independent Verifier

I certify that the accredited independent verifier identified above reviewed the *ConsistencyApplication*, including all forms and attachments, in its entirety, including a review of the following:

(a) The adequacy and validity of information supplied by the Project Sponsor to demonstratethat the offset project meets the applicable eligibility requirements of 25 Pa Code § 145.393, § 145.394 and § 145.395, including the required documentation that must be provided in the *Consistency Application.*

(b) The adequacy and validity of information supplied by the Project Sponsor to demonstrate baseline emissions, pursuant to the applicable requirements of 25 Pa. Code § 145.395, including the required documentation that must be provided in the *Consistency Application.*

(c) The adequacy of the Monitoring and Verification Plan in accordance with the applicablerequirements of 25 Pa. Code § 145.395 including the required documentation that must be provided in the *Consistency Application.*

A verification report is attached that documents the verifier's review of the items listed above and includes evaluation conclusions and findings.

Verifier Representative Signature

Date

Printed Name

Title

Notary

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Pennsylvania CO_2 Budget Trading Program

Offset Project Consistency Application

U.S. Forest Projects - Reforestation

Contents

1. Overview

To demonstrate that a U.S. Forest offset project qualifies for the award of CO_2 offset allowances, a Project Sponsor must submit to the Department in accordance with these instructions, a fully completed *Offset Project Consistency Application – U.S. Forest Project* ("*Consistency Application*"), including the coversheet and all forms and related attachments. An incomplete *Consistency Application* will not be reviewed to determine consistency. Following these instructions will ensure that the *Consistency Application* contains all necessary information and is submitted properly.

Each Project Sponsor should review the CO_2 Budget Trading Program regulations at 25 Pa Code §§ 145.394—145.397addressing offset projects and the award of CO_2 offset allowances. All offset application materials and other documents are available at www.dep.pa.gov/RGGI.

Before the *Consistency Application* can be completed, the Project Sponsor must establish a general account and obtain an offset project ID code through the RGGI CO_2 Allowance Tracking System (RGGI COATS). The Project Sponsor identified in the *ConsistencyApplication* must be the same as the Authorized Account Representative for the RGGI COATSgeneral account identified in the *Consistency Application.* For information about establishing a RGGI COATS general account and offset project ID code, consult the RGGI COATS User's Guide, available at http://www.rggi-coats.org.

Key eligibility conditions and application submittal requirements for offset projects are asfollows:

- U.S. Forest Projects may be applied for in a RGGI participating state (excluding NYand CT) or anywhere in the United States if Project State has entered into a Memorandum of Understanding with RGGI states.
- The *Consistency Application* must be submitted within one year after the project iscommenced.

2. Submission Instructions

Submit one (1) complete hardcopy original *Consistency Application* as well as an electronic copy in the form of a CD disk to the Department at the location specified below. Submit hardcopies of forms requiring signatures as originally-signed copies and scan such signed forms for electronic submission. Facsimiles of the *Consistency Application* are notacceptable under any circumstances.

Pennsylvania Department of Environmental Protection
c/o Bureau of Air Quality
Rachel Carson State Office Building, P.O. Box 8468
Harrisburg, PA 17105-8468

The *Consistency Application* has three parts, as described below. Each part comprises specified forms and required documentation. The *Consistency Application* has been created as a Microsoft Word document with editable fields. Enter information directly into the fields provided or submit information or documentation as an attachment, as directed. Include headerson all attachments indicating the form to which each is attached, the offset project name, and offset project ID code.

The Project Sponsor should save an electronic copy for his or her file to serve as areference for any necessary remediation.

3. Consistency Application Forms

The *Consistency Application* includes eleven (11) forms divided into three parts, asfollows.

Part 1. General Information Forms

- Form 1.1 – Coversheet
- Form 1.2 – General Information
- Form 1.3 – Attestations
- Form 1.4 – Project Sponsor Agreement
- Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Part 2. Category-Specific Information and Documentation Forms

- Form 2.1 – Project Description
- Form 2.2 – Demonstration of Eligibility
- Form 2.3 – Baseline Modeling
- Form 2.4 – Monitoring and Verification Plan
- Form 2.5 – Reversal Risk Rating

Part 3. Independent Verification Form

- Form 3.1 – Independent Verifier Certification Statement and Report

The following instructions address each of the forms in numerical order. Note that theforms themselves include many embedded instructions.

Part 1. General Information Forms

The five (5) forms in Part 1 of the *Consistency Application* address general requirements applicable to U.S. Forest – Reforestation offset projects. Instructions for the Part 1 forms are provided below.

Form 1.1 Coversheet

Enter the requested information in the editable text fields in the form.

Check the boxes to indicate which forms are being submitted. For information about entering the Project Sponsor, offset project name and offset project ID code, and RGGI COATSaccount name and number, see instructions below for Form 1.2, General Information.

Submit all required forms including the Coversheet. If a required form is not submitted, the *Consistency Application* will not be considered complete for commencement of review by the Department.

Form 1.2 General Information

Enter the requested information in the editable text fields in the form. If a text field is notapplicable or is unanswerable, enter "NA." Note the following:

Offset Project ID Code: Enter the offset project ID code. The offset project ID code is the alphanumeric code generated when the Project Sponsor creates a record of the offset project in the RGGI CO_2 Allowance Tracking System (RGGI COATS). See the RGGI COATS User's Guide for more information about creating an offset project record in RGGI COATS, available at http://www.rggi- coats.org.

Project Information: Enter project information. The name of the offset projectshould be the same name entered by the Project Sponsor when creating a project record in RGGI COATS. The project location entered should be the primary location of the project if the project consists of actions at multiple locations. The summary narrative of the project should indicate all locations where project actions occur or will occur.

Project Sponsor: Identify the Project Sponsor and provide his or her contact information. The Project Sponsor is the natural person who is the Authorized Account Representative for the RGGI COATS general account identified in the*Consistency Application.* The Project Sponsor must be a Forest Owner as defined in Section 2.2 of the RGGI U.S. Forest Protocol.

Project Sponsor Organization: Provide the full legal name of the organization theProject Sponsor represents, including any alternative names under which the organization also may be doing business (e.g., John Doe Enterprises, Inc., d/b/a JDE). If the Project Sponsor is representing himself or herself as an individual,enter "NA".

RGGI COATS General Account Name and Number: Enter the RGGI COATS general account name and number. The RGGI COATS general account identified in the *Consistency Application* is the RGGI COATS account into whichany awarded CO_2 offset allowances related to the offset project will be transferred.

Form 1.3 Attestations

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application.* Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application.*

Form 1.4 Project Sponsor Agreement

Sign and date the form. Submit the originally signed form as part of the paper hardcopy *Consistency Application.* Scan the signed and dated form for submission as part of the electronic version of the *Consistency Application.*

Form 1.5 Disclosure of Greenhouse Gas Emissions Data Reporting

Check the appropriate box in the form to indicate whether greenhouse gas emissions data related to the offset project have been or will be reported to any voluntary or mandatory programs, other than the CO_2 Budget Trading Program. For each program for which data have been or will be reported, provide the program name, the program type (voluntary or mandatory),program contact information (website or street address), the categories of emissions data reported, the frequency of reporting, when the reporting began or will begin, and reporting status(prior, current, future). The Project Sponsor must disclose future reporting related to current commitments made to voluntary programs as well as future reporting mandated by current statutes, regulations, or judicial or administrative orders.

Offset Project Name	*Offset Project ID Code*

Form 1.1 – Coversheet

Project Sponsor
Project Sponsor Organization
RGGI COATS General Account Name
RGGI COATS General Account Number

Each of the following forms (except Form 2.5, which is optional) must be submitted. Check theboxes below to indicate that the submitted *Consistency Application* includes each of the required forms:

- ☐ Form 1.2 – General Information
- ☐ Form 1.3 – Attestations
- ☐ Form 1.4 – Project Sponsor Agreement
- ☐ Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting
- ☐ Form 2.1 – Project Description
- ☐ Form 2.2 – Demonstration of Eligibility
- ☐ Form 2.3 – Baseline Modeling
- ☐ Form 2.4 – Monitoring and Verification Plan
- ☐ Form 2.5 – Reversal Risk Rating
- ☐ Form 3.1 – Independent Verifier Certification Statement and Report

Offset Project Name	Offset Project ID Code

Form 1.2 – General Information

Project Sponsor (RGGI COATS Authorized Account Representative)			
Telephone Number	Fax Number	Email Address	
Street Address			
City	State/Province	Postal Code	Country
RGGI COATS General Account Name			
RGGI COATS General Account Number			
Name of Offset Project		Application Date	
Summary Description of Offset Project			
Project City	Project County	Project State	Project Commencement Date
Project Sponsor Organization			
Primary Street Address			
City	State/Province	Postal Code	Country
Brief Description of Project Sponsor Organization			
Telephone Number		Website URL	
Independent Verifier (Company/Organization)		States Where Verifier Accredited	
Primary Street Address		Website URL	
City	State/Province	Postal Code	Country
Point of Contact for Projects			
Contact Telephone Number	Contact Fax Number	Contact Email Address	
Contact Street Address			
City	State/Province	Postal Code	Country

Offset Project Name	*Offset Project ID Code*

Form 1.3 – Attestations

The undersigned Project Sponsor certifies the truth of the following statements:

1. The offset project referenced in this *Consistency Application* is not required pursuant toany local, state, or federal law, regulation, or administrative or judicial order.
2. The offset project referenced in this *Consistency Application* has not and will not beawarded credits or allowances under any other greenhouse gas program.
3. The offset project referenced in this *Consistency Application* has not and will not receiveany funding or other incentives from the CO_2 Budget Trading Program auction proceeds.
4. A *Consistency Application* for the offset project or any portion of the offset project referenced in this *Consistency Application* has not been filed in any other participatingstate.
5. All offset projects for which the Project Sponsor or project sponsor organization has received CO_2 offset allowances, if any, under the Project Sponsor's or project sponsor organization's ownership or control (or under the ownership or control of any entity which controls, is controlled by, or has common control with the Project Sponsor or project sponsor organization) are in compliance with all applicable requirements of the CO_2 BudgetTrading Program in all participating states.
6. I am authorized to make this submission on behalf of the project sponsor organization. I certify under penalty of law that I have personally examined, and am familiar with, the statements and information submitted in this *Consistency Application* and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of myknowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment.

Project Sponsor Signature	Date
Printed Name	
Title	
Organization	Notary

Offset Project Name	*Offset Project ID Code*

Form 1.4 – Project Sponsor Agreement

The undersigned Project Sponsor recognizes and accepts that the application for, and the receipt of, CO_2 offset allowances under the CO_2 Budget Trading Program is predicated on the Project Sponsor following all the requirements of 25 Pa Code §§ 145.391—145.397. The undersigned Project Sponsor holds the legal rights to the offset project, or has been granted the right to act on behalf of a party that holds the legal rights to the offset project. The Project Sponsor understands that eligibility for the award of CO_2 offset allowances under 25 Pa Code §§ 145.391—145.397 is contingent on meeting the requirements of 25 Pa Code §§ 145.391—145.397. The Project Sponsor authorizes the Department or its agent to audit this offset project for purposes of verifying that the offset project, including the Monitoring and Verification Plan, has been implemented as described in this application. The Project Sponsor understands that this right to audit shall include the right to enter the physical location of the offset project. The Project Sponsor submits to the legal jurisdiction of the Commonwealth of Pennsylvania.

Project Sponsor Signature

Date

Printed Name

Title

Organization

Notary

Offset Project Name	*Offset Project ID Code*

Form 1.5 – Disclosure of Greenhouse Gas Emissions Data Reporting

Check the box below that applies:

☐ No greenhouse gas emissions data related to the offset project referenced in this *Consistency Application* have been or will be reported to a voluntary or mandatory programother than the CO_2 Budget Trading Program.

☐ Greenhouse gas emissions data related to the offset project referenced in this *ConsistencyApplication* have been or will be reported to a voluntary or mandatory program other than the CO_2 Budget Trading Program. Information for all such programs to which greenhouse gas emissions data have been or will be reported is provided below.

Name of Program to which GHG Emissions Data Reported	
Check all that apply.	
☐ Reporting is currently ongoing	*Enter Frequency of Reporting*
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	*Enter Reporting Start Date*
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	*Program Website*
Categories of Emissions Data Reported	
Name of Program to which GHG Emissions Data Reported	
Check all that apply:	
☐ Reporting is currently ongoing	*Enter Frequency of Reporting*
☐ Reporting was conducted in the past	
☐ Reporting will be conducted in the future	*Enter Reporting Start Date*
☐ Reporting is mandatory	
☐ Reporting is voluntary	
Program Contact Information – Address	*Program Website*
Categories of Emissions Data Reported	

Add extra pages as needed.

Part 2. Category-Specific Information and Documentation Forms

The five (5) forms in Part 2 of the Consistency Application address category-specific requirements and documentation for U.S. Forest offset projects. Instructions for the Part 2 formsare provided below.

Form 2.1 Project Description

Attach a detailed narrative of the actions to be taken as part of the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and includes the offset project name and offset project ID code. Check the boxes in Form 2.1 to indicate that thenarrative includes the required components. The narrative must include the following information:

1. Land Owners. Identify the owner(s) of the land within the offset project boundary. Attach a copy of the deed or title filed with the state or local registrar of deeds. State whether the landowner(s) leased subsurface or surface rights to other parties. Provide a table that includes each owner's name, status (individual, corporation, LLC, partnership, LLP, trust, foundation, cooperative, government entity), ownership share, and expected role (Project Sponsor must be identified), if any, in the management of the offset project. The table should beformatted in a manner consistent with the example below and include a row for each distinct land owner:

Names of Fee Title	*Status*	*Percent Ownership*	*Role in Offset Project*

2. Project Area. Identify whether the offset project will take place on private or public lands. Confirm whether the project is located on land that is either owned by, or subject toan ownership or possessory interest of a Tribe, "Indian lands" of a Tribe, as defined by 25 U.S.C. §81(a)(1), or owned by any person, entity, or Tribe, within the external borders of such Indian lands. If the project is located on land that meets any of these criteria, the project must obtain a waiver of sovereign immunity between the tribe and the Participating State. Provide thelongitude and latitude of the project, as well as total project area acreage.

3. Conservation Easement. Attach a copy of any conservation easements or otherlegal encumbrances (either an executed copy or a copy of the to-be-executed easement) encumbering the project boundary.

4. Identify the Assessment Area(s). Provide a table that lists each of the Supersectionsand Assessment Areas associated with the Project Area. The table should include a row for each Assessment Area and be formatted in a manner consistent with the example below:

Super Section	*Assessment Area*	*Acreage*

Form 2.2 Demonstration of Eligibility

Attach documentation to Form 2.2 to demonstrate offset project eligibility. Each attachment must include a header that indicates it is an attachment to Form 2.2 and includesthe offset project name and offset project ID code.

The following documentation must be provided:

1. Reforestation Land Eligibility. Select which scenario the Project Area land fits underto demonstrate eligibility as a reforestation project, and explain how the land meets either scenario:
   - Less than 10 percent tree canopy cover for a minimum of 10 years
   - Subject to a Significant Disturbance that has removed at least 20 percent of theland's above-ground live biomass

2. Reforestation Project Eligibility. Indicate the appropriate "Scenario Number" from Appendix E of the RGGI U.S. Forest Protocol that accurately reflects the Project conditions.

3. Project Commencement. Identify the Project Commencement Date, as well as the action being used to demonstrate the offset project commencement date per Section 3.2 of the RGGI U.S. Forest Protocol.

4. Demonstration of Natural Forest Management. Describe how the project will meet the definition of Natural Forest Management according to Table 3.2 of the RGGI U.S. Forest Protocol. In order to meet the definition of Natural Forest Management, describe how the projectwill meet each of the following requirements:

   - Native Species: Describe what percentage of the standing live carbon pool will be comprised of native species. The project must consist of at least 95% native species,or must demonstrate that management practices will lead to this goal being met overthe project life. Reforestation projects are initially assessed using estimates of stemsper acre.
   - Species Diversity: Describe the percentage each distinct tree species comprises of total basal area. No single species may exceed the maximum percentage shown in the Assessment Area Data File under the "Species Diversity Index" column. If any single species exceeds this percentage, describe how the project will demonstrate atrend towards achieving the Species Diversity Index within the project life.
   - Sustainable Management: Indicate which of the following options the project will useto meet the sustainable management requirement, as applied to all forest landholdings owned or controlled by the Forest Owner.
     - No commercial harvesting is taking place within the Project Area.
     - Third party certification of sustainable management via Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), or TreeFarm System.
     - Adherence to a renewable long-term management plan demonstrating sustainable harvest levels sanctioned and monitored by a state or federalagency.
     - Employment of uneven-aged silvicultural practices and canopy cover retention averaging at least 40% across forest landholdings, as measuredon any 20 acres within the entire forestland owned or controlled by the Forest Owner.
   - Structural Elements: Describe how the project will ensure that standing and lying dead wood is retained according to the requirements of Table 3.2 of the RGGI U.S.Forest Protocol for the duration of the project life.
   - Legal Requirement: Indicate whether the project is being implemented as result ofany law, statute, regulation, court order, or other legally binding mandate. If so, explain.
   - Broadcast Fertilization: Indicate whether the project will employ broadcastfertilization.

Form 2.3 Baseline Modeling

Provide documentation of the sequestration baseline where indicated in Form 2.3 or as an attachment to Form 2.3, as directed below. Each attachment must include a header that indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code. Multiple attachments may be integrated into a single document, as appropriate, as longas each element is clearly identified, as specified below. For submission of the electronic version of the *Consistency Application*, spreadsheets must be provided as a distinct electronic file or files (distinct spreadsheets may be incorporated into a single spreadsheet file, as appropriate, as long as each element is clearly identified, as specified below). Check the boxes in Form 2.3 to indicate that required documentation is attached and includes the required components.

The following documentation must be provided:

1. Modeling Plan. Describe the project's modeling plan according to Appendix B, Section B. 3 of the RGGI U.S. Forest Protocol. Indicate which approved growth model will be used for the project. For Reforestation Projects, this may be deferred until the second requiredverification.

2. Qualitative Description. Provide a qualitative characterization of the Project baseline conditions. In this description, provide a description of the likely natural vegetationconditions or regeneration activities that would have occurred in the absence of the project,taking into consideration all legal mandates that would promote reforestation on the Project Area.

Form 2.4 Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as multiple attachments to Form 2.4. Each attachment must include a header that indicates it is an attachment to Form 2.4and includes the offset project name and offset project ID code. Multiple attachments may be integrated into a single document as long as each element is clearly identified, as specified below. Check the appropriate boxes in Form 2.4 to indicate that required documentation is attached to the form.

The M&V Plan must include the following:

1. Designation of Inventory Methodology. Describe the inventory design, detailing theyear of the inventory and how the sampling plots were selected. If the project is stratified, include the stratification rules, attach a map of vegetation strata, and describe the results of stratification (area by strata) and the tools for application (GIS, aerial photos, etc.).

2. Identification of Sampling Plots. Attach a map depicting the project boundary and the locations of the sampling plots as well as a list of the number, sizes, and coordinates of theplots. The attachment must include recent photos of the plots, and distinct plot identifiers to provide for verification of reported sequestered carbon by an independent verifier or the Department.

3. Documentation of Field Measurements. Attach a list that documents all field procedures that will be/were used to take measurements and monument the sampling plots.

4. Documentation of the Modeling Plan. Attach the project modeling plan that was used to update the inventory and describe the approved model. The modeling plan must containall of the elements specified in Appendix B.3 of the RGGI U.S. Forest Protocol

5. Assessment of Forest Management Practices if Commercial Timber Harvest Activities Have Occurred. If commercial timber harvest activities are anticipated to occur, attachthe assessment or certification issued by the American Tree Farm System (ATFS), Forest Stewardship Council (FSC), Sustainable Forestry Institute (SFI), or other similar organizations as approved by the Department ensuring that the land within the offset project boundary is being managed in accordance with environmentally sustainable forestry practices. Ifthe certification has not been provided yet, state that the certification will be completed prior to the completion of the first reporting period. If no commercial harvesting activities are anticipated to take place, state as such.

6. Documentation of Quality Assurance Procedures Conducted. Document the qualityassurance procedures for the project that will ensure accuracy in data collection, data analysis, and data storage.

Form 2.5 Reversal Risk Rating

Provide the Reversal Risk Rating calculation in a table formatted in a manner consistentwith the table below:

Risk Category	Forest Projects not on publiclands or without a Qualified Conservation Easement	Forest Project on public lands orwith a Qualified Conservation Easement
Financial Risk	5% (Default Value)	1% (Default Value)
Illegal Forest Biomass Removal	0% (Default Value)	0% (Default Value)
Conversion	2% (Default Value)	0% (Default Value)
Over-harvesting	2% (Default Value)	0% (Default Value)
Social	2% (Default Value)	2% (Default Value)
Wildfire	% (Must be supported per Appendix D Table D.7) or 4% (Default Value)	% (Must besupported per Appendix D Table D.7) or 4% (Default Value)
Disease or Insect Outbreak	3% (Default Value)	3% (Default Value)
Other CatastrophicEvents	3% (Default Value)	3% (Default Value)

Include the overall calculation of the Reversal Risk Rating according to the calculationformula displayed in Appendix D:

Reversal Risk Rating = 100% - ((1-Financial Risk %) x (1-Illegal Forest Biomass Removal %) x(1 – Conversion %) x (1-Over-harvesting %) x (1-Social Risk %) x (1-Wildfire %) x (1- Disease/Insect Outbreak %) x (1-Other Catastrophic Events %))

Offset Project Name	*Offset Project ID Code*

Form 2.1 – Project Description

Attach a detailed narrative of the actions to be taken as part of the offset project. The attached narrative must include a header that indicates it is an attachment to Form 2.1 and identifies theoffset project name and offset project ID code.

Check the boxes below to indicate that the detailed narrative of the offset project includes thefollowing required information:

☐ 1. Land Owners. Table identifying the owner(s) of the land within the offset project boundary and copy of deed or title filed with state or local registrar of deeds; statementidentifying whether subsurface or surface rights leased to other parties

☐ 2. Project Area. Documentation describing whether project is on private or public lands,and whether the project is located on tribal lands.

☐ 3. Conservation Easement. Copy of conservation easement (executed or to-be-executedcopy) or any other legal encumbrances affecting the Project

☐ 4. Assessment Area. Table listing Project Assessment Area(s) by acreage

Offset Project Name	*Offset Project ID Code*

Form 2.2 – Demonstration of Eligibility

Attach documentation to demonstrate offset project eligibility. Each attachment must include aheader that indicates it is an attachment to Form 2.2 and includes the offset project name andoffset project ID code.

Check the boxes below to indicate that the following required documentation is attached:

☐ 1. Reforestation Land Eligibility. Select which scenario the Project fits under, and explainhow the Project meets the selected scenario.

- ☐ Less than 10 percent tree canopy cover for a minimum of 10 years
- ☐ Subject to a Significant Disturbance that has removed at least 20 percent of theland's above-ground live biomass

☐ 2. Project Commencement. Identify project commencement date and providedocumentation as evidence of action identifying the commencement date.

☐ 3. Natural Forest Management. Describe how the project will meet the Natural ForestManagement requirements.

- ☐ Native Species
- ☐ Species Diversity
- ☐ Sustainable Management
- ☐ Structural Elements

☐ 4. Legal Requirement. Describe the legal framework of the project (federal, state, localregulations) and explain why this project is not legally required.

☐ 5. Broadcast Fertilization. Confirm that the project does not and will not use broadcastfertilization.

Offset Project Name	*Offset Project ID Code*

Form 2.3 – Baseline Modeling

Attach documentation to demonstrate the baseline modeling methodology and preliminary data.Each attachment must include a header that indicates it is an attachment to Form 2.3 and includes the offset project name and offset project ID code. Multiple attachments may be integrated into a single document, as appropriate, as long as each element is clearly identified, as specified below.

Check the boxes below to indicate that the following required documentation is attached:

☐ 1. Modeling Plan. Identify the approved forest growth model being used for the project.Describe the modeling plan in accordance with Appendix B of the RGGI U.S. ForestProtocol.

☐ 2. Qualitative Description. Provide a qualitative characterization of the baseline conditions.

Offset Project Name	*Offset Project ID Code*

Form 2.4 – Monitoring and Verification Plan

Provide the Monitoring and Verification Plan (M&V Plan) as multiple attachments. Each attachment must include a header that indicates it is an attachment to Form 2.4 and includes the offset project name and offset project ID code. Multiple attachments may be integrated intoa single document as long as each element is clearly identified, as specified below.

Check the boxes below to indicate that the following required components of the M&V Plan areattached:

☐ 1. Documentation of Project Inventory. Description of the inventory design and plot selection process. List of stratification rules, map of vegetation strata, and description of vegetation strata, if applicable.

☐ 2. Identification of Sampling Plots. Map of sampling plots and list of number, sizes, and locations of all sampling plots used for developing the project inventory, including recentphotos and distinct sampling plot identifiers.

☐ 3. Documentation of Field Measurements. List all field procedures used to takemeasurements and monument the sampling plots.

☐ 4. Documentation of the Modeling Plan. Description of approved model and the modelingplan used to update the project inventory.

☐ 5. Assessment of Forest Management Practices if Commercial Timber Harvest Activities Have Occurred. If applicable, the assessment or certification issued by American Tree Farm System (ATFS), Forest Stewardship Council (FSC), Sustainable Forestry Institute(SFI), or such other similar organizations as approved by the Department ensuring that the land within the offset project boundary is being managed in accordance with environmentally sustainable forestry practices.

☐ 6. Documentation of Quality Assurance Procedures Conducted. Documentation of qualityassurance procedures conducted during the reporting period to ensure accuracy in datacollection, data analysis, and data storage.

Offset Project Name	*Offset Project ID Code*

Form 2.5 – Reversal Risk Rating

Submit Form 2.5 detailing the calculation of the project's Reversal Risk Rating according to Appendix D of the RGGI U.S. Forest Protocol.

Check the boxes below to indicate that the following required components of the M&V Plan are attached:

☐ 1. Reversal Risk Rating Table. Provide the table identifying the reversal risk rating foreach risk category.

☐ 2. Reversal Risk Rating Calculation. Show the Reversal Risk Rating calculation inaccordance with the formula in Appendix D.

Part 3. Independent Verification Form

The form in Part 3 of the *Consistency Application* addresses the requirements and documentation related to the independent verifier certification statement and report. Instructionsfor the form in Part 3 are provided below.

Form 3.1 Independent Verifier Certification Statement and Report

An accredited independent verifier must sign and date the form. Submit the originally signed form as part of the paper hardcopy of the *Consistency Application.* Scan the signed anddated form for submission as part of the electronic version of the *Consistency Application.*

Provide the independent verifier report as an attachment to Form 3.1. The verifier reportmust include a header that indicates it is an attachment to Form 3.1 and includes the offset project name and offset project ID code.

The verifier report must document the following:

1. The verifier has reviewed the entire *Consistency Application* and evaluated thecontents of the application in relation to the applicable requirements of 25 Pa Code §§ 145.391—145.397.

2. The verifier has evaluated the adequacy and validity of information supplied by the Project Sponsor to demonstrate that the offset project meets the applicable eligibilityrequirements of 25 Pa Code § 145.393, § 145.394 and § 145.395.

3. The verifier has evaluated the adequacy and validity of information supplied by theProject Sponsor to demonstrate baseline CO_2-equivalent sequestration, pursuant to the applicable requirements of 25 Pa. Code § 145.395.

4. The verifier has evaluated the adequacy of the monitoring and verification plansubmitted pursuant to 25 Pa. Code § 145.395.

The verifier report must include the following contents, in the order listed below:

- Cover page with report title and date
- Table of contents
- List of acronyms and abbreviations
- Executive summary
- Description of objective of report
- Identification of the client, including name, address, and other contact information
- Identification of the offset project
- Description of evaluation criteria (applicable regulatory provisions and documentationrequirements specified in *Consistency Application*)
- Description of the review and evaluation process, including any site visits andinterviews
- Identification of individuals performing the verification work, including the verificationteam leader and key personnel, and contact information for the team leader
- Description of the materials provided to the verifier by the Project Sponsor
- Evaluation conclusions and findings, including level of assurance provided

Offset Project Name	*Offset Project ID Code*

Form 3.1 – Independent Verifier Certification Statement and Report

An accredited independent verifier must sign and date Form 3.1. Attach the accredited independent verifier report. The attached verifier report must include a header that indicates it is an attachment to Form 3.1 and includes the offset project name and offset project ID code

Name of Accredited Independent Verifier

I certify that the accredited independent verifier identified above reviewed the *ConsistencyApplication*, including all forms and attachments, in its entirety, including a review of the following:

(a) The adequacy and validity of information supplied by the Project Sponsor to demonstratethat the offset project meets the applicable eligibility requirements of 25 Pa Code § 145.393, § 145.394 and § 145.395, including the required documentation that must be provided in the *Consistency Application*.

(b) The adequacy and validity of information supplied by the Project Sponsor to demonstratebaseline CO_2-equivalent sequestration, pursuant to the applicable requirements of 25 Pa Code § 145.393, § 145.394 and § 145.395, including the required documentation that must be provided in the *Consistency Application*.

A verification report is attached that documents the verifier's review of the items listed aboveand includes evaluation conclusions and findings.

Verifier Representative Signature

Date

Printed Name

Title

Notary

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

Pennsylvania CO_2 Budget Trading Program
Offset Verifier Accreditation Application

Contents

1. Overview

An organization that intends to provide verification services for an offset Project Sponsor under the Pennsylvania CO_2 Budget Trading Program must be accredited by the Department of Environmental Protection (Department). To apply for accreditation, a prospective verifier must submit to the Department in accordance with these instructions a fully completed *Application for Accreditation Version 1.1* ("Accreditation Application"), including all forms and required attachments. Following these instructions will ensure that the Accreditation Application contains all necessary information and is submitted properly.

Each prospective verifier should review the CO_2 Budget Trading Program regulations at 25 Pa. Code §§ 145.391—145.397 that address offset projects, offset project verification, and the award of CO_2 offset allowances. Prospective verifiers should also review the offset application and submittal materials for the offset categories for which they seek to provide verification services. All offset application and submittal materials are available at www.dep.pa.gov/RGGI.

2. Submission Instructions

Submit one (1) complete hardcopy original *Accreditation Application* and one (1) electronic copy in the form of a CD disk to the Department at the location specified below. Submit hardcopies of forms requiring signatures as originally-signed copies and scan such signed forms for electronic submission. Facsimiles of the *Accreditation Application* are not acceptable under any circumstances.

Pennsylvania Department of Environmental Protection
c/o Bureau of Air Quality
Rachel Carson State Office Building, P.O. Box 8468
Harrisburg, PA 17105-8468

The *Accreditation Application* has been created as a PDF document with editable fields. Enter information directly in the fields provided in the forms or submit an attachment with the information or documentation requested, as instructed. Include headers on all attachments indicating the form to which each is attached.

The applicant should save an electronic copy of the *Accreditation Application* for its file to serveas a reference for any necessary application remediation or updates.

3. Accreditation Application Forms

The Accreditation Application includes seven (7) forms:

- Form 1 – Contact Information
- Form 2 – Offset Categories
- Form 3 – Documentation of ANSI ISO14065 Accreditation
- Form 4 – Verification Team
- Form 5 – Work Product Sample
- Form 6 – Documentation of Professional Liability Insurance
- Form 7 – Attestations

Form 1: Contact Information

Name of Applicant (Organization):	
Point-of-Contact:	
Mailing Address:	
Telephone Number:	
Fax Number:	
E-mail:	
Describe the nature of the Applicant's core business or organization. Additionally, describe the structure of the Applicant's organization, including whether the entity is a sole proprietorship, partnership, limited partnership, limited liability company (LLC), limited liability partnership (LLP), corporation (for-profit), nonprofit corporation (not-for-profit), or cooperative. If a field below is not applicable or is unanswerable, respond with "NA".	
Describe the Nature of the Applicant's Core Business or Organization and Organizational Structure:	
Place of Incorporation:	
Federal Tax Identification Number:	
Dun & Bradstreet or DUNS Number:	
Year Founded:	
Website URL:	

Form 2: Offset Categories

Identify the offset project categories for which the Applicant seeks accreditation by checking theappropriate box(es) below.

Offset Project Category	Accreditation Sought
Landfill methane capture and destruction	☐
Sequestration of carbon due to afforestation	☐
Sequestration of carbon due to improved forest management,reforestation, and/or avoided conversion	☐
Avoided methane emissions from agriculture manure management operations	☐

Form 3: Documentation of ANSI ISO 14065 Accreditation

Provide the following details of the Applicant's ANSI ISO 14065 accreditation in the fields below.Attach a copy of the certificate of accreditation. The attachment must include a header that identifies it as an attachment to Form 3.

ANSI Accreditation No.:	
Date of Initial Accreditation:	
Accreditation Valid Until:	
Scope of ANSI Accreditation:	
Has the Applicant's ANSI accreditation ever been suspended or withdrawn? If yes, please describe the grounds for suspension/withdrawal and the measures taken to become reaccredited:	

Form 4: Verification Team

In the fields below, identify the Offset Project Category, Verification Team Leader(s), and Key Personnel that will provide verification services (add additional pages as required). In the organizational affiliation column, indicate the organization that employs the individual. If accreditation is being sought for more than one offset project category, provide a separate Form4 for each offset project category for which accreditation is being sought.

Offset Project Category		
Verification Team		
Role	**Name**	**Organizational Affiliation**
Verification Team Leader:		
Verification Team Leader:		
Key Personnel:		
Key Personnel:		
Key Personnel:		
Key Personnel:		
Key Personnel:		

Provide as an attachment detailed resumes for all Verification Team Leaders(s) and Key Personnel. Resumes should include identification of any audit certification or registration programs under which the individual is accredited or certified, such as Professional Foresterstatus.

If any of the individuals listed above are not employees of the Applicant, attach a signed copy ofthe contract or engagement letter between the individual and the Applicant.

Each attachment must include a header that identifies it as an attachment to Form 4.

Form 5: Work Product Sample

Attach a sample of at least one relevant work product produced in whole or part by the Applicant. The sample must consist of a final report or other material provided to a client under contract. The sample work product submitted shall not contain any proprietary information. If the original work product contained proprietary information, the work sample may be submitted, provided proprietary information is redacted from the document. The attachment must include aheader that identifies it as an attachment to Form 5.

Provide a description of the attached work sample(s) in the space provided below. If the workproduct was jointly produced by the Applicant and another entity, include in the description an explanation of the role of the Applicant in producing the work product.

Form 6: Documentation of Professional Liability Insurance

Provide documentation in the fields below of professional liability insurance held by the Applicant in an amount not less than one million U.S. dollars. Attach a copy of the insurance certificate and other documentation as may be required to document the relationship between arelated entity that holds the insurance and the Applicant. The attachment(s) must include a header that identifies it as an attachment to Form 6.

Name of Insurer:	
Policy Number:	
Amount of Coverage (US$):	
Policy Expiry Date:	
Deductibles (if any):	
Exclusions (if any):	
Name of the entity under which the insurance is held:	
If the insurance coverage isheld under the name of a related entity, describe the financial relationship between the Applicant and the related entity and attach supporting documentation:	

Form 7: Attestations

The following attestations must be made.

The undersigned Applicant acknowledges and will comply with and be bound by the following:

1. The undersigned Applicant shall provide any verification services to offset Project Sponsors in accordance with 25 Pa. Code §§ 145.391—145.397.
2. The undersigned Applicant shall use suitably qualified personnel and devote and employsufficient resources and labor to ensure that high-quality verification services are provided.
3. The undersigned Applicant shall ensure that for any verification services undertaken bythe Applicant:
   (a) a Verification Team Leader identified in the *Accreditation Application* directs, supervises, and leads the undertaking of those services and signs all written reportsor opinions to be provided by the accredited verifier;
   (b) verification services are undertaken by a Team Leader and Key Personnel identifiedin the application for accreditation; and
   (c) any other staff, employees, or contractors used by the accredited verifier inconnection with verification services:
      (i) are used only to assist any Verification Team Leader and KeyPersonnel identified in the *Accreditation Application*; and
      (ii) shall work under the direct control, supervision, and direction of a VerificationTeam Leader and Key Personnel identified in the *Accreditation Application.*
4 The undersigned Applicant shall ensure that each Verification Team Leader and Key Personnel identified in the *Accreditation Application* maintain the qualifications identified in the *Accreditation Application*, including any identified qualifications, licenses,and certifications.
5. The undersigned Applicant shall ensure that each Verification Team Leader and Key Personnel identified in the *Accreditation Application* undertake and complete any trainingas may be required by the Department to demonstrate competence in the provision of verification services for individual offset categories specified at 25 Pa. Code § 145.396(a)(1).
6. The undersigned Applicant acknowledges that the Department or its agent may conduct a performance review of an accredited verifier to evaluate whether the accredited verifier remains qualified and is providing verification services in accordance with the requirements of 25 Pa. Code §§ 145.391—145.397. As part of a performance review, the Applicant will provide access to any reports, documents, or other information related to the provision of verification services by the Applicant pursuant to 25 Pa. Code §§ 145.391—145.397 required by the Department or its agent.
7. The undersigned Applicant acknowledges that prior to engaging in verification services for an offset Project Sponsor, the Applicant shall disclose all relevant information to the Department to allow for an evaluation of potential conflict of interest with respect to an offset project, offset project developer, offset Project Sponsor or project sponsor organization, or any other party with a direct or indirect financial interest in an offset project that is seeking or has been granted approval of a Consistency Application under a state CO_2 Budget Trading Program, including information concerning the Applicant's ownership, past and current clients, related entities, as well as any other facts or circumstances that have the potential to create a conflict of interest.
8. The undersigned Applicant acknowledges that it shall have an ongoing obligation to disclose to the Department any facts or circumstances that may give rise to aconflict of interest with respect to an offset project, offset project developer, offset Project Sponsor or project sponsor organization, or any other party with a direct or indirect financial interest in an offset project.
9. The undersigned Applicant acknowledges that it shall have an ongoing obligation to maintain one million U.S. dollars of professional liability insurance throughout the periodfor which it is accredited.

10. The undersigned Applicant acknowledges that the Department may revoke the accreditation of a verifier at any time, for any of the following:

(a) failure to fully disclose any issues that may lead to a conflict of interest situation with respect to an offset project, offset project developer, or offset Project Sponsor;

(b) the verifier is no longer qualified due to changes in staffing or other criteria;

(c) negligence or neglect of responsibilities pursuant to the requirements of 25 Pa. Code §§ 145.391—145.397 and

(d) intentional misrepresentation of data or other intentional fraud.

I certify that the undersigned is authorized to make these attestations on behalf of the Applicant.I certify that I have personally examined, and am familiar with, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that the statements and information are to the best of my knowledge and belief true, accurate, and complete.

_____ _____

Signature of Authorized Representative Date

_____

Name in Print

_____

Title

Sworn and subscribed before me on this _____ day of _____, 20_____

_____

Notary

REGIONAL GREENHOUSE GAS INITIATIVE (RGGI) ENROLLMENT - CO2 AUCTION 52- CURRENT CONTROL PERIOD

GENERAL INFO & AUTHORIZED AUCTION REP(S)

Applicant Name *

Street Address * City *

Country / Region * State / Province * Postal Code *

Applicant Category *

- ○ Individual
- ◉ Other Corporate Entity

Describe the Nature of the Applicant's Core Business or Organization *

Place of Incorporation (City, State, Country) * Federal Tax ID * DUNS # *

Years In Business * Web Site

See the most recent auction notice section titled 'Authorized Auction Representative' for more information.

Primary Authorized Auction Representative

First Name * Last Name * Title *

Office Phone (Primary) * Mobile Phone (Secondary)

Fax

Company *

Email Address *

Street Address * | City * | Country / Region *

State / Province * | Postal Code *

Is there a Secondary Authorized Auction Representative? *

(•) Yes ( ) No

Secondary Authorized Auction Representative

First Name * | Last Name * | Title *

Office Phone (Primary) * | Mobile Phone (Secondary) | Fax

Company * | Email Address *

Street Address * | City * | Country / Region *

State / Province * | Postal Code *

☑ I authorize the Secondary Authorized Auction Representative to act on behalf of the Applicant in the remediation of the Qualification Application and/or Intent to Bid. *

COATS ACCOUNT VALIDATION

Information regarding the applicant's RGGI CO2 Allowance Tracking System (RGGI COATS) account must be provided. This is the account into which all awarded CO2 allowances will be deposited.

RGGI COATS Account Number *

CORPORATE ASSOCIATIONS

See the most recent auction notice sections titled Identifying Direct and Indirect Corporate Associations and Use of Direct and Indirect Corporate Associations for more information.

Does the Applicant have a direct or indirect Corporate Association with another applicant? *

(●) Yes ( ) No

An affirmative answer to this statement requires disclosure of the direct or indirect Corporate Association(s) below.

Name of Applicant *	Bid Limitation (%) *	
		(cannot exceed 25%)

Name of Associated Applicant *	Bid Limitation (%) *	The Type of Association (i.e. Direct or Indirect) and a Brief Description of the Association *
	Total = 0%	

BIDDING ASSOCIATIONS

The information in each Applicant's Qualification Application will be used to limit the quantity of CO2 allowances bid by each party in the Bidding Association. See the most recent auction notice sections titled "Identifying Bidding Associations" and "Use of Bidding Associations" for more information and examples.

Does the Applicant have or expect to have a Bidding Association with another party? *

(•) Yes ( ) No

An affirmative answer to this statement requires disclosure of the bidding association(s) below.

Does the Bidding Association involve bidding on a specific quantity of CO2 allowances? *

( ) Yes (•) No

Bidding Associations Not Involving a Specific Quantity of CO2 Allowances

Name of Applicant *	Bid Limitation (%) *	
		(cannot exceed 25%)

Name of Other Party *	Bid Limitation (%) *	The Type of Bidding Association and a brief Description of the association (Reference Notice Section 7.2.3.3 a-d) *

Total = 0%

ATTESTATIONS & SIGNATURE

The following attestations must be made.

The applicant must answer yes or no for attestations 1-5. If the Applicant answers affirmatively to any of attestations 1-5, an explanation must be provided. An affirmative answer to any of these attestations does not automatically disqualift the Applicant. The explanation provided will be used to inform the decision regarding the applicant's qualification status. Include additional pages if necessary.

1. Has the Applicant, or any of its corporate officers, directors, principals, members (if the applicant is a LLC or LLP), or partners been indicted for a felony, in any federal or state jurisdiction, within the five (5) years up to and including the date of this Qualification Application? *

○ Yes ◉ No

2. Has the Applicant, or any of its corporate officers, directors, principals, members (if the applicant is a LLC or LLP), or partners of the applicant been convicted of a felony, within the five (5) years preceding the date of this Qualification Application? *

○ Yes ◉ No

3. Has the Applicant been subject to any civil penalties, judgements, sanctions, or consent decrees arising out of the violation of any law, rule, regulation, or ordinance in connection with any commodity market or exchange, or by the Securities and Exchange Commission or Commodity Futures Trading Commission? *

○ Yes ◉ No

4. Has the Applicant had any permit or authority to do business in any jurisdiction revoked or suspended? *

○ Yes ◉ No

5. Has the Applicant been found to be non-responsible with regard to any federal, state, or local procurement, barred from public bidding or sanctioned for unauthorized disclusure of confidential information? *

○ Yes ◉ No

All the information provided in this Qualification Application is accurate, true, and not misleading.

The Primary Authorized Auction Representative designated on Form 2 is authorized to represent the Applicant in all matters regarding CO2 Allowance Auctions.

The Secondary Authorized Auction Representative designated on Form 2 is authorized to (1) submit bids on behalf of the Applicant in any CO2 Allowance Auction; (2) submit an Intent to Bid on behalf of the Applicant for any CO2 Allowance Auction; and (3) act on behalf of the Applicant in the remediation of the Qualification Application and/or any Intent to Bid.

The Applicant will be responsible for all confidential information regarding the CO2 Allowance Auctions and will not publicly

release confidential information, to the extent permitted by applicable state law.

The Applicant, individually or in combination with any applicant with which the Applicant has a corporate or bidding association, will not seek to bid in aggregate more than 25% of the CO2 allowances offered for sale in any single auction.

The Applicant, if not a compliance entity required by the laws or rules of one of the RGGI participating states to hold CO2 allowances equal to emissions, hereby attests and agrees that with respect to the applicant's purchase, sale, holding or transfer of any CO2 allowance, the Applicant shall be subject to the personal jurisdiction and venue of courts of any of the RGGI participating states for adjudication of claims relating to fraudulent, misleading, manipulative, collusive or noncompetitive behavior arising out of such purchase, sale, holding, or transfer.

Any fraudulent, misleading, manipulative, collusive or noncompetitive behavior in a RGGI CO2 Allowance Auction or in the CO2 allowance market may be investigated and prosecuted in accordance with any and all applicable regulations and laws.

☑ I acknowledge and accept the above attestations. *

Signature *	Title *	Date *

Do you assert that the submitted information in this form is confidential? *

◉ Yes ○ No

INTENT TO BID & SIGNATURE

☑ The Applicant intends on participating in CO2 Auction 52-Current Control Period. *

A previously qualified applicant with a material change to the information previously submitted in its qualification application becomes a new applicant and must follow the requirements and procedures outlined in Auction Notice Section 2.2. Specific criteria outlining what constitutes a material change to previously submitted information in a qualification application are:

General Information: Any change constitutes a material change, except for "Street Address", "City", "State/Province" [first occurrence], "Postal Code", "Country", "Years in Business", and "URL for Applicant's Web Site".

Authorized Auction Representatives: Only a change to the Authorized Auction Representative(s) "First Name" and/or "Last Name" constitutes a material change.

COATS Account Validation: Any change constitutes a material change.

Corporate Associations: Any change constitutes a material change if a previously qualified applicant intends to participate in RGGI-Auction 52-Current Control Period.

Bidding Associations: Any change constitutes a material change if a previously qualified applicant intends to participate in RGGI-Auction 52-Current Control Period.

Attestations: Any change constitutes a material change.

For any non-material change(s), provide it in writing to the Auction Manager via email at auctionmanager.enelxnorthamerica@enel.com

Does the Applicant have a material change as defined above and will be submitting the Qualification Application? *

○ Yes ◉ No

Please indicate if the Applicant has a business relationship with the RGGI Auction Manager (Enel X) and/or the independent Market Monitor (Potomac Economics)

☐ Enel X North America, Inc. ☐ Potomac Economics

The following attestations must be made:

1. All the information provided herein is accurate, true, and not misleading.
2. The Applicant has read and understands the auction procedures and requirements as outlined in the Auction Notice.
3. The Applicant will comply with and be bound by the auction procedures and requirements as outlined in the Auction Notice.
4. The Applicant acknowledges that failure to comply with any of the auction procedures or requirements, as contained in the Auction Notice, may result in a procedure violation and barring from RGGI-Auction 52-Current Control Period and/or future CO Allowance Auctions.
5. The Applicant acknowledges that any fraudulent, misleading, manipulative, collusive or noncompetitive behavior in a RGGI CO Allowance Auction or in the CO allowance market may be investigated and prosecuted in accordance with any and all applicable regulations and laws.
6. The undersigned is authorized to make these attestations on behalf of the Applicant.

☑ I agree to the above terms *

Signature *	Title *	Date *

Do you assert that the submitted information in this form is confidential? *

◉ Yes ○ No

FINANCIAL SECURITY

In the field below indicate the amount of financial security provided with certified funds.

Total Financial Security Amount (USD) *

All unused cash balances will be returned to applicants via Automated Clearing House (ACH) credit. Information on where the cash will be sent must be provided below. Click here for instructions on submitting cash wires or making an optional cash settlement.

Security Type *	Account Name *	ABA Number *	Account Number *	Account Type *

BIDDER REGISTRATION

If you would like the opportunity to participate in future Enel X Energy Exchange procurement events please complete the form below.
Upon submission your information will be reviewed and a member of our Operations team will contact you.
If you have previously registered and forgot your password, please click here to retrieve your password.

Are you registering to participate in a Regional Greenhouse Gas Initiative (RGGI) CO_2 Allowance Auction? *

○ Yes ◉ No

Company Information

Legal Company Name *

Business Type *

Street Address *

City *

Country / Region *

United States

State / Province *

-- Select One --

Postal Code *

Annual Revenue *

Total Employees *

Years In Business *

Federal Tax ID *

DUNS # *

Web Site

https://

Primary Contact

First Name *

Last Name *

Title *

Office Phone (Primary) *

Mobile Phone (Secondary)

Fax

Email Address *

copy company address

Street Address *

City *

Country / Region *

United States

State / Province *

-- Select One --

Postal Code *

Accounting Contact

First Name * | Last Name * | Title *

Office Phone (Primary) * | Mobile Phone (Secondary) | Fax

Email Address *

copy company address

Street Address * | City * | Country / Region *

United States

State / Province * | Postal Code *

-- Select One --

Commodities

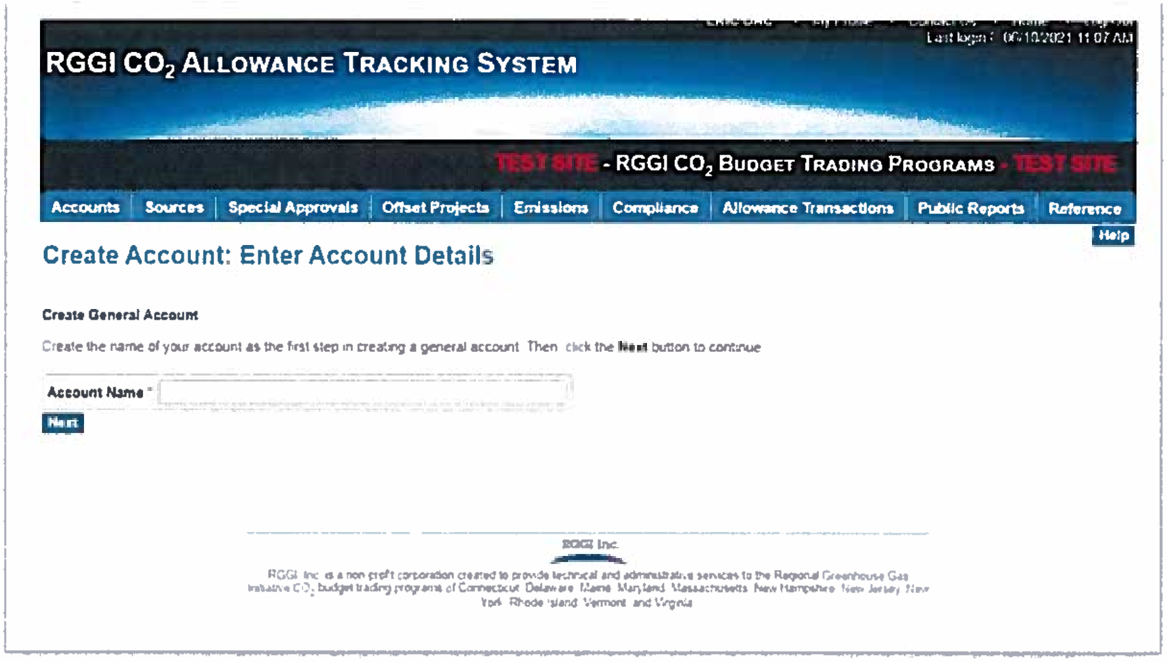
Please select all the commodities you supply:

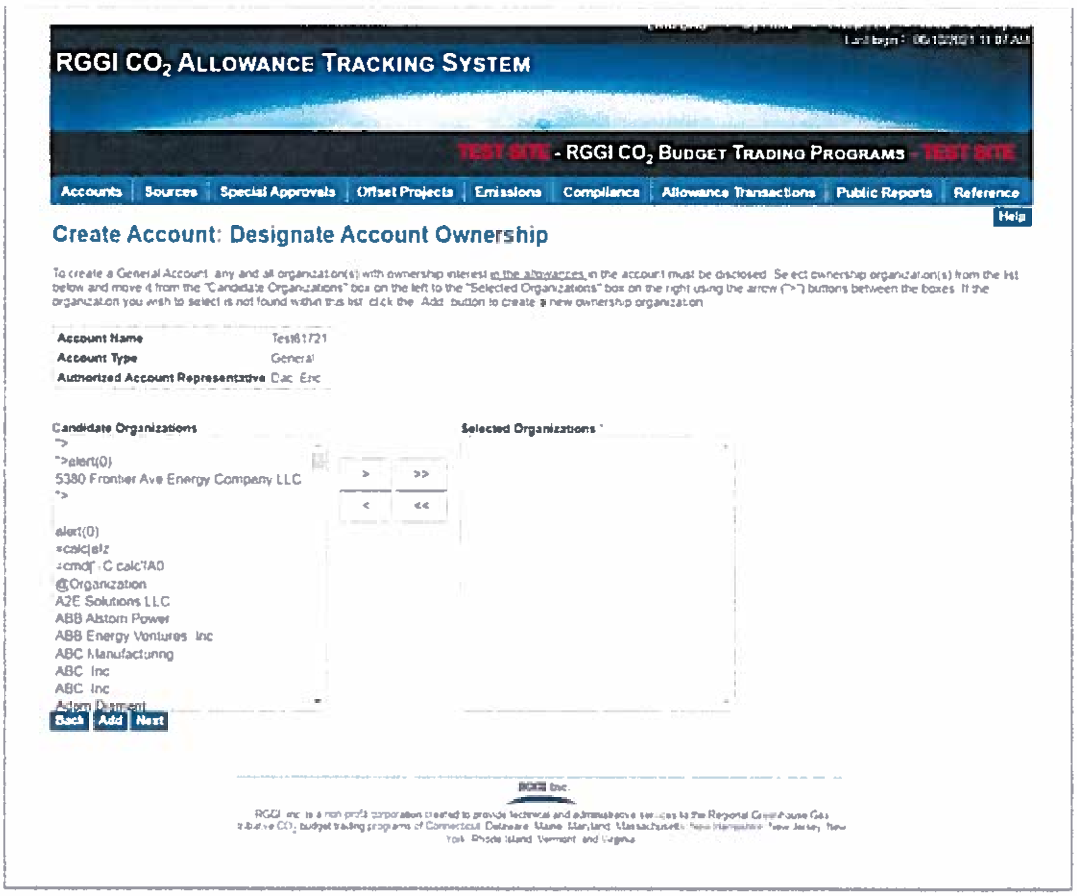
☐ Electricity ☐ Fuel ☐ Natural Gas

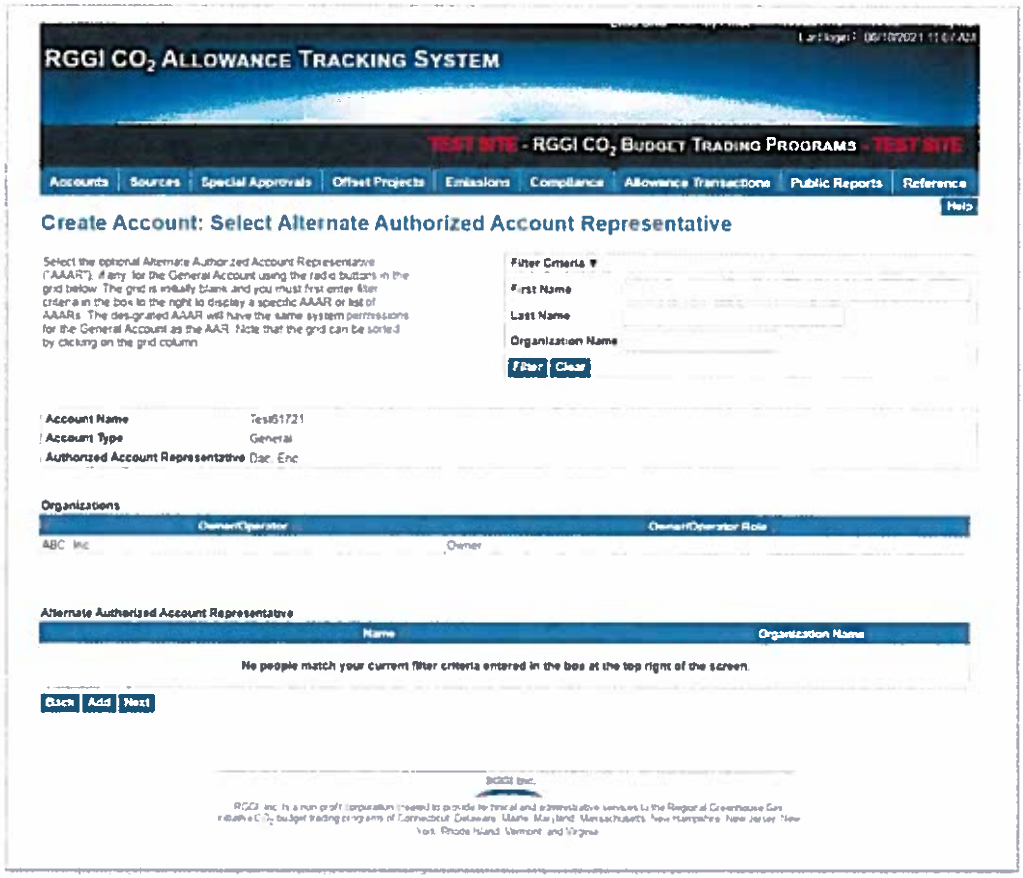
Comments

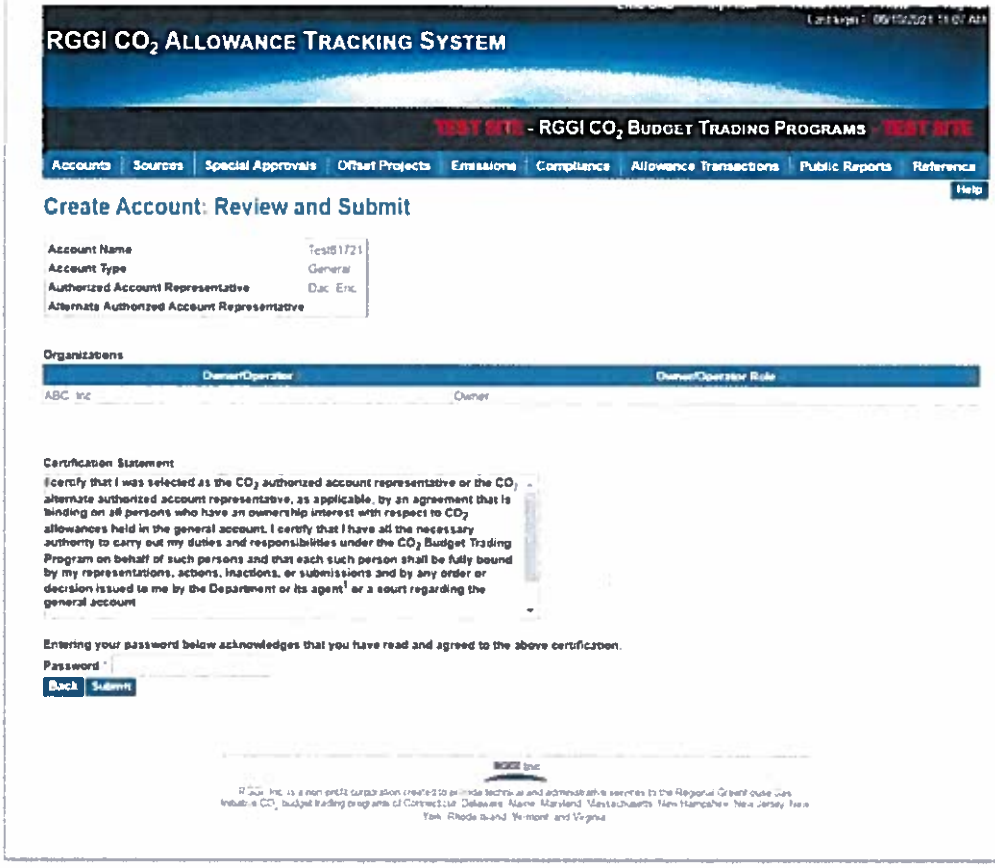
Please use the text area below to specify any additional comments you may have

Submit


RGGI CO2 ALLOWANCE TRACKING SYSTEM
TEST SITE - RGGI CO2 BUDGET TRADING PROGRAMS - TEST SITE
Accounts
Sources
Special Approvals
Offset Projects
Emissions
Compliance
Allowance Transactions
Public Reports
Reference
Help
Create Account: Enter Account Details
Create General Account
Create the name of your account as the first step in creating a general account. Then, click the Next button to continue.
Account Name *
Next
RGGI Inc.


RGGI CO2 ALLOWANCE TRACKING SYSTEM
TEST SITE - RGGI CO2 BUDGET TRADING PROGRAMS - TEST SITE
Accounts
Sources
Special Approvals
Offset Projects
Emissions
Compliance
Allowance Transactions
Public Reports
Reference
Help
Create Account: Designate Account Ownership
Account Name
Test61721
Account Type
General
Candidate Organizations
Selected Organizations *
5380 Frontier Ave Energy Company LLC
A2E Solutions LLC
ABB Alstom Power
ABB Energy Ventures, Inc
ABC Manufacturing
ABC, Inc
ABC, Inc
Back
Add
Next
RGGI Inc.


RGGI CO_2 ALLOWANCE TRACKING SYSTEM
TEST SITE - RGGI CO_2 BUDGET TRADING PROGRAMS - TEST SITE
Accounts | Sources | Special Approvals | Offset Projects | Emissions | Compliance | Allowance Transactions | Public Reports | Reference
Help
Create Account: Select Alternate Authorized Account Representative
Select the optional Alternate Authorized Account Representative ("AAAR"), if any, for the General Account using the radio buttons in the grid below. The grid is initially blank and you must first enter filter criteria in the box to the right to display a specific AAAR or list of AAARs. The designated AAAR will have the same system permissions for the General Account as the AAR. Note that the grid can be sorted by clicking on the grid column.
Filter Criteria
First Name
Last Name
Organization Name
Filter
Clear
Account Name Test61721
Account Type General
Authorized Account Representative Doc Enc
Organizations
Owner/Operator
Owner/Operator Role
ABC Inc
Owner
Alternate Authorized Account Representative
Name
Organization Name
No people match your current filter criteria entered in the box at the top right of the screen.
Back
Add
Next
RGGI Inc.


RGGI CO_2 ALLOWANCE TRACKING SYSTEM
TEST SITE - RGGI CO_2 BUDGET TRADING PROGRAMS - TEST SITE
Accounts | Sources | Special Approvals | Offset Projects | Emissions | Compliance | Allowance Transactions | Public Reports | Reference
Help
Create Account: Review and Submit
Account Name Test61721
Account Type General
Authorized Account Representative Doc Enc
Alternate Authorized Account Representative
Organizations
Owner/Operator
Owner/Operator Role
ABC Inc
Owner
Certification Statement
I certify that I was selected as the CO_2 authorized account representative or the CO_2 alternate authorized account representative, as applicable, by an agreement that is binding on all persons who have an ownership interest with respect to CO_2 allowances held in the general account. I certify that I have all the necessary authority to carry out my duties and responsibilities under the CO_2 Budget Trading Program on behalf of such persons and that each such person shall be fully bound by my representations, actions, inactions, or submissions and by any order or decision issued to me by the Department or its agent[1] or a court regarding the general account.
Entering your password below acknowledges that you have read and agreed to the above certification.
Password *
Back
Submit
RGGI Inc.

RGGI CO_2 ALLOWANCE TRACKING SYSTEM

RGGI CO_2 BUDGET TRADING PROGRAMS

Help

Registration Information for Access to RGGI COATS

Users who are representatives of RGGI COATS accounts and need to manage these accounts through the RGGI COATS system must complete the registration below to access the system. Registration is not required for members of the public who wish to access public reports and do not require ability to log in to the RGGI COATS system. Fields marked by * are required.

Step 1: Enter Information

Title (Mr./Ms.)

First Name *

Last Name *

Middle Initial

Phone Number *

Fax Number

Company Name

Address *

Address

City *

Country *

State/Province

Postal Code *

Reason for requesting a login *

Important: Enter a valid email address to receive notification of your completed registration as a user. Valid RGGI COATS passwords are at least eight characters in length and contain at least one of each of the following: an alphabetic character, a numeric character, and special character (@#$!, etc.).

Email Address *

Re-enter email address *

Email Salutation (e.g. Bill Smith,) *

Create your RGGI COATS username *

Create your password *

Re-enter password *

Back Next

RGGI Inc.

RGGI, Inc. is a non-profit corporation created to provide technical and administrative services to the Regional Greenhouse Gas Initiative CO_2 budget trading programs of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and Virginia.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Air Quality

CO_2 Budget Trading Program

25 Pa. Code Chapter 145, Subchapter E
50 Pa.B. 6212 (November 7, 2020)
Environmental Quality Board Regulation #7-559
(Independent Regulatory Review Commission #3274)

Comment and Response Document

CO_2 Budget Trading Program

On November 7, 2020, the Environmental Quality Board (Board) published notice of 10 public hearings and a public comment period on the proposed rulemaking to amend Chapter 145 (relating to interstate pollution transport reduction) to add Subchapter E (relating to CO_2 budget trading program) in the *Pennsylvania Bulletin*. The Board proposed to establish a program to limit the emissions of carbon dioxide (CO_2) from fossil fuel-fired electric generating units (EGU) located in this Commonwealth, with a nameplate capacity equal to or greater than 25 megawatts (MWe). The proposed rulemaking would also provide for the Commonwealth's participation in the Regional Greenhouse Gas Initiative (RGGI), a regional CO_2 Budget Trading Program. The purpose of the proposed rulemaking is to reduce anthropogenic emissions of CO_2, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth. The declining CO_2 Emissions Budget in the proposed rulemaking would effectuate least cost CO_2 emission reductions for the years 2022 through 2030.

The public comment period opened on November 7, 2020 and closed on January 14, 2021. Ten virtual public hearings were held on the proposed rulemaking as follows:

December 8, 2020, at 9 a.m.—12 p.m.
December 8, 2020, at 1 p.m.—4 p.m.
December 9, 2020, at 1 p.m.—4 p.m.
December 9, 2020, at 6 p.m.—9 p.m.
December 10, 2020, at 1 p.m.—4 p.m.
December 10, 2020, at 6 p.m.—9 p.m.
December 11, 2020, at 9 a.m.—12 p.m.
December 11, 2020, at 1 p.m.—4 p.m.
December 14, 2020, at 1 p.m.—4 p.m.
December 14, 2020, at 6 p.m.—9 p.m.

During the public comment period, the Department received more than 14,000 comments. The public hearings were advertised in a number of manners including publication in the *Pennsylvania Bulletin*, social media, the Department's website and publication in twelve newspapers of general circulation across this Commonwealth, in addition to the countless articles advertising the public comment period and the public hearings.

The public hearings were held virtually, meaning they could be accessed via phone or internet connection, over a two-week period of time. There were two hearings held each day, with alternating starting times to increase access and availability to a broader group of individuals. The Department offered live interpretation services during the public hearings as well. All commentators who registered for the public hearings were able to testify. The Department heard testimony from 449 individuals during more than 32 hours of testimony over the 10 public hearings.

Comments were provided by members of the public from all regions of this Commonwealth, representing a variety of sectors and industries. The Department estimates that nearly 90% of comments received were supportive of this final-form rulemaking.

This document summarizes the testimony received at the public hearings and the written comments received during the public comment period. In addition, the comments received from members of the General Assembly, including the Senate and House Environmental Resources and Energy Committees, and the Independent Regulatory Review Commission (IRRC) are summarized with responses provided.

In assembling this document, the Pennsylvania Department of Environmental Protection (Department) has responded to all comments related to the CO_2 Budget Trading Program rulemaking. The Department received a number of general comments related to issues including the Chesapeake Bay, methane emissions from oil and gas sources, the Delaware River Basin Commission, among many others. These issues are unrelated to the CO_2 Budget Trading Program rulemaking. However, the Department has reviewed and considered these comments. Since they are outside the scope of the CO_2 Budget Trading Program rulemaking, these comments are not included in this Comment and Response document.

Additionally, the Department received many comments regarding opportunities, suggestions and priorities for the investment of auction proceeds to maximize air quality benefits and GHG emission reductions in this Commonwealth. The ideas were unique, thoughtful and included many opportunities for leveraging the investments resulting from this final-form rulemaking to enhance the health, welfare, economy and environment of this Commonwealth. The Department specifically requested comments on ways to support Pennsylvanians and communities historically disadvantaged and disproportionately impacted by air pollution. Additionally, comments were requested on how to support workers and communities as the nation and this Commonwealth's energy sector transitions to cleaner burning energy. Stemming from this request, comments regarding support for energy communities and environmental justice communities are contained and responded to in this Comment and Response document. All comments surrounding investments are valuable and have been considered by the Department. However, these comments are not contained in this Comment and Response document. Instead, they will be used to inform the draft investment plan currently being developed by the Department.

In addition to comments received by the Department as part of this final-form rulemaking, the draft investment plan is also informed by the community-level engagement of the Delta Institute and the Department's engagement and outreach with interested stakeholders and residents. The widespread and inclusive outreach conducted prior to the development of a draft plan will aid the Department in presenting an investment plan for public comment that is thoughtful, and well-informed. The Department appreciates the feedback on this final-form rulemaking and requests similar engagement regarding the draft investment plan. It is anticipated that this draft investment plan will be published for public comment during the Summer of 2021, with a commitment to finalizing an investment plan prior to the implementation of this final-form rulemaking.

For the purposes of this document, comments of similar subject matter have been grouped together and responded to accordingly. A list of the commentators, including name and affiliation, is provided in a separate document.

All comments received by the Board are posted on the Department's e-Comment website at https://www.ahs.dep.pa.gov/eComment/. Additionally, copies of all comments received by the Board are posted on the IRRC website at http://www.irrc.state.pa.us. Search by Regulation # 7-559 or IRRC # 3274.

Acronyms used in this Comment and Response Document

ACE (Rule) – Affordable Clean Energy Rule
ACHD – Allegheny County Health Department
AEO – Annual Energy Outlook
AEPS – Alternative Energy Portfolio Standard
AMD – Acid Mine Drainage
AML – Abandoned Mine Land
AMS – Philadelphia Air Management Services
APCA – Air Pollution Control Act
AQTAC – Air Quality Technical Advisory Committee
BAT – Best Available Technology
Btu – British Thermal Unit
CAA – Federal Clean Air Act (42 U.S.C.A. §§ 7401—7671q)
CAC – Citizens Advisory Council
CAF – Clean Air Fund
CAIR – Clean Air Interstate Rule
CCAC – Climate Change Advisory Committee
CCR – Cost Containment Reserve
CFR – United States Code of Federal Regulations
CHP – Combined Heat and Power
COATS – CO_2 Allowance Tracking System
COPD – Chronic Obstructive Pulmonary Disease
CO_2 – Carbon Dioxide
CO_2e – Carbon Dioxide Equivalent
COATS – CO_2 Allowance Tracking System
CPSTF – Carbon Pricing Senior Task Force
CRS – Congressional Research Service
CSAPR – Cross-State Air Pollution Rule
C&I – Commercial and Industrial
CNI – Corporate Net Income
ECR – Emissions Containment Reserve
EGU – Electric Generating Unit
EIA– United States Energy Information Administration
EJ – Environmental Justice
EJA – Environmental Justice Areas
EJAB – Environmental Justice Advisory Board
eMAP – Environmental Management Assistance Program
EPA – United States Environmental Protection Agency
EQB – Environmental Quality Board
ERE – (House or Senate) Environmental Resources and Energy Committee
FERC – Federal Energy Regulatory Commission
FIP – Federal Implementation Plan
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
IMM – Independent Market Monitor

IPCC – Intergovernmental Panel on Climate Change
IPM – Integrated Planning Model
ISO – Independent System Operator
IRRC – Independent Regulatory Review Commission
LAER – Lowest Achievable Emission Rate
MATS – Mercury Air Toxics Standard
MMT – Million Metric Ton
MOPR – Minimum Offer Price Rule
MWe – Megawatt Electrical
MWh – Megawatt Hour
NAAQS – National Ambient Air Quality Standard
NAICS – North American Industry Classification System
NCA4 – Fourth National Climate Assessment
NERC – North American Electric Reliability Corporation
NO_x – Oxides of Nitrogen
OTC – Ozone Transport Commission
PAE – Projected Annualized Emissions
PIT – Personal Income Tax
PJM – PJM Interconnection, Inc.
PM – Particulate Matter
$PM_{2.5}$ – Particulate Matter 2.5 micrometers and smaller
PSE – Penn State Extension
PUC – Public Utility Commission
PURPA – Public Utility Regulatory Policies Act
RACT – Reasonably Available Control Technology
RAF – Regulatory Analysis Form
REC – Renewable Energy Credit
REMI – Regional Economic Models, Inc.
RPS – Renewable Portfolio Standard
RRA – Regulatory Review Act
RTO – Regional Transmission Operator
RGGI – Regional Greenhouse Gas Initiative RRA – Regulatory Review Act
SBCAC – Small Business Compliance Advisory Committee
SEC – Securities and Exchange Commission
SEU – Sustainable Energy Utility
SIP – State Implementation Plan
SO_2 – Sulfur Dioxide
TABA – Third Adjustment for Banked Allowances
UC – University of California
UIAPAA – Uniform Interstate Air Pollution Agreements Act
USGCRP – United States Global Change Research Program
VOC – Volatile Organic Compound
VRE – Voluntary Renewable Energy

Contents

COMMENTS AND RESPONSES

IRRC and Legislative Comments

1. Comment: IRRC noted that under the RRA, the comments, objections or recommendations of a Legislative Committee is one of the criteria that IRRC must consider when determining if a regulation is in the public interest. IRRC then asks the Board to explain whether the regulation is in the public interest, particularly given the House and Senate Environmental Resources and Energy (ERE) Committee objections noted in their disapproval letters.

Response: The Department states how this final-form rulemaking is in the public interest. As required under section 745.5b of the RRA (71 P.S. §§ 745.5b), to determine whether a regulation is in the public interest, IRRC must first determine whether the agency has the statutory authority to promulgate the regulation and whether the regulation conforms to the intent of the General Assembly when it enacted the enabling statute. The Board has the authority to promulgate this final-form rulemaking under section 5(a)(1) of the APCA. Additionally, this final-form rulemaking is consistent with the purpose of the APCA and the intent of the General Assembly. That is, to, among other things, protect the air resources of the Commonwealth to the degree necessary for the protection of public health, safety, and well-being of its citizens. 35 P.S. § 4004(a)(i). Moreover, several members of the General Assembly, including minority members of the ERE committees, provided supportive comments, specifically noting that the Board has the authority under the APCA to promulgate this final-form rulemaking and that it is in the public interest.

In determining whether a regulation is in the public interest, IRRC also must consider the additional criteria for review of regulations outlined under section 745.5b(b) of the RRA. The Department explains how this final-form rulemaking satisfies the review criteria in detailed responses to comments below and specifically notes the following. First, this final-form rulemaking will have a positive economic and fiscal impact on this Commonwealth. For example, the economic modeling conducted for this final-form rulemaking shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and spur further economic growth in this Commonwealth as it will result in an additional $1.9 billion to the Gross State Product. Second, this final-form rulemaking protects the public health, safety and welfare and the environment from harmful CO_2 pollution from fossil fuel-fired EGUs. For instance, the Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Third, the requirements of this final-form rulemaking are both reasonable and feasible. One of the most cost-effective emissions reduction strategies to limit CO_2 emissions is through an electricity sector cap and trade program. Fourth, this final-form rulemaking does not represent a policy decision of such a substantial nature that it requires legislative review. That is, the General Assembly has already provided the Board with broad authority to promulgate this final-form rulemaking. Fifth, the Board has responded to the comments, objections and recommendations of the ERE committees in the Preamble for this final-form rulemaking and this comment and response document. Where warranted, changes were made to this final-form rulemaking in response to those comments. Sixth, the Board and the Department complied with the RRA and IRRC's regulations throughout the rulemaking process. Seventh, this final-form rulemaking is supported by a plethora of acceptable data and an extensive modeling effort as discussed throughout the Preamble and RAF. Finally, while there is not a less costly or less

intrusive method of achieving the goal of this final-form rulemaking, since a cap and trade program is the most effective means of reducing CO_2 emissions, provisions are included in this final-form rulemaking to address any impact on small business stationary sources.

Further, the Commonwealth Court has found that the regulation of air pollution has long been a valid public interest. See e.g., *Bortz Coal Co., v. Commonwealth*, 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.*, 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation*, 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce GHG emissions, including CO_2. *Funk v. Wolf*, 144 A.3d 228, 250 (Pa. Cmwlth. 2016).

2. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating that the Board lacks statutory authority under the APCA (35 P.S. § 4001—40015) to promulgate the regulation.

Response: The Board has the authority to promulgate this final-form rulemaking under the APCA. Through the APCA, the Legislature granted the Department and the Board the authority to protect the air resources of this Commonwealth for the protection of public health, safety and the environment. Section 5(a)(1) of the APCA provides the Board with broad authority to adopt rules and regulations for the prevention, control, reduction and abatement of air pollution in this Commonwealth. In *Marcellus Shale Coalition v. Commonwealth*, 216 A.3d 448 (Cmwlth. Ct. 2019), the Commonwealth Court outlined the test for determining whether a legislative rulemaking has statutory authority. To determine whether a regulation is adopted within an agency's granted power, the Commonwealth Court stated that it looks to the statutory authority authorizing the agency to promulgate the legislative rule and examines that language to determine whether the rule falls within that grant of authority. The Court also found that the legislature's delegation must be clear and unmistakable. In particular, the Court considers the letter of the statutory delegation to create the rule and the purpose of the statute and its reasonable effect. *Id.* As this final-form rulemaking would limit CO_2 pollution by regulating CO_2 emitted from fossil fuel-fired EGUs to ensure protection of public health, welfare and the environment, this final-form rulemaking is clearly within the Board's granted authority under the APCA and advances the purposes of the APCA to abate air pollution.

3. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating that the proceeds generated through the auction procedures of the rulemaking and RGGI are not a fee under the APCA, but rather an illegal tax.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. There is also existing case law that supports the conclusion that auction

proceeds are a fee, including *National Biscuit Company v. Philadelphia*, 98 A.2d 182 (Pa. 1953) and *White v. Com. Medical Professional Liability*, 571 A.2d 9 (Pa. Cmwlth. 1990).

Under RGGI, regulated EGUs are required to purchase one CO_2 allowance per ton of CO_2 they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions and the secondary market are then provided back to the participating states. The purchase of CO_2 allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO_2 emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO_2 emissions from EGUs.

Moreover, none of the eleven participating states consider their CO_2 budget trading program regulations, or the RGGI program overall, as establishing a tax. Also, no court has determined that RGGI amounts to a tax. Recently in *California Chamber of Commerce v. State Air Res. Bd.*, 10 Cal. App. 5th 604, 650, 216 Cal. Rptr. 3d 694, 728 (2017), the California court determined that the California Air Resource Board's cap and invest program did not create a tax.

4. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating the Department violated the APCA's mandate for public hearings to be held in impacted communities. They also noted that citizens without internet access or broadband capability were excluded from participating in the virtual hearings that were held. A few other commentators also believe that the APCA requires the Board to hold in-person public hearings.

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentators and legislators seem to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Department disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of

Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

5. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating it will have a negative fiscal impact on this Commonwealth's economy. In particular, they argue that the coal industry, fossil-fuel-fired EGUs, large industrial users of electricity, small businesses, labor unions and individuals will be harmed financially.

Response: The implementation of this final-form rulemaking will provide public health, environmental and economic benefits to this Commonwealth. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. This equates to a range of $232—$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_2 and $PM_{2.5}$) and exclude the additional benefits provided from the reduction in CO_2 emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The economic modeling conducted shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, an independent study by Penn State's Center for Environmental Law and Policy confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. See Penn State Center for Energy Law and Policy, Prospects for Pennsylvania in the Regional Greenhouse Gas Initiative Working Paper, December 2020, https://sites.psu.edu/celp/files/2021/01/CELP_RGGI.pdf. In particular, the Penn State study indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefits to the power sector within this Commonwealth. This study determined that economic benefits to electricity market participants include the higher net profits to the generation sector (additional revenue arising from higher wholesale electricity prices less new costs from the purchase of CO_2 allowances) and CO_2 allowance proceeds accruing to CO_2 allowance holders. Economic costs predominantly reflect the higher costs of purchasing bulk power by load-serving entities and direct access consumers in the PJM regional electricity

market. This analysis is narrower in scope than the Department's modeling but remains demonstrative of the positive economic impacts of this final-form rulemaking.

In 2010, coal generation accounted for 47 percent of the energy generated in this Commonwealth and by 2019, coal generation had decreased to 17 percent. The Department's modeling indicates that this trend will continue with the majority of coal generation (with the exception of waste coal) ceasing by 2025. This is the current trajectory of coal which has been on the decline for decades, and in 2014 was finally usurped by natural gas as the leading source of energy generation in this Commonwealth. These impacts are not resulting from RGGI participation as they will occur regardless of the implementation of this final-form rulemaking. However, RGGI participation presents an opportunity to assist transitioning communities, which would not exist without this final-form rulemaking.

While fossil fuel-fired EGUs subject to this final-form rulemaking will have costs associated with the purchase of CO_2 allowances, in most cases this minimal cost will be passed onto consumers. Cost impacts as a result of implementation of this final-form rulemaking are minimal and are less than the typical seasonal swing in electricity prices. Wholesale power prices ($/MWh) are expected to be no more than 2.4 percent higher in 2022 and no more than 1.7 percent higher by 2030. These prices reflect the cost of a cap-and-trade program and are not reflective of the investment of the auction proceeds. Significant investments of the auction proceeds in the energy sector in this Commonwealth will have a price suppressing impact further decreasing any potential price impacts.

Additionally, based on information contained within the PUC's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania PUC, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

The Department understands the concerns that have been expressed regarding impacts on employees in this Commonwealth's energy sector. As mentioned previously, while there will be expansion and contraction within the energy sector as a result of implementation of this final-form rulemaking, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs. The Department has partnered with the Delta Institute to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers, and the

surrounding communities. This will assist the Department in identifying community-driven ways to assist this Commonwealth's transition to a cleaner energy economy.

6. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating CO_2 is not an "air pollutant" as defined by the APCA. The committee members stated that the proposal does not prevent or reduce greenhouse gases because generation will shift to fossil-fuel-fired EGUs in other states and emissions from those EGUs will pollute the environment of the Commonwealth. This is referred to as leakage. Any reduction of pollution would be insignificant; thus, this final-form rulemaking fails to meet the APCA's standard that regulations must produce a meaningful reduction of "air pollution."

Response: The Department contends that CO_2 is in fact a regulated "air pollutant." Specifically, section 5(a)(1) of the APCA provides the Board with authority to regulate CO_2 emissions. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021).

While there is a potential for leakage as outlined in the Department's modeling for this final-form rulemaking, this potential leakage does not undermine the value of the significant benefits that will accrue to this Commonwealth and its residents as a result of this final-form rulemaking. The potential for reducing CO_2 produced in this Commonwealth by 2030 ranges from 97 million—227 million tons. The meaningful reductions of air pollution stemming from this final-form rulemaking have also been confirmed by independent power sector modeling conducted by PJM and the Penn State Center for Energy Law and Policy.

7. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating that the modeling used by the Board to justify the rulemaking is outdated and does not provide an accurate estimate of the economic impact that the rulemaking will have. They also state that the modeling does not account for leakage.

Response: The Department understands the concerns raised and wanted to make sure the modeling was as current as possible to ensure that all the provisions of this final-form rulemaking, specifically the starting CO_2 allowance budget, were still appropriate when this final-form rulemaking is implemented in 2022. Additionally, the Department wanted to verify

previous conclusions based on the modeling. For this final-form rulemaking, the Department conducted additional power sector modeling which verified earlier modeling conclusions, confirming the 78 million CO_2 allowance budget for 2022, and the significant potential for CO_2 emissions reductions in this Commonwealth. The updated modeling also showed that in comparison to the previous 2020 round of modeling, impacts on natural gas generation, this Commonwealth's energy exports, and electricity prices are even less than the slight impacts anticipated by the previous modeling. Furthermore, the modeling confirmed that the retirement of coal-fired EGUs in this Commonwealth will occur within a shorter time horizon. According to the updated modeling, most of the coal-fired generation in this Commonwealth will cease by 2025 in no part due to this final-form rulemaking, but rather decreased demand for electricity resulting in part from the COVID-19 pandemic and its impacts on the energy markets.

The Department's modeling used IPM, the Integrated Planning Model, which provides long-term projections of plant dispatch, capacity expansion and retirement, market prices, and emissions projections for the power sector across the country. This specific analysis focused on this Commonwealth, the PJM states, and the current states participating in RGGI. The results of the modeling include electricity transmission both into and out of this Commonwealth and the larger PJM and Eastern Interconnection. These values allow the Department to evaluate the changes in generation, and the flows of electricity between states and across the region. It is through this data that the Department is able to evaluate the potential for and magnitude of emissions shifts within the region.

The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. This leakage has no bearing on the environmental, health or economic benefits of this final-form rulemaking, and merely means that a portion of the emissions reductions achieved within this Commonwealth may shift to other states or areas without carbon pricing. Additionally, this final-form rulemaking will result in a net emissions reduction of 28 million tons of CO_2 across the broader PJM region through 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the Federal Energy Regulatory Commission (FERC) and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80% of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

Although there is the potential for leakage as confirmed in both the original and updated modeling results, this leakage does not undermine the benefits of this final-form rulemaking to this Commonwealth, nor to the broader PJM region and Eastern Interconnection. The Department's modeling has not only accounted for leakage, but Department staff have actively engaged with stakeholders, PJM Interconnection and electricity generators specifically to discuss options for leakage mitigation.

8. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating that the Federal government is moving forward with climate change policies.

Response: While the current Federal Administration is currently in the process of developing climate change policies, there is no guarantee that those policies will come to fruition. For instance, the Obama Administration's regulation to control GHG emissions from existing fossil fuel-fired EGUs, commonly known as the Clean Power Plan, was stayed by the United States Supreme Court and later repealed and replaced by the Trump Administration's ACE rule. The Board contends that addressing the impacts of climate change is too pressing of an issue to wait any longer. As one of the top GHG emitting states in the country, the Board has a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment.

9. Comment: IRRC noted that the House and Senate ERE Committees objected to this final-form rulemaking stating that the potential costs of the rulemaking outweigh any meaningful benefits that may result from it, especially during the time of the COVID-19 pandemic.

Response: Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from COVID-19. The current pandemic underscores the need for further emissions reductions. See Harvard University Study "Fine particulate matter and COVID-19 mortality in the United States: A national study on long-term exposure to air pollution and COVID-19 mortality in the United States," 2020, https://projects.iq.harvard.edu/covid-pm.

The implementation of this final-form rulemaking will have climate, environmental and health benefits. While there is a cost associated with implementation, the benefits far outweigh any costs. Although the methodology to determine climate and environmental impacts are complicated, calculating the health benefits is quite simple. The Department calculated the health impacts associated with the emissions reductions stemming from the implementation of this final-form rulemaking using the EPA's Benefit-per-Ton (BPT) and Incidence-per-Ton (IPT) methodology. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. This equates to a range of $232—$525 million annually and is an extremely conservative estimate given these health benefits are only those benefits tied to the reduction of co-pollutants (NO_x, SO_2 and $PM_{2.5}$) and exclude the additional benefits provided from the reduction in CO_2 emissions. Further, calculations using the social cost of carbon would result in significantly higher benefit values for this final-form rulemaking.

The analysis conducted by Penn State's Center for Energy Law and Policy estimated the health benefits of this Commonwealth's participation in RGGI to be on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Implementation of this final-form rulemaking does come with increased costs, in terms of impacts on electricity prices. Updated modeling shows that the impact on wholesale power prices is estimated to be 2.42 percent in 2022 and 1.73 percent by 2030. These minimal prices impacts are exclusive of the price suppressing impacts of any investments to be made in the energy sector using the auction proceeds.

The Department's economic modeling shows that even with consideration of these electricity price increases, this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. While implementation of this final-form rulemaking is not without cost; the economic and health the economic benefits are considerable and far outweigh any implementation costs.

10. Comment: IRRC questions whether the regulation represents a policy decision of such a substantial nature that it requires legislative review. IRRC also notes that a Senate letter signed by 29 members states the following: "The proposed regulation joining Pennsylvania to RGGI represents the single, most significant energy policy reform since the deregulation of electric generation in the 1990's." IRRC also mentions the passage of HB 2025 and that ten of the 11 states that currently participate in RGGI have done so with specific authority granted by their respective legislative branches. Additionally, IRRC notes that three advisory committees declined to support the proposed rulemaking. IRRC asks the Board to explain why it is appropriate to implement this carbon trading program through executive order and the rulemaking process instead of the legislative process.

Response: The Department contends that this final-form rulemaking is not a policy decision of such a substantial nature that it requires legislative review. The General Assembly provided the Board with broad authority to regulate sources of air pollution under the APCA. This final-form rulemaking directly falls within that statutory grant of authority as CO_2 emissions cause harmful air pollution. The APCA does not limit the Board in how it may regulate a source of pollution. This is shown by the Board's history of promulgating different types of regulations, including command and control and cap and trade regulations under the broad authority of section 5(a)(1) of the APCA. If House Bill 2025 had not been vetoed by the Governor, it would have taken away the Board's existing statutory authority to regulate CO_2 emissions. The bill went beyond preventing this Commonwealth from participating in RGGI to prohibit the Board from promulgating any regulation to address CO_2 emissions unless and until the General Assembly passed future authorizing legislation. This would have been extremely detrimental to the Department's efforts to address GHG emissions and climate change impacts. However, the General Assembly provided the Board with the authority to promulgate this final-form rulemaking through the expansive language in the APCA.

Through Executive Order 2019-07, Governor Tom Wolf directed the Department to develop and present to the Board a rulemaking to abate, control, or limit CO_2 emissions from fossil-fuel-fired EGUs, as authorized by the APCA. In other words, the Department was directed to use its

existing statutory authority, the APCA, to implement this final-form rulemaking. The Executive Order was an indication from the Governor that addressing CO_2 emissions from the electricity sector is necessary. However, this final-form rulemaking is not being implemented under the Executive Order as it is being implemented under the APCA, specifically sections 5(a)(1) and 6.3(a).

Although most of the participating states were directed to participate in RGGI through specific legislation, that does not necessarily mean that their environmental agencies lacked regulatory authority. It is more of an indication of the willingness to address climate change in those states. Furthermore, as discussed previously, four of the Department's advisory committees voted to support the Department's recommendation to move this final-form rulemaking forward to the Board. This includes the three advisory committees, AQTAC, SBCAC and CAC, which had voted against supporting the proposed rulemaking.

11. Comment: IRRC notes that some commentators have provided suggestions for amending the regulation to provide further environmental protections. These suggestions include: modifying or eliminating set-aside allowances for certain industries; inclusion of data collection mechanisms to ensure emissions are not shifted to generation facilities that fall below the 25 megawatt threshold of the rulemaking because the facilities could have a negative impact on environmental justice communities; and ensuring that imported power does not contribute to leakage. IRRC also encourages the Board to consider all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of the Commonwealth and its natural resources and meeting the goal of this rulemaking.

Response: The Department has considered all the recommendations provided by commentators as a means of further protecting the public health, safety and welfare of citizens of this Commonwealth and its natural resources and meeting the goal of this final-form rulemaking. The Department made the following changes to this final-form rulemaking in response to comments. The Department increased the value of the waste coal set-aside in response to comments received to account for the continued operation of one waste coal-fired unit and to better reflect the operation levels of the waste coal-fired units in this Commonwealth. The waste-coal set-aside was increased from 9.3 million CO_2 allowances in the proposed rulemaking to 12.8 million CO_2 allowances in this final-form rulemaking.

The Department received extensive comments on the cogeneration set-aside and made changes in response to those comments. Additionally, commentators expressed the potential for unintended consequences in the form of emissions increases potentially by disincentivizing the operation of current cogeneration facilities and the addition of future facilities. The Department was asked to clarify what was meant by cogeneration and to expand the set-aside to cover the full emissions of facilities that meet certain emissions criteria. In response, the Department clarified that its intent was to be inclusive of CHP units and as a result changed the name of the set-aside to clarify that it was not applicable to all cogeneration, but specifically to CHP units as defined in this final-form rulemaking. Additionally, the Department responded to the request for an expanded set-aside by including two tiers for qualifying CHP units to apply for CO_2 allowances to be retired on their behalf.

Commentators also requested additional clarification on the functioning of the strategic use set-aside. In response, the Department clarified the objectives for the set-aside, provided additional specifics on the types of qualifying projects and outlined the application process by which an entity could submit a project for consideration to the Department. The Department also received comments that the scope of the limited exemption from the applicability requirements was too narrow and that the term manufacturing facility should be replaced with "industrial, institutional or commercial" facility. The Department made this change in this final-form rulemaking in response to comments.

There were concerns expressed during the comment period regarding the impact of cap and trade programs on environmental justice communities. Environmental justice and other stakeholders specifically requested that the Department closely monitor the impacts of this final-form rulemaking on air quality in this Commonwealth, particularly in environmental justice communities. In response, the Department added a provision for an annual air quality impacts assessment in this final-form rulemaking. In response to comments received both prior to and during the public comment period, the Department, in partnership with external stakeholders developed equity principles for this final-form rulemaking. Through the establishment of these principles and their implementation, the Department pledged to inclusively gather public input on the rule and mitigate any adverse impacts with a focus on Environmental Justice communities.

The Department also received comments urging additional flexibility in terms of the implementation date for this final-form rulemaking. Some commentators requested that the Department consider a mid-year start date if January 1, 2022 is not possible to avoid a delay in implementation until January 1 of the following year. In response, the Department added quarterly CO_2 allowance budgets for 2022 which identify the starting CO_2 allowance budget for the beginning of each quarter. These budgets are based on the starting CO_2 allowance budget of 78 million CO_2 allowances and allocated to each quarter based on the seasonal emissions distributions during the past five years. For example, rather than assigning a value of 25 percent to each quarter, the value for each quarter is calculated based on historic emissions. The Department relied on actual historic emissions from the past five years to properly assign a quarterly emissions value.

12. Comment: IRRC asks the Board to consider all of the arguments on both sides of the statutory authority issues and provide a point-by-point analysis of why this proposal is within the statutory authority granted by the APCA and also consistent with the intent of the General Assembly when that statute was enacted.

Response: A point-by-point analysis of the Board and the Department's statutory authority is included in the Preamble for this final-form rulemaking, as well as an explanation on how this final-form rulemaking is consistent with the intent of the General Assembly. Specifically, the Department explained how Section 5(a)(1) of the APCA provides the Board with broad authority to promulgate regulations for the "prevention, control, reduction and abatement of air pollution." The Department also explained how CO_2 is included in the definition of "air pollutant" under section 3 of the APCA. Additionally, the Department explained how the auction proceeds are a

fee authorized under Section 6.3(a), and not an illegal tax as some commentators have claimed. Further, the Department also addressed leakage concerns.

Members of the General Assembly and others have argued that the Department is violating section 4(24) of the APCA by not submitting the interstate air pollution control compact or agreement to the General Assembly. Section 4(24) of the APCA provides that the Department shall "cooperate with the appropriate agencies of the United States or of other states or any interstate agencies with respect to the control, prevention, abatement and reduction of air pollution, and where appropriate formulate interstate air pollution control compacts or agreements for the submission thereof to the General Assembly." See 35 P.S. § 4004(24). However, as states do not sign any sort of agreement or compact to participate in RGGI, there is no agreement to submit to the General Assembly under section 4(24) of the APCA. Instead, the key piece to becoming a "participating state," as the term is defined in this final-form rulemaking, is the establishment of a corresponding regulation as part of the CO_2 Budget Trading Program. While this final-form rulemaking provides for this Commonwealth's participation in RGGI by establishing a corresponding regulation, it does not amount to an agreement or compact subject to legislative approval.

In the Preamble, the Department noted that RGGI is not an interstate air pollution control compact or agreement. Instead, RGGI is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A state may participate in RGGI once it meets the definition of a "participating state," meaning the state has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

Moreover, the APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentators and legislators seem to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Board disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region. For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding ten well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide.

13. Comment: IRRC questions whether the regulation is consistent with the intent of the General Assembly. The commentator notes that the current balance of the Clean Air Fund is approximately $26 million dollars and that the Department anticipates that this rulemaking will raise over $2 billion dollars between 2022 and 2030. IRRC is concerned that the General Assembly did not contemplate or envision the Clean Air Fund growing to that amount and that it could be spent at the discretion of the Secretary under the guidance provided by a regulation

(Chapter 143) promulgated over 40 years ago. IRRC asks the Board to explain how this process of collecting proceeds and distributing funds of this magnitude is consistent with the intent of the General Assembly when the APCA was enacted.

Response: As the Department explained in the Preamble, this final-form rulemaking is consistent with the intent of the General Assembly. The Board and the Department are acting within the existing statutory authority granted by the General Assembly. Section 6.3(a) of the APCA provides the Board with broad authority to establish fees to support the air pollution control program authorized by the APCA and not covered by fees required by section 502(b) of the Clean Air Act. As provided under section 9.2(a) of the APCA, all auction proceeds will be used to support the elimination of air pollution and in furtherance of the purpose of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

14. Comment: IRRC questions whether the regulation is consistent with the intent of the General Assembly. The commentator notes that the current balance of the Clean Air Fund is approximately $26 million dollars and that the Department anticipates that this rulemaking will raise over $2 billion dollars between 2022 and 2030. IRRC is concerned that the General Assembly did not contemplate or envision the Clean Air Fund growing to that amount and that it could be spent at the discretion of the Secretary under the guidance provided by a regulation (Chapter 143) promulgated over 40 years ago. IRRC asks the Board to explain how this process of collecting proceeds and distributing funds of this magnitude is consistent with the intent of the General Assembly when the APCA was enacted.

Response: As the Department explained in the Preamble, this final-form rulemaking is consistent with the intent of the General Assembly. The Department and the Board are acting within the existing statutory authority granted by the General Assembly. Section 6.3(a) of the APCA provides the Board with broad authority to establish fees to support the air pollution control program authorized by the APCA and not covered by fees required by section 502(b) of the Clean Air Act. As provided under section 9.2(a) of the APCA, all auction proceeds will be used to support the elimination of air pollution and in furtherance of the purpose of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

15. Comment: IRRC notes that many of the commentators that support this final-form rulemaking provided suggestions on how the auction proceeds could be allocated. Some of the suggestions would appear to be outside of the parameters established by 25 Pa. Code Chapter 143. IRRC agrees with comments submitted by the Pennsylvania Office of Consumer Advocate that suggest the Department should "seek further authority" to allow for a broader use of the auction proceeds. Alternatively, IRRC suggests that the Department could initiate a rulemaking to amend existing Chapter 143 to allow for a broader use of the proceeds.

Response: The Department is not planning on seeking further authority for the use of the auction proceeds as the authority provided under section 9.2(a) of the APCA is quite broad. Section

9.2(a) allows the Department to use fees to further eliminate air pollution in this Commonwealth. As required under section 9.2(a) of the APCA, the Board adopted Chapter 143 to further provide for the management and use of the money in the Clean Air Fund. Section 143.1(a) states that "monies paid into the Clean Air Fund may be disbursed at the discretion of the Secretary for use in the elimination of air pollution." See 25 Pa. Code § 143.1(a). Under § 143.1(b), the "full and normal range of activities" of the Department are considered to contribute to the elimination of air pollution. See 25 Pa. Code § 143.1(b). Section 143.1(b) also includes a nonexclusive list of purposes that the Clean Air Fund monies can be used for, including the purchase of contractual services and payment of the costs of a public project necessary to abate air pollution. Section 143.1(b) therefore specifically provides for the Department to both use the auction proceeds to invest in projects that further reduce GHG emissions and to contract with RGGI, Inc. for administrative and technical support services. For these reasons, the Board and the Department do not find it necessary to seek further authority or to initiate a rulemaking to amend Chapter 143. However, if the General Assembly enacts legislation that extends the Department's authority to use the auction proceeds, the Department would be able to further assist transitioning workers and environmental justice communities.

16. Comment: IRRC questions whether the regulation is needed and asks the Board to address the economic and fiscal impact. IRRC notes that questions raised about the need for this final-form rulemaking are numerous but revolve around two main issues. The first, as noted by the Senate ERE Committee, is the fact that CO_2 emissions from fossil-fuel power generation in this Commonwealth have been reduced by 38 percent since 2008. This reduction trend is likely to continue because of the price of natural gas and the development of renewable energy. Second, the rulemaking will push the generation of electricity to states like West Virginia and Ohio that do not participate in RGGI. If these states increase their production of fossil-fuel-generated electricity, as predicted by some commentators, the overall health benefits to this region of the country, and Pennsylvania specifically, will be minimal and come at a steep economic cost.

Response: This final-form rulemaking is needed to reduce CO_2 emissions in this Commonwealth. This Commonwealth has established Statewide goals to reduce GHG emissions economy-wide by 26 percent by 2025 and 80 percent by 2050 in comparison to 2005 levels. While this Commonwealth has achieved reductions from all sectors, including the power sector, more is needed to meet these goals, set to avoid the worst impacts of climate change. This Commonwealth's participation in RGGI would provide significant assurance that prudent investments of the auction proceeds coupled with other GHG abatement activities will allow this Commonwealth to remain on track to reach the 2025 reduction goal. Without the reductions associated with the implementation of this this final-form rulemaking, this Commonwealth will fail to reach even the interim GHG reduction goal established for this Commonwealth.

While emissions from the generation sector have decreased since 2008, the current trajectory of emissions reductions in the power sector is not sustainable. There are few remaining coal-fired EGUs, which based on updated modeling are anticipated to cease most if not all generation by 2025. The air emissions gains that were realized through fuel switching (coal to natural gas) and replacing aging coal-fired facilities with new natural gas plants have mostly occurred. Moving forward a new approach is needed to achieve further reductions. Historic trends provide no guarantee of what the emissions profile for this Commonwealth's electricity sector will look like

in the future. For example, electricity generation is very sensitive to the costs of inputs, the major input of which is fuel. As this Commonwealth has seen over the last year, the COVID-19 pandemic led to an increase in natural gas prices, in turn generating electricity with natural gas became more expensive and in response production of electricity using coal as an input increased. In turn this led to an increase in emissions in this Commonwealth. Even though demand for electricity decreased, the method and fuel from which that electricity has being created was more energy and emissions intensive leading to increased emissions even when the overall demand for electricity had decreased. The energy market is very dynamic, and historic emissions trends and profiles are not indicative of future trends, not without concrete targets and goals regarding emissions reductions. RGGI is a proven market-based program, and one that recognizes that CO_2 emissions from fossil fuel-fired EGUs exist, and the cost of this pollution should be factored into the price of that electricity. This allows the Department to value the real cost of electricity generation when the cost of these emissions is factored in and helps position this Commonwealth to remain competitive in an ever-evolving energy market where clean energy is highly valued both in this Commonwealth and in the other states to which it export electricity.

The Department's power sector modeling indicates a potential for emissions and generation leakage, meaning that some of the emissions decrease in this Commonwealth tied to decreased generation in this Commonwealth may be made up for by increased generation in other states across the region. This shift most often occurs between states that have implemented carbon pricing programs (like RGGI) and those states that do not have carbon pricing. The modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO_2 reductions between 2022 and 2030. These emissions reductions are going to occur in this Commonwealth and are not tied to or dependent on actions by other surrounding states. When this Commonwealth implements this final-form rulemaking, significant CO_2 emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Penn State's study projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of this regulation, and again are not tied to decisions by outside actors.

Where leakage becomes a consideration is when the focus on emissions reductions is outside of this Commonwealth and across a broader region, for example, the PJM Interconnection, the regional transmission organization consisting of parts of 13 states and the District of Columbia. The potential for an evaluation of leakage has been a focus of PJM since the creation of the RGGI as PJM has some member states that participate in RGGI (have a carbon price) and some that do not (have no carbon price). In order to study the potential more thoroughly for leakage and the magnitude of that leakage, PJM created the Carbon Pricing Senior Task Force (CPSTF). This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and also the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for

leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. See PJM Interconnection, Issue Charge of the Carbon Pricing Senior Task Force, 2019, www.pjm.com/-/media/committees-groups/task-forces/cpstf/postings/issue-charge.ashx?la=en. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

In addition to the modeling conducted by the Department and PJM, the report by the Penn State Center for Energy Law and Policy also addresses leakage. Their associated modeling confirms the potential for leakage, and bolsters results from PJM and the Department in confirming that despite leakage, CO_2 emissions in the multi-state PJM region decline following this Commonwealth participating in RGGI. Though some emissions may shift to other states, the potential increases in other states' emissions do not absorb the emissions reductions occurring in this Commonwealth. This Commonwealth's EGUs with close proximity to abundant and inexpensive natural gas have a competitive advantage over similar operations in other states. While some other states may experience some increased emissions, again any increase in emissions in the region is outweighed by the decrease in this Commonwealth, thereby resulting in net benefits across the region. Additionally, these leakage estimates and models are based on current and predicted market conditions based on existing laws and policies, exclusive of any further regional or National action on carbon pricing which would minimize or entirely eliminate the potential for leakage.

The Department compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report and all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf.

17. Comment: IRRC agrees that the goal of reducing GHGs through RGGI and this final-form rulemaking is laudable. However, IRRC mentions that the declining emissions from fossil-fuel-fired EGUs that has occurred over recent years without participation in RGGI and the leakage that will occur if this Commonwealth does join RGGI raises the question of whether this final-form rulemaking, and its potential benefits, are needed compared to the potential negative fiscal impact that is predicted by the Committees, certain legislators and some members of the regulated community. To assist IRRC in determining if the rulemaking is in the public interest, IRRC asks the Board to explain why the benefits of the rulemaking outweigh the costs associated with its implementation.

Response: The benefits of this final-form rulemaking far exceed any associated costs. According to the Department's 2021 Pennsylvania Climate Impacts Assessment, climate change is already having a negative impact on this Commonwealth with wide-ranging economic impacts, from disruptions to recreation and tourism to agriculture and infrastructure service disruptions.

Furthermore, climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As this Commonwealth works to reduce its climate risks, steps should be taken to ensure that these inequitable impacts are addressed, and that efforts to address climate change do not inadvertently exacerbate inequities. The harm is already being felt by this Commonwealth's most vulnerable residents, and the Commonwealth must not delay implementation as this final-form rulemaking is clearly in the public interest. As mentioned above, failure to implement this final-form rulemaking, or even a delay in implementation will cause this Commonwealth to miss its 2025 interim GHG reduction goal with concerns regarding the trajectory toward meeting the 2050 goal.

As CO_2 budget sources would need one allowance for each ton of CO_2 emitted, the owners or operators would need to acquire 61 million CO_2 allowances at the estimated 2022 allowance price of $3.24 (2017 $/Ton). If these CO_2 allowances were all purchased at quarterly multistate auctions in 2022, the total purchase cost would be $198 million. The CO_2 budget sources would then most likely incorporate this compliance cost into their offer price for electricity. The price of electricity is then passed onto electric consumers. However, that does not mean that $198 million will be passed onto this Commonwealth's electric consumers as 25 percent of this Commonwealth's electricity is sold out of state.

Even if assuming the $198 million is the annual price tag of the program, which as explained above is an over estimation, the resulting public health benefits alone are estimated to be higher at $232—$525 million annually. The value of partial benefits already exceeds the cost of the program, and this does not account for the total environmental, health and economic benefits of CO_2 reductions, nor does it include the benefits of the reinvestment of the quarterly auction proceeds, a major economic driver.

The independent Penn State study also confirms that the climate benefits for this Commonwealth exceed the monetary costs of participation in RGGI. Penn State's analysis projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. Looking at the benefits even through the narrow lens of health benefits, the benefits exceed the costs with additional benefits accruing from the reinvestment of the auction proceeds. This is consistent with the actual results of participation for the existing participating states over the last decade.

18. Comment: IRRC questions whether the regulation is supported by acceptable data. IRRC also notes that commentators have raised concerns about the modeling employed by the Board to quantify the economic and health benefits of the rulemaking. They question if the data considered is acceptable and appropriate. First and foremost, commentators are concerned that the underlying assumptions and data used for the modeling have not been made available to the public. IRRC urges the Board to share the underlying assumptions and data used for its modeling and address the following issues to demonstrate the validity of the data upon which the regulation is based:

a. Emissions reductions in the Commonwealth have been overstated because of leakage; therefore, the monetized health benefits are also overstated.

b. The modeling compares cumulative data for the time from 2019-2030, but the Commonwealth will not join RGGI until 2022.
c. The model uses an estimate of future natural gas prices which could be much lower than predicted.
d. The model does not account for new natural gas generation, but it does account for new renewable generation.
e. The modeling was conducted before New Jersey and Virginia joined RGGI.
f. The actual cost of buying an allowance will be higher than projected.
g. The modeling fails to account for the economic downturn related to the COVID-19 pandemic.
h. The model fails to account for the expansion of other federal and state regulations and
i. initiatives that impact the production and distribution of electricity.

Response: The Department has been transparent in terms of the modeling and the inputs and assumptions that went into the modeling, both for the original 2020 modeling and the updated 2021 modeling runs as well. The underlying data and assumptions are sound, and the Department's modeling aligns with the real-world benefits that have accrued to the RGGI participating states. All modeling results, assumptions and raw data have been made available to the public through the Department's website in several areas and has been presented and discussed with thousands of stakeholders through the course of this rulemaking. The Department has also held individual meetings with stakeholders and the modeling contractor when requested to make sure that all questions and inquiries regarding the modeling were thoroughly answered. The modeling information posted to the Department's website consists of comprehensive spreadsheets containing all the assumptions and raw data upon which the Department's analyses and conclusions were based.

The Department also compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report, all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at www.dep.pa.gov/RGGI.

The Department addresses the issues noted by IRRC and other commentators individually below in a)—h) to demonstrate the validity of the data upon which this final-form rulemaking is based.

a) In response, the modeling indicates that this Commonwealth's participation in RGGI could lead to between 97 million and 227 million tons of CO_2 reductions between 2022 and 2030. The Department's modeling indicates what emissions reductions will occur in this Commonwealth. These are not based on regional benefits, but state benefits alone. When this Commonwealth implements this final-form rulemaking, significant CO_2 emissions reductions occur within this Commonwealth. Tied to these significant emissions reductions are the resulting health impacts. The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. Penn State's study projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically

noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of implementation of this final-form rulemaking, and if anything, the Department's health benefits are understated.

b) In response, when evaluating the impacts of RGGI participation on the power sector, there are two separate modeling runs or scenarios. The first scenario, the Reference Case or Business-as-Usual Case projects what this Commonwealth's power sector will look like in the future without this Commonwealth's participation in RGGI, and the Policy Case or the RGGI case projects what this Commonwealth's power sector will look like with RGGI participation. These two modeling cases are then compared to help project the impacts of RGGI participation on electric transmission and generation and electric sector emissions, among others in this Commonwealth. When this modeling was first completed in 2020 for the proposed rulemaking, the most recent year of available data was 2019. Therefore, the 2019 data was included in the 2020 round of modeling. While the time period for the IPM analysis was 2019 through 2030, the modeling specifically provided projections for 2020, 2022, 2025, 2028, and 2030. When the modeling was updated in early 2021 for this final-form rulemaking, the most recent year of available data was 2020. Therefore, the 2020 data was included in the 2021 round of modeling and as such the time period for the updated IPM analysis was 2020 through 2030.

The time period for the IPM analysis includes years prior to the implementation of this final-form rulemaking for two reasons. First, as stated, the only available data for each round of modeling was either 2019 or 2020. Second, the Policy Case assumes this final-form rulemaking will be in effect in 2022, so the modeling needs to account for certain assumptions, for example legal or policy requirements that are projected to change, in years before 2022. This accounts for any differences between the Reference Case and the Policy Case in years prior to 2022. Lastly, these assumptions are not only a factor in the Department's modeling, but can also be seen by the functioning of the actual energy market. For example, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

c) In response, the modeling includes natural gas prices that are the average of the Annual Energy Outlook (AEO) Reference Case and the High Gas Resources Case which are published annually by the EIA. The AEO Reference Case is used as a starting point, and then averaged with the High Gas Resources Case because of this Commonwealth's location within the shale region. This hybrid method is used because neither the AEO Reference Case nor the AEO High Gas Resources Case are singularly representative of gas prices in this Commonwealth. Averaged together, the two cases provide as accurate a forecast as possible for modeling purposes. However, the Board notes that these are forecasted prices and there is a possibility that future prices could vary.

d) In response, the modeling accounts for all available data for new generation within this Commonwealth and the surrounding states despite the fuel source. The specific list of projects that were included as firm capacity additions for this Commonwealth is included in the publicly available modeling results on the "Assumptions Overview- Firm Capacity Changes in PA" tab on the Department's RGGI webpage located at www.dep.pa.gov/RGGI. In the 2020 power sector

modeling, the Department included 3,131 MW of new natural gas combined cycle capacity and 251 MW of new solar generation capacity.

e) In response, in the Reference Case for the modeling, RGGI was modeled as an 11-state program including the 9 states participating in RGGI at the end of 2019 — Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island, Vermont, New York, Delaware, and Maryland. Additionally, New Jersey and Virginia were included in the modeling as projected to begin participation on January 1, 2020, and January 1, 2021, respectively. In particular, the starting CO_2 allowance budget for New Jersey was input at 18 million short tons, and the starting CO_2 allowance budget for Virginia was input at 27.16 million short tons. The IPM Policy Case uses similar assumptions as the Reference Case with the key difference that it assumes that this Commonwealth will begin participation in RGGI on January 1, 2022.

f) In response, the RGGI auction clearing prices in late 2020 and early 2021 had a higher price compared to the projected CO_2 allowance prices in the Department's 2020 modeling. The difference between projected CO_2 allowance prices and actual CO_2 allowance prices can be due to a number of factors, including the end of the RGGI three-year control period, the change of the Federal administration, the fact that Virginia began participating in RGGI at the start of 2021, among others. The IPM model generates a CO_2 allowance price based on actual market fundamentals, including the projected supply and demand of CO_2 allowances during the modeling period. However, the model does not take into account behavioral considerations that impact auction bidder behavior and expectations. Bidder expectations can influence the CO_2 allowance price, and therefore lead to a difference from the projected CO_2 allowance price.

g) In response, the Board and the Department received comments and feedback on the power sector modeling through our extensive advisory committee meetings, webinars, public hearings, and the formal public comment period. Understanding the concerns that were raised, the Department conducted a second round of modeling to ensure that the modeling was as up to date as possible, specifically to confirm that the starting CO_2 allowance budget for 2022 and other components of this final-form rulemaking were still appropriate. In February of 2021, the Department updated the power sector modeling assumptions and inputs previously included in the 2020 round of modeling. These assumptions and inputs include the following: 2021 PJM electricity demand forecast, 2021 AEO Natural Gas Prices, updated capacity additions and retirements, updated technology costs and revisions to State law and policies which encompasses the new in-state generation requirement for Tier II resources under the Alternative Energy Portfolio Standards Act (73 P.S. §§ 1648.1—1648.8).

Most notably, the main difference in the modeling assumptions between 2020 and 2021 was the demand forecast for electricity. As a direct impact of the COVID-19 pandemic, the projections for the future demand of electricity are below the 2020 projections made prior to the onset of the pandemic. In sum, while the original 2020 modeling did not account for the impacts of the COVID-19 pandemic, the updated 2021 modeling conducted for this final-form rulemaking includes those impacts.

h) In response, the IPM model properly takes into account the expansion of other Federal and State regulations and initiatives that impact the production and distribution of electricity. IPM is

a dynamic linear programming model that generates optimal decisions under the assumption of perfect foresight. It determines the least-cost method of meeting energy and peak demand requirements over a specified period. In its solution, the model considers several key operating or regulatory constraints that are placed on the power, emissions and fuel markets. The constraints include, but are not limited to, emission limits, transmission capabilities, renewable generation requirements and fuel market constraints. The model is designed to accommodate complex treatment of emission regulations involving trading, banking and special provisions affecting emission allowances, as well as traditional command-and-control emission policies. The specific Federal and State laws and policies that are included in the modeling runs are outlined on the "Assumptions Overview" tab on the Department's RGGI webpage located at www.dep.pa.gov/RGGI, the very first tab located in each of the modeling results files.

19. Comment: IRRC notes that there is no consensus on how this final-form rulemaking will affect the economy of this Commonwealth. IRRC asks the Board to review the concerns of those commentators that have raised issues related to the effect on the economy and provide updated and revised information in the RAF related to the potential economic and fiscal impact of this final-form rulemaking. In particular, commentators believe that the requirement to purchase allowances by coal and older natural gas-fired EGUs will result in those units becoming uneconomical to operate. As a result, these EGUs will close, impacting the coal mining industry of this Commonwealth and hundreds of small businesses and labor unions that support those industries. Another concern is that the price of electricity will increase. The price that electric utilities pay for electricity from fossil fuel-fired generators will increase and the additional cost will be passed on to residential, commercial and industrial rate payers. Low-income residents and those economically affected by the COVID-19 pandemic, small businesses and large industrial users will be impacted. Large industrial users of electricity may base a decision to locate or relocate a business based on the price of electricity in this Commonwealth. Additionally, IRRC mentions that commentators also note that local governments where the coal-related industries and small businesses operate will be negatively impacted because of the tax loss that will result from the rulemaking. One commentator has stated that the fiscal impact of the rulemaking will be the loss of over 8,000 jobs, the loss of $2.82 billion in total economic impact, the loss of $539 million in employee compensation, and the loss of $34.2 million in state and local tax revenue. However, other commentators believe any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

Response: The Department's updated 2021 modeling shows that most if not all the coal-fired generation in this Commonwealth, except for waste coal-fired facilities, will cease generation by 2025. These are the results of the Business-as-Usual or Reference case which does not take into consideration the impacts of this Commonwealth's participation in RGGI on the power sector. Notably, this is a divergence from the results of the Business-as-Usual or Reference case from the 2020 modeling which had projected that coal generation was expected to cease by 2030, though this Commonwealth's participation in RGGI and the associated CO_2 allowance price were previously shown to accelerate these retirements to some extent.

The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and an addition of $1.9 billion to the Gross

State Product, a measurement of the value of the State's economy, indicating economic growth. The Department's modeling incorporates any impacts to economic activity, divestment and loss of tax base that would occur as a result of this final-form rulemaking. Further, the Department's modeling projects this Commonwealth will continue to have lower electricity prices than nearly all of the participating states from 2022-2030, demonstrating the continued advantage of operating a business in this Commonwealth relative to nearby states.

Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030, this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. In sum, RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

The Department agrees with other commentators that any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

20. Comment: IRRC requests additional information and more complete answers to the following sections of the RAF, in addition to the more thorough analysis regarding potential fiscal or economic impact requested. First, Section 17 of the RAF asks an agency to identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor organizations and other public and private organizations. It also asks an agency to evaluate the benefits expected as a result of the regulation. The Board provides a detailed explanation of the expected environmental, health and economic benefits of the regulation for society as a whole. It also provides a dollar estimate of the potential cost to residential customers in terms of monthly electricity bills. However, the explanation does not provide a similar estimate for small businesses and other businesses. IRRC asks the Board to provide that information in the RAF submitted with the final regulation. Second, Section 19 of the RAF asks an agency to estimate any costs or savings to the regulated community associated with legal, accounting or consulting procedures. IRRC asks the Board to estimate the cost associated with an owner or operator having an account representative required to participate in allowance auctions under RGGI.

Response: The Department added supplementary information to the responses to sections 17 and 19 of the RAF. The Department particularly added more detail regarding the estimates for small

businesses and other businesses. Additionally, potential costs and savings to the regulated community are discussed in more detail in the RAF, including the estimated cost associated with an owner or operator having an account representative required to participate in the multistate auctions under RGGI.

21. Comment: IRRC questions whether a less costly or less intrusive alternative method of achieving the goal of the regulation has been considered for the regulation impacting small businesses. IRRC asks the Board to consider the following options, and if it decides to proceed with the current rulemaking, provide an explanation of why these alternatives are not appropriate. First suggestion is do nothing: A comment letter signed by 40 Representatives of the General Assembly states that the current regulatory environment and existing market forces have already significantly reduced CO_2 emissions in the Commonwealth. The "status quo is a far less costly and intrusive method than RGGI at achieving tremendous reductions in carbon emissions." Second, the letter states the Department could achieve its objective with a "gradually declining CO_2 emissions budget without the exorbitant costs proposed by this submission." This could be accomplished by calculating a price to auction emissions that would cover the cost needed to administer RGGI.

Response: The Department contends that the status quo will not achieve the emissions reductions needed to protect public health and the environment, nor are current measures adequate to address climate change. The Department's modeling effort as mentioned above included two separate modeling runs, the first of which is (a) the reference case which reflects business-as-usual with no regulatory or policy changes, and (b) the policy case which is reflective of the impacts of this final-form rulemaking. In comparing these modeling scenarios, without this final-form rulemaking in place, this Commonwealth will emit 97-227 million tons of CO_2 more than with the implementation of this final-form rulemaking. Additionally, residents of this Commonwealth will not benefit from improved air quality or realize the economic, job impacts or health benefits that result from this final-form rulemaking.

Furthermore, rather than benefitting from implementation of this final-form rulemaking, there will be a deleterious impact on the environment, health and the economy without this meaningful and decisive action. Business-as-usual or status quo does not address climate change in a meaningful way. While there may be emissions reductions in the future, they do not occur at the rate or level at which is required to avoid the worst impacts of climate change. Additionally, as a Commonwealth we will not be capable of honoring our commitment to address climate change and will fall short of meeting the interim 2025 GHG reduction goal.

Part of what makes RGGI economically efficient is that it is a regional program, allowing for EGUs to achieve least cost compliance by buying and selling CO_2 allowances whether in multistate auctions or in the secondary market. CO_2 allowances are fungible, meaning that though this Commonwealth has an established CO_2 allowance budget for each year, this Commonwealth's CO_2 allowances are available to meet the compliance obligations in any other participating state and vice versa. Therefore, emissions from this Commonwealth's power sector are not limited to strictly the amount of this Commonwealth's CO_2 allowances. This cooperation allows EGUs more flexibility in terms of compliance and allows the market to signal entrance and exit of generation. In this respect, the market assists in achieving least cost compliance for

all participating states. Furthermore, strategic investments of the auction proceeds within this Commonwealth reduce GHG emissions even further than this Commonwealth's annual CO_2 allowance budget alone.

22. Comment: IRRC asks the Board to respond to technical comments for and against the set-aside provisions and comments requesting full exemptions instead of set-asides. Additionally, IRRC asks the Board to respond to technical comments suggesting ways to improve the implementation of the set-asides and exemptions.

Response: Each state has the authority and discretion as to how CO_2 allowances are treated which is memorialized in each state's CO_2 Budget Trading Program regulation. Allocation of the CO_2 allowances is just one mechanism through which states further public policy goals. For example, each state must decide how to make the CO_2 allowances available. In addition to states offering CO_2 allowances for sale through the multistate auctions, most participating states also opt to have set-aside accounts. These states specifically carve out or "set aside" a portion of the state's CO_2 allowance budget to assist certain sectors with part or all of their compliance obligations or allow other sectors to monetize the CO_2 allowances for further investment.

In this final-form rulemaking, the Department has provided three set-aside options, which are discussed in detail in this preamble. First, the Department is setting aside CO_2 allowances to assist this Commonwealth's waste coal generation sector with compliance with this final-form rulemaking. While waste coal facilities are not exempt from this final-form rulemaking, the Department will oversee the sector's compliance using CO_2 allowances that have specifically been carved out or "set aside" for this purpose. In other words, the compliance costs for waste coal-fired EGUs will be minimal.

At the beginning of each compliance year, the Department will set-aside CO_2 allowances for the waste coal facilities, thereby eliminating the need for the facilities to purchase these allowances in either the multistate auctions or on the secondary market. The waste coal set-aside is equal to 12.8 million tons of CO_2 emissions, an increase from the 9.3 million as outlined in the proposed rulemaking, in response to comments received during the public comment period.
Some commentators requested an increase in the set-aside allocation to allow for future expansion of the waste coal industry, while others requested that the set aside allocation be reduced or completely eliminated. In response, the Department slightly increased the value of the set-aside to account for a facility previously marked for closure that will now remain in operation and to better reflect the operation levels of the waste coal-fired units in this Commonwealth.

Much like the comments received on the waste coal-set aside, the Board received comments asking for both the expansion and elimination of the cogeneration (now CHP) set-aside. Furthermore, commentators asked for clarification as to what facilities would qualify for the set-aside and how those calculations would be performed. In response to comments, the Board changed the name and description of the set-aside to clarify that the specific type of cogeneration facilities the set-aside covers are CHP facilities.

Some commentators requested the elimination of the CHP set-aside, indicating the anti-competitive nature of this set-aside. The Department notes that facilities that would qualify for

this set-aside are not strictly electricity producers in the plainest sense but have on-site generation that is feeding an interconnected facility. In other words, while these facilities do have some electricity that is sold to the grid, that is not the key focus of their business model nor is the amount of electricity sold to the grid in a volume that allocation of CO_2 allowances would create an anti-competitive environment.

Comments were also made requesting that the Department expand the value of the CHP set-aside to account not only for a portion of the qualifying facility's compliance obligation, but to account for all of a qualifying facility's compliance obligation. Commentators indicated that without a full set-aside the Department may be creating a disincentive for existing CHP facilities to operate efficiently and a potential disincentive for the future buildout of additional CHP facilities. The commentators emphasized that this runs counter to the recommendations outlined in the Department's Climate Action Plan and the PUC's Policy Statement on Combined Heat and Power. Commentators indicated that any disincentive for these facilities to operate at anything, but peak efficiency was undermining the environmental benefits of CHP and may lead to other facilities with higher emissions intensity generating the lost electricity.

In response, the Department developed a two-tier approach to the CHP set-aside whereby facilities meeting strict efficiency criteria may be eligible for a full set-aside while other qualifying CHP facilities that do not meet those criteria may qualify for the partial set-aside. This allows for efficient operation of existing CHP facilities and does not interfere with the potential for future buildout of CHP in this Commonwealth.

The Department received comments asking that rather than depositing undistributed CO_2 allowances from the waste coal set-aside account into the strategic use set-aside account, that the strategic use set-aside account have its own independent CO_2 allowance allocation. In response, the Board notes that the Department has the flexibility in future years to deposit CO_2 allowances into the strategic use set-aside if the undistributed CO_2 allowances are not sufficient to support activity in this set-aside account. Because the Department has this flexibility already, the Department decided to maintain the allowance allocation structure as proposed.

Furthermore, comments were received asking that the Department add a new set-aside or modify the strategic use set-aside to develop a Voluntary Renewable Energy Set-aside akin to those established by a few of the participating states. In response, the Department elected to keep the strategic use set-aside as proposed, with some clarifications to explain that renewable and other non-emitting energy technologies would qualify for allocation of allowances under the strategic use set-aside. Rather than restrict the types of projects that would qualify for allowances, the Department has elected to keep the broader, more inclusive nature of the strategic use set-aside.

The Department also received comments requesting that the process by which applicants could apply for allowance allocations be more clearly outlined in the regulation. The Department responded with modifications to the regulation clearly outlining the set-aside application process and requirements. An additional requirement was added clarifying that CO_2 allowances are distributed upon the completion of a project which is not legally required. Projects that are completed for compliance purposes or as the result of settlements do not qualify for an allocation of allowances under the strategic use set-aside account.

23. Comment: IRRC asks the Board to consider delaying the implementation of the rulemaking for one year. IRRC suggests that this additional time would allow the regulated community an opportunity to adjust their business plans to account for the potential increased costs associated with this Commonwealth joining RGGI.

Response: The Department understands the concerns expressed by IRRC and other commentators; however, this Commonwealth cannot wait any longer to address CO_2 emissions from fossil-fuel fired EGUs. On October 3, 2019, it was announced that the Department was going to begin this rulemaking process, which provided more than two years' notice to the regulated community of the forthcoming regulation. As has been stated above, further delay would compromise this Commonwealth's ability to meet the GHG emissions reductions goals, and cause harm to public health and the environment which the Department is responsible for protecting under the APCA. Furthermore, due to the nature of compliance in the RGGI program, the first real compliance deadline occurs more than a year after the anticipated January 1, 2022 start date, further extending the compliance horizon for covered facilities.

RGGI operates on a three-year compliance schedule whereby only partial compliance is required within the first two years, and then full compliance is required after the end of the third year. The current RGGI three-year compliance period began in 2021, so 2021 and 2022 are interim compliance years while 2023 is a full compliance year. What this means is that facilities only need to acquire 50 percent of the necessary CO_2 allowances during the interim compliance years, but need to hold 100 percent of CO_2 allowances for the entire three-year control period by March 1 of the following year.

For example, while January 1, 2022 or the first day of the next calendar quarter following publication is the date upon which the CO_2 requirements begin for this Commonwealth, the first compliance deadline is not until more than a year later on March 1, 2023 with full compliance not required until March 1, 2024 providing ample time to comply.

24. Comment: IRRC says the applicability provision under § 145.304 is unclear because it does not specify that only units that are operating would have to comply with the regulation. IRRC suggests that the final regulation be amended to improve the clarity of this requirement.

Response: The Department amended § 145.304 to remove the language related to a unit operating at any time on or after January 1, 2005 to clarify that only fossil fuel-fired EGUs currently operating in this Commonwealth need to comply with this final-form rulemaking.

25. Comment: IRRC is concerned that § 145.314 does not require the owner or operator of a unit to verify anything. Section 145.314 specifies what must be included in a complete account certificate of representation for a CO_2 authorized account representative or a CO_2 authorized alternate account representative. IRRC recommends that the final-form regulation be amended to require the owner or operator of a unit to sign or verify in some manner that the representative is authorized to represent their interests under the CO_2 budget trading program.

Response: In addition to the language pertaining to the account representatives in § 145.314, there is language in § 145.311 providing that "the representative of the CO_2 budget source shall be selected by an agreement binding on the owner or operator of the source and all CO_2 budget units at the source and must act in accordance with the certificate of representation under § 145.314." Additionally, the owner or operator should already have a designated representative who submits data to the EPA on behalf of the owner or operator. To participate in COATS, a representative of the CO_2 budget source must complete a Certificate of Representation form and submit the form to the EPA. The account representative listed on the form for a CO_2 budget source must match the representative for that facility in the EPA's Clean Air Market Division system. The regulatory language in sections 145.311 and 145.314 is also consistent with the existing language in the Board's NO_x Budget Trading Program regulation in 25 Pa. Code Chapter 145, Subchapter A and the RGGI Model Rule.

26. Comment: Numerous members of the General Assembly expressed their support of this final-form rulemaking and this Commonwealth's participation in RGGI. Some even highlighted that polling consistently shows that more than 70 percent of Pennsylvanians strongly support action on climate change and that this final-form rulemaking has diverse support from businesses and institutions to environmental nonprofits and health organizations. Members also stressed that it is crucial to address climate change, lower emissions of harmful air pollutants, particularly given the COVID-19 pandemic, and consider environmental justice concerns. They noted that RGGI has proven successful and that RGGI participation will provide a multitude of benefits to public health, safety, and welfare, as well as benefits to the environment and the economy. In particular, they stated that participating in RGGI will spur additional investments in renewable energy throughout this Commonwealth, ensuring that this Commonwealth's vital position in national energy markets is maintained. They also emphasized that reducing CO_2 emissions from the power generation sector would improve the environment for this Commonwealth's citizens and make this Commonwealth a more sustainable and innovative place in the future.

Response: The Department acknowledges these comments and thanks the members for their support.

27. Comment: A few members of the General Assembly commented that the process has not included input from the legislative branch.

Response: The Department disagrees with this characterization of the regulatory process. The House and Senate ERE Committees and members of the Legislature have extensive involvement in the development of the Department's rulemakings, including appointed members on the Department's advisory committees and 4 seats on the Board, in addition to the review outlined under the Regulatory Review Act (RRA). The Board and the Department consistently seek opportunities to engage productively with interested parties, including the Legislature. The Department's Legislative Office works to address issues and ensure that the Legislature is informed of actions by the Department and the Board. Throughout the development of this final-form rulemaking, the Department met with individual legislators and responded to questions on this rulemaking and RGGI participation during several legislative hearings. Additionally, several members of the Legislature including the ERE Committees submitted comments on the proposed rulemaking.

General Comments

28. Comment: Several municipalities and townships passed resolutions urging the Independent Regulatory Review Commission to reject the proposed Carbon Dioxide Budget Trading Regulation as contrary to state statute and against the best interests of Pennsylvanians.

Response: The Department acknowledges these resolutions. However, the APCA, a state statute, provides the Department and the Board with broad authority to promulgate and implement this final-form rulemaking. Additionally, this final-form rulemaking is necessary to ensure CO_2 emissions continue to decrease and at a rate that shields this Commonwealth from the worst impacts of climate change, benefitting public health, the environment and all sectors of the Pennsylvania economy, all of which is in the best interests of Pennsylvanians.

29. Comment: Several municipalities and townships passed resolutions urging the Independent Regulatory Review Commission to approve the proposed Carbon Dioxide Budget Trading Regulation as necessary for addressing climate change citing the health, economic and environmental benefits.

Response: The Department acknowledges the comment and appreciates the support for the final-form rulemaking.

30. Comment: The commentator expressed general support for the proposed rulemaking and encouraged the Board to adopt the rulemaking.

Response: The Department acknowledges this comment and appreciates the commentator's support.

31. Comment: The commentator expressed general opposition to the proposed rulemaking and encouraged the Board to not move forward with the rulemaking.

Response: The Department acknowledges this comment.

32. Comment: The commentator states that additional regulation by the Department is not necessary and would only be a burden on Pennsylvanians.

Response: The Department disagrees. The purpose of this final-form rulemaking is to reduce anthropogenic emissions of CO_2, a GHG and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth. This final-form rulemaking is necessary to reduce CO_2 emissions from sources within this Commonwealth and will benefit public health, the environment, and all sectors of the Pennsylvania economy, for the benefit of all Pennsylvanians.

33. Comment: The commentator states that there are significant health benefits for Pennsylvanians as a result of the emissions reductions associated with this proposed rulemaking.

Response: The Department agrees. In fact, a 2017 independent study by Abt Associates, a global research firm focused on health and environmental policy, on the "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014" showed that participating states gained significant health benefits in the first six years of RGGI implementation alone. From 2009-2014, the participating states avoided around 24 percent of CO_2 emissions that would have otherwise been emitted during that period, resulting in around $5 billion in avoided health related costs. See Abt Associates, "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014," January 2017, https://www.abtassociates.com/sites/default/files/files/Projects/executive%20summary%20RGGI.pdf.

A recent study led by researchers from the Columbia Center for Children's Environmental Health at Columbia University Mailman School of Public Health ("Columbia study"), published on July 29, 2020, on the "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative" indicates that the health benefits from RGGI are even more significant than estimated in 2017 by Abt Associates. The Columbia study concluded that the co-pollutant reductions resulting from RGGI have provided considerable child health benefits to participating and neighboring states. In particular, between 2009-2014, RGGI resulted in an estimated 537 avoided cases of childhood asthma, 112 avoided preterm births, 98 avoided cases of autism spectrum disorder, and 56 avoided cases of term low birthweight. Those child health benefits also have significant economic value, estimated at $199.6–358.2 million between 2009 and 2014 alone. However, the researchers note that the actual health benefits are even greater than estimated because the analysis does not capture the future health benefits related to reductions in childhood $PM_{2.5}$ exposure and mitigating climate change, such as fewer heat-related illnesses or cases of vector-borne disease to which children are especially vulnerable. See Frederica Perera, David Cooley, Alique Berberian, David Mills, and Patrick Kinney, "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative," Environmental Health Perspectives, Vol. 128, No. 7, July 2020, http://ehp.niehs.nih.gov/doi/10.1289/EHP6706.

Further, when looking specifically at this final-form rulemaking, the Department's modeling projects that sources within this Commonwealth will reduce CO_2 emissions by 97-227 million tons over the next decade. The Department used the EPA's Incidence-per-Ton methodology which calculates total avoided incidences of major health issues, and calculation of avoided lost work and school days due to reduced emissions. Based on an assumption that 188 million tons of CO_2 emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking. Children and adults alike will suffer less from respiratory illnesses, 30,000 less incidences of upper and lower respiratory symptoms which leads to reduced emergency Department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults will be healthier as well which results in over 83,000 avoided lost workdays due to health impacts. Health benefits were also calculated using EPA's Benefit-per-Ton methodology, which indicates that the public health benefits to this Commonwealth of these avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

34. Comment: The commentator states that a national carbon pricing program or a regional program through the PJM market would be a more effective climate mitigation effort than this proposed rulemaking.

Response: The Department appreciates the comment and supports ongoing efforts to price carbon through the electricity sector at the regional or national level by PJM, the FERC, and the Federal government. Both regional and federal implementation of a carbon pricing mechanism would either partially or entirely address leakage concerns. There would be no potential shifting of generation or emissions from carbon pricing to non-carbon pricing regions as a large portion of or all surrounding states would be subject to the same requirements. However, since neither a national carbon pricing program nor a regional program through PJM currently exists, the Department is focused on addressing CO_2 emissions at the state level while exploring opportunities for leakage mitigation.

The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. Additionally, the FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80 percent of the nation's electricity from zero-carbon sources.

If there is future action to address climate change on a regional or national level, this Commonwealth will be well positioned, through implementation of this rulemaking, to meet any future requirements.

35. Comment: The commentator states that joining RGGI is not in Pennsylvania's best interests, necessary or cost-effective to reduce CO_2 emissions in Pennsylvania. The commentator also disputes that CO_2 is a problem and disagrees that climate change is actually occurring.

Response: The Department disagrees with the commentator. While CO_2 emissions from the electricity sector have decreased in recent years, the Department projects that, without this rulemaking, CO_2 emissions will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. Participation in RGGI will ensure that CO_2 emissions continue to decrease in this Commonwealth as needed to protect public health, safety, and welfare, as well as the environment.

The Department concurs with the EPA's determination that reducing emissions using a market-based system provides regulated sources with the flexibility to select the most cost-effective approach to reduce emissions and has proven to be a highly effective way to achieve emission reductions, meet environmental goals, and improve human health.

RGGI has proven beneficial for the current participating states and the Department's modeling and other independent studies have shown that RGGI participation will also be beneficial for this Commonwealth. CO_2 emissions are inimical to public health, safety and welfare. In the Fifth

Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) released in 2014, the IPCC concluded that, "human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history." See IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. While CO_2 is a necessary element of life on Earth and acts as a fundamental aspect of nearly every critical system on the planet, CO_2 in high concentrations in the atmosphere leads to the greenhouse effect. The greenhouse effect occurs when CO_2 (and other GHG) molecules absorb solar energy and re-emit infrared energy back to the Earth's surface. This absorption and re-emitting of infrared energy is what makes certain gases trap heat in the lower atmosphere, not allowing it to go back out to space. The greenhouse effect disrupts the normal process whereby solar energy is absorbed at the Earth's surface and is radiated back through the atmosphere and back to space. Maintaining the surface temperature of the Earth depends on this balance of incoming and outgoing solar radiation. See the National Aeronautics and Space Administration, "The Causes of Climate Change," https://climate.nasa.gov/causes/.

36. Comment: The commentator states that RGGI participation is unnecessary as PA CO_2 emissions have decreased without RGGI.

Response: The Department acknowledges this comment. While CO_2 emissions from the electricity sector have decreased in recent years, the Department projects that, without this rulemaking, looking forward CO_2 emissions will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. Participation in RGGI will ensure that CO_2 emissions continue to decrease in this Commonwealth as needed to protect public health, safety, and welfare, as well as the environment.

37. Comment: The commentator states that the Commonwealth has already reduced emissions in the electricity generation sector without this proposed rulemaking due to market, financial, and technological changes, therefore this proposed rulemaking is not needed for emissions reductions.

Response: The Department recognizes that Pennsylvania's electricity generation sector has decreased emissions in recent years, but further emissions reductions are necessary to achieve the necessary GHG reduction targets. Based on the most recent data from the EPA's State Inventory Tool, in 2017, this Commonwealth generated net GHG emissions equal to 233.20 million metric tons CO_2 equivalent ($MMTCO_2e$) statewide, the vast majority of which are CO_2 emissions. In the global context, this Commonwealth's electricity generation sector alone emits more CO_2 than many entire countries including Greece, Sweden, Israel, Singapore, Austria, Peru and Portugal. Historically, the electricity generation sector has been the leading source of CO_2 emissions in this Commonwealth. Based upon data contained in the Department's 2020 GHG Inventory, 29 percent of this Commonwealth's total GHG emissions are produced by the electricity generation sector.

In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix, resulting from market forces and the establishment of alternative energy goals, and energy

efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced.

However, looking forward, the Department projects CO_2 emissions from the electricity generating sector will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth. The Three Mile Island nuclear power plant already closed on September 20, 2019, amounting to a loss of 818 MW of carbon free generation. However, the modeling conducted for this proposed rulemaking predicts no further nuclear power plants retirements through 2030 with implementation of this proposed rulemaking. Without this proposed rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure. In fact, the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, recently withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

Further, the Department's Climate Action Plan predicts that total and net GHG emissions (including emissions sinks) will increase by 4 percent and 5 percent, respectively, from 2015 to 2050. Additionally, the most recent GHG Inventory indicates that in 2017 GHG emissions in this Commonwealth increased, widening the gap between current emissions and reductions necessary to avoid the worst impacts of climate change.

This proposed rulemaking is necessary to ensure CO_2 emissions continue to decrease and at a rate that shields this Commonwealth from the worst impacts of climate change. RGGI plays an important role in providing a platform whereby this Commonwealth can reduce CO_2 emissions using a market-based approach. As the electricity generation sector remains one of the leading sources of CO_2 in this Commonwealth, it is imperative that emissions continue to decrease from that sector.

38. Comment: The commentator states that this regulation will not reduce emissions in the Commonwealth.

Response: The Department disagrees. The design of the CO_2 Budget Trading Program within this final-form rulemaking ensures emissions from the electricity generation sector are decreased over time. Between 2022 and 2030, the program's CO_2 emissions budget will decrease 19,914,960 tons, equal to a reduction of 25.532 percent. However, to capture the full extent of the benefits of this proposed rulemaking, it is critical to compare this Commonwealth's annual emissions with this proposed rulemaking and without it from 2022 to 2030.

The Department estimated in 2020 that this Commonwealth will experience CO_2 emission reductions of 188 million tons over the decade as a direct result of participation in RGGI. The Department's updated modeling in 2021 estimated a range of reductions between 97-227 million tons from sources within this Commonwealth between 2021-2030. This results in CO_2 reductions in this Commonwealth and a net benefit to the entire PJM region. The Department's modeling shows that this Commonwealth makes these significant emission reductions while maintaining

historic electric generation levels, enhancing this Commonwealth's status as a leading net energy exporter, creating economic opportunities and reducing long-term wholesale energy prices.

39. Comment: The commentator states that the Department should remove "inimical" and replace with a more customarily used word.

Response: The Department acknowledges this comment. The term "inimical" is appropriate for this final-form rulemaking as it is used in the definition of "air pollution" under section 3 of the APCA.

40. Comment: Even if the presence of CO_2 in the atmosphere amounts to "air pollution," any attempt by the EQB to employ RGGI's carbon taxing program to regulate emissions of that gas would not meaningfully "prevent[], control, reduc[e], and abate[]" climate change, as required for the agency to adopt regulations under APCA. On a percentage basis, Pennsylvania's fossil fuel-fired power plants make only a miniscule contribution to total worldwide GHG emissions. The consequence is that, even if implementing RGGI in Pennsylvania were to completely eliminate carbon emissions from all regulated power plants in the Commonwealth (which, of course, it would not be designed to do), it would not materially impact the concentration of ambient CO_2 in the outdoor atmosphere.

Response: As stated in this final-form rulemaking, the purpose of this rulemaking is not to solve global climate change, but to address this Commonwealth's share of CO_2 emissions from one of its highest emitting sectors. Although this final-form rulemaking will not solve global climate change, it will aid this Commonwealth in addressing its share of the impact, joining other states and countries that are addressing their own impacts. This Commonwealth has the fifth leading CO_2 emitting electricity generation sector in the country, and this final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG emissions.

41. Comment: The commentator states that the proposed rulemaking will cause widespread economic harm across the Commonwealth due to increased electricity prices, decreased investment, or other various economic reasons related to implementation of this final-form rulemaking.

Response: The Department disagrees as the associated Pennsylvania-specific economic benefits are evident. The Department's 2020 modeling estimates that from 2022 to 2030, this final-form rulemaking would lead to an increase in Gross State Product of $1.9 billion and a net increase of 27,752 jobs in this Commonwealth. The results also show that overall, citizens of this Commonwealth could see a cumulative increase in Disposable Personal Income of $6.9 billion by 2050.

Additionally, this final-form rulemaking provides an opportunity to assist residents of this Commonwealth impacted by changes in the energy sector, as this Commonwealth and the rest of the country transitions to a new energy future. Without this final-form rulemaking, many jobs, specifically at coal-fired power plants will be lost without any opportunities for assistance to ensure there is an equitable transition for workers in all energy sectors.

The Department recognizes the potential for short-term, minimal increases in electricity prices to consumers as a result of this final-form rulemaking, however the Department's 2020 modeling indicates that investments made in energy efficiency, renewable energy, and GHG abatement as a result of RGGI proceeds would result in the addition of 9.4 GW of renewable energy and load reduction of 29 TWh of electricity from energy efficiency projects. This addition of carbon free generation and reduction in electricity demand would further bolster the benefits of this final-form rulemaking. This increases the amount of electricity exported from this Commonwealth, further drives down emissions and compliance costs for facilities, and results in a reduction of electricity prices in 2029 below what they would have been without this final-form rulemaking.

By using program proceeds to invest in energy efficiency and renewable energy programs, this will help offset any potential increased costs to electricity prices by decreasing peak demand and offering low cost electricity to the grid. In fact, the Acadia Center conducted an analysis of electricity costs for all states that participated in RGGI compared to states in the rest of the country and found that electricity prices in RGGI states have fallen by 5.7 percent while prices have increased in the rest of the country by 8.6 percent. See Acadia Center, "The Regional Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf. Also see the Modeling and Data Analysis section of this document for information on the electricity cost impacts of RGGI.

42. Comment: The commentator states this final-form rulemaking will benefit the Pennsylvania economy due to increased competitiveness, program investments, public health benefits, or other various economic reasons related to implementation of this final-form rulemaking.

Response: The Department agrees. In addition to the benefits of this final-form rulemaking discussed above, the public health benefits to this Commonwealth of avoided SO_2 and NO_x emissions as a result of RGGI participation range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year. Additionally, it is estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth by 2030 due to emission reductions directly resulting from this final-form rulemaking.

Further, this Commonwealth is anticipated to experience no loss of competitive advantage over neighboring states as a result of this rulemaking, and should experience greater competitive advantage in the future. In the 2020 modeling, the Department found that this Commonwealth will continue to export electricity to other states and this Commonwealth's total generation is not eroded as a result of RGGI participation. In fact, if the auction proceeds are invested in the energy sector, the 2020 modeling estimates that total electricity exports from this Commonwealth will be higher by 2030 with this final-form rulemaking than without it. Any price differential resulting from the addition of the CO_2 allowance price is not significant enough to cause EGUs to close and reopen in surrounding states. EGUs in this Commonwealth have historically maintained a competitive advantage regarding natural gas prices due to the proximity to the Marcellus and Utica shale formations. Even with the price adder of the CO_2 allowance price, the modeling shows that natural gas generation in this Commonwealth continues to be extremely competitive. Meanwhile, renewable energy sources in Pennsylvania will become more competitive under this rulemaking than without RGGI participation.

These factors, combined with the investment of program proceeds in energy efficiency, renewable energy, and communities as a result of RGGI participation, will increase public health, create job opportunities, and enable a competitive economy while producing substantial environmental benefits.

43. Comment: The commentator states that this regulation will make the Commonwealth less economically competitive.

Response: The Department disagrees. The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the RGGI participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

44. Comment: The commentator states that the last sentence in the paragraph preceding *Compliance assistance plan* "then" needs replaced with "than".

Response: The Department has corrected the typographical error in the Preamble.

45. Comment: The commentator states that Pennsylvania's air pollution is at historically low levels and that Pennsylvania's air quality does not cause any harm.

Response: The Department acknowledges that there have been certain air quality improvements in this Commonwealth. However, CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which

unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. Additionally, there is a significant body of scientific literature to show that CO_2 meets the definition of air pollution under the APCA. As the Department has mentioned in the regulatory documents of this final-form rulemaking, numerous sources, including the EPA, the Penn State University, the United States Global Change Research Program (USGCRP) and the IPCC, have confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life.

The Department acknowledges that this Commonwealth has reduced carbon emissions in certain sectors, however, those reductions are not yet enough to meet statewide goals to reduce GHG emissions by 26 percent by 2025 and 80 percent by 2050 in comparison to 2005 levels. While this Commonwealth has achieved reductions from all sectors, including the power sector, more is needed to meet these goals, set to avoid the worst impacts of climate change. Further, CO_2 emissions are projected to increase, as the Department's Climate Action Plan predicts that total and net GHG emissions (including emissions sinks) will increase by 4 percent and 5 percent, respectively, from 2015 to 2050. Additionally, the most recent GHG Inventory indicates that in 2017 GHG emissions in this Commonwealth increased, widening the gap between current emissions and reductions necessary to avoid the worst impacts of climate change.

Additionally, as shown by the Department's modeling, the reduction of co-pollutants, in addition to the direct CO_2 emission reductions, results in significant public health and environmental benefits. For decades the EPA has included co-pollutant reductions when calculating the benefits of a regulation.

46. Comment: The commentator states that since the goal of RGGI is to decrease pollution, the Department should not allow fossil fuel power plants to increase their emissions once RGGI is implemented.

Response: This final-form rulemaking will lead to decreased CO_2 emissions across this Commonwealth, which is the intent of the Department. The design of this final-form rulemaking will not limit emissions from specific EGUs, as a command and control rulemaking would do.

In 2003, the EPA issued "A Guide to Designing and Operating a Cap and Trade Program for Pollution Control," in which the EPA detailed the benefits of cap and trade programs and the advantages they provide over more traditional approaches to environmental regulation. By establishing an emissions budget, cap and trade programs can provide a greater level of environmental certainty than other environmental policy options. The regulated sources, across the region, must procure allowances to cover emissions or risk being penalized for lack of compliance. Traditional command and control regulations, on the other hand, tend to rely on variable emission rates and usually only regulate existing or new sources. However, under cap and trade programs, new and existing sources must comply with the emissions budget. A cap and trade program may also encourage sources to achieve emission reductions in anticipation of future compliance, resulting in the earlier achievement of environmental and human health benefits. In fact, the Department's modeling shows that this is occurring as this Commonwealth prepares to participate in RGGI in 2022.

The EPA also noted in the guide that banking of allowances, which this final-form rulemaking allows, provides an additional incentive to reduce emissions earlier than required. Banking provides flexibility by allowing sources to save unused allowances for use in a later compliance period when the emissions budget is lower and the costs to reduce emissions may be higher. With command and control, the regulating authority specifies sector-wide technology and performance standards that each of the affected sources must meet, whereas cap and trade provides sources with the flexibility to choose the technologies that minimize their costs while achieving their emission target. Cap and trade programs also provide more accountability than a command and control program. Under this final-form rulemaking and other cap and trade programs, sources must account for every ton of emissions they emit by acquiring allowances. On the other hand, command and control programs tend to rely on periodic inspections and assumptions that control technology is functioning properly to show compliance. See EPA, "Tools of the Trade: A Guide to Designing and Operating a Cap and Trade Program for Pollution Control," June 2003, EPA430-B-03-002, https://www.epa.gov/sites/production/files/2016-03/documents/tools.pdf.

47. Comment: The commentator states that due to the growth in electric generation from natural gas, Pennsylvania has reduced emissions and improved public health across the Commonwealth.

Response: The Department acknowledges that the growth of natural gas generation in this Commonwealth has reduced emissions; however, more reductions are needed to address climate change and meet the Commonwealth's GHG reduction goals. Historically, the electricity generation sector has been the leading source of CO_2 emissions in this Commonwealth. Based upon data contained in the Department's 2020 GHG Inventory, 29 percent of this Commonwealth's total GHG emissions are produced by the electricity generation sector. See Environment and Natural Resources Institute of The Pennsylvania State University, 2020 Pennsylvania Climate Change Impacts Assessment Update, April 2020, http://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/ClimateChange/2020ClimateChangeImpactsAssessmentUpdate.pdf. The Department's GHG inventory and related information is available at www.dep.pa.gov/Citizens/climate/Pages/CCAC.aspx.

In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix, resulting from market forces and the establishment of alternative energy goals, and energy efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced. All of these factors contributed to decreasing CO_2 emissions from the electricity sector and therefore reduced co-pollutants and increased public health benefits.

However, looking forward, the Department projects CO_2 emissions from the electricity generating sector will increase due to reduced switching from coal to natural gas, the potential closure of zero carbon emitting nuclear power plants, and the addition of new natural gas-fired units in this Commonwealth.

Further, the Department's Climate Action Plan predicts that total and net GHG emissions (including emissions sinks) will increase by 4 percent and 5 percent, respectively, from 2015 to 2050. See Pennsylvania Department of Environmental Protection, 2018 Pennsylvania Climate Action Plan: Strategies and actions to reduce and adapt to climate change, April 29, 2019, http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e. Additionally, the most recent GHG Inventory indicates that in 2017 GHG emissions in this Commonwealth increased, widening the gap between current emissions and reductions necessary to avoid the worst impacts of climate change. See Pennsylvania Department of Environmental Protection, 2020 Pennsylvania Greenhouse Gas Inventory Report, July 2020, https://files.dep.state.pa.us/Energy/Office%20of%20Energy%20and%20Technology/OETDPortalFiles/Climate%20Change%20Advisory%20Committee/2020/Pennsylvania%202020%20GHG%20Inventory%20Report.pdf.

48. Comment: The commentator states that the following statement should be removed "Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from the novel coronavirus (COVID-19). As such, reductions in CO_2 emissions are even more significant now more than ever before. The COVID-19 pandemic has resulted in a renewed focus on climate change, local air quality impacts, and opportunities for economic development, all areas where RGGI participation can provide value." This statement could correlate to a myriad of illnesses. Without identifying Chronic Obstructive Pulmonary Disease (COPD), pneumonia, asthma or other health ailments this appears as bias or sensationalism. Certainly, until 2020, the aforementioned were most likely to have increased mortality rates when living in air-polluted environments. Specifically, the correlation is with particulate matter and ground-level ozone. Reference March 12, 2009 The New England Journal of Medicine article on UC Berkley Air Pollution study. If the Department decides to use the language contained in the draft rule, it would more accurately convey the message if it were rewritten. "…reduction in CO_2 emissions are needed now more than ever before." "Significantly" does not convey "need".

Response: The Department disagrees with this comment suggesting a language change and notes that the statement is based on a recent study from Harvard University. See Harvard University Study "Fine particulate matter and COVID-19 mortality in the United States: A national study on long-term exposure to air pollution and COVID-19 mortality in the United States, 2020, https://projects.iq.harvard.edu/covid-pm. Additionally, the term "significant" does convey "need" as it conveys how important, which is synonymous with significant, the need is to reduce emissions.

49. Comment: The commentator states that climate change is not an adequate enough concern to warrant this proposed rulemaking.

Response: The Department disagrees. Climate change impacts endanger the lives and livelihoods of the people of this Commonwealth. On May 5, 2021, the Department with support from ICF and Penn State University, released the most recent Pennsylvania Climate Impacts

Assessment. The 2021 Pennsylvania Climate Impacts Assessment found that the average annual temperature Statewide has risen and will continue to rise, as much as 5.9°F (3.3°C) by midcentury compared to a baseline period of 1971-2000. Additionally, this Commonwealth could experience more total average rainfall, occurring in less frequent but heavier rain events. Extreme rainfall events are projected to increase in magnitude, frequency, and intensity, while drought conditions are also expected to occur more frequently due to more extreme, but less frequent precipitation patterns.

There will also be more frequent and intense extreme heat events with temperatures expected to reach at least 90°F on 37 days per year on average across the State, up from the 5 days during the baseline period. Days reaching temperatures above 95°F and 100°F will become more frequent as well. These increasing temperatures will continue to alter the growing season and increase the number of days that individuals and businesses will have to run air conditioning. As heat waves become increasingly common, individuals will be more susceptible to health and economic risks. This is particularly true for vulnerable populations, including low-income populations, the elderly, pregnant women, people with certain mental illnesses, outdoor workers, and those with cardiovascular conditions. Most notable from the 2021 Pennsylvania Climate Impacts Assessment is that climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As shown by all of the Pennsylvania Climate Change Impacts Assessments, climate risks and related impacts in Pennsylvania could be severe, potentially causing increased infrastructure disruptions, higher risks to public health, economic impacts, and other changes, unless actions are taken by this Commonwealth to avoid and reduce the consequences of climate change. Moreover, participation in RGGI will aid this Commonwealth in the just transition to a lower-carbon future in line with existing market and regulatory trends on a global scale.

50. Comment: In the absence of federal policy, the commentator supports Pennsylvania's creation of goals, and the development of policy to meet those goals.

Response: The Department thanks the commentator for their support of this final-form rulemaking.

51. Comment: The commentator states that even if implementing RGGI in Pennsylvania were to completely eliminate carbon emissions from all regulated power plants in the Commonwealth (which, of course, it would not be designed to do), it would not materially impact the concentration of ambient CO_2 in the outdoor atmosphere.

Response: As stated in this final-form rulemaking, the purpose is not to solve global climate change, but to address this Commonwealth's share of CO_2 emissions from one of its highest emitting sectors. Although this final-form rulemaking will not solve global climate change, it will aid this Commonwealth in addressing its share of the impact, joining other states and countries that are addressing their own impacts. This Commonwealth has the fifth leading CO_2 emitting electricity generation sector in the country, and this final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce GHG emissions.

52. Comment: The commentator states that putting a price on electricity use through RGGI and Pennsylvania's outdated AEPS, without also putting a price on GHG emissions from direct use of fossil fuels and industrial processes burning those fuels, poses an economic deterrent to the electrification in other sectors that will be necessary to achieve deep decarbonization by 2050.

Response: The Department disagrees with this comment. Implementation of this final-form rulemaking will not be a deterrent to electrification in other sectors. The Department's modeling indicates a minimal impact to electricity rates as a result of this final-form rulemaking, with significant opportunities for implementation of energy efficiency measures to further address any limited impact. Furthermore, pricing is not impacted to the level that would signal electricity demand reductions or limit future electrification. Modeling confirms this as it does not project significant declines in electricity demand as a result of this final-form rulemaking.

The Department is regulating CO_2 emissions from the electricity generation sector, one of the largest sources of GHG emissions in this Commonwealth. It is imperative to reduce the amount of GHG emissions released from the electricity sector as other sectors are switching from burning fossil fuels directly to using electricity instead.

53. Comment: Pennsylvania's Alternative Energy Portfolio Standards and energy efficiency requirements are not adequate substitutes for a RGGI compliant regulation. Arresting emissions of GHG pollution in a way sufficient to prevent severe climate disruption requires an all-of-the-above approach.

Response: The Department agrees that this final-form rulemaking and the AEPS are complementary policies that reduce GHG emissions in different ways.

54. Comment: The commentator states that the policy indicates climate change as a primary reason for increases in tick-related Lyme disease. "Mosquitoes, fleas and ticks and the diseases they carry have been a particular concern in the Northeast in recent years. Scientists have linked these diseases, specifically tick-related Lyme disease, to climate change." The commentator agrees with the first part of this statement, but would reference a connection between West Nile and climate change instead of ticks and Lyme disease. Without proof or a reference, the commentator would contend that ticks and Lyme disease are more appropriately influence by lack of rodent predation, especially mice, that are vectors. As urban and suburban development has disrupted the natural balance of mammalian ecology, so has this development increased Lyme exposure. Though West Nile arguably is a by-product of urban and suburban development too, it is a better example as increased temperature and rainfall, as well as standing pools of water, more accurately correlate with climate change.

Response: The Department acknowledges this comment. However, the Department's climate change impacts assessment indicates that the Department's statement is appropriate.

55. Comment: The commentator states that in general, there is a large volume of unsubstantiated claims in this draft that use presumptive language (could, may, might, likely, etc.). As a document drafted by a science-based Department on a science-based issue, the commentator would suggest removing such claims that are not based on existing knowledge or

modeling, e.g., "The risk of injury and death from extreme weather events could also increase as a consequence of climate change. Additionally, climate change could affect the prevalence and virulence of air-borne infectious diseases such as influenza."

Response: The Department disagrees as the development of and basis for this final-form rulemaking has been based on science and quantitative analysis both by the Department, and other respected governmental and nongovernmental organizations.

56. Comment: The commentator states that Governor Wolf's GHG emissions goals could not be achieved if the reductions are not proportional to each sector's contributions to annual GHG emissions, and the electricity sector has already adequately reduced its sectoral share of emissions relative to the statewide emissions reductions goal.

Response: The Department disagrees with that assessment. The Department recognizes that this final-form rulemaking alone will not achieve Governor Wolf's GHG emissions reduction goals and emphasizes that this final-form rulemaking is part of a suite of emissions reduction efforts currently underway or planned in this Commonwealth. Moreover, this Commonwealth has the fifth largest CO_2 emissions from the electricity sector of all states, proving the need for additional reductions from this sector. Methods for achieving emissions reductions across all sectors of the economy are outlined in the Department's Climate Action Plan, released in 2018, that details many recommendations to reduce GHG emissions across all sectors. See Pennsylvania Climate Action Plan http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

57. Comment: The commentator states that there is nothing that Pennsylvania can do that will provide CO_2 reductions beyond those that have already occurred, or will occur through current market forces, or other non-carbon regulations that are already "on the books," that will result in CO_2 reductions that provide any quantifiable local, regional or global effect on climate change.

Response: The Department disagrees with that assessment and specifically strongly disagrees with the commentator's assertion that this rulemaking will not achieve emissions reductions. The Department's modeling shows that this final-form rulemaking would result in CO_2 emission reductions by sources in this Commonwealth of 97—227 million short tons by 2030, improving the health and welfare and the environment of this Commonwealth, including communities most impacted by marginal air quality. Moreover, other states currently participating in RGGI have demonstrated quantifiable emissions reductions as a result of participation.

58. Comment: Given widespread concern over potential impacts from leakage, job loss and electricity bill impacts, the Department should include a safety valve in the final rule that at minimum provides that the Secretary of the Department may at his or her discretion direct the agency to repeal the regulation and not enforce compliance should the Secretary determine continuing to participate in RGGI runs counter to Pennsylvania's interests. Codifying such an option in a final regulation, along with several criteria which would inform the Secretary's review and decision-making under such an option, would protect against litigation by third-

parties who may allege Pennsylvania no longer participating in RGGI would be arbitrary and capricious. Criteria for exiting RGGI may include a diminishment in Pennsylvania's energy exports, continued legal challenges by other RGGI states against Pennsylvania's industries over energy and environmental policy or against gas and electric infrastructure that would deliver energy produced in Pennsylvania to other jurisdictions, increases in electricity costs, or the adoption at the federal level of more sweeping environmental requirements.

Response: The Department acknowledges this comment. In this final-form rulemaking, the Department included a provision for this Commonwealth to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. The Department has determined that participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run auction in this final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

59. Comment: The commentator states that oil and natural gas and coal are essential to life, and essential for the foreseeable future, certainly through 2035 and 2050. Many people also do not realize the real costs of renewable energy or the essential role that oil and natural gas and coal play in actually providing the renewable energy to consumers.

Response: The Department recognizes the role that fossil fuels play in the current energy landscape; however, fossil fuel-fired EGUs are also significant GHG emitters and controlling those emissions is necessary to address climate change. The use of fossil fuels in the production of renewable energy infrastructure is outside of the scope of this final-form rulemaking.

Support for Action on Climate Change

60. Comment: The commentator states that this Commonwealth emitted more energy-related carbon pollution in 2015 than 172 of the 194 nations that signed the Paris Climate Agreement. This Commonwealth therefore has a moral imperative, particularly in the absence of meaningful federal action, to do our fair share to significantly reduce greenhouse gas emissions within our borders and add to multistate and international efforts to avoid potentially catastrophic levels of climate disruption.

Response: The Department acknowledges this comment. This final-form rulemaking is a critical part of this Commonwealth's response to the threat of climate change.

61. Comment: The commentator states that many Pennsylvanians support climate action and therefore the Department should advance this proposed rulemaking.

Response: The Department agrees. The public comments on this proposed rulemaking were overwhelmingly supportive and many commentators supported this proposed rulemaking because of its climate mitigation impacts. Further, public opinion polls have shown a majority of Pennsylvanians support climate action. In fact, 67 percent of Pennsylvanians believe global warming will harm future generations and 72 percent support regulating CO_2 as a pollutant. Those results come from a large national survey dataset (>24,000 respondents) collected between 2008 through 2019 as part of the Climate Change in the American Mind project led by the Yale Program on Climate Change Communication and the George Mason University Center for Climate Change Communication.

62. Comment: The commentator states that climate change is a threat to the environment and must be addressed by reducing greenhouse gas emissions.

Response: The Department agrees. Global temperatures are increasing due to the greenhouse effect. Significantly changing the global temperature has impacts to every other weather and climate cycle occurring across the world. For instance, global average sea level, which has risen by about 7–8 inches since 1900 (with about 3 inches of that increase occurring since 1993), is expected to rise at least several inches in the next 15 years and by 1–4 feet by 2100. The impacts of increased GHGs in the atmosphere, including extreme weather and catastrophic natural disasters, have become more frequent and more intense. Extreme weather events also contribute to deaths from extreme heat or cold exposure and lost work hours due to illness. The World Health Organization expects climate change to cause around 250,000 additional deaths globally per year between 2030-2050, with additional direct damage costs to health estimated to be around $2-4 billion per year by 2030. Based on the overwhelming scientific evidence, these harms are likely to increase in number and severity unless aggressive steps are taken to reduce GHG emissions.

This final-form rulemaking will contribute to reducing Pennsylvania's GHG emissions from the electricity generation sector.

63. Comment: The commentator states that this commonwealth is already experiencing impacts from climate change.

Response: The Department agrees. On May 5, 2021, the Department with support from ICF and Pennsylvania State University, released the most recent Pennsylvania Climate Impacts Assessment. The 2021 Pennsylvania Climate Impacts Assessment found that the average annual temperature Statewide has risen and will continue to rise, as much as 5.9°F (3.3°C) by midcentury compared to a baseline period of 1971-2000. Additionally, this Commonwealth could experience more total average rainfall, occurring in less frequent but heavier rain events. Extreme rainfall events are projected to increase in magnitude, frequency, and intensity, while

drought conditions are also expected to occur more frequently due to more extreme, but less frequent precipitation patterns.

There will also be more frequent and intense extreme heat events with temperatures expected to reach at least 90°F on 37 days per year on average across the State, up from the 5 days during the baseline period. Days reaching temperatures above 95°F and 100°F will become more frequent as well. These increasing temperatures will continue to alter the growing season and increase the number of days that individuals and businesses will have to run air conditioning. As heat waves become increasingly common, individuals will be more susceptible to health and economic risks. This is particularly true for vulnerable populations, including low-income populations, the elderly, pregnant women, people with certain mental illnesses, outdoor workers, and those with cardiovascular conditions. Most notable from the 2021 Pennsylvania Climate Impacts Assessment is that climate change will not affect all Pennsylvanians equally. Some may be more at risk because of their location, income, housing, health, or other factors. As shown by all of the Pennsylvania Climate Change Impacts Assessments, climate risks and related impacts in Pennsylvania could be severe, potentially causing increased infrastructure disruptions, higher risks to public health, economic impacts, and other changes, unless actions are taken by this Commonwealth to avoid and reduce the consequences of climate change.

64. Comment: The commentator states that the appropriate conclusion is not that RGGI is unnecessary but rather that it will not be enough for Pennsylvania to achieve the GHG reductions necessary to avoid the worst impacts of climate disruption.

Response: The Department acknowledges this comment. This final-form rulemaking is a significant component in achieving the Commonwealth's goals to reduce net GHG emissions from 2005 levels by 26 percent by 2025 and 80 percent by 2050. The Department is taking actions in other sectors to further reduce GHG emissions in this Commonwealth.

65. Comment: The commentator states that the most basic and powerful reason for taking meaningful action to limit emissions of GHG pollution concerns the duty of humans not to cause harm to life. Whether phrased as a religious mandate to protect the "creation," or as an ethical mandate to respect the rights of others, the world's leading religious and ethical leaders have reached an overwhelming consensus on the importance of taking strong and immediate action on reducing GHG emissions. This is not a choice right now for Pennsylvania but a duty, a more fundamental moral or ethical duty that fully justifies the corresponding legal duty.

Response: The Department acknowledges this comment and is taking much-needed steps to reduce GHG emissions through this final-form rulemaking.

66. Comment: The commentator states that this Commonwealth is currently bearing the costs of carbon dioxide pollution from emitting generators, effectively providing those generators with an unfair subsidy. RGGI partially addresses this problem by requiring these generators to pay a portion of the cost of these emissions, which encourages cleaner generation to run at any given moment while encouraging the gradual shift to a cleaner fleet. Importantly, the revenue raised through RGGI will support measures that will further reduce emissions while minimizing the program's overall cost.

Response: The Department acknowledges this comment.

67. Comment: The commentator states that the proposed RGGI Regulation is a necessary but insufficient action to address the threat of climate disruption from GHG pollution. It is necessary to establish a cap on GHG emissions and to reduce that cap annually. Given that there is a cap, an auction with provision for trading is the fairest way to allocate permission to emit GHGs. A descending cap with an announced schedule and an auction is not only necessary but will also likely generate significant economic benefits for the Commonwealth and its residents. Arguments that RGGI or the California-Quebec auction-cap-trade-and-invest programs have not driven emissions reductions or that they inherently produce outcomes that disproportionately burden environmental justice communities are misplaced.

Response: The Department acknowledges this comment and agrees with the importance of reducing GHG emissions in this Commonwealth.

68. Comment: The commentator states that RGGI is insufficient, by itself, to address climate disruption. It is necessary to include additional sectors in the auction-cap-trade-and-invest program so that the entire economy will be under the proposed auction-cap-trade-and-invest program. Deep decarbonization will require electrification of many sectors. Putting a cost on GHG emissions for the electricity sector without reflecting that cost in other sectors could reduce the incentive for operators in other sectors to electrify. Pennsylvania should therefore expand the auction-cap-trade-and-invest program to its entire economy. The most expeditious way to do so would be to adopt the proposed regulation set forth in the *Climate Protection Petition*, which is already before the EQB. This could be accomplished in a separate rulemaking proceeding following the adoption of the proposed RGGI regulation. The proposed regulation in the *Climate Protection Petition* can readily be modified to make it consistent with the RGGI regulation and not impair the Commonwealth's ability to participate in the RGGI program.

Response: The Department acknowledges this comment. The Department understands that this final-form rulemaking will not solve climate change on its own. However, it will help this Commonwealth achieve the statewide goals to reduce GHG emissions by 26 percent by 2025 and 80 percent by 2050 in comparison to 2005 levels.

Additionally, the Department's modeling does not project significant declines in electricity demand as a result of this final-form rulemaking. This is supported by the minimal impact to monthly electricity rates as a result of this final-form rulemaking. The Department disagrees that this final-form rulemaking will be a deterrent to widespread electrification.

69. Comment: The commentator states that joining RGGI provides Pennsylvania with a proven, efficient tool to begin addressing climate change and supporting the preservation and deployment of clean sources of electricity, including nuclear. It is a prudent insurance policy to help maintain our existing clean electricity resources and encourage continued expansion of emission-free electricity.

Response: The Department acknowledges and agrees with this comment.

70. Comment: The commentator states that in the case of both RGGI and California's programs, it is the state's overall program that is successfully reducing emissions so that the economy-wide emissions are being reduced in accordance with the descending cap. Where an integrated program is achieving documented reductions, it defies common sense to claim, without significant and appropriate statistical analysis, that a single element of that program is unnecessary.

Response: The Department acknowledges this comment and agrees that both prongs of the two-prong RGGI cap-and-invest program are necessary to fulfill the purpose of reducing GHG emissions from the electricity sector.

71. Comment: The commentator states that although there are emissions reductions as a result of this proposed rulemaking, there must be further action taken by the Department to continue to reduce statewide emissions and mitigate climate change.

Response: The Department acknowledges this comment and has a number of existing programs that currently incentivize lower-carbon and emissions-free transportation options, energy efficiency programs, methane reduction strategies, amongst other efforts to reduce GHG emissions across all sectors. Further, the Department published a Climate Action Plan in 2018 that details many recommendations to reduce GHG emissions across all sectors. See Pennsylvania Climate Action Plan http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

72. Comment: The commentator supports putting a price on GHG emissions and capping those emissions with flexible trading, as it is a critical tool in each sector. A cap is a necessary backstop, and a cap cannot be applied without allowances, trading, and an initial distribution mechanism. No one should be allowed to dispose of waste GHGs in the atmosphere without paying for such use.

Response: The Department acknowledges this comment. Cap and trade programs have proven successful, particularly for addressing emissions from the electricity sector.

73. Comment: The commentator states that adopting a RGGI-compliant regulation and the further actions proposed by the commentators will help Pennsylvania meet anticipated federal requirements under the Biden Administration. President-elect Biden has adopted the science-based goals of achieving GHG emissions neutrality in the electricity sector by 2035 and economy-wide GHG emissions neutrality by 2050. These goals are likely to become federal mandates under the Clean Air Act when the incoming Administration adopts regulations to implement the President-elect's vision. Pennsylvania will need to submit regulations as part of its SIP and the proposed regulation will put Pennsylvania ahead in meeting these anticipated requirements.

Response: The Department acknowledges this comment and agrees that the GHG emission reductions resulting from implementation of this final-form rulemaking are necessary. This regulation is a significant step toward addressing climate change in this Commonwealth.

74. Comment: The commentator states that meaningful action to address the climate crisis by limiting and reducing emissions of GHG pollutants is required by ethical principles. The arguments against taking action are inconsistent with well-established ethical principles.

Response: The Department acknowledges this comment and agrees that the GHG emission reductions resulting from this final-form rulemaking are necessary.

75. Comment: The commentator states that further details on any Department analysis of research, use, and deployment of carbon capture technology that could reduce emissions would be helpful in determining the full toolbox available in addressing climate change.

Response: The Department acknowledges this comment. The Department is currently participating in an Interagency Carbon Capture Utilization and Storage workgroup to help develop a regional CO_2 transport infrastructure action plan. In terms of this final-form rulemaking, carbon capture technology would be an acceptable project under the strategic use set-aside as a project that reduces GHGs through energy efficiency measures, renewable or non-carbon emitting energy technologies, or innovative GHG emissions abatement technologies with significant GHG reduction potential.

Additionally, the Pennsylvania Climate Change Act requires not only a report on greenhouse gas impacts every three years but also requires the Department to develop a climate change action plan for submission to the Governor identifying "cost-effective strategies for reducing and offsetting GHG emissions." 71 Pa. Cons. Stat. §§ 1361.3, 1361.7 (2018). The most recent Climate Action Plan, published in 2018, details many recommendations to reduce GHG emissions across all sectors including carbon capture technology. See Pennsylvania Climate Action Plan http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

76. Comment: While establishing a price on carbon will not accomplish the goals outlined in the January 2019 order alone, the commentator states that it will create a competitive advantage to less carbon-intensive energy sources to expedite their growth in the electric market and will demonstrate Pennsylvania's willingness to lead and build cooperation among states as the economy moves toward a cleaner energy future.

Response: The Department acknowledges this comment and that additional action is needed beyond this final-form rulemaking to reduce GHG emissions in other sectors.

77. Comment: The commentator states that the Department claims RGGI-related CO_2 reductions by 2030 are imperative to advance the Commonwealth's climate goals, and without

RGGI, the Commonwealth would not even meet the interim goal of 26 percent reduction from 2005 emissions by 2025.

Response: The Department agrees with this comment, as implementation of this regulation will achieve significant CO_2 reductions in this Commonwealth. Though this regulation alone will not address all impacts of climate change, without it, Pennsylvania would be challenged to meet even the interim goal of a 26 percent reduction of GHGs compared to 2005 by 2025.

78. Comment: The commentator states that climate change will present significant challenges, and addressing these challenges will require a private sector that can develop and implement solutions and technologies. The commentator advocates for balanced environmental policy that promotes stewardship and economic growth. Legislatures have embedded statements of policy in state and federal air quality law that resonate with this approach. Market-based programs can be more efficient than command-and-control approaches, but costs must not exceed benefits and flexibility with respect to compliance and implementation is key.

Response: The Department acknowledges and appreciates this comment, and underscores that as RGGI is a market-based approach, this Commonwealth will be well positioned to advance environmental and economic goals.

79. Comment: The regulation contained in the Climate Protection Petition can readily be modified to make it consistent with the proposed RGGI Regulation without endangering Pennsylvania's participation in RGGI.

Response: The Department acknowledges this comment; however, the economy-wide cap-and-trade petition is outside the scope of this final-form rulemaking. The Department also notes that the petition is currently under review by the Department.

80. Comment: The commentator requests that the full Climate Protection Petition be included in the record for the RGGI Regulation Rulemaking Docket in that its content strongly supports adoption of the proposed RGGI Regulation, as well as further action that could build on and expand the RGGI Regulation, including implementation of the Transportation Climate Initiative.

Response: The Department acknowledges this comment and receipt of the petition as part of the comments; however, the economy-wide cap and trade petition is outside the scope of this final-form rulemaking. The Department is currently evaluating the economy-wide cap and trade petition that was submitted to the Board.

81. Comment: The commentator urges the Board to take further action to adopt the regulation proposed in the February 28, 2019 petition that would expand the program to all sectors of the economy and continue emissions reductions to achieve GHG emissions neutrality no later than 2052. See Petition Pursuant to 25 Pa. Code §§ 23.1-23.5, Article I, §27 of the Pennsylvania Constitution, and the Pennsylvania Air Pollution Control Act to Adopt the Attached Regulation Establishing a Comprehensive Program to Limit Greenhouse Gas Emissions Though an Auction-Cap-and-Trade Program to Conserve and Maintain a Stable Climate and Other Public Resources for Which the Commonwealth is a Trustee (Feb. 28, 2019),

http://files.dep.state.pa.us/PublicParticipation/Public%20Participation%20Center/PubPartCenterPortalFiles/Environmental%20Quality%20Board/2019/02_Petition_GHG%20Emissions/GHG%20Emission%20Petition_February%2028,%202019.pdf

Response: The Department acknowledges this comment; however, the economy-wide cap and trade petition is outside the scope of this final-form rulemaking. The Department acknowledges that this rulemaking alone is not sufficient to address climate change in this Commonwealth, but it will lead to significant reductions in GHG emissions. Additionally, the referenced petition is under review by the Department at this time.

Regional Greenhouse Gas Initiative

82. Comment: The commentator highlighted the historic success of RGGI and other cap and trade programs, commenting on their effectiveness at reducing emissions in a cost-effective manner.

Response: The Department acknowledges this comment and agrees that RGGI and other cap and trade programs have proven to be successful.

83. Comment: The commentator cites the economic benefits, including increase in GDP and job creation, seen in other RGGI states as support for the notion that this final-form rulemaking will benefit this Commonwealth. The benefits arise both from the existence of the cap with trading, itself, as well as the reinvestment of proceeds.

Response: The Department agrees.

84. Comment: The commentator states that other cap and trade programs were intentionally designed to control costs. RGGI, on the other hand, is specifically designed to increase costs to the level that some generating units' operations will be reduced and ultimately (in some cases immediately) retired and in the process create considerable revenue to be spent by the Commonwealth for activities well beyond the fees necessary to support the air pollution control program authorized by this act and not covered by fees required by section 502(b) of the Clean Air Act.

Response: The Department acknowledges this comment and disagrees with the characterization of the other cap and trade programs referenced. RGGI is designed to price carbon, which is a pollutant, the cost of which is not currently taken into consideration when pricing electricity. This program assigns a price and a compliance obligation to CO_2 emissions from EGUs, thereby including the price of CO_2 emissions in electricity prices, signaling the market to value cleaner sources and aid in the transition to a clean energy economy. Additionally, section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the

auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

85. Comment: The commentator notes that a balanced approach to economic growth and environmental stewardship is also written into the federal Clean Air Act itself, where Section 101(b) directs EPA to implement the provisions of the Act in a manner "to promote public health and welfare and the productive capacity of [the] population." The General Assembly struck a similar tone in its statement of policy within the Air Pollution Control Act, which predated the federal Clean Air Act by a decade.

Response: The Department acknowledges this comment. The Department agrees and concurs with the EPA's determination that reducing emissions using a market-based system provides regulated sources with the flexibility to select the most cost-effective approach to reduce emissions and has proven to be a highly effective way to achieve emission reductions, meet environmental goals, and improve human health. In contrast to traditional command and control regulatory methods that establish specific emissions limitations and technology use with limited or no flexibility, cap and trade programs harness the economic incentives of the market to reduce pollution. The EQB has a decades-long history of promulgating regulations that have established this Commonwealth's participation in successful cap and trade programs.

86. Comment: The commentator states that this rulemaking provides a level of regulatory certainty to guide future investment decisions for energy producers or investors.

Response: The Department agrees. Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO_2 allowance prices are predictable. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the Cost Containment Reserve (CCR) and Emissions Containment Reserve (ECR). The CCR process triggers additional CO_2 allowances to be offered for sale in the case of higher than projected emissions reduction costs. Similarly, states implementing the ECR, including this Commonwealth, will withhold CO_2 allowances from the auction to secure additional emissions reductions if prices fall below the established trigger price, so that the ECR will only trigger if emission reduction costs are lower than projected. These mechanisms provide predictability in terms of the cost of compliance for covered entities. CO_2 allowances may also be purchased through the secondary market when costs are low and held for future compliance years.

87. Comment: The commentator states that the financial benefit of the carbon price automatically adjusts according to the carbon intensity of resources that are operating; in hours where carbon intensive resources are online, lower emitting resources will benefit as the energy price will reflect the higher cost of producing power and paying for more emissions allowances, and when only renewables are online, lower emitting resources will benefit less as the energy price will reflect the lower cost of producing power and paying for fewer emissions allowances. This provides valuable information and incentives to guide investment not just in lower carbon resources, but in lower carbon resources that can produce power when they can offset more carbon emissions.

Response: The Department acknowledges this comment and recognizes the impact the allowance price can have on the electricity market.

88. Comment: The commentator states that natural gas is essential to the reliability and resiliency of the electric grid with increased use of wind and solar energy. RGGI is an unneeded and bad social policy for Pennsylvania and natural gas will remain a clean and reliable source of electric energy for many years to come.

Response: The Department acknowledges this comment and disagrees that RGGI is unneeded. RGGI has proven beneficial for the current participating states and the Department's modeling and other independent studies have shown that RGGI participation will also be beneficial for this Commonwealth.

Cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Beginning in 1995, Pennsylvania participated in the first national cap and trade program in the United States, the Acid Rain Program, which was established under Title IV of the 1990 CAA Amendments and required, in part, major emission reductions of SO_2 through a permanent cap on the total amount emitted by EGUs. For the first time, the Acid Rain Program introduced a system of allowance trading that used market-based incentives to reduce pollution. The Acid Rain Program reduced SO_2 emissions by 14.5 million tons (92 percent) from 1990 levels and 16.0 million tons (93 percent) from 1980 levels. The undisputed success of achieving significant emission reductions in a cost-effective manner led to the application of the market-based cap and trade tool for other regional environmental problems. From 1999 to 2002, this Commonwealth participated in the Ozone Transport Commission's (OTC) NOx Budget Program, an allowance trading program designed to reduce summertime NOx emissions from EGUs to reduce ground-level ozone, which included all of the current states participating in RGGI. According to the OTC's NOx Budget Program 1999-2002 Progress Report, NOx Budget Program units successfully reduced ozone season NOx emissions in 2002 by nearly 280,000 tons, or about 60 percent, from 1990 baseline levels, achieving greater reductions than required each year of the program. Based on the success of the OTC's NOx Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NOx cap and trade program under the NOx SIP Call, which closely resembled the OTC NOx Budget Program. The EPA again noted the cost savings of achieving emissions reductions through trading.

Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO_2 pollution by over 45 percent since 2009, while experiencing per capita Gross Domestic Product growth and reduced energy costs. The program design of RGGI would enable the Board to regulate CO_2 emissions from the power sector in a way that is least-cost and economically efficient thereby driving long-term investments in cleaner sources of energy.

89. Comment: The commentator states that utilizing an established regional cap and trade program allows Pennsylvania's resources to compete on a broader scale, increasing market efficiencies that come with RGGI's scale, which spans 10 states. It also allows the transition to a clean energy future to occur in a more efficient manner by eliminating the "growing pains" associated with new program development

Response: The Department agrees with the comment as RGGI is an established program, that has a proven track record of success in the region for over a decade now. In addition to building on the existing program, its auction platform and compliance systems, the Department is able to use this regional approach to transition to a clean energy future at least cost using this regional construct.

90. Comment: The commentator states that adopting a RGGI-compliant regulation and the further actions proposed here will help Pennsylvania meet anticipated federal requirements under the Biden administration. However, the proposed regulation is only a first step and more will be required to meet these anticipated federal requirements and to give Pennsylvania businesses the regulatory certainty that they need. To satisfy future federal requirements, the budget in the proposed RGGI regulation should be amended to provide for 7.7 percent annual reductions in the emissions cap to achieve carbon neutrality by 2035 consistent with President-elect Biden's current plans. Likewise, Pennsylvania should proceed to propose and adopt the economy-wide auction-cap-trade-and-invest program that is the subject of the proposed rulemaking petition to achieve carbon neutrality by 2050.

Response: The Department appreciates the support for this final-form rulemaking and acknowledges that implementation of this regulation is a large step forward in addressing climate change, but is not alone able to reach the climate change goals set forth by Governor Tom Wolf in Executive Order 2019-01, or potential future Federal requirements. In order to reduce net GHG emissions from 2005 levels by 26 percent by 2025 and 80 percent by 2050, a combination of efforts are needed. However, without the reductions provided by this final-form rulemaking between now and 2025, the Commonwealth would not be on course to meet even the interim goal.

91. Comment: The commentator appreciates the fact that RGGI is an example of a sectoral program that aims to be field and technology neutral.

Response: The Department agrees, that RGGI, as a market-based, technology neutral solution for emissions reductions is a sound approach.

92. Comment: The ability to bank and trade allowances in RGGI and other allowance markets has led to the development of well-functioning futures markets, which provide industry with greater predictability and transparency.

Response: The Department acknowledges this comment and agrees that regulatory certainty and regional trading are important tenets of this program.

93. Comment: The commentator disputes that "RGGI provides regulatory certainty" as claimed in the proposed rulemaking; as point of fact it adds to uncertainty, particularly given the proposed rulemaking is silent with respect to how the program would interplay with the EPA's Affordable Clean Energy rule (greenhouse gas emission standards for existing fossil fuel electric generation units, promulgated under Section 111(d) of the federal Clean Air Act) or new source performance standards for EGUs (promulgated under Section 111(b) of the same statute), or how it might interplay should the incoming Biden administration impose more stringent greenhouse gas emission rules on the energy sector through EPA environmental rules. The Biden administration's nominees to the Federal Energy Regulatory Commission may also advance or welcome carbon pricing at PJM, and Congress may establish further national goals or mandates with respect to reduction of greenhouse gas emissions.

Response: The Department explained in the RAF for the proposed rulemaking how it was implementing the ACE Rule in this Commonwealth. However, on January 19, 2021, the D.C. Circuit Court of Appeals vacated the "Affordable Clean Energy Rule or ACE rule" and remanded it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). Additionally, the Department cannot predict what regulations the EPA may propose to control GHG emissions or what Federal policy may be announced in the future. While the current Federal Administration is in the process of developing climate change policies, there is no guarantee that those policies will come to fruition. For instance, the Obama Administration's regulation to control GHG emissions from existing fossil fuel-fired EGUs, commonly known as the Clean Power Plan, was stayed by the United States Supreme Court and later repealed and replaced by the Trump Administration's ACE rule. Addressing the impacts of climate change is too pressing of an issue to wait any longer. As one of the top GHG emitting states in the country, the Department and the Board have a compelling interest to reduce GHG emissions to address climate change and protect public health, welfare and the environment.

94. Comment: The commentator references the CATO Institute study whereby comparison states economies grew 2.5 times faster than the RGGI states. The commentator states that the RGGI states lost 35 percent of energy intensive businesses (primary metals, food processing, paper products, petroleum refining, and chemicals), while the comparison states only lost 4 percent. The commentator states that the RGGI states lost 13 percent of overall goods production, while the comparison states grew by over 15 percent. The comparison states economies grew 2.5 times faster than the RGGI states.

Response: The Department disagrees with this assessment. RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. See Analysis Group, "The Economic Impacts of the Regional Greenhouse Gas Initiative on Northeast and Mid-Atlantic States,"

https://www.analysisgroup.com/Insights/cases/the-economic-impacts-of-the-regional-greenhouse-gas-initiative-on-northeast-and-mid-atlantic-states/

95. Comment: The commentator states that enacting a policy such as RGGI will have dire economic consequences, as has been proven in other RGGI states. The commentator cites a study from the CATO Institute that states that RGGI allowance costs added to already high regional electric bills. The combined pricing impact resulted in a 12 percent drop in goods production and a 34 percent drop in the production of energy-intensive goods. The commentator states that comparison states increased goods production by 20 percent and lost only five percent of energy-intensive manufacturing. The commentator states that power imports from other states increased from eight percent to 17 percent.

Response: The Department disagrees with the assertion that other states have suffered deleterious economic impacts as a result of RGGI participation. RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid. In an independent and nonpartisan evaluation of RGGI's first three control periods, the Analysis group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs.

96. Comment: The commentator states that this proposed rulemaking is necessary to improve the air quality and continue to reduce GHG emissions from the electricity sector in this Commonwealth.

Response: The Department agrees. This final-form rulemaking would provide public health benefits due to the expected reductions in emissions of CO_2 and the ancillary emission reductions or co-benefits of SO_2 and NO_x reductions. The Department's 2020 modeling projects cumulative emission reductions of 112,000 tons of NO_x and around 67,000 tons of SO_2 over the decade. Further reducing NO_x and SO_2 emissions is beneficial to public health because NO_x and SO_2 contribute to several health problems.

Short-term exposure to SO_2 emissions can be harmful to public health because it impacts the ability to breathe especially in children and those with asthma. NO_x can also cause irritation in the respiratory system. In particular, long-term exposure to elevated NO_x levels may contribute to asthma, and potentially increase susceptibility to respiratory infections and lead to increased hospital admissions.

NO_x and SO_2 emissions are also major contributors to PM pollution, which is a mixture of microscopic solid and liquid droplets that are suspended in the air. The smaller the size of the particle, the more damaging it is to human health. $PM_{2.5}$, which is particulate matter that is particularly damaging as the particles are small enough to get deep into the lungs, and perhaps even enter the bloodstream. Children are at increased risk of health impacts from PM as their lungs are still developing, and PM can exacerbate asthma or acute respiratory

disease. Elevated levels of PM will also aggravate adults with COPD, asthma, coronary artery disease, or congestive heart failure. When particle levels in the air are high, older adults are more likely to be hospitalized, and death from aggravated heart or lung disease may occur.

NO_x emissions also contribute to the formation of ground-level ozone. When ozone occurs at ground level it presents a serious air quality problem in many parts of the United States, including this Commonwealth. Ground level ozone is formed when pollutants emitted from a variety of sources, including power plants, react with sunlight. Ozone negatively affects human health as it irritates the respiratory system, reduces lung function, aggravates asthma, and inflames and damages the lining of the lungs. Those especially at risk from ground-level ozone exposure are children, adults who are active outdoors, and those with underlying respiratory issues such as asthma.

The Department has confirmed the potential for significant reductions in GHG emissions. Specifically, the 2021 modeling projected a range of 97-227 million short tons of CO_2 will not be emitted by sources within this Commonwealth over the decade as a result of this final-form rulemaking. The 2021 modeling does not include all the results that the 2020 modeling did, including projected co-pollutant emissions, health benefits, and broader economic metrics. Additionally, the 2021 modeling does not factor in how program proceeds are invested, while the 2020 modeling assumed strategic investments were made back into the energy sector. Nonetheless, both the 2020 modeling and the 2021 modeling efforts are useful indicators to evaluate implementation of this final-form rulemaking and both will be referenced throughout this document. All modeling results are available publicly at https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx.

97. Comment: The commentator states that the reductions of CO_2 emissions attributable to the RGGI states are overstated. Specifically, the commentator references the Acadia Center report cited by the Department and states that the calculations within the report capture emissions reductions from years before the first states began participating in RGGI. See Acadia Center, "The Regional Greenhouse Gas Initiative 10 Years in Review," 2019, https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf. Additionally, the commentator states that in referencing that report, the Department compares emissions reduction in RGGI states, which includes only RGGI covered sources, to emissions reductions in Pennsylvania which includes total net CO_2 emissions.

Response: The emissions reductions attributed to power plants in participating states described in the Acadia Center report use a baseline of 2008, one year prior to the first year the first participating states entered the program. The Department's comparison between emissions from this commonwealth and emissions from participating states clearly delineates that the participating states estimate is based on covered sources.

98. Comment: The commentator states that an appropriate comparison of emissions reductions in other states would be 2009 through the most recently available year of data, which for the U.S. Energy Information Agency's State energy-related carbon dioxide emissions by year is 2017. From 2009 to 2017, the RGGI states' energy related emissions decreased from 490.1 million short tons to 459.9 million short tons, or -16 percent. Over the same period of time,

Pennsylvania's energy-related emissions decreased from 242.4 million short tons to 216.7 million short tons, or -10 percent, while RGGI states within PJM increased their reliance on imports.

Response: The Department acknowledges that there are multiple ways to compare changes in GHG emissions and electricity generation across the PJM region since 2009. The Department acknowledges that some RGGI participating states may have decreased emissions and increased electricity imports between 2009-2017. The Department's modeling projects that this Commonwealth would experience decreased emissions with this final-form rulemaking while experiencing minimal impact on electric generation and remaining a leading energy exporter through 2030.

99. Comment: The commentator states that RGGI is one opportunity to continue Pennsylvania's trajectory of emissions reductions while preserving the proud status as an economic powerhouse and an energy producing state.

Response: The Department thanks the commentator for their support of this rulemaking and agrees that this final-form rulemaking allows for the continued growth of energy production in this Commonwealth.

100. Comment: The commentator states that a market-based approach to reducing carbon emissions that starts with RGGI and expands to all sectors of the economy will be the most efficient way of achieving GHG emission reduction goals as it will minimize any financial burden on consumers as the economy transitions from fossil fuels.

Response: The Department thanks the commentator for their support of this rulemaking, and agrees that a market-based approach to emissions reduction in the electricity generation sector is the most effective for this Commonwealth. The Department does not commit to expansion of cap and trade mechanisms for other sectors of this Commonwealth's economy.

101. Comment: The commentator states that after the Department adopts the proposed RGGI regulation, it must continue to regulate across the economy and to achieve net zero GHG emissions by 2050.

Response: The Department acknowledges this comment and is committed to reducing GHG emissions in sectors beyond the electricity sector.

102. Comment: The commentator states that any discussion of Pennsylvania possibly joining interstate efforts with respect to energy and environmental policy would be deficient without noting that several states involved in RGGI have taken actions through the Federal Clean Air Act to request more onerous regulatory obligations on Pennsylvania businesses. These states, including New York, New Jersey, Connecticut, Delaware, and Maryland, have petitioned EPA to establish more stringent emissions rules on manufacturing and energy infrastructure facilities, alleging that it is the fault of Pennsylvania businesses that these states cannot meet their federal air quality obligations under the National Ambient Air Quality Standards. These petitions have

repeatedly, and properly, been rejected by the EPA, but the commentator notes that our state must expend considerable time and resources in responding to these petitions.

Response: The Department understands the commentator's concerns; however, this is outside of the scope of the rulemaking as the 184(c) petitions are being addressed separately from this final-form rulemaking.

Implementation Timeline

103. Comment: The commentator urges finalization of this rule in time to enter RGGI on January 1, 2022, and underscores the importance of avoiding undue delay that would impede this timeline.

Response: The Department acknowledges this comment and agrees that it is important to avoid undue delay to the finalization of this final-form rulemaking. The Department intends to begin participation in RGGI on January 1, 2022.

104. Comment: The commentator states that due to the impacts to society from the spread of COVID-19 or other various reasons, the Department should delay implementation of the proposed rulemaking.

Response: The Department disagrees. This Commonwealth cannot wait any longer to address CO_2 emissions from fossil-fuel fired EGUs. On October 3, 2019, it was announced that the Department was going to begin this rulemaking process, which provided more than two year's notice to the regulated community of the forthcoming regulation. Further delay would compromise this Commonwealth's ability to meet the GHG emissions reductions goals, and cause harm to public health and the environment which the Department is responsible for protecting under the APCA. Furthermore, due to the nature of compliance in the RGGI program, the first real compliance deadline occurs more than a year after the anticipated January 1, 2022 start date, further extending the compliance horizon for covered facilities.

RGGI operates on a three-year compliance schedule whereby only partial compliance is required within the first two years of the compliance period, and then full compliance is required after the end of the third year. The current RGGI three-year compliance period began in 2021, so 2021 and 2022 are interim compliance years while 2023 is a full compliance year. What this means is that facilities only need to acquire 50 percent of the necessary CO_2 allowances during the interim compliance years but need to hold 100 percent of CO_2 allowances for the entire three-year control period by March 1 of the following year.

For example, while January 1, 2022 or the first day of the next calendar quarter following publication is the date upon which the CO_2 requirements begin for this Commonwealth, the first compliance deadline is not until more than a year later on March 1, 2023 with full compliance not required until March 1, 2024 providing ample time to comply.

Further, in addition to decreasing CO_2 emissions and addressing this Commonwealth's contribution to regional climate change impacts, this final-form rulemaking would provide

numerous co-benefits to public health and welfare and the environment. The co-benefits include job creation and worker training, decreased incidences of asthma, respiratory illness and hospital visits, avoidance of premature deaths, avoidance of lost work and school days due to illness and future electric bill savings. This Commonwealth will also see a decrease in harmful NO_x, SO_2 and PM emissions, as well as ground level ozone pollution. This will particularly benefit those most often impacted by marginal air quality, such as low income and environmental justice communities. Emerging evidence links chronic exposure to air pollution with higher rates of morbidity and mortality from the novel coronavirus (COVID-19). As such, reductions in CO_2 emissions are even more significant now more than ever before. The COVID-19 pandemic has resulted in a renewed focus on climate change, local air quality impacts, and opportunities for economic development, all areas where RGGI participation can provide value.

105. Comment: The commentator states the Department should not use the impacts of COVID-19 as a reason to delay implementation of the proposed rulemaking.

Response: The Department agrees. This Commonwealth cannot wait any longer to address CO_2 emissions from fossil-fuel fired EGUs. On October 3, 2019, it was announced that the Department was going to begin this rulemaking process, which provided more than two year's notice to the regulated community of the forthcoming regulation. Further delay would compromise this Commonwealth's ability to meet the GHG emissions reductions goals, and cause harm to public health and the environment which the Department is responsible for protecting under the APCA. Furthermore, due to the nature of compliance in the RGGI program, the first real compliance deadline occurs more than a year after the anticipated January 1, 2022 start date, further extending the compliance horizon for covered facilities.

106. Comment: The commentator states that in the numerous public comment opportunities the Department has conducted prior to offering this Proposed Rule, a handful of commentators raised the suggestion that this important regulatory action be delayed due to the ongoing COVID-19 pandemic. The commentator urges the Department not to delay for two main reasons. First, the current regulatory timeline would enable Pennsylvania to join RGGI a full year from now, in 2022. Second, the value of clean air has never been clearer, and these important protections should not be delayed, particularly given emerging evidence that long-term exposure to air pollution increases risk of death from COVID-19.

Response: The Department acknowledges and agrees with this comment.

107. Comment: The commentator states that participating in RGGI beginning January 1, 2022, at the proposed budget level would help support the continued and long-term operation of the Commonwealth's remaining nuclear plants. Energy Harbor Corporation's announcement to rescind the shutdown decision for the Beaver Valley nuclear facility in Shippingport, which previously had been scheduled to retire prematurely in 2021, highlighted the role RGGI can play in helping to preserve this Commonwealth's nuclear capacity. But for this action, this Commonwealth would have lost another nearly 2,000 MW of emissions-free generation, along with over a thousand high-paying, highly skilled local jobs. The announcement explained that this Commonwealth's decision to begin this regulatory process in time for a 2022 program start date was a large driver for rescinding the retirement plans, and those plans would need to be

revisited if Pennsylvania does not begin participation in RGGI next year as proposed. The harm retirement of Beaver Valley would have caused the greater Shippingport community, to say nothing of all Pennsylvanians' air and climate, is highlighted by the 2019 closure of the remaining unit at Three Mile Island, which cost the Harrisburg area 650 family-sustaining jobs in addition to more than 7 million MW-hours of zero emission electricity output annually.

Response: The Department acknowledges this comment. The Department's modeling conducted for this final-form rulemaking predicts no further nuclear power plant retirements through 2030 with implementation of this final-form rulemaking. Without this final-form rulemaking, this Commonwealth's nuclear fleet may remain at-risk of closure.

108. Comment: Implementing the RGGI Rule in January 2022 would result in the likely deactivation or retirement of at least three affected coal-fired stations, the KEY-CON and Homer City Stations. The Department asserts that it needs about $20 million annually from Title V fees to maintain the Title V program. The KEY-CON stations each remit $900,000 - $1,000,000 annually, and the Homer City Station remits a similar amount. Together, these stations pay a disproportionate share of the total funding. These three facilities pay about 15 percent of the total funding, while the hundreds of other Title V facilities in the Commonwealth pay the remainder. If the three facilities were to dramatically curtail operations or deactivate simultaneously in a single calendar year (as is predicted by the Department's RGGI modeling with the rule in effect), the Department would lose a significant portion of its Title V funding. A revised RGGI Rule that includes a glide path to retirement for these facilities would provide sufficient time for the Department to develop alternate funding sources for their Title V budget.

Response: The Department acknowledges this comment and is continuing to move forward with a January 1, 2022 implementation date. Note that RGGI operates on a three-year compliance schedule whereby only partial compliance is required within the first two years, and then full compliance is required after the end of the third year. The current RGGI three-year compliance period began in 2021, so 2021 and 2022 are interim compliance years while 2023 is a full compliance year. What this means is that facilities only need to acquire 50 percent of the necessary CO_2 allowances during the interim compliance years but need to hold 100 percent of CO_2 allowances for the entire three-year control period by March 1 of the following year.

For example, while January 1, 2022 or the first day of the next calendar quarter following publication is the date upon which the CO_2 requirements begin for this Commonwealth, the first compliance deadline is not until more than a year later on March 1, 2023 with full compliance not required until March 1, 2024 providing ample time to comply.

Additionally, in January 2021, the Department finalized the Air Quality Fee Schedule Amendments rulemaking which spread the financial burden of supporting the Title V Operating Permit Program across almost three times as many Title V facility owners and operators as the prior fee schedule. The new fee schedule spreads the cost obligation for supporting the Title V Operating Permit Program across 289 Title V facility owners where the prior fee schedule spread the cost obligations of supporting the Title V Operating Permit Program across 102 Title V facility owners and operators. This final-form rulemaking does not impact the Department's existing Title V fee program structure.

Statutory Authority

109. Comment: The commentator submits that the specific aim of the proposed rulemaking, to "reduce anthropogenic emissions of CO_2 . . . from CO_2 budget sources in a manner that is protective of public health, welfare and the environment," is a regulatory goal that, if enforceable by the Commonwealth of Pennsylvania at all, is enforceable strictly by the Department.

Response: The Department agrees that it has the authority under the APCA to regulate CO_2 emissions.

110. Comment: The Committees, individual legislators and public commentators opposed to the proposal disagree that the Board has the statutory authority to promulgate the rulemaking. First, the commentator states that CO_2 is not included in the definition of "air pollutant" under Section 3 of the APCA. (35 P.S. § 4003). They contend that CO_2 is naturally occurring, not inimical to humans or animals and is necessary for human life. In addition, the commentators claim that CO_2 was not considered a greenhouse gas under a Federal court ruling regarding the CAA and the cited statutory authority for this rulemaking is the APCA. Therefore, the Board does not have statutory authority to regulate CO_2.

Response: The Board has the statutory authority to promulgate this final-form rulemaking, as provided by the General Assembly through the APCA. CO_2 is in fact a regulated "air pollutant." Specifically, section 5(a)(1) of the APCA provides the Board with authority to regulate CO_2 emissions. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant … in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. The U.S. Environmental Protection Agency (EPA), the Penn State University, the USGCRP and the IPCC, have all confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life. CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). This is in addition to the 2009 Endangerment Finding issued by the EPA that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The Endangerment Finding was in response to the remand issued by the U.S. Supreme Court in *Massachusetts v. EPA,* 549 U.S. 497 (2007), where the court found that the CAA allows EPA to regulate GHGs because they qualify as air pollutants.

111. Comment: The commentators believe Section 4(24) of the APCA (35 P.S. 4004(24)) allows the Department to formulate "interstate air pollution control compacts or agreements," but any such agreement must be submitted to the General Assembly. The commentators argue that the submittal to the General Assembly has not occurred.

Response: RGGI is not an interstate air pollution control compact or agreement. Participating states do not sign any sort of agreement, so there is no agreement to submit to the General Assembly under Section 4(24) of the APCA. While this final-form rulemaking provides for this Commonwealth's participation in RGGI, it does not amount to an agreement or compact subject to legislative approval. RGGI is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a "participating state," meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

112. Comment: The commentator states that Pennsylvania's participation in RGGI without Pennsylvania legislative authorization is unlawful.

Response: The Department disagrees with the commentator. The Board has the statutory authority to promulgate and the Department has the authority to implement this final-form rulemaking, as provided by the General Assembly through the APCA.

113. Comment: The commentator states that Pennsylvania's Air Pollution Control Act does not authorize the regulation of CO_2. No Pennsylvania court has ever held that CO_2 constitutes air pollution or is a GHG under the APCA. The commentator quotes testimony provided at the July 21, 2020 hearing of the House ERE committee concerning House Bill 2025 which stated that CO_2 is not inimical to the public health, safety or welfare or injurious to human, plant or animal life or to property, and does not unreasonably interfere with the comfortable enjoyment of life or property. The testimony also stated that the APCA indicates that it does not allow for the regulation of substances whose sole environmental consequence is that they contribute to global climate change.

Response: The Board has the statutory authority to promulgate this final-form rulemaking, as provided by the General Assembly through the APCA. CO_2 is in fact a regulated "air pollutant." Specifically, section 5(a)(1) of the APCA provides the Board with authority to regulate CO_2 emissions. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered

to be "air pollution" under the APCA. The EPA, the Penn State University, the USGCRP and the IPCC, have all confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life.

CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). This is in addition to the 2009 Endangerment Finding issued by the EPA that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The Endangerment Finding was in response to the remand issued by the U.S. Supreme Court in *Massachusetts v. EPA*, 549 U.S. 497 (2007), where the court found that the CAA allows EPA to regulate GHGs because they qualify as air pollutants. Further, the Commonwealth Court has found that the regulation of air pollution has long been a valid public interest. See e.g., *Bortz Coal Co., v. Commonwealth*, 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.*, 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation*, 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce GHG emissions, including CO_2. *Funk v. Wolf*, 144 A.3d 228, 250 (Pa. Cmwlth. 2016).

114. Comment: The commentator argues that the general rulemaking authority granted to the Board under Section 5(a)(1) of the APCA for the "prevention, control, reduction and abatement of air pollution" is not a broad grant of authority to enter into a multistate agreement such as RGGI. It is also argued that joining RGGI will have minimal impact on the air pollution in the Commonwealth because of leakage. Therefore, the proposal fails to meet the standard of preventing, controlling, reducing and abating air pollution required by the APCA.

Response: The Department is not entering into a multistate agreement. RGGI is not an interstate air pollution control compact or agreement. While this final-form rulemaking provides for this Commonwealth's participation in RGGI, it does not amount to an agreement or compact subject to legislative approval. RGGI is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a "participating state," meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc. This final-form rulemaking satisfies section 5(a)(1) of the APCA as the declining CO_2 Emissions Budget in this final-form rulemaking directly results in CO_2 emission reductions of around 20 million short tons in this Commonwealth as well as emission reductions across the broader PJM regional electric grid. Including investments of the auction proceeds, the Department projects that 97—227 million short tons of CO_2 that would have been emitted in this Commonwealth over the next decade are avoided by this Commonwealth's participation in RGGI.

115. Comment: The commentators argue that Section 6.3(a) of the APCA only allows the EQB to establish fees to cover the costs of administering the air pollution control plan. The projected amount of fees collected through the auction mechanism of the proposed regulation and RGGI far exceeds the costs of administering the program. Since the EQB projects that five percent of the auction proceeds will be used for administrative purposes and one percent will be allocated to RGGI, the remaining proceeds would qualify as a tax. Since the power to tax lies solely with the General Assembly, the revenue raising mechanism of the regulation is illegal.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

116. Comment: The commentator mentions the CCR and ECR allowances and trigger prices and states that an essentially guaranteed revenue stream having only a small portion dedicated to administrative purposes to fund the program and contract with RGGI to run the auction effectively constitutes an unauthorized tax.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. The entirety of the auction proceeds would be used to reduce GHG emissions in furtherance of the purpose of this final-form rulemaking and to invest in projects that assist transitioning energy workers and environmental justice communities.

117. Comment: The commentator states that a private corporation, RGGI, Inc., would determine the amount of the tax – which would fluctuate over time – and do so by using auction methodologies and standards that no Pennsylvania statute or regulation required it to use. The EQB, in this regard, characterizes RGGI, Inc.'s auction process as "consistent with the process described in this proposed rulemaking[,]" which is a tacit acknowledgment that Pennsylvania law would not, in fact, govern the process. 50 Pa. Bull. 6187, 6218 (Nov. 7, 2020) (emphasis added). Because there would be no Pennsylvania statutory or regulatory standard to bind or constrain RGGI, Inc. as it set the amount of the tax that regulated entities were required to pay, the corporation would be engaged in legislating (as opposed to fact-finding or implementing legislation), which would amount to a violation of the "non-delegation doctrine" that arises out of Article II, Section 1 of the Pennsylvania Constitution. See *West Philadelphia Achievement*

Charter Elem. Sch. v. Sch. Dist. of Philadelphia, 132 A.3d 957, 965 (Pa. 2016) (statute that gave School Reform Commission "what amounts to carte blanche powers to suspend" provisions of Public School Code violated non-delegation doctrine because it failed to "impose[] any discernable standards or restraints in relation to the selection of School Code provisions for suspension"). As the Pennsylvania Supreme Court has explained, private entities like RGGI, Inc. "are isolated from the political process, and, as a result, are shielded from political accountability. Because of this, it is perhaps unsurprising that our precedents have long expressed hostility toward delegations of governmental authority to private actors." *Protz v. Workers' Comp. Appeal Bd.*, 161 A.3d 827, 837 (Pa. 2017).

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. This final-form rulemaking includes §§ 145.401—145.409 (relating to CO_2 allowance auctions) outlining the procedure for auctioning CO_2 allowances through multistate auctions conducted by RGGI, Inc. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO_2 Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc. Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the Department's implementation of this final-form rulemaking. The Department is not violating the non-delegation clause of the Pennsylvania Constitution, as it is not delegating any authority to RGGI, Inc. or any of the participating states.

118. Comment: The commentator raised concerns regarding the Board's compliance with Section 7(a) of the APCA. (35 P.S. § 4007(a)). This section states, in part, the following: "Public hearings shall be held by the board or the Department... in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." It is argued by the commentator that the virtual public hearings held by the Department, do not satisfy this requirement.

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentator seems to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Department disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding 10 well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

119. Comment: The commentator states that as the Board's and the Department authority to enroll Pennsylvania unilaterally in RGGI under the Air Pollution Control Act, 35 P.S. §§ 4001 et seq., is questionable and fraught with legal uncertainty, proceeding with the proposed rulemaking increases the likelihood of protracted litigation, thus resulting in additional costs to the Commonwealth, its businesses, and its residents.

Response: The Department disagrees with the commentator. The Board has broad rulemaking authority under section 5(a)(1) of the APCA and this final-form rulemaking is being promulgated in accordance with that authority.

120. Comment: The commentator strongly encourages the Board to provide a mechanism or procedure that would act as a safety valve, such as by including in the proposed rulemaking a set of triggering events (e.g., energy price increases or the loss of energy exports above certain threshold levels) that, upon occurrence, would automatically result in a suspension of enforcement, obligate the Board to initiate the necessary rulemaking process to repeal Chapter 145, Subchapter E, and formally withdraw the Commonwealth from RGGI.

Response: The Department will closely monitor this final-form rulemaking after promulgation as a final-form rulemaking in the Pennsylvania Bulletin for its effectiveness and recommend updates to the Board as necessary. Further, the participating states conduct comprehensive, periodic "program reviews" to consider program successes, impacts and design elements. In particular, during program review, participating states may revise the RGGI Model Rule, adjust the multistate auction process and develop new goals for the CO_2 Budget Trading Program. The program review also includes an extensive regional stakeholder process that engages the regulated community, environmental groups, consumer and industry advocates and other interested stakeholders. The participating states have completed 3 program reviews since

program implementation in 2009, and the next program review is scheduled to begin in late Summer/early Fall of 2021. The program review in 2021 will evaluate energy trends, performance of the amendments, and other program design elements. Upon implementation of this final-form rulemaking, this Commonwealth would participate in the periodic program reviews to ensure this final-form rulemaking is implemented effectively.

121. Comment: The commentator states that the Department also has the authority to design a GHG emissions reduction program so as to minimize the incentives to move GHG-emitting entities to other states, a phenomenon known as leakage. The Department is charged with developing a "general comprehensive plan for the control and abatement of existing air pollution and air contamination and for the abatement, control and prevention of any new air pollution and air contamination." Under this broad language, the Department's authority is not limited to sources that must obtain permits; rather, the EQB is authorized to adopt regulations "applicable to all air contamination sources regardless of whether such source is required to be under permit by this act." The term "air contamination source" means "any place, facility or equipment, stationary or mobile, at, from *or by reason of which* there is emitted into the outdoor atmosphere any air contaminant." The phrase "by reason of which" shows that the APCA authorizes the regulation at various places along the supply chain, not just at the location of the emission. The sale of electricity within the state would be the "reason by which" the electricity source is emitting carbon, so the Department has clear authority to regulate such sale within the state as a "source," such as at the first point of sale in the state.

Response: The Department acknowledges this comment. Sources in this case will be regulated consistent with the provisions of this final-form rulemaking.

122. Comment: The APCA further authorizes the Department to contract with third-party vendors in order to administer a trading program, pursuant to broad enabling language. Accordingly, the Department can link with and participate in RGGI's emissions trading program and utilize the services of RGGI, Inc. to administer allowance auctions.

Response: The Department acknowledges this comment and agrees that it has the authority to implement this final-form rulemaking and contract with third-party entities, including RGGI, Inc.

123. Comment: The APCA broadly authorizes the Department to collect fees to "to support the air pollution control program authorized by this act," in addition to other specifically enumerated fees. Fees collected by the Department are to be deposited in the state treasury, in a fund called the Clean Air Fund, in which the agency may establish separate accounts. It further specifies that the money in the Clean Air Fund is to be used to eliminate air pollution. Notably, the APCA does not limit the amounts to be collected or deposited into the Clean Air Fund. The broad statutory purpose for the Clean Air Fund, combined with the Department expansive authority to collect fees to support its air control program, indicate that the agency has ample authority to collect auction proceeds as part of a cap-and-trade program, and to use such proceeds for the further elimination of air pollution.

Response: The Department acknowledges this comment and agrees that it has authority to collect fees resulting from the purchase of CO_2 allowances through auctions and to use the proceeds to further eliminate air pollution.

124. Comment: The commentator states that the Department has the authority to "formulate" interstate air pollution agreements "for the submission thereof to the General Assembly." Therefore, while APCA envisions that the Department will negotiate interstate air pollution control agreements, it does not authorize the agency to actually execute such agreements, without first submitting them to the General Assembly for approval. The statute signals that neither the Governor nor the Department can unilaterally bind the Commonwealth to implement an agreement like RGGI without the General Assembly's consent.

Response: The Department is not entering into a multistate agreement. RGGI is not an interstate air pollution control compact or agreement. While this final-form rulemaking provides for this Commonwealth's participation in RGGI, it does not amount to an agreement or compact subject to legislative approval. RGGI is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a "participating state," meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

125. Comment: Even apart from the tax issue, the EQB lacks the statutory authority to implement RGGI in Pennsylvania. Regardless of whether APCA authorizes the regulation of CO_2 emissions generally, the statute does not authorize the adoption of regulations to implement RGGI. While the APCA gives the Department the authority to impose various requirements regarding air emissions – including recordkeeping, reporting, monitoring, and sampling requirements – and gives the EQB the authority to issue certain categories of regulations regarding air emissions, the statute is devoid of any clear authorization for any agency to adopt regulations that implement the detailed carbon-emission program, including the CO_2 allowances regime, that forms the foundation of RGGI. The result is that, if the EQB were to adopt the Proposed Rulemaking, its action would be *ultra vires* and void. Indeed, unlike Pennsylvania, every state that currently participates in RGGI has express statutory authority to do so or, like New York, has enacted an express statutory mandate to regulate CO_2 emissions.

Response: This final-form rulemaking is consistent with the broad purpose of the APCA and there is nothing in the APCA that says the Board cannot regulate CO_2 through a regional cap and trade program. In fact, the Board has promulgated several cap and trade program regulations. Further, although most of the participating states were directed to participate in RGGI through specific legislation, that does not necessarily mean that their environmental agencies lacked regulatory authority. It is more of an indication of the willingness to address climate change in those states.

126. Comment: Under Section 6.3(a), the EQB may only establish "fees sufficient to cover the indirect and direct costs of administering" APCA and the CAA, and therefore may not adopt regulations, like the Proposed Rulemaking, that would require entities to pay "fees" (by purchasing emission allowances) that would generate revenues that far exceeded those costs.

Response: Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

127. Comment: APCA establishes procedures that the EQB must follow in order to adopt a rulemaking. In this case, the EQB has failed to follow the procedures under Section 7(a) of APCA. In its most natural reading, therefore, this provision contemplates that, in order to adopt a rulemaking regarding air pollution, the EQB must hold hearings and the hearings must be physical, in-person meetings – given that they must take place "in" the "regions" or multi-region "areas" of the Commonwealth that the rulemaking would impact. But here, in connection with the Proposed Rulemaking, the EQB has not taken this approach. Instead, it held five WebEx sessions, each punctuated by a break, or, as the EQB describes it, "ten virtual public hearings for the purpose of accepting comments on this proposed rulemaking."

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The commentator seems to be interpreting the phrase "in any region of the Commonwealth affected" in Section 7(a) as creating a requirement for "in-person" public hearings. The Department disagrees with this interpretation and contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding 10 well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing.

Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

128. Comment: The EQB lacks the authority to adopt the Proposed Rulemaking. Moreover, in connection with the Proposed Rulemaking, the EQB has failed to follow certain administrative procedures that it is required to follow under Pennsylvania law. And, from a public policy perspective, adopting the Proposed Rulemaking would not materially benefit the natural environment and yet would have devastating, wide-ranging economic and other impacts on the Commonwealth's citizens.

Response: The Department acknowledges this comment and disagrees with the commentator. The Board has broad rulemaking authority under section 5(a)(1) of the APCA and this final-form rulemaking is being promulgated in accordance with that authority. The Board has followed all procedures required under the APCA and the Regulatory Review Act, as well as other relevant laws. As shown by the Department's modeling, this final-form rulemaking will have a positive impact on this Commonwealth, including the economy and power prices in the future will be lower than if Pennsylvania was not participating in RGGI.

129. Comment: The cornerstone of RGGI is a revenue-raising auction program that would qualify as a "tax" under Pennsylvania law. Only the General Assembly, not the Board, has the power to impose such a tax. Under prevailing Pennsylvania case law, something qualifies as a "tax" if it is a "revenue-producing measure." Regulatory "fees," by contrast, are merely "intended to cover the cost of administering a regulatory scheme." And therefore, as Pennsylvania's courts have explained, whether an income-producing mechanism imposes a "tax" or a "fee" turns on the volume of income that the mechanism generates and the proportion of the income that goes to cover the program's administrative costs. Under this standard, RGGI's quarterly auction mechanism – which is the heart of the program – would qualify as a "tax," not a "fee," because the proceeds of the auctions are grossly disproportionate to the costs of administering RGGI. Through 2018, in fact, the RGGI states had directed less than 6 percent of the proceeds toward the program's administration.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

130. Comment: Under Section 6.3(a) of APCA, the Board may *only* establish "fees sufficient to cover the indirect and direct costs of administering" APCA and the federal Clean Air Act ("CAA"). The Board therefore may *not* adopt regulations that would require regulated entities to

pay emission "fees" (by purchasing emission allowances) that would generate revenues that were far in excess of the "indirect and direct costs of administering" APCA and the CAA. And yet the Board would need to take *precisely* that approach in order to implement RGGI.

Response: Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

131. Comment: The commentator states that the Preamble cites Section 5(a)(1) of the Pennsylvania Air Pollution Control Act (APCA – 35 P.S. § 4005(a)(1)), which authorizes the adoption of rules to prevent, control, reduce and abate air pollution, as the legal authority to promulgate the proposed RGGI regulations. The Department states CO_2 constitutes "air pollution" under Section 3 of the statute. This raises the question as to whether the Administration has the authority to sign a memorandum of understanding with existing RGGI states to establish an interstate compact or agreement to implement the regulations without General Assembly authorization, even assuming that Section 5(a)(1) provides adequate authority to promulgate them. It would be helpful if the Department addresses these contentions in the Preamble or the RAF.

Response: The Administration is not signing a memorandum of understanding to participate in RGGI nor establishing an interstate compact or agreement. This final-form rulemaking will be implemented as authorized under the APCA. The Department has addressed this in both the Preamble and the RAF for this final-form rulemaking.

132. Comment: The commentator states that the authority to promulgate air pollution regulations under the APCA, however, is not a grant of authority by the General Assembly to participate in interstate programs for the prevention and reduction of air pollution. The Pennsylvania Supreme Court has made clear that grants of authority must demonstrate the legislature's basic policy choice and standards to restrain the exercise of the delegated authority. Neither the Governor nor the Department has been granted the power by the General Assembly to promulgate the proposed Chapter 145 regulations or participate in a regional CO_2 emissions budget and allowance trading program. Some legislative action by the General Assembly will be necessary to effectuate the proposed CO_2 Budget Trading Program.

Response: The Department acknowledges this comment and disagrees with the commentator. The Board has broad rulemaking authority under section 5(a)(1) of the APCA and this final-form rulemaking is being promulgated in accordance with that authority.

133. Comment: The commentator states the Department is bound to the RGGI Model Rule and that the IRRC has limited ability to recommend alterations to the proposed rule.

Response: The Department is not bound to the RGGI Model Rule. The Model Rule is a framework for each state to use in developing its independent CO_2 Budget Trading Program

regulation. While this final-form rulemaking is sufficiently consistent with the Model Rule and corresponding regulations in the participating states, the Board, in the exercise of its own independent rulemaking authority, also accounts for the unique environmental, energy and economic intricacies of this Commonwealth. As explained in detail in the Preamble for this final-form rulemaking, there are six main areas in which this final-form rulemaking differs from the Model Rule. This includes the waste coal-set aside, the CHP set-aside, the strategic use set-aside, the limited exemption, the Annual Air Quality Impacts Assessment, and the inclusion of the auction procedure.

134. Comment: The commentator states that it is reasonable to conclude that APCA does not even authorize the regulation of CO_2 emissions generally. Section 5(a)(1) of APCA, in this regard, provides that when the Board adopts the types of regulations (*e.g.*, regulations that set maximum allowable emission rates) it must do so "for the prevention, control, reduction and abatement of *air pollution*[.]" No Pennsylvania court has held that the presence of ambient CO_2 or other greenhouse gases ("GHGs") in the outdoor atmosphere constitutes "air pollution" within the meaning of the statute. And, in fact, ambient CO_2 does *not* meet the statute's definition of "air pollution" because, unlike conventional pollutants (for example, lead, mercury, particulates, nitrogen oxides, and sulfur oxides), the inhalation of carbon dioxide or direct exposure to it at typical atmospheric concentrations is not "inimical to the public health, safety or welfare" or "injurious to human, plant or animal life or to property" and does not "unreasonably interfere[] with the comfortable enjoyment of life or property." By its plain language, in other words, APCA signals that it does not allow for the regulation of substances whose sole environmental consequence is that they contribute to global climate change.

Response: The Board has the statutory authority to promulgate this final-form rulemaking, as provided by the General Assembly through the APCA. CO_2 is in fact a regulated "air pollutant." Specifically, section 5(a)(1) of the APCA provides the Board with authority to regulate CO_2 emissions. CO_2 falls under the definition of "air pollution" in section 3 of the APCA. First, CO_2 is a gas, and falls within the definition of "air contaminant," under section 3 of the APCA, which is defined as "[s]moke, dust, fume, gas, odor, mist, radioactive substance, vapor, pollen or any combination thereof." By extension, CO_2 is also "air contamination," under section 3 of the APCA, which is defined as "[t]he presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." The term "air pollution" is defined as "[t]he presence in the outdoor atmosphere of any form of contaminant ... in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." Therefore, CO_2 is also considered to be "air pollution" under the APCA. The EPA, the Penn State University, the USGCRP and the IPCC, have all confirmed that CO_2 emissions cause harmful air pollution that is inimical to the public health, safety and welfare, as well as human, plant and animal life.

CO_2 is also a Federally regulated air pollutant under the CAA (42 U.S.C.A. §§ 7401—7671q). See *Massachusetts v. EPA*, 549 U.S. 497 (2007). Moreover, the EPA has issued an Endangerment Finding for CO_2 emissions resulting from fossil fuel-fired EGUs. See 80 FR 64509 (October 23, 2015); *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914 (D.C. Cir. 2021). This is in addition to the 2009 Endangerment Finding issued by the EPA that six GHGs—CO_2,

methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The Endangerment Finding was in response to the remand issued by the U.S. Supreme Court in *Massachusetts v. EPA*, 549 U.S. 497 (2007), where the court found that the CAA allows EPA to regulate GHGs because they qualify as air pollutants. Further, the Commonwealth Court has found that the regulation of air pollution has long been a valid public interest. See e.g., *Bortz Coal Co., v. Commonwealth*, 279 A.2d 388, 391 (Pa. Cmwlth. 1971); *DER v. Pennsylvania Power Co.*, 384 A.2d 273, 284 (Pa. Cmwlth. 1978); *Commonwealth v. Bethlehem Steel Corporation*, 367 A.2d 222, 225 (Pa. 1976). Moreover, the Commonwealth Court has endorsed the Department's position that the General Assembly, through the APCA, gave the agency the authority to reduce GHG emissions, including CO_2. *Funk* v. *Wolf*, 144 A.3d 228, 250 (Pa. Cmwlth. 2016).

135. Comment: The commentator states that RGGI is distinguishable from cap-and-trade programs like the acid rain SO_2 emissions program, premised on Section 401 of the CAA, and the Cross-State Air Pollution Rule (CSAPR), premised on Sections 108 and 109 of the CAA. Unlike RGGI, each of these programs is rooted in the CAA and allows the owners of the regulated units to install controls on a specific project, manage multiple units at the fleet level, or trade or "average" emission allowances with other affected units. The allowances are budgeted at the particular emissions levels to be achieved and then allocated to the owners of the affected units, at no cost to them. The overall intent of the programs is to minimize emissions-control costs while still achieving the specified environmental benefit. This approach stands in contrast to RGGI, which requires owners of power plants to choose between paying a unit-specific tax for each ton of CO_2 that the unit emits or shuttering the unit. Under the RGGI framework, these options are the only ones that are available because the allowances are not allocated and instead need to be purchased. Importantly, there are no control options other than fuel switching, reduced utilization, or unit retirement. Fleetwide management is not an option. The notion that RGGI is a "cap and trade" program is therefore misguided.

Response: RGGI, like the other cap-and-trade programs identified above, are premised on Section 5(a)(1) of the APCA. The fact that the acid rain program and CSAPR are also CAA programs does not mean that there was no stand-alone state authority to develop those programs. Just like the SO_2 and CSAPR programs, sources under RGGI can fuel switch, reduce utilization, or use a combination of other techniques to come into compliance with the rule. Sources do not need to shut down as a compliance option. RGGI is a "cap and trade" program that sets a regulatory limit on CO_2 emissions from fossil fuel-fired EGUs and permits trading of CO_2 allowances to effect cost efficient compliance with the regulatory limit. RGGI is also referred to as a "cap and invest" program, because unlike traditional cap and trade programs, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The first prong is a declining CO_2 emissions budget and the second prong involves investment of the proceeds resulting from the auction of CO_2 allowances to further reduce CO_2 emissions.

136. Comment: The commentator states that RGGI is constitutionally mandated under Article I, Section 27 of the Pennsylvania Constitution. The Constitution places a trustee responsibility on the state to conserve and maintain Pennsylvania's natural resources for the benefit of all people.

Consistent with this mandate, it is incumbent upon the state at all levels of government to ensure clean air and a clean atmosphere. The proposed RGGI regulation enhances the state's ability to fulfill its duty as trustee and should therefore be approved.

Response: The Department acknowledges this comment and agrees that this rulemaking is consistent with the Commonwealth's duties as a trustee of the environment, set forth in Article I, Section 27 of the Pennsylvania Constitution and the PA Supreme Court Ruling on the Environmental Rights Amendment in *Pennsylvania Environmental Defense Foundation v. Commonwealth of Pennsylvania*, 161 A.3d 911 (Pa. 2017) during the development of this rulemaking. This rulemaking was developed under the authority of Sections 5(a)(1) and 6(a)(3) of the APCA. The APCA is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. This rulemaking would help the Department protect the air resources of this Commonwealth as well as public health and welfare by reducing harmful GHG emissions from the electricity sector. The Department recognizes Pennsylvanians' rights and the Commonwealth's obligations under the Pennsylvania Constitution and must meet those obligations in every action the agency takes. Because this rulemaking reduces GHG emissions, resulting in considerable benefits to public health among others, the Department is satisfied that its Article I, Section 27 obligations have been met with the development of this rulemaking.

137. Comment: The commentator states that the proposed RGGI Regulation as well as the further action that would be implemented by the proposed regulation that is the subject of the Climate Protection Petition are constitutionally mandated and statutorily authorized.

Response: The Department acknowledges this comment and agrees that this final-form rulemaking is authorized under the APCA.

138. Comment: The commentator states that the RGGI regulation and the Commonwealth's participation in the RGGI program are specifically authorized by the law and consistent with the Commonwealth and federal Constitutions. In fact, action to reduce GHG Pollution is mandated by Article I, § 27 of the Pennsylvania Constitution. The promulgation of the proposed regulation is not merely a policy preference of the Wolf Administration. Rather, it represents the Commonwealth's fulfillment of its constitutional duty as a trustee under Article I, § 27 of the Pennsylvania Constitution to address climate disruption caused by GHG emissions. Robert B. McKinstry, Jr. & John C. Dernbach, Applying the Pennsylvania Environmental Rights Amendment Meaningfully to Climate Disruption, 9 Mich. J. Envt'l & Admin. L 50 (2018) ("McKinstry-Dernbach"). At minimum, the constitutional duty to conserve a natural climate "requires Pennsylvania to do as much as it can, using existing authority." Because the Pennsylvania Air Pollution Control Act provides ample legal authority, Pennsylvania can and must use that authority to promulgate the proposed RGGI regulation to achieve its projected GHG emissions reductions from fossil fuel-fired power plants.

Response: The Department agrees that this final-form rulemaking is authorized under the APCA and is consistent with both the Pennsylvania and U.S. Constitutions. Specifically, the

Department agrees it has fulfilled its duties as a trustee of the environment, set forth in Article I, Section 27 of the Pennsylvania Constitution and the PA Supreme Court Ruling on the Environmental Rights Amendment in *Pennsylvania Environmental Defense Foundation v. Commonwealth of Pennsylvania*, 161 A.3d 911 (Pa. 2017) during the development of this rulemaking. This rulemaking was developed under the authority of Sections 5(a)(1) and 6(a)(3) of the APCA. The APCA is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. This rulemaking would help the Department protect the air resources of this Commonwealth as well as public health and welfare by reducing harmful GHG emissions from the electricity sector. The Department recognizes Pennsylvanians' rights and the Commonwealth's obligations under the Pennsylvania Constitution and must meet those obligations in every action the agency takes. Because this rulemaking reduces GHG emissions, resulting in considerable benefits to public health among others, the Department is satisfied that its Article I, Section 27 obligations have been met with development of this rulemaking.

139. Comment: The commentator states that the proposed RGGI Regulation and its implementation through participation in the cooperative interstate RGGI program is expressly authorized by the APCA. Moreover, the Pennsylvania Uniform Interstate Air Pollution Agreements Act authorizes participation in air pollution control programs on a regional basis, encouraging the Department to coordinate and cooperate with "State and local authorities of other states affected by air sheds or regional air masses lying partly within another state or states, or moving between or among this State and another state or states." 35 Pa. Cons. Stat. §§ 4101-4106. This authorizes the provision for interstate trading in the RGGI Program as provided by the proposed RGGI regulation. The Commonwealth currently participates in the interstate NOx trading program pursuant to this same authority. 25 Pa. Code §§ 123.101-123.121.

Response: The Department agrees that this final-form rulemaking is authorized under the APCA.

140. Comment: The commentator states that the participation in RGGI does not violate the Compacts Clause of the United States Constitution. U.S. Const. Art. I, § 10, cl. 1. That Clause limits the ability of states to enter into binding agreements with one another or foreign governments. The Compacts Clause requires that states obtain the consent of Congress to "enter into any Agreement or Compact with another State, or with a foreign Power." U.S. Const. Art. I, § 10, cl. 3. States can enter into non-binding cooperative arrangements with each other, as eleven states and a Canadian province have already done in both the existing Regional Greenhouse Gas Initiative and the California-Quebec program, without violating the clause. Furthermore, Pennsylvania would have independent authority under state law to implement this CO_2 Budget Trading Program even if RGGI did not exist, and the Commonwealth maintains authority and discretion under §145.401 to conduct Pennsylvania-run auctions if the Department determines this would exceed the benefits of participation in the multistate auction process.

Response: The Department agrees that this final-form rulemaking does not violate the Compacts Clause of the United States Constitution.

141. Comment: The commentator states that the APCA grants authority to promulgate the proposed RGGI regulation under two independent lines of reasoning. First, it is authorized by virtue of the state statute's authorization to implement the provisions of the federal Clean Air Act, under which GHG emissions from fossil-fired power plants are pollutants that can be and are regulated. Second, the Act also provides independent authority to regulate GHG emissions.

Response: The Department agrees that this final-form rulemaking is authorized under the APCA.

142. Comment: The commentator states that the Department must regulate greenhouse gases, at least to the extent required under the Federal Clean Air Act. Pennsylvania currently has a mandate to regulate GHG emissions from power plants under the Federal Clean Air Act and that mandate is very likely to be strengthened in the near future. The proposed RGGI regulation would be consistent with that mandate. It could, in fact, be incorporated into the State Implementation Plan ("SIP") required by the ACE Rule to be filed by July 8, 2022.

Response: The Department acknowledges this comment. However, on January 19, 2021, the D.C. Circuit Court of Appeals vacated the "Affordable Clean Energy Rule or ACE rule" and remanded it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021).

143. Comment: The commentator states that there is no statute that provides the executive Department or agencies authority to adopt regulations to conform with RGGI, even if the executive Department or agencies sign the memorandum of understanding to participate in RGGI. While it is highly debatable that the executive Department or agencies even have the power to sign the memorandum of understanding, the provisions of the regulations necessary to be able to participate in the program are not expressed powers in the Air Pollution Control Act or the Uniform Interstate Air Pollution Agreements Act.

Response: The Department is not signing a memorandum of understanding to participate in RGGI nor establishing an interstate compact or agreement. This final-form rulemaking will be implemented as authorized under the APCA.

144. Comment: The commentator states that the Board's duty to adopt regulations limiting GHG emissions goes beyond the minimum that may be required under the Clean Air Act, even without considering the Commonwealth's duty as a trustee under Article I, § 27 of the Pennsylvania Constitution. The Department, accordingly, has authority under existing law to regulate GHGs through adoption of regulations by Board, even in the absence of regulations under the federal Clean Air Act. The Pennsylvania Climate Change Act requires not only a report on greenhouse gas impacts every three years but also requires the Department to develop a climate change action plan for submission to the Governor identifying "cost-effective strategies for reducing and offsetting GHG emissions." 71 Pa. Cons. Stat. §§ 1361.3, 1361.7 (2018). This provision would not make sense unless the APCA authorized the adoption of regulations that controlled GHGs so as to provide for their reduction or offsetting. The fact that the plan is submitted to the administrative branch rather than the legislative branch suggests that the

General Assembly contemplated that the administrative branch could implement those strategies through rule-making and other actions already authorized by the General Assembly.

Response: The Department acknowledges this comment and agrees that it has the authority to regulate GHG emissions.

145. Comment: The commentator states that the fact that the RGGI regulation is more stringent than the ACE rule is immaterial. Both the APCA and Article I, § 27 authorize the Department to adopt regulations more stringent than federal regulations and require more stringent regulations where necessary to protect health and conserve the Commonwealth's public natural resources.

Response: The Department acknowledges this comment and agrees that it has the authority under the APCA to adopt regulations more stringent than Federal regulations.

146. Comment: The commentator states that the argument that the RGGI Rule requires authorization beyond that already provided because the auction is a tax is a red herring. There is no right to pollute. By causing GHG pollution by creating carbon dioxide through combustion of fossil fuels, a polluter is appropriating a public natural resource, whose ownership is committed to the Commonwealth, including future generations. Requiring that this right be auctioned with an appropriate reserve price means that the polluter must pay for the resources, just as those who acquire other public natural resources must pay. Thus, private parties must acquire timber or mineral resources from public lands through auctions with a reserve price and hunters and fishers must pay the Commonwealth for a license to take those public resources. The failure of the Commonwealth to charge for GHG polluters' use of a public resource (i.e., the capacity of the atmosphere to absorb GHGs without causing climate disruption) is a failure of the Commonwealth's duty as a trustee under Article I, § 27 of the Pennsylvania Constitution. The issue of whether a cap-and-trade program distributing allowances by way of an auction with a reserve price was a tax was specifically considered and rejected by the California Court of Appeals. The Court's reasoning in *Cal. Chamber of Commerce v. State Air Res. Bd.*, 216 Cal. Rptr. 3d 694, 700 (Cal. Ct. App. 2017) is equally applicable to the proposed RGGI regulation.

Response: The Department acknowledges this comment and agrees that this final-form rulemaking does not establish a tax.

147. Comment: The commentator states that while the Commonwealth Court accepted the Department's self-serving assertion of authority to regulate CO_2 as a GHG in *Funk v. Wolf*, the court's rationale was based upon the Department's authority to implement the federal Clean Air Act and its "sweeping definition of 'air pollutant'." The EQB has emphasized that this proposed rulemaking is being promulgated "under the authority of the APCA, not the CAA." Accordingly, *Funk v. Wolf* does not support the EQB's reliance upon the APCA as authority for this proposed rulemaking.

Response: The Department disagrees with the commentator's characterization of *Funk v. Wolf*. The decision is not as narrow as the commentator suggests. The court specifically identified the APCA as part of the current legislative scheme to address climate change.

148. Comment: The commentator states that neither the APCA nor Pennsylvania's Uniform Interstate Air Pollution Agreements Act authorizes Pennsylvania to participate in RGGI through this rulemaking. Section 4004(24) of the APCA merely authorizes the Department to "formulate" interstate air pollution control agreements for consideration by the General Assembly.

Response: This final-form rulemaking is authorized under sections 5(a)(1) and 6.3(a) of the APCA. RGGI is not an interstate air pollution control compact or agreement. Participating states do not sign any sort of agreement, so there is no agreement to submit to the General Assembly under Section 4(24) of the APCA. While this final-form rulemaking provides for this Commonwealth's participation in RGGI, it does not amount to an agreement or compact subject to legislative approval. RGGI is a regional initiative, where participating states develop regulations that are capable of linking with similar regulations in other states. States may withdraw from participation at any time. A State may participate in RGGI once it meets the definition of a "participating state," meaning the State has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

149. Comment: The commentator states that the proposed mandatory CO_2 emission allowance fees constitute taxes that Pennsylvania's General Assembly has not authorized. Under Pennsylvania law only the General Assembly has the authority to impose taxes, and the difference under Pennsylvania law between "taxes" and "fees" is clear. The proceeds from the emissions allowance auctions are expected to generate income greatly in excess of the administrative costs of the program for various programs and activities not authorized by the APCA.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

150. Comment: The commentator states that the investment of the auction proceeds is the primary purpose of this proposed rulemaking and not a significant or meaningful reduction of CO_2 emissions in this Commonwealth or regionally, nationally or globally is shown by the relatively small, estimated reductions in CO_2 emissions in Pennsylvania, the RGGI states, nationally and globally. That the proposed regulations are primarily intended to raise revenue is shown by the fact that there is no discussion in the Preamble or RAF regarding how or whether reducing CO_2 emissions through RGGI will improve or even affect Pennsylvania climate and precipitation.

Response: The Department acknowledges this comment, but strongly disagrees with this assertion that the primary purpose of this rulemaking is investment of revenue. This Commonwealth's participation in RGGI, and the investment of auction revenues into programs that will curb carbon emissions, will achieve a reduction of 97—227 million short tons of CO_2 that would have been emitted by sources in this Commonwealth over the next decade. Moreover, climate change is a global phenomenon, and carbon emissions and their environmental impacts cross state and national boundaries. It is not possible to quantify the temperature or precipitation impacts avoided by a single subnational government's participation in a cap and trade mechanism to limit emissions. Participation in RGGI allows this Commonwealth to contribute to an international effort to draw down carbon emissions using a market-driven approach that supports businesses and communities in the transition to a lower-carbon economy. The Department recognizes that Pennsylvania's participation in RGGI is only part of what will need to be a global effort to mitigate climate change and avoid the worst of its impacts.

151. Comment: The commentator claims that the Department must obtain approval from the General Assembly to participate in RGGI. They state that RGGI functions as an interstate agreement or compact and the Pennsylvania Constitution does not provide the Governor or any Executive agency the authority to unilaterally enter into interstate compacts or agreements – only the General Assembly has that power. The General Assembly can enact legislation authorizing the Executive Department to enter into such agreements, but has not done so in the case of RGGI. They also state that since RGGI establishes a regional CO_2 Budget Trading Program among its member states, it clearly falls within the scope of Section 4004(24) of the APCA and Pennsylvania's participation in RGGI clearly requires approval of the General Assembly.

Response: States do not execute a multistate agreement or compact to participate in RGGI, and States may withdraw from participation at any time. There is also no central RGGI authority as States jointly oversee the program. The key piece to become a "participating state," as the term is defined under § 145.302 (relating to definitions), is the establishment of a corresponding regulation as part of the CO_2 Budget Trading Program. As defined under § 145.302, the "CO_2 Budget Trading Program" is a multi-state CO_2 air pollution control and emissions reduction program established under this final-form rulemaking and corresponding regulations in other participating states as a means of reducing emissions of CO_2 from CO_2 budget sources. For this Commonwealth to participate in RGGI, the Board is promulgating this final-form rulemaking which is consistent with the Model Rule.

152. Comment: The commentator states that the proposed rule fails the most important requirement for promulgating regulations in Pennsylvania: "First and foremost" the promulgating agency must have "the statutory authority to promulgate the regulation," and the regulation must conform "to the intention of the General Assembly" based on "the statute upon which the regulation is based." Here, the EQB is proposing a rule that contravenes clear statutory language and the intent of the General Assembly. This is further supported not only by comments submitted by individual legislators, including the Chair of the Environmental Resources and Energy Committee of the House of Representatives for the 2019-20 Legislative Session, but also reflected by both chambers of the General Assembly passing House Bill 2025 in the 2019-20 legislative session, which declares that the Department does not have the authority to join RGGI unless authorized by the General Assembly.

Response: The Board has the authority to promulgate this final-form rulemaking under section 5(a)(1) of the APCA. Additionally, this final-form rulemaking is consistent with the purpose of the APCA and the intent of the General Assembly. That is, to, among other things, protect the air resources of the Commonwealth to the degree necessary for the protection of public health, safety, and well-being of its citizens. 35 P.S. § 4004(a)(i). The General Assembly provided the Board with broad authority to regulate sources of air pollution under the APCA. This final-form rulemaking directly falls within that statutory grant of authority as CO_2 emissions cause harmful air pollution. The APCA does not limit the Board in how it may regulate a source of pollution. This is shown by the Board's history of promulgating different types of regulations, including command and control and cap and trade regulations under the broad authority of section 5(a)(1) of the APCA. Moreover, several members of the General Assembly, including minority members of the ERE committees, provided supportive comments, specifically noting that the Board has the authority under the APCA to promulgate this final-form rulemaking and that it is in the public interest.

If House Bill 2025 had not been vetoed by the Governor, it would have taken away the Board's existing statutory authority to regulate CO_2 emissions. The bill went beyond preventing this Commonwealth from participating in RGGI to prohibit the Board from promulgating any regulation to address CO_2 emissions unless and until the General Assembly passed future authorizing legislation. This would have been extremely detrimental to the Department's efforts to address GHG emissions and climate change impacts. However, the General Assembly provided the Board with the authority to promulgate this final-form rulemaking through the expansive language in the APCA.

153. Comment: The commentator states that the Uniform Interstate Air Pollution Agreements Act ("UIAPAA") does not authorize the Department to enter into a mandatory CO_2 Budget Trading Program such as RGGI. The administrative agreements allowed under UIAPAA may provide for, among other things, coordinated administration of air pollution control programs, consultation on technical issues, securing of contract services, and development of recommendations concerning air quality standards. The proposed rule exceeds the scope of administrative agreements authorized under the UIAPAA in that it would impose mandatory CO_2 budget limits and require participation in the regional CO_2 allowance trading program.

Response: The Department has not referenced the Uniform Interstate Air Pollution Agreements Act as providing authority for this final-form rulemaking. This final-form rulemaking is authorized under the APCA. The Department is not signing an agreement to participate in RGGI. A state may participate in RGGI once it meets the definition of a "participating state," meaning the state has promulgated a regulation consistent with the RGGI Model Rule and has executed a service contract with RGGI, Inc.

154. Comment: The commentator states that contrary to the Board's assertion that it has authority under APCA § 5(a)(1) to promulgate the proposed rule, there is no statutory authority for this rulemaking. While this particular statute authorizes the EQB to promulgate rules setting allowable emission rates, regulating combustion of certain fuels and specifying pollution control equipment, it does not provide clear authorization for adopting detailed regulations for a CO_2 cap

and trade system. Furthermore, while APCA § 5(a)(1) may have been used to authorize rules for other air pollutant cap and trade programs, those programs were established under the federal Clean Air Act and the rules only implemented the federally mandated programs. By contrast, the proposed rule would unilaterally implement the RGGI cap and trade program, which has no federal counterpart, and would impose a host of detailed requirements and substantial costs on regulated sources, well beyond the scope set forth in APCA § 5(a)(1).

Response: This final-form rulemaking is consistent with the broad purpose of the APCA and there is nothing in the APCA that says the Board cannot regulate CO_2 through a regional cap and trade program. The APCA does not limit the Board in how it may regulate a source of pollution. This is shown by the Board's history of promulgating different types of regulations, including command and control and cap and trade regulations under the broad authority of section 5(a)(1) of the APCA. Section 5(a)(1) of the APCA does not state that the Board is limited to only promulgating cap and trade programs that were established under the CAA. Instead, Section 5(a)(1) provides the Board with the power and duty to "adopt rules and regulations, for the prevention, control, reduction and abatement of air pollution, applicable throughout the Commonwealth or to such parts or regions or subregions thereof specifically designated in such regulation which shall be applicable to all air contamination sources regardless of whether such source is required to be under permit by this act." 35 P.S. § 4005(a)(1).

155. Comment: The commentator states that under Pennsylvania law, a tax is a revenue producing measure, whereas a regulatory fee is a charge intended to cover the cost of a regulatory scheme. Under the Pennsylvania Constitution, the power to impose a tax is vested only in the General Assembly. By this standard, the RGGI allowance program is clearly a tax. As stated in the Board's Regulatory Analysis Form ("RAF"), CO_2 allowance auction proceeds are projected to be over $330 million in the first year and over $2.3 billion through 2030. Of this, only 6 percent is directed toward programmatic costs related to the CO_2 budget trading program. Given the vast sums that will be generated, with only a small portion used for program administration, the costs for purchasing allowances is clearly a tax, which can only be imposed by the General Assembly.

Response: The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

156. Comment: The commentator states that to the extent the costs of CO_2 allowances are fees, and not a tax, the Department lacks authority under the APCA to assess such fees. Of the categories of funds under section 9.2(a) of the APCA, the auction proceeds most closely resemble fees. As set forth in the proposed rule, the CO_2 allowance auction proceeds would not

be subject to any of the limitation in section 6.3 of the APCA. Accordingly, the Department would be exceeding its authority in collecting such fees.

Response: Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. While the auction proceeds may appear to be significant, the fee amounts are necessary to further achieve through investments the GHG emission reductions needed to address climate change and protect public health and welfare.

157. Comment: The commentator states that the proposed regulations arguably violate the Compact Clause and the Dormant Commerce Clause of the U.S. Constitution. Interstate agreements that tend to enhance state power at the expense of federal supremacy by affecting interstate commerce violate the Compact Clause. *U.S. Steel Corp. v. Multistate Tax Comm'n*, 434 U.S. 452, 470 (1978). The RGGI program provides the RGGI states more authority to control CO_2 emissions than EPA, which does not regulate CO_2 emissions under the federal Clean Air Act. Likewise, under the Dormant Commerce Clause, state law may not place an undue burden on interstate commerce. By imposing significant additional costs on Pennsylvania power generators, the proposed RGGI regulations would treat in-state and out-of-state fossil-fuel-fired power generators differently. The very significant financial burden imposed on Pennsylvania generators is excessive in relation to the benefits claimed from controlling emissions, as explained elsewhere in these comments. That result violates the Dormant Commerce Clause.

Response: The Department strongly disagrees with the commentator. This final-form rulemaking does not violate the Compact Clause or the Dormant Commerce Clause of the U.S. Constitution. First, the Department is not executing a multistate compact. Second, the Department is regulating CO_2 emissions to effectuate a legitimate local public purpose of addressing the public health and environmental impacts of climate change, and any effects on interstate commerce as a result of this final-form rulemaking are only incidental.

158. Comment: The commentator states that the Department modeled an allowance revenue investment scenario with 31 percent of annual proceeds used for energy efficiency, 32 percent for renewable energy and 31 percent for greenhouse gas abatement. Presumably, proceeds from allowance auctions initially would be placed in the Department's Clean Air Fund. However, Section 9.2(a) of the APCA (35 P.S. § 4009.2(a)) limits disbursements from the Fund only "for use in the elimination of air pollution." Distributing revenue from the Fund for the wide range of energy efficiency and renewable energy projects discussed in the Preamble (e.g., upgrading appliances and weatherizing buildings) is well beyond the Department's current authority under the APCA.

Response: The Department disagrees that such uses are beyond its current authority under the APCA. Investing in renewable energy and energy efficiency projects will directly reduce CO_2 emissions in this Commonwealth by reducing the demand for fossil fuel derived energy.

159. Comment: The commentator states that an endangerment finding by the Department does not mandate this action, it simply acts as the cloak under which the Department chooses to proceed with this action. Other cap and trade programs were specifically mandated under the Clean Air Act, in particular Acid Rain, or to meet the requirements of § 108 and § 109 of the Clean Air Act which relate to the National Ambient Air Quality Standards (NAAQS).

Response: The Department is not issuing an endangerment finding. In 2009, under CAA section 202(a)(1), (42 U.S.C.A. § 7521(a)(1)), the EPA issued an "Endangerment Finding," that six GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride—endanger both the public health and the public welfare of current and future generations by causing or contributing to climate change. See 74 FR 66496 (December 15, 2009). The EPA's 2009 endangerment finding particularly concerned GHG emissions released from motor vehicles. However, in 2015, the EPA issued an endangerment finding for GHG emissions released from new EGUs through the promulgation of its regulation concerning "Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." See 80 FR 64509 (October 23, 2015). On January 19, 2021, the D.C. Circuit Court of Appeals affirmed that the endangerment finding issued for new EGUs provided a sufficient basis for the EPA's regulation controlling GHG emissions from existing EGUs, commonly known as the "Affordable Clean Energy Rule or ACE rule" in its decision vacating the rule and remanding it back to the EPA. See *Am. Lung Ass'n v. Env't Prot. Agency*, 985 F.3d 914, 977 (D.C. Cir. 2021). In other words, the EPA made a source-specific finding that GHG emissions, principally CO_2, from EGUs endanger public health and welfare and cause or contribute to climate change. Additionally, the EPA's Endangerment Findings are further reinforced by the findings of the USGCRP's Fourth National Climate Assessment (NCA4) which is consistent with the Commonwealth's 2015, 2020, and 2021 Climate Change Impacts Assessments. While these Federal studies inform the Department's decision to regulate CO_2 emissions within this Commonwealth, they are not determinative because this final-form rulemaking is being promulgated by the Board under the authority of the APCA, not the CAA.

160. Comment: The commentator states that the APCA defines the term *air pollution* broadly and includes "any form of contaminant...in such place, manner or concentration inimical or which may be inimical to the public health, safety or welfare..." The fact that carbon dioxide, as a greenhouse gas and a key factor in climate change, is "inimical to the public health, safety or welfare" has been extensively documented by the Intergovernmental Panel on Climate Change, the U.S. Global Change Research Program, and by the Department itself. The Supreme Court of the United States has also found that "the harms associated with climate change are serious and well recognized" and that the failure to regulate greenhouse gas emissions presented a risk of harm that was both actual and imminent. Furthermore, carbon dioxide is included in the definition of the term "regulated pollutant" found in APCA, Section 502 of the CAA, and Pennsylvania's existing air quality regulations. All of those rules and regulations define the term *regulated pollutant* to include those compounds regulated under CAA sections 111 or 112. The Affordable Clean Energy (ACE) rule, finalized in 2019, specifically regulates greenhouse gases—including carbon dioxide—under section 111(d) of the CAA thus including carbon dioxide in the list of regulated pollutants.

Response: The Department acknowledges this comment and agrees with the commentator.

161. Comment: The commentator states that courts have repeatedly found that the reduction of air pollution is in the public interest. In *Com., Dep't of Envtl. Prot. v. Pennsylvania Power Co*, the court found: "...[T]he purpose behind the Pennsylvania Air Pollution Control Act (APCA) and the provisions contained therein is to provide the people of this Commonwealth with air which is of a higher quality than that required by federal law. Examining this purpose, there is little doubt that the reduction of air pollution to such a degree is a valid public interest. In speaking on this same question in the case of *Bortz Coal Co. v. Commonwealth*, Pa.Cmwlth. 441, 444-45, 279 A.2d 388, 391 (1971), this Court pointed out that the regulation of air pollution has long been a valid public interest." In *Com., Dep't of Envtl. Res. v. Locust Point Quarries, Inc.*, the court stated, "The Commonwealth is committed to the conservation and maintenance of clean air by Art. I, s 27 of the Pennsylvania Constitution. To that effect, through Section 4002 of the Air Pollution Control Act, the legislature has declared as policy the protection of air resources to the degree necessary for the protection of the health, safety and well-being of the citizens; the prevention of injury to plant and animal life and property; the protection of public comfort and convenience and Commonwealth recreational resources; and the development, attraction and expansion of industry, commerce, and agriculture. In sum, protection of air resources is a matter of highest priority in the Commonwealth."

Response: The Department acknowledges this comment and agrees with the commentator.

162. Comment: The commentator states that having established carbon dioxide as a pollutant, the APCA specifically grants EQB the authority to establish and publish a maximum quantity of carbon dioxide emissions that are permitted. The EQB's proposed CO_2 Budget Trading Program regulation accomplishes this by establishing a statewide emissions cap. APCA also directs EQB to establish various conditions under which pollution is permissible and to establish emission fees. The proposed rule accomplishes both these tasks through an allowance mechanism. Covered sources must obtain either emissions allowances or allowable offsets for each ton of emissions. While EQB could set emission fees directly, it has chosen to use an auction system to distribute the bulk of allowances, thus allowing the market to discover the minimum appropriate fee to achieve the targeted emissions limits.

In addition, several different methods are used to further control potential costs for the regulated community. By cooperating with the Regional Greenhouse Gas Initiative in establishing a multi-state allowance trading program, the fees will likely be lower than would result from a state-only auction. The proposal also provides a cost containment reserve feature that will release additional allowances in the market if fees exceed certain metrics. Finally, the regulated community has the option to invest in certain offset projects in lieu of purchasing allowances for a percentage of their compliance obligation.

This use of a cap-and-trade system rather than a command-and-control approach where EQB requires facilities to adopt specific pollution control technology regardless of cost is not a new approach in Pennsylvania. Similar programs have been successfully used to reduce the SO_2 emissions that cause acid rain since the mid-1990s and the NOx emissions that contribute to

ozone smog since the late 1990s. Both programs have since been revised with the 2009 Clean Air Interstate Rule and the 2015 Cross-State Air Pollution Rule, but the fundamental structure of trading allowances remains. At no time has it been determined that APCA's language prohibits such programs.

Response: The Department acknowledges this comment and agrees with the commentator.

163. Comment: The commentator states that Pennsylvania law specifies that, when interpreting statutes such as APCA, the object of all interpretation and construction is to ascertain and effectuate the intention of the General Assembly. This begins by, first and foremost, giving effect to any unambiguous words in the statute.

The proposed regulation responds to two unambiguous requirements. First, the APCA specifies that it is the duty of EQB to adopt regulations for the control of air pollution. Second, the Environmental Rights Amendment of Pennsylvania's Constitution requires that the Commonwealth shall conserve and maintain public natural resources, including clean air, for the benefit of all people, including generations yet to come. Certain members of the legislature have claimed that the APCA does not permit regulation of carbon dioxide emissions because that legislation lacks a specific reference to the RGGI. The language that authorizes the regulation of pollution contains no expressed limitation that would limit the regulation of carbon dioxide. It is also clear that such regulation is not preempted. The PA Supreme Court has held that "the state is not presumed to have preempted a field merely by legislating in it. The General Assembly must clearly show its intent to preempt a field in which it has legislated." Here there is simply no preemption language anywhere in the act. Furthermore, as there is expressed authority to implement the CAA, and the CAA contains provisions regulating greenhouse gasses such as carbon dioxide, interpreting the APCA to exclude the authority to regulate carbon dioxide would create absurd results having provisions that are impossible of execution; such an interpretation is counter to the Statutory Construction Act.

The legislature also revisited the issue of greenhouse gas emissions in passing the Climate Change Act of 2008 which requires the development of a climate change action plan. Had the General Assembly believed that the administration lacked authority to regulate greenhouse gases, the entire plan would need to be submitted for consideration and action by the legislature prior to implementation. Instead, the act only requires that the plan identify those legislative changes necessary for implementation. The plain language used by the General Assembly implies that there are potential aspects of implementation that do not require legislative changes.

This is further evidenced by the fact that a bill to prevent the regulation of carbon dioxide in the manner proposed by this action was vetoed by Governor Wolf in September of 2020. If the existing APCA and the Climate Change Act already preempted such regulation, that later attempt to prohibit such action would be unnecessary.

Finally, because administrative agencies are often in the best position to evaluate their own enabling legislation, both federal and state courts give such agencies significant deference in their interpretations. Absent specific legislation to the contrary, it must be concluded that the

proposed regulation is permissible under the APCA.

Response: The Department acknowledges this comment and agrees with the commentator.

164. Comment: The commentator states that the APCA provides clear authority to regulate air pollution, including CO_2, and improve air quality in the interest of the health, welfare, and environment of the Commonwealth. This authority clearly extends to regulatory activities that contribute to health, welfare, and environmental protection outside of the Commonwealth, as well. But the authority is at its strongest ebb in relation to the protection of the public health, welfare, and environmental resources of the Commonwealth, and there are multiple statements in the proposed rule that would benefit from highlighting the benefits that the CO_2 Budget Trading Program would have for Pennsylvanians' health and welfare, or the quality of the Commonwealth's air quality resources, to clarify the rule's firm footing under APCA legal authority.

Discussion of certain impacts of climate change are arguably beyond the purview of the APCA – i.e. discussions of increases in infectious diseases and weather events. However, the proposed rule's "background and purpose" section describes the connection between reducing GHG pollution to address climate change and associated benefits to air quality, public health, and reduced co-pollutants. Since addressing these issues are more solidly within the APCA's purpose, it would bolster the legal defensibility of the rule to clearly prioritize the health and welfare benefits as the issues the rule is crafted to address and the associated climate change benefits as ancillary.

Ideally, the background and purpose section should lead with its language most aligned with the statutory authority of the APCA: "the statutory authority for this proposed rulemaking, the APCA, is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture," as this clarifies that while addressing climate change is not the driving purpose behind the rule, EQB has the authority to regulate the pollutants contributing to climate change impacts on public health in Pennsylvania. The rule's function to limit climate change impacts should be discussed as a benefit of a regulation targeted at protecting public health, welfare, and environmental resources in the Commonwealth, not the other way around.

Response: The Department acknowledges this comment and agrees that the APCA provides clear authority for this final-form rulemaking. As authorized under the APCA, the purpose of this final-form rulemaking is to protect public health, welfare and the environment through reduced CO_2 emissions. Additionally, this final-form rulemaking will simultaneously address part of this Commonwealth's contribution to climate change. This final-form rulemaking is clear on the purpose as the Preamble begins by stating, "the purpose of this final-form rulemaking is to reduce anthropogenic emissions of CO_2, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth." The Department also disagrees with the commentator that certain impacts of climate change discussed in the regulatory documents are beyond the purview of the APCA. Climate change is caused by air pollution which the APCA was specifically

enacted to address and climate change also negatively impacts public health, welfare and the environment. As such, a discussion of the harmful effects of climate change is appropriate.

165. Comment: The Board's authority under section 5(a)(1) includes the ability to impose fees for the control of air pollution, so long as they do not constitute an impermissible tax. Courts will examine both the nature and purpose of an exaction in determining its definition as a fee or tax. Under Pennsylvania law, the auction charges operate either as a licensing or user fee, not a tax. The Pennsylvania Supreme Court set out a four-part test in *National Biscuit Co. v. Philadelphia* to distinguish a license fee from a tax: 1) fees are only applicable to a type of business that is subject to supervision and regulation by the licensing authority under its police power; 2) the supervision and regulation are in fact conducted by the licensing authority; 3) the payment of the fee is a condition upon which the licensee is permitted to transact its business or pursue his occupation; and 4) the legislative purpose in imposing the charge is to reimburse the licensing authority for the expense of the supervision and regulation it conducts.

Even when an exaction does not precisely meet the *National Biscuit* test, the Court in *White v. Commonwealth of Pennsylvania* held an exaction may be found to be a fee rather than a tax when it "more logically" falls into that category. The *White* court found it dispositive that the exacted funds were deposited into a segregated account and disbursed only for a designated purpose related to the exaction, rather than deposited into the state's coffers for general public purposes. The Court in *Phone Recovery Services, LLC v. Verizon Pennsylvania, Inc.* interpreted the *White* holding as recognition of a distinct category of non-tax charges, characterized by the exaction raising funds to be held in trust and deposited in a segregated account for a specific purpose.

Response: The Department acknowledges this comment and agrees that the Board has the authority under the APCA to promulgate regulations that assess fees.

166. Comment: The APCA establishes the Clean Air Fund (CAF), to be administered by the Department for use in the elimination of air pollution. That any charges collected would be paid into the CAF supports the interpretation that allowance auction is logically a licensing fee rather than a tax. The Court in *Phone Recovery* further acknowledged the existence of a third category of government exaction, the user fee, distinct from both taxes and licensing fees. The *Phone Recovery* Court looked to rulings in the highest courts of Alabama and Massachusetts in defining non-tax charges, as both those states make explicit the category of a user fee. The referenced test from Supreme Judicial Court of Massachusetts defines a user fee as a charge: 1) in exchange for a particular government service which benefits the party paying the fee in a manner not shared by other members of society; 2) paid by choice, in that the party paying the fee has the option of not utilizing the governmental service and thereby avoiding the charge; and 3) not collected to raise revenues but to compensate the governmental entity providing the services for its expenses. Alabama defined a user fee as a payment in return for a government provided benefit, tied in some fashion to the payor's use of the service. California offers a user fee framing as well in its examination of whether an emissions allowance auction is a tax or fee.

The U.S. Supreme Court has recognized the interest of a state to exact a user fee from those who avail themselves of government properties and services, so long as the charge is not

unreasonable in amount for the privilege granted. An exaction in exchange for the use of property or improvements thereon is a fee or toll, not a tax. Pennsylvania's constitution vests the state as trustee to hold the natural resources within the state in public trust for its citizens. Further, states have a "quasi-sovereign" interest separate and above that of its citizens in maintaining the air quality within its borders. Accordingly, a state possesses authority to charge a fee for the use of air as a repository for polluting emissions within its jurisdiction pursuant to its proprietary and ownership interests. Since the regulatory scheme will be grounded in the APCA, the fact that all fees so collected will be put into the Clean Air Fund and can only be disbursed for the purpose of eliminating air pollution demonstrates that the auction charge is a user fee paid in exchange for the privilege to use a resource managed and improved by the DEP, the state's air.

Response: The Department acknowledges this comment and agrees that this final-form rulemaking establishes a fee, not a tax.

167. Comment: The APCA provides ample legal authority for the promulgation and implementation of a cap and trade program to regulate CO_2 emissions from the power sector as set forth in the Proposed Rule.

Response: The Department acknowledges and agrees with this comment.

168. Comment: The APCA authorizes the regulation of CO_2 emissions. Carbon dioxide, a greenhouse gas present in the atmosphere that contributes to a condition that may be inimical to public health, safety or welfare, is clearly subject to regulation under the APCA. The APCA gives the Board the power and the duty to "[a]dopt rules and regulations, for the prevention, control, reduction and abatement of air pollution" that may, among other things, "prohibit or regulate any process or source or class of processes or sources." In addition, the APCA directs the Board to "[e]stablish and publish maximum quantities of air contaminants that may be permitted under various conditions at the point of use from any air contaminant source in various areas of the Commonwealth so as to control air pollution." Under the APCA, gases are included in the definition of "air contaminant," and "air contamination" is "the presence in the outdoor atmosphere of an air contaminant which contributes to any condition of air pollution." "Air pollution" includes "any form of contaminant, including . . . EQB has repeatedly recognized this authority and relied upon the APCA to regulate greenhouse gas emissions. Accordingly, the Commonwealth Court has recognized that the APCA bestows upon the Department a duty to promulgate regulations to reduce greenhouse gas emissions. smoke, soot, fly ash, dust, cinders, dirt, noxious or obnoxious acids, fumes, oxides, gases . . . or any other matter in such place, manner or concentration inimical or which maybe inimical to the public health, safety or welfare or which is or may be injurious to human, plant or animal life or to property or which unreasonably interferes with the comfortable enjoyment of life or property." The Board has repeatedly recognized this authority and relied upon the APCA to regulate greenhouse gas emissions. Accordingly, the Commonwealth Court has recognized that the APCA bestows upon the Department a duty to promulgate regulations to reduce greenhouse gas emissions.

Response: The Department acknowledges and agrees with this comment.

169. Comment: The APCA provides authority for a Cap-and-Invest Market-based Program. The APCA provides broad authority to control air emissions, including through market-based programs such as the Proposed Rule. Pennsylvania has repeatedly replied upon this broad authority to adopt cap-and-trade programs for other air contaminants, and no court has found that the Commonwealth lacks authority to regulate air contaminant emissions through these programs, which have long been an effective part of Pennsylvania's efforts to protect its air resources. In 1997, Pennsylvania established the Ozone Transport Commission NOx Budget Trading Program; in 2000, the NOx SIP Call NOx Budget Trading Program; and in 2008, the CAIR NOx Trading Program. In adopting each of these programs, the Board relied upon its authority under APCA Section 5(a)(1). The Board correctly found this authority to be sufficient and did not draw on its separate statutory authority to implement the federal Clean Air Act. In fact, under the APCA, Pennsylvania has gone beyond the federal mandates of the Clean Air Act to create broader trading programs. For example, the 2008 rule responded to EPA's Clean Air Interstate Rule ("CAIR"). CAIR required only power plants be covered, but the Board required other industrial sources to hold allowances as well.

Response: The Department acknowledges and agrees with this comment.

170. Comment: The Department has the authority to require regulatory fees for allowances and to put those proceeds into the Clean Air Fund. Importantly, the Board has the authority to require regulated entities to pay fees for emission allowances and put those proceeds into the Clean Air Fund. The APCA not only directs fees into the Clean Air Fund, but also includes specific authority for the Clean Air Fund to receive contributions from "any private source." APCA also provides the Department the authority to administer the Clean Air fund "for use in the elimination of air pollution." 35 Pa. Stat. § 4006.3 (2020). Significantly, the RGGI auction fees are a regulatory measure, distinct from fees established "to cover the indirect and direct costs of administering" the various regulatory programs, which are also authorized by the APCA and referred to by Pennsylvania Courts as "license fees." See, e.g., *National Biscuit Co. v. Philadelphia, 98 A.2d 182, 188 (Pa. 1953)*. In addition to supporting measures that directly reduce air pollution, auction fees can and should be used to support communities affected by power plant closures in order to facilitate the Commonwealth's transition to a cleaner electric grid. The transition to cleaner power is already happening and will continue; inherent in that transition are social and economic changes in communities that have previously relied upon emissions-intensive generation for jobs and tax base. Making change possible and productive for these communities is integral to the elimination of air pollution.

Response: The Department acknowledges and agrees with this comment.

171. Comment: The commentator states that the fees in the proposed rule are not taxes. Allowance auction fees under the Proposed Rule do not constitute taxes requiring legislative authorization. While allowance auction fees would raise revenue, they are imposed by a regulatory measure, and they are held in a special fund and charged and expended for a specific purpose. "The question of whether an enactment is a tax or a regulatory measure is determined by the purposes for which it is enacted, and not by its title." The primary purpose of the Proposed Rule is not to raise revenue, but rather "to reduce anthropogenic emissions of CO_2, a GHG and major contributor to climate change impacts, in a manner that is protective of public health,

welfare and the environment." Several other characteristics of allowance auction payments under the Proposed Rule demonstrate that they do not constitute taxes: First, sources will choose to purchase allowances at auction and may alternatively choose to eliminate emissions or purchase allowances on the secondary market; second, these fees do not work like taxes: they are not deposited in the general fund, fee amount is variable, and allowances are fungible, which means proceeds from any given purchase may go outside Pennsylvania; and finally, unlike a tax, payment of a fee confers a value on the purchaser: the permission to emit a pollutant while producing electricity for sale.

Response: The Department acknowledges and agrees with this comment.

172. Comment: In addition to the Department's statutory authority to promulgate this proposed rulemaking under the APCA, this proposal is both consistent with, and in furtherance of, the constitutional requirements of Article I, Section 27. It is clear that, as a trustee with fiduciary duties, the Commonwealth must act toward the corpus of the trust, i.e., Pennsylvania's public natural resources, with prudence, loyalty, and impartiality.

Under Pennsylvania trust law, the duty of prudence requires a trustee to "exercise such care and skill as a man of ordinary prudence would exercise in dealing with his own property." Prudence requires good judgment and caution, particularly when trust resources are being threatened. Participating in a well-established and effective program like RGGI is a prudent approach to protecting the public trust resources in Pennsylvania being adversely affected by greenhouse gas emissions.

The duty of loyalty imposes an obligation to manage the corpus of the trust so as to accomplish the trust's purposes for the benefit of the trust's beneficiaries and not for others. The Commonwealth would further this duty under the proposed rulemaking by reducing greenhouse gas emissions that are threatening the public natural resources that belong to the people of Pennsylvania, including generations yet to come.

The duty of impartiality requires the trustee to manage the trust so as to give all of the beneficiaries due regard for their respective interests in light of the purposes of the trust. The proposed rulemaking benefits all of the trust beneficiaries—present and future generations—by providing economic benefits to the present generation as well as environmental and public health benefits to present and future generations.

Establishing a price on carbon emissions is also consistent with the text of the Environmental Rights Amendment, which directs the Commonwealth, as trustee, to "conserve and maintain" the trust corpus in furtherance of the people's enumerated rights. Having polluters obtain allowances at auction - establishing a limited authorization to pollute the air - is more consistent with the Commonwealth's duties as a trustee for its natural resources than allowing those polluters to appropriate public resources free of charge and, as a result, deplete or damage the corpus of the trust.

Response: The Department agrees that this final-form rulemaking is authorized under the APCA and is consistent with the Pennsylvania Constitution. The Department has fulfilled its duties as a

trustee of the environment, set forth in Article I, Section 27 of the Pennsylvania Constitution and the PA Supreme Court Ruling on the Environmental Rights Amendment in *Pennsylvania Environmental Defense Foundation v. Commonwealth of Pennsylvania*, 161 A.3d 911 (Pa. 2017) during the development of this rulemaking. This rulemaking was developed under the authority of Sections 5(a)(1) and 6(a)(3) of the APCA. The APCA is built on a precautionary principle to protect the air resources of this Commonwealth for the protection of public health and welfare and the environment, including plant and animal life and recreational resources, as well as development, attraction and expansion of industry, commerce and agriculture. This rulemaking would help the Department protect the air resources of this Commonwealth as well as public health and welfare by reducing harmful GHG emissions from the electricity sector. The Department recognizes Pennsylvanians' rights and the Commonwealth's obligations under the Pennsylvania Constitution and must meet those obligations in every action the agency takes. Because this rulemaking reduces GHG emissions, resulting in considerable benefits to public health among others, the Department is satisfied that its Article I, Section 27 obligations have been met with development of this rulemaking.

173. Comment: The Environmental Quality Board (the "EQB") is generally authorized to classify sources of air pollution in Pennsylvania and to adopt regulations that prevent, control, reduce, and abate air pollution from such sources. Carbon dioxide is an air pollutant that is already having a pronounced negative impact on public health and welfare, and will have an increasingly pronounced negative impact on public health and welfare in the future if carbon dioxide pollution is not addressed now. Fossil fuel-fired electric generating units ("EGUs") with nameplate capacities at or above 25 Megawatts ("MW") are a significant source of carbon dioxide pollution. Accordingly, it is clear under the Air Pollution Control Act that the EQB may adopt rules to control and reduce carbon dioxide emissions from fossil fuel-fired EGUs.

Response: The Department acknowledges this comment and agrees with the commentator that the Board has the authority under the APCA to regulate CO_2 emissions from fossil fuel-fired EGUs.

174. Comment: Given the EQB's description of the serious nature of the threat that carbon dioxide emissions pose to the public health and welfare, it is well past time for the EQB to regulate CO_2 emissions. The EQB must ensure that the Proposed Rulemaking conforms fully with the Air Pollution Control Act's requirements; if it cannot, the Administration should propose legislation that will accomplish the Proposed Rulemaking's goals of reducing Pennsylvania EGUs' carbon dioxide emissions and encouraging the development of energy efficiency and renewable energy projects in Pennsylvania.

Response: The Department and the Board have ensured that this final-form rulemaking complies with the APCA, including sections 5(a)(1) and 6(a)(3). Additional legislation is not necessary to achieve the purpose of this final-form rulemaking.

175. Comment: Section 6.3(g) of the Air Pollution Control Act provides: Any fees imposed under this section in areas with approved local air pollution control programs shall be deposited in a restricted account established by the governing body authorizing the local program for use by that program to implement the provisions of this act for which they are responsible. The

governing body shall annually submit to the Department an audit of the account in order to insure the funds were properly spent. Allegheny and Philadelphia Counties both have approved local air pollution control programs, the Allegheny County Health Department ("ACHD") and Philadelphia Air Management Services ("AMS"), respectively. Accordingly, fees imposed on fossil fuel-fired EGUs in Allegheny and Philadelphia Counties for carbon dioxide allowances under the Proposed Rulemaking must be deposited in restricted accounts administered by ACHD and AMS, to use on energy efficiency and renewable energy projects in those counties.

Response: The Department acknowledges this comment and will further evaluate the recommendation.

176. Comment: The commentator states that the Board and the Department should proceed cautiously and avoid surrendering authority to develop programs, policies, and regulations that acknowledge, reflect, and preserve Pennsylvania's distinctive strengths, employment opportunities, energy consumers, and Pennsylvania's status as a leading energy producer and exporter.

Response: The Department is not delegating any authority to RGGI, Inc. or any of the participating states. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO_2 Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc. Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the Department's implementation of this final-form rulemaking.

177. Comment: As a condition to joining RGGI, Chapter 145, Subchapter E must closely align with the RGGI Model Rule and, in the event the RGGI Model Rule is revised (as is expected in the summer of 2021), Subchapter E would necessarily require revision in order for the Commonwealth to meet its obligations under the RGGI Memorandum of Understanding. On this point, however, the Proposed Rulemaking is silent, yet by joining RGGI, the Commonwealth would surrender much of its power to directly control the content of the regulations it enforces.

Response: The Department is not delegating any authority to RGGI, Inc. or any of the participating states. RGGI, Inc. is a nonprofit corporation created to provide technical and administrative support services to the participating states in the development and implementation of their CO_2 Budget Trading Programs. Each participating state is also allotted two positions on the Board of Directors of RGGI, Inc. Under this final-form rulemaking, RGGI, Inc. would provide technical and administrative services to support the Department's implementation of this final-form rulemaking. This support would include maintaining COATS and the auction platform and providing assistance with market monitoring. Any assistance provided by RGGI, Inc. would follow the requirements of this final-form rulemaking. RGGI, Inc. has neither any regulatory or enforcement authority within this Commonwealth nor the ability to restrict or interfere with the

Department's implementation of this final-form rulemaking. Additionally, there is not a RGGI Memorandum of Understanding.

178. Comment: Legislation that reduces the existing power of the Administration to adopt regulations aimed to protect the naturally occurring climate from disruption by GHG pollution would also be unconstitutional. That would include, for example, bills introduced in the 2019-20 legislative session (likely to be re-introduced this session) that would require additional action by the General Assembly before the proposed regulation or any action to limit GHG emissions could be adopted.

Response: The Department acknowledges this comment and agrees that the legislation referenced was introduced in an attempt to eliminate the Department's existing authority to regulate CO_2 emissions under the APCA.

Regulatory Review

Public Hearings and Public Comment

179. Comment: The commentator states that the public hearings were not held in impacted areas and therefore the Department did not adequately hear from impacted communities or comply with the requirements of the APCA.

Response: The Department understands the concerns expressed by the commentator about participation in the virtual public hearings. In accordance with Governor Tom Wolf's emergency disaster declaration and based on advice from the Department of Health regarding the mitigation of the spread of the COVID-19, the Board held the public hearings for this rulemaking virtually. The virtual hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments on the proposed rulemaking without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this proposed rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemaking, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period. Further, the public hearings were held in compliance with the APCA as there is not an in-person hearing requirement under the APCA.

180. Comment: The commentator states that the Department held virtual hearings in consecutive days that were not based in the areas of the commonwealth that would be most impacted. These virtual meetings were internet-based, and many of the most impacted areas lack access to affordable and/or reliable broadband internet required to participate. Governor Wolf has acknowledged the severe lack of rural broadband access as recently as December of 2020.

Response: The Department understands the concerns expressed by the commentator about participation in the virtual public hearings. In accordance with Governor Tom Wolf's emergency disaster declaration and based on advice from the Department of Health regarding the mitigation of the spread of COVID-19, the Board held the public hearings for this rulemaking virtually. The virtual hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments on the proposed rulemaking without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this proposed rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemaking, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period. Further, the public hearings were held in compliance with the APCA as there is not an in-person hearing requirement under the APCA.

181. Comment: The commentator states that the public hearing process limited testifiers to five minutes and required a complicated two-step online and email registration process to virtually participate.

Response: The Department limited testifiers to five minutes in an effort to hear from as many registered testifiers as possible- and had a total of 449 individuals provide testimony. The Department disputes that it was a difficult process as many individuals were able to complete the registration process over the phone. In order for the hearings to run as efficiently as possible, the Department kept with its standard registration process for those individuals who wanted to testify at a public hearing. This required an interested individual to contact the Department by email, phone etc. to request to provide testimony. The second part of the process was for the individual to determine how they wanted to participate in the hearings, whether that be via phone, or online access. For those who participated via the WebEx platform, this second step required them to register for the WebEx so they had the information to access the hearing. If the individual was providing testimony over the phone, they were most often provided the call-in details. For those individuals who needed assistance, the Department personally registered interested individuals to facilitate the registration process and provided a phone number to participate for those who may

not be as familiar with the WebEx technology or for those who did not have internet access. Neither technology limitations nor lack of access to broadband were limiting factors to participate in the hearings, as many individuals both listened to and provided testimony via phone.

182. Comment: The commentator states that this proposal seeks to have Pennsylvania link to RGGI markets by finalizing a regulation that is consistent with the scope and ambition of RGGI's model rule. However, as the Department is aware, RGGI states will convene this summer to review the model rule and consider more stringent goals and other program obligations. The commentator cautions the Department from jumping blindly into this program without such an offramp. Substantial revisions to the model rule, should they be finalized before the end of the Department promulgating a final regulation to join RGGI, would require a substantial revision to Pennsylvania's implementing regulations – so much so that it may require a second round of public comment.

Response: The Department will evaluate any proposed changes to the RGGI Model Rule and consider whether this final-form rulemaking needs to be amended at that time. The Department also notes that this Commonwealth is not signing a binding agreement to participate in RGGI and states may withdraw from participation at any time.

183. Comment: The commentator also questions the timeline of this rulemaking. The initial concepts were released, lacking much detail, in February of 2020, before the pandemic took hold of Pennsylvania's attention. However, the process then continued all while Pennsylvania has been operating under the Wolf Administration's emergency declaration. The final rule proposal was not made available for public comment until November of 2020, with a constitutionally mandated suspension of the General Assembly from November 30 until swearing-in on January 5, 2021. During this time, legislative committees, which are key in the analysis and comments on proposed regulations, are not permitted to convene, nor are the committees premised to have assigned members. The implementation of this timeline is a major cause of concern as the General Assembly is extremely limited in its ability to react to this rulemaking. The commentator believes this was a deliberate attempt to exclude Pennsylvania's elected representatives from participating in the process.

Response: The House and Senate ERE Committees and members of the Legislature have extensive involvement in the development of the Department's rulemakings, including appointed members on the Department's advisory committees and four seats on the Board, in addition to the review outlined under the Regulatory Review Act (RRA). The Board and the Department consistently seek opportunities to engage productively with interested parties, including the Legislature. The Department's Legislative Office works to address issues and ensure that the Legislature is informed of actions by the Department and the Board. Throughout the development of this final-form rulemaking, the Department met with individual legislators and responded to questions on this rulemaking and RGGI participation during several legislative hearings. Additionally, several members of the Legislature including the ERE Committees submitted comments on the proposed rulemaking.

184. Comment: The commentator states that although it might be argued that, for purposes of Section 7(a), virtual hearings take place "in any region of the Commonwealth affected" or "in the [multi-region] area concerned" because they take place "everywhere" at once (at least theoretically), this reasoning falls flat because it cannot be squared with some of the other language in the same Section. The Section provides, for example, that "[w]hen it becomes necessary to adopt rules and regulations for the control, abatement, prevention or reduction of air pollution for more than one region of the Commonwealth, the board may hold one hearing for any two contiguous regions to be affected by such rules and regulations. Such hearing may be held in either of the two contiguous regions." This language makes it clear that when one of these types of hearings takes place, it takes place in one of the two contiguous regions ("either"), but not both at the same time. Unlike a physical, in-person meeting, a virtual hearing cannot meet this standard because it happens "everywhere" at once. These factors help to confirm that, for purposes of Section 7(a), a hearing must be a physical, in-person meeting. The EQB has failed to hold physical, in-person hearings in connection with the Proposed Rulemaking. The Proposed Rulemaking is therefore procedurally defective.

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The phrase "in any region of the Commonwealth affected" in Section 7(a) does not create a requirement for "in-person" public hearings. The Department contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

185. Comment: The commentator states that the EQB says that it held the virtual meetings "[i]n accordance with Governor Tom Wolf 's emergency disaster declaration and based on advice from the Department of Health regarding the mitigation of the spread of COVID-19[.]" 50 Pa. Bull. 6187, 6231 (Nov. 7, 2020). But the Governor never suspended Section 7(a) of APCA and there is otherwise no "COVID exception" to that Section's requirements. See *Commonwealth v. Glenn*, 233 A.3d 842, 846 (Pa. Super. Ct. 2020) ("We are cognizant that it is not for the courts to add, by interpretation, to a statute, a requirement, or an exception, which the legislature did not see fit to include.") (internal quotation and brackets omitted).

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The phrase "in any region of the Commonwealth affected" in Section 7(a) does not create a requirement for "in-person" public hearings. The Department contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding 10 well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

186. Comment: The regulation should be delayed until the Department holds in-person public hearings in affected areas.

Response: The Department disagrees and will continue working toward a January 1, 2022 implementation date as there has been considerable public input and public engagement regarding this regulation. Additionally, the APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The phrase "in any region of the Commonwealth affected" in Section 7(a) does not create a requirement for "in-person" public hearings. The Department contends that the intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation.

187. Comment: The commentator says there appears to have been a lack of public notice for the public meetings held on the rulemaking process. Section 7(c) of our Commonwealth's Air Pollution Control Act (ACPA) requires as follows: Notice to the public of the time and place of any public hearing shall be given at least thirty (30) days prior to the scheduled date of the hearing by public advertisement in a newspaper or newspapers of general circulation in the region of the Commonwealth affected. The commentator cannot locate any publication for these meetings with the exception of the original notice in the Pennsylvania Bulletin and the Department of Environmental Protection's website. The ACPA contains the public notice requirement to ensure that the public is adequately informed that there will be a hearing on any proposed rules which affect the abatement of air pollution. Without this notice, it is quite

possible that many stakeholders, interested parties and the general public missed out on attending, submitting comments, and learning from these hearings. Public notice requirements facilitate public access and increase transparency and accountability in the regulatory and policy-making process and agencies must strictly comply with their mandates.

Response: This comment is inaccurate. The Department provided public notice for the virtual public hearings in twelve newspapers of general circulation prior to the opening of the comment period on November 7, 2020. This included public notices in the Allentown Morning Call, the Altoona Mirror, the Bucks County Courier Times, the Delaware County Daily and Sunday Times, the Erie Times-News, the Indiana Gazette, the Patriot-News, the Pittsburgh Post-Gazette, the Reading Eagle, the Scranton Times-Tribune, the Wilkes Barre Times Leader, and the Williamsport Gazette. Altogether, the Board and the Department saw record participation during the virtual public hearings and 449 members of the public provided testimony on the proposed rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemaking, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

188. Comment: The commentator has concerns about the fact the meetings were held virtually when the APCA expressly requires in-person public meetings. The commentator recognizes and appreciates the importance of COVID mitigation requirements, and appreciates the ability to participate remotely, but points out that virtual-only settings can exclude significant numbers of Pennsylvanians who do not have access to the internet. Moreover, the APCA requirement for in-person public meetings is clear and unambiguous. The commentator recommends extending the public comment deadline and holding additional, properly noticed in-person meetings consistent with the APCA and in compliance with necessary COVID mitigation health policies.

Response: The APCA does not require the Board to hold "in-person" public hearings. Section 7(a) of the APCA states "Public hearings shall be held by the board or by the Department, acting on behalf and at the direction or request of the board, in any region of the Commonwealth affected before any rules or regulations with regard to the control, abatement, prevention or reduction of air pollution are adopted for that region or subregion." The phrase "in any region of the Commonwealth affected" in Section 7(a) does not create a requirement for "in-person" public hearings. The intent of the statutory language is to ensure that a public hearing is held in a location that is actually impacted by a regulation. For instance, section 7(a) would prevent the Board from holding one public hearing in Harrisburg for a regulation that only impacts the Northwest region.

For this final-form rulemaking, the Board satisfied the public hearing requirement in section 7(a) of the APCA by holding 10 well-attended virtual public hearings. As this final-form rulemaking impacts the entire Commonwealth, the virtual public hearings were accessible Statewide. The virtual public hearings were a necessity due to the COVID-19 pandemic and allowed hundreds of Pennsylvanians to deliver their comments without exposing themselves or their families to a widespread, communicable disease. To ensure that all Pennsylvanians had access to the ten

virtual public hearings for this rulemaking, the Department and the Board made the hearings accessible via any phone connection, including landline and cellular service, or internet connection. The public hearings were also held at varying times including evening hours, so that members of the public could provide testimony outside of typical work hours. For the first time, the Department was able to provide real time English to Spanish interpretation during the virtual public hearings. Altogether, the Board and the Department saw record participation during the virtual public hearings and over 445 members of the public provided testimony on this rulemaking. The Department also received feedback from many participants that the use of a virtual public hearing platform was preferred and resulted in savings, in both time and money, for many residents who did not have to drive or find a way to attend a public hearing. Additionally, as with all the Department's rulemakings, members of the public also had the opportunity to provide written comments by regular mail, the Department's eComment system, or email during the comment period.

Advisory Committee Engagement

189. Comment: In developing the Proposed Rulemaking, the Department, as required by statute, consulted with several statutorily-created independent advisory bodies: the Air Quality Technical Advisory Committee, Citizens Advisory Committee, and Small Business Advisory Committee. Each of those bodies formally voted *not* to approve the Proposed Rulemaking, concluding that adopting it would be contrary to the public interest. The commentator agrees that the rulemaking is not in the public interest.

Response: While that may have been the view of the Advisory Committees upon reviewing the proposed regulation in 2020, significant efforts were to made to address committee concerns in this final-form rulemaking and ultimately all three advisory committees voted in support of recommending that the Department advance the final-form rulemaking to the Environmental Quality Board. Additionally, the Environmental Justice Advisory Board voted unanimously in support of the Department moving forward.

On April 8, 2021, the Department presented an update on this final-form rulemaking to AQTAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 17, 2021, at a special AQTAC meeting, the Department presented this final-form rulemaking and updated power sector modeling results. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. The supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

On April 20, 2021, the Department presented an update on this final-form rulemaking to CAC. The update included information on the regulatory process, a summary of the comments received, the Department's key proposed regulatory changes from proposed to final, and the Department's public outreach efforts. On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to CAC. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in

support of recommending that the Department move this final-form rulemaking forward to the Board. Again, the supportive vote is particularly notable considering that the same committee had been divided on whether to concur with the draft proposed rulemaking.

On May 19, 2021, the Department presented this final-form rulemaking and updated power sector modeling results to SBCAC. During the presentation, the Department mentioned that it had estimated that now twelve small business stationary sources, as defined under section 3 of the APCA (35 P.S. § 4003), may need to comply with this final-form rulemaking. Of those twelve sources, eight were estimated to be waste coal-fired power plants. The Department also mentioned that, in the final-form rulemaking, it had retained the CO_2 allowance set-aside provision to assist all waste coal-fired power plants located in this Commonwealth with their compliance obligation. After the Department answered the members remaining questions on this final-form rulemaking, the members voted in support of recommending that the Department move this final-form rulemaking forward to the Board. In light of the SBCAC vote in opposition to the draft proposed rulemaking, the members' support of this final-form rulemaking is particularly significant.

Additionally, the Department provided an informational presentation on the draft proposed rulemaking to EJAB on May 21, 2020, and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group throughout 2020. On July 16, 2020, the Department participated in a discussion with EJAB members centered around recommendations to the Department regarding RGGI. This conversation continued at the August 11, 2020, meeting and resulted in recommendations shared with the Department regarding RGGI program implementation in addition to review and discussion of the draft RGGI equity principles, developed in conjunction with the Advisory Committee. Discussion and consultation with EJAB regarding the draft RGGI Equity Principles continued during the November 17, 2020, meeting.

On May 20, 2021, the Department provided a presentation on the final rulemaking and updated power sector modeling, specifically highlighting environmental justice and equity concerns and how these were addressed in the rulemaking and would be addressed in an investment plan. The Delta Institute, with whom the Department collaborated to conduct outreach and research in communities impacted by this final-form rulemaking, also presented their findings and recommendations for the Department's efforts in affected communities. The Department also provided an opportunity to present public comments at this meeting. While EJAB did not vote on the draft proposed rulemaking in 2020, the EJAB members decided to vote unanimously in support of the Department moving this final-form rulemaking forward to the Board.

190. Comment: The commentator states that the Air Quality Technical Advisory Committee, Citizens Advisory Council, and Small Business Compliance Advisory Committees all voted to not recommend that the Department advance the proposed rulemaking to the Board and therefore the proposed rulemaking should not be advanced.

Response: The Department disagrees. As required under the Regulatory Review Act and further emphasized by Executive Order 2019-07, the Department conducted robust public outreach including the business community, energy producers, energy suppliers, organized labor,

environmental groups, low-income and environmental justice advocates and others to ensure that the development and implementation of this program results in reduced emissions, economic gains and consumer savings. While that may have been the view of the Advisory Committees upon reviewing the proposed regulation in 2020, significant efforts were to made to address committee concerns in this final-form rulemaking and ultimately all three advisory committees voted in support of recommending that the Department advance the final-form rulemaking to the Board. Additionally, the Environmental Justice Advisory Board voted unanimously in support of the Department moving forward.

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Additionally, the Department provided an informational presentation on the draft proposed rulemaking to EJAB on May 21, 2020, and had further engagement with Environmental Justice stakeholder groups such as the Chester Environmental Partnership and EJ Stakeholders Group throughout 2020. On July 16, 2020, the Department participated in a discussion with EJAB

members centered around recommendations to the Department regarding RGGI. This conversation continued at the August 11, 2020, meeting and resulted in recommendations shared with the Department regarding RGGI program implementation in addition to review and discussion of the draft RGGI equity principles, developed in conjunction with the Advisory Committee. Discussion and consultation with EJAB regarding the draft RGGI Equity Principles continued during the November 17, 2020, meeting.

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Regulatory Review Act

191. Comment: The Board should continue to consider potential alternatives to joining RGGI. Analysis of alternative measures by the Board and the Department is not only advisable from a public policy standpoint but is also mandated under the RRA. See 71 P.S. § 745.5(a)(12). On this point, the Department's Regulatory Analysis Form ("RAF") submitted to the Independent Regulatory Review Commission ("IRRC") is deficient. In conclusory fashion, the Department simply states that "[t]here are no less intrusive or less costly alternative regulatory provisions available." RAF at 47.

Response: The Department disagrees with this comment. RGGI has proven to be both successful and cost effective at reducing CO_2 emissions from the electric sector. While the Department could have developed a traditional command and control regulation to reduce CO_2 emissions from fossil fuel-fired EGUs, that would not be the most advantageous or economically beneficial method to control CO_2 emissions in this Commonwealth. In the RAF, the Department also explains the benefits of cap and trade v. traditional command and control regulations. Section 745.5(a)(12) requires the Department to include a "description of any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected" in the RAF. 71 P.S. § 745.5(a)(12). The Department fulfilled that requirement.

192. Comment: Under Pennsylvania's Regulatory Review Act ("RRA"), 71 P.S. §§ 745.1 et seq., the Board is required to provide an estimate "of the direct and indirect costs to the Commonwealth, its political subdivisions and to the private sector." 71 P.S. § 745.5(a)(4). In the proposed rulemaking, however, the Board indicates that any plan outlining reinvestment options for auction proceeds will be addressed separately from the proposed rulemaking. Additionally, as noted by other commentators, the Board has also failed to provide any analysis regarding the potential cost impact of the proposed rulemaking on large C&I consumers.

Response: The updated RAF includes an estimate of the direct and indirect costs to the Commonwealth, its political subdivisions and to the private sector in response to question #17 *Identify the financial, economic and social impact of the regulation on individuals, small businesses, businesses and labor communities and other public and private organizations.*

Based on information contained within the Pennsylvania Public Utility Commission's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PA PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

193. Comment: The commentator states that the cost-benefit standard required by the Regulatory Review Act and Executive Order 1996-1 mandates that the Department demonstrate commensurate environmental and public health benefits will be achieved through adoption and implementation of this proposed rulemaking. The commentator states that considering actions of other jurisdictions or benefits from projected program investments does not met the strict cost-benefit criteria of the Regulatory Review Act and Executive Order 1996-01.

Response: The Department disagrees with the commentator's characterization of the required cost-benefit analysis for regulations. There is nothing in the Regulatory Review Act or Executive Order 1996-01 that would exclude the benefits of investing the auction proceeds. While the specific investment programs will be discussed further in a separate investment plan, the Department is clear in this final-form rulemaking that the proceeds will be deposited in the Clean Air Fund and used to further reduce GHG emissions. The Department's modeling shows that investing the proceeds strategically will provide several benefits to this Commonwealth in addition to the GHG reductions, including public health, environmental and economic benefits. Executive Order 1996-01 provides that "costs of regulations shall not outweigh their benefits." Section 745.5b of the RRA requires the Department to consider the economic or fiscal impacts of a regulation and the protection of the public health, safety and welfare and the effect on this Commonwealth's natural resources. This final-form rulemaking is consistent with Executive Order 1996-01 and the RRA as the benefits of this final-form rulemaking substantially outweigh any associated costs.

194. Comment: The proposed rule's regulatory analysis documents fall short of various Regulatory Review Act requirements. The documents do not include an estimate of the loss of

tax revenues to the Commonwealth nor the electricity cost impacts to commercial or industrial consumers. The documents in part attempt to justify the rule on a proposed spending plan that is not part of the comment docket. The cost-benefit analysis also does not consider the impact to Pennsylvania's environment from emissions that would occur in upwind states due to leakage.

Response: The Department disagrees with the commentator as the regulatory analysis is comprehensive and includes the significant analyses conducted by the Department in support of this final-form rulemaking including all of the items mentioned above. Tax revenues are considered in the economic analysis conducted by the Department, more detail on which is provide in the Modeling and Data Analysis section of this document. Additionally, electricity sector impacts and the potential for leakage have been documented and discussed by the Department in many forums and discussion of which is also included in the regulatory documents. Finally, the Regulatory Analysis Form, specifically question #17 was updated to provide estimates of electricity cost impacts to small commercial and large commercial/industrial customers and is included below as well.

Based on information contained within the Pennsylvania Public Utility Commission's 2020 Rate Comparison Report (See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report.https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf), a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

195. Comment: The commentator states that Pennsylvania is attaining the most stringent 24-hour particulate matter standards in all but one monitoring point and is out of attainment for just four monitoring points for ozone standards, according to recent preliminary design values presented by the Department to its Air Quality Technical Advisory Committee. The NAAQS are established by EPA at a level sufficient to protect public health plus an adequate margin – therefore it is questionable that reductions of NAAQS concentrations below these thresholds will produce a meaningful health benefit. Further, it is not apparent why RGGI is needed to secure attainment with these standards. Not only is the Department obligated to implement federal air quality rules, the state's placement into the Ozone Transport Region obligates any new or expanded major source to be permitted and regulated under LAER standards – the most stringent air quality controls available. The Regulatory Review Act requires agencies to consider whether a proposed rulemaking results in a "duplication of statutes or existing regulation." Where existing law already provides direct authorization for the Department to regulate certain

pollutants, the "potential for co-benefits" cannot be touted as a benefit. Duplicating existing regulation is not an appropriate basis for a proposed rulemaking.

Response: The Department disagrees with this comment. As shown by the Department's modeling, the reduction of co-pollutants, in addition to the direct CO_2 emission reductions, results in significant public health and environmental benefits. Additionally, for decades the EPA has included co-pollutant reductions when calculating the benefits of a regulation. The Department also follows this approach as reducing air pollution is always beneficial, no matter the type of pollutant. Since the Department does not currently have a regulation that controls CO_2 emissions from fossil fuel-fired EGUs, this final-form rulemaking is not a duplication of an existing regulation. The Federal standards referenced by the commentator do not address CO_2 emissions.

196. Comment: The commentator state that the Commonwealth Documents Law prohibits a final rulemaking from expanding upon the purpose of a proposed rulemaking.

Response: The Department acknowledges this comment. This final-form rulemaking has not expanded the purpose of the proposed rulemaking. The purpose remains to establish the Pennsylvania component of the CO_2 Budget Trading Program, which is designed to reduce anthropogenic emissions of CO_2, a greenhouse gas, from CO_2 budget sources in a manner that is protective of public health, welfare and the environment.

197. Comment: The EQB fails to explain its consideration of FERC's Minimum Offer Price Rule in fashioning the waste coal-fired generation set-aside. At worst, it represents an unlawful attempt to manipulate the wholesale capacity price, which is subject to the exclusive jurisdiction of FERC. At the very least, the EQB must explain how the set aside will function in light of the MOPR. See 71 P.S. § 745.5b(b)(1)(ii) (proposed regulations must consider adverse effects on prices of goods and services, productivity or competition); and 71 P.S. § 745.5b(b)(3) (proposed regulation should not conflict with existing regulations). The Board's failure to even address the question is a violation of the Regulatory Review Act. This issue should be resolved before the proposed rule is promulgated.

Response: The Department disagrees with this comment. FERC's Minimum Offer Price Rule (MOPR) pertains to how state policies are to be addressed in wholesale energy markets. Generally, the MOPR would require that any generation sources that receive out-of-market subsidies would be required to include the value of those subsidies in their Minimum Offer price for electricity in the wholesale market. While treatment of generation sources in the wholesale market is outside the scope of this rulemaking, the waste coal generators would be subject to the MOPR requirements as they receive out-of-market subsidies in the form of state tax rebates, and payment for Tier II renewable energy credits. While the waste coal set-aside contained in this final-form rulemaking may constitute an out-of-market payment, it would not trigger the MOPR requirement as these facilities may already be required to comply with the MOPR requirement due other programs and subsidies. It is ultimately up to the individual facilities to understand their requirements concerning the MOPR. As additional information, PJM is planning to submit a proposal to FERC later this summer that would end the MOPR's application to state-subsidized

resources. See https://www.pjm.com/-/media/committees-groups/cifp-mopr/2021/20210428/20210428-item-04-pjms-initial-proposal-minimum-offer-price-rule.ashx.

198. Comment: The commentator states that the Proposed Rule is in the public interest under the Regulatory Review Act (RRA). The IRRC should find the Proposed Rule to be in the public interest; this finding is supported by the criteria provided by the RRA. The Proposed Rule will minimize consumer costs while protecting public health and the Commonwealth's natural resources. The Proposed Rule is clear, feasible, reasonable, supported by data, and developed in full compliance with Pennsylvania's robust procedural safeguards. Numerous reputable organizations have looked at the question of Pennsylvania participating in RGGI at the proposed emissions budget and found that it would reduce CO_2 and other harmful emissions while minimizing costs to Pennsylvanians, including through significant investments made possible through use of RGGI funds.

Response: The Department acknowledges and agrees with this comment.

199. Comment: The commentator questions whether the regulation represents a policy decision of such a substantial nature that it requires legislative review noting that a Senate letter signed by 29 members states the following: "The proposed regulation joining Pennsylvania to RGGI represents the single, most significant energy policy reform since the deregulation of electric generation in the 1990's." The commentator also notes the passage of HB 2025. The commentator mentions that 10 of the 11 states that currently participate in RGGI have done so with specific authority granted by their respective legislative branches. Additionally, three advisory committees declined to support the proposed rulemaking. The commentator asks the EQB to explain why it is appropriate to implement this carbon trading program through executive order and the rulemaking process instead of the legislative process.

Response: The Department has existing authority under the Air Pollution Control Act to promulgate this regulation. HB 2025 though passed by the Legislature was not signed into law and as such has no bearing on the promulgation of this final-form regulation.

200. Comment: While the Proposed Rule is important to the Commonwealth's efforts to mitigate climate change, it is not a policy decision of such a substantial nature as to require legislative review. Opponents have argued these actions are outside the scope of the APCA and that such air emissions control programs may only be promulgated by the Pennsylvania Legislature. This is incorrect. Rather, the Pennsylvania Legislature has already provided ample authority for the Proposed Rule by enacting the APCA, which provides an intentionally broad delegation of authority that directs EQB to fashion air quality programs to protect the Commonwealth's air resources.

Response: The Department acknowledges and agrees with this comment.

201. Comment: The commentator disputes the contention on p. 47 of the RAF that "[t]here are no less intrusive or less costly alternative regulatory provisions available." Section 5(a)(12) of the RRA requires more than just stating the agency's belief there are no alternatives available – it requires a description of alternatives that have been considered and evaluated. The Department

does not show it has evaluated the merits of a Pennsylvania-only program, or joining with other jurisdictions, such as Appalachian states like Ohio and West Virginia (whose energy sectors and economies more closely reflect that of Pennsylvania than many of the New England states who are a part of RGGI) on an emissions trading program. Nor does the RAF evaluate the impacts of simply not joining RGGI.

Response: The Department's evaluation included an assessment of the RGGI program and an evaluation of not participating in RGGI via the Policy Case and Reference Case in the power sector modeling. RGGI has proven beneficial for the current participating states and the Department's modeling and other independent studies have shown that RGGI participation will also be beneficial for this Commonwealth.

Cap and trade programs have an established track record as economically efficient, market-driven mechanisms for reducing pollution in a variety of contexts. Beginning in 1995, Pennsylvania participated in the first national cap and trade program in the United States, the Acid Rain Program, which was established under Title IV of the 1990 CAA Amendments and required, in part, major emission reductions of SO_2 through a permanent cap on the total amount emitted by EGUs. For the first time, the Acid Rain Program introduced a system of allowance trading that used market-based incentives to reduce pollution. The Acid Rain Program reduced SO_2 emissions by 14.5 million tons (92 percent) from 1990 levels and 16.0 million tons (93 percent) from 1980 levels. The undisputed success of achieving significant emission reductions in a cost-effective manner led to the application of the market-based cap and trade tool for other regional environmental problems. From 1999 to 2002, this Commonwealth participated in the Ozone Transport Commission's (OTC) NOx Budget Program, an allowance trading program designed to reduce summertime NOx emissions from EGUs to reduce ground-level ozone, which included all of the current states participating in RGGI. According to the OTC's NOx Budget Program 1999-2002 Progress Report, NOx Budget Program units successfully reduced ozone season NOx emissions in 2002 by nearly 280,000 tons, or about 60 percent, from 1990 baseline levels, achieving greater reductions than required each year of the program. Based on the success of the OTC's NOx Budget Program and the Acid Rain Program, in 2003 the EPA implemented a regional NOx cap and trade program under the NOx SIP Call, which closely resembled the OTC NOx Budget Program. The EPA again noted the cost savings of achieving emissions reductions through trading.

Other countries and states have found that cap and trade programs are effective methods to achieve significant GHG emission reductions. RGGI is one of the most successful cap and trade programs and it is well-established with an active carbon trading market for the northeastern United States. This successful market-based program has significantly reduced and continues to reduce emissions. The participating states have collectively reduced power sector CO_2 pollution by over 45 percent since 2009, while experiencing per capita Gross Domestic Product growth and reduced energy costs. The program design of RGGI would enable the Board to regulate CO_2 emissions from the power sector in a way that is least-cost and economically efficient thereby driving long-term investments in cleaner sources of energy.

Further, the Department's modeling analyzed the impact of this final-form rulemaking on the power sector the economy of this Commonwealth. The Department's 2020 modeling efforts

showed that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, this final-form rulemaking protects the public health, safety and welfare and the environment from harmful CO_2 pollution from fossil fuel-fired EGUs. For instance, the Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. These modeling results further bolster the real-world results that have been experienced by the RGGI states.

Further, as Ohio and West Virginia do not currently participate in and have not indicated any interest in participating in an emissions trading program, that was not an available alternative for the Department to evaluate. As far as a Pennsylvania-run auction, this final-form rulemaking includes a provision for the Department to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. As discussed in this final-form rulemaking, participation in RGGI would provide those benefits to this Commonwealth. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Department provides for flexibility in case the benefits of the multistate auctions diminish in the future.

202. Comment: As the Department's own modeling makes clear and as discussed elsewhere in these comments, there is a very slight difference in cumulative greenhouse gas emissions across PJM through 2030 when comparing Pennsylvania joining or not joining RGGI, and the Department is overstating the environmental and health benefits from emissions reductions achieved directly or as a co-benefit from imposing additional RGGI compliance obligations on the state's energy sector, given that much of the emissions decreases in Pennsylvania will be offset elsewhere in upwind PJM states.

Response: The Department acknowledges the comment though disagrees with the assertion that Department modeling shows implementation of this rulemaking will have a slight impact, indeed quite the opposite. There is a significant potential for greenhouse gas emissions reductions and associated health benefits. Department results were confirmed by PJM's own independent analysis and a study conducted by Penn State's Center for Environmental Law and Policy states that the Department's health benefit calculations are most likely understated. The Department has completed an updated regulatory analysis for this final-form rulemaking. The Department has also conducted updated IPM, Integrated Planning Model, power sector modeling, which provides long-term projections of plant dispatch, capacity expansion and retirement, market

prices, and emissions projections for the power sector across the country. This specific analysis focused on this Commonwealth, the PJM states, and the current states participating in RGGI. The results of the modeling include electricity transmission both into and out of this Commonwealth and the larger PJM and Eastern Interconnection. These values allow the Department to evaluate the changes in generation, and the flows of electricity between states and across the region.

The Department estimated in the 2020 modeling that this Commonwealth will experience CO_2 emission reductions of 188 million tons over the decade as a direct result of participation in RGGI. The Department's updated modeling in 2021 estimated a range of reductions from sources within this Commonwealth between 97-227 million tons over the decade. This results in CO_2 reductions in this Commonwealth and a net benefit to the entire PJM region. The Department's modeling shows that this Commonwealth makes these significant emission reductions while maintaining historic electric generation levels, enhancing this Commonwealth's status as a leading net energy exporter, creating economic opportunities and reducing long-term wholesale energy prices.

Further, PJM created the CPSTF. This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and also the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

In addition to the modeling conducted by the Department and PJM, the analysis by the Penn State Center for Energy Law and Policy also addresses leakage. Their associated modeling confirms the potential for leakage, and bolsters results from PJM and the Department in confirming that despite leakage, CO_2 emissions in the multi-state PJM region decline following this Commonwealth participating in RGGI. And these leakage estimates and models are based on current and predicted market conditions based on existing laws and policies, exclusive of any further regional or national action on carbon pricing which would minimize or entirely eliminate the potential for leakage.

203. Comment: The commentator states that the calculations used to estimate the program proceeds in Table 7 of the Regulatory Analysis Form does not include the cogeneration set aside, which then overstates the amount of program proceeds that were modeled to be invested into the economy, and thereby overstating the economic benefits of the program.

Response: The Regulatory Analysis Form for this final-form rulemaking includes an updated Table 7, which includes expected proceeds that factor in the set-asides within this final-form rulemaking.

204. Comment: The commentator states that the Department has not appropriately considered the effects of its proposal on small businesses. The RRA requires the Department to analyze the probable effect of a regulation on small businesses. A more thorough analysis of the projected increased cost of electricity to Pennsylvania's industrial and commercial customers is required in view of the Department's failure to do what is required by the RRA. The Department's complete failure to do its duty required by the RRA with respect to small business is inexplicable and should be unacceptable to the Independent Regulatory Review Commission, which is charged with ensuring compliance with the RRA.

Response: The Department has considered the effects of the proposal on small businesses that may have a compliance obligation under the regulation as required under the Regulatory Review Act, and made specific provisions in the regulation to assist the majority of those facilities that qualify as small businesses with most if not all of their compliance requirement. Additionally, on several occasions the Department sought the input and advice of the Small Business Compliance Assistance Committee (SBCAC) which under section 7.8 of the APCA (35 P.S. § 4007.8), the SBCAC is required to review and advise the Department on rulemakings which affect small business stationary sources.

Based on the most recent data from the EPA's Clean Air Market Division, the EIA and the Department's emission inventory, the Department estimates that as of the end of 2020, 63 CO_2 budget sources (facilities) with 150 CO_2 budget units (EGUs) would have a compliance obligation under this final-form rulemaking. However, due to the dynamic nature of the electricity generation sector, the number of covered facilities will likely change by the time this final-form rulemaking is implemented. The Department projects based on announced closures and future firm capacity builds that in 2022, there will be 66 CO_2 budget sources with 158 CO_2 budget units with a compliance obligation under this final-form rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99 percent of this Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking.

The Department used the North American Industry Classification System (NAICS) codes for the subject industry sectors to develop lists of potentially affected entities. The NAICS identifies the industry as Electric Bulk Power Transmission and Control (NAICS code 221112 and 221121), Other Electric Power Generation (NAICS code 221118), Electric Power Distribution (NAICS code 221122), and Paper (except Newsprint) Mills facility (NAICS code 322121). The Department provided these NAICS codes to the Pennsylvania Small Business Development Center's Environmental Management Assistance Program (EMAP) with a request for a list of entities in each classification. EMAP provided the Department with a list of 58 facility owners or operators identified by NAICS code 221112, three facility owners or operators identified by NAICS code 221121, one facility owner or operator identified by NAICS code 221118, one facility owner or operator identified by NAICS code 221122, and three facility owners or operators identified by NAICS code 322121, for a total of 66 potentially affected entities. Under the U.S. Small Business Administration (SBA) Small Business Size Regulations under 13 CFR Chapter 1, Part 121, the small business-size standard in number of employees for each of these NAICS classifications is 750 employees. The Department determined that twelve of these

potentially affected entities may be small businesses by that definition. Of these twelve entities, eight are waste coal facilities, for which a set-aside provision has been established to assist these facilities with most if not all of their compliance obligation under this final-form rulemaking.

205. Comment: The Regulatory Review Act requires the Department to analyze the probable effect of a regulation on small businesses. As currently written, Section 24 of the RAF simply states that ten businesses, most of which are waste coal fired facilities, would be subject to the regulations and that the waste coal CO_2 allowance set aside will minimize the impact on them. However, the majority of Pennsylvania's commercial electricity consumers are small businesses of less than 500 employees. They are not necessarily electric generators covered by the regulations, yet they could be impacted by them. Additional discussion regarding how the regulations may affect costs for small businesses, particularly those stressed by the current pandemic, would be very helpful.

Response: The Department has considered the effects of the proposal on small businesses that may have a compliance obligation under the regulation as required under the Regulatory Review Act, and made specific provisions in the regulation to assist the majority of those facilities that qualify as small businesses with most if not all of their compliance requirement. Additionally, on several occasions the Department sought the input and advice of the SBCAC which under section 7.8 of the APCA (35 P.S. § 4007.8), the SBCAC is required to review and advise the Department on rulemakings which affect small business stationary sources.

Though not required as part of the small business analysis, the Department calculated potential rate impacts to residential, small commercial and large commercial customers. Based on information contained within the Pennsylvania Public Utility Commission's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

206. Comment: The RAF does not consider the impact of the regulations on small businesses that provide materials and support to the coal-fired powerplants that would shut down as a result of this regulation, such as engineering and environmental consulting firms, equipment maintenance and support companies, waste haulers and plant maintenance contractors, and analytical laboratory services, to name only a few. These small businesses would lose a

significant portion of their revenue as a result. The Department should be required to investigate further the impact of this proposed regulation on the Commonwealth's small businesses.

Response: The Department acknowledges this concern. Communities throughout the country are dealing with vacancy and environmental stressors from displaced and departed industry, which limit investment and degrade economic health as well as quality of life. This reality disproportionally hits communities of color and rural areas, especially those reliant on the fossil fuel industry and the potential economic impacts that facilities could have on their employees, the surrounding communities and small businesses that serve these entities. Pennsylvania has a unique opportunity to creating an equitable, inclusive, and innovative investment mechanism through RGGI auction proceeds that can both directly assist communities and workers impacted by the ongoing (and accelerating) energy sector transformation, and prioritize investment in communities that have been impacted by long-standing environmental pollution.

The Department has partnered with the Delta Institute, which has an extensive history of helping agencies, community groups, and coalitions transition from planning to implementation. Delta achieves this through convening and facilitation expertise, data analysis and visualization, technical, planning and policy assistance, business research and modeling, and backbone support of administration and activity coordination of complex projects with many stakeholders with different priorities. Delta has leveraged its technical, planning, and engagement expertise to assist communities across the Midwest in tackling challenges like coal-based economy transition, community investment, brownfield redevelopment, and poor air quality, and now they are assisting in Pennsylvania. Delta is in the process of directly engaging local practitioners, legislative members, change-makers, employees and residents to participate in both strategy and facilitation, ensuring that solutions are collaborative, not prescriptive and will lay a strong foundation for these communities to thrive now and into the future. Delta's work product, informed by this extensive stakeholder outreach, will be used by the Department in drafting an investment framework.

207. Comment: The RAF states that "[t]he Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal . . . and, in most instances, will require no additional emissions reporting." The commentator disagrees. This rulemaking will require additional administrative expenses for facilities, particularly for CHP and cogeneration facilities who, at least as written in the proposed rulemaking, need to be in constant vigilance of stumbling over the sales threshold for compliance. Management of power plants and cogeneration facilities may also need to report compliance obligations and associated risks on public SEC filings.

Response: The Department estimates that the costs related to monitoring, recordkeeping and reporting will be minimal as this final-form rulemaking utilizes current methods and, in most instances, will require no additional emissions reporting. For instance, the continuous emission monitoring required under this final-form rulemaking is already in existence at the regulated source and the necessary emissions data is currently reported to the EPA. The Department acknowledges that there may be minimal programmatic costs related to the submittal of compliance certification reports and auction, account, and offset project related forms. The RGGI auction services provider estimates that the owner, operator or representative on their behalf, will need to spend approximately 16 hours for the initial auction participation (including

opening a COATS account, registration, and training). In subsequent auctions, the estimate drops to about 4-8 hours.

208. Comment: The commentator states that Section 5(a)(1) requires agencies to provide "[e]stimates of the direct and indirect costs to the Commonwealth, its political subdivisions and to the private sector." The RAF notes the Department may keep 5 percent of proceeds for administrative costs, but the document does not include an analysis of potential loss of revenue to the Commonwealth as a result of the expected loss in investment and jobs due to leakage or higher electricity costs. The RAF includes a discussion of an increase to residential customers but does not include an estimate on the costs to commercial and industrial customers. The RAF attempts to justify the increases in costs to residential customers (and the regulation writ large) based on modeling that shows macroeconomic outputs resulting from implementation of a separately proposed plan to spend RGGI proceeds, but this investment plan is not part of the public comment document for this rulemaking. The EQB suggests, without statutory support, that auction proceeds could be used to mitigate impacts to communities and employees impacted by power plant closures. However, the proposed rulemaking fails to adequately consider the loss of the tax base associated with power plant closure in addition to other indirect costs, such as reductions in PIT, CNI and sales and use tax revenues to the Commonwealth.

Response: The Department disagrees with the commentator as the regulatory analysis is comprehensive and includes the significant analyses conducted by the Department in support of this final-form rulemaking including all of the items mentioned above. Tax revenues are considered in the economic analysis, and electricity price changes in the power sector analysis conducted by the Department, more detail on which is provide in the Modeling and Data Analysis section of this document. Additionally, the Regulatory Analysis Form, specifically question #17 was updated to provide estimates of electricity cost impacts to small commercial and large commercial/industrial customers and is included below as well.
Based on information contained within the Pennsylvania Public Utility Commission's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report, https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

Furthermore, the Department has partnered with the Delta Institute, which has an extensive history of helping agencies, community groups, and coalitions transition from planning to

implementation. Delta achieves this through convening and facilitation expertise, data analysis and visualization, technical, planning and policy assistance, business research and modeling, and backbone support of administration and activity coordination of complex projects with many stakeholders with different priorities. Delta has leveraged its technical, planning, and engagement expertise to assist communities across the Midwest in tackling challenges like coal-based economy transition, community investment, brownfield redevelopment, and poor air quality, and now they are assisting in Pennsylvania. Delta is in the process of directly engaging local practitioners, legislative members, change-makers, employees and residents to participate in both strategy and facilitation, ensuring that solutions are collaborative, not prescriptive and will lay a strong foundation for these communities to thrive now and into the future. Recommendations from the Delta Institute will help inform the draft investment plan which will be shared for public comment.

209. Comment: The Department's Regulatory Analysis Form for this proposed rulemaking explains the health impacts of air pollution from sulfur dioxide, oxides of nitrogen, and particulate matter, and the health benefits in the Commonwealth due to the expected ancillary emission reductions of these pollutants with the adoption of this regulation. See e.g., RAF at 16-20. These particular pollutants are "criteria pollutants" regulated under Title I of the Clean Air Act, which requires the U. S. EPA to set and periodically review the National Ambient Air Quality Standards (NAAQS). These standards are already in place to protect the nation's public health and environment. Nearly all areas in the Commonwealth are in attainment with the NAAQS. See 40 C.F.R. §81.339. Furthermore, the Department should note that as part of its recent review of the MATS Rule, U.S. EPA noted that accounting for environmental benefits solely attributable from reductions in criteria pollutants not targeted by a subject rule is "particularly inappropriate[:]" The EPA believes that relying almost exclusively on benefits accredited to reductions in pollutants not targeted by CAA section 112 is particularly inappropriate given that those other pollutants are already comprehensively regulated under other CAA provisions, such as those applying to the NAAQS. As the EPA outlined in the 2019 Proposal, the determination that it is not appropriate to give equal weight to non-HAP co-benefits in making the appropriate and necessary determination is further supported by the fact that Congress established a rigorous system for setting standards of acceptable levels of criteria air pollutants and provided a comprehensive framework directing the implementation of those standards in order to address the health and environmental impacts associated with those pollutants. See, e.g., 42 U.S.C. 7409; 7410; 7501; 7502; 7505a; 7506; 7506a; 7507; 7509; 7509a; 7511; 7511a; 7511b; 7511c; 7511d; 7511e; 7511f; 7512; 7512a; 7513; 7513a; 7513b; 7514; and 7515.

National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units—Reconsideration of Supplemental Finding and Residual Risk and Technology Review, 85 Fed. Reg. 31286, 31299-300 (May 22, 2020). The Department has not explained why further regulation of these pollutants is necessary to protect public health.

Response: The Department disagrees with this comment. As shown by the Department's modeling, the reduction of co-pollutants, in addition to the direct CO_2 emission reductions, results in significant public health and environmental benefits. Additionally, for decades the EPA has included co-pollutant reductions when calculating the benefits of a regulation. The

Department also follows this approach as reducing air pollution is always beneficial, no matter the type of pollutant. On May 14, 2021, the EPA published an interim final rule to rescind the previous administration's rule entitled "Increasing Consistency and Transparency in Considering Benefits and Costs in the Clean Air Act Rulemaking Process," also known as the Benefit-Cost Rule. See 86 FR 26406 (May 14, 2021). The interim final rule is effective as of June 14, 2021. The EPA reviewed the Benefit-Cost Rule and found that it imposed procedural restrictions and requirements that would have limited EPA's ability to use the best available science in developing Clean Air Act regulations, and would be inconsistent with economic best practices.

210. Comment: The commentator states that this regulation will negatively impact small businesses.

Response: The Department determined that twelve of these potentially affected entities may be small businesses. Of these twelve entities, eight are waste coal facilities, for which a set-aside provision has been established to assist with most if not all of their compliance obligation under this final-form rulemaking. The rulemaking also offers the opportunity to use offsets as a compliance method, and establishes the Compliance Assistance Program to address additional needs of businesses including small businesses.

Regulatory Language

211. Comment: The commentator states that many sections within the proposed rulemaking are not complete and include vague, general summaries, and this impedes the commentator's – and all interested parties' – ability to provide public comments. This proposed rulemaking differs greatly from most proposed rulemakings because a majority of proposed sections do not contain any definitive language, but rather simply a general statement as to what each section will cover. For instance, Section 7(c) of the APCA is an example of a complete section regarding notice. However, the Proposed Rulemaking's section on notice reads as follows: "§ 145.404. Auction notice This section proposes to establish the requirement for notice to be provided of each CO_2 allowance auction and the required contents of the notice." There is no indication of the method or content of notice or the timeline regarding notice. It is simply a general note that there should be a notice section in this place. The vast majority of the proposed rules themselves are written in this manner with this vague language. More concerning is the fact that the public cannot ascertain which sections they might want to weigh in on when they have no language by which to tell whether these sections might affect their interests.

Response: The commentator appears to have only read the Preamble of the proposed rulemaking and not the Annex, which contains the actual regulatory language, as published in the *Pennsylvania Bulletin*. As required under the Regulatory Review Act and the Commonwealth Documents Law, every regulatory package must include a Preamble to a regulation which provides an overview of the regulation so interested persons have context for reading the actual regulatory language. There is a link at the bottom of the webpage of the *Pennsylvania Bulletin* that states "Continued on Next Webpage." The first webpage is the Preamble and the second page starts the Annex containing the definitive language that the commentator claimed was missing.

Applicability

212. Comment: The final rulemaking should also expressly state that the exemption criteria in terms of determining applicability of RGGI compliance obligations are determined by the capacity and sales of an individual unit, not the entire facility.

Response: The Department agrees that the applicability threshold is determined on a unit-by-unit basis and not through facility-level aggregation. The Department has added language to the preamble of the regulation to highlight the determination of applicability on a unit-by-unit basis.

213. Comment: In the event that a unit designated as a grid support generation resource is requested to run at maximum output to provide support during a generation or transmission emergency, as defined by the PJM Operating Agreement and Open Access Transmission Tariff, the operator should not be required to purchase credits for associated emissions.

Response: The Department agrees with the need to provide flexibility, which is why the efficiency thresholds are calculated on an annual basis, to provide flexibility for just these events. However, if a permit issued by the Department to a CO_2 budget source contains a condition restricting the supply of the CO_2 budget unit's annual electrical output to the electric grid to no

more than 10 percent of the annual gross generation of the unit to qualify for the exemption and if such a source subsequently exceeds the restriction, the permittee will be subject to enforcement for the non-compliance. The enforcement consequence may also include purchase of credits for the associated emissions. The continued eligibility of such exemption will also be re-evaluated if repeated exceedance occurs. The Department does not believe it is necessary to add this language to the regulation but will consider force majeure events when evaluating permit exceedances if they occur.

214. Comment: In the event that a unit designated as a grid support generation resource is requested to run at maximum output to provide support during a generation or transmission emergency, as defined by the PJM Operating Agreement and Open Access Transmission Tariff, electricity supplied during these instances should not count toward the 10 percent annual gross generation threshold and should be eligible for allowance credits.

Response: If a permit issued by the Department to a CO_2 budget source contains a condition restricting the supply of the CO_2 budget unit's annual electrical output to the electric grid to no more than 10 percent of the annual gross generation of the unit to qualify for the exemption and if such a source subsequently exceeds the restriction, the permittee will be subject to enforcement for the non-compliance. The enforcement consequence may also include purchase of credits for the associated emissions. The continued eligibility of such exemption will also be re-evaluated if repeated exceedance occurs.

215. Comment: The commentator supports the proposal's recognition of the GHG reduction benefits of biomass energy. Specifically, Section 145.355 (Compliance) states in subsection (b)(1) that allowances in a budget unit's account are to be deducted for compliance "less any CO_2 emissions attributable to the burning of eligible biomass."

Response: The Department acknowledges the comment and the support for the biomass provisions which are also contained in the final-form rulemaking.

216. Comment: Due to Pennsylvania's unique position as a leading energy exporter and developer of natural gas technologies, the commentator recommends that the Board revise Sections 145.304 and 145.305 of the proposed rulemaking to further limit the potential adverse impacts on energy-intensive businesses with cogeneration and CHP resources. To this end, the commentator recommends that the Board revise Sections 145.304 and 145.305 by tying the applicability of the proposed rulemaking to existing regulatory regimes, such as by exempting qualifying facilities under the federal Public Utility Regulatory Policies Act ("PURPA"), 16 U.S.C. § 824a-3. See 16 U.S.C. § 796(17)-(18) (defining "qualifying small power production facility" and "qualifying cogeneration facility.").

Response: The Department acknowledges the comment though under § 145.304 (relating to applicability), the owner or operator of a fossil-fuel-fired EGU with a nameplate capacity equal to or greater than 25 MWe that sends more than 10 percent of its annual gross generation to the electric grid will have a compliance obligation under the final-form regulation. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99 percent of this

Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking. This matches the stringency of the existing RGGI program and that necessary to meet the Greenhouse Gas reduction goals established for this Commonwealth.

217. Comment: The commentator recommends that the Board revise Section 145.305 to incorporate additional exemptions based on the definitional exclusions for cogeneration units and CHP systems under the federal Environmental Protection Agency's air quality regulations. See, e.g., 40 C.F.R. §§ 51.123(cc), 60.5509(b), 97.404(b). Specifically, a cogeneration unit or CHP system that is subject to a federally enforceable permit condition limiting the unit's net-electric sales to no more than one-third of its potential electric output or 219,000 MWh, whichever is greater, should be exempted from the proposed rulemaking.

Response: Under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Board provides additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional, or commercial facility. A CHP unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10 percent of annual gross generation to the electric grid. The Board is including this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

Additionally, the Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances, then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25 percent of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60 percent on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional, or commercial facility. Unlike the waste coal set-aside, the Department would not distribute CO_2 allowances directly to the unit, but rather retire CO_2 allowances on behalf of the unit to reduce its compliance obligation. The owner or operator of a unit requiring additional CO_2 allowances to satisfy the CO_2 requirements under § 145.306(c) shall transfer CO_2 allowances for compliance deductions to the compliance account of the unit. Therefore, while the CHP facilities remain covered

facilities under the final-form regulation, significant modifications have been made to the regulation to accommodate existing and future CHP facilities.

218. Comment: The commentator recommends "industrial and commercial facilities" replace manufacturing facility in § 145.305.

Response: The Department agrees and has modified the limited exemption by striking the phrase manufacturing facility and replacing it with industrial and commercial facilities as suggested.

219. Comment: The commentator requests that references to the unit and associated interconnected facility within the proposed rulemaking be updated to account for "one or more" to not exclude operators.

Response: The Department does not believe this change is necessary as the current wording does not exclude operators.

220. Comment: The commentator appreciates the Cost Containment Reserve (CCR) provision in the proposed regulations to guard against higher than projected emissions reduction costs. It appears from Section 145.382 that CCR additional allowances will only be sold if the auction trigger price exceeds $14.88 in 2023 (and increasing in following years) and the demand for allowances exceeds the number available. The commentator requests further information about how this trigger was selected.

Response: The trigger price levels for the Cost Containment Reserve were set during the Second RGGI Program Review, and were informed by IPM modeling conducted to analyze a "base" policy case, as well as sensitivity runs of the policy case to analyze potential scenarios that may cause allowance prices to be higher or lower than the base policy case. The CCR trigger prices were informed by the high sensitivity modeling and the RGGI states' discussions and the Emissions Containment Reserve (ECR) trigger prices were informed by the low sensitivity modeling.

221. Comment: The commentator suggests that the Emissions Containment Reserve (ECR), under which allowances will be withheld if the trigger price falls below $6.87 in 2023 (and increasing in following years), is intended to provide a relatively predictable stream of revenue for Pennsylvania and requests further clarification regarding the Department's analysis as to the reason an artificial floor for auction purposes is necessary.

Response: This final-form rulemaking provides regulatory certainty for CO_2 budget sources in this Commonwealth. Although RGGI is a market-based approach, there are also price fluctuation protections that are built into the auction platform to help ensure that CO_2 allowance prices are predictable. Specifically, there are auction mechanisms that identify a precipitous increase or decrease in price, and trigger what are referred to as the Cost Containment Reserve (CCR) and Emissions Containment Reserve (ECR). The CCR process triggers additional CO_2 allowances to be offered for sale in the case of higher than projected emissions reduction costs. Similarly, states implementing the ECR, including this Commonwealth, will withhold CO_2 allowances from the auction to secure additional emissions reductions if prices fall below the established

trigger price, so that the ECR will only trigger if emission reduction costs are lower than projected. This provides predictability in terms of the cost of compliance for covered entities. The ECR and CCR are both a fundamental part of the RGGI auction mechanism and related policies which are associated with the regional auction to provide regulatory certainty.

222. Comment: The commentator states that section 145.342 subsection (f) and (g) do not provide criteria for determining whether the allowance budget adjustment described in that section is necessary, and the supporting regulatory documents do not explain why an adjustment is needed or when it could be triggered. The commentator states that it is unclear if the Department will be compelled to make an adjustment for banked allowances if other RGGI states adjust their allowance budgets to account for banked allowances. The commentator states that these sections should be removed from the regulation because Pennsylvania sources have not historically banked allowances, so it is unfair to Pennsylvania sources as they have not had the opportunity to bank allowances.

Response: Adjustments to the RGGI cap to address banked allowances are integral to maintaining the environmental integrity of all RGGI participating states' CO_2 budget trading programs. The current cap adjustment, the Third Adjustment for Banked Allowances (TABA), was calculated on March 15, 2021, and will be implemented over the years 2021-2025 by the current RGGI participating states. Pennsylvania was not a RGGI participating state at the time of the March 15, 2021 calculation and therefore would not be able to implement the TABA. Any additional cap adjustments would be determined via consensus by all RGGI participating states during RGGI Program Review.

Note that banked allowances currently held are available for purchase by all market participants via secondary markets (i.e., Pennsylvania CO_2 budget sources have access to these banked allowances).

223. Comment: The commentator states that the Department proposes to allow any individual or entity which meets the requirements of an auction participant to participate as a bidder in a CO_2 auction. The commentator states that this is inappropriate and can increase compliance costs for regulated facilities or result in manipulation of distortion of the allowance market. The commentator recommends that the Department require all auction participants to have a compliance obligation under this proposed rulemaking.

Response: Auctions are open to any bidder who can meet the application and financial requirements, and are designed to allow for unrestricted access to the market. However, the auction has protections in place, such as the rule that no single bidder or group of related bidders (e.g. bidders with any corporate or bidding association) may purchase more than 25 percent of the available allowances in each of the quarterly auctions. Furthermore, there are additional auction mechanisms in place to prevent market manipulation and collusion. Another benefit of participating in multistate auctions run by RGGI, Inc. is that RGGI, Inc. has retained the services of an independent market monitor to monitor the auctions, CO_2 allowance holdings, and CO_2 allowance transactions, among other activities. The market monitor provides independent expert monitoring of the competitive performance and efficiency of the RGGI allowance market. This includes identifying attempts to exercise market power, collude, or otherwise manipulate prices

in the auction and/or the secondary market, making recommendations regarding proposed market rule changes to improve the efficiency of the market for RGGI Allowances, and assessing whether the auctions are administered in accordance with the noticed auction rules and procedures. The market monitor also monitors bidder behavior in each auction and reports to the participating states any activities that may have a material impact on the efficiency and performance of the auction. To date, with over 52 auctions, the independent market monitor for the RGGI market has found no evidence of anticompetitive conduct in the RGGI CO_2 allowance market.

A Market Monitor Report is released by the independent market monitor shortly after each CO_2 allowance auction. The report includes aggregate information about the auction including the dispersion of projected demand, the dispersion of bids, and a summary of bid prices, showing the minimum, maximum, average, and clearing price and the allowances awarded. Please note that over the first 52 RGGI auctions, Compliance Entities purchased 73 percent of the total allowances sold.

CO_2 allowances may be acquired through purchases in quarterly multistate auctions, through secondary markets, or by obtaining CO_2 offset allowances. Once a CO_2 allowance is purchased in an auction, it can then be resold in the secondary market. Non-compliance market participants are essential to a liquid, transparent and stable secondary market that assists compliance entities in procuring CO_2 allowances during the three months between quarterly auctions., as well as providing price signals to assist compliance entities and reduce future price volatility.

224. Comment: The commentator asks the Department to clarify that the 25 MWe applicability threshold in Section 145.304(a) will be determined on a unit-by-unit basis, rather than through facility-level aggregation, consistent with the implementing regulations of other RGGI member states.

Response: Correct, the applicability threshold is determined on a unit-by-unit basis and not through facility-level aggregation. The Department has added language to the preamble of the regulation to highlight the determination of applicability on a unit-by-unit basis.

225. Comment: The commentator requests that the Board revise the proposed rulemaking to include additional flexibility or a safe harbor for facilities with co-located cogeneration and CHP systems that experience force majeure events, resulting in anomalous electricity exports above the threshold.

Response: The Department agrees with the need to provide flexibility, which is why the efficiency thresholds are calculated on an annual basis, to provide flexibility for just these events. The Department does not believe it is necessary to add this language to the regulation but will consider force majeure events when evaluating permit exceedances if they occur.

226. Comment: The commentator requests that the Department modify the proposed rulemaking such that, in the event an otherwise exempt electric generation unit ("EGU") loses its exemption under Section 145.305, the total number of CO_2 allowances that the owner or operator must

obtain be measured by the percentage of output that exceeds the applicable percentage limitation in the facility's operating permit, rather than the EGU's total annual gross generation.

Response: A facility that loses its exemption is then subject to the applicable requirements of the regulation including procurement of allowances for CO_2 emissions for the entire control period.

227. Comment: The commentator requests that the Department clarify that, in the event an otherwise exempt EGU loses its exemption under Section 145.305 in a given year, the EGU regains its exemption at the beginning of the next calendar year.

Response: The supply restriction applicable to the EGU will remain a separately enforceable permit condition even after the EGU loses its exemption under Section 145.305.

228. Comment: The commentator recommends that the Department remove the exemption and charge a minimum of twenty-five percent (25 percent) the price of regular allowances for CHP plants.

Response: The Department acknowledges the comment, though has maintained the limited exemption criteria for CHP facilities. Those facilities that do not qualify for the exemption would be required to obtain one allowance for every ton of CO_2 emitted. They could do this through the quarterly auctions, secondary market, or if applicable apply for allowances from the CHP set-aside to assist with compliance.

229. Comment: The commentator asks under the § 145.305 Cogeneration exemption, if a facility is sold are credits transferrable? The commentator would oppose transfer of credits upon sale.

Response: Under the limited exemption in § 145.305, qualifying combined heat and power units would be exempted from the requirement to obtain one CO_2 allowance for each ton of CO_2 emitted. The answer to the commentator's question is no because there would not be any CO_2 allowances provided to the facility.

230. Comment: The commentator states that the proposed rule should be amended to align with the federal non-EGU definition found in various federal air quality rules – specifically, should the Department move forward with RGGI, the final rulemaking should exempt for purposes of compliance or establishing the state's budget any unit subject to a federally enforceable permit condition limiting annual net-electric sales to no more than one-third of its potential electric output or 219,000 MWh, whichever is greater.

Response: The purpose, scope, and programs for which the federal non-EGU definition apply are significantly different than those of this final-form rulemaking, including their minimal and tangential relevance to air emissions, particularly GHGs. Use of the definition set forth in the final-form is appropriate and consistent with the existing RGGI program.

CO_2 Allowance Budget and Trajectory

231. Comment: The commentator appreciates the detailed modeling analysis - including projected retirements and additions of electricity generators by 2022 - undertaken by the Department to inform this initial CO_2 budget.

Response: The Department appreciates the comment.

232. Comment: The commentator states that the base budget in the final-form rule must be no higher than the final emissions inventory for covered sources from the most recent year for which a complete dataset is available in January 2022.

Response: The Department acknowledges the comment and appreciates the importance of having an adequately stringent starting allowance budget. The most recent year for which a complete dataset would be in available in January 2022 is for the calendar year 2020. The Department has maintained the starting allowance budget or base budget in this final form rulemaking of 78 million allowances or tons of CO_2. Updated modeling indicated that perhaps an 81.1-million-ton base budget would be appropriate; however, the recent actual year emissions indicated a lower amount would be appropriate. Actual CO_2 emissions from covered sources under this final regulation were 84.5 million tons in 2019 and 77.4 million tons in 2020. This led the Department to maintaining the more stringent 78 million ton starting allowance budget.

233. Comment: There is a long history of emissions trading systems that have established initial budgets based on modeled projections that frequently prove to be too high in practice, resulting in emissions caps that are non-constraining. Indeed, this occurred in the RGGI participating states after the initial budget took effect in 2009; the emissions cap exceeded actual emissions by a wide margin, thereby limiting the program's ability to compel regulated entities to make internal emission reductions. The delta between the cap and actual emissions was driven by a variety of factors, including the economic downturn resulting from the Great Recession and market forces driving a shift to less carbon-intensive fuels. Regardless, the regional budget needed to be readjusted during two different program review processes completed in 2013 and 2017, respectively, which necessitated additional statutory or regulatory action in the RGGI participating states. Given Pennsylvania's unique regulatory review process, where rulemakings routinely take multiple years to promulgate, it is critical that the Department finalize a sufficiently constraining cap at the outset.

Response: The Department appreciates the comment and agrees with the importance of setting an adequately stringent starting allowance budget. Ensuring an appropriate starting allowance budget, given the power sector impacts of the recent pandemic was one of the primary drivers for completing the 2021 modeling. As noted in the response above, the Department included in the final-form rulemaking a starting allowance budget of 78 million tons of CO_2 – which the Department determined was adequately stringent.

234. Comment: There is a risk that offering 68.7 million additional allowances for sale at regional auctions in 2022 could flood the regional market, resulting in suppressed prices and distorted market signals across the region.

Response: The Department acknowledges the comment but disagrees with the outcome of Pennsylvania joining RGGI as suggested. Both the 2020 modeling and 2021 modeling indicates that with Pennsylvania participation beginning in 2022 with a 78-million ton starting allowance budget will not suppress allowance prices nor created distorted model signals. These are among several of the factors that are analyzed to ensure that Pennsylvania begins participation with an adequately stringent starting allowance budget, specifically to avoid any market disruption and seamlessly integrate into the regional program.

235. Comment: The Board should consider several modifications to strengthen the proposed regulation. The proposed budget should be lowered to put Pennsylvania on track to achieve the Biden Administration's goal of achieving GHG emissions neutrality in the electricity sector by 2035. Assuming a 2022 start, this will require that the GHG budgets provide for annual reductions of 7.7 percent, rather than the reductions in the proposed RGGI regulation.

Response: The Department acknowledges this comment. The Department's updated 2021 modeling confirmed the sufficiency of the 2022 CO_2 allowance base budget that was included in the proposed rulemaking and is maintained in this final-form rulemaking. This is also consistent with the Commonwealth's GHG reduction goals.

236. Comment: The commentator states that the Proposed Emissions Budget is reasonable and must not be increased. RGGI works in part by sending a positive price signal to clean generation sources through the energy markets, ramping up cleaner generation and ramping down relatively dirtier generation through the instantaneous dispatch of the electricity markets. This reordering can occur between types of generation, such as from coal to natural gas, or within fuel type, such as from a less-efficient to a more-efficient natural gas turbine. The efficacy of RGGI's price signal is a direct consequence of whether the emissions budget is set appropriately – too high a budget, and demand for allowances will be weak, resulting in an inconsequential price signal. By requiring emitting generators to internalize some portion of the cost of their CO_2 pollution, the price signal also encourages the preservation of low- and non-emitting resources and the development of new clean generation capacity. Current and forward electricity market prices that reflect some portion of the cost of CO_2 are visible to all market participants, including potential investors in clean energy projects and purchasers of generation and other products from existing and new clean resources. This transparency, combined with the certainty of a long-term emissions-reduction trajectory, are necessary for the transition to a cleaner generation fleet.

Response: The Department acknowledges this comment and the CO_2 emissions budget in this final-form rulemaking has not changed from the proposed rulemaking.

237. Comment: The Proposed Rule's emissions budget trajectory, which starts at recent historical annual emissions and decreases each year at a rate in line with other RGGI states, establishes a framework for meaningful emissions reductions while minimizing consumer costs. This budget level also retains and in fact likely encourages maintenance of Pennsylvania's status as an electricity exporter, particularly to other RGGI states that have stated a preference for cleaner electricity. In the numerous public comment opportunities, the Department has provided prior to offering this Proposed Rule, some argued that the 2030 budget level is too close to the

reference or business-as-usual case, such that joining RGGI would be wasted effort. While the commentator would support a more stringent budget, the commentator disagrees that the Proposed Rule would not result in significant emissions reductions – the nine million tons avoided per year by 2030 is itself significant. Further, there is no guarantee that the reference case reflects what would occur or that emissions would not be even higher without participation in RGGI, particularly if Pennsylvania were to lose another nuclear plant like Beaver Valley.

Response: The Department acknowledges this comment and agrees that this final-form rulemaking will result in significant CO_2 emission reductions, as well as co-pollutant reductions.

238. Comment: The commentator states that the emissions budget is accurately projected at 78 million tons of carbon dioxide in 2022.

Response: The Department appreciates the comment and has confirmed the starting budget through two rounds of modeling.

239. Comment: The commentator recommends that the Department consider a more protective emissions budget to lock in additional emissions reductions.

Response: The Department completed modeling in 2020 whereby the 2022 emissions were estimated to be 78 million tons of CO_2 in 2022- and as such the starting point for the allowance budget. When the modeling was updated in 2021, the 2022 emissions were estimated to be 81 million tons of CO_2 in 2022, signaling that perhaps the starting allowance budget should be three million tons higher, however the Department opted to keep the starting allowance budget at the 78 million ton value thereby selecting a slightly more protective emissions budget. The methodology used to determine the Department's starting allowance budget and the calculation of reductions over the 2022-2030 time period match not only the methodology, but the stringency employed by the other RGGI participating states.

240. Comment: The commentator states that there should be a regulatory mechanism that automatically reduces emissions if actual emissions are much lower than the annual allowance budget.

Response: While each state has its own independent regulation that facilitates participation, each state makes a commitment in the regulation as to how many allowances they will provide on an annual basis to the regional auctions. This allows for regulatory certainty and an adequate provision of allowances, resulting in a steady decline of both available allowances and CO_2 emissions. If there are excess allowances in the regional market, there are existing regulatory mechanisms through which the RGGI participating states can decrease the amount of available allowances to better align the supply and demand of allowances.

241. Comment: A descending cap, as provided by the RGGI Rule but going to the point of carbon neutrality by a given date, is a necessary element of a suite of measures to reduce GHG pollution. A steadily descending cap provides industry and society as a whole the planning certainty to support capital investment for infrastructure that will need to be in place in 2050 and beyond. This is particularly true for the electricity generation, transmission, and distribution

sector, which must make large capital investments through that period. The need for a descending cap to provide guidance for long term capital investments extends well beyond the electricity industry. To prevent the worst impacts of climate disruption, Pennsylvania, like the rest of the world must achieve carbon neutrality in all sectors of the economy by 2050. While there are many possible pathways to achieve this "deep decarbonization," electrification of other sectors of the economy – transportation, buildings, industry, and waste - is widely expected to be required. These measures will increase electricity demand, while also requiring decarbonization of the electricity sector. Agriculture and forestry will also need to be addressed. Deep decarbonization will require electrification of our buildings, transportation, and much of our industrial infrastructure before and by 2050.

Response: The Department acknowledges this comment and agrees that this final-form regulation is a major step, though not the only necessary action needed to address climate change.

242. Comment: The commentator proposes that Pennsylvania conduct a Pennsylvania-only auction with a reserve price for at least the first compliance period and adjust the proposed GHG budget to reflect allowance sales during that period. Pennsylvania should establish a Pennsylvania-only reserve price equal to the highest of the actual allowance clearing price in RGGI markets over the previous six years and the projected allowance price in RGGI modeling for the next year (assuming that Pennsylvania were not participating). Both RGGI allowances and Pennsylvania-only allowances then could be traded and used throughout the RGGI region. If Pennsylvania-only allowances are not sold during this "training wheels" period, they should be retired, and Pennsylvania's baseline GHG budget should be reduced to reflect the lower sales. Thus, the GHG budget for the year after this training wheels period would be the lower of the proposed budget and 92.3 percent of the derived budget (so that emissions would drop by an annual percentage necessary to achieve carbon neutrality by 2035).

Response: The Department is proposing to participate in the multistate auction as it provides benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. The multistate auction process must be consistent with the process described in the final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, the Board also states that if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

CO_2 Allowance Set Aside Accounts

243. Comment: The commentator states that the Department's proposal establishes two discriminatory set-asides, waste coal and coal generation for covered sources that would result in disparate treatment among various generation technologies and distort competitive market efficiencies. They should both be removed from the final regulation.

Response: The Department acknowledges the comment, disagrees that the set-aside provisions distort the competitive market and have maintained the set-asides in the final-form rulemaking.

244. Comment: The commentator asks why the Department directly allocating CO_2 emissions credits to waste coal resources, but also retiring compliance credits on behalf of CHP or cogeneration units, would not be considered to be arbitrary and capricious, particularly if the Department does not adopt the federal non-EGU threshold criteria for CHP and cogeneration units. As proposed, the Department would, for some types of power generation resources, require the purchase and retirement of emissions allowances and for some other types of resources award those allowances gratis, and for yet some other types of resources retire the allowances on behalf of the resources.

Response: The Department acknowledges this comment. Any CO_2 allowances allocated to waste coal-fired units must be used to satisfy the unit's compliance under this final-form rulemaking. Deducting the CO_2 allowances for compliance is equivalent to retiring the CO_2 allowances on the unit's behalf. The Department also revised the CHP set-aside in this final-form rulemaking to provide two tiers for requesting the retirement of CO_2 allowances. Under the first tier, which is an addition at final-form, applicable CHP units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable CHP units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

245. Comment: Where natural gas resources are deployed in the Real-Time and Day-Ahead markets to supplement variable sources, the commentator suggests allowance credits be issued to offset those emissions to support the viability of renewables in the competitive market, while encouraging investments in natural gas generators to improve ramp rate performance and capabilities.

Response: The Department acknowledges the comment and retains the three set-aside provisions as included on proposed in the final-form regulation.

246. Comment: The commentator recommends any natural gas entity designated as a Load Management Demand Resource receive allowances for emissions resulting from required deployment. This will encourage investments in technologies to improve baseload capabilities and the reliability of natural gas generation.

Response: The Department acknowledges this comment; however, it has maintained the three set-aside accounts as outlined in this final-form rulemaking. Though Load Management Demand Resources are important to grid reliability, this is not a designation from the Department. Furthermore, a designation of such neither exempts them from this regulation nor qualifies them for the existing set-asides.

247. Comment: In no event should an individual waste coal power plant receive allowances from a set aside if the plant (a) is polluting in excess of any federal air or water pollution standard that applies to conventional coal-fired power plants, including and especially the requirements of the Mercury and Air Toxics Standards, or has been shown to be contributing to an exceedance of the National Ambient Air Quality Standards; or (b) the plant receives waste coal from a site or operation that has been issued a citation or enforcement action for violations related to coal refuse extraction or site restoration in the previous 12 months.

Response: The Department acknowledges the comment, and though no additional eligibility criteria have been added to the final-form rulemaking, any exceedances or violations will be addressed separately as appropriate.

248. Comment: The Department should add a voluntary renewable energy (VRE) set-aside in section 145.342. Such a set-aside would incentivize additional in-state renewable generation, which in turn would reduce demand for fossil generation from non-covered sources and thereby reduce leakage.

Response: The Department acknowledges the comment and the importance of incentivizing additional in-state carbon free generation. The Strategic use set-aside account has been designed to allow for allocation of allowances to a broad range of projects located in Pennsylvania that result in a greenhouse gas reduction benefit including among others, the implementation of renewable or noncarbon-emitting energy technologies. With the applicability of the strategic use set-aside including renewable generation, the Department did not add a stand-alone VRE set-aside as that would have been duplicative.

249. Comment: The commentator states that allowances could also be used to promote new renewable electricity. As EQB works toward finalizing the Proposed Rule, the commentator supports a clarification, either through a minor revision of the regulatory text or in the preamble published in connection with the Final Rule, to ensure that support for voluntary renewable electricity within the Commonwealth is not inadvertently affected by its participation in RGGI. This need not and must not delay finalization in time for a 2022 start. Specifically, the commentator supports confirmation that, under the Final Rules, CO_2 emission allowances could be retired on behalf of voluntary renewable electricity sales made and sourced within the Commonwealth. This approach, a version of which has been adopted by Connecticut, Maine, Massachusetts, New Hampshire, New York, and Rhode Island, allows customers to retain, and claim, the emission avoidance value associated with their voluntary renewable electricity purchases. This would further the purpose of the Proposed Rule "to reduce anthropogenic emissions of CO_2, a greenhouse gas (GHG) and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment." The commentator

does not believe this would necessarily require a change to the Proposed Rule, which already has an allowance set-aside that could be used for this purpose, but suggests that a clarification or confirmation that the set-aside could be used for this purpose would help provide certainty for voluntary renewable electricity customers.

Response: The Department acknowledges the comment and agrees that claiming the emission avoidance value associated with voluntary renewable electricity purchase would be an eligible project under the strategic use set-aside account, as long as the other project eligibility criteria are met. The Department does not believe a regulatory language change is necessary as the current definition allows for this use.

250. Comment: There are cases where providing free allowances or allowances at a reduced price can be warranted. For example, providing free allowances to waste coal facilities that are burning legacy waste coal piles that would otherwise burn in uncontrolled waste and gob piles while contaminating Pennsylvania streams can be constitutionally justified, since the allowances are, in a sense, paying for environmental remediation. Likewise, awarding free allowances or allowances at reduced cost as a means of preventing leakage to jurisdictions that do not put a price on GHG emissions may also be justifiable.

Response: The Department acknowledges this comment and appreciates the support for the waste coal set-aside. The final-form rulemaking does not include allocation to generators outside of the three set-aside accounts, though the Department is continuing to explore options for addressing the potential for leakage through regional and national solutions.

Combined Heat and Power Set-Aside

251. Comment: The commentator states that the proposed rulemaking will serve as a disincentive for manufacturers to install these systems as once the regulations are in place, as the parameters can be altered in future. Limiting CHP is the opposite of policy the commonwealth should be enacting. A recent report endorsed by the Pennsylvania Department of Community and Economic Development, dozens of state-wide and regional business organizations, and top industries states, "Pennsylvania's low-cost natural gas resource can create significant economic benefits for energy-intensive manufacturers when used as a source of heat and power. In order to tap into those benefits, we need to identify ways to make it easier for manufacturers to adopt CHP (Combined Heat and Power) solutions..."

Response: The Department acknowledges the concern and has made changes to the final-form rulemaking to address this concern. Specifically, due to the efficiency and environmental benefits that CHP units provide; the Department understands that it is beneficial to incentivize new CHP buildout in this Commonwealth. In addition, incentivizing future CHP units provides economic development benefits and can be a significant factor for manufacturers and other industrial facilities looking to expand operations within or to this Commonwealth. In fact, the most recent Pennsylvania Climate Action Plan recognized the benefits and importance of incentivizing CHP. In the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO_2 emissions by an amount equal to

the CO^2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO^2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

252. Comment: The commentator submitted an analysis of the proposed rulemaking on their facility which illustrates that, with the implementation of the proposed RGGI rule and requirements to purchase allowances, their plant will realize a reduction in operating days due to the increased cost of producing electricity for sale to the PJM regional electric grid. This reduction in CHP operating days and electric output to the grid will result in the electric power being replaced and produced by less efficient, non-baseload electric generating units (EGUs), which also results in a net increase in the amount of CO_2 emissions generated to supply power to the PJM region.

Response: The Department acknowledges the comment and has addressed this concern through two separate changes to the final-form rulemaking. The first, as described above, expands the existing partial CHP set-aside to include a full set-aside for those qualifying CHP facilities that meet certain efficiency criteria. Additionally, under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Department provided additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional, or commercial facility. A CHP unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10 percent of annual gross generation to the electric grid. The Department included this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

253. Comment: The commentator recommends tightening the definition of co-generation unit. Cogeneration unit should be defined as — an electric-generating unit that uses a steam-generating unit or stationary combustion turbine to simultaneously produce both electric or mechanical and useful thermal energy from the same primary energy facility, where the useful thermal energy produced is at least 25 percent of the total energy output of the facility on an annual basis, having an Electric Allocation Factor of less than 0.75 on an annual basis as defined in the United States Environmental Protection Agency eGRID database or its successor.

Response: The Department agrees and has changed the regulatory language to include similar criteria for a CHP unit to now qualify for the full Combined Heat and Power set-aside. The regulation now includes a useful thermal energy threshold of 60 percent or greater, and where total electric generation sent to the grid in comparison to total useful thermal energy is 25 percent.

254. Comment: While the adoption of a CHP set aside program in the proposed rule is a good first step, the provision does not capture the full carbon reduction attributes of CHP and especially CHP-fed district energy systems. It will result in the unintended consequence of producing an immediate spike in carbon emissions. The commentator recommends the regulation offset the full compliance obligation of qualifying cogeneration units and allow for the retirement of allowances associated with cogeneration including electricity production to remedy this issue.

Response: The Department understands the concern and has adjusted the language in the final-form rulemaking as a result. As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances (covering all emissions), then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25 percent of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60 percent on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional, or commercial facility.

255. Comment: The commentator is recommending that the term combined heat and power unit be specifically added to the applicability section regarding the cogeneration set-aside to clarify that combined heat and power units also qualify.

Response: The Department agrees with the comment and whereas the proposed rulemaking included a set-aside provision for cogeneration units, which also covered CHP systems, in this final-form rulemaking, the Department changed the name of the set-aside from "cogeneration" to "combined heat and power." This change was made to clarify that it is CHP units that will be qualified for CO_2 allowances under the set-aside provision, where a CHP unit is defined as an electric-generating unit that simultaneously produces both electricity and useful thermal energy.

256. Comment: As an efficient technology that has been used to improve sustainability and the competitiveness of manufacturers, health systems and universities, the final rule should afford greater flexibility to combined heat and power systems by incorporating federal definitions of non-EGU facilities, as well as greater flexibility with respect to compliance obligations.

Response: The Department agrees, and as is explained further above, the Department understands the concern and has adjusted the language in the final-form rulemaking as a result. As in the proposed rulemaking, the combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances (covering all emissions), then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25 percent of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60 percent on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application which includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional, or commercial facility.

Furthermore, under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Department provided additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional, or commercial facility. A CHP unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10 percent of annual gross generation to the electric grid. The Department included this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

257. Comment: The commentator appreciates the set-aside provision in the proposed rulemaking for these technologies by reducing the compliance obligation for CO_2 emissions associated with the generation of thermal energy and/or electricity supplied to interconnected facilities.

Response: The Department appreciates the support for the CHP set-aside.

258. Comment: The commentator believes that CHP should be clearly exempt from the RGGI regulation. The energy efficiency and GHG reduction benefits of CHP are well-recognized in federal and Pennsylvania policy. Subjecting CHP to the compliance obligations, reporting and other requirements of the RGGI program would be detrimental to existing CHP in Pennsylvania and a significant disincentive to investments in new CHP.

Response: While CHP systems are not exempt from the final-form rulemaking, as explained above due to the energy efficiency and GHG reduction benefits as cited in the comment, the Department made changes to the final-form rulemaking to allow for expanded limited exemption criteria and set-aside opportunities.

259. Comment: Given the benefits CHP facilities offer, the Commonwealth should take a measured approach to the application of RGGI to CHP facilities to avoid that outcome and exclude newer, more efficient facilities as the regulation could discourage such facilities from being built in the Commonwealth.

Response: The Department acknowledges the comment, and though CHP units are not exempt from the regulation, changes to the final-form rulemaking both in terms of expansion of the limited exemption and set-aside provisions provide expanded compliance options for CHP units.

260. Comment: The commentator does not support inclusion of a CHP set aside.

Response: The Department established the CHP set-aside because CHP units concurrently produce electricity and useful thermal energy, making them energy efficient and environmentally beneficial. In the final-form rulemaking, the Department includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested. CHP systems use energy efficiently by simultaneously producing electricity and useful thermal energy from the same fuel source. CHP captures the wasted heat energy that is typically lost through power generation, using it to provide cost-effective heating and cooling to factories, businesses, universities, and hospitals. CHP systems are able to use less fuel compared to other fossil fuel-fired EGUs to produce a given energy output. Less fuel being burned results in fewer air pollutant emissions, including CO_2 and other GHGs. In addition to reducing emissions, CHP benefits the economy and businesses by improving manufacturing competitiveness through increased energy efficiency and providing a way for businesses to reduce energy costs while enhancing energy reliability.

261. Comment: The commentator supports inclusion of CHP set aside.

Response: The Department appreciates this comment.

262. Comment: The commentator stated an increased CHP set aside is necessary.

Response: The Department agrees with the comment and has adjusted the language of the final-form rulemaking. In the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO_2 emissions by an amount equal to the CO_2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

263. Comment: The commentator suggests including avoided transmission line losses in § 145.342(k) as an additional benefit of combined heat and power systems.

Response: While the Department agrees that avoided transmission line losses are an additional benefit of CHP, the section to which the language addition was requested has been removed from the Annex.

264. Comment: The commentator recommends that rather than using the term "co-located facility" in reference to CHP units, the Department should indicate systems are "interconnected" to a facility.

Response: The Department agrees and replaced the term "co-located" with "interconnected" in the final-form Annex A.

265. Comment: Under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Board proposes to provide additional flexibility in the form of a limited exemption for cogeneration units that are interconnected and supply power to a manufacturing facility. A cogeneration unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected manufacturing facility, does not have a compliance obligation under this proposed rulemaking.

Response: The commentator has correctly portrayed the limited exemption which also appears in the final-form rulemaking.

266. Comment: The Department should provide additional flexibility in the form of a limited exemption for cogeneration units that are interconnected and supply power to not only manufacturing facilities, but other sectors beyond industrial that utilize the thermal capabilities and emission benefits of CHP, including: critical infrastructure, healthcare, higher education, and other emerging markets for CHP application in the Commonwealth.

Response: The Department understands the concern and has adjusted the language in the final-form rulemaking as a result. Under § 145.305 (relating to limited exemption for CO_2 budget units with electrical output to the electric grid restricted by permit conditions), the Board provides additional flexibility in the form of a limited exemption for CHP units that are interconnected and supply power to an industrial, institutional or commercial facility. In the proposed rulemaking, the interconnected facility was required to be a manufacturing facility. In response to comments received, in this final-form rulemaking, the Department broadened the language to allow for the interconnected facility to be an industrial, institutional or commercial facility. A CHP unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking. The owner or operator of the CHP unit claiming this limited exemption must have a permit issued by the Department containing a condition restricting the supply to the electric grid. This limited exemption is in addition to the exemption in the RGGI Model Rule for fossil fuel-fired EGUs with a capacity of 25 MWe or greater that supply less than 10 percent of annual gross generation to the electric grid. The Department is including this additional exemption for CHP units that primarily send energy to an interconnected facility because these CHP units provide a CO_2 emission reduction benefit. These units provide useful thermal energy, a byproduct of electricity generation, to the interconnected facility which helps prevent the need for the facility to run additional boilers onsite to generate electricity which in turn avoids additional CO_2 emissions.

267. Comment: The Department should adjust the language within §145.305, limited exemption, from gross generation to net generation to account for the sale and purchase of electricity from the grid. Recommend "no more than 10% of the annual **gross** generation to the electric grid" to instead say "...the annual net generation to the electric grid." This would be consistent with the Commonwealth of Virginia, which utilizes the term net instead of gross as stated in the Virginia Clean Energy Act.

Response: The Department acknowledges this comment. However, the Department has maintained the term "annual gross generation" in the limited exemption in this final-form rulemaking. The Department used "gross" vs "net" in the limited exemption because the term "gross" further supports the purpose of this final-form rulemaking, particularly as it relates to differences in carbon-intensity of electricity provided from the grid versus the facility.

268. Comment: The commentator references an analysis that increasing CHP deployment in Pennsylvania through investments could reduce annual CO_2 emissions by more than 1.1-million tons in 2030- Save nearly 6-million megawatt-hours of electricity in 2030, and save businesses $3.3 billion in cumulative cost savings (2016-2030) from avoided electricity purchases.

Response: The Department acknowledges the comment and has relied upon similar analyses for the basis of establishing the CHP set-aside.

269. Comment: The commentator recommends removing the allocation of free emission allowances for CHP facilities. This will ensure that emission allowance prices are not artificially depressed through the allocation of free allowances, and that these facilities do not receive windfall profits and environmental subsidies that would increase their competitiveness in wholesale energy markets.

Response: The Department acknowledges the comment, and notes that the power sector modeling conducted includes the allocation of allowances through the set-aside provisions which do not have a price suppressing effect on the allowances. Additionally, the comment regarding competition in the wholesale energy market is outside of the scope of this rulemaking.

270. Comment: As proposed the commentator indicates that the Department regulation will have a significant negative impact on CHP units that provide electricity to the grid. The commentator indicated that the draft PA RGGI regulation would increase the time periods when it is not economically feasible for its CHP units to sell power to the electric grid. This reduction in CHP generation will, based on a review of historical generation, result in electricity production from a much higher CO_2 emitting power generation unit.

Response: The Department acknowledges this comment and has made changes to the final-form regulation to address these concerns in terms of an expanded CHP set-aside and expanded criteria for the CHP-related limited exemption.

271. Comment: The commentator requests that the Department exclude or provide a full exemption for CHP units in the final regulation due to the substantial energy efficiency and avoided GHG emissions benefits provided by these sources.

Response: The Department acknowledges the comment and has developed a full set-aside for qualifying CHP facilities in the final-form rulemaking. As in the proposed rulemaking, combined heat and power units must submit a complete application to request that CO_2 allowances be retired by the Department on behalf of the unit. The Department added in this final-form rulemaking that if the unit is requesting total retirement of CO_2 allowances (covering all emissions), then the unit must satisfy the more stringent requirements. The unit must submit an application including documentation that the useful thermal energy is at least 25 percent of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60 percent on an annual basis. If the unit is requesting partial retirement of CO_2 allowances, the unit must submit an application that includes documentation of the amount of useful thermal energy or electricity, or both, supplied to an interconnected industrial, institutional or commercial facility.

272. Comment: While the commentator appreciates the Board's motivations underlying the proposed rulemaking, in its current form, the proposed rulemaking creates significant regulatory uncertainty and would impose additional, unpredictable costs and burdensome compliance

obligations on Pennsylvania businesses that own and operate cogeneration units and CHP systems.

Response: The Department acknowledges the comment and the concern regarding regulatory uncertainty and has made specific changes to the final form regulation to address this.

First, the proposed rulemaking included a set-aside provision for cogeneration units, which also covered CHP systems. In this final-form rulemaking, the Department changed the name of the set-aside from "cogeneration" to "combined heat and power." This change was made to clarify that it is CHP units that will qualify for CO_2 allowances under the set-aside provision, eliminating stated uncertainty as to what units may qualify. A CHP unit is defined as an electric-generating unit that simultaneously produces both electricity and useful thermal energy.

Second, in the proposed rulemaking, the Department included a set provision that involved adjusting the compliance obligation of a unit. As proposed, the Department would have adjusted the compliance obligation by reducing the total CO_2 emissions by an amount equal to the CO_2 that is emitted as a result of providing useful thermal energy or electricity, or both, supplied directly to a co-located facility during the allocation year. In this final-form rulemaking, the Department instead includes two tiers for the retirement of CO_2 allowances from the combined heat and power set-aside account. Under the first tier, which is an addition at final-form, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the total amount of CO_2 emitted as a result of providing all useful thermal energy and electricity during each allocation year. The unit must submit an application including documentation that the useful thermal energy is at least 25 percent of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit is at least 60 percent on an annual basis in order to qualify for the first tier. Under the second tier, which was included in the proposed rulemaking, applicable combined heat and power units may request that the Department retire CO_2 allowances equal to the partial amount of CO_2 emitted as a result of supplying useful thermal energy or electricity, or both, to an interconnected industrial, institutional or commercial facility during the allocation year. This two-tier approach aligns the overall environmental benefits of CHP units with the CO_2 allowances that may be requested.

Third, in response to comments received, in this final-form rulemaking, the Department broadened the limited exemption language to allow for the interconnected facility to be an industrial, institutional or commercial facility. A CHP unit that supplies less than 15 percent of its annual total useful energy to the electric grid, not including energy sent to the interconnected facility, does not have a compliance obligation under this final-form rulemaking.

273. Comment: The proposed RGGI regulations as currently written will have a very significant impact on the implementation and operation of CHP by industrial sources and commercial entities. This would create a disincentive for existing CHP facilities to operate as intended and potential deter future CHP investment and utilization.

Response: The Department acknowledges this comment and has made changes to the final-form regulation to address these concerns by the addition of an expanded CHP set-aside and expanded criteria for the CHP-related limited exemption.

274. Comment: Qualifying CHP facilities should be exempt from the regulation if they meet the following criteria: a useful thermal efficiency greater than 60 percent and its total electric generation sold to the grid, in comparison to its total useful thermal energy, is less than 50 percent". If a facility meets these criteria than the facility should be exempt from the regulation.

Response: While the Department maintains the CHP limited exemption, it modified the set-aside provision in the regulation. The Department added regulatory language to include similar criteria for a CHP unit to now qualify for the full Combined Heat and Power set-aside. The regulation now includes language that the useful thermal energy has to be at least 25% of the total energy output of the combined heat and power unit on an annual basis and that the overall efficiency of the combined heat and power unit has to be at least 60% on an annual basis.

275. Comment: The commentator indicates that an exemption is preferred to the current proposed set-aside allocation as an exemption would eliminate the need for the complicated process of completing annual requests for allowance allocations.

Response: The Department acknowledges the comment. This final-form rulemaking does not categorically exempt CHP units because doing so would not account for the CO_2 emissions resulting from these units in this Commonwealth's annual budget.

276. Comment: The commentator proposes to modify the regulation so that the final regulations do not create a disincentive for cogeneration and specifically Combined Heat and Power facilities. Qualifying CHP facilities should be exempt -both existing and future- from the requirements associated with this regulation.

Response: The Department has amended the final-form regulation to address the concerns regarding regulatory uncertainty and disincentives for the future buildout of CHP. Though the facilities have more compliance flexibility, they are still subject to the regulation if they do not meet the CHP limited exemption criteria.

277. Comment: The commentator supports the proposed set-aside provisions under § 145.342(k) and § 145.305 for cogeneration units, which includes CHP systems. The commentator also thanks the Department for realizing CHP is both energy efficient and environmentally beneficial given that CHP concurrently produces electricity and useful thermal energy.

Response: The Department acknowledges the comment and appreciates the support for the CHP set-aside.

Waste Coal Set-Aside

278. Comment: The commentator supports the inclusion of the waste coal set-aside and states that waste-coal plants play a critical role in environmental remediation in the coal regions where they are located by removing coal refuse piles, remediating, and reclaiming mining affected lands and reducing or even eliminating surface and groundwater pollution caused by acid mine drainage (AMD) from coal refuse piles.

Response: The Department agrees and has cited these benefits as the reason for the establishment of the waste coal set-aside.

279. Comment: The commentator recognizes the goal of addressing CO_2 emissions from the electric generating sector while at the same time prioritizing the need to address abandoned mine land (AML) pollution from the Commonwealth's historic mining operations and ensuring an adequate and reliable supply of electricity to power our homes and businesses.

Response: The Department appreciates the comment.

280. Comment: The commentator appreciates the changes made during the process of developing this rule to extend the lookback period for legacy emissions considering recent market trends and provide greater regulatory certainty to individual plants.

Response: The Department appreciates the comment.

281. Comment: The commentator does not support the inclusion of a waste coal set aside in the proposed rulemaking.

Response: The Department included a waste coal set-aside in this proposed rulemaking because waste coal-fired units provide an environmental benefit of reducing the amount of waste coal piles in Pennsylvania. Coal piles are a significant environmental issue in Pennsylvania, because waste coal piles cause air and water pollution, as well as safety concerns. Waste coal-fired units burn waste coal to generate electricity thereby reducing the size, number and impacts of these piles otherwise abandoned and allowed to mobilize and negatively impact air and water quality in Pennsylvania. In recent years, waste coal-fired units have struggled to compete in the energy market, due in part to low natural gas prices, and several units have shut down or announced anticipated closure dates. Given the environmental benefit provided, the Department determined that it is necessary to assist owners or operators of waste coal-fired units with meeting their compliance obligation under this proposed rulemaking. This legacy environmental issue from Pennsylvania's long history of coal mining further underscores why it is vital to not leave additional environmental issues, like climate change, for future generations to solve. By providing a set aside, as opposed to an exemption, the CO_2 emissions from waste coal-fired units are included in Pennsylvania's CO_2 emissions budget and owners or operators of waste coal-fired units are still required to satisfy compliance of all the regulatory requirements in this proposed rulemaking.

While Pennsylvania's participation in RGGI will have tangible health, environmental and economic benefits, the inclusion of the waste coal set-aside has the additional benefit of avoiding unintended impacts to this generation sector, so that the environmental benefits of continuing to remediate the legacy waste coal piles may continue. For context, since 1988 a total of 160.7 million tons of waste coal has been removed and burned to generate electricity, with an additional 200 million tons of coal ash beneficially used at mine sites. Of Pennsylvania's over 13,000 acres of waste coal piles cataloged by the Department, 3,700 acres have been reclaimed with roughly 9,000 acres remaining. Additionally, of the piles that remain, approximately 40 of them have ignited, and continually burn which significantly impacts local air quality.

282. Comment: The commentator suggests waste coal-fired units be required to purchase the allowances for associated emissions and these funds be utilized for environmental site remediation for sites not currently associated with, or in close proximity to, an existing coal refuse EGU.

Response: The Department acknowledges the comment though for the reasons stated above have maintained the waste coal set-aside in the final-form rulemaking.

283. Comment: The commentator states that the Department should consider simply excluding waste coal units from the proposed CO_2 budget trading program and reducing the 78-million-ton Pennsylvania CO_2 budget by an amount representing their legacy emissions. By excluding these facilities from the proposed rule, the Department would not only appropriately recognize the great environmental and safety and health benefits of this unique environmental remediation industry, but the Department would also provide environmental justice to the communities where the polluting coal refuse is located and to areas downstream from these coal refuse piles.

Response: The waste coal facilities are covered EGUs which would be subject to the final-form regulation. In balancing the goals of the regulation, and the benefits to the Commonwealth from these facilities, it was decided not to exclude them from the regulation, but rather to keep them as part of the regulation with the associated set-aside account.

284. Comment: The commentator states that the program currently over-allocates allowances to the set-aside by setting it equal to the total of each waste coal-fired unit's highest year of CO_2 emissions from an identified 5-year period (equal to 9,300,000 tons). This creates an artificially high emissions budget that allows a greater aggregate level of emissions from these facilities than they have produced historically. The set-aside should not exceed the actual emissions from existing waste coal plants for the year during the 5-year period in which they generated the greatest amount of emissions in aggregate.

Response: The definition of legacy emissions was changed in this final-form rulemaking. Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. This change reflects the Department's

effort to balance both the benefits provided by the industry and the need to assign a reasonable value to the set-aside. The set-aside value does not in itself limit the generation of the waste coal facilities, but rather establishes the amount of CO_2 allowances available to those facilities, above which the facility would be required to acquire additional CO_2 allowances. Any unused allowances are transferred to the strategic use set-aside.

285. Comment: The commentator states that the set-aside should not be granted to facilities that are currently subject to any permit violations or enforcement proceedings regarding noncompliance with health and air quality protections. If a facility is not compliant with existing state or federal law – and is therefore damaging human health and the environment – the facility should be required to remedy the violation before being eligible for the set-aside.

Response: The Department acknowledges the comment, and any violations or enforcement proceedings will be handled by the Department apart from this final-form regulation.

286. Comment: The commentator states that recipients of the set-aside should be required to submit a plan to either reduce their emissions by implementing both conventional pollution and GHG control technologies or commit to facility retirement by 2030. In addition to implementing available pollution controls, facilities should be required to install and operate monitoring programs to ensure that local air quality does not worsen.

Response: The Department acknowledges the comment and the concern regarding maintaining local air quality. Under § 145.306(b)(3) (relating to standard requirements), the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emissions data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emissions data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

287. Comment: The commentator states that the definition of waste coal should be limited to coal abandoned prior to July 1982 and should not include any permitted disposal of coal refuse after that date.

Response: The Department acknowledges the comment, though the definition of "waste coal" used in this final-form rulemaking, for consistency purposes, is as defined within the definition of "alternative energy sources" under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2).

288. Comment: The commentator states that the waste coal set-aside should have a prescribed sunset date of December 31, 2029. The Department would have the option before that date, after reviewing emission trends and the amount of pre-1982 waste coal remaining in the Commonwealth, to extend that sunset or otherwise modify the rulemaking. There should also be verification of actual remediation benefits of waste coal-fired facilities before any decision is made to continue the set aside.

Response: The Department acknowledges the comment and notes that §145.342 (relating to CO_2 allowance allocations) contains a set-aside termination provision for the waste coal set-aside. The final-form regulation indicates that if no CO_2 allowances are allocated under subsection (i)(4) in any calendar year due to the fact that there were no actual CO_2 emissions from waste coal-fired units subject to this subsection, then the CO_2 allowances remaining in the waste coal set-aside account will be transferred to the strategic use set-aside account. No additional CO_2 allowances will be allocated to the waste coal set-aside account under subsection (i)(3) and the Department will close the waste coal set-aside account.

289. Comment: The commentator states that the Colver Green Energy facility should be included in any calculation of the Waste Coal Set Aside Account.

Response: The Department agrees and adjusted the value of the waste coal set-aside to account for the continued operation of the Colver facility in this final-form rulemaking.

290. Comment: The commentator states that the Waste Coal Set Aside Account should be adjusted to account for the higher operating capacity of these facilities that will be required to meet new in-state credit restrictions under Tier II of the AEPS program. The definition of "legacy emissions" should therefore be extended to encompass a timeframe when the majority of the industry was operating under PPAs and wholesale energy prices offered sufficient incentives for facilities without PPAs to operate at base load.

Response: The definition of legacy emissions was changed in this final-form rulemaking. Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. This change reflects the Department's effort to balance both the benefits provided by the industry and the need to assign a reasonable value to the set-aside. Including a slightly higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses.

291. Comment: The commentator states that the Department should amend the waste coal set aside to reflect the tonnages of legacy emissions as the highest year of CO_2 emissions from a waste coal-fired unit during the time period that includes annual emissions for all years through at least 2010.

Response: The definition of legacy emissions was changed in this final-form rulemaking. Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. This change reflects the Department's effort to balance both the benefits provided by the industry and the need to assign a reasonable value to the set-aside. Including a slightly higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses.

292. Comment: The commentator states that if the Department is to use a 5-year timeframe to calculate the set aside in the proposed rule, the commentator recommends using Projected Annualized Emissions (PAE) to calculate legacy emissions for establishing the amount of the waste coal set aside account. Legacy emissions would be defined as the amount of CO_2 emissions in tons equal to the annualized total of the highest month of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015 through December 31, 2019. The amount of the set aside using the PAE during this timeframe would be 14.2 million tons. If the legacy emission definition remains unchanged, the proposed rule creates a fundamental unfairness to those waste coal-fired facilities that operated at a reduced capacity during the proposed 5-year period.

Response: After evaluating a considerable number of options regarding the calculation of legacy emissions and the options of creating one central pool of allowances or individual allowance set-asides for each facility, the definition of legacy emissions was changed in this final-form rulemaking. Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. This change reflects the Department's effort to balance both the benefits provided by the industry and the need to assign a reasonable value to the set-aside. Including a slightly higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses.

293. Comment: The commentator states that the combination of the projected increase in wholesale electricity prices in Pennsylvania from this proposed rulemaking and the allowance set aside, would likely make it economic for waste coal plants to operate and emit more than they currently do. Such an outcome thwarts RGGI and any clean air policy goals.

Response: The Department acknowledges the comment and the concern regarding achievement of clean air policy goals. The Department has set the value of the waste coal set-aside based on historical emissions, creating a ceiling for allowance allocation through the set-aside. Additionally, under § 145.306(b)(3) (relating to standard requirements), the Department is

making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emissions data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emissions data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the Pennsylvania Bulletin on an annual basis.

294. Comment: The commentator states that because the Department is including a Waste Coal set aside, the Department is explicitly recognizing that the environmental challenges posed by the existence of waste coal are greater environmental threats than mitigating climate change.

Response: The final-form regulation allows Pennsylvania to create a regulation that is sufficiently aligned with the RGGI model rule to allow for participation in the regional auction, while enabling the Department to tailor the regulation through set-asides and other provisions to Pennsylvania's unique energy landscape. In creation of a waste coal set-aside in this program, the Department is able to advance the goals of reducing CO_2 emissions in this commonwealth, while acknowledging the unique benefits of the waste coal generation sector. They remain regulated by the Department and have a compliance obligation under this regulation.

295. Comment: The commentator states that the Department does not provide a rational basis for not acknowledging the environmental attributes of other sources of electric generation, and not providing commensurate recognition of these benefits in the rulemaking. The commentator references acid mine draining and plugging of conventional orphaned and abandoned oil & gas wells as examples.

Response: As mentioned in the response above, the Department has tailored the regulation to include set-aside provisions to acknowledge the benefits and attributes of other sources of electric generation, including combined heat and power, waste coal and other non-carbon emitting sources such as those noted in the Strategic Energy Use Set-Aside. The Department acknowledges the importance of addressing well plugging and acid mine drainage, though those two items are outside of the scope of this rulemaking as those activities are not regulated entities under either the proposed or final-form regulation.

296. Comment: The commentator asks under the § 145.342(i) Waste coal incentive, will the Department actually purchase the credits totaling 9,300,000 for the waste coal industry? If so, what funds will be used for said purchase. The commentator encourages this incentive, and only ask the question for clarification.

Response: To clarify, the Department is not purchasing the 12.8 million CO_2 allowances for the waste coal set-aside. Instead, the Department is directly allocating CO_2 allowances from its air pollution reduction account to the waste coal set-aside account.

297. Comment: The commentator states that the proposed regulation should be revised to include restrictions that assure that allowances allocated from the waste coal set-aside can be used and retired only for carbon-dioxide emissions from waste-coal and biomass.

Response: The final-form regulation includes language restricting the allocation of allowances from the waste coal set-aside to only qualifying waste coal facilities which are defined as a facility combusting waste coal or, if in combination with any other fuel, waste coal comprises 75 percent or greater of the annual heat input on a Btu basis. Facilities combusting waste coal shall use at a minimum a circulating fluidized bed boiler and be outfitted with a limestone injection system and a fabric filter particulate removal system.

298. Comment: The regulation should be revised to require reporting and allowance allocation adjustments to assure that the allowances are retired only from the combustion of waste coal. The proposed RGGI regulation proposes to do this by defining a waste coal facility as one whose feedstock is 75 percent waste coal. However, a facility meeting that definition could decide to operate fewer hours and simply sell allocated allowances. Likewise, it could burn, for example, 25 percent waste tires. Therefore, facilities receiving an allocation from this set aside should be required to report its feedstock and actual operations for the relevant reporting period and be charged the highest auction clearing price during the relevant period for any emissions that do not arise from waste coal or biomass.

Response: Section 145.342(i)(4)(ii) of this final-form rulemaking prohibits the sale or transfer of CO_2 allowances allocated to the compliance account of a waste coal-fired unit. Since that language is included in this final-form rulemaking, waste coal-fired units will be prevented from doing so in COATS.

299. Comment: While remediation of waste coal piles undoubtedly has environmental benefits, primarily associated with reduction of acidic drainage, the burning of waste coal for power generation would produce far more air pollutant emissions than would otherwise be emitted from a waste coal pile. To illustrate this point, the Department states that there are approximately 40 waste coal piles that are burning, which significantly impacts local air quality. However, the RAF fails to estimate emissions from either source so they could be compared. Likewise, the RAF fails to consider the amount of coal combusted in these fires to the far greater amount of waste coal combusted to generate electricity, and the corresponding CO_2 emissions from these waste coal pile fires is far less than the 9,300,000 tons/year of CO_2 generated by the waste coal fired EGUs in Pennsylvania. The EQB has failed to articulate "any alternative regulatory provisions which have been considered and rejected and a statement that the least burdensome acceptable alternative has been selected." 71 P.S. § 745.5(a)(12). Furthermore, incentivizing waste-coal units with CO_2 allowances at no cost will provide them a competitive pricing advantage with respect to other fossil fuel sources. This will result in greater utilization of these units over coal or natural gas units, which would result in greater emissions of CO_2 and air

pollutants than would otherwise be the case without RGGI. From an air quality perspective, subsidizing waste coal fired EGUs is actually subsidizing air pollution.

Response: The Department acknowledges the comment and the concern regarding the potential for a shift in generation and associated emissions. The Department has set the value of the waste coal set-aside based on historical emissions, specifically creating a ceiling for allowance allocation through the set-aside. Any unused allowances would not be made available to qualifying waste-coal facilities in subsequent years, but rather transferred to the Strategic Use Set-Aside account. Additionally, under § 145.306(b)(3) (relating to standard requirements), the Department is making an annual commitment to assess changes in emissions and air quality in this Commonwealth as it relates to implementation of this final-form rulemaking. To address these concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emissions data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emissions data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the Pennsylvania Bulletin on an annual basis.

300. Comment: The commentator recommends removing the Proposed Regulation's allocation of free allowances to waste coal plants. Whether the potential benefits from the operation of waste coal plants cited in the Proposed Regulation accrue at all depends on multiple factors that strongly indicate that a blanket rule providing free allocation of RGGI allowances to these facilities is not justified. The commentator recommends the Proposed Regulation require these facilities purchase emission allowances at their fair market value without exemption or discount.

Response: The Department included a waste coal set-aside in this proposed rulemaking because waste coal-fired units provide an environmental benefit by reducing the amount of waste coal piles in Pennsylvania. Coal piles are a significant environmental issue in Pennsylvania, because waste coal piles cause air and water pollution, as well as safety concerns. Waste coal-fired units burn waste coal to generate electricity thereby reducing the size, number and impacts of these piles otherwise abandoned and allowed to mobilize and negatively impact air and water quality in Pennsylvania. In recent years, waste coal-fired units have struggled to compete in the energy market, due in part to low natural gas prices, and several units have shut down or announced anticipated closure dates. Given the environmental benefit provided, the Department determined that it is necessary to assist owners or operators of waste coal-fired units with meeting their compliance obligation under this proposed rulemaking. This legacy environmental issue from Pennsylvania's long history of coal mining further underscores why it is vital to not leave additional environmental issues, like climate change, for future generations to solve. By providing a set aside, as opposed to an exemption, the CO_2 emissions from waste coal-fired units are included in Pennsylvania's CO_2 emissions budget and owners or operators of waste coal-

fired units are still required to satisfy compliance of all the regulatory requirements in this proposed rulemaking.

While Pennsylvania's participation in RGGI will have tangible health, environmental and economic benefits, the inclusion of the waste coal set-aside has the additional benefit of avoiding unintended impacts to this generation sector, so that the environmental benefits of continuing to remediate the legacy waste coal piles may continue.

301. Comment: The commentator notes that the proposed regulation does not require any demonstration that using any particular source of waste coal provides a net benefit or is the most effective method of achieving the stated environmental goal. Without such a determination, there is no guarantee this part of the proposal is reasonable.

Response: The Department acknowledges this comment. As discussed in the Preamble and RAF, the waste coal set-aside is needed to ensure the continued reduction of the acres of waste coal piles remaining in this Commonwealth which cause air and water pollution, as well as safety concerns.

302. Comment: The commentator states that Pennsylvania's waste coal sector has received subsidies through tax credits and Alternative Energy Portfolio Standard credits, including increases to those subsides after the proposed rule was approved by the Board. Therefore, the waste coal set aside should be suspended until the magnitude of existing subsidies is fully quantified and an analysis demonstrates that it is necessary to achieve environmental goals and consistent with state constitutional requirements.

Response: The Department acknowledges the comment and has taken into consideration in updated modeling and analysis the intervening changes to the AEPS since the regulation was originally proposed. Given recent policy changes impacting the waste coal industry, including the recent legislative adjustment to Tier II of the Alternative Energy Portfolio Standards Act, the Department also made an adjustment in this final-form rulemaking to the definition of "legacy emissions." Instead of determining the amount of legacy emissions based on the amount of CO_2 emissions in tons equal to the highest year of CO_2 emissions from a waste coal-fired unit during the 5-year period beginning January 1, 2015, through December 31, 2019, the Department will determine the legacy emissions based on the 10-year period beginning January 1, 2010, through December 31, 2019. Reviewing a 10-year period as opposed to a 5-year period better reflects the operation levels of waste coal-fired units in this Commonwealth. Including a higher set-aside amount in this final-form rulemaking will also enable the Department to provide additional compliance assistance to owners or operators of waste coal-fired units, the majority of which are small businesses.

303. Comment: The definition of what qualifies as waste coal should include only refuse that was abandoned prior to 1982, and should not include refuse that was part of a permitted disposal after that date or in the future. Any benefits of waste coal plant operation stem from their cleanup of abandoned coal piles, for which no existing entity has a financial obligation or legal liability, that are creating water pollution and other environmental issues for surrounding communities. If these problems are present at permitted refuse disposal sites, then that is a problem with the

permit or its enforcement that needs to be addressed independently. Waste coal power plants should not be viewed as a substitute for current and future mining companies' environmental restoration responsibilities.

Response: The Department acknowledges the comment, though the definition of "waste coal" used in this final-form rulemaking, for consistency purposes, is as defined within the definition of "alternative energy sources" under section 2 of the Alternative Energy Portfolio Standards Act (73 P.S. § 1648.2). It is defined as the coal disposed or abandoned prior to July 31, 1982, or disposed of thereafter in a permitted coal refuse disposal site regardless of when disposed of and used to generate electricity.

304. Comment: Receipt of allowances under any waste coal set-aside should be contingent on the recipient having submitted to the Department a plan and making an enforceable commitment to reduce emissions—both carbon dioxide and other pollution—at the waste coal facility, including by implementing all reasonably available efficiency improvements and control technology for conventional air pollutants.

Response: The Department acknowledges this comment and notes that waste coal-fired units are already required by the Department to meet Best Available Technology (BAT) requirements for criteria pollutants. In addition to BAT requirements, the Department is also more thoroughly evaluating these and other facilities in determining updated Reasonably Available Control Technology (RACT) requirements to further limit NO_x emissions.

305. Comment: Since 2018, four waste coal plants have retired. These plants should be removed from the calculation of legacy emissions as they will not exist in 2022.

Response: The Department agrees, and only those waste coal facilities that are assumed to be operating in 2022 are included in the calculation of the waste coal set-aside.

Strategic Use Set-Aside

306. Comment: The commentators support the inclusion of the Strategic Use set-aside in the proposed rulemaking.

Response: The Department appreciates the comment.

307. Comment: The commentator states that the Strategic Use set-aside should still receive allowances if the Waste Coal set aside ceases to exist.

Response: The Department agrees, and the regulation contains the necessary flexibility to allow for allowance allocation to the strategic use set-aside independent of the waste coal set-aside if necessary.

308. Comment: Although this proposed section certainly carves out projects that "foster promotion of energy efficiency measures" related to energy consumption, behind-the-meter load response projects also address the demand component of electric generation production (and by correlation, emissions of CO_2 and other GHGs). The regulation should also acknowledge the

opportunities presented by behind-the-meter load response technologies by adding the language "promote demand reduction" as an additional segment of "eligible projects".

Response: The Department acknowledges the comment, also recognizes the value of the behind-the-meter demand reduction projects, and does not believe a modification to the regulation is necessary as these projects would qualify under the strategic use set-aside as currently designed.

309. Comment: The commentator states the proposed rulemaking should include a voluntary renewable energy set aside.

Response: The Department elected to keep the strategic use set-aside as proposed, with some clarifications to explain that renewable and other non-emitting energy technologies would qualify for allocation of allowances under the strategic use set-aside. Rather than restrict the types of projects that would qualify for allowances, the Department has elected to keep the broader, more inclusive nature of the strategic use set-aside.

310. Comment: The commentator stated that a renewable energy set-aside will foster continued voluntary demand in Pennsylvania for in-state and RGGI-located generation, accelerating decarbonization and allowing this generation to be eligible for Green-e ® Energy certification. Green-e ® Energy certifies tens of millions of megawatt hours (MWh) of renewable energy each year and, as the only certification for the voluntary renewable energy market in the United States, is the de facto standard for private purchasing of renewable energy in North America. Where states or provinces have introduced cap-and-trade regulation without a renewable energy set-aside, Green-e ® has required that Green-e ® certified renewable energy from these jurisdictions be matched with purchased allowances equal to the generation's emissions reduction benefit on the grid. Where private purchasing of allowances is not possible, as is the case in RGGI states, there are no avenues to reclaim the avoided emissions benefit. In the few RGGI states that have not included a voluntary set-aside, residents are not able to purchase Green-e ® certified renewable energy from generation located in the state or neighboring RGGI states, severely limiting options for impactful renewable energy procurement.

Response: The Department appreciates the comment, and since the strategic use set-aside is inclusive of renewable and other non-emitting energy technologies – it functions as other states' renewable energy set-asides and satisfies the criteria required for Green-e ® certified renewable energy. The Department looks forward to fostering continued voluntary demand in Pennsylvania for in-state generation, accelerating decarbonization and enabling this generation to be eligible for Green-e ® certification.

311. Comment: The commentator recommends that the Department clarify that the Strategic Use set aside can be used similarly to a Voluntary Renewable Energy set aside.

Response: The Department agrees and has clarified the language to explain that renewable and other non-emitting energy technologies would qualify for allocation of allowances under the strategic use set-aside.

312. Comment: The commentator encourages the Department to include § 145.342(j) Strategic use set-aside allocations to support manure to mine lands projects, reforestation of mine lands, energy audits within EJAs, support of unconventional hydro, support 10 Million Trees initiative, and provide funding to state agencies for the acquisition, preservation, protection and enhancement of forested resources.

Response: The Department acknowledges this comment and notes that projects that reduce greenhouse gases through energy efficiency measures, renewable or non-carbon emitting energy technologies, or innovative greenhouse gas emissions abatement technologies with significant greenhouse gas reduction potential would qualify for distribution of CO_2 allowances from the strategic use set-aside.

313. Comment: The criteria for the strategic use set-aside is too vague. The Department and the Board already should have identified the types of energy efficiency and renewable energy projects that will provide the most benefit per dollar, as well as the communities in Pennsylvania that are in the most need of investment in energy efficiency and renewable energy resources. The regulation should describe such projects and communities so that the proceeds of auctions of carbon dioxide allowances are targeted there.

Response: The Department appreciates the comment and notes that the investment of auction proceeds is separate and apart from the strategic use set-aside as outlined in the final-form regulation. The Department will allocate undistributed CO_2 allowances to the strategic use set-aside account for each allocation year from the waste coal set-aside account. The Department may then elect to distribute CO_2 allowances, not funding, from the strategic set-aside account to eligible projects. These project sponsors could then in turn monetize those allowances, but most likely will retire the allowances on behalf of a qualifying project to maximize the CO_2 or related greenhouse gas emissions reductions benefits.

Additionally, to address the investment of auction proceeds. Any proceeds generated from this proposed rulemaking would be invested into programs that would further reduce air pollution and create positive economic impacts in this Commonwealth. The use of auction proceeds as a result of this final-form rulemaking are not included in the regulation itself. The Department is developing a draft plan for public comment outlining reinvestment options separate from this proposed rulemaking.

314. Comment: The commentator recommends the strategic use set-aside not be contingent on unused allowances from the waste coal set-aside. The strategic use set-aside is intended to incentivize additional projects that reduce pollution and should be maintained regardless of how many emissions are produced by the waste coal industry.

Response: The Department acknowledges the comment and believes the regulation contains the necessary flexibility to allow for allowance allocation to the strategic use set-aside independent of the waste coal set-aside if necessary.

CO_2 Allowance Offset Projects

315. Comment: The commentator appreciates the flexibility offered to EGUs to participate in offset projects. As carbon abatement technologies and methods evolve, the commentator asks that the Department accept and review proposals on an annual basis for additional methods that demonstrate in a quantifiable way that the allowances represent CO_2 emission reductions or carbon sequestration that is real, additional, verifiable, enforceable and permanent.

Response: The Department acknowledges the comment. While the Department has maintained the current three categories included as offsets, there will be opportunities, most likely during the upcoming RGGI program review during which the offset provisions and project types can be discussed. Given the reciprocal nature of the CO_2 allowances, any new offset program would require discussion, agreement regarding protocols, and measurement and verification among the participating states.

316. Comment: The commentator states that regenerative agricultural practices should be included as eligible offset projects in this proposed rulemaking.

Response: As described under § 145.395 (relating to CO_2 emissions offset project standards), there are three eligible offset categories included in the final-form regulation which are landfill methane capture and destruction projects, projects that sequester carbon due to reforestation, improved forest management or avoided conversion, and projects that avoid methane emissions from agricultural manure management operations. Each of the three offset categories are designed to further reduce or sequester emissions of CO_2 or methane within the northeast region. In the RGGI Model Rule, the participating states cooperatively developed prescriptive regulatory requirements for each of the offset categories that have been incorporated into this final-form rulemaking. These requirements ensure that awarded CO_2 offset allowances represent CO_2e emission reductions or carbon sequestration that are real, additional, verifiable, enforceable and permanent. While these are the current three categories included as offsets, there will be opportunities, most likely during the upcoming RGGI program review during which the offset provisions and project types can be discussed. Given the reciprocal nature of the CO_2 allowances, any new offset program would require discussion, agreement regarding protocols, and measurement and verification among the participating states.

317. Comment: The commentator states that the Department should re-examine the exclusion of well plugging as a potential allowance offset opportunity for a generator with a compliance obligation under the proposed rulemaking.

Response: As indicated in the response above, the final-form regulation includes those three existing offset programs as outlined in the RGGI model rule. The Department agrees with the importance of well plugging in this Commonwealth and wants to ensure ample opportunities for well plugging. However, the Department has chosen to prioritize well plugging through the investment portion of the RGGI program rather than through the regulatory side. Additionally, as the RGGI Program Review is on the horizon, this will provide an opportunity for further discussion about the existing offsets and potential for additional offset categories.

318. Comment: The commentator states that the reasons for removal of the methane emissions offset remain unknown with no discussion in the Preamble to the proposed rule or other public documents. The commentator states that it appears that the removal is related to the price of CO_2 cited at the meeting of the Oil and Gas Technical Advisory Board on May 20, 2020 when the Department stated that given the current price for CO_2 (i.e., $5.65 per ton of CO_2) when compared to the costs to plug abandoned wells, the benefit was considered to be outweighed by the costs to set up a monitoring and evaluation program to track the offset of methane from abandoned wells. The commentator believes that it is possible to meet the standards for being real, additional, verifiable, enforceable, and permanent and that the allowance price has been higher than projected, and will continue to be, so including well plugging as an offset category will be more viable.

Response: There was no mention of the methane emissions offset in the regulatory documents as it was merely a concept that was never fully developed, and as such not included in the proposed regulation. As stated in the previous response, the Department agrees with the importance of well plugging in this Commonwealth and wants to ensure ample opportunities for well plugging. However, the Department has chosen to prioritize well plugging through the investment portion of the RGGI program rather than through the regulatory side. Additionally, as the RGGI Program Review is on the horizon, this will provide an opportunity for further discussion about the existing offsets and potential for additional offset categories. Given the reciprocal nature of the CO_2 allowances, any new offset program would require discussion, agreement regarding protocols, and measurement and verification among the participating states.

319. Comment: The commentator states that well plugging presents at least the degree of collateral benefits as do waste coal plants and probably more. Importantly, well plugging presents direct carbon emissions reduction/prevention benefits which is the essential purpose of the RGGI program. Abandoned wells are a legacy issue related to this Commonwealth's long history of oil and gas production. Abandoned wells cause pollution, as well as safety concerns. It is a vital here with respect to well plugging as it is for waste coal plants to not leave additional environmental issues, like climate change, for future generations. Well plugging also provides improved water quality as abandoned wells leak oil, natural gas, other pollutants that can impact ground and surface water. Abandoned wells also present a safety risk as abandoned wells pose a risk of explosion and negative health effects for both commercial and residential properties. Further, the presence of abandoned wells reduces property values, negatively impacts land and economic development, as well as recreational and conservation opportunities. Moreover, Pennsylvania well plugging can produce good paying Pennsylvania jobs. While critics of Pennsylvania's entry into RGGI cite loss of jobs at the outset from the program, an offset program will create jobs. While the commentator understands that it has been said that well plugging may be a funding target down the road, this issue will only continue to grow with time and should not be the basis to eliminate a worthy offset program at the outset of the RGGI program.

Response: The liaison between the waste coal plants and well plugging is not an exact parallel as waste coal facilities have a compliance obligation under this regulation, and are not eligible offset projects. The Department agrees that abandoned wells are a legacy issue for this Commonwealth, and as mentioned the Department seeks to target plugging with auction

proceeds. Reinvestment of the auction proceeds will be of enormous benefit to this commonwealth, in regard to not only the environment, but the economy as well.

320. Comment: The commentator states that with the 2017 RGGI Model Rule, there are only a few types of projects that are eligible for offsets, even if other activities can reduce the same level of emissions. This rigid eligibility structure does not present a fuel and technology neutral approach and Pennsylvania could use its eventual position in the RGGI stakeholder process to expand the options. For example, given the low amount of natural gas and oil production in other RGGI states, it is not surprising to see that upstream sustainability projects that reduce emissions are not included.

Response: As mentioned, the RGGI Program Review is on the horizon, and this will provide an opportunity for further discussion about the existing offsets and the potential for additional offset categories.

321. Comment: The commentator says it is confusing that a draft regulation pursuant to CO_2 discusses methane projects as offsets. Why are offset credits for landfill gas and agricultural methane provided in this draft? Is methane associated with these offsets going to be converted to CO_2 credits? If so is one methane credit equal to one CO_2 credit (X) or 25X? Referenced in § 145.395.

Response: One CO_2 offset allowance is equivalent to one CO_2 allowance. The calculations for converting other GHG emissions to CO_2 equivalent (CO_2e) emissions is detailed under § 145.395 (relating to CO_2 emissions offset project standards) of this final-form rulemaking.

322. Comment: The commentator asks under the *Offset provisions*, how are values assigned to projects? Who validates and assigns said values? How long must projects remain functional after generating a credit? Do new riparian or reforestation projects generate reoccurring or one-time credits?

Response: The answer depends on the type of offset project and is detailed under each offset project's description under § 145.395 (relating to CO_2 emissions offset project standards) in this final-form rulemaking.

323. Comment: The commentator asks under § 145.393 what is the definition of "partially" in the commonwealth? The commentator believes 51 percent of the project should be within Pennsylvania.

Response: Under § 145.393(a)(2)(ii) of this final-form rulemaking, offset projects are required to be located in this Commonwealth or at least be partly located in this Commonwealth as long as the rest of the project is located in a state participating in RGGI. This is to prevent CO_2 offset allowances from being provided to projects located outside of the RGGI states. The Department also requires that the majority of the CO_2e emissions reductions or carbon sequestration due to the offset project occurs in this Commonwealth.

324. Comment: The commentator asks if state agencies can implement projects and sell CO_2 credits (i.e. Bureau of Abandoned Mine Reclamation (BAMR) completes a 50-acre reforestation project and 30-acre refuse pile fire)? The commentator is in favor of state agencies being able to augment their project and general budgets with CO_2 credit proceeds.

Response: State agencies are permitted to sponsor an offset project provided they satisfy the requirements under § 145.394 (relating to application process).

325. Comment: The commentator asks if the Department would define "permanent" under § 145.391.

Response: The term "permanent" is used in this final-form rulemaking as it is commonly defined in the dictionary. The intent is to ensure that the CO_2 reduced by an offset project is not later allowed to be emitted.

326. Comment: The commentator recommends revising the offset allowance eligibility to require the offset project be located solely within Pennsylvania and within 3 miles of the subject plant. If offset allowances are adopted as a permitted compliance mechanism, the use of offsets should be conditioned on ensuring that the emission benefit accrues within the communities that otherwise would have benefited if emission reductions were achieved at the subject facility itself.

Response: The Department acknowledges the comment, though citing the regional nature of the RGGI program, and the reciprocity of CO_2 allowances, the Department maintains these eligibility criteria in the final-form rulemaking.

Compliance Requirements

327. Comment: The commentator would like to propose two edits to the sections on notice and recordkeeping. First, the commentator would recommend that the notice section be consistent with the requirements of the Newspaper Advertising Act for public notice so that the public is adequately informed of the auction. The commentator suggested the following language to put this notice in line with similar law: At least thirty (30) days prior to any scheduled auction the board shall give notice thereof, not less than once in two (2) newspapers of general circulation in the county, if so many are published therein, and once in the legal journal, if any, designated by the court for the publication of legal notices. Such notice shall set forth (1) the time and date of such auction, (2) the place of such auction, (3) the terms and procedure of the auction, and (4) a description of what is being auctioned. The commentator also recommends that the section on recordkeeping reference the Right to Know Law in order to ensure public access and accountability: § 145.375. Recordkeeping and reporting This section proposes to establish recordkeeping and reporting requirements including monitoring plans, certification applications and quarterly reports. The board shall be a commonwealth agency and records, including but not limited to monitoring plans, certification applications and quarterly reports, shall be subject to the act of February 14, 2008 (P.L. 6, No. 3), known as the Right-to-Know Law.

Response: The Department acknowledges the comment and believes the current procedures as outlined ensure that the public is adequately aware and informed of the availability of the auction.

328. Comment: The Department should employ mechanisms such as drafting and publishing a factsheet for each air quality permit issued related to emission/RGGI credit limitations.

Response: The Department acknowledges this comment. Air quality permits are made publicly available on the Department's website.

329. Comment: The commentator states that it is their understanding of the penalty scheme in proposed § 145.355(d) that, if a CO_2 Budget Source's emissions exceed the equivalent number of allowances in the account when deductions are made for compliance purposes, the Department will deduct allowances equal to three times the number of the CO_2 Budget Source's excess emissions. If the compliance account does not contain enough allowances to cover these additional deductions, the CO_2 Budget Source must transfer adequate allowances to that account immediately. Additionally, and for the same violation, a CO_2 Budget Source will be subject to a permit violation. If a CO_2 Budget Source has excess emissions in a control period or an interim control period, each day of that control period constitutes a day of violation unless the owner or operator demonstrates that a lesser number of days should be considered. Furthermore, each ton of excess emissions will be considered a separate violation. It is unclear from the proposed regulation how the Department proposes to calculate this penalty. If the Department intends to rely on existing law, namely the APCA penalty provision, the penalty could be as high as $25,000.00 per day per ton, which is excessive for an administrative violation. 35 Pa. Stat. § 4009.1. This penalty scheme anticipates three separate penalties arising out of a single administrative violation: (1) a treble penalty in the form of allowance deductions, (2) a per day 13 violation, and (3) a per ton violation. Such a penalty for an administrative violation "strikes at one's conscience as being unreasonable."

Response: The Department acknowledges this comment and will assess any penalties in accordance with this final-form rulemaking and the APCA, including ensuring that the final penalty is appropriate for the violation.

330. Comment: The commentator states that the Department's cost of compliance on a per-ton basis is understated. The commentator states that since a proportion of the projected avoided emissions in Pennsylvania are mitigated by emissions increases in other states, the compliance obligation is understated by an equally proportional amount.

Response: This final-form rulemaking requires affected facilities to purchase CO_2 allowances equal to their CO_2 emissions. The CO_2 allowance price is not dictated by emissions changes in other PJM states.

331. Comment: The commentator asks how noncompliance with CO_2 budgets for generators is handled under this rulemaking, and if a generator has multiple occurrences of noncompliance, will credits be forfeited and future permission to participate revoked.

Response: The penalty for a CO_2 budget source that is noncompliant due to excess emissions is detailed under § 145.355(d) (relating to compliance) of this final-form rulemaking. This includes deducting CO_2 allowances equal to three times the number of the CO_2 budget source's excess emissions.

332. Comment: The commentator states under § 145.304 they object to allowing generators three years to fully offset their emissions. What happens if a generator goes bankrupt with only 50 percent of their CO_2 budget paid?

Response: CO_2 budget units are not provided three years to offset their emissions. They are instead required to obtain one CO_2 allowance for each ton of CO_2 they emit. During the first 2 years of a 3-year control period, the unit must hold 50 percent of its required CO_2 allowances in its compliance account by the CO_2 allowance transfer deadline. During the last year of a 3-year control period, the unit must hold 100 percent of its required CO_2 allowances in its compliance account by the CO_2 allowance transfer deadline. The interim control period requirement to hold 50 percent of the unit's CO_2 allowances was added by the RGGI states during a recent update to the Model Rule to account for the possibility of an EGU filing bankruptcy in the middle of a control period.

333. Comment: The commentator states that under § 145.356 they oppose the ability to perpetually bank CO_2 credits. Conceivably large-scale projects could be completed early in the first performance period of RGGI. Due to the magnitude of scale these credits may be cheaper to obtain than in 2029. Therefore, banking credits allows for manipulation of credit values over time. The commentator believes credit should be spent within two performance periods.

Response: The Department acknowledges this comment and disagrees that CO_2 allowances should expire after a period of time. The ability to purchase allowances and use them for compliance at a later date increases compliance flexibility and decreases costs embedded with this final-form rulemaking.

334. Comment: RGGI does not have control options other than fuel switching, reduced operations or retirement. Consequently, RGGI maximizes the costs to the certain generators. The only potential for trading would be the speculative purchase of RGGI allowances.

Response: The Department disagrees with this categorization of the RGGI program. Regulated EGUs may reduce CO2 emissions, purchase CO_2 allowances, or develop offset projects to comply with the requirements of this final-form rulemaking.

335. Comment: The commentator requests that the Board provide additional clarification regarding the type of information, data, and records that must be maintained to demonstrate compliance with a supply restriction under an AQ Permit. Under Section 145.305(c)(3), owners and operators of exempt EGUs are required to retain "records demonstrating that conditions of the permit under subsection (a) were met," and the owner or operator "bears the burden of proof that the unit met the restriction on the percentage of annual gross generation that may be supplied to the electric grid." In the event the Department determines that an owner or operator "fails to meet their burden of proving that the unit is complying with the restriction," the exemption under

Section 145.305(a) is lost. See *id.* § 145.305(c)(5)(ii). The proposed rulemaking, however, fails to expressly state the types of information or records that an owner or operator would need to retain in order to demonstrate compliance.

Response: The Department acknowledges this comment. As with any permit condition, the owner or operator will need to be able to sufficiently show that the condition allowing the unit to qualify for the exemption has been satisfied.

336. Comment: The commentator requests that the Board revise the proposed rulemaking to make clear that owners and operators of previously exempted EGUs are only required to obtain and hold CO_2 allowances for the affected EGU as measured by the percentage of output that exceeds the applicable percentage.

Response: The Department acknowledges this comment and disagrees with the suggested revision. If the limited exemption is exceeded, the EGU must fully comply with this final-form rulemaking.

337. Comment: The commentator states that as the applicable document retention period under Section 145.305(c) is ten years, the proposed rulemaking leaves open the question of whether the Department would seek to retroactively enforce a compliance obligation on owners and operators of exempt EGUs. Given the potentially high costs associated with losing an exemption, clarification on these points is again crucial for both providing regulatory certainty to the regulated community and for reducing potentially conflicting interpretations in the event the proposed rulemaking is finalized.

Response: The Department acknowledges this comment. As stated in the Annex for this final-form rulemaking, the Department may, in writing, extend the 10-year period for keeping records, at any time prior to the end of the period.

338. Comment: The commentator states that the RGGI program compliance should begin for a facility commencing with the first three (3) year control period (3 years) following commercial operation of the facility is fully operational and the Title V permit is application filed. This would allow facilities to begin RGGI program compliance after the initial startup and shakedown period aligned with normal operations. It also allows the facility and ones like it to be accounted for accurately during a full control period.

Response: The Department acknowledges this comment. The compliance dates included on proposed are retained in this final-form rulemaking.

339. Comment: The commentator requests that the Department provide unencumbered carbon allowance allocations for the first year of a facility's startup period analogous to U.S. EPA's Acid Rain Program.

Response: The Department acknowledges this comment and disagrees with the suggestion. The Department does not deem that provision necessary to maintain the low-cost nature of this final-

form rulemaking. Furthermore, the Department does not deem the startup period of a facility as requiring special consideration in design of this final-form rulemaking.

Comment: Further, the Department should also expressly state in terms of compliance obligations that should a non-EGU CHP or cogeneration facility that is supporting manufacturing exceed the sales threshold, the unit shall only be required to retire emissions offset credits equivalent to the emissions associated with the sales or output above the threshold, not all emissions for one given year. There may be certain circumstances, such as an extreme weather event or a pandemic, in which circumstances beyond management's control may dictate that a manufacturing facility be required to shut down a line or sell additional power to the grid.

Response: The Department acknowledges this comment and disagrees with the suggested revision as it recommends that the Department allow exempted facilities to not have to comply with a permit condition. If the limited exemption is exceeded, the EGU must fully comply with this final-form rulemaking.

340. Comment: The commentator states that the Department does not align the RGGI rulemaking with the federal non-EGU definition, and the Department should recognize the annual net-electric sales limit of ten percent, as proposed, presents substantial compliance risk for CHP units. It is our understanding that should a CHP unit in any given year sell more than ten percent of net-electricity production, the unit will be liable for all CO_2 emissions produced in that given year, not just the emissions associated with the production in excess of ten percent. The final rulemaking should clarify that only the increases associated with sales above ten percent should trigger compliance obligations.

Response: The Department acknowledges this comment and disagrees with the suggested revision. If the limited exemption is exceeded, the EGU must fully comply with this final-form rulemaking. However, in addition to the limited exemption, the Department includes two tiers for retiring CO_2 allowances on behalf of a CHP unit under the CHP set-aside.

Multistate CO_2 Allowance Auctions

341. Comment: The commentator states that Pennsylvania should auction the remaining allowances. A key element of the RGGI program is the investment of auction proceeds. Thus, the commentator supports the Department's proposal to auction the vast majority of allowances, with the proceeds to be invested in ways that further reduce emissions.

Response: The Department acknowledges this comment. The vast majority of CO_2 allowances will be auctioned, and the auction proceeds will be used in a manner consistent with the APCA and to fulfill the purpose of this final-form rulemaking.

342. Comment: The commentator supports the auction of allowances included in the proposed rulemaking.

Response: The Department thanks the commentator for their support of this rulemaking.

343. Comment: The Board should consider several modifications to strengthen the proposed regulation. The proposed regulation should provide for an initial Pennsylvania-only auction with a reserve price to assure that allowance prices do not crash and base future yearly budgets based on the number of allowances that clear that auction.

Response: The Department acknowledges this comment. This Commonwealth will participate in multistate auctions conducted by RGGI, Inc. in accordance with §§ 145.401—145.409 of this final-form rulemaking.

344. Comment: The law and regulations governing use of the Clean Air Fund support the types of uses of auction proceeds that will generate jobs and promote environmental justice while further reducing GHG emissions. The Department contemplates use of the Fund in this manner.

Response: As stated in this final-form rulemaking, the multistate auction proceeds will be deposited in the Department's Clean Air Fund and used to further eliminate air pollution as authorized under the APCA. The Department's authority under the APCA includes using the auction proceeds to reduce GHG emissions in furtherance of the purpose of this final-form rulemaking. The investment of the auction proceeds will be discussed in a separate Investment Plan, which will be available for public comment later in the summer of 2021.

345. Comment: The commentator states that Pennsylvania should not allow transfers of RGGI proceeds into the general fund. Such transfers are discouraged by the RGGI model legislation and would inspire a negative public reaction, as they did in New York, Connecticut, and New Jersey. Moreover, transfers to the general fund would be inconsistent with RGGI's primary purpose and goal -- fighting climate change.

Response: The Department does not have the authority to deposit the multistate auction proceeds in the Commonwealth's General Fund. As stated in this final-form rulemaking, the multistate auction proceeds will be deposited in the Department's Clean Air Fund and used to further eliminate air pollution as authorized under the APCA.

346. Comment: The commentator asks the Department to confirm that auction proceeds will augment and not supplant existing Clean Air Act funds.

Response: The commentator is correct. This final-form rulemaking will not replace existing funds in the Department's Clean Air Fund. The auction proceeds will be deposited in a subaccount within the Department's Clean Air Fund and used to further reduce air pollution in this Commonwealth, particularly GHG emissions.

347. Comment: The commentator submits that any investment programs resulting from this proposed rulemaking should remain exclusively under the jurisdiction and enforcement of the Department, and not the PUC.

Response: Auction proceeds as a result of RGGI participation would be deposited in the Clean Air Fund, which is managed by the Department.

348. Comment: The commentator states that similar to the Chesapeake Bay modeling, the commentator contends that without significant changes to tracking and communication with other agencies, the Department will not be able to properly track GHG reductions made outside of the RGGI funded projects and credit program. A lack of quantitative data integration across state grantmaking systems results in difficulty quantifying environmental benefits of PennVest, DCNR C2P2, Growing Greener, BAMR, and other programming. Funding needs applied to generating a system that can accurately and quantifiably track (from all funding sources) not only 1) number of trees planted, 2) acres planted, 3) linear feet planted, but also 4) dollars invested, 5) dollars leveraged, but also 6) emissions sequestered.

Response: The Department acknowledges this comment. The Department currently maintains a GHG emission inventory which is updated every year. The Department's GHG Inventory relies on the EPA's State Inventory Tool (SIT). The SIT is a model designed to help states develop GHG emissions inventories, consisting of 11 estimation modules applying a top-down approach to calculate GHG emissions, and one module to synthesize estimates across all modules. The Department also incorporates additional state-specific data. All of the modules examine direct GHG emissions, with the exception of the electricity consumption module which estimates indirect GHG emissions from electricity consumption. The methods used and the sectors covered are the same as those in the U.S. GHG Inventory. Tracking emissions reductions from various programs beyond this final-form rulemaking are outside the scope of this final-form rulemaking.

349. Comment: The commentator states investment plan envisioned by the Department is an integral component to the proposed rulemaking. However, the Department has not yet published it for comment and has announced it intends to do so outside of this comment docket. The proposed rulemaking should not move forward until the investment plan is prepared and subject to simultaneous comment.

Response: The Department acknowledges this comment. The investment of the auction proceeds will be discussed in a separate Investment Plan, which will be available for public comment later this summer. The Department has committed to finalizing the investment plan prior to the implementation of this final-form rulemaking.

350. Comment: The commentator states the proposed rulemaking should be revised to include essential protections for Pennsylvania energy consumers, including procedures to formally withdraw Pennsylvania from RGGI in response to damaging energy price fluctuations, the loss of energy exports, or revisions to the RGGI Model Rule inconsistent with Pennsylvania's public policy objectives.

Response: There are some existing regulatory protections for RGGI participating state energy consumers which are included in the model rule. For example, there is a Cost Containment Reserve (CCR) whereby if allowance prices exceed the established range, then the CCR would be triggered thereby releasing additional allowances into the market in order to suppress allowance prices, a consumer protection mechanism. Additionally, in § 145.401 (relating to auction of CO_2 allowances), the Board includes a provision for the Department to participate in multistate CO_2 allowance auctions in coordination with other participating states based on specific conditions. First, a multistate auction capability and process must be in place for

the participating states. A multistate auction must also provide benefits to this Commonwealth that meet or exceed the benefits conferred on this Commonwealth through a Pennsylvania-run auction process. The criteria that the Department will use to determine if the multistate auction "meets or exceeds the benefits" of a Pennsylvania-run auction are whether the auction results in reduced emissions and environmental, public health and welfare, and economic benefits. Additionally, the multistate auction process must be consistent with the process described in this final-form rulemaking and include monitoring of each CO_2 allowance auction by an independent market monitor. Since the multistate auctions conducted by RGGI, Inc. satisfy all four of the conditions, the Department will participate in the multistate auctions. However, the Board also states that if the Department finds these four conditions are no longer met, the Department may determine to conduct a Pennsylvania-run auction. By including the ability to conduct a Pennsylvania-run action in this final-form rulemaking, the Board provides for flexibility in case the benefits of the multistate auctions diminish in the future.

Modeling & Data Analysis

351. Comment: The commentator states that the modeling was not conducted in time to account for changes to the economy and the power sector as a result of the COVID-19 pandemic, and therefore the Department should revisit the modeling results.

Response: The Department conducted a second round of modeling to ensure that the modeling was as up to date as possible, and, among other things, the modeling accounted for changes as a result of COVID-19. In February of 2021, the Department updated the power sector modeling assumptions and inputs previously included in the 2020 round of modeling. These assumptions and inputs include the following: 2021 PJM electricity demand forecast, 2021 AEO Natural Gas Prices, updated capacity additions and retirements, updated technology costs and revisions to state law and policies which encompasses the new in-state generation requirement for Tier II resources under the Alternative Energy Portfolio Standards Act (73 P.S. §§ 1648.1—1648.8), as amended by 66 Pa.C.S. § 2814.

Most notably, the difference in the modeling assumptions between 2020 and 2021 was the demand forecast for electricity. As a direct impact of the COVID-19 pandemic, the projections for what the future demand for electricity would be were below the 2020 projections, which had been made prior to the onset of the pandemic. In summary, though the original 2020 modeling did not account for impacts of the COVID-19 pandemic, the updated 2021 modeling conducted through updated assumptions includes those impacts.

352. Comment: The commentator states that the modeling did not have a wide enough scope.

Response: The Department disagrees because the scope of the modeling, which included power sector, economic and health benefits calculations, was adequate to assist in analyzing this final-form rulemaking.

353. Comment: The commentator states that there have been allegations of conflict on the part of the consultants in developing modeling. The commentator states that ICF International regularly engaged in lobbying practices as a signatory on advocacy letters in support of RGGI before the both the CAC and the Board. Additionally, ICF International appeared on a letter that was sent to the General Assembly opposing House Bill 2025, a bill that would have further solidified the legislative approval of regulations similar to RGGI.

Response: The Department disagrees with this characterization. In July of 2020, businesses supporting the passage of this final-form rulemaking sent a letter to members of the Board. The letter of support was representative of the widespread business support for this final-form rulemaking and included a broad coalition of businesses across Pennsylvania. The letter did include the use of ICF's logo, however ICF has repeatedly clarified that it had no knowledge of and did not give permission for its name to be used in a letter supporting the final-form rulemaking. ICF added that had they been asked to participate, they would have declined as ICF is a non-partisan, non-political company.

Further, the Keystone Energy Efficiency Alliance, who authored the letter, sent a revised letter to this Board that did not have ICF's logo and further clarified that the remaining signatories had authorized the use of the logo in support of this final-form rulemaking.

The Department has full confidence in ICF's modeling capabilities and the results that they produced. ICF is an unbiased modeling consultant who has been used by State and National governments, organizations, and companies to conduct power sector modeling. In addition, the Department had significant oversight over the modeling process. The Department met with ICF on a weekly basis and all of the data and assumptions came from the Department and reputable sources such as EPA's Clean Air Market Division and the U.S. Energy Information Administration.

Further, the Department has been transparent in terms of the modeling and the inputs and assumptions that went into the modeling, both for the original 2020 modeling and the updated 2021 modeling runs as well. The underlying data and assumptions are sound. All modeling results, assumptions and raw data have been made available to the public through the Department's website in several areas and have been presented and discussed with thousands of stakeholders through the course of this rulemaking. The Department has also held individual meetings with stakeholders and the modeling contractor when requested to make sure that all questions and inquiries regarding the modeling were thoroughly answered. The modeling information posted to the Department's website consists of comprehensive spreadsheets containing all the assumptions and raw data upon which the Department's analyses and conclusions were based.

The Department also compiled a Pennsylvania RGGI Modeling Report which provides a detailed explanation of modeling processes, assumptions, inputs, and outputs to provide a broad understanding of the results. This summary report, all the modeling results and recordings of the public webinars providing further explanation of key results are available on the Department's RGGI webpage located at www.dep.pa.gov/RGGI.

354. Comment: The commentator states that, as EPA noted in a 2016 technical support document, the social cost of carbon (in 2007 dollars) ranges from $12 per ton in 2020 to $212 per ton in 2050. The Department's modeling projects RGGI credit prices, should PA join, will fluctuate between $5 and $7 per ton. It is apparent that if the Department's modeling is accurate RGGI credit prices will not be greater than even the lowest social cost of a ton of carbon. Given that much of the Department's rationale in justifying this regulation is to avoid impacts from greenhouse gas emissions, it is not apparent how establishing a tax that is less than the assumed economic damages is rational. Further, the commentator is not aware that the Department or the administration has, as a matter of policy established through a process that involved public comment, a preferred value for the social cost of carbon to inform air quality rulemaking.

Response: The Department acknowledges that there is a social cost of carbon pollution. The Department referenced a social cost of carbon in its Climate Action Plan, publish in 2018, that details many recommendations to reduce GHG emissions across all sectors. See Pennsylvania Climate Action Plan
http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%

20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

In that document, the Department used a social cost of carbon of $95. That social cost of carbon is the 2050 social cost of carbon assuming a 2.5 percent discount rate. That social cost of carbon was used only as a comparison in evaluation of GHG emission reduction strategies and not to inform an air quality rulemaking.

The Department does not equate an allowance price to the social cost of carbon. Further, this final-form rulemaking does not factor the social cost of carbon into the allowance price. If CO_2 allowances are purchased through the multistate auctions, the owner or operator of a CO_2 budget unit will pay the auction allowance price for each ton of CO_2 the unit emits. Reserved CO_2 CCR allowances can be released into the auction if allowance prices exceed predefined price levels, meaning emission reduction costs are higher than projected. The total cost of purchasing allowances will therefore vary per unit based on how much CO_2 the unit emits and the allowance price. The owner or operator may also purchase CO_2 allowances on the secondary market where they could potentially purchase CO_2 allowances at a price lower than the RGGI allowance price. CO_2 allowances also have no expiration date and can be acquired and banked to defray future compliance costs.

Lastly, the Department opposes the assertion that this final-form rulemaking is a tax. The auction proceeds amount to fees authorized under section 6.3(a) of the APCA and not an illegal tax. Section 6.3(a) of the APCA provides the Department with the authority to establish fees to support the air pollution control program. The Department is limited by its existing statutory authority under Section 9.2(a) of the APCA (35 P.S. § 4009.2) to only use fees for "the elimination of air pollution." Since the auction proceeds generated as a result of this final-form rulemaking would be used to reduce GHG emissions, further eliminating air pollution, the fees would be used to support the "air pollution control program" in accordance with section 6.3(a) of the APCA. There is also existing case law that supports the auction proceeds are a fee, including *National Biscuit Company v. Philadelphia*, 98 A.2d 182 (Pa. 1953) and *White v. Com. Medical Professional Liability*, 571 A.2d 9 (Pa. Cmwlth. 1990).

Under RGGI, regulated EGUs are required to purchase one CO_2 allowance per ton of CO_2 they emit through multistate auctions or on the secondary market. The proceeds of the multistate auctions and the secondary market are then provided back to the participating states. The purchase of CO_2 allowances generating auction proceeds is a fee because these purchases are one component of the "regulatory measures intended to cover the cost of administering a regulatory scheme authorized under the police power of the government." See *City of Philadelphia v. Southeastern Pennsylvania Transp. Auth.*, 303 A.2d 247, 251 (1973). As mentioned previously, RGGI provides a "two-prong" approach to reducing CO_2 emissions from fossil fuel-fired EGUs. The second prong involves the proper investment of the auction proceeds to further reduce CO_2 emissions, as well as other harmful GHG emissions. This investment therefore fulfills the purpose and administration of this final-form rulemaking. This final-form rulemaking does not create a tax which is a "revenue-producing measure authorized under the taxing power of the government." *Id.* The intent of RGGI is not to generate revenue for general government or public purposes, but to achieve a common goal of reducing CO_2 emissions from EGUs.

Moreover, none of the eleven participating states consider their CO_2 budget trading program regulations, or the RGGI program overall, as establishing a tax. Also, no court has determined that RGGI amounts to a tax. Recently in *California Chamber of Commerce v. State Air Res. Bd.*, 10 Cal. App. 5th 604, 650, 216 Cal. Rptr. 3d 694, 728 (2017), the California court determined that the California Air Resource Board's cap and invest program did not create a tax.

355. Comment: The commentator states it is important to understand that: (i) CO_2 emissions from the electric generators, other industrial stationary sources and mobile sources comprise about 85 percent of the current total state-wide CO_2 emissions, and the percentage contributions are similar to one another for these 3 source categories. (ii) It is inappropriate and unreasonable for the Department to assign the entire burden of emissions reductions desired by 2030 on the electric generators. This industry has no direct control over CO_2 emissions from other industrial sources and mobile sources. (iii) Emissions inventory data submitted annually to U.S. EPA clearly shows that CO_2 emission reductions from the Pennsylvania electric generators alone and combined with CO_2 emissions from other industrial stationary sources have already exceeded the 26 percent reduction goal specified in Executive Order 2019- 01. 49 Pa.B. 438 (Feb. 2, 2019). CO_2 emission reductions from the electric generators are expected to decrease throughout this decade without a RGGI Rule in effect because the coal-fired units that are expected to retire by 2030 will be replaced by new natural gas-fired units (which results in a 2:1 reduction in CO_2 emissions and some co-reduction of criteria pollutants such as NO_x, SO_2 and $PM_{2.5}$).

Response: The Department disagrees with the characterization that the Department is assigning the entire burden of emissions reductions by 2030 on the electricity sector. The Department recognizes that this final-form rulemaking alone will not achieve Governor Wolf's GHG emissions reduction goals and emphasizes that this final-form rulemaking is part of a suite of emissions reduction efforts currently underway or planned in this Commonwealth. Moreover, this Commonwealth has the fifth largest CO_2 emissions from the electricity sector of all states, proving the need for additional reductions from this sector. Further, the Department's most recent statewide GHG Inventory shows that this Commonwealth has reduced gross GHG emissions approximately 18% since 2005, short approximately 8% from the reductions needed by 2025. Methods for achieving emissions reductions across all sectors of the economy are outlined in the Department's Climate Action Plan, release in 2018, that details many recommendations to reduce GHG emissions across all sectors. See Pennsylvania Climate Action Plan http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1454161&DocName=2018%20PA%20CLIMATE%20ACTION%20PLAN.PDF%20%20%20%3cspan%20style%3D%22color:blue%3b%22%3e%28NEW%29%3c/span%3e.

356. Comment: The commentator states that the Department indicated that average Pennsylvania temperatures are expected to increase 5.4°F by 2050 yet is silent on what the expected temperature increase (or decrease) will be as a direct result from RGGI participation.

Response: Climate change is a global phenomenon, and carbon emissions and their environmental impacts cross state and national boundaries. It is not possible to quantify the temperature increase avoided by a single subnational government's participation in a cap and

trade mechanism to limit emissions. Participation in RGGI allows this Commonwealth to contribute to an international effort to draw down carbon emissions using a market-driven approach that supports businesses and communities in the transition to a lower-carbon economy. The Department recognizes that Pennsylvania's participation in RGGI is only part of what will need to be a global effort to mitigate climate change and avoid the worst of its impacts.

357. Comment: The commentator asks though RGGI states have shown economic gains and valuation of credits over time, what assurances does Pennsylvania have that similar monetary gains are sustainable with our participation? Additionally, how are credits safeguarded from devaluation or market collapse such as Delaware and New Jersey's Renewable Energy Certificates (RECs) or PennVest's nutrient credits? Does the reserve credit account truly stabilize credit pricing?

Response: Several analyses have been completed regarding the more than a decade of state participation in RGGI. While real-world studies, such as that completed by the Analysis Group, have shown that RGGI has a proven track record of environmental benefits and economic gains, the Department's power sector and economic modeling have shown the same results. The Department's 2020 modeling efforts showed that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, this final-form rulemaking protects the public health, safety and welfare and the environment from harmful CO_2 pollution from fossil fuel-fired EGUs. For instance, the Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. These modeling results further bolster the real-world results that have been experienced by the RGGI states.

Additionally, there are market mechanisms, such as the Cost Containment Reserve (CCR) and the Emissions Containment Reserve (ECR) which when a certain price floor or ceiling is triggered, allowances are either withheld or released to keep the allowance price within a certain, predictable price band. This as mentioned safeguards the devaluation of allowances and also protects from higher than projected emissions reductions costs.

358. Comment: Given that RGGI states may adjust the program's goals and model rule this year, the commentator encourages EQB to incorporate an off-ramp or safety valve in the state's final rule to hedge against unexpected or undesired outcomes, such as duplication of obligations from federal or regional energy policies, the state losing its status as a net exporter, or significant cost increases. The commentator also notes some RGGI states have taken action to worsen the operating climate in Pennsylvania through various regulatory proceedings.

Response: On February 2, 2021, the RGGI states issued a press release outlining the tentative approach and timing to the upcoming Third Program Review. In this release they outlined that the RGGI participating states intended to publish a preliminary Program Review schedule in late summer 2021. Their proposed plan is to hold listening sessions late this year, and early next year to solicit stakeholder feedback and then to embark upon policy deliberations and technical analyses in 2022. Pennsylvania stakeholders will have an opportunity to participate in these conversations, and the process will not impact the regulatory timeline for this final-form

rulemaking. The Department also notes that this Commonwealth is not signing a binding agreement to participate in RGGI and states may withdraw from participation at any time. It is unclear what the commentator means by "various regulatory proceedings" by some RGGI states. If the commentator means to reference the 184(c) petitions, the Department notes that those are being addressed separately from this final-form rulemaking.

Economic Modeling

359. Comment: The commentator states that the Department's modeling effort did not include impacts to the economy.

Response: The Department disagrees. The Department estimates that this final-form rulemaking will generate program proceeds from the sale of CO_2 allowances in multistate auctions. These auction proceeds are then available to the Department to be invested in programs and projects that would further eliminate air pollution in this Commonwealth. For the purposes of modeling the impacts of investing the proceeds, assumptions were made that the proceeds would be distributed to support the program so that 31 percent are invested in energy efficiency, 32 percent in renewable energy and 31 percent in GHG abatement with 6 percent remaining to cover any costs related to management of the CO_2 Budget Trading Program, 5 percent for the Department and 1 percent for RGGI, Inc.

Using these inputs, along with other economic data, the Department modeled the macroeconomic impacts of those power sector changes on the overall state economy using a customized version of the REMI Policy Insight Plus model. The REMI Policy Insight Plus model is used by government agencies (including most U.S. state governments), consulting firms, nonprofit institutions, universities, and public utilities to forecast economic impacts of policy decisions. Model simulations estimate comprehensive economic and demographic effects in wide-ranging initiatives, such as: economic impact analysis; policies and programs for economic development, infrastructure, environment, energy and natural resources; and state and local tax changes. Articles about the model equations and research findings have been published in professional national journals, including the American Economic Review, The Review of Economic Statistics, the Journal of Regional Science, and the International Regional Science Review.

The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product.

Additionally, an independent study by Penn State's Center for Environmental Law and Policy confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. See Penn State Center for Energy Law and Policy, Prospects for Pennsylvania in the Regional Greenhouse Gas Initiative Working Paper, December 2020, https://celp.psu.edu/files/2021/01/CELP_RGGI.pdf. In particular, the Penn State study indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefits to this Commonwealth.

360. Comment: The commentator states that the Department's modeling does not account for lost tax revenues from reduced coal mining and natural gas production.

Response: The Department used the REMI's PI+ model, a structural economic forecasting and policy analysis model that integrates several analytic techniques including input-output, computable general equilibrium, econometric, and economic geography methodologies. REMI is a dynamic model, with forecasts and simulations to include behavioral responses to wage, price, and other economic factors. It can be used for estimating national, regional, and state-level impacts of policy changes. The dynamic modeling framework supports the option to forecast how changes in the economy, and adjustments to those changes, will occur on an annual basis. REMI functions by forecasting two states of the world. The first is the state of the regional economy under some standard assumptions of employment and population changes. This first forecast is referred to as the control forecast. The second forecast, in which the model user incorporates the desired policy changes, is referred to as the alternative forecast or the simulation. The difference between the two forecasts would be the estimated effect of the policy.

The REMI model projects the total economic effects of policy initiatives, as defined by changes in key policy variables such as change in output or prices (e.g., electricity or natural gas production and prices), investments (e.g., in energy efficiency or new capacity), and changes in production costs, among other variables.

The REMI models separate industry categories according to the North American Industry Classification System (NAICS). NAICS is the standard classification system for business establishments used by Federal agencies. When selecting a REMI model, the end user identifies the level of granularity required for the analysis. A 23-sector model would contain the industries separated at the 2-digit NAICS, while a 70-sector model would contain industries mapping to 3-digit NAICS (providing more granularity). Key outputs include gross state product (GSP), disposable personal income, and employment impacts. The Department's analysis uses a one region (PA), 70-sector model of REMI PI+ version 2.3.5 to estimate the macroeconomic impacts. These macroeconomic impacts would include changes to certain sector productivity as a result of this final-form rulemaking, as well as the direct and indirect impacts from changes to productivity, such as decreased tax revenues.

361. Comment: The commentator states that the modeling included assumptions on use of program proceeds, including funds being used for investment in renewable energy. The commentator states that there should be further considerations when evaluating renewable energy sources such as reliability, material sourcing, and material disposal.

Response: The Department's modeling assumption for use of proceeds do not necessarily reflect the Department's intended use of the program proceeds, but reflect typical investments made by other RGGI states throughout the duration of the program. Considerations of other issues, outside of CO_2 emissions, around specific energy sources are outside the scope of this final-form rulemaking.

362. Comment: The commentator asks what population number(s) was/were used in modeling.

Response: The REMI model uses a combination of population estimates from the federal Bureau of Economic Analysis and the U.S. Census Bureau. The REMI model also uses a proprietary method to project future populations based on these historical data and other available projections. The population levels for each modeling scenario is publicly available at the Department's website. See "Economic Modeling" https://www.dep.pa.gov/Citizens/climate/Pages/RGGI.aspx.

363. Comment: The commentator asks if under Electric consumer impact, for consistency and ease of understanding what does "31%" translate to in dollars? Is "69%" equal to "$219M" or is "$219M" the total of "31%" and "69%"? Provide clarification to the total amount.

Response: The amount of program proceeds that were modeled to be invested into each category changes each year based on the investments of previous years. The model assumes 31 percent of the available program proceeds each year are invested in energy efficiency, 32 percent in renewable energy and 31 percent in GHG abatement with 6 percent remaining to cover any programmatic costs related to management of the CO_2 Budget Trading Program, 5 percent for the Department and 1 percent for RGGI, Inc. More information on how the investments were modeled is detailed in the Department's modeling report located at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf.

364. Comment: The commentator is interested in the Department's analysis and data supporting the notion that there will be positive impacts from RGGI – both economic and social – in low-income and underserved communities as a result of CO_2 reductions. Elaboration on whether this part of the issue has been studied and modeled and any corresponding results would help the public discourse on this important area, and the commentator requests the Department address this point in its response to comments.

Response: The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product. Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030 this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the RGGI participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest global economic consulting firms, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. In sum, RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

The Department recognizes the potential for economic impact on certain populations within this Commonwealth, particularly low-income ratepayers or communities who have been disproportionally impacted by air pollution. The Department will ensure that measures taken through this final-form rulemaking do not disproportionately impact the most vulnerable residents in this Commonwealth. The Department is focused on developing a strategy for the reinvestment of proceeds resulting from the auction of this Commonwealth's CO_2 allowances that ensures an equitable distribution of beneficial projects across this Commonwealth, with a focus on benefits for low-income consumers, environmental justice communities and communities impacted by this Commonwealth's transition to a new energy future.

365. Comment: The commentator recommends the inclusion of predetermined reliability violation scenarios within the rulemaking that would require Pennsylvania to withdraw from participation in RGGI.

Response: The Department acknowledges the comment and disagrees with the recommendation, as the Annex A already includes conditions for this Commonwealth to participate in the multistate auctions. The Department does not anticipate any electrical grid reliability issues as a result of this final-form rulemaking.

Power Sector Modeling

366. Comment: The commentator states that the Department does not apply the same criteria in its projections of expected new natural gas generation and new renewable energy generation in its modeling.

Response: The Department used fixed criteria for projections of added capacity which were constant across all types of generation. For this analysis, the Department specified the sources for these assumptions, based on publicly available information and sources adopted for previous RGGI analyses. This information includes public announcements and other public sources, such as ISO project planning queues, etc. In this case, the Department further refined the list of planned facilities, to include only those that were considered "firm capacity additions" in this Commonwealth, based on whether projects met two out of three criteria including, fully funded, fully permitted, or had a power purchase agreement in place for the majority of the generation. These criteria were the same criteria against which all future projects were evaluated, despite their generation source.

367. Comment: The Department's power price modeling does not account for the significant build-out in new transmission and integration that will be required for the magnitude of new renewable generation that is assumed in ICF's modeling. The cost of new transmission will be passed on to the electric ratepayers, therefore the Department understated the impact on retail rates of Pennsylvania joining RGGI.

Response: The Department disagrees. The IPM is a dynamic linear programming model that generates optimal decisions under the assumption of perfect foresight. It determines the least-cost method of meeting energy and peak demand requirements over a specified period. In its solution, the model considers several key operating or regulatory constraints that are placed on

the power, emissions, and fuel markets. The constraints include, but are not limited to, emission limits, transmission capabilities, renewable generation requirements, and fuel market constraints.

The IPM represents the least-cost arrangement of electricity supply (capacity and generation) within each model region to meet assumed future load (electricity demand) while constrained by a transmission network of bulk transfer limitations on interregional power flows. All utility-owned existing electric generating units, including renewable resources, as well as independent power producers and cogeneration facilities selling electricity to the grid, are modeled.

368. Comment: The commentator states that given the proposed rulemaking would not become effective until 2022, it is unclear why the Department includes emissions reductions between 2019-2021 in its results.

Response: The Department compared two modeling cases, the Reference Case and the Policy Case, to project the impacts of RGGI participation on the power sector. This includes impacts on electric transmission and generation and related electric sector emissions, among other outputs. When this modeling was first completed in 2020 for the proposed rulemaking, the most recent year of available data was 2019. Therefore, the 2019 data was included as the base year in the 2020 round of modeling. While the time period for the IPM analysis was 2019 through 2030, the modeling specifically provided projections for 2020, 2022, 2025, 2028, and 2030. When the modeling was updated in early 2021 for this final-form rulemaking, the most recent year of available data was 2020. Therefore, the 2020 data was included as the base year in the 2021 round of modeling and as such the time period for the updated IPM analysis was 2020 through 2030.

The time period for the IPM analysis includes years prior to the implementation of this final-form rulemaking for two reasons. First, as stated, prior years are included in the modeling time horizon as they serve as the base years- reflecting actual statistics for those years as they have already occurred. Second, the Policy Case assumes this final-form rulemaking will be in effect in 2022, so the modeling needs to account for certain assumptions, for example legal or policy requirements that are projected to change, in years before 2022. This accounts for any differences between the Reference Case and the Policy Case in years prior to 2022. Lastly, these assumptions are not only a factor in the Department's modeling, but can also be seen by the functioning of the actual energy market. For example, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations.

369. Comment: The commentator states that it is unclear why the Department did not include a year-by-year breakdown of emissions in the results.

Response: While the modeling evaluated the time horizon from 2019-2030 in the 2020 modeling and 2020-2030 in the 2021 modeling, the reporting years that were generated by the model were 2020, 2022, 2025, 2028, and 2030. These models analyze and synthesize a considerable amount of data and the model outputs are limited to these years in order to minimize the time for the models to run, while providing adequate information for analysis. Using this method, it is

possible to understand the key trends and patterns of the results, without having to expend additional time and resources to receive results for every single year. While individual year data may not be available for each criterion, summary statistics are available for the entire time horizon to facilitate comparisons between states, years and modeling runs.

370. Comment: The commentator states that the forecasted amount of electrical generation in the Commonwealth for the years 2022 through 2028 is significantly greater than any annual historic generation realized in the past 20 years, whereas the forecasted amount of electrical generation in the Commonwealth for the same years for the Policy Case is consistent with recent historic generation. Consequently, the commentator believes that the electrical generation and resultant CO_2 emissions in those years have biased the impact of implementing RGGI in the Commonwealth. The commentator states that they have requested the Department to explain this issue multiple times.

Response: The Department's modeling inputs, assumptions, and projected changes to capacity have been made publicly available and explained at multiple advisory committee meetings, online webinars and individual conversations when requested. The electric generation inputs for both the Policy Case and the Reference Case were identical, therefore any changes to generation levels in the modeling years between the modeling cases were a result of the model's choices based on the least-cost options and other factors, not inputs from the Department.

Further, the Department conducted updated modeling using revised assumptions, including 2021 electric demand projections and updated projected capacity additions, which led to electric generation levels in the Reference Case being similar to recent years. Additionally, by 2030, the difference in electric generation levels between the Policy Case and Reference Case in the updated modeling results is approximately 5 percent.

371. Comment: The commentator states that the Department does not explain why it assumes all allowances will be purchased, as the amount of emissions from Pennsylvania's applicable facilities is projected to be less than the allowances in the proposed rulemaking's effective budget.

Response: The Department expects the number of allowances in the "Effective Budget", as detailed in Table 7 of the Regulatory Analysis Form, to be purchased through the auction process. The estimated amount of CO_2 allowances that will be entered into the RGGI market as a result of this final-form rulemaking can be purchased by affected facilities in any RGGI state. Therefore, the amount of emissions from affected facilities in this Commonwealth may not always align with the amount of CO_2 allowances purchased. It is the nature of the regional cap and a feature of the RGGI program that has helped it achieve success in cost-effectively reducing emissions.

372. Comment: The commentator states that for Henry Hub prices, ICF used an average of the EIA Annual Energy Outlook (AEO) Reference Case and High Gas Resource Case (a case with low natural gas prices). The resulting Henry Hub price outlook rose in nominal dollars from $3.07/MMBTU in 2020 to $3.85/MMBTU in 2030. For the five years for which ICF provided data – 2020, 2022, 2025, 2028, and 2030 – Henry Hub prices averaged $3.28/MMBTU. Prices

for the interceding years were not provided. ICF did not provide an explanation for why it used an average of the AEO's Reference Case and High Gas Resource Case rather than the Reference Case, nor was a sensitivity analysis performed.

Response: The Department's modeling includes natural gas prices that are the average of the Annual Energy Outlook (AEO) Reference Case and the High Gas Resources Case which are published annually by the EIA. The AEO Reference Case is used as a starting point, and then averaged with the High Gas Resources Case because of this Commonwealth's location within the shale region. This hybrid method is used because neither the AEO Reference Case nor the AEO High Gas Resources Case are singularly representative of gas prices in this Commonwealth. Averaged together, the two cases provide as accurate a forecast as possible for natural gas prices in this Commonwealth. However, the Department notes that these are forecasted prices and there is a possibility that future prices could vary. Lastly, the Department conducted a natural gas sensitivity case to estimate avoided emissions between 2021-2030, the results of which were detailed at the May 17th Air Quality Technical Advisory Committee meeting and are available at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2021/5-17-21/FINAL_AQTAC_PA_CO2_Budget_Trading_Program.pdf.

373. Comment: The commentator states that the Department's modeling relied on the Henry Hub price for its natural gas pricing inputs, which is typically a significantly higher estimate for Pennsylvania's natural gas prices.

Response: The Department's modeling includes natural gas prices that are the average of the Annual Energy Outlook (AEO) Reference Case and the High Gas Resources Case which are published annually by the EIA. The AEO Reference Case is used as a starting point, and then averaged with the High Gas Resources Case because of this Commonwealth's location within the shale region. This hybrid method is used because neither the AEO Reference Case nor the AEO High Gas Resources Case are singularly representative of gas prices in this Commonwealth. Averaged together, the two cases provide as accurate a forecast as possible for natural gas prices in this Commonwealth. However, the Department notes that these are forecasted prices and there is a possibility that future prices could vary. Lastly, the Department conducted a natural gas sensitivity case to estimate avoided emissions between 2021-2030, the results of which were detailed at the May 17th Air Quality Technical Advisory Committee meeting and are available at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2021/5-17-21/FINAL_AQTAC_PA_CO2_Budget_Trading_Program.pdf.

374. Comment: The commentator states that given the sensitivity of power markets and RGGI compliance costs to natural gas prices, the ICF power sector modeling should have contained a natural gas price sensitivity analysis.

Response: The Department conducted a natural gas sensitivity case to estimate avoided emissions between 2021-2030, the results of which were detailed at the May 17th Air Quality

Technical Advisory Committee meeting and available at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2021/5-17-21/FINAL_AQTAC_PA_CO2_Budget_Trading_Program.pdf.

375. Comment: The commentator believes that one possible reason the Department used the AEO gas pricing assumption is that low natural gas prices reduces the cost of compliance with RGGI. The commentator states that low natural gas prices produce more coal-to-gas switching and reduce the demand for RGGI allowances. If natural gas prices are higher, coal-to-gas switching is reversed and the demand for RGGI allowances increases because of coal's higher carbon intensity. This results in higher allowance prices, which flow through to higher wholesale power prices and higher retail electricity rates.

Response: The Department disagrees. The reason for the natural gas price assumption is detailed in responses above.

376. Comment: The commentator suggests that the modelling did not make any analysis of the land use implications of mineral extraction for providing materials for construction of alternative power sources. The comment states that no land use study was considered for land occupation and power line construction of alternative generation facilities.

Response: The mineral extraction and land use requirements related to particular sources of electric power or electric transmission was outside the scope of the modeling related to this final-form rulemaking.

377. Comment: The commentator states that there did not seem to be an analysis on potential dependence on foreign sources of materials, specifically around manufacturing of renewable energy, including issues related to how specific materials were extracted such as wages and treatment of workers.

Response: The focus of the final-form rulemaking is the reduction of CO_2 emissions from fossil fuel-fired EGUs, and as such anything else is outside of the scope of the rulemaking.

378. Comment: The commentator states that there was not an analysis of security risk incurred by dependence on foreign sources for materials unavailable in the U.S.

Response: Those issues are outside the scope of this final-form rulemaking and therefore were not included in the analysis.

379. Comment: The commentator asks what calculations were used in modeling to account for environmental refugees moving to Pennsylvania to avoid climate impacts from their current states of residence.

Response: The Department's modeling did not calculate environmental refugees moving to this Commonwealth as that is outside the scope of this final-form rulemaking.

380. Comment: The commentator states that the Department's modeling did not include how PJM Interconnection's capacity market pricing rule known as the Minimum Offer Price Rule (or, "MOPR") would affect the deployment of renewables in PJM and, more specifically, the impact of joining RGGI on Pennsylvania.

Response: The Department conducted its 2020 modeling prior to any resolution between the Federal Energy Regulatory Commission (FERC) and PJM Interconnection on how the MOPR would be implemented. In February 2021 the FERC took action that clarified MOPR implementation and allowing PJM Interconnection to move forward with its capacity auction. See FERC Docket Order EL16-49-006 https://elibrary.ferc.gov/eLibrary/filelist?document_id=14929833&optimized=false. At the time the Department was conducting 2021 modeling, it was unclear what the impact the MOPR would have on the energy market so it could not adequately be modeled. Further, there are multiple petitions challenging FERC's PJM MOPR order that are proceeding through the U.S. Court of Appeals, further hindering the ability of the Department to accurately incorporate the MOPR into the modeling.

381. Comment: The commentator states that the Department's modeling still fails to recognize the significant potential for price volatility due to lack of on-site storage capacity and the higher risk to potential cyber and physical disruptions to pipeline delivery.

Response: The Department's modeling incorporates resource adequacy, providing enough electricity to meet demand, and the associated costs of that electrical power. The risk of cyber or physical disruptions are outside the scope of this final-form rulemaking.

382. Comment: The commentator states that the Department's modeling results appear to assume 7.9 million allowances set aside for waste coal generation instead of 9.3 million.

Response: The Department acknowledges that this was an error, not in the model but merely in the assumptions portion of the modeling-related spreadsheet which has since been corrected.

383. Comment: The commentator notes that New York intends to amend applicability of its RGGI regulations to include electric generating units that have a nameplate capacity of 15 megawatts. The commentator states that the Department's modeling should contemplate the implications of New York's RGGI rule modifications.

Response: The Department considered the impacts of this applicability change for New York and determined that at the time of the modeling, that change would have minimal impact on the modeling results as the large majority of New York EGUs were already participating in the program.

384. Comment: The commentator states that the Department's modeling did not include the most updated inputs for Pennsylvania's energy efficiency policies, specifically the Act 129 program Phase IV updates.

Response: The Department's 2020 modeling inputs were entered into the model prior to the details of the Act 129 program Phase IV being finalized. The 2021 modeling was inclusive of the energy efficiency goals of Act 129's Phase IV.

385. Comment: The commentator states that as technology increases, there is a correlative rate of electric increase, and asks what factor was used to correlate this increase.

Response: The projected electricity load and peak demand used in the model are based on the PJM 2021 Demand Forecast.

386. Comment: The commentator states that the Department's modeled investments achieved eight million short tons of avoided CO_2 emissions during the modeling period, and that the primary consideration for program investments should be the amount of CO_2 reduced per dollar invested.

Response: The Department acknowledges this comment. The proceeds generated from this final-form rulemaking would be invested into programs that would reduce air pollution and create positive economic impacts in this Commonwealth. The use of program proceeds as a result of this final-form rulemaking are not included in the regulation itself. The Department is developing a draft plan for public comment outlining reinvestment options separate from this final-form rulemaking.

387. Comment: The commentator states that a proper analysis should include a pricing analysis for specific scenarios based upon PJM's best data.

Response: The modeling included the best data publicly available, which is detailed in the Department's modeling report at https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf.

388. Comment: The commentator states that there is a notable difference in emissions in 2022 between the Policy Case and the Reference Case and that the Department does not provide adequate explanation of the discrepancy. The commentator noted that the idea of the projected implementation of the proposed rulemaking is not an appropriate explanation of differences between Reference Case and Policy Case emissions for modeling years prior to 2023.

Response: The Department disagrees that the difference between the two cases is a discrepancy, rather it is the impact of this Commonwealth's participation in RGGI as a result of the proposed rulemaking. The Department compared two modeling cases, the Reference Case and the Policy Case, to help project the impacts of RGGI participation on electric transmission and generation and electric sector emissions, among others in this Commonwealth. The difference or the delta between the two cases is the impact of implementation of this rulemaking. As mentioned 2022 is a notable year as this would be the first year of implementation of this rulemaking in the Commonwealth, and when the requirement to acquire an allowance for each ton of CO_2 emitted begins. As depicted by the modeling scenarios, the impact, especially in 2022 is significant.

As noted, the Reference Case and Policy Case include comparison years prior to the implementation year of 2022. When the 2020 modeling was completed, the most recent year of available data was 2019. Therefore, 2019 became the base year and was included as the first year of data in the 2020 modeling. When the modeling was updated in early 2021 for this final-form rulemaking, the most recent year of available data was 2020. Therefore, the 2020 became the base year for the update modeling and was included as the first year of data.

The time period for the IPM analysis includes years prior to the implementation of this final-form rulemaking for two reasons. First, as stated, the only actual available data for each round of modeling was either 2019 or 2020. Second, the Policy Case assumes this final-form rulemaking will be in effect in 2022, so the modeling needs to account for certain assumptions, for example legal or policy requirements that are projected to change, in the intervening years, between now and 2022. This accounts for any differences between the Reference Case and the Policy Case in years prior to 2022. Lastly, these assumptions are not only a factor in the Department's modeling, but can also be seen by the functioning of the actual energy market.

For example, on March 13, 2020, Energy Harbor, the owner of the Beaver Valley nuclear power plant, responsible for 1,845 MW of carbon free generation, withdrew its closure announcement, specifically citing this Commonwealth's intended participation in RGGI as a key determinant in continuing operations. This represents a significant amount of carbon free generation that would not be represented as generation in the reference case in 2020 (as they had submitted a deactivation notice) but does exist in the policy case in 2020 as the RGGI announcement was a contributing factor to that generation remaining online.

389. Comment: ICF's modeling did not project the price of RGGI allowances to reach above $7.00 until 2025, yet it did so this past December, rendering their modeling assumptions invalid.

Response: The Department disagrees. The Department acknowledges that the RGGI auction clearing prices in late 2020 and early 2021 had a higher price compared to the projected CO_2 allowance prices in the Department's 2020 modeling. The difference between projected CO_2 allowance prices and actual CO_2 allowance prices can be due to a number of factors, including the end of the RGGI three-year control period, the change of the Federal administration, the fact that Virginia began participating in RGGI at the start of 2021, among others. The IPM model generates a CO_2 allowance price based on actual market fundamentals, including the projected supply and demand of CO_2 allowances during the modeling period. However, the model does not take into account behavioral considerations such as auction bidder behavior and expectations. Bidder expectations can influence the CO_2 allowance price, and therefore lead to a difference from the projected CO_2 allowance price based on market mechanics alone. The Department does not rely on the power sector modeling as an exact prediction of future prices, but as an indicator of shifts or changes in trends as a result of this final-form rulemaking. Therefore, the Department does not consider recent short-term increases in allowance prices as an invalidation of the modeling.

390. Comment: The commentator states that the Department's modeling projects the ECR is triggered in 2022, however the ECR trigger price is much lower than recent auction clearing

prices. The commentator states that this causes the Department to underestimate the amount of allowances available in the market and thereby distort the overall modeling projections.

Response: The Department disagrees. See the response to the previous question.

391. Comment: The commentator states that ICF shows no electric battery storage installations in Pennsylvania. The commentator states that battery storage is needed to balance the grid when there is high penetration of intermittent renewables.

Response: The Department acknowledges the comment and notes that battery storage was not included in the modeling as the modeling focused on electric generating units within this Commonwealth, and was exclusive of battery storage considerations.

392. Comment: The commentator states that when the Department assembled its analysis, New Jersey and Virginia had not yet formally joined RGGI. Thus, the financial, operational and emissions implications from those two states' participation in light of their participation in RGGI and presence in PJM service territories were not included alongside an analysis of the impact upon Pennsylvania. This data is necessary to understand the effects of PA participation in RGGI upon electric generating units in all PJM states, including PA, and to allow the determination of the actual CO_2 and other pollutant emissions that will occur both with and without Pennsylvania's participation in RGGI. Detailed, state specific operations impacts for all of the electric generating units in all of the PJM states, assuming New Jersey and Virginia join RGGI, and with and without Pennsylvania's participation in RGGI. This must include the generation already coming on-line through 2022 and 2023, and expected to be online prior to 2030.

Response: The Department disagrees. In the Reference Case for the modeling, RGGI was modeled as an 11-state program including the 9 states participating in RGGI at the end of 2019 — Massachusetts, Connecticut, Maine, New Hampshire, Rhode Island, Vermont, New York, Delaware, and Maryland. Additionally, New Jersey and Virginia were included in the modeling as projected to begin participation on January 1, 2020, and January 1, 2021, respectively. In particular, the starting CO_2 allowance budget for New Jersey was input at 18 million short tons, and the starting CO_2 allowance budget for Virginia was input at 27.16 million short tons. The IPM Policy Case uses similar assumptions as the Reference Case with the key difference that it assumes that this Commonwealth will begin participation in RGGI on January 1, 2022. The Department communicated with New Jersey and Virginia staff in the development of the modeling inputs to ensure the assumptions aligned with each states' program design.

393. Comment: The commentator states that the modeling results should have included a list of electric generating units that are likely unable to compete in the PJM market due to their unit specific RGGI allowance price adder.

Response: The Department acknowledges this comment. The modeling results included a list of Pennsylvania affected sources in all modeling results.

394. Comment: The comment states that the modeling results should have included projected electricity pricing for each year.

Response: The Department's modeling results included electricity pricing for the reporting years which are 2020, 2022, 2025, 2028, and 2030. These models analyze and synthesize a considerable amount of information and the model outputs are limited to these years in order to minimize the time for the models to run, while providing adequate information for analysis. Using this method, it is possible to understand the key trends and patterns of the results, without having to expend additional time and resources to receive results for every single year. While individual year data may not be available for each criterion – summary statistics are available for the entire time horizon to facilitate comparisons between states, years and modeling runs.

395. Comment: The commentator states that the modeling results should have included state-by-state carbon dioxide emissions for each scenario.

Response: The Department's modeling results include CO_2 emissions from all expected participating RGGI states, including Pennsylvania, along with the entire PJM region, RGGI participating states within the PJM region, and the other major regional grids in the eastern U.S. In order to cost-effectively obtain the modeling results, typical practice is to select participating RGGI states that will get individual emissions results, along with major regions, in contrast to getting results for every single state participating in the electricity market. Using this method, it is possible to understand the key trends and patterns of the results, without having to expend additional time and resources to receive results for every single state.

396. Comment: The commentator states that the modeling results should have included impacts, by state, on electric generation in the PJM states that won't be participating in RGGI, as well as, the generation already coming online for 2022- 23, and expected to be on-line prior to 2030 in PJM.

Response: The Department's modeling results include results from all expected participating RGGI states, including Pennsylvania, along with the entire PJM region, RGGI participating states within the PJM region, and the other major regional grids in the eastern U.S. In order to cost-effectively obtain the modeling results, typical practice is to select participating RGGI states that will get individual emissions results, along with major regions, in contrast to getting results for every single state participating in the electricity market, as that is outside the scope of this rulemaking. Using this method, it is possible to understand the key trends and patterns of the results, without having to expend additional time and resources to receive results for every single state.

The Department used fixed criteria for projections of added capacity which were constant across all types of generation. For this analysis, the Department specified the sources for these assumptions, based on publicly available information and sources adopted for previous RGGI analyses. This information includes public announcements and other public sources, such as ISO project planning queues, etc. In this case, the Department further refined the list of planned facilities, to include only those that were considered "firm capacity additions" in this Commonwealth, based on whether projects met two out of three criteria including, fully funded, fully permitted, or had a power purchase agreement in place for the majority of the generation.

397. Comment: The commentator states that the ability to successfully build the 9,300 MW of wind and solar capacity that ICF assumes in its Policy + Investment Case is overstated given that other RGGI member states have added far less than that over the past decade. New York, which has been a member of RGGI since its inception and invests much of its auction proceeds in renewable energy, has added less than 1,200 MW of utility-scale wind and solar capacity since 2010. Massachusetts – the next highest state – has added just 915 MW of utility-scale wind and solar capacity during the same period.

Response: The Department disagrees. The amount of renewable generation in the modeling results is a function of the amount of planned capacity, economic capacity additions, and the value of the investments. The size of the allowance budget in this final-form rulemaking is larger than the other RGGI participating states. Therefore, there are more program proceeds that were modeled to be invested into renewable energy compared to other RGGI participating states. Additionally, declining technology costs for renewable energy, among other factors, contribute to more future investments relative to past years since the RGGI program began.

398. Comment: The commentator states that since other nations or states are emitting GHG, or are projected to do so between now and 2030, the proposed rulemaking's contribution to mitigation of climate change will be decreased, if not eliminated.

Response: The Department disagrees. The emissions reductions achieved by this rulemaking will help mitigate this Commonwealth's contribution to climate change regardless of the actions of other states or nations. It will be incumbent upon other states and nations to curb their own emissions to combat climate change as this rulemaking will do in this Commonwealth.

399. Comment: The commentator states that the climate benefits of the expected emissions reductions are minimal and therefore this proposed rulemaking is not adequately justified.

Response: The Department disagrees. The Department projects that 97—227 million short tons of CO_2 that would have been emitted in this Commonwealth over the next decade are avoided by this Commonwealth's participation in RGGI. If this Commonwealth participates in RGGI in 2022, combined with the other participating states and based on gross domestic product (GDP), RGGI would be equal to the third largest economy in the world. When viewed from this collective impact, the CO_2 emission reductions achieved by the participating states are even more significant. Reductions in CO_2 emissions will help decrease the adverse impacts of climate change on human health, the environment and the economy. Specifically, CO_2 emission reductions may decrease costs from extreme weather events and climate-related ailments that also result in increased health care costs, as well as missed school and workdays due to illness. The CO_2 emission reductions accomplished through implementation of this final-form rulemaking would benefit the health and welfare of the approximately 12.8 million residents and the numerous animals, crops, vegetation and natural areas of this Commonwealth by reducing the amount of climate-change-causing air pollution resulting from the regulated sources.

400. Comment: The Department presented "RGGI + Investment" modeling results to the Air Quality Technical Advisory Committee on May 7, 2020, which projected actual emissions from Pennsylvania covered sources to be just 57 million short tons in the first year of the program.

That reflects a gap of 21 million tons between the initial base budget and projected actual emissions, a gap that will largely persist throughout this decade despite the annually declining CO_2 budget. This will limit the effectiveness of the program at driving additional emission reductions, the ultimate objective of a cap-and-invest program, approaching 2030.

Response: The Department acknowledges the comment though disagrees that the difference between the allowance budget and actual emissions will limit the effectiveness of the cap-and-invest program. Since RGGI is a regional program, the allowances are fungible meaning that they have value and can be bought and sold for compliance in other participating states. This trading aspect is the cornerstone of the program, and the difference in the allowance budget and actual emissions are being purchased by other entities in participating states to cover their compliance obligations.

401. Comment: The commentator states that several states that operate in the PJM grid, including New Jersey, Maryland and Illinois have publicly stated they are exploring exiting the PJM markets or enacting other policies related to electricity markets to accommodate these states' expansive RPS mandates and energy subsidies. What these states ultimately do, and what effect these actions will have on the electricity markets and interstate transactions remains to be seen – but should the states bordering Pennsylvania who have historically relied on importing power from Pennsylvania decide they no longer wish to participate in the PJM markets (and accept delivery of Pennsylvania power), Pennsylvania ought to decide if it no longer needs to participate in a cap-and-trade program with these same states.

Response: The Department acknowledges the comment and will evaluate any future changes that may impact this final-form rulemaking

Electricity Rates

402. Comment: The commentator states that this regulation will lead to increased electricity costs across Pennsylvania due to the allowance price impacts and potential closure of coal-fired or natural gas-fired power plants.

Response: Based on the Department's 2021 modeling, it can be expected that at least 25 percent of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are estimated at 51,000 gigawatt hours (GWh), representing 25 percent of this Commonwealth's 2022 electricity generation of 201,221 GWh. See Pennsylvania Public Utility Commission, Electric Power Outlook for Pennsylvania 2017-2022, August 2018, www.puc.state.pa.us/General/publications_reports/pdf/EPO_2018.pdf. As a result, without factoring in the strategic investment of auction proceeds, the remaining 75 percent of the costs or $149 million would be borne by this Commonwealth. This percentage is also dependent on the CO_2 emissions intensity of the exported generation.

According to the EIA, the major components of the United States' average price of electricity in 2020 were 56 percent generation, 31 percent distribution and 13 percent transmission costs. See Pennsylvania Public Utility Commission, 2018 Collections Data for the Major Electric and Gas Companies- Chapter 14 Biennial Report, January 15, 2020,

www.puc.pa.gov/General/publications_reports/pdf/Chapter14-Biennial_2018RCD.pdf. This final-form rulemaking would only impact the generation portion of a consumer electric bill, which is a little more than half of the bill. The Department's 2021 modeling estimates that in 2022, wholesale energy prices will be 2.4 percent higher with RGGI participation. That amounts to a roughly 1.2 percent increase in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

The average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source. See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report. https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2 percent in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this final-form proposed rulemaking were not implemented.

403. Comment: The commentator is concerned that RGGI and the proposed rulemaking will likely produce unintended consequences for Pennsylvania's industrial and manufacturing community in the form of significant and deleterious costs that could permanently harm these businesses.

Response: The Department disagrees. According to the PA PUC, a large commercial customer, akin to some industrial and manufacturing customer usage, using 200,000 kWh per month has monthly bills ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

404. Comment: The commentator states that there are potential electricity rate impacts to low-income consumers.

Response: The Department recognizes the potential for electricity rate impacts on all ratepayers, particularly low-income ratepayers. The Department will ensure that measures taken through this final-form rulemaking do not disproportionately impact the most vulnerable residents in this Commonwealth. The Department is focused on developing a strategy for the reinvestment of proceeds resulting from the auction of this Commonwealth's CO_2 allowances that ensures an equitable distribution of beneficial projects across this Commonwealth, with a focus on benefits for low-income consumers, environmental justice communities and communities impacted by this Commonwealth's transition to a new energy future.

Opportunities for these expenditures to assist transitioning communities include targeted weatherization and energy efficiency services to reduce energy use and costs for households and businesses, training opportunities related to energy efficiency and renewable energy careers, and the retention of jobs through repowering of coal-fired facilities to natural gas, among others. The Department's modeling showed that if investments are made in energy efficiency measures, electricity rates will be lower beyond 2030 with this final-form rulemaking in effect.

405. Comment: The commentator states that the Department's own modeling indicates that consumers in the Commonwealth will experience an increase in the rates that they pay for electricity, with the increase totaling more than $2.6 billion by 2030.

Response: The Department disagrees. Based on the Department's 2021 modeling, it can be expected that at least 25 percent of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are estimated at 51,000 gigawatt hours (GWh), representing 25 percent of this Commonwealth's 2022 electricity generation of 201,221 GWh. See Pennsylvania Public Utility Commission, Electric Power Outlook for Pennsylvania 2017-2022, August 2018, www.puc.state.pa.us/General/publications_reports/pdf/EPO_2018.pdf. As a result, without factoring in the strategic investment of auction proceeds, the remaining 75 percent of the costs or $149 million would be borne by this Commonwealth. This percentage is also dependent on the CO_2 emissions intensity of the exported generation.

According to the EIA, the major components of the United States' average price of electricity in 2020 were 56 percent generation, 31 percent distribution and 13 percent transmission costs. See Pennsylvania Public Utility Commission, 2018 Collections Data for the Major Electric and Gas Companies- Chapter 14 Biennial Report, January 15, 2020, www.puc.pa.gov/General/publications_reports/pdf/Chapter14-Biennial_2018RCD.pdf. This final-form rulemaking would only impact the generation portion of a consumer electric bill, which is a little more than half of the bill. The Department's 2021 modeling estimates that in 2022, wholesale energy prices will be 2.4 percent higher with RGGI participation. That amounts to a roughly 1.2 percent increase in the average retail electricity rate, which is less than the swing in prices traditionally seen as a result of seasonal fluctuations in the energy market.

The average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source. See Pennsylvania Public Utility Commission, 2020 Rate Comparison Report. https://www.puc.pa.gov/General/publications_reports/pdf/Rate_Comparison_Rpt2020.pdf. Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2 percent in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. However, the Department's 2020 modeling shows that this minor increase is temporary. As shown in the 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future

consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this final-form proposed rulemaking were not implemented.

Based on information contained within the Pennsylvania Public Utility Commission's 2020 Rate Comparison Report, a small commercial customer's usage is the closest aligned with a small business as defined by the U.S. Small Business Administration, though it is not an exact match. The PUC report indicates that average 2019 electricity consumption for this customer class is 1,000 kWh/month with total monthly bills ranging from $106.29 to $143.49 depending on the Electric Distribution Company service territory and the corresponding electricity rate. Using the same assumptions regarding the composition of an electric bill as used above, a small commercial customer using 1,000 kWh/month could expect to see a potential increase of $1.28 to $1.72 per month in 2022.

According to the PA PUC, a large commercial customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

406. Comment: The commentator states Pennsylvania's average retail prices in 2010 were demonstrably lower than those of RGGI states, supporting the case that Pennsylvania's approach to energy and environmental policy has yielded lower costs to business and consumers than the approach taken by states in RGGI.

Response: The Department acknowledges this comment. The Department's modeling shows that this Commonwealth's participation in RGGI will result in lower future electricity prices than they would be without RGGI participation, even the program proceeds are invested in energy efficiency, GHG abatement, and clean energy.

407. Comment: The commentator states that industrial and manufacturing businesses in Pennsylvania have already contributed hundreds of millions of dollars to the Commonwealth's existing efforts to reduce greenhouse gas emissions by large electric generation facilities through the various electric utilities' compliance with the stringent energy efficiency and conservation requirements of Act 129 (codified at 66 Pa.C.S. § 2806.1).

Response: The Department acknowledges this comment. This final-form rulemaking is needed to ensure further reduction of CO_2 emissions from the electricity generation sector in this Commonwealth.

408. Comment: The commentator is concerned that RGGI and the proposed rulemaking may foist upon Pennsylvania's industrial and manufacturing community additional costs, adding to the financial burden of operating within the Commonwealth, while providing no direct economic benefits in return to ease the impact.

Response: The Department disagrees with this assessment. Based on the Department's 2021 modeling, it can be expected that at least 25 percent of the cost of compliance would be borne by out-of-state electric consumers. In 2022, this Commonwealth's net electricity exports are

estimated at 51,000 gigawatt hours (GWh), representing 25 percent of this Commonwealth's 2022 electricity generation of 201,221 GWh. See Pennsylvania Public Utility Commission, Electric Power Outlook for Pennsylvania 2017-2022, August 2018, www.puc.state.pa.us/General/publications_reports/pdf/EPO_2018.pdf.

According to the PA PUC, an industrial or manufacturing customer using 200,000 kWh per month has a monthly bill ranging from $11,788.08 to $21,043.18. These customers could expect to see a 2022 potential price increase of $141 to $253 per month, again depending on their electric service territory and associated rates.

The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and an addition of $1.9 billion to the Gross State Product. Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030, this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. In sum, RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

409. Comment: The commentator states that adding on additional costs will drive manufacturers out of Pennsylvania and make it exceedingly difficult to bring new firms in; essentially making RGGI a hard-cap on economic growth in the manufacturing sector.

Response: The Department disagrees with this assertion based on the explanation in response to #408 as provided above. Furthermore, that any potential economic disruption caused by this final-form rulemaking will be negligible because of growth of other segments of the economy.

The Department's economic modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and an addition of $1.9 billion to the Gross State Product. Additionally, Penn State's study confirms the economic benefits accruing as a result of this Commonwealth's participation in RGGI and suggests positive economic impacts beyond even those calculated by the Department. Penn State indicates that between 2022 and 2030, this Commonwealth's participation in RGGI will yield $2.6 billion in net economic benefit to this Commonwealth. These have also been the results reported by the participating states and summarized in the RGGI review conducted by the Analysis Group.

In an independent and nonpartisan evaluation of the first three control periods in RGGI, the Analysis Group, one of the largest economic consulting firms globally, found that the participating states experienced economic benefits in all three control periods, while reducing CO_2 emissions. The participating states added between $1.3 billion and $1.6 billion in net economic value during each of the three control periods. The participating states also showed growth in economic output, increased jobs and reduced long-run wholesale electricity costs. In sum, RGGI has helped the participating states create jobs, save money for consumers, and improve public health, while reducing power sector emissions and transitioning to a cleaner electric grid.

410. Comment: The United States Energy Information Administration (EIA) recently released its 2019 State Electricity Profiles, detailing the average retail price of electricity, capacity, generation, and retail sales. The commentator states that participating RGGI states rank higher than Pennsylvania in electricity costs. Between 2009 and 2019, the average retail price of electricity has increased in RGGI states, but in Pennsylvania the increase in cost has been much less. The commentator states that this most recent EIA data clearly illustrates that joining RGGI results in an increase in the price of electricity.

Response: The Department disagrees that this final-form rulemaking will lead to long-term electricity price increases. Additionally, price comparisons between this Commonwealth and the other RGGI participating states is not a good indicator of what Pennsylvania prices will be in the future. The RGGI states have different regulatory structures and policies that also have price impacts – it is not merely RGGI that dictates electric prices in states.

As shown in the Department's 2020 modeling, as a result of the fee investments from the auction proceeds, by 2030, energy prices will fall below business-as-usual prices resulting in future consumer electricity cost savings. This means electric consumers will see greater electric bill savings in the future than if this final-form proposed rulemaking were not implemented.

411. Comment: The commentator states that the Department's modeling projects that residential electricity prices will be minimally impacted by the proposed rulemaking due to ratepayers using less electricity as a result of the proposed rulemaking.

Response: The Department agrees that modeling projects minimal impacts to residential electricity prices, though not as a result of decreased demand. The Department's modeling relies on PJM's demand projections, which have projected a decrease in electricity demand over time for multiple years in a row. However, the impact to ratepayers is not solely a function of how much electricity is being consumed.

As is described in detail in previous responses, the average residential electric consumer in this Commonwealth spends from $97.04 to $136.60 per month depending on whether they heat their homes with electricity or another fuel source Although electricity rates vary in this Commonwealth by Electric Distribution Company service territories, these bill amounts represent the average electricity rates across this Commonwealth.

If this final-form rulemaking is implemented and this Commonwealth begins participating in RGGI in 2022, residential electric consumer bills will increase by an estimated 1.2 percent in the short-term. This amounts to an additional $1.17 to $1.65 per month depending on the home heating source. These price impacts do not include the added benefits and potential price suppressing impacts of investments of the auction proceeds in the energy section.

412. Comment: The commentator recommends the inclusion of predetermined leakage scenarios, which would require Pennsylvania to withdraw from participation in RGGI if it is demonstrated and forecasted that emissions across the PJM territory would be reduced without Pennsylvania's participation.

Response: The Department acknowledges the comment and as stated the focus of this final-form regulation is reduction of CO_2 emissions within this Commonwealth and inclusion of such language would not be appropriate.

Emissions Leakage

413. Comment: The commentator recommends an updated, comprehensive regulatory impact analysis be completed and presented to the EQB including a modeling analysis from PJM on the regional impacts of this rulemaking to ensure leakage and locational marginal pricing are considered in the analysis.

Response: The Department has completed an updated regulatory analysis for this final-form rulemaking. The Department has also conducted updated IPM, Integrated Planning Model, power sector modeling, which provides long-term projections of plant dispatch, capacity expansion and retirement, market prices, and emissions projections for the power sector across the country. This specific analysis focused on this Commonwealth, the PJM states, and the current states participating in RGGI. The results of the modeling include electricity transmission both into and out of this Commonwealth and the larger PJM and Eastern Interconnection. These values allow the Department to evaluate the changes in generation, and the flows of electricity between states and across the region.

Further, PJM created the CPSTF. This group, in which the Department has been an active participant, has examined the impacts of both the recent entry of Virginia into RGGI and also the potential impacts of this Commonwealth's participation in RGGI. PJM's independent power sector modeling came to the same conclusions as the Department's modeling, that though there was some potential for leakage, this did not undermine the significant emissions reduction potential within this Commonwealth, nor did it undermine emissions benefits across the PJM region. Even with the potential for leakage, PJM determined that in addition to significant benefits within this Commonwealth there was a net benefit across the PJM region as well. When this is extrapolated further to the Eastern Interconnection, there continues to be a net benefit, the value of which decreases as the lens through which the reductions are viewed becomes wider.

In addition to the modeling conducted by the Department and PJM, the report by the Penn State Center for Energy Law and Policy also addresses leakage. Their associated modeling confirms the potential for leakage, and bolsters results from PJM and the Department in confirming that

despite leakage, CO_2 emissions in the multi-state PJM region decline following this Commonwealth participating in RGGI. And these leakage estimates and models are based on current and predicted market conditions based on existing laws and policies, exclusive of any further regional or national action on carbon pricing which would minimize or entirely eliminate the potential for leakage.

414. Comment: The commentator states that there are electric generating units expected to come online in the near-term in non-RGGI PJM states that will lead to further electricity leakage, all of which was not factored into the modeling.

Response: The Department disagrees. The modeling process begins with the development of assumptions for a number of inputs that drive the projections from IPM, including electricity load and peak demand, fuel prices, cost and performance for generating capacity types, and policy assumptions, such as the representation of the RGGI cap and trade program and state renewable portfolio standards (RPS). Typical assumptions also include firm build and retirement assumptions, which are units specified in IPM to either build or retire. For this analysis, ICF and the Department specified the sources for these assumptions, based on publicly available information and sources adopted for previous RGGI analyses. This information includes public announcements and other public sources, such as ISO project planning queues. In this case, the Department further refined the list of planned facilities, to include only those that were considered "firm capacity additions" in this Commonwealth, based on whether projects met two out of three criteria including, fully funded, fully permitted, or had a power purchase agreement in place for the majority of the generation. ICF incorporates expected generation facility additions or closures in other states based on publicly available information.

Following specification of the assumptions, ICF inputs the assumptions into IPM and uses the model to generate projections. The results provided include changes in generation capacity and generation mix; energy, capacity, and firm (energy plus capacity) power prices; renewable energy credit (REC) prices for relevant RPS programs; CO_2, SO_2, and NOx emissions; fuel consumption; and zonal transmission flows.

The modeling accounts for all new generation within this Commonwealth and the surrounding states. The specific list of projects that were included as firm capacity additions for this Commonwealth is included in the publicly available modeling results on the "Assumptions Overview- Firm Capacity Changes in PA" tab on the Department website.

415. Comment: The commentator states that emissions reductions as a result of this proposed rulemaking will be negated by emissions increases in other states in the PJM region, or the broader Eastern Interconnection that are not RGGI participating states and do not have to factor allowance costs into their costs. This could include EGUs that have a higher carbon intensity than EGUs in Pennsylvania.

Response: While efforts to model impacts of this final-form rulemaking focused on this Commonwealth, the impacts on the participating states in the PJM region, which consists of all or parts of 13 states and the District of Columbia, were also considered. Historically, the RGGI program has experienced some emissions leakage. Emissions leakage is the shifting of emissions

from states with carbon pricing to states without carbon pricing. The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Despite the leakage, this Commonwealth's participation in RGGI would result in a net emissions reduction of 28 million tons of CO_2 across PJM for the period between 2021 and 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the FERC, and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. See PJM Interconnection, Issue Charge of the Carbon Pricing Senior Task Force, 2019, www.pjm.com/-/media/committees-groups/task-forces/cpstf/postings/issue-charge.ashx?la=en. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80 percent of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

416. Comment: The commentator states that because electricity generation in these non-RGGI PJM states has significantly higher carbon intensity, leakage out of Pennsylvania could actually contribute to increased emissions intensity. DEP's modeling forecast that PA's RGGI participation will shift generation to non-RGGI PJM states will undermine the state's emissions goals. Should that be the case, Pennsylvania will not only have lost significant generation, investment and economic activity, it will have done so for a negligible improvement in regional air quality and emissions.

Response: The purpose of this final-form rulemaking is to reduce CO_2 emissions in this Commonwealth. While efforts to model impacts of this final-form rulemaking focused on this Commonwealth, the impacts on the participating states in the PJM region, which consists of all or parts of 13 states and the District of Columbia, were also considered. Historically, the RGGI program has experienced some emissions leakage. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders.

While there is a potential for leakage as outlined in the Department's modeling for this final-form rulemaking, this potential leakage does not undermine the value of the significant benefits that will accrue to this Commonwealth and its residents as a result of this final-form rulemaking. The potential for CO_2 reductions in this Commonwealth by 2030 ranges from 97 million to 227 million tons. These emissions reductions will occur in this Commonwealth despite any generation changes that may occur in other states. The meaningful reductions of air pollution stemming from this final-form rulemaking have also been confirmed by independent power sector modeling conducted by PJM and the Penn State Center for Energy Law and Policy.

417. Comment: The commentator states that leakage concerns should not prevent participation in RGGI.

Response: The Department acknowledges this comment.

418. Comment: The commentator states that concerns about emissions leakage should not prevent the Department from implementing the proposed rulemaking in 2022.

Response: The Department acknowledges this comment.

419. Comment: The commentator states that if RGGI were implemented in Pennsylvania, CO_2 emissions from power plants in the Commonwealth would, in significant part, transform into emissions from power plants in neighboring, non-RGGI states like West Virginia and Ohio. The result is that Pennsylvania's participation in the program would not even be materially effective in reducing CO_2 emissions in the region.

Response: The Department disagrees that this final-form rulemaking would not reduce CO_2 emissions in the PJM region. While efforts to model impacts of this final-form rulemaking focused on this Commonwealth, the impacts on the participating states in the PJM region, which consists of all or parts of 13 states and the District of Columbia, were also considered. Historically, the RGGI program has experienced some emissions leakage. Emissions leakage is the shifting of emissions from states with carbon pricing to states without carbon pricing. The Department's modeling indicates that there may be some future emissions leakage in terms of additional fossil fuel emissions outside of this Commonwealth's borders. Despite the leakage, this Commonwealth's participation in RGGI would result in a net emissions reduction of 28 million tons of CO_2 across PJM for the period between 2021 and 2030.

It is important to note that the modeling results assume the only policy change impacting the power sector in the region between 2021 and 2030 is this Commonwealth's participation in RGGI. The Department finds that extremely unlikely given the ongoing efforts by PJM, the FERC, and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80 percent of the nation's electricity from zero-carbon sources. The Department anticipates actions at the regional and Federal level will mitigate potential leakage impacts that may result from this final-form rulemaking.

420. Comment: The commentator recommends that Pennsylvania undertake a process to identify an effective leakage mitigation mechanism such as placing emissions associated with imported electricity under the emissions budget, to ensure the state can achieve even greater regional reductions and ensure greater net retention of reductions made by Pennsylvania's program.

Response: The Department acknowledges this comment. The Department will continue to support regional leakage mitigation efforts.

421. Comment: The commentator strongly supports the Department's continued partnership with the PUC to engage with PJM to "promote the integration of this program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage" and its continued participation in the PJM Carbon Pricing Senior Task Force.

Response: The Department acknowledges this comment and will continue to partner with the PUC and participate in the PJM Carbon Pricing Senior Task Force.

422. Comment: The commentator recommends that the Department and the PUC request any information from PJM that may be necessary or helpful to assess and minimize emissions leakage.

Response: The Department acknowledges this comment. The Department will continue to assess ways to reduce leakage.

423. Comment: The commentator states that the Department should work with PJM, other PJM states, and RGGI, Inc. to accurately measure whatever emissions leakage may occur after Pennsylvania starts to participate in RGGI.

Response: The Department acknowledges and agrees with this comment.

424. Comment: The commentator states that the Department should study how to avoid significant leakage in order to ensure that joining RGGI does not result in regional increases in CO_2 and other pollutants resulting from the increased operation of fossil fuel generation from other states and that this analysis should be completed and factored into the proposed rule.

Response: The Department will continue to support regional leakage mitigation efforts. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region.

425. Comment: The commentator states that in studies that PJM, the market operator, has performed, it is not until the RGGI footprint expands to include Pennsylvania that the overall impact of RGGI within PJM is to reduce total PJM emissions. Under the current RGGI footprint within PJM, which includes Maryland, Delaware, and New Jersey, the unfortunate overall result of RGGI's carbon pricing program is an increase in emissions when looking at the whole PJM market. PJM's study results show that the addition of Virginia to RGGI dampens this effect so that, RGGI has a negligible impact on total PJM emissions. However, the study results of further expanding the RGGI footprint to include Pennsylvania show that RGGI reduces both total PJM emissions as well as PJM emissions intensity, which accounts for the possibility of changes in PJM exports to neighboring regions due to carbon pricing. While leakage still remains an issue even with this expanded footprint, The commentator thinks it is notable that Pennsylvania's

participation in RGGI helps improve the functioning of the larger RGGI program within PJM, both by expanding the size of the RGGI subregion within PJM and diversifying the types of resources covered by RGGI.

Response: The Department agrees that this Commonwealth's participation in RGGI will reduce emissions across the PJM region.

426. Comment: The commentator references the concept of either a one-way or two-way border adjustment within PJM to separate the PJM states into those with and without carbon pricing. The commentator states that these mechanisms may not adequately address state or stakeholder concerns about leakage. The one-way border adjustment could be a well-founded means for RGGI states to address a fact pattern where the RGGI states consume more electricity than they produce (and thus more than is covered by their RGGI participation). However, with Pennsylvania's entry into RGGI, that fact pattern no longer holds true. PJM has constructed the one-way border adjustment such that the emissions leakage problem is implicitly defined as needing to cover a state's consumption of electricity rather than just its production. Under that rubric, Pennsylvania joining RGGI solves the emissions leakage problem because the RGGI subregion would no longer be a net importer of electricity. The commentator believes that there would still be real consequences of carbon pricing only covering part of PJM, and there would still be some generation shifting and thus emissions leakage from the RGGI states to the rest of PJM.

Response: The Department acknowledges this comment and will continue to discuss leakage mitigation with the PJM Carbon Pricing Senior Task Force members and interested stakeholders.

427. Comment: The commentator states that PJM found that CO_2 emissions decline in the sub-region with carbon prices were largely offset by CO_2 emission increases in the rest of the market. PJM's analysis supports the notion that leakage significantly diminishes any CO_2 emission reduction benefit of Pennsylvania joining RGGI. To further supplement this PJM analysis, an October 2020 study released by Energy and Environmental Economics, Inc. (E3) found that the current combination of state renewable portfolio standards and partial carbon pricing within PJM has "significant costs but limited effectiveness in reducing carbon emissions." E3's analysis suggested that a continuation of these policies would "add $3 billion per year to electricity bills in the region by 2030, while reducing CO2 emissions by only 40 million metric tons" relative to a scenario in which these policies are not in place.

Response: The Department acknowledges this comment and will continue to engage PJM on potential leakage solutions and participate in PJM's Carbon Pricing Senior Task Force. The purpose of this final-form rulemaking is to reduce CO_2 emissions in this Commonwealth.

428. Comment: The commentator states that modeling performed for NRDC found that despite a certain amount of leakage to other PJM states, Pennsylvania's participation in RGGI would reduce cumulative emissions across the PJM region by more than 145 million tons between 2019 and 2030, even in the absence of complementary policies. Modeling by the Environmental Defense Fund using a tool developed by MJ Bradley & Associates reached a similar conclusion, also finding significantly less leakage than the Department projected.

Response: The Department agrees that this Commonwealth's participation in RGGI will reduce emissions in this Commonwealth and across the PJM region.

429. Comment: The commentator references the Penn State Center for Energy Law and Policy study that modeled Pennsylvania's participation in RGGI with a proprietary tool called "RGGI+PJM Policy Analysis Model," projected that 86 percent of the CO_2 reductions from Pennsylvania's joining RGGI would be offset by emissions increases in PJM and/or other RGGI states – a significantly higher amount of leakage than the Department found.

The commentator has reviewed Penn State's methodology and believe that it suffers from several serious flaws, including reliance on outdated assumptions concerning renewables prices, failure to account for recent state policy developments in PJM and RGGI states, and disregard of the availability of battery storage and offshore wind technologies. The overall effect of these flaws is an overreliance of the model on gas-fired generation in the PJM region, leading to higher leakage projections than are warranted.

The commentator adds that even the Penn State analysis projects that Pennsylvania's participation in RGGI will reduce carbon dioxide emissions across the PJM region, despite the higher leakage estimates, and deliver significant net benefits.

Response: The Department acknowledges this comment. The Department conducted its own modeling effort that has lower emissions leakage estimate than the referenced Penn State study. The Department does not solely rely on the Penn State study, but references its results as another indication of projected overall benefits for this Commonwealth as a result of RGGI participation from a widely respected research institution.

430. Comment: The Department has not engaged PJM, the only source with the specific EGU pricing and operations information and transmission constraints information necessary to conduct an adequate assessment of Pennsylvania's, as well as New Jersey's and Virginia's, participation, in a PA RGGI participation analysis.

Response: The Department disagrees with this assessment. The Department has had numerous conversations with PJM staff and has continued to participate in PJM's Carbon Pricing Senior Task Force. The Department has full confidence in ICF's modeling capabilities and the results that they produced. ICF's model has been used by a number of different governments, organizations, and companies to conduct power sector modeling, including RGGI Inc. and other RGGI states.

431. Comment: The commentator states that without Federal Action Pennsylvania needs to take further action to prevent leakage. Pennsylvania should take further action to prevent its generators from suffering from leakage that would reduce demand for their generation capacity while also decreasing the GHG emissions reductions resulting from Pennsylvania participating in RGGI.

Response: The Department acknowledges the comment, and continues to work with PJM, and other stakeholders to identify opportunities to address leakage.

432. Comment: The commentator believes a decision to join RGGI without leakage mitigation within this propose rulemaking, especially given the Department's comments to the CPSTF, is grossly premature and inconsistent with the governor's Order.

Response: The Department acknowledges this comment and disagrees. This Commonwealth's participation in RGGI will result in reduced emissions across PJM.

433. Comment: Leakage is best addressed by the regional transmission operator with market design evolutions and is not within the states authority to address unilaterally.

Response: The Department acknowledges the comment and disagrees. This Commonwealth's participation in RGGI will result in reduced emissions across PJM.

434. Comment: The Department's modeling indicates there will be leakage from Pennsylvania to states including West Virginia and Ohio that also supply power to the PJM Interconnection. Section 17 of the RAF does not, however, assess the amount of power generation, the capital expenditures, or the number of jobs that might migrate to other PJM states. This section states the Department will conduct additional modeling with PJM's Carbon Pricing Senior Task Force to better understand and control leakage. Further analysis of the economic and environmental consequences of leakage would be very helpful in understanding the implication of the regulations on the economy and for mitigating potential effects.

Response: The Department agrees and continues to analyze the potential for and options to address leakage.

Health Benefits

435. Comment: The commentator states that while science will continue to develop, several studies have already demonstrated that air pollution may increase and worsen COVID-19 cases. For instance, researchers with Harvard University's T.H. Chan School of Public Health found that in counties across the United States, very small increases in exposure to fine particulate matter ($PM_{2.5}$) air pollution were associated with an 11 percent increase in COVID-19 mortality rates, even after controlling for county-specific levels of household income, education, age distribution, race and population density. The study adds to a growing body of research that finds even slightly higher levels of air pollution worsen COVID-19 health outcomes. Georgia State University researchers studied United States 2020 data and found that lower $PM_{2.5}$ air pollution levels were associated with fewer confirmed COVID-19 cases and lower mortality rates from COVID-19. In England, researchers showed that $PM_{2.5}$ was a major contributor to COVID-19 cases. Worldwide, about 15 percent of the people who have died from COVID-19 were people exposed to higher levels of $PM_{2.5}$ pollution long term. This Commonwealth is not yet in full compliance with the most recent Federal $PM_{2.5}$ standards. These studies demonstrate that, rather than providing a reason for further delay, the ongoing COVID-19 pandemic further supports the urgent need for the emission-reduction benefits to be gained through participating in RGGI.

Response: The Department acknowledges and agrees with this comment. NO_x and SO_2 emissions are also major contributors to PM pollution, which is a mixture of microscopic solid and liquid droplets that are suspended in the air. The smaller the size of the particle, the more damaging it is to human health. $PM_{2.5}$, which is particulate matter that is particularly damaging as the particles are small enough to get deep into the lungs, and perhaps even enter the bloodstream. Children are at increased risk of health impacts from PM as their lungs are still developing, and PM can exacerbate asthma or acute respiratory disease. Elevated levels of PM will also aggravate adults with COPD, asthma, coronary artery disease, or congestive heart failure. When particle levels in the air are high, older adults are more likely to be hospitalized, and death from aggravated heart or lung disease may occur.

436. Comment: The commentator states that the Department predicts the final-form rulemaking will result in significant health benefits. Those benefits are attributable to ancillary reductions in SO_2 and NO_x emissions but there is not a discussion of whether there will be health benefits directly attributable to reducing CO_2.

Response: The immediate health benefits of this final-form rulemaking are attributable to the reductions in SO_2 and NOx emissions as a result of the CO_2 emissions limit contained within this final-form rulemaking. However, there are a plethora of health studies that support the contention that reducing CO_2 emissions is necessary to support a stable climate. Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify, and new health threats will emerge. Not everyone is equally at risk. Important considerations include age, economic resources, and location. In the U.S., public health can be affected by disruptions of physical, biological, and ecological systems, including disturbances originating here and elsewhere. The health effects of these disruptions include increased respiratory and cardiovascular disease, injuries and premature deaths related to extreme weather events, changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases, and threats to mental health. CO_2 is an air pollutant and its reduction is necessary to improve public health in the long term.

437. Comment: The commentator states that reductions in certain criteria pollutants (i.e., SO_2 and NO_x) are espoused by the Department as co-benefits of RGGI participation and comprise virtually all the quantitative health benefits. However, the Department has not provided a basis for the need for these reductions or why RGGI is the proper pathway for doing so.

Response: The Department disagrees with this characterization. As shown by the Department's modeling, the reduction of co-pollutants, in addition to the direct CO_2 emission reductions, results in significant public health and environmental benefits. Additionally, for decades the EPA has included co-pollutant reductions when calculating the benefits of a regulation. The Department also follows this approach as reducing air pollution is always beneficial, no matter the type of pollutant.

438. Comment: The commentator states that the health benefit projections are overstated because they reflect emissions reductions occurring prior to implementation of this proposed rulemaking.

Response: The Department considers emissions reductions occurring prior to 2022 as a result of the expected implementation of this final-form rulemaking as valid. Therefore, health benefit projects that include such emissions reductions are not overstated.

The Department calculated that if 188 million tons of CO_2 are avoided through 2030 then this Commonwealth's residents would see cumulative health benefits amounting to $2.79—$6.3 billion. An analysis conducted by Penn State's Center for Environmental Law and Policy projected even higher health benefits, on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's RGGI participation, specifically noting the conservative nature of the Department's calculations. These health benefits accrue within this Commonwealth as a result of implementation of this final-form rulemaking, and if anything, the Department's health benefits are understated.

439. Comment: The commentator states that the reduction of CO_2 emissions alone does not provide quantifiable public health benefits and that this Commonwealth is currently meeting attainment for criteria pollutants and has methods beyond this proposed rulemaking to achieve federal ambient air quality standards.

Response: This final-form rulemaking will lead to decreased CO_2 emissions across this Commonwealth, which is the intent of the Department. The health benefits of this final-form rulemaking are attributable to the reductions in SO_2 and NO_x emissions as a result of the CO_2 emissions limit contained within this final-form rulemaking.

440. Comment: The Department has used a methodology to calculate the health benefits that EPA has identified as being merely a "screening tool" with considerable limitations. A screening level assessment is a very conservative assessment used to determine if a more rigorous assessment is appropriate and necessary to determine actual effect and impacts. A screening level assessment does not result in accurate total monetized health benefits nor provide accurate monetized benefits for any particular region.

Response: The Department's methodology to calculate the health benefits of projected emissions reductions is a useful indicator of the health benefits resulting from the implementation of this final-form rulemaking. And as indicated above, related analyses indicate the Department's calculations of health benefits were understated, as health benefits were determined by Penn State to be on the order of $1 billion to $4 billion per year over the initial decade of this Commonwealth's participation in RGGI.

441. Comment: A presentation made by the Department to the Small Business Compliance Advisory Committee on July 22, 2020, showed the great improvements that have been achieved in ambient air quality in Pennsylvania. Further, the 2017 – 2019 ambient monitoring data, aka 2019 design value, collected by the Department demonstrated that the ambient air quality standards, which are developed to protect all members of the population, were being met at the

vast majority of monitoring sites. Consequently, further emissions reductions by the Pennsylvania electric generating units (EGUs) that would be retired due to RGGI participation would not likely provide the monetized benefits calculated by the Department.

Response: The Department disagrees. The benefits calculated by the Department are independent of ambient air quality improvements from 2017-2019.

442. Comment: The commentator states that the Department suggests that from 2009 through 2014 states participating in RGGI gained significant health benefits in the first six years of the program's implementation; however, research by other sources such as the Congressional Research Service (CRS) found that RGGI itself did not drive any emissions reductions because the limits set by RGGI were above the actual emissions for those years. Instead, the health benefits are likely a result of fuel switching from coal and oil to natural gas as noted by Abt Associates in a 2017 analysis where they determined a small number of legacy coal plants accounted for the majority of RGGI's health benefits. The same CRS report found that the RGGI program raised funding for programs that support clean energy development activities, but the program's contribution to directly reducing greenhouse gas emissions was arguably negligible. These findings do not necessarily result in a conclusion that RGGI should not be pursued – at this point, the data presented by the Department are inconclusive.

Response: The Department disagrees with the suggestion that if actual emissions are lower than the allowance budget, than this final-form rulemaking would not drive emissions reductions. The Department's modeling demonstrated that is not the case.

The Department acknowledges that a 2017 independent study by Abt Associates, a global research firm focused on health and environmental policy, on the "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014" showed that participating states gained significant health benefits in the first six years of RGGI implementation alone. From 2009-2014, the participating states avoided around 24 percent of CO_2 emissions that would have otherwise been emitted during that period, resulting in around $5 billion in avoided health related costs. See Abt Associates, "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative, 2009-2014," January 2017, https://www.abtassociates.com/sites/default/files/files/Projects/executive%20summary%20RGGI.pdf.

A recent study led by researchers from the Columbia Center for Children's Environmental Health at Columbia University Mailman School of Public Health ("Columbia study"), published on July 29, 2020, on the "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative" indicates that the health benefits from RGGI are even more significant than estimated in 2017 by Abt Associates. The Columbia study concluded that the co-pollutant reductions resulting from RGGI have provided considerable child health benefits to participating and neighboring states. In particular, between 2009-2014, RGGI resulted in an estimated 537 avoided cases of childhood asthma, 112 avoided preterm births, 98 avoided cases of autism spectrum disorder, and 56 avoided cases of term low birthweight. Those child health benefits also have significant economic value, estimated at $199.6–358.2 million between 2009 and 2014 alone. However, the researchers note that the actual health benefits are even greater than

estimated because the analysis does not capture the future health benefits related to reductions in childhood $PM_{2.5}$ exposure and mitigating climate change, such as fewer heat-related illnesses or cases of vector-borne disease to which children are especially vulnerable. See Frederica Perera, David Cooley, Alique Berberian, David Mills, and Patrick Kinney, "Co-Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative," Environmental Health Perspectives, Vol. 128, No. 7, July 2020, https://ehp.niehs.nih.gov/doi/10.1289/EHP6706.

Further, when looking specifically at this final-form rulemaking, the Department's modeling projects avoided CO_2 emissions by sources in this Commonwealth of 97-227 million tons between 2021-2030. The Department used the EPA's Regional Incidence-per-Ton methodology which calculates total avoided incidences of major health issues, and calculation of avoided lost work and school days due to reduced emissions. Based on an assumption that 188 million tons of CO_2 emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking. Children and adults alike will suffer less from respiratory illnesses, 30,000 less incidences of upper and lower respiratory symptoms which leads to reduced emergency Department visits and avoided hospital admissions. Healthier children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well which results in over 83,000 avoided lost workdays due to health impacts. The public health benefits to this Commonwealth of these avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

The Department considers the combination of all of this information conclusive.

443. Comment: The EQB makes no attempt to quantify expected public health benefits that will accrue to Pennsylvanians specifically from the Proposed Rulemaking, despite the fact that it is citizens of the Commonwealth who will bear the brunt of whatever costs Pennsylvania's participation in RGGI entails. The public health benefits that will accrue to Pennsylvanians from reductions in emissions of all air pollutants that accompany Pennsylvania's participation in the RGGI are certain to be real, substantial, local, and immediate. The EQB should quantify such benefits, perhaps based on the experiences of other states that are already participating in the RGGI and use that quantification to better demonstrate that the benefits from the Proposed Rulemaking will exceed its costs.

Response: The Department quantified the expected public health benefits of this final-form rulemaking. When looking specifically at this final-form rulemaking, the Department's modeling projects avoided CO_2 emissions by sources in this Commonwealth of 97-227 million tons between 2021-2030. The Department used the EPA's Regional Incidence-per-Ton methodology which calculates total avoided incidences of major health issues, and calculation of avoided lost work and school days due to reduced emissions. Based on an assumption that 188 million tons of CO_2 emissions are avoided through 2030, the Department estimated that between 283 and 641 premature deaths will be avoided in this Commonwealth due to emission reductions resulting directly from this final-form rulemaking. Children and adults alike will suffer less from respiratory illnesses, 30,000 less incidences of upper and lower respiratory symptoms which leads to reduced emergency Department visits and avoided hospital admissions. Healthier

children will be able to play more, as incidences of minor restricted-activity days decline on the order of almost 500,000 days between now and 2030. Adults would be healthier as well which results in over 83,000 avoided lost workdays due to health impacts. The public health benefits to this Commonwealth of these avoided SO_2 and NO_x emissions range between $2.79 billion to $6.3 billion by 2030, averaging between $232 million to $525 million per year.

444. Comment: It is improper to consider the estimated health benefits as "co-benefits" as Pennsylvania monitors widespread attainment of the NAAQS, which are established to protect public health, including a sufficiently conservative safety factor. With the Commonwealth already monitoring attainment of these health-based standards, it is questionable whether further reduction of concentrations of these pollutants below these standards would provide any further benefit. Additionally, the Regulatory Review Act requires agencies to consider whether a proposed rulemaking results in a "duplication of statutes or existing regulation." 71 P.S. § 745.5b(b)(3)(i). Here, the APCA already provides statutory authority for the Department to regulate particulate matter, NOx and SO_2. An attempt to duplicate existing regulation cannot form the basis for a purported "co-benefit." Furthermore, by claiming such benefits, it appears that the proposed rulemaking is also directed at regulating these pollutants to levels more stringent than the NAAQS. Such regulation is not permissible under the APCA, which prohibits more stringent regulation of pollutants for which NAAQS' have been established except in certain instances, none of which appear to apply to this rulemaking.

Response: The Department disagrees with this comment. As shown by the Department's modeling, the reduction of co-pollutants, in addition to the direct CO_2 emission reductions, results in significant public health and environmental benefits. Additionally, for decades the EPA has included co-pollutant reductions when calculating the benefits of a regulation. The Department also follows this approach as reducing air pollution is always beneficial, no matter the type of pollutant. Since the Department does not currently have a regulation that controls CO_2 emissions from fossil fuel-fired EGUs, this final-form rulemaking is not a duplication of an existing regulation. Further, the Department is not directly regulating NO_x, SO_2, or particulate matter emissions in this final-form rulemaking. Any reductions are a result of reducing CO_2 emissions.

445. Comment: The commentator states that the Department does not account for how shifts in emissions across states as a result of this proposed rulemaking will also lead to changes in co-pollutant emissions, specifically states that are upwind, and the associated health impacts of those emissions shifts.

Response: The Department acknowledges this as outside the scope of the Department's modeling. The changes in co-pollutant emissions from states that are downwind are also not included in the scope of the modeling.

446. Comment: The Department has submitted SIPs for each current SO_2 non-attainment area that outline how the respective areas will come into attainment and all four have been approved by EPA. None of the four SIPs rely on RGGI participation, meaning RGGI is not needed for the entire Commonwealth to meet the SO_2 NAAQS.

Response: This final-form rulemaking does not directly regulate SO_2 emissions. However, the Department notes that while it has submitted attainment demonstrations for each current SO_2 non-attainment area, the U.S. EPA has yet to approve the submitted attainment demonstration for Indiana county. In addition, any additional SO_2 emissions from this rulemaking would provide additional margin of safety for the exposed population. Furthermore, any reduction of SO_2 emissions from this rulemaking would also result in the reduction of secondary formation of fine particulate matter emissions and the associated impact on the exposed population.

447. Comment: The purported NO_x emission reductions achieved as a co-benefit of joining RGGI would be duplicative to those already required by the FIP, revised SIP, and revised CSAPR and will occur anyway.

Response: The Department disagrees with this comment. The Department is not directly regulating NO_x emissions in this final-form rulemaking. Any reductions are a result of reducing CO_2 emissions. Since the Department does not currently have a regulation that controls CO_2 emissions from fossil fuel-fired EGUs, this final-form rulemaking is not a duplication of an existing regulation.

Special Considerations

448. Comment: The commentator urges the Department to publish an annual report on power plant emission levels on a statewide basis. The commentator states that these reports should be broken down into no less than six regions; Northeast, Northcentral, Northwest, Southwest, Southcentral, and Southwest. By breaking the reporting down into regions, it would help the Department and other stakeholders understand the cumulative and localized impacts of RGGI once implemented.

Response: The Department agrees that an annual report on emissions from EGUs is important. The Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emissions data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emissions data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the Pennsylvania Bulletin on an annual basis.

449. Comment: The commentator states that the Board should revise the proposed rulemaking to include essential protections for all Pennsylvania energy consumers. The proposed rulemaking fails to adequately consider or plan for several contingencies that are key to analyzing the feasibility and sustainability of enrolling the Commonwealth in RGGI. While the proposed rulemaking includes a cost containment reserve mechanism to help mitigate spikes in the price of CO_2 allowances, the proposed rulemaking fails to address or provide safeguards against potentially devastating increases in Pennsylvania energy prices, emissions leakage, or job losses.

Response: The Department acknowledges the comment though disagrees with the need for safeguards as neither the Department's own modeling nor the 10-plus year history of RGGI have resulted in the outcomes as described by the commentator.

Environmental Justice Communities

450. Comment: The commentator recommends that the regulation include a triennial assessment and remediation plan. The assessment should examine the economic and environmental impact of RGGI on low income communities, communities of color, and frontline communities, and should include a plan for remediation of identified impacts. The assessment should be subject to a robust and inclusive public input and comment process to ensure that solutions are grounded in local solutions.

Response: The Department appreciates the comment and has committed to an annual review of the impacts of this final-form regulation. The Department has committed to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions

data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emissions data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

451. Comment: The commentator states that air pollution permits issued by the Department should include more input from the communities surrounding electric generating units, such as considerations of nearby schools, hospitals, or community spaces and the permit process should take into account other factors such as existing air quality in that area and cumulative impact of all regulated air pollution sources.

Response: The Department appreciates this comment and has committed to an annual review of the impacts of this final-form rulemaking. The Department has committed to providing an Annual Air Quality Impact Assessment.

452. Comment: The commentator stated that in order to mitigate the impact on disadvantaged communities, the Department must exercise its authority outlined in the Pennsylvania Air Pollution Control Act and conduct a thorough investigation before imposing any emission limitation per permittee. The Department can do this by implementing case studies in low-income and minority communities to estimate the plan's side effects on co-pollutants such as particulate matter. Since the operation of RGGI may not be entirely predictable in Pennsylvania, the Department must investigate a range of scenarios. If this analysis suggests that the system is likely to create, exacerbate, or maintain a significant level of pollution hot spots, the Department should employ countermeasures such as imposing controls on those sources to purchase allowances. Once RGGI is operational, monitoring pollution concentrations remains essential to ensuring hot spots are not developing and that disadvantaged communities are sharing equitably in the benefits of emissions reductions.

Response: The Department appreciates this comment. The Department has committed to an annual review of the impacts of this final-form rulemaking. The Department has committed to providing an Annual Air Quality Impact Assessment. In addition, the Department has committed to Equity Principles which have been incorporated in this final-form rulemaking. The Equity Principles consist of inclusively gathering and meaningfully considering input from environmental justice community members, mitigating any adverse impacts on human health in environmental justice communities, and distributing environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution.

453. Comment: The commentator states that this proposed rulemaking would benefit historically disadvantaged communities through improved air quality or air pollution reduction investments.

Response: The Department agrees.

454. Comment: The commentator states that historically, air pollution in Pennsylvania has disproportionately impacted environmental justice communities and that should be considered in the development and implementation of this proposed rulemaking.

Response: The Department agrees. The Department developed Equity Principles which have been incorporated in this final-form rulemaking. The Equity Principles consist of inclusively gathering and meaningfully considering input from environmental justice community members, mitigating any adverse impacts on human health in environmental justice communities, and distributing environmental and economic benefits of auction proceeds in communities that have been disproportionately impacted by air pollution. The Board also added language to this final-form rulemaking indicating that the Department will assess air emissions data each year to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. Additionally, the Department is committed to allocating a portion of the auction proceeds to further eliminate air pollution in environmental justice communities.

455. Comment: The commentator recommends the Department conduct periodic assessments that include determinations of whether the pollution burden in environmental justice communities increased or declined over the assessment period and examine economic and environmental impacts of RGGI implementation on environmental justice communities. The commentator recommends that these efforts include opportunities for public input and employ adaptive management strategies that allow the Department to efficiently translate feedback on program implementation into program improvements.

Response: The Department appreciates this comment. The Department has committed to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emissions data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis.

456. Comment: The commentator recommends the EQB include provisions in the Proposed Regulation for mechanisms to understand the impact of RGGI implementation on the distribution of pollution burdens and benefits across the Commonwealth. Specifically, this should include data collection mechanisms that quantify emissions from all power plants and publication of periodic assessments of emissions levels at the individual power plants level. As part of this, the commentators recommend review of the potential for power plants located in close proximity to environmental justice communities that are also in nonattainment areas to (a) increase capacity

factors; and (b) clear PJM market clearing price thresholds for dispatch will provide important insights into potential for these plants to operate more frequently in response to RGGI.

Response: The Department acknowledges this comment and has included an Annual Air Quality Impacts Assessment in this final-form rulemaking.

457. Comment: The commentator states that the Department should ensure that EGUs in environmental justice areas do not emit more CO_2, relative to historical emissions and other EGUs, as a result of this proposed rulemaking by enhancing air quality monitoring and assessments. The commentators also stated that if certain EGUs were to increase emissions, there should be regulatory mechanisms in place to limit emissions.

Response: The Department agrees and has committed to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis. If there is a need to adjust this final-form rulemaking, the Department can revise the rulemaking and bring a revised rulemaking back to the Board.

458. Comment: The commentator states that to address concerns that RGGI could disproportionately burden disadvantaged communities in Pennsylvania where natural gas plants are located, the Department should monitor emissions shifts among regulated plants, develop adaptive management strategies to address any emissions increases in environmental justice communities, and dedicate RGGI auction proceeds to increasing environmental monitoring and enforcement and investing in clean energy in those communities.

Response: The Department agrees and has committed to annually monitoring emissions in all communities across the Commonwealth. Additionally, communities that have historically been overburdened by pollution are priority communities for the investment of auction proceeds and further air quality improvements.

459. Comment: The commentator states that the Department should take steps to ensure that implementation of the Proposed Rule does not result in the leakage of generation and emissions from covered sources to smaller uncovered generators, particularly when these units are located in environmental justice areas.

Response: The Department appreciates this comment. The Department will use the Annual Air Quality Impact Assessment, along with other data, to assess this concern on an annual basis. Further, the Department projects based on announced closures and future firm capacity builds

that in 2022, there will be 66 CO_2 budget sources with 158 CO_2 budget units with a compliance obligation under this final-form rulemaking. The Department conducted an analysis of power sector emissions and the facilities that meet the applicability criteria in this final-form rulemaking and determined that around 99 percent of this Commonwealth's power sector CO_2 emissions would be covered under this final-form rulemaking.

460. Comment: The commentator believes that RGGI can substantially advance environmental justice, but that RGGI by itself is not enough.

Response: The Department acknowledges this comment. The Department's Office of Environmental Justice is ensuring that the Pennsylvanians most at risk from pollution and other environmental impacts have a voice in the decision-making process, beyond this final-form rulemaking. See https://www.dep.pa.gov/PublicParticipation/OfficeofEnvironmentalJustice/pages/default.aspx.

461. Comment: The commentator states that the proposed RGGI regulation is a well-designed program to help achieve the critically important goal of substantially reducing GHG emissions to address climate disruption, which has disproportionately high adverse impacts upon disadvantaged populations worldwide. To the extent that RGGI succeeds in discouraging continued operation of fossil fuel fired power plants, it will reduce emissions of other harmful pollutants as well. In fact, the RGGI program will reduce emissions from fossil fuel-fired power plants and cause the closure of many fossil-fired power plants, which can be located in low-income areas, so that emissions of those pollutants are likely to be reduced.

Response: The Department agrees that this final-form rulemaking will reduce emissions of CO_2, as well as other co-pollutants across this Commonwealth.

462. Comment: The commentator cites a 2016 PSE Healthy Energy study that examined the demographics of communities within 3 miles of Pennsylvania power plants subject to the EPA's proposed Clean Power Plan. The commentator states that the study found that half of the plants were located within three miles of a region designated as an Environmental Justice Area by the Department. The PSE Healthy Energy Study also assessed the frequency of power plant inspections and violations in Pennsylvania using data available from 2011-2015 for multiple statutes, including the Clean Air Act, Clean Water Act, Safe Drinking Water Act and Resource Conservation and Recovery Act and found that coal plants were inspected 193 times and were cited for 58 violations while natural gas plants (both combined cycle and steam) were inspected 76 times and were cited for 48 violations. The commentator states that a closer examination of the very high rate of violations at natural gas plants reveals concerning results for Pennsylvanians residing in environmental justice communities. The commentator cites results that show that while natural gas plants located within three miles of environmental justice communities were inspected at twice the rate of gas plants outside the three mile radius, gas plants within the three mile radius were cited for violations more than four times as often as gas plants outside that radius.

The Commentators conducted a preliminary analysis to better understand the current relationship between power plant locations, community demographics, attainment of NAAQS, and other

factors. That analysis identified 13 gas-fired power plants with capacity of 25 MW or larger located within a designated nonattainment area and within 3 kilometers of an environmental justice area, along with 11 gas and oil plants less than 25 MW located within a designated nonattainment area and within 3 kilometers of an environmental justice area.

The commentator states that although most of Pennsylvania's gas-fired generation is not within 3 kilometers of an environmental justice community, the PSE Healthy Energy Study findings, coupled with the Commentators' preliminary analyses, compel ongoing scrutiny by the Department to determine whether emissions increase at any plants that are within such communities, and the pro-active development of strategies to address potential increases, now.

Response: The Department acknowledges this comment and has included an annual Air Quality Impact Assessment in this final-form rulemaking.

463. Comment: The commentator recommends the Department conduct a close review of air pollution standards adopted under the Clean Air Act and APCA and take steps to reduce the potential for power plants located in environmental justice communities to avoid or even increase co-pollutant emissions as a result of RGGI CO_2 emission trading provisions. The commentator notes that while APCA limits the Departments ability to adopt criteria pollutant standards more stringent than the minimum standard established pursuant the Clean Air Act, this limitation does not apply "if the Board determines that it is reasonably necessary for a control measure or other requirement to exceed minimum Clean Air Act requirements in order for the Commonwealth to achieve or maintain ambient air quality standards." This exception appears to provide the Board and the Department flexibility to adopt ambient air quality standards more stringent than the minimum standards established pursuant to the Clean Air Act for "nonattainment" and "maintenance" areas.

The Clean Air Act provides that upon the designation of a "nonattainment area" for a national ambient air quality standard, states must develop implementation plans ("Nonattainment Plans") to reach "attainment" within 5 years of the designation date. Among other requirements, Nonattainment Plans must provide for the implementation of "all reasonably available control measures as expeditiously as practicable" and provide for the attainment of national primary ambient air quality standards.

The commentator recommends the Department review national ambient air quality standards in nonattainment areas and determine what additional "available control measure" can be implemented "as expeditiously as practicable" to provide for the attainment of national primary ambient air quality standards. The Department should explore the options to revise and update Nonattainment Plans to incorporate those "available control measures" (including further rulemakings and other measures to meet more stringent ambient air quality standards than the minimum standard under the Clean Air Act) and such "other requirements" that will accelerate timelines for achieving attainment and mitigate against the potential for increased utilization of certain power plants in communities that already bear a disproportionate pollution burden. Revisions to Nonattainment Plans should identify zero emission resources as a "reasonably available control measure" and the Department should move as expeditiously as practicable to deploy these resources in nonattainment areas.

Response: The Department acknowledges this comment. To address environmental justice concerns, the Department is committing to providing an Annual Air Quality Impact Assessment. The report will include at a minimum the baseline air emissions data from each CO_2 budget unit for the calendar year prior to the year this Commonwealth becomes a participating state and the annual emissions measurements provided from each unit. The Department will not only be assessing the CO_2 emission data provided under the requirements of this final-form rulemaking but will be assessing the entirety of the data submitted from each CO_2 budget unit as required under the Department's regulations. The Department will assess the emission data to determine whether areas of this Commonwealth have been disproportionately impacted by increased air pollution as a result of implementation of this final-form rulemaking. The Department will also publish notice of the availability of the report and the determination in the *Pennsylvania Bulletin* on an annual basis. The rest of this comment is outside the scope of this final-form rulemaking.

464. Comment: The recommendations conveyed to the Department by the Environmental Justice Advisory Board (EJAB) should serve as a cornerstone of engagement regarding program goals and outcomes.

Response: The Department agrees and in response to comments received by and in consultation with EJAB and other stakeholders developed a set of equity principles. These equity principles advance the Department's commitment to equity in both the development of this rulemaking and the associated investment plan. Engagement with and recommendations from the EJAB have been invaluable to the engagement strategy, outreach efforts and overall approach taken by the Department in the development and finalization of this rulemaking.

Traditional Energy Communities

465. Comment: The commentator states that this regulation will cause economic harm to communities with fossil fuel-fired EGUs due to job loss, decreased tax assessments, and overall decreased economic activity.

Response: The Department recognizes that shifts in employment across the energy sector are already well-underway in this Commonwealth. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced. Even without the influence of this rulemaking, employment in coal-fired electricity generation in this Commonwealth shrank by 3.3 percent between 2017 and 2019, reflecting a 24.3 percent decrease in coal production across the United States.

The Department's modeling projects significant declines in electric generation from coal-fired EGUs even without this final-form rulemaking in effect. For electric generation from natural gas-fired EGUs, the Department's modeling shows that RGGI participation is expected to have relatively minor effects.

The Department understands the concerns that have been expressed regarding impacts on employees in this Commonwealth's energy sector. This final-form rulemaking provides an opportunity to assist residents of this Commonwealth impacted by changes in the energy sector. Without this final-form rulemaking, many jobs, specifically at coal-fired power plants will be lost without any opportunities for assistance to ensure there is an equitable transition for workers in all energy sectors. The Department has partnered with the Delta Institute to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers, and the surrounding communities. This will assist the Department in identifying community-driven ways to assist this Commonwealth's transition to a cleaner energy economy.

466. Comment: The commentator states that as a result of this proposed rulemaking, there will be electricity generation companies and workers that shift their operations to nearby states that are not participating states in RGGI, resulting in negative economic impact to Pennsylvania.

Response: The Department recognizes the uncertainty faced by coal operations and their employees in this Commonwealth and emphasizes its intention to prioritize traditional energy workers and communities in a just transition to a lower-carbon future. Nationally, the last ten years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005, electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline dramatically. In 2010, coal generation represented 47 percent of this Commonwealth's generation portfolio and is expected to decline to roughly 1 percent of this Commonwealth's generation portfolio in 2030. This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI. The Department has partnered with the Delta Institute to evaluate the potential impacts of a changing energy sector on this Commonwealth's energy workers, and the surrounding communities. This will assist the Department in identifying community-driven ways to assist this Commonwealth's transition to a cleaner energy economy.

The Department's economic modeling projected the economic impact across this Commonwealth as a result of this final-form rulemaking. The Department's modeling shows that this Commonwealth's participation in RGGI will lead to a net increase of more than 30,000 jobs and add $1.9 billion to the Gross State Product by 2030.

467. Comment: The commentator states that the Department fails to sufficiently address the financial, economic and social impact the proposed rule will have on business and labor communities. 71 P.S. § 745.5(a)(10). The commentator states that if the proposed rule is promulgated, it will have an immediate and devastating economic impact on coal-fired EGUs in Pennsylvania and the families and communities surrounding these plants. In particular, there are four coal-fired EGUs in southwestern Pennsylvania: Cheswick; Conemaugh, Homer City and Keystone. Together these facilities employ over 600 people, plus several times that amount of contractors; spend almost $1.1 billion per year in operations; and have a total economic impact in the Commonwealth of $2.87 billion. Significantly, there are numerous designated environmental justice areas in the vicinity of these plants that will bear the brunt of these impacts. Moreover,

since these plants are significant employers in otherwise depressed areas, there are few employment alternatives offering similar wages and benefits for impacted employees, forcing many of them to relocate to find work.

Response: The Department recognizes the uncertainty faced by coal operations and their employees in this Commonwealth and emphasizes its intention to prioritize traditional energy workers and communities in a just transition to a lower-carbon future. Nationally, the last ten years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005, electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline dramatically. In 2010, coal generation represented 47 percent of this Commonwealth's generation portfolio and is expected to decline to roughly 1 percent of this Commonwealth's generation portfolio in 2030. This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI.

468. Comment: The commentator states that if this commonwealth were to implement this final-form rulemaking, four EGUs (Cheswick, Conemaugh, Homer City and Keystone) would cease operation, and the production of nine million tons of Pennsylvania-mined coal would be put at risk.

Response: The Department's modeling projects most coal-fired electric generation will cease by 2025, even without this final-form rulemaking. The Department recognizes the uncertainty faced by coal operations and their employees in this Commonwealth and emphasizes its intention to prioritize traditional energy workers and communities in a just transition to a lower-carbon future. Nationally, the last ten years have seen coal's position steadily erode due to a combination of low electricity demand, mounting concern over climate, and increased competition from natural gas and renewables. The same is true for coal generation in this Commonwealth. Since 2005, electricity generation in this Commonwealth has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emissions generation sources, such as natural gas, and renewable energy. Between now and 2030, coal generation is expected to decline dramatically. In 2010, coal generation represented 47 percent of this Commonwealth's generation portfolio and is expected to decline to roughly 1 percent of this Commonwealth's generation portfolio in 2030. This shift away from coal-fired generation occurs irrespective of this Commonwealth's participation in RGGI.

469. Comment: The commentator states that as the financial market shifts as part of a greater focus on Environmental, Social and Governance, coal-fueled generators are finding it increasingly difficult to obtain access to the capital necessary to maintain operations.

Response: The Department recognizes that coal generation may become less financially viable over time due to the influx of more affordable energy options, particularly natural gas production in Pennsylvania, but this shift away from coal predates this rulemaking and will occur irrespective of RGGI participation. The Department recognizes the uncertainty faced by coal

operations in this Commonwealth and emphasizes its intention to prioritize traditional energy workers and communities in a just transition to a lower-carbon future.

470. Comment: The commentator states that its Maryland coal plants, which have been operating under RGGI since its inception, only recently announced the intent to stop burning coal. The commentator adds that the existence of RGGI in Maryland did not impact that decision. The major reason for that decision is that the plants recently became more of a capacity resource, running only when market conditions dictated due to continuously low energy prices, primarily driven by the abundance of low-cost natural gas and declining energy demand. The commentator states that for similar reasons, Pennsylvania coal plants will be similarly challenged and face an uncertain future.

Response: The Department recognizes the uncertainty faced by coal operations in this Commonwealth and emphasizes its intention to prioritize traditional energy workers and communities in a just transition to a lower-carbon future.

471. Comment: The commentator contests the idea that RGGI is not needed because emission reductions in RGGI states have occurred primarily due to coal plants shutting down (fuel switching to combined cycle natural gas-fired generation) and that this would have happened even without RGGI. The commentator states that this argument fails to recognize the changing dynamics of power generation in this region and that a large number of factors go into the long-term strategy of power companies facing substantial capital investments in old generating plants. The commentator states that over the last decade, as cheap natural gas has led to a proliferation of combined-cycle natural gas-fired plants, and, less efficient, more costly coal-fired plants began to shut down, and that these retirements occurred in both states with and without RGGI.

Response: The Department acknowledges this comment. This Commonwealth's participation in RGGI is necessary to ensure CO_2 emissions are reduced from the electricity generation sector.

472. Comment: The commentator states that there could be positive economic impacts for Pennsylvania's nuclear electric generating industry as a result of this final-form rulemaking, which could lead to economic growth in areas with nuclear power plants.

Response: The Department agrees that this final-form rulemaking could contribute to mitigating economic distress of nuclear electric generating units in this Commonwealth, although that is not the purpose of this final-form rulemaking.

Further, nuclear employment has declined by 5.7 percent since 2017, shedding 256 jobs. A number of the job losses in nuclear generation are likely attributable to the closure of the Three Mile Island nuclear generation facility in September 2019. However, nuclear facilities are bolstered through this final-form rulemaking because the facilities are zero-carbon emitters. This means that the facilities will not need to factor in the price of emitting CO_2 when bidding into the electricity market. In fact, in early 2020, Energy Harbor, the owner of the Beaver Valley Nuclear Plant, specifically cited this final-form rulemaking as a primary reason for withdrawing the deactivation notice previously issued for the facility. Since the Beaver Valley Nuclear Plant will continue operating, the jobs related to the facility will be retained.

473. Comment: The commentator states that this prosed rulemaking will not economically benefit nuclear power plants to the point of completely mitigating financial challenges the industry is facing.

Response: The Department acknowledges this comment.

474. Comment: Data from the EIA shows that states that participate in RGGI decrease in-state generation. According to the EIA, states that participated in RGGI between 2008, the last non RGGI year, and 2019 decreased their cumulative generation by over 46 million MWh annually. During that same time RGGI states imported 447,167,524 MWh of their electricity sales - or over 447 GWh of imported generation over a ten-year period. By contrast, according to the EIA's Detailed State Data, Pennsylvania produced 2,435,486 GW of power during that same time, yet had only 1,608,340 GW of electricity sales, meaning over 827 thousand GWs of electricity was exported from Pennsylvania and imported to other states.

Response: The Department acknowledges this comment. The Department's modeling projects only a 5 percent average difference in total Pennsylvania electric generation as a result of this final-form rulemaking.

475. Comment: The commentator states that there is no reason to reduce Pennsylvania generation when doing so will not affect climate change whatsoever.

Response: The final-form regulation does not aim to reduce generation, rather price CO_2 emissions into the cost of electricity generation.

476. Comment: The commentator states this regulation will negatively impact power reliability.

Response: The Department disagrees with that assessment. In recent years, this Commonwealth has seen a shift in the electricity generation portfolio mix, resulting from market forces and the establishment of alternative energy goals, and energy efficiency targets. Since 2005, this Commonwealth's electricity generation has shifted from higher carbon-emitting electricity generation sources, such as coal, to lower and zero emission generation sources, such as natural gas, wind and solar. At the same time, overall energy use in the residential, commercial, transportation, and electric power sectors has reduced. There have not been negative impacts to reliability during this period.

Further, the Department's modeling resulted in this Commonwealth's generation mix consisting of a maximum of 15 percent renewable generation by 2030. There is no evidence that renewable energy integration at that generation level would negatively impact reliability. In fact, one PJM study estimated that there would not be any significant issues operating with up to 30 percent of energy coming from wind and solar across the entire PJM grid. See General Electric International, Inc., PJM Renewable Integration Study, 2014, https://www.pjm.com/-/media/committees-groups/subcommittees/irs/postings/pris-executive-summary.ashx

477. Comment: Baseload sources, such as coal, still play an important role in grid resilience. The North American Electric Reliability Corporation (NERC) has cautioned through recent assessments that the retirements of baseload generation, coupled with the rapid addition of variable sources and influx of natural gas generation, could impact system reliability.

Response: The Department acknowledges this comment. Coal-fired power plants in this Commonwealth have declined in total generation since 2005, and the Department's modeling projects that will continue to occur even without this final-form rulemaking.

478. Comment: The commentator recommends a working group consisting of representatives from PJM, NERC and Reliability First Corp. that will provide feedback to ensure Pennsylvania's evolving generation and ultimate retirement of baseload capacity are reviewed and considered in the annual evaluation of Pennsylvania's participation in RGGI.

Response: The Department acknowledges this comment and will give this recommendation additional consideration; however, widespread grid reliability is neither within the purview of the Department nor within the scope of this final-form rulemaking.

479. Comment: The commentator states that Pennsylvania is a leading electricity exporter and that should be factored into the rulemaking so that status is maintained.

Response: The Department's modeling projects that this Commonwealth will continue to be a leading electricity exporter if this final-form rulemaking is implemented.

480. Comment: Because of Pennsylvania's unique position as the second largest producer of natural gas in the country and primary exporter of electricity to the largest electric grid in the country, it is critical that the state perform a comprehensive and regional review of the benefits and unintended impacts of joining the Regional Greenhouse Gas Initiative.

Response: The Department conducted power sector and economic modeling that evaluated the impacts on the energy sector if this final-form rulemaking is implemented.

481. Comment: RGGI has not and will not result in significant renewable electricity development.

Response: This final-form rulemaking is intended to reduce CO_2 emissions in this Commonwealth.

482. Comment: The commentator states that the Department should include an assessment of how the proposed program works in tandem with the existing Alternative Energy Portfolio Standards.

Response: The Department's modeling included any relevant electricity sector policies, including the Alternative Energy Portfolio Standard. The AEPS is a stand-alone law that is complementary to the goals of this final-form regulation.

483. Comment: The commentator asks if Pennsylvania's benefit in RGGI will be maximized without an increase to the state's alternative energy portfolio and if enough CO_2 credits be generated to fulfill the needs of all generators without the commonwealth purchasing credits.

Response: This final-form rulemaking, including implementation and projected benefits, are fully independent of changes or management of the Alternative Energy Portfolio Standard.

484. Comment: The commentator states that many neighboring states have by legislation or executive action established significant renewable portfolio standards, and their public utility commissions have authorized or contracted significant amounts of offshore wind, which is in terms of levelized cost of energy the most expensive resource. It is apparent that these states are eager for Pennsylvania to join RGGI so as to facilitate more buyers for the RGGI credits to support the development of these states' wind and solar resources. To the extent Pennsylvania wishes to pursue reducing greenhouse gas emissions, it must not do so in a way that disadvantages our state's energy sector to advance that of our neighbors.

Response: The Department disagrees with this assessment. The Department's modeling projects that in most years, the emissions from affected facilities in this Commonwealth will be less than the allowance budget in this final-form rulemaking. This would indicate that affected facilities in this Commonwealth would not be purchasing credits from allowance budgets in other participating states.

485. Comment: The commentator states that under RGGI, the state's electricity generation will decline, which hampers its competitiveness relative to generators in neighboring states that do not participate in RGGI. Reduced competitiveness means that Pennsylvania's generators will dispatch less frequently, and the state will rely on imported power more often. Increased reliance on imported power will expose Pennsylvanians to higher power prices.

Response: The Department's modeling projects that this Commonwealth will continue to be a leading electricity exported if this final-form rulemaking is implemented and will not be reliant on imported power.

486. Comment: The commentator states that PJM's two-way border adjustment purports to address not just emissions leakage but also cost leakage, whereby states that have not joined RGGI nevertheless face a marketplace where some resources have higher costs because of other states' choice to join RGGI. However, by allowing resources within RGGI states to avoid RGGI compliance costs when those resources are purportedly serving customers outside of the RGGI subregion, the two-way border adjustment applied to a RGGI footprint including Pennsylvania has the effect of undoing the emission reductions that RGGI brought about in the first place, thereby weakening the already diluted impacts of subregional carbon pricing.

Response: The Department acknowledges this comment and agrees with the commentator that the impacts of the two-way border adjustment may run counter to the intent of this final-form rulemaking. The Department will continue to evaluate this and other leakage mitigation options.

487. Comment: The commentator states that they recently introduced an alternative proposal for how PJM states could come to a mutually beneficial agreement to mitigate both emissions leakage and cost leakage. The commentator urges Pennsylvania and other PJM states to consider this approach. The commentator believes this approach is responsive to comments that suggest Pennsylvania work with PJM stakeholder on enacting carbon pricing across the entire PJM footprint. The commentator's proposal would mimic a regional approach by applying the RGGI carbon pricing mechanism across the entire ISO/RTO footprint and using payments, including payments between RGGI states and non-RGGI states, to make the non-RGGI states indifferent. The commentator lists several possible sources of funds to facilitate these payments to non-RGGI states. The commentator assumes that PJM states will collectively decide on a set of payments that are mutually agreeable, and once there is an agreed upon method to allocate funds among the states, each individual state's designated regulatory or legislative entity would decide what to do with the funds.

Response: The Department appreciates the comment. The Department did not make adjustments to this final-form rulemaking to account for any potential increases in electric generation or emissions in other states. The Department will continue to support regional leakage mitigation efforts. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting the additional modeling in an effort to better understand and control leakage across the entire PJM region.

488. Comment: The commentator states that if the Department amends this proposal to impact the affected facilities in order to account for leakage, such an amendment would require additional notice and comment, pursuant to the Commonwealth Documents Law, which prohibits final rulemakings that "enlarge the original purpose of the proposal as published."

Response: The Department did not make adjustments to this final-form rulemaking to account for any potential increases in electric generation or emissions in other states.

489. Comment: The Department has failed to provide information from PJM that details state-specific impacts to EGU's with and without Pennsylvania's RGGI participation. A PJM analysis at a minimum should project state-by-state electric generation CO_2 emissions for each scenario, thereby allowing the assessment of overall regional emissions reductions and PJM leakage impacts.

Response: This final-form rulemaking is intended to reduce CO_2 emissions across this Commonwealth. The Department's modeling provided a full analysis on the impacts to this Commonwealth if this final-form rulemaking were to be implemented.

490. Comment: The commentator states that there has not been any consultation with the Independent Market Monitor (IMM), which is responsible for promoting a competitive and nondiscriminatory electric power market in PJM. IMM's latest State of the Market Report recommends "...that PJM provide a full analysis of the impact of carbon pricing on PJM generating units and carbon pricing revenues to the PJM states in order to permit the states to consider a potential agreement on the development of a multistate framework for carbon pricing

and the distribution of carbon revenues." This requested analysis has not yet been completed by PJM.

Response: The Department acknowledges this comment. That is outside the scope of this final-form rulemaking.

491. Comment: Within the PJM footprint only three states - Delaware, Maryland, and New Jersey - participate in RGGI, with Virginia slated to join January 2021. Further demonstrating RGGI leakage, all four of these states import electricity from Pennsylvania and other non-RGGI PJM states. In West Virginia, a non-RGGI PJM state where the primary fuel source for generating electricity is coal, coal-fired generation makes up 91 percent of the state's electricity production and nearly half of the electricity produced is exported to other states. This demonstrates why shuttering Pennsylvania's four remaining coal fired EGUs and making Pennsylvania's natural gas units uncompetitive against those in neighboring non-RGGI states will not reduce CO_2 emissions, it will simply displace those emissions to our neighboring PJM states.

Response: The Department acknowledges the comment though disagrees with the assessment. The final-form rulemaking as per the Department's updated modeling is not shuttering coal facilities, rather market forces are leading to accelerated facility closures. Furthermore, extensive modeling by this Department, PJM and Penn State confirm emissions reductions benefits for this Commonwealth and across PJM.

492. Comment: With regards to a specific analysis of leakage by PJM, the commentator recommends the Department review the presentation to the Air Quality Technical Advisory Committee from October 15, 2020. The presentation references the results of a PJM study presented at the meeting of the Carbon Pricing Senior Task Force in January 2020 exploring the potential effects that different carbon-pricing scenarios could have on the region it serves. PJM performed a carbon price modeling study, independent of the Department or ICF, that clearly illustrates that leakage would occur if certain states within its footprint implemented a carbon pricing regime.

Response: The Department is aware of the modeling conducted by PJM that evaluated carbon-pricing scenarios. The Department will continue to support regional leakage mitigation efforts. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting the additional modeling in an effort to better understand and control leakage across the entire PJM region.

493. Comment: The most effective actions that Pennsylvania could take to mitigate leakage are actions that must be taken by the General Assembly, namely to strengthen Act 129 of 2008—the state's energy efficiency and conservation standard—and to significantly raise the renewable energy goals in the Alternative Energy Portfolio Standards Act of 2004.

Response: The Department acknowledges this comment and will continue to work with the PA PUC as appropriate.

494. Comment: The commentator states that the Department and the Public Utility Commission should continue to engage in the PJM Interconnection's Carbon Pricing Senior Task Force with the goal of securing an effective carbon border adjustment.

Response: The Department acknowledges this comment and the Department has stated previously that it remains committed to conversations and collaboration with CPSTF and other interested stakeholder on the matter of leakage.

495. Comment: Emissions leakage is likely if the CO_2 Budget Trading Program is promulgated without complementary policies, such as including stronger statutory energy efficiency and renewable energy goals and a carbon border adjustment implemented by PJM or by the Commonwealth.; however, even if a relatively high amount of the leakage occurs, the Program will result in lower emissions across the PJM region and significant net benefits in Pennsylvania.

Response: The Department agrees that this final-form rulemaking will lead to decreased CO_2 emissions in this Commonwealth and the PJM region. The Department will continue to support regional leakage mitigation efforts. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region.

496. Comment: Pennsylvania will need to take further actions to prevent leakage that will reduce the efficacy and potentially displace generation to jurisdictions outside of Pennsylvania that do not put a price on emitting GHG pollution. The PJM Interconnection LLC has explored mechanisms to prevent leakage and will be receptive. FERC has been more receptive to uniform carbon-based measures than to technology-based initiatives such as Pennsylvania's AEPS.

Response: The Department appreciates the comment and supports ongoing efforts to price carbon from the electricity sector at the regional or national level by PJM, the FERC, and the Federal government. The Department has been an active participant in PJM's Carbon Pricing Senior Task Force which is conducting additional modeling in an effort to better understand and control leakage across the entire PJM region. The FERC hosted a carbon pricing technical conference in the Fall of 2020, resulting in a policy statement requesting public comment on issues such as how to address shifting generation amongst states as a result of carbon pricing. Lastly, the Federal administration is seeking to reduce carbon emissions from the electric power sector, specifically aiming to produce 80 percent of the nation's electricity from zero-carbon sources. The Department appreciates those efforts while also understanding that this final-form rulemaking will reduce anthropogenic emissions of CO_2, a GHG and major contributor to climate change impacts, in a manner that is protective of public health, welfare and the environment in this Commonwealth.

Outside the Scope of the Rulemaking

The Department received a number of comments related to issues including the Chesapeake Bay, methane emissions from oil and gas sources, the Delaware River Basin Commission, among many others. These issues are unrelated to this final-form rulemaking. The Department has reviewed and considered these comments. However, since they are outside the scope of this final-form rulemaking, these comments are not included in this Comment and Response Document.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Comment and Response Document

Appendix: List of Commentators

CO_2 Budget Trading Program

25 Pa. Code Chapter 145, Subchapter E
50 Pa.B. 6212 (November 7, 2020)
Environmental Quality Board Regulation #7-559
(Independent Regulatory Review Commission #3274)

*Commentators denoted with an asterisk provided testimony at one of the public hearings, but no written copy of their testimony was received. Please refer to the public hearing transcripts for a verbatim copy of their comments, available under Regulation #7-559 in eComment, https://www.ahs.dep.pa.gov/eComment/.

First Name	Last Name	Affiliation	City	State
David	Sumner	Independent Regulatory Review Commission	Harrisburg	PA
Sen. Camera	Bartolotta	PA Senate - 46th District	Washington	PA
Sen. Amanda	Cappelletti	PA Senate - 17th District	Norristown	PA
Sen. Maria	Collett	PA Senate - 12th District	Harrisburg	PA
Sen. Carolyn T.	Comitta	PA Senate - 19th District	Harrisburg	PA
Sen. Art	Haywood	PA Senate - 4th District	Philadelphia	PA
Sen. Tim	Kearney	PA Senate - 26th District	Springfield	PA
Sen. Katie	Muth*	PA Senate - 44th District	Royersford	PA
Sen. Joe	Pittman	PA Senate - 41st District	Harrisburg	PA
Sen. Joe	Pittman	29 PA State Senators	Harrisburg	PA
Sen. Nikil	Saval*	PA Senate - 1st District	Harrisburg	PA
Sen. Judith	Schwank	PA Senate - 11th District	Harrisburg	PA
Sen. Sharif	Street	PA Senate - 3rd District	Philadelphia	PA
Sen. Gene	Yaw	PA Senate - 23rd District	Harrisburg	PA
Rep. Matt	Bradford	PA House of Representatives - 70th District	Harrisburg	PA
Rep. Tim	Briggs	PA House of Representatives - 149th District	King of Prussia	PA
Rep. Donna	Bullock	PA House of Representatives - 195th District	Philadelphia	PA
Rep. Joseph	Ciresi	PA House of Representatives - 146th District	Royersford	PA
Rep. Mary Jo	Daley	PA House of Representatives - 148th District	Narberth	PA
Rep. Elizabeth	Fiedler	PA House of Representatives - 184th District	Philadelphia	PA
Rep. Dan	Frankel	PA House of Representatives - 23rd District	Pittsburgh	PA
Rep. Robert L.	Freeman	PA House of Representatives - 136th District	Easton	PA
Rep. Edward	Gainey	PA House of Representatives - 24th District	Pittsburgh	PA
Rep. Liz	Hanbidge	PA House of Representatives - 61st District	Harrisburg	PA
Rep. Dianne	Herrin*	PA House of Representatives - 156th District	West Chester	PA
Rep. Carol	Hill-Evans	PA House of Representatives - 95th District	York	PA
Rep. Sara	Innamorato	PA House of Representatives - 21st District	Harrisburg	PA
Rep. Mary	Isaacson	PA House of Representatives - 175th District	Philadelphia	PA
Rep. Malcolm	Kenyatta	PA House of Representatives - 181st District	Harrisburg	PA
Rep. Rick	Krajewski	PA House of Representatives - 188th District	Philadelphia	PA

Rep. Leanne	Krueger	PA House of Representatives - 161st District	Harrisburg	PA
Rep. Maureen	Madden	PA House of Representatives - 115th District	Harrisburg	PA
Rep. Bridget	Malloy Kosierowski	PA House of Representatives - 114th District	Taylor	PA
Rep. Daryl	Metcalfe	PA House Environmental Resources & Energy Cmte.	Harrisburg	PA
Rep. Daryl	Metcalfe	PA House of Representatives - 12th District	Harrisburg	PA
Rep. Brett	Miller	40 PA House of Representatives Members	Lancaster	PA
Rep. Kyle	Mullins	PA House of Representatives - 112th District	Harrisburg	PA
Rep. Napoleon	Nelson	PA House of Representatives - 154th District	Harrisburg	PA
Rep. Danielle Friel	Otten	PA House of Representatives - 155th District	Exton	PA
Rep. Chris	Rabb*	PA House of Representatives - 200th District	Philadelphia	PA
Rep. James	Roebuck	PA House of Representatives	Harrisburg	PA
Rep. Steve	Samuelson	PA House of Representatives - 135th District	Bethlehem	PA
Rep. Benjamin	Sanchez	PA House of Representatives - 153rd District	Abington	PA
Rep. Christina	Sappey	PA House of Representatives - 158th District	Kennett Square	PA
Rep. Michael	Schlossberg	PA House of Representatives - 132nd District	Allentown	PA
Rep. Melissa	Shusterman	PA House of Representatives - 157th District	Paoli	PA
Rep. Brian	Sims	PA House of Representatives - 182nd District	Philadelphia	PA
Rep. Pam	Snyder	PA House of Representatives - 50th District	Carmichaels	PA
Rep. Jared	Solomon	PA House of Representatives - 202nd District	Philadelphia	PA
Rep. Jim	Struzzi	PA House of Representatives - 62nd District	Indiana	PA
Rep. Greg	Vitali	PA House of Representatives - 166th District	Havertown	PA
Rep. Joe	Webster	PA House of Representatives - 150th District	West Norriton	PA
Rep. Dan	Williams	PA House of Representatives - 74th District	Thorndale	PA
Carlyn			Carmichaels	PA
Kevin			*Submitted via email*	PA

Lesha			*Submitted via email*	PA
Steve	Aaron	Nuclear Powers Pennsylvania	Harrisburg	PA
Shalain	Abbas		Pittsburgh	PA
Sheima	Abbas*		Philadelphia	PA
Bruce	Abbott		Media	PA
K.	Abbott		Philadelphia	PA
Marisa	Abbott		Rostraver Township	PA
Azza	Abdin		Philadelphia	PA
Roosevelt	Abdullah		Philadelphia	PA
Sakeenah	Abdullah		West Chester	PA
Hassan	Abdulrahim		Philadelphia	PA
Margherita	Abe		Philadelphia	PA
Chastity	Abel		Dover	PA
Jodi	Abel		York	PA
Dashun	Abney		Philadelphia	PA
Barbara	Abraham		Douglassville	PA
Taniya	Abraham		State College	PA
Matt	Abrams		Wellsboro	PA
Ronald	Abrams		Philadelphia	PA
Herbert	Abramson		Lancaster	PA
Marylou	Acciavatti		Philadelphia	PA
Rebecca	Ace		East Stroudsburg	PA
Rebecca	Acer		Pittsburgh	PA
Mark	Acerni		Mercer	PA
Barbara	Achey		Union Dale	PA
James	Achey		Union Dale	PA
Judith	Ackerman		Hazleton	PA
Margo	Ackerman		Elkins Park	PA
Sharlene	Ackerman		Monaca	PA
Melissa	Acosta		Lebanon	PA
Peggy	Acosta		Womelsdorf	PA
Frank	Adair		Philadelphia	PA
Cookie	Adam		Phoenixville	PA
Frank	Adamczyk		Windber	PA
Anthony	Adams		Philadelphia	PA
Ben	Adams	MaGrann Associates	Philadelphia	PA
Christine	Adams		Philadelphia	PA
Gregg	Adams		Philadelphia	PA
Howard	Adams		Philadelphia	PA
Larry	Adams		Meyersdale	PA
Latoya	Adams		Philadelphia	PA
Maureen	Adams		Philadelphia	PA
Mumina	Adams		Pittsburgh	PA
Nancy	Adams		Mechanicsburg	PA
Pam	Adams	Centre Region Council of Governments	State College	PA

Pam	Adams		PA Furnace	PA
Patricia	Adams		Bethel Park	PA
Patty	Adams		Millersburg	PA
Peggy	Adams		Fair Oaks	PA
Peter	Adams		Pittsburgh	PA
Stephen	Adams		Danville	PA
Viola	Adams		Pottsville	PA
Kathleen	Adamson		Wallingford	PA
Linda	Addis		Hermitage	PA
Peace	Adebayojp		Feasterville Trevose	PA
Bukola	Adekoje		Philadelphia	PA
Kudirat	Adewale		Croydon	PA
Adewale	Adeyinka		Philadelphia	PA
Lorie	Adkins		Pittsburgh	PA
Claire	Adler		Philadelphia	PA
Linda	Adzima		Oakmont	PA
Antoinette	Agbuya		Philadelphia	PA
Hanna	Aggen		Red Lion	PA
Hans	Aglidian		Marcus Hook	PA
Sandra	Agnew		Pittsburgh	PA
Domingo	Agosto		Philadelphia	PA
Shefali	Agrawal		Lancaster	PA
Suparna	Agrawal		Pittsburgh	PA
Elvira	Aguayo		Carbondale	PA
Josue	Aguilar	Natural Resources Defense Council	New York	NY
Caroline	Aguilera		Hazleton	PA
Stephen	Agypt		Harrisburg	PA
Maryann	Ahearn		King of Prussia	PA
Eugenia	Ahern		Philadelphia	PA
Hizra	Ahmad		Wayne	PA
Farah	Ahmed		Hershey	PA
Nagwa	Ahmed-Cramer		Allentown	PA
Carina	Ahren		Havertown	PA
Julie	Aiken		Boalsburg	PA
Howard	Aikens		Pittsburgh	PA
Katie	Aikins		Philadelphia	PA
Leann	Aikins		*Submitted via email*	PA
Keith	Aitken		Levittown	PA
Mitul	Ajmera		Lansdale	PA
Muhammad	Akhanda		Upper Darby	PA
Shantel	Akins		Bethlehem	PA
Ennie	Akinwunmi		Philadelphia	PA
Heather	Akladios		Bala Cynwyd	PA
Anjali	Akula		Pittsburgh	PA
Terrie	Alaimo		Scranton	PA

Kirk	Aland		Latrobe	PA
Henry	Albert		Elkins Park	PA
Allison	Alberts		Kunkletown	PA
Dr. John Jay	Albertson		Boalsburg	PA
Julia	Albertson		Vineland	NJ
Dixie	Albright		Wrightsville	PA
Eric	Albright		Erie	PA
Etta	Albright		Cresson	PA
George	Alden		Eagleville	PA
Katherine	Alden		Center County	PA
Ed	Alderfer		Pottstown	PA
Scott	Alderfer		Macungie	PA
Becky	Aldrich		Erie	PA
Renee	Aldrich		Pittsburgh	PA
Donna	Aldridge		Philadelphia	PA
Robert	Alejnikov		Downingtown	PA
Juan	Aleman-Irizarry		Reading	PA
Diane	Alex		Upper Black Eddy	PA
Floyd	Alexander		Aliquippa	PA
Henry	Alexander		West Chester	PA
John	Alexander		Phoenixville	PA
Melody	Alexander		Coatesville	PA
Nakricia	Alexander		Pittsburgh	PA
Tara	Alexander		Sewickley	PA
Diane	Alexanderson		Doylestown	PA
Lavone	Alford		Philadelphia	PA
Laura	Alicea		East Stroudsburg	PA
Norberto	Alicea		Philadelphia	PA
Zavidny	Alison		Gibsonia	PA
Mark	Allain		Mohnton	PA
Arianne	Allan		Wallingford	PA
Lisa	Allarde		Kunkletown	PA
Shanel	Alle		Philadelphia	PA
Ward	Allebach	Adjunct Prof., Univ. of Pitt. Env. Studies Program	Pittsburgh	PA
Alexandra	Allen		State College	PA
Amber	Allen		Philadelphia	PA
Gwendolyn	Allen		Philadelphia	PA
Kerri	Allen		Pittsburgh	PA
Kimberly	Allen		Erie	PA
Kimberly	Allen		Philadelphia	PA
Mary	Allen		Philadelphia	PA
Russ	Allen		Jenkintown	PA
Sonya	Allen		Pottstown	PA
Tatyana	Allen		Philadelphia	PA
Jorunn W.	Allersma		Pittsburgh	PA
Leslie	Allison		Havertown	PA

Richard	Allison		Red Lion	PA
Sarah	Allison		Lewistown	PA
Richard	Alloway		Warminster	PA
Linda	Allridge		Bensalem	PA
Maria Guadalupe	Almanza*		Conestoga	PA
Jadamaris	Almodovar		Reading	PA
Ricardo	Almodovar		Lancaster	PA
Ibrahim	AlMuasher		Medford	MA
Melanie	Aloi		Pittsburgh	PA
Camillia	Al-Rokh		Philadelphia	PA
Robert	Alspaugh		Clarks Summit	PA
Leigh	Altadonna	President, Wyncote Audubon Society	Abington	PA
Robert	Altenburg	PennFuture	Harrisburg	PA
Holly	Altenderfer		Reading	PA
Lori	Altenderfer		Pittsburgh	PA
Noah	Alter		Derry	PA
Lourdes	Alvarado		Philadelphia	PA
Nicholas	Alvarado		Philadelphia	PA
Michelle	Alvare		Havertown	PA
Tim	Alvey		Harrisburg	PA
MaryEllen	Alviti		Flourtown	PA
Aquilla	Alwan		Philadelphia	PA
Baheejah	Alwan		Philadelphia	PA
Patricia	Amakye		Philadelphia	PA
Chelsea	Amanatides		Philadelphia	PA
Wilbur	Amand		West Chester	PA
Evelyn	Amaro		Columbia	PA
Arthur	Amato		Philadelphia	PA
Betsy	Amber		Exton	PA
Janet	Amber		Pottsville	PA
Bobbie	Ambrose		Delta	PA
Dr. Thomas	Ambrosia		Benton	PA
Philip	Ameris	Laborers' District Council of Western Pennsylvania	Pittsburgh	PA
Diana	Ames		Pittsburgh	PA
Meliza	Amill		Philadelphia	PA
Kathleen	Ammann		Philadelphia	PA
Peter	Ammirati		Lambertville	NJ
Susan	Amprim		Monessen	PA
Annete	Amrhein		Butler	PA
Nina	Amster		Ambler	PA
Sidney	Amster		Philadelphia	PA
Nikhil	Anand	Associate Professor, University of Pennsylvania	Philadelphia	PA
Priscilla	Anand		West Boylston	MA
Ilenia	Anastasi		West Chester	PA

Judi	Andersen		Phoenixville	PA
Alison	Anderson		Philadelphia	PA
Andrea	Anderson		Philadelphia	PA
B.C.	Anderson		Phoenixville	PA
Betty	Anderson		DuBois	PA
Brian	Anderson		Philadelphia	PA
Chasity	Anderson		Aliquippa	PA
Elaine	Anderson		Punxsutawney	PA
Elizabeth	Anderson		Haverford	PA
Eric	Anderson		Philadelphia	PA
Erik	Anderson		Lancaster	PA
Georgi	Anderson		Gardners	PA
Jilann	Anderson		Altoona	PA
Kamika	Anderson		Philadelphia	PA
Kim	Anderson		Ebensburg	PA
Kisha	Anderson		Coatesville	PA
Kris	Anderson		Wayne	PA
Lawlaise	Anderson		Philadelphia	PA
Libby	Anderson		Haverford	PA
Lynn A.	Anderson		New Milford	PA
Megan	Anderson		Pittsburgh	PA
Melody	Anderson		Delaware Water Gap	PA
Mia	Anderson		Erie	PA
Michael	Anderson		Philadelphia	PA
Michelle	Anderson		Philadelphia	PA
Rasheedah	Anderson		Philadelphia	PA
Renee	Anderson		Philadelphia	PA
Rhonda	Anderson		Kennett Square	PA
Richard	Anderson		East Brady	PA
Robert	Anderson		Titusville	PA
Ronald	Anderson		Philadelphia	PA
Sam	Anderson		Mars	PA
Stephen	Anderson		Allentown	PA
Tracey	Anderson		Lansdowne	PA
Tressa	Anderson		Levittown	PA
William	Anderson		Camp Hill	PA
William	Anderson		Narberth	PA
Kristy	Anderson-Penrose		New Florence	PA
Xenaida	Andino		Allentown	PA
Brett	Andrews		Pittsburgh	PA
David	Andrews		Carnegie	PA
Elaina Marie	Andrews		Ambler	PA
Doreen	Andrulis		Reading	PA
Julio	Andujar		Philadelphia	PA
Ky	Anerson		Eddystone	PA
Michelle	Angelico		Breinigsville	PA

Nicole	Angelo		Oakdale	PA
Alan	Ankeny		Philadelphia	PA
Michelle	Anson		Penn	PA
Lori	Anszis		Upper Darby	PA
Marie	Antar		Norristown	PA
Jimmy	Antes		Liberty	PA
Diane	Anthony		Indiana County	PA
Lilly	Antill		Warrington	PA
Chris	Antis		*Submitted via email*	PA
Megan	Anton		Greensburg	PA
Mary Grace	Antonich*		Allison Park	PA
Carol	Antos		Northern Cambria	PA
Lisa	Antrim		Reading	PA
Anthony	Antrom		Philadelphia	PA
Donte	Antrom		Philadelphia	PA
Alisa	Apgar		Philadelphia	PA
Marilyn	Aponte		Philadelphia	PA
George	Apostol		Pen Argyl	PA
Aaron	Appel	Sunrise Movement Philadelphia Hub	Philadelphia	PA
Sean	Appel		Pittsburgh	PA
Danielle	Appicello		Philadelphia	PA
H	Applebaum		Blue Bell	PA
Arizonia	Applegarth		Bentleyville	PA
Todd	Appleman		Philadelphia	PA
Kathy	Aprile		Califon	NJ
Nicole	Aquino		Philadelphia	PA
Ralph	Aquino		Ambridge	PA
Steven	Arabia	LS Power	East Brunswick	NJ
Soumia	Araichi		Allentown	PA
Reveca	Arana		Philadelphia	PA
Amy	Arcaro		Philadelphia	PA
Sandra	Arch-Evans		Pittsburgh	PA
Sally	Archibald		Grove City	PA
Gerald	Arcuri		Benton	PA
Donald	Arena	South Central PA Building & Construction Trades	Ebensburg	PA
Sharon	Argueta		Reading	PA
Abby	Aristeo		Dallas	PA
Melvin	Armolt		Chambersburg	PA
Allison	Armstrong		Havertown	PA
Carol	Armstrong		Malvern	PA
Ericka	Armstrong		Pittston	PA
Jim	Armstrong		Lincoln University	PA
Mary	Armstrong		Kennett Square	PA
Stephan	Armstrong		Watsontown	PA
Terry	Armstrong		Waynesboro	PA

Kevin	Arnold		Cresson	PA
Sherman	Aronson	Green Building United	Philadelphia	PA
B.	Arrindell	Damascus Citizens for Sustainability	Milanville	PA
Jose	Arroyo		Reading	PA
Luis	Arroyo		Philadelphia	PA
Maria	Arroyo		Philadelphia	PA
David	Arseneault		Hollidaysburg	PA
Evrim	Artman		Royersford	PA
Nancy	Artus		Downingtown	PA
Beth	Arvin		York	PA
Shweta	Arya		Garnet Valley	PA
John	Ascenzi		Philadelphia	PA
Dwight	Ashbaugh		Marion Center	PA
Carolynn J.	Ashelman		Berwick	PA
Ina	Asher		Merion	PA
Rebecca	Ashkettle		Pittsburgh	PA
Brett	Ashley		Freeport	PA
Marissa	Ashley		York	PA
Robert	Ashman		Philadelphia	PA
Tiffany	Ashton		Olyphant	PA
Andy	Ashurst		Bethlehem	PA
Michael	Ashworth		Lancaster	PA
Anthony	Askew		Philadelphia	PA
Brenda	Askew		Philadelphia	PA
Walter	Askins		Fairview	PA
Stephen	Aspenberg		Baden	PA
Charles	Aston		Chambersburg	PA
Brandon	Atherholt		Jim Thorpe	PA
David	Atherholt		Elizabethtown	PA
Lucius	Atkins		Philadelphia	PA
Sean	Atkins		Altoona	PA
Kailee	Atkinson		Philadelphia	PA
Michael	Atkinson		Philadelphia	PA
Donald	Atkiss		Hatfield	PA
Barbara	Attie		*Submitted via email*	PA
Thomas	Au*		Harrisburg	PA
David	Auch		Bainbridge	PA
Yolanda	Audifre		Allentown	PA
Mary Lynn	August		Spring City	PA
Catherine	Augustitus		Shamokin	PA
Hilary	Auker		Ephrata	PA
Greta	Aul		Lancaster	PA
Gary	Aull		Canonsburg	PA
Mary Ruth	Aull		Penn Hills	PA
Joann	Aurand		Pittsburgh	PA

Judith	Austin		Philadelphia	PA
Renee	Austin		Birchrunville	PA
Sashet	Austin		Upper Darby	PA
Gregory	Avakian		Philadelphia	PA
Kaitlyn	Ave'Lallemant		Philadelphia	PA
Jeremy	Avellino	Green Building United	Philadelphia	PA
Kostas	Avgiris		North Wales	PA
Nancy	Avila		Reading	PA
Jose	Aviles Velez		Lancaster	PA
Colleen	Avni		Upper Darby	PA
Diana	Axtell		Pittsburgh	PA
Carlos	Ayala		Philadelphia	PA
Carol	Ayala		York	PA
Robert	Aycox		Wyndmoor	PA
Frank	Ayers		Altoona	PA
James	Ayers		Allentown	PA
Michael	Ayers		Kingston	PA
Michele	Ayers		Clarks Summit	PA
Ken	Ayre		Saylorsburg	PA
Marguerite	Ayres		Flourtown	PA
Amy	B.		Perryopolis	PA
Jill	B.		San Francisco	CA
Lisa	Baas		Emmaus	PA
Brendon	Baatz	ChargEVC-PA	Highland Park	NJ
Michael	Babb		Fleetwood	PA
Susan	Babbitt		Philadelphia	PA
Michael	Babitch		Kimberton	PA
Denise	Babjack		McDonald	PA
Vignesh	Babu		Phoenixville	PA
Romina	Baca		Philadelphia	PA
Alex	BacaJimenez		Philadelphia	PA
Jennifer	Bachman		Allentown	PA
Terry	Bachman		Meyersdale	PA
Cindy	Bachmann		Gibsonia	PA
Phila	Back		Kutztown	PA
Max	Bader		Munhall	PA
William	Bader		Bethlehem	PA
Kelly	Baehr		Pittsburgh	PA
Sariah	Baerga		Philadelphia	PA
Nelson	Baez		Landenberg	PA
Carlo	Baffa		Bala Cynwyd	PA
Donna	Bagenstose		Leesport	PA
Sidne	Baglini		Malvern	PA
Cataldo	Baglio		Bristol	PA
Donald	Bahn		East York	PA
Diane	Bailey		Reading	PA
Irwin	Bailey		Philadelphia	PA

Lamisha	Bailey		Philadelphia	PA
Maurizz	Bailey		Philadelphia	PA
Shernita	Bailey		Philadelphia	PA
Tanya	Bailey		Drexel Hill	PA
Allison	Bailey*	Vet Voice Foundation	Twentynine Palms	CA
William	Bailey, Jr.		Monroeville	PA
John	Baillie	Group Against Smog and Pollution	Pittsburgh	PA
Sherri	Bailor		Pittsburgh	PA
William	Bain		Pittsburgh	PA
Milton	Bair		Milan	PA
Stephen	Bair		Bangor	PA
Dr. Jennifer	Baka		University Park	PA
Aric	Baker	IBEW Local 459, Keystone Generation Station	Ford City	PA
Barbara	Baker		Lewisburg	PA
Bestrice	Baker		Philadelphia	PA
Brian	Baker		Ford City	PA
Brice	Baker		Philadelphia	PA
Constance	Baker		Churchville	PA
Dennie and Carol	Baker		Warrington	PA
Jenn	Baker		Grantville	PA
Maddy	Baker		Lansdale	PA
Michael	Baker		Adrian	PA
Michael	Baker		Canonsburg	PA
Sam	Baker		Kittanning	PA
Siena	Baker		State College	PA
Gerritt & Elizabeth	Baker-Smith		Portsmouth	VA
John	Balavage		Irwin	PA
James	Baldassarre		Doylestown	PA
Rocio	Baldessari		Philadelphia	PA
Richard	Baldock		Allentown	PA
Christine	Baldonieri		Latrobe	PA
Deborah	Baldwin		Coudersport	PA
Gary	Baldwin		Clearfield	PA
Joseph	Baldwin		Philadelphia	PA
Kim	Baldwin		Lackawaxen	PA
Rebecca	Baldwin		Yeadon	PA
Roy	Baldwin		Philadelphia	PA
John	Balicki		Acme	PA
Paul	Balik		Beaver	PA
Carl	Balis		Glenolden	PA
Terrie	Balko		West Newton	PA
Kenneth	Ball		Buena Vista	PA
Annette	Ballard		Philadelphia	PA
Crystal	Ballard		Philadelphia	PA
Hanif	Ballard		Wilkes-Barre	PA

Zenia	Ballard		Kane	PA
James	Ballow		Philadelphia	PA
Alex	Baloga	PFMA	Camp Hill	PA
Karen	Balos		Erie	PA
Michael	Balsai		Philadelphia	PA
Gail	Balser		Delta	PA
Charlotte	Ban		White Oak	PA
Charlene	Bance		North Wales	PA
Marcia	Bandes		Pittsburgh	PA
Jonathan	Banfield		Indiana	PA
James	Banford		Feasterville	PA
Edward	Banja		Mifflinville	PA
Thomas	Bank		Lemoyne	PA
Barbara	Bankard		Mechanicsburg	PA
RaeAnn	Banker		New Hope	PA
Hailee	Banko		Nazareth	PA
Damon	Banks		Philadelphia	PA
David	Banks	City Councilman, City of Williamsport	Williamsport	PA
Janice	Banks		Center Barnstead	NH
Pat	Banks		Philadelphia	PA
Theresa	BanksNewsome		Philadelphia	PA
James	Bannan		Exton	PA
Gregory	Bannett		Ardmore	PA
Mary-Grace	Banyas		Nazareth	PA
Megan	Baranowski		Pittsburgh	PA
Mark	Barbash		Philadelphia	PA
Mark	Barbee	Mayor, Bridgeport Borough	Bridgeport	PA
Christopher	Barber		Philadelphia	PA
Diana	Barber		Philadelphia	PA
Edna	Barber		West Chester	PA
Zachary	Barber		Pittsburgh	PA
Vince & Cindy	Barbi		Blairsville	PA
Bill	Barbour		Harrisburg	PA
Carolyn	Barcomb		Media	PA
Nick	Barcott		Lynnwood	WA
Diane	Bardol	VP&Soc.Justice Coord,Grey Nuns of the Sacred Heart	Philadelphia	PA
Debbie	Barg		Merion	PA
Lauri	Barish		Lower Gwynedd	PA
Amy	Barker		Pittsburgh	PA
Barbara	Barker		Indiana	PA
Charlot Mary	Barker		West Chester	PA
Emily	Barlow		Pittsburgh	PA
Jesse	Barlow	President, State College Borough Council	State College	PA
Dennis	Barnebey		Philadelphia	PA

Ann	Barnes		Russell	PA
John A.	Barnes		Philadelphia	PA
Latasha	Barnes		Philadelphia	PA
Latrelle	Barnes		Philadelphia	PA
Lesly	Barnes		Camp Hill	PA
Lisa	Barnes		Philadelphia	PA
Norman	Barnes		Bethlehem	PA
Raquel	Barnes		Philadelphia	PA
Sabina	Barnes		Philadelphia	PA
Tracey	Barnes		New Hope	PA
Valerie	Barnes		Fayetteville	PA
Andrea	Barnett		Lancaster	PA
Jack	Barnett		Hawley	PA
Diann	Barnhart		Shippensburg	PA
Cathy	Barno		Rices Landing	PA
Ozell	Barnum		Coatesvill	PA
Burns	Barr		Chambersburg	PA
Kathy	Barr		Clymer	PA
Linda	Barr		Chambersburg	PA
Joseph	Barratt		Philadelphia	PA
Ivette	Barreto		Philadelphia	PA
Jack	Barrett		Bushkill	PA
Nick	Barrett		White Haven	PA
Nitia	Barrett		Philadelphia	PA
Laura	Barris		Elkins Park	PA
David	Barron		Brookville	PA
Drew	Barron		Downingtown	PA
Patricia	Barrow		Harrisburg	PA
Dieynabou	Barry	Partnership for Working Families	Bronx	NY
Jane	Barry		Philadelphia	PA
Matthew	Barry		Munhall	PA
Linda	Barsamian		West Chester	PA
Jeffrey	Bartholomew		Easton	PA
Wayne	Bartholow		*Submitted via email*	PA
Jason	Bartlebaugh	CAMS Conemaugh Generating station	Ebensburg	PA
Howard	Bartlett		Reading	PA
K.	Bartlett		Sylvania	PA
Mary L.	Bartlett Backes		Philadelphia	PA
Joseph	Bartolacci		Scranton	PA
Angela	Bartoli		Carlisle	PA
Maria	Bartolomei		Allentown	PA
Katie	Bartolotta	Green Building United	Philadelphia	PA
Natasha	Bartolotta		Fleetwood	PA
Joseph	Bartolotto		Prosperity	PA
Karen	Barton		Bryn Mawr	PA

Paul	Barton		White Oak	PA
Marie	Bartorillo		Fredonia	PA
Henry	Barusevicius		Media	PA
Shannalee	Bascoe		Philadelphia	PA
Gale	Basham		Highsprire	PA
Numan	Bashir		Pittsburgh	PA
Diane	Basile		Huntingdon Station	NY
Rosalind	Basnight		Reading	PA
Ruby	Bass		Erie	PA
Ryan	Bassaro		Indiana	PA
Frank	Bassegio		Irwin	PA
Quinnetta	Bassett		Drexel Hill	PA
Diane	Bastian		Liberty	PA
Cuddy	Batch		Pittsburgh	PA
Freddie	Bates		Norristown	PA
Gina	Bates		Apple Creek	OH
Kristine	Bates		Lower Burrell	PA
Rachel	Bates		Reading	PA
Sharon	Bates		Philadelphia	PA
Suzanne	Bates		Baden	PA
Vincent	Batista		Allentown	PA
Joan	Batory		Philadelphia	PA
Patty	Battaglio		Eagleville	PA
Lawrence	Battle		Philadelphia	PA
Travis	Battle		Malvern	PA
Richard	Baubles		Danville	PA
Joshua	Baucum		Birmingham	AL
Ed	Bauer		Exton	PA
Linda	Bauer		Philadelphia	PA
Robert	Bauer		Ambler	PA
Rick	Bauer*	St. Edward's Episcopal Church	Lancaster	PA
Teresa	Bauer-Eland		Lucinda	PA
Athena	Bauerle		Sellersville	PA
George	Bauernschmitt		Kintnersville	PA
Brian	Baughan		Philadelphia	PA
Donna	Baum		Perkasie	PA
William	Baum		Mifflintown	PA
Charles	Bauman		Philadelphia	PA
Cynthia	Baumann		East Norriton	PA
Mayme	Baumann	Uwchlan Township	Exton	PA
Barbara	Bautista		Philadelphia	PA
Gina	Baxendell		Pittsburgh	PA
Andrew	Baxter		Newtown Square	PA
Jason	Baxter		Havertown	PA
Jerome	Baxter		Philadelphia	PA
Lise	Baxter	Protect Our Water & Air	Yardley	PA
Robert	Baybutt		Dresher	PA

Rosemarie	Bayes		Fort Washington	PA
Lorry	Bayman		Wrightsville	PA
Tykiera	Baynes		Philadelphia	PA
James C.	Bazick Sr.		Scranton	PA
Teresa	Bazyk		Washington	PA
Huh	Bbg		Philadelphia	PA
Barbara	Beale		Freeport	PA
Doris	Beale		Lancaster	PA
Barbara	Beam		Enola	PA
Kelly	Beam		Pittsburgh	PA
Sydney	Beam	Heritage House Coal Yard	Meyersdale	PA
Joyce	Bean		Norristown	PA
Sheree	Beans		Dublin	PA
Robert	Beard		Lewisburg	PA
Kenneth	Bearer		Ebensburg	PA
Shannon	Bearman		Haverford	PA
Norman D.	Beasley		Pittsburgh	PA
Valerie	Beattie		Macungie	PA
Bobby	Beatty		Philadelphia	PA
Ryan	Beatty		Vandergrift	PA
Theresa	Beatty		Steelton	PA
Patrick	Beaudry		Carnegie	PA
Ann	Bebout		Emmaus	PA
Angela	Bechard		Glenmoore	PA
Bill	Bechtel		Gardners	PA
Jean	Bechtel		Philadelphia	PA
Joan	Bechtel		Newville	PA
Kelly	Bechtel		Pottstown	PA
Patricia	Bechtold		Phoenixville	PA
Barbara	Beck		Quakertown	PA
Elisa	Beck		Monroeville	PA
Karen	Beck		Royersford	PA
Sherry	Beck		Lancaster	PA
Taunja	Beck		Lancaster	PA
Karen	Beck Pooley	Director,Bethlehem Area School District Board	Bethlehem	PA
Deborah	Becker		Pittsburgh	PA
Deborah	Becker		Springfield	PA
Joanne	Becker		Ambler	PA
Judith	Becker		Philadelphia	PA
Peggy	Becker		Fountain Hill	PA
Rosalyn	Becker		Pittsburgh	PA
Ira	Beckerman		New Cumberland	PA
Timothy	Beckham		Erdenheim	PA
Cindy	Beckler		Pottstown	PA
Raymond	Beckler		Pottstown	PA
Linda	Beckman		Philadelphia	PA

Patricia	Beckwith		Philadelphia	PA
Joe	Bedard		Mechanicsburg	PA
Daniel	Bednar		Whitehall	PA
Angela	Bednarczyk		Pittsburgh	PA
Gregg	Bee		Port Allegany	PA
Lauren	Beebe		Chadds Ford	PA
Stephen	Beebee	Community Eco Store	Phoenixville	PA
Jill	Beech		Coatesville	PA
Carl	Beehler		Media	PA
Jenn	Beer	Greater Pittsburgh Chamber of Commerce	Pittsburgh	PA
Annette	Beers		Knox	PA
Cathy	Beers		Lewistown	PA
Jack	Beers		Lewistown	PA
Joanne	Beese		Malvern	PA
Elizabeth	Beeson		Indianola	PA
Edward	Behr		Newtown Square	PA
Anita	Behrman		Ambler	PA
Glenn	Beidler		Lebanon	PA
Toni	Beil		New Castle	PA
John	Beiler		Butler	PA
Monica	Beistline Block		Bechtelsville	PA
Amanda	Beiter		Greensburg	PA
Andrea	Belasco		Swarthmore	PA
Phyllis	Belboda-Thompson		Landisville	PA
Bernadette	Belcastro		Floral Park	NY
Joseph	Belcastro		Shermans Dale	PA
Kathy Lynn	Belcastro		Pittsburgh	PA
John	Belch		Pittsburgh	PA
James	Belfiore		Cranberry Township	PA
Patrick	Belizaireone		Philadelphia	PA
Parvin	Belknap		Aliquippa	PA
Amanda	Bell		Tunkhannock	PA
Camille	Bell		Conshohocken	PA
Christoph	Bell		Lafayette Hill	PA
Erin	Bell	Mom's Clean Air Force	Allison Park	PA
Gina	Bell		Norristown	PA
James	Bell		Philadelphia	PA
James	Bell		Uniontown	PA
Kimberly	Bell		Murrysville	PA
Lemont	Bell		Philadelphia	PA
Lori	Bell		Elizabethtown	PA
Malik	Bell		Philadelphia	PA
Pamela	Bell		Philadelphia	PA
Rick	Bell		Folsom	PA

Sebastian	Bell		Gladwyne	PA
Tina	Bell		Philadelphia	PA
William	Bell		Pittsburgh	PA
Katharina	Bellairs		Pittsburgh	PA
Jessica	Bellas		Pittsburgh	PA
Karen	Belli		Dallas	PA
Jackie	Bellinger		Philadelphia	PA
Donna	Bello		Glenolden	PA
Tomilola	Bello		Philadelphia	PA
Jessica	Bellwoar		Philadelphia	PA
Ashley	Belsinger		Lititz	PA
Sharon	Belson		Brookhaven	PA
Giuseppe	Beltempo		Five Points	PA
Thomas	Belz		Reading	PA
Courtney	Bement		West Grove	PA
Travis	Bement		West Grove	PA
Ryan	Bencak		Landisville	PA
James D.	Bence		Indiana County	PA
Kathryn	Bench		McMurray	PA
Michele	Benchouk		Lansdale	PA
Adam	Bender		Philadelphia	PA
Nancy	Bender		Schwenksville	PA
Donald	Bender Jr		Erie	PA
Daniel	Bendyk		Pottstown	PA
Kristina	Bendyk		Pottstown	PA
L.	Benedict		Pittsburgh	PA
Bobbie	Benek		Philadelphia	PA
Bob	Benesole		Philadelphia	PA
Lindsey	Benevich		Weedville	PA
Genoveva	Beniquez		Bethlehem	PA
James	Benn		Philadelphia	PA
Keith	Benner		Coatesville	PA
Christian	Bennett		Pottsville	PA
Meredith	Bennett		Trafford	PA
Olivia	Bennett	County Councilor District 13, Allegheny County	Pittsburgh	PA
Sally	Bennett		Oxford	PA
Sarah	Bennett		Erie	PA
Shirlene	Bennett		Philadelphia	PA
Charmaine	Benson		Philadelphia	PA
Kate	Benson		Jenkintown	PA
Kimberly	Benston		Haverford	PA
Michelle	Bentley		Lancaster	PA
Barbara	Benton		Swarthmore	PA
Mary	Benton		*Submitted via email*	PA
Jennifer	Bentsen		Breinigsville	PA

Robert	Benvin		Newville	PA
Richard	Beran		Pittsburgh	PA
John	Berardelli		Pittsburgh	PA
Raymond	Berardelli		Crescent	PA
Marilyn	Berberich		Newtown Square	PA
Amanda	Berdis		Pitcairn	PA
John	Beres*		Pittsburgh	PA
Pamela	Berezansky		Indiana	PA
William	Berg*		Nottingham	PA
Dom	Bergamasco		Pittsburgh	PA
Rev. John	Bergen		Philadelphia	PA
Andrew	Berger		McKees Rocks	PA
Matthew	Berger		Pittsburgh	PA
John	Bergeron		Philadelphia	PA
Joy	Bergey	Springfield Twp Environmental Advisory Committee	Flourtown	PA
Joy	Bergey	Clean Power PA Coalition	Flourtown	PA
Nancy	Bergey		New Wilmington	PA
Garrett	Bergman		Narberth	PA
Phillip	Bergren		Williamsport	PA
James	Berkhimer		Elverson	PA
Carl	Berkman		West Chester	PA
Fred	Berkobin		Doylestown	PA
Valerie	Berkobin		Doylestown	PA
Joseph	Berkoski		Enola	PA
Henry	Berkowitz		Sabinsville	PA
Alejandro	Berlin		Philadelphia	PA
Mike	Berlinsky		Pittsburgh	PA
Richard	Bernardi		Newtown Square	PA
Donna	Berndt		Ramey	PA
Quentin	Bernhard		New Tripoli	PA
Janet	Bernstein		Philadelphia	PA
Nancy	Bernstein		Pittsburgh	PA
Will	Bernstein	Natural Resources Defense Council	Pittsburgh	PA
Carolyn	Berran		Pittsburgh	PA
Michael	Berringer		Rossiter	PA
Nilda	Berrios		York	PA
Charles	Berry		Derry	PA
Julius	Berry		Philadelphia	PA
Karen	Berry		Bethlehem	PA
David	Bertenthal		Pittsburgh	PA
Dylan	Bertovich		Avella	PA
Andrea	Bertram		Johnstown	PA
Linda	Bescript		Langhorne	PA
Judy	Besore		Mount Holly Springs	PA
Cynthia	Best		McKeesport	PA

Katherine	Bestwick		Zion Grove	PA
Roberto Santamaria	Betancourt		Lancaster	PA
Kimberly	Betcher		Elizabeth	PA
Joan	Betesh		Bala Cynwyd	PA
Alonzo	Bethea		Philadelphia	PA
Zonibia	Betrand		Philadelphia	PA
Thomas Cynthia & Madison	Betts		Home	PA
Robert	Betz		Schwenksville	PA
James	Betzko		Wyoming	PA
Kathleen	Bevan		Philadelphia	PA
Lily	Bevan		Villanova	PA
George	Bevans		Milford	PA
Jamall	Bey		Philadelphia	PA
Barbara	Beyer		Allison Park	PA
Ann	Beynon		Olyphant	PA
Frank	Bezak III		Pittsburgh	PA
Sue	Bialostosky		Pittsburgh	PA
Jane	Biberman		Doylestown	PA
Michael	Bicich		New Hope	PA
Kenneth	Bickel		Pittsburgh	PA
Janice	Biddle		Roscoe	PA
Carley	Biebel		Union City	PA
Dave	Bieber		Gladwyne	PA
Mary	Biehler		Philadelphia	PA
Gary	Bielski		Claysville	PA
Ronald	Biem		Altoona	PA
Susie	Bigelow		Hamburg	PA
Michelle	Bilbrough		Aston	PA
Walter	Bilderback		Philadelphia	PA
Abby	Bilger		Shippensburg	PA
Nancy	Biller		Philadelphia	PA
Troy	Billet		Hallam	PA
Jean	Billings		Chesterbrook	PA
Doris	Billingslea		York	PA
Chelcie	Bills		Oil City	PA
Jayson	Billups		Johnstown	PA
Lauren	Bilsky		Pittsburgh	PA
Roza	Bimer		Philadelphia	PA
Jane	Binakonsky		Pittsburgh	PA
Glenda	Bines		Philadelphia	PA
Carol	Bingaman		Harrisburg	PA
Claire	Binkley		West Chester	PA
Elizabethann	Binstead		*Submitted via email*	PA
Juliet	Birch		Media	PA

Leslie	Birch*		Philadelphia	PA
Bruce	Birchard*		Glen Mills	PA
Michael	Bird		Hickory	PA
William	Bird		Philadelphia	PA
Connie	Bires		Carlisle	PA
Fran	Bires		Sandy Lake	PA
Roy E.	Bires		Pittsburgh	PA
Jessica	Bisbee		Oil City	PA
Daryl	Biser		Warminster	PA
Mary Jean	Biser		Warminster	PA
Shannon	Biser		East York	PA
Kim	Bish		Sarver	PA
Andrew	Bishop		Lancaster	PA
Betty	Bishop		Greencastle	PA
David	Bishop		Lancaster	PA
Elizabeth	Bishop		Philadelphia	PA
Ronald	Bishop		Philadelphia	PA
Ayisat	Bisiriyu		Pittsburgh	PA
Bruce	Biskin		Newtown	PA
Peggy	Bissett		Waynesburg	PA
Elizabeth	Bistolas		Mercer	PA
Helen M.	Bitting		Scranton	PA
Carolee	Bittle		Kutztown	PA
Erik	Bittner		Somerset	PA
Frances	Bittner		Youngwood	PA
JoEllen	Bitzer		Mechanicsburg	PA
Kim	Bjarkman		Lewisburg	PA
Cindy	Black		Easton	PA
Elizabeth Lea	Black		Pittsburgh	PA
Jim	Black		Philadelphia	PA
Joseph	Black		Philadelphia	PA
Martha	Black		Lebanon	PA
Schinita	Black		Philadelphia	PA
Shauntea	Black		Lewistown	PA
Story	Black		Philadelphia	PA
Richard	Blackburn		Warminster	PA
Robert	Blackiston		Levittown	PA
Correl	Blackman		Philadelphia	PA
David	Blackshear		Philadelphia	PA
Christine	Blade		Croydon	PA
Lindsay	Blade		Croydon	PA
Michael	Blaese		New Hope	PA
Myron	Blahy		Lehighton	PA
David	Blaich		Quakertown	PA
Dave	Blair		Monaca	PA
George	Blair		Franklin	PA
Glenda	Blake		Philadelphia	PA

Douglas	Blakeney		Philadelphia	PA
Bianca	Blanco		Philadelphia	PA
John	Bland	Boilermakers Local 13	Mullica Hill	NJ
Traci	Blanding		Reading	PA
Jeffrey	Blank	Transportation Industry	Saxonburg	PA
Margaret	Blankenmeyer		Manheim	PA
Jael	Blankenship		Lancaster	PA
Reginald	Blanton		Philadelphia	PA
Randy	Blasdell		Columbia	PA
Aurora	Blasko		North East	PA
Dawn	Blasko		Bellefonte	PA
Michael	Blasko		North Huntingdon	PA
Richard	Blaszczyk		Philadelphia	PA
Linda	Blatstein		Southampton	PA
Gwen	Blatt		Wernersville	PA
Kimberly	Blatt		Glenolden	PA
Louis	Blau		Brownsville	PA
Barbara	Blazick		Pittsburgh	PA
Pat	Bleam		Quakertown	PA
Laura	Blechner		Royersford	PA
Sam	Bleecker		Lancaster	PA
Alicia	Blessington		Newtown Square	PA
Luke	Bley		Downingtown	PA
Jeanne	Blicharz		Bethlehem	PA
Susan	Blinn		Pittsburgh	PA
Jaclyn	Bliss	Vicinity Energy	Boston	MA
Alan	Blitstein		Pittsburgh	PA
Misty	Blizzard		Chambersburg	PA
Susan	Bloch		Philadelphia	PA
Jaelyn	Blonder		Allentown	PA
Debbie	Bloom		Philadelphia	PA
Richard	Bloom	Conemaugh Valley Conservancy	Ebensburg	PA
Mary	Blooming		Natrona Heights	PA
Richard	Bloomingdale	Pennsylvania AFL-CIO	Harrisburg	PA
John	Blose		Phoenixville	PA
Eleanor	Bloss		Narberth	PA
Gary	Bloss	Co-Owner, Josie Porter Farm	Stroudsburg	PA
Denise	Blount		Philadelphia	PA
Mikel	Blount		Cheltenham	PA
Ernestine	Blue		Philadelphia	PA
Kathryn	Bluhm		Hollsopple	PA
Phyllis	Blumberg		Bala Cynwyd	PA
Katie	Blume	Conservation Voters of PA	Philadelphia	PA
David	Blumenthal		Penn Valley	PA
Dennis	Blumling		Homer City	PA
Seth	Blumsack	Center for Energy Law and Policy, Penn State	University Park	PA

Barry	Blust		Glenmoore	PA
Linda	Blythe		Philadelphia	PA
Katherine	Boas		Lancaster	PA
Santiago	Bobadilla		Lancaster	PA
Gail	Bobchak		Coraopolis	PA
Stephen	Bobyock		Collegeville	PA
Linda	Bock		Levittown	PA
William	Bock		Warminster	PA
Karen	Boddie		Royersford	PA
Benamin	Boddorf		Summerville	PA
Andrew	Boden		Genesee	PA
Carolyn	Bodenschatz		Pittsburgh	PA
Robert	Bodenschatz		Friedens	PA
Gregory	Bodison		Philadelphia	PA
Rachel	Bodnar		Heidelberg	PA
Nancy	Boeckel		York	PA
John	Boecker	7group	Washington Boro	PA
Janice	Boehmler		Coatesville	PA
Edward	Boehner		Philadelphia	PA
Sabrena	Boekell		Nottingham	PA
Roelfien	Boerema		Wayne	PA
Lance	Bogash		Lincoln University	PA
Deborah	Bogen		Pittsburgh	PA
Gretchen	Boger		Philadelphia	PA
Cheryl	Boggess		Pittsburgh	PA
Andre	Boggs		Parkesburg	PA
Jon	Bogle		Williamsport	PA
Carol	Boglia		Levittown	PA
Gary	Bohatch		Leechburg	PA
Judith	Bohler		Ephrata	PA
Clare	Bohn		Philadelphia	PA
Judith	Bohne		Womelsdorf	PA
Raymond	Bohner		Reading	PA
Joe	Bohnert		Morris	PA
Angelina	Boka		Bethlehem	PA
Paul	Bokus		East York	PA
Robin	Bolling		Harrisburg	PA
Jane	Bollinger		Prompton	PA
Susan	Bolno		Narberth	PA
Richard	Bologna		Rochester	PA
Elizabeth	Bolton		Swarthmore	PA
William	Bolton		Philadelphia	PA
Phoebe	Bolz		Bryn Mawr	PA
Cara	Bombardier		Monaca	PA
Bob	Bombich		Pittsburgh	PA
Daniel	Bonacci		Pittsburgh	PA
Matthew	Bonanno		Royersford	PA

Rev. Stephen C.	Bond		Indiana	PA
Stephen	Bond		Malvern	PA
Tracy	Bond		Columbus	NJ
Ellen	Bonds		Lionville	PA
Paul	Bonetti		Carnegie	PA
Richard	Boni		McMurray	PA
Terrence	Boni		Charleroi	PA
Martin	Bonifanti		King of Prussia	PA
Angelica	Bonilla		Philadelphia	PA
Maria	Bonilla		Harrisburg	PA
Wilson	Bonilla		Lancaster	PA
Denise	Bonk		Philadelphia	PA
Nick	Bonnell		Erie	PA
Noel	Bonnell		Erie	PA
Ineke	Bonner		Willow Grove	PA
Scott	Bonner		Mechanicsburg	PA
Diane	Bono		Pottstown	PA
Jackie	Bonomo		Lemont	PA
Tara	Bonsell		Alburtis	PA
Monica	Bonualas		Mountain Top	PA
Carol	Book		York	PA
Anthony	Booker		Philadelphia	PA
Barbara	Booker		Philadelphia	PA
Phillip	Bookhart		Philadelphia	PA
Donna	Bookheimer		Douglassville	PA
Annique	Boomsa		Pelham	MA
Barbara	Boone		Plymouth Meeting	PA
Elaine	Boone		Philadelphia	PA
Quaseem	Boone		Philadelphia	PA
Clare	Boone*		Stewartstown	PA
Walter	Borawski		Erie	PA
Emily	Borcz		West Sunbury	PA
Mark	Borczon		Erie	PA
Dominic	Bordelon		Pittsburgh	PA
Anna	Borges		East Stroudsburg	PA
Betty Lou	Boring		Zelienople	PA
Erin	Boring		Clymer	PA
Keith	Boring		Harrisburg	PA
Carol	Borkowski		Holland	PA
Lawrence	Borowiec		New Kensington	PA
Mark	Borowski	BP America	Washington	DC
Michael	Borrasso		Philadelphia	PA
Dara	Bortman		Yardley	PA
Mark	Bortman		Yardley	PA
Alfred B.	Bortz		Monroeville	PA
Marjorie	Bortz		Harrisburg	PA

Robert	Borzok		*Submitted via email*	PA
Anthony	Borzotta		Philadelphia	PA
Kayla	Boscia		Carnegie	PA
Kathleen	Bosiljevac		Gibsonia	PA
Scott	Bostic		Bensalem	PA
Donald	Bosworth		Wyncote	PA
Gina	Bosworth		Kennett Square	PA
Roxanne	Bothe		Fayetteville	PA
Celia	Bottger		Portland	ME
Michael	Bottorf		Quakertown	PA
Joan M	Bouchard		State College	PA
Mark	Boudreau		Media	PA
Cassidy	Boulan		Philadelphia	PA
Michael	Bourg		Philadelphia	PA
George	Bourlotos		Morris Plains	NJ
David	Bouslog		Essington	PA
Robert	Boutwell		Springdale	PA
Amy	Bowan		Industry	PA
Sandie	Bowan		Beaver	PA
Michael	Bowe		Red Hill	PA
Annmarie	Bowen		Philadelphia	PA
Eilene	Bowen		Dauphin	PA
Vincent	Bowen		Philadelphia	PA
Lois	Bower Bjornson*		Scenery Hill	PA
William	Bowerman		West Grove	PA
David	Bowers		Friedens	PA
Gail	Bowers		Pittsburgh	PA
June	Bowers		Philadelphia	PA
Linda	Bowers		New Hope	PA
Melody	Bowers		Royersford	PA
Bryn	Bowersock		Ambler	PA
Margaret	Bowie		Philadelphia	PA
Timikia	Bowie		York	PA
Dorian	Bowles		Pittsburgh	PA
Tim	Bowley		Harrisburg	PA
Kelly	Bowman		Coaldale	PA
Krystal	Bowman		Easton	PA
Matthew	Bowman		Philadelphia	PA
David	Bowne	Associate Professor of Biology,Elizabethtown	Elizabethtown	PA
Joyce	Bowser		Tarentum	PA
Salina	Bowser		North Versailles	PA
Jocolyn	Bowser-Bostick	Delaware County Ready For 100	Chester	PA
Nancy	Boxer	Association for Climate Health	Havertown	PA
Corissa	Boyd		Philadelphia	PA
Cynthia	Boyd		Malvern	PA

Donna	Boyd		Darby	PA
Dyeisha	Boyd		Coatesville	PA
James	Boyd	John T. Boyd Company	Canonsburg	PA
James	Boyd		Philadelphia	PA
Katelyn	Boyd		Uniontown	PA
Meghan	Boyd		Pittsburgh	PA
Michael	Boyd	Commissioner, Wilkins Township	Turtle Creek	PA
Vicy	Boyd		Pittsburgh	PA
Jason	Boyer		Wallingford	PA
Jessica	Boyer		Harrisburg	PA
Lisa	Boyer		Pottstown	PA
Michael	Boyer		Philadelphia	PA
Daniel	Boylan		Pottstown	PA
Frances	Boyle		Merion Station	PA
Jenny	Boyle		Lock Haven	PA
Michelle	Boyle		Pittsburgh	PA
Tom	Bozek		Harrisburg	PA
Gannon	Brabazon		Ephrata	PA
Elizabeth	Brabham		Philadelphia	PA
Steven	Bracciodieta		Mount Pocono	PA
Kerry	Brace		*Submitted via email*	PA
Claudia	Bracha		Scranton	PA
Matthew	Bracken		Pittsburgh	PA
Paul	Bracken		Indiana	PA
Samantha	Bradbury		Philadelphia	PA
Anita	Bradford		Philadelphia	PA
Andy	Bradigan	Bradigan's Inc.	Kittanning	PA
Becky A.	Bradley	Lehigh Valley Planning Commission	Allentown	PA
Beverly	Bradley		Philadelphia	PA
Odell	Bradley		Philadelphia	PA
Pamela	Bradley		Philadelphia	PA
Reginald	Bradley		Philadelphia	PA
Eliza	Bradley, PhD		State College	PA
Annie	Bradshaw		Philadelphia	PA
Barbara	Bradshaw		Springfield	PA
Sharmaine	Bradwell		Lansdowne	PA
Brian	Brady		Big Cove Tannery	PA
Carol Ann	Brady		Valley Forge	PA
Donna	Brady		Enola	PA
Patrick	Brady		Salunga-Landisville	PA
William	Braham		Swarthmore	PA
Thomas	Brainsky		Shrewsbury	PA
Janet	Braker		Southampton	PA
Tim	Braman		Bedford	PA
James	Branch		East Stroudsburg	PA
Joanna	Branch		Havertown	PA

Randi	Brand		Pittsburgh	PA
Lee	Brandenberger		Aliquippa	PA
Kristin	Brandimarte		Millersville	PA
Barbara	Brandom		Pittsburgh	PA
Arielle	Brandon		Harrisburg	PA
Alex	Brandt		Philadelphia	PA
Elizabeth	Brannon		Philadelphia	PA
Hayley	Branstetter		State College	PA
Suzanne	Brant		Hallstead	PA
Ryan	Brass		Willow Street	PA
James	Brassard		Willow Street	PA
Joseph	Braucher		Greensburg	PA
Sharon	Braun		Hanover	PA
Timothy	Braun		Linwood	PA
Jeremy	Brawley		Johnstown	PA
Robert	Brecht		Pittsburgh	PA
John	Breen		Somerset	PA
Barbara	Breese		Glen Rock	PA
Leigh	Breeze		Lewistown	PA
Nicholas	Breinich		Pittsburgh	PA
Brenda	Breisch		Bloomsburg	PA
Larry	Breisch		Indiana	PA
Jennie	Breitigan		Orwigsburg	PA
Betty	Brendel		Lock Haven	PA
Perri	Brendzel		Millburn	NJ
Pamela	Breneman		Wernersville	PA
A.	Brennan		Philadelphia	PA
Barbara	Brennan		Philadelphia	PA
James	Brennan		Pittsburgh	PA
Martha	Brennan		*Submitted via email*	PA
Rachel	Brennan		Port Matilda	PA
William	Brennan		Philadelphia	PA
Tammy	Brenner		Hollidaysburg	PA
Thomas	Brenner		Hollidaysburg	PA
Elizabeth	Brensinger		New Tripoli	PA
Alberto	Bressan		State College	PA
David	Bressler		West Chester	PA
Samuel	Bressler		Seward	PA
William	Bressler		Huntingdon	PA
Marie	Breth		Johnstown	PA
Kim	Bretzik		Bath	PA
Joe	Brevoort		Collegeville	PA
Jeremy	Brewer		Pittsburgh	PA
Joseph Curtis	Brewer		Northampton	PA
Daleece	Bridgeman		Philadelphia	PA
Susan	Bridges		Macungie	PA

Joseph	Bridy		Philadelphia	PA
Travis	Briel		Harrisburg	PA
Amanda	Briggs		York	PA
Jean	Briggs		Philadelphia	PA
Michelle	Briggs	Associate Professor of Biology, Lycoming College	Williamsport	PA
Barbara	Brigham		Philadelphia	PA
Jean	Bright		Columbia	PA
Michael	Brigidi		Doylestown	PA
Stephanie	Brilhart		Indiana County	PA
Charles	Brill		Philadelphia	PA
Deborah	Brillhart		York	PA
Mary Jo	Brinker		Ellwood City	PA
Matthew	Brinker		Johnstown	PA
Robert	Brinker		Johnstown	PA
Amy	Brinkhoff		Wexford	PA
Ronald	Brinkley		Philadelphia	PA
Lisa	Brinton		Cochranville	PA
William	Brisbane		Normalville	PA
Dorothy	Briscoe		Wayne	PA
Sonia	Briscoe		Philadelphia	PA
Vincent	Brisini	Olympus Power, LLC	Morristown	NJ
Doris	Brison		Kittanning	PA
Joan	Bristol		Coatesville	PA
Rolando	Bristol		Lancaster	PA
Bonnie	Bristow		Ardmore	PA
Dariam	Brito		Hazleton	PA
Nola	Britt		Philadelphia	PA
Darrin	Britting		Philadelphia	PA
Katie	Brittingham		Carlisle	PA
Rebecca	Britton		Ellwood City	PA
Berta	Britz		Newtown Square	PA
Andrew	Brletrick		Northern Cambria	PA
Dr. Peter	Broad		Indiana	PA
Yolanda Stern	Broad, PhD		Indiana	PA
Charles	Brock		Erie	PA
Daniel	Brocklebank		Seven Valleys	PA
Hassan	Brockman		Philadelphia	PA
Karen	Brockunier		Manor	PA
Adrienne	Brockwell		Jenkintown	PA
Nathaniel	Brodsky		Pittsburgh	PA
Mark	Brody		Wayne	PA
Michael	Brody	Borough Counciman, Lewisburg Borough	Lewisburg	PA
Frank	Brofft		Doylestown	PA
Bryant	Brogdon		Croydon	PA
Already	Broke		York	PA

Ellen	Broniszewski		Philadelphia	PA
Julie	Brookens		Fayetteville	PA
Michelle	Brooker		Camp Hill	PA
Monica	Brookins		Pittsburgh	PA
Danette	Brooks		Philadelphia	PA
Elaine	Brooks		Philadelphia	PA
Geraldine	Brooks		Philadelphia	PA
Greg	Brooks		Norristown	PA
Kendra	Brooks	Philadelphia City Councilmember At-Large	Philadelphia	PA
Regina	Brooks		Pittsburgh	PA
Tara	Brooks		Uniontown	PA
Reno	Brosey		Felton	PA
Gale	Broshious		Whitehall	PA
Renate	Brosky		Whitehall	PA
Kristina	Brothers		Butler	PA
Jerod	Brougher*		Stahlstown	PA
Beatrice	Broughton		Avondale	PA
Suzanne	Broughton		Allison Park	PA
Avery	Broughton*		Philadelphia	PA
Jeffrey	Brouse		Danville	PA
Angela	Brown		Harrisburg	PA
Audrey	Brown		Philadelphia	PA
Barbara	Brown		Warrington	PA
Bikim	Brown		Philadelphia	PA
Brian	Brown		Lewisburg	PA
C. Drew	Brown	Environmental Engineer, Philadelphia Water Dept	Philadelphia	PA
Carolyn	Brown		Philadelphia	PA
Celeste	Brown		Elizabethtown	PA
Christine	Brown		Lititz	PA
Colleen	Brown		Quakertown	PA
Daion	Brown		Harrisburg	PA
Damon	Brown		Los Angeles	CA
Denise	Brown		Philadelphia	PA
Donald A.	Brown		Camp Hill	PA
Dorothy	Brown		Philadelphia	PA
Edward	Brown		Philadelphia	PA
Eileen	Brown		Norwood	PA
Elizabeth	Brown		Beaver	PA
Ella	Brown		Philadelphia	PA
Eric	Brown		Erie	PA
Ernestine	Brown		Harrisburg	PA
Gloria	Brown		Philadelphia	PA
Gregory	Brown		Pittsburgh	PA
Heidi	Brown		Chadds Ford	PA
Herbert	Brown		Philadelphia	PA

Jean	Brown		Fountain Hill	PA
Jennie	Brown		Carmichaels	PA
Jennifer	Brown		Pittsburgh	PA
Jesse	Brown		Avondale	PA
John	Brown		Camp Hill	PA
Kevin	Brown		Philadelphia	PA
Kristy	Brown		Winburne	PA
Lauren	Brown		Hanover	PA
Leslie	Brown		Pittsburgh	PA
Lionel	Brown		Altoona	PA
Lisa	Brown		Philadelphia	PA
Lynne	Brown		Pine Grove Mills	PA
Maurice	Brown		Glenside	PA
May	Brown		Philadelphia	PA
Michael	Brown		Pittsburgh	PA
Michelle	Brown		Pittsburgh	PA
My	Brown		Pittsburgh	PA
Najee	Brown		Easton	PA
Paul	Brown		Pittsburgh	PA
R. Scott	Brown		Chadds Ford	PA
Renell	Brown		Philadelphia	PA
Rev. David Wesley	Brown		Philadelphia	PA
Robert	Brown		Stillwater	PA
Shelly	Brown		Philadelphia	PA
Takiyah	Brown		Pittsburgh	PA
Tim	Brown		Ebensburg	PA
Tom	Brown		Ford City	PA
Toni	Brown		Philadelphia	PA
Trish	Brown		Little Meadows	PA
Tyreek	Brown		Philadelphia	PA
Walter	Brown		Philadelphia	PA
William	Brown		Philadelphia	PA
Yanna	Brown		Morrisville	PA
Zoey	Brown		Export	PA
C. Baird	Brown*	eco(n)law llc	Philadelphia	PA
Harry and Jill	Brownfield		Newport	PA
Rev. Angela	Brown-Vann		Philadelphia	PA
Neiko	Broz		McKeesport	PA
Eric	Brubaker		Philadelphia	PA
Frances	Brubaker		East Waterford	PA
Marlene	Brubaker		Upper Darby	PA
Sandra	Brubaker		Philadelphia	PA
Barbara	Bruce		Johnstown	PA
Charles	Bruce		Pittsburgh	PA
Susan E.	Bruce	Pennsylvania Energy Consumer Alliance	Harrisburg	PA

Amy	Brucker	Board Member, Guardians of the Brandywine	Downingtown	PA
Robert	Bruckman		West Chester	PA
Susan	Bruegel		West Chester	PA
Crystal	Brumbaugh		Duncansville	PA
Nicole	Brunet		Philadelphia	PA
Tina	Brunetti		Conshohocken	PA
Carol	Brunner		Hatboro	PA
Roberta	Brunner	ACJ Area League of Women Voters	Huntingdon Valley	PA
Lois	Bruno		Levittown	PA
Nicholas	Bruno		Edinboro	PA
Jeff	Brunskill	Associate Professor, Bloomsburg University	Bloomsburg	PA
Henry	Brunson		Philadelphia	PA
Alan	Brunton		Aliquippa	PA
Elizabeth	Brunton		Norristown	PA
Alexander	Brush	Schuylkill Energy Resources	Shenandoah	PA
Alexander	Brush	Ri-Corp. Development, Inc. d/b/a Gilberton Power C	Frackville	PA
Michael	Brust	IBEW Local 81	Scranton	PA
David	Bryan		Lewes	DE
Jay	Bryan		Narberth	PA
John	Bryan		Narberth	PA
Paula	Bryan		Shade Gap	PA
Dorothy	Bryant		Philadelphia	PA
Gordon	Bryant		Johnstown	PA
Kate	Bryant		Wexford	PA
Keenan	Bryant		Philadelphia	PA
Robert	Bryden		West Mifflin	PA
Lisa	Bryer		Richboro	PA
John	Bryner		Chambersburg	PA
Shane	Bryner		Dickerson Run	PA
Albert	Bryson		Parkesburg	PA
Stella	Buccella		Philadelphia	PA
Paxton	Bucheral	DMI Companies	Monongahela	PA
Chris	Buchheit		Greensburg	PA
Andrew	Buchleitner		West Mifflin	PA
Justine	Buchman		Pittsburgh	PA
Lee	Buck		Bethlehem	PA
Wanda	Buck		Trout Run	PA
Doyle	Buckley		Felton	PA
John	Buckley		West Chester	PA
Scott	Buckley		Homestead	PA
Stephen	Bucklin		Pittsburgh	PA
Irene	Bucko		Collegeville	PA
Susan	Buda		State College	PA
George	Budock		Denver	PA

Danielle	Buehler		Philadelphia	PA
Anita	Buffer		Warminster	PA
Tom	Buglio		Malvern	PA
Tommy	Bugno		Wyncote	PA
Theresa	Bui		Allentown	PA
Warren	Bulette		York	PA
Vincent	Bullard		Philadelphia	PA
Martin	Bullen		Paoli	PA
Joseph	Bullick		Pottstown	PA
Gregory	Bullins		Philadelphia	PA
Jessie	Bulseco		Canonsburg	PA
Kayla	Bumbalough		Vanderbilt	PA
Amy	Bumer		Pittsburgh	PA
Robert	Bumer		Canonsburg	PA
Robert	Buncher		Pittsburgh	PA
Miles	Buncich		Johnstown	PA
Susan	Bundas		Erie	PA
Greta	Bunin		Elkins Park	PA
Jenna	Bunk		Pittsburgh	PA
Chris	Bunodono		Philadelphia	PA
William	Bunting		Kunkletown	PA
Tam	Buonvicino		Hallstead	PA
Carl	Burch		Lancaster	PA
Sandy	Burchett		Chester	WV
William	Burden		Philadelphia	PA
Gregory	Burgdorf		Hummelstown	PA
Brendan	Burger		Schellsburg	PA
Barbara	Burgess		Hanover	PA
Tyline	Burgess		Philadelphia	PA
Earl	Burgman		Tobyhanna	PA
Angel	Burgos		Philadelphia	PA
Beatriz	Burgos		Reading	PA
Diana	Burgos		Reading	PA
Dajuan	Burhannon		Philadelphia	PA
Lisa	Burick		Glenside	PA
Jesse	Burk		Red Lion	PA
Alex	Burka		Philadelphia	PA
Janet	Burkardt		Pittsburgh	PA
Barbara	Burke		Wyncote	PA
David	Burke		Bryn Mawr	PA
David	Burke		Smithfield	PA
John	Burke		Havertown	PA
Juliana	Burke		Hollidaysburg	PA
Linda	Burke		Wynnewood	PA
Louisa	Burke		Pittsburgh	PA
Marilyn	Burke		Pittsburgh	PA
Mary	Burke		Lansdale	PA

Nancy	Burke		Hollidaysburg	PA
Tonya	Burke		Philadelphia	PA
Chelsea	Burket		Pittsburgh	PA
Craig	Burket		Imler	PA
Richard	Burkett		Friedens	PA
Erin	Burkey		Johnstown	PA
Amanda	Burkhart		Atglen	PA
Kathryn	Burkhart		New Holland	PA
Don	Burkholder		Jenkintown	PA
Miranda	Burkley		Seward	PA
Jamie	Burks		Wyndmoor	PA
Venice	Burks		Philadelphia	PA
D.	Burnett		Spring City	PA
Lakia	Burnett		Philadelphia	PA
Arlene	Burns		Wyncote	PA
Marianna	Burns		Mohrsville	PA
Nancy	Burns		Lancaster	PA
Patricia	Burns		Greentown	PA
Phoebe	Burns		Philadelphia	PA
Stephen	Burns		Wyncote	PA
Vanessa	Burrell		Philadelphia	PA
Richard	Burrill		York	PA
Capreese	Burris		Philadelphia	PA
Dajah	Burrows		Philadelphia	PA
Wayne	Burrows		Fenelton	PA
Yvonne	Burrus		Easton	PA
Denise	Burstein		Linfield	PA
Mimi	Burstein		Paoli	PA
Steve	Burt		Bryn Mawr	PA
Duane	Burtner		Butler	PA
Tracy	Burto		Philadelphia	PA
Brenda	Burton		Philadelphia	PA
Donna	Burton		Herndon	PA
Ronald	Burton		Hallstead	PA
Tamila	Burton		Pittston	PA
Tyler	Burton		Media	PA
Zekiah	Burton		Philadelphia	PA
Jim	Burtt		Willow Grove	PA
Trina	Busani		Josephine	PA
Susan	Busch		Newtown	PA
Erin	Bush		Pittsburgh	PA
John	Bush		Coatesville	PA
Patricia	Bush		Coatesville	PA
Scott	Bush		Bangor	PA
Seth	Bush		Swissvale	PA
Sharon	Bush		Philadelphia	PA
Carol	Buskirk		Harrisburg	PA

George	Busse		Waynesboro	PA
Janet	Busse		Philadelphia	PA
Jeanette	Bussen		Baden	PA
Jeffrey	Bussmann		Lansdowne	PA
Mary	Butash		Jenkintown	PA
Anthony	Butch		New Castle	PA
Felecia	Bute		Pittsburgh	PA
Andre	Butler		Philadelphia	PA
Charmaine	Butler		Upper Darby	PA
Claude	Butler		Upper Darby	PA
Corey	Butler		Philadelphia	PA
David	Butler		Philadelphia	PA
Meghan	Butler		Greensburg	PA
Miles	Butler	Owner/Operator, Germantown Espresso Bar	Philadelphia	PA
Nadia	Butler		Philadelphia	PA
Terrance	Butler		Pittsburgh	PA
Wendy	Butler		Harleysville	PA
Mary Katherine	Butler-Stonewall		*Submitted via email*	PA
James	Butt		Macungie	PA
Rhonda	Buttacavoli		Apollo	PA
Lucille	Butts		Easton	PA
Geneva	Butz		Philadelphia	PA
Richard	Buxton		Havertown	PA
Shazzmina	Byard		Philadelphia	PA
Noreen	Byatt-Grassi		Palmyra	PA
David	Byerly		Montoursville	PA
Jack	Byerly		Philadelphia	PA
Andrew	Byers		Lancaster	PA
Todd	Byers		Pottstown	PA
Janet	Byrd		Upper Darby	PA
Shavon	Byrd		Edwardsville	PA
Stanley	Byrd		Philadelphia	PA
Theodore	Byrd		Erie	PA
Claire	Byrnes		Philadelphia	PA
Gia	C.		Philadelphia	PA
N.	C.		Harleysville	PA
N.	C.		Royersford	PA
Leona	Cabbagestalk		Pittsburgh	PA
Jeffery	Cable		Indiana	PA
Cathleen	Cabral		Benton	PA
Sue	Cabrera		Lackawaxen	PA
Michael	Cadaret		Pittsburgh	PA
Juanita	Caddy		Duncannon	PA
Cinthia	Cadena		Philadelphia	PA
Jess	Cadorette		Glen Mills	PA

Kathleen	Caffarella		Philadelphia	PA
Douglass	Caggiano		Grove City	PA
Matthew	Cagnetta		Pittsburgh	PA
Daniel	Cain		Jefferson Hills	PA
Edna	Cain		Philadelphia	PA
Nathaniel	Cain		Lancaster	PA
Jerry	Caine		Galeton	PA
Diane	Cairns		Irwin	PA
John	Cairns		Lansdale	PA
Jamie	Caito		Warren	PA
Lay	Cakie		Philadelphia	PA
Ken	Cala	Co-owner, The Local Vapor	Doylestown	PA
Lesley	Calafato		Erie	PA
Maureen	Calandra		Loretto	PA
Thomas	Calandra		Stroudsburg	PA
Tony	Calandra	Jennmar Corporation	Pittsburgh	PA
Dwight	Caldararo		New Castle	PA
Frank	Calderone		Philadelphia	PA
Bernadette	Caldwell		Upper Darby	PA
Nathan	Caldwell		Philadelphia	PA
Bonnie	Calhoun		Hanover	PA
Bryan	Calhoun		Bethel Park	PA
Gregory	Calhoun		Philadelphia	PA
Laraine	Calhoun		Thorndale	PA
Diane	Calkins		Philadelphia	PA
Edward	Callan		Royersford	PA
Brian	Callaway		Philadelphia	PA
Alyce	Callison		Havertown	PA
Dorothy Li	Calzi		Philadelphia	PA
Linda	Camac		Newtown Square	PA
William	Camal		Newfoundland	PA
Penelope	Camarata		Philadelphia	PA
Joe	Camarda		Allison Park	PA
Juan	Camargo		Philadelphia	PA
Diane	Camarote		Garnet Valley	PA
Gloria	Cameron		Mercer	PA
James	Cameron		Philadelphia	PA
Paul	Cameron*	IBEW Local 459	Champion	PA
Kathy	Camino		Greensburg	PA
Jaquelin	Camp		King of Prussia	PA
Mary	Camp		Philadelphia	PA
Nelson	Camp		Southampton	PA
Roberta	Camp		Philadelphia	PA
Suzanne	Camp		Philadelphia	PA
Greg	Campagna		Lawrence	PA
Sandra	Campagna		Lansdale	PA
Thomas	Campanini		York	PA

Benita J.	Campbell		Burgettstown	PA
Bree	Campbell		Philadelphia	PA
Cameron	Campbell		Stewartstown	PA
Chuck	Campbell		Ulster	PA
Denise	Campbell		Punxsutawney	PA
Donald	Campbell		Glenside	PA
Elaine	Campbell		Chadds Ford	PA
H.L.	Campbell		New Cumberland	PA
James	Campbell		Philadelphia	PA
Janice	Campbell		Philadelphia	PA
Jeffrey	Campbell		Pittsburgh	PA
Kimberly	Campbell		Philadelphia	PA
Lael	Campbell	Exelon Corporation	Washington	DC
Lee	Campbell		Hallstead	PA
Linda	Campbell		Emmaus	PA
Lois	Campbell		Pittsburgh	PA
Renea	Campbell		Punxsutawney	PA
Russell	Campbell		Mercer	PA
Sara	Campbell	Conemaugh Power Plant	Blairsville	PA
Venus	Campbell		Norristown	PA
Lisa	Campuzano		Philadelphia	PA
Nathalie	Camus		Hollis	NY
Detra	Canady		Lansdowne	PA
Brenda	Canales		Langhorne	PA
Macyle	Candela		New Oxford	PA
Judy	Canelos		West Mifflin	PA
Gail	Canizares		Gibsonia	PA
Susan	Cannavo		Philadelphia	PA
Jenny	Cannon		Newtown Square	PA
Lisa	Cannon		Greensburg	PA
Mack	Cannon		Coatesville	PA
Mary	Cannon		Franklintown	PA
Tara	Cannon		Philadelphia	PA
Zane	Cannon		Pittsburgh	PA
Russell	Canon		Reading	PA
Kaila	Cantens		Philadelphia	PA
Rosemary	Caolo		Scranton	PA
Paula	Capaldo		Philadelphia	PA
Elizabeth	Capece		Royersford	PA
Lauren	Capella		Philadelphia	PA
Brian	Capoferri		Conestoga	PA
Wayne	Capra		Pittsburgh	PA
Pamela	Caprio		New Hope	PA
Lyn	Capurro		Great Neck	NY
Ralph	Caputo		Taylor	PA
Beth	Capwell		Allentown	PA
Luis	Caraballo		Philadelphia	PA

Beverly	Caratelli		Homer City	PA
Frank	Caratelli		Homer City	PA
Frank	Caratelli, Jr.		Lickingville	PA
Ben	Carbaugh		Seneca	PA
Danielle	Carbo		Norristown	PA
Desiree	Carbone		Pittsburgh	PA
Kathy	Carbone		Scottsdale	AZ
Kathleen	Card		Philadelphia	PA
Thomas	Cardell		Red Lion	PA
Flora	Cardoni	PennEnvironment	Philadelphia	PA
Jolene	Cardwell		Lancaster	PA
Michael	Carew		York	PA
Monica	Carey		Manheim	PA
Peter	Carey		Bradford	PA
Mary Anne	Carletta, Ph.D.		Hawley	PA
Joseph	Carlile		Conshohocken	PA
Steven	Carlin		Rome	PA
Robert	Carline, PhD		State College	PA
Thomas	Carlins		Pittsburgh	PA
Carol	Carlson		Mount Jewett	PA
Charles	Carlson		Pittsburgh	PA
Larry	Carlson		Omaha	NE
Matt	Carlson		State College	PA
Nancy	Carlson		Monroeville	PA
Hannah	Carlton		Philadelphia	PA
Rosanne	Carmean		Coatesville	PA
Carol	Carmon		Media	PA
Stephanie	Carnahan		Monaca	PA
Lauren	Carnevale		Phoenixville	PA
Caroline	Carney		Philadelphia	PA
Lisa Sherman	Carney		Oxford	PA
Marie	Carota		Doylestown	PA
Andrew	Carpenter		Phoenixville	PA
David	Carpenter		Pittston	PA
Joshua	Carpenter		Chalfont	PA
Nuala	Carpenter		Wayne	PA
Patricia	Carpenter		Pittsburgh	PA
Quincy	Carpenter		Swarthmore	PA
Sharon	Carpenter		Greensburg	PA
Timothy	Carpenter		Morrisville	PA
Denise	Carr		Chadds Ford	PA
Donna	Carr		Harleysville	PA
Gerard	Carr		Philadelphia	PA
Joe	Carr		East Stroudsburg	PA
Kathy	Carr		New Bethlehem	PA
Kimberly	Carr		Philadelphia	PA
Ada	Carrasquill		Philadelphia	PA

Ketty	Carrasquillo		Philadelphia	PA
Marc	Carrella		*Submitted via email*	PA
Margarita	Carreras		Harrisburg	PA
Jill	Carrick		Kingston	PA
Brittany	Carrion		Philadelphia	PA
Beverly	Carroll		Wallingford	PA
Dorothy	Carroll		Philadelphia	PA
Hannah	Carroll		Kennett Square	PA
Jack	Carroll		Monroeville	PA
Nicole	Carroll		Mount Pleasant Mills	PA
Christopher	Carrolli		Greensburg	PA
Stacy	Carr-Poole	Executive Director, Bucks County Audubon Society	New Hope	PA
Bobb	Carson		Coopersburg	PA
Joan	Carson		Coopersburg	PA
Karen	Carson		Pittsburgh	PA
Melissa	Carson		Marianna	PA
Donna	Carswell		Huntingdon Valley	PA
Cherie	Cartagena		Philadelphia	PA
Aaron	Carter		Philadelphia	PA
Charlesl	Carter		East Pittsburgh	PA
Ileen	Carter		State College	PA
Jen	Carter		Kutztown	PA
Joseph	Carter		East McKeesport	PA
Kimberly	Carter		Pittsburgh	PA
Leroy	Carter		Philadelphia	PA
Maren	Carter		Ambler	PA
Monica	Carter		Philadelphia	PA
Seth	Carter		Erie	PA
Thomas	Carter		Mars	PA
Tiara	Carter		Harrisburg	PA
Veronica	Carter		Red Lion	PA
Janet	Cartwright		Glenside	PA
Teresa	Caruthers		Ephrata	PA
Richard	Casaday		Bellwood	PA
Elisabeth	Casale		Mechanicsburg	PA
Terri	Casale		Loretto	PA
Jenifer	Casey		Carbondale	PA
Jere	Casey		Pennsburg	PA
Michele	Casey		Philadelphia	PA
Darlene	Cash		Philadelphia	PA
Melanie	Cashaw		Pittsburgh	PA
Patricia	Cashman		Narberth	PA
Tony	Casilio	Manager, Environmental, Health and Safety - Domtar	Johnsonburg	PA

David	Casker		Johnstown	PA
Mark	Caskey	Steel Nation	Canonsburg	PA
Leah	Casner		Equinunk	PA
Joseph	Cassidy		Marcus Hook	PA
Loretta	Cassidy		Swiftwater	PA
Taylor	Cassidy		Canonsburg	PA
Susan	Cassidyray		East Greenville	PA
Linda	Castagna		Philadelphia	PA
Joseph	Castaldi		Coopersburg	PA
Kilee A.	Casteel		Punxsutawney	PA
James	Castellan		Rose Valley	PA
Alex	Castellano		Newtown Square	PA
Cathy	Castellano Baker		Reading	PA
Jessica	Castillo		Philadelphia	PA
Maria	Castro		Philadelphia	PA
Edgar	Catala		Lancaster	PA
Kathie	Cataldo		Easton	PA
Carol	Catanese		Kennett Square	PA
Barbara	Catanzaro		Bridgeville	PA
Domenick	Catrambone		Philadelphia	PA
Maria	Catrambone		Philadelphia	PA
George	Cauffman		Malvern	PA
Susan	Caughlan		Eagleville	PA
Norma	Cavada		Jeannette	PA
Anthony	Cavage		Philadelphia	PA
Janet	Cavallo		Secane	PA
Samantha	Cavallone		New Hope	PA
Connie	Cavara		Pittsburgh	PA
Allyn	Cavoto		Adrian	PA
Pauline	Cay		Allentown	PA
Jane	Cease		Allentown	PA
Anne	Cecil		Philadelphia	PA
Cynthia	Cedeno		Reading	PA
Rose	Cejer		Coraopolis	PA
Ron	Celentano	PA Solar & Storage Industries Association	Wyndmoor	PA
Fabiola	Celidon		Philadelphia	PA
Joanne	Celler		Olyphant	PA
Kevin	Cellini		Philadelphia	PA
Mary	Cellucci		Broomall	PA
Mary	Centola		Carlisle	PA
Rydesha	Cephas		Reading	PA
James	Cerroni		Sharon	PA
Diane	Cervasio		Chalfont	PA
David	Ceton		Newtown Square	PA
Andrew	Chabot	BCI Technology Investments	Leetsdale	PA
Ann	Chadwell		Camp Hill	PA

Elizabeth	Chadwick		Lancaster	PA
Benjamin	Chaffee		Lake City	PA
Brian	Chai		King of Prussia	PA
William	Chain		*Submitted via email*	PA
Theresa	Chalich, RN		Pittsburgh	PA
Patricia	Challenger		New Oxford	PA
Nancy	Chalmers		Philadelphia	PA
Adriana	Chalson		Wallingford	PA
Anne	Chambers		Media	PA
Larry	Chambers		Hanover	PA
Makalynn	Chambers		Philadelphia	PA
Tamia	Chambers		Lancaster	PA
Cathy	Chamblee		Springfield	PA
Berry	Chamness		Jenkintown	PA
Anthony	Champion		Philadelphia	PA
Belinda	Champion		Philadelphia	PA
Angel	Chandler		Philadelphia	PA
James	Chandler		*Submitted via email*	PA
Stephanie	Chandler		Indiana	PA
Terrell	Chandler		Philadelphia	PA
Kristal	Chaney		Clairton	PA
Tai	Chang		Blue Bell	PA
Mitch	Chanin*		Philadelphia	PA
Courtney	Chapin		Pittsburgh	PA
Kathryn	Chapman		Benton	PA
Letha	Chapman		Clairton	PA
Margaret	Chapman		Gibsonia	PA
RoseMary	Chapman		Fort Washington	PA
Shauntaya	Chapman		Pittsburgh	PA
Ashley	Chappell		Muncy	PA
Bryan	Chappell		Shelocta	PA
Alexander	Charlton		Springfield	PA
Lavonjalett	Charlton		Philadelphia	PA
Mark	Chase		Pottstown	PA
Michelle	Chau		New Park	PA
Stu	Chazan		North Abington Township	PA
Maura	Chazin		Feasterville Trevose	PA
Molly	Cheatum		Harrisburg	PA
Hamad	Chebly		Morrisville	PA
Robert	Checket		Lebanon	PA
Wes	Checkeye	Evoke Solar	Hellertown	PA
Mike	Chelsey		Sinking Spring	PA
Jeremy	Chen		Philadelphia	PA

William	Chenault		Philadelphia	PA
Valerie	Cheney		Media	PA
Annie	Cheng		Philadelphia	PA
Liz	Chernett		Philadelphia	PA
Nancy	Chernett	Member, Delaware River Valley Pachamama Chapter	Wynnewood	PA
Patricia	Chernicky		Erie	PA
Ernest	Cherry		Altoona	PA
Jacqueline	Cherry		Philadelphia	PA
Jamil	Cherry		Philadelphia	PA
Duncan	Cheshire		Paoli	PA
Jon	Cheshire		Malvern	PA
Renee	Chesler		Royersford	PA
Debra	Chesnick		Beaver Falls	PA
Debra	Chesny		Sunbury	PA
C. Gerald	Chetkowski		Landenberg	PA
Eloise	Chevrier	Tabernacle United Church of Christ	Philadelphia	PA
Caroline	Chew		Oxford	PA
Cathy	Chhour		King of Prussia	PA
Ricardo	Chiappe		Harrisburg	PA
Lonna	Chiaradio		Bensalem	PA
Raul	Chiesa		Scottdale	PA
Lee	Chilcoat		Columbia	PA
John and Kim	Childe		Dauphin	PA
Chris	Childers		Downingtown	PA
Cary	Childs		Philadelphia	PA
Kenneth	Childs		Philadelphia	PA
Olga	Chili		Pittsburgh	PA
Ellen	Chinn		Indiana	PA
Laura	Chinofsky		Southampton	PA
A. Samuel	Chiodo		Bridgeville	PA
Phillip	Chiodo		McKees Rocks	PA
Judi	Chiolo		Lafayette Hill	PA
Steve	Chiolo		Blue Bell	PA
David	Chipps II		Washington	PA
Anna	Chisholm		Philadelphia	PA
Ryan	Chisholm		North Wales	PA
Thomas	Chisholm		Sharpsville	PA
Ronald	Chizmar		Philadelphia	PA
Dennis	Chobody		Kittanning	PA
Andy	Chock		York	PA
Jason	Choi		Pittsburgh	PA
Judith	Chomsky		Elkins Park	PA
Katie	Chong		Meadowbrook	PA
Michael	Chopp		Butler	PA
Michael	Chorba		Millville	PA
Ibraheem	Choudhry		Glenmoore	PA

Sandra	Choukroun		Narberth	PA
Dawn	Christensen		Pittsburgh	PA
Fred	Christman		Tobyhanna	PA
John	Christman	PSU Prof. Philosophy, Poly Sci & Women's Studies	State College	PA
Linda	Christman		Lehighton	PA
Roger	Christman		Saylorsburg	PA
Dontae	Christmas		Philadelphia	PA
Larry	Christner		Meyersdale	PA
Ann-Marie	Christopher		Pittsburgh	PA
Tina	Chromey		Landenberg	PA
Wayne	Chudleigh		Union Dale	PA
Cathy	Chung		Philadelphia	PA
Cindy	Chuplis		Middleport	PA
Frank	Chylinski		Erie	PA
Don	Cianelli		Newtown Square	PA
Adeline	Ciannella		Media	PA
Robert	Ciavatta		East Stroudsburg	PA
Diane	Cicco		Pittsburgh	PA
Lawrence	Cicco		Cranberry Township	PA
Christen	Cieslak		Pittsburgh	PA
Tony	Ciferni		Dover	DE
Timothy	Cimino		Pittsburgh	PA
Donna	Cinalli		Langhorne	PA
Gayle	Cindric		Monroeville	PA
Michael	Ciocci		Royersford	PA
Joyce	Ciotti		Pittsburgh	PA
M.	Cipriani		Springfield	PA
James	Cirilli		West Chester	PA
Gabriel	Cisneros		Pittsburgh	PA
David	Citron		Martinsburg	PA
Dorothy	Clair		Telford	PA
James	Clair		Telford	PA
Braheem	Clanton		Philadelphia	PA
Janean	Clare		Morton	PA
Alysha	Clark		Madison	WI
April	Clark		Philadelphia	PA
Ashleigh	Clark		Pittsburgh	PA
Bernadette	Clark		Philadelphia	PA
Bettie	Clark		Connellsville	PA
Christopher	Clark		Pittsburgh	PA
Cynthia	Clark		Pittsburgh	PA
Darlene	Clark		State College	PA
David	Clark		Bridgeport	PA
Dennis	Clark		Spring City	PA
Georgiana	Clark		Philadelphia	PA

Helene	Clark		New Castle	PA
James	Clark	Clark Energy Inc	Broomall	PA
Jennifer	Clark		Wallingford	PA
Jeremy	Clark		Pittsburgh	PA
Jonnathan	Clark		McMurray	PA
Karen	Clark		Lehighton	PA
Linda	Clark		Philadelphia	PA
Nakia	Clark		Philadelphia	PA
Pamela	Clark		McMurray	PA
Rachel	Clark		Philadelphia	PA
Rameana	Clark		Darby	PA
Reginald	Clark		Scranton	PA
Sandra	Clark		Erie	PA
Scott	Clark		Narberth	PA
Sharon	Clark		Harrisburg	PA
Steven	Clark		Havertown	PA
Tanya	Clark		Philadelphia	PA
Tyrone	Clark		Philadelphia	PA
Victoria	Clark		Lebanon	PA
William	Clark		Fairless Hills	PA
Yvonne	Clark		Wilkes-Barre	PA
Zachary	Clark		Indiana	PA
Margaret	Clark		Philadelphia	PA
Roger	Clark*		Ambler	PA
Amy	Clarke		Glenshaw	PA
Collins	Clarke		Philadelphia	PA
Jeffrey	Clarke		Philadelphia	PA
Ms.	Clarke		New Hope	PA
Neil	Clarke		Manheim	PA
Ronald	Clarke		Philadelphia	PA
Tracian	Clarke		Philadelphia	PA
Malinda	Clatterbuck	Secretary, Lancaster Against Pipelines	Holtwood	PA
Ivette	Claudio		Hazleton	PA
Robert	Clauser		Harrisburg	PA
Sarah	Clauser		Wallingford	PA
Joseph	Clawson		Springfield	PA
Nancy	Clawson		Indiana	PA
Robert	Clawson		Indiana	PA
Charles	Clay		Philadelphia	PA
Tamara	Clay		Philadelphia	PA
Todd	Clay		York	PA
Wayne	Claybourne		Doylestown	PA
Breton	Claycomb		Bedford	PA
Rachel	Cleary		Philadelphia	PA
Emily	Cleath		Pittsburgh	PA
Martha	Cleaves		Pipersville	PA

Michele	Cleckley		Franklin	PA
Deborah	Cleeton	Elected Official, Bellefonte Borough	Bellefonte	PA
Danielle	Clemens		West Chicago	IL
Douglas	Clemens		New Hope	PA
Virginia	Clemens		New Hope	PA
Christina	Clement		Intercourse	PA
Nicolaus	Clemente		Pittsburgh	PA
Claudia	Clemons		Pittsburgh	PA
Annette	Clewell		Harrisburg	PA
S.	Clifford		Wynnewood	PA
William	Clifford		Harrisburg	PA
Timothy	Clincy		Philadelphia	PA
Clarissa	Cline		West Mifflin	PA
Gary	Cline	Homer City Generation LP	Homer City	PA
Jeffery	Cline		New Alexandria	PA
Kyle	Clinger		Brookville	PA
Mary	Clinton		Media	PA
Lisa	Clisham		Harrisburg	PA
April	Clisura	Co-Chair,Greenfield Neighbors for Clean Air	Pittsburgh	PA
Susan	Clough*		Lancaster	PA
Michael	Clucas		West Grove	PA
Joe	Clupp		Willow Street	PA
Mark	Coatney		Philadelphia	PA
George	Coats		Acme	PA
Tasha	Cobb		Philadelphia	PA
John	Cobia, Jr.		Williamsport	PA
Alixe	Cobin		Paoli	PA
Michael	Coblenz		Pittsburgh	PA
Ruth	Coburn		Spring City	PA
Raymond	Coccia		Greensburg	PA
Anna	Coccodrilli		Philadelphia	PA
Charles	Cochran		Philadelphia	PA
Patricia	Coda		Philadelphia	PA
Mary	Coe		Wayne	PA
James	Coffey		Green Lane	PA
John	Coffey		Hatfield	PA
Rosemarie	Coffey		North Wales	PA
Rosemary	Coffey		Pittsburgh	PA
Davis	Coffey*		Charlottesville	VA
Donna	Coffman		Philadelphia	PA
James	Coffman		Acme	PA
Scott	Cogley		Mechanicsburg	PA
Jeffrey	Cogshall		Doylestown	PA
Larry	Cohbra		Cheltenham	PA
Al	Cohen		Hummelstown	PA
Amy	Cohen		Pittsburgh	PA

Anne Marie	Cohen		Emmaus	PA
Barbara	Cohen		Mendenhall	PA
Cathleen	Cohen		Wynnewood	PA
Daniel	Cohen		Pittsburgh	PA
Elaine	Cohen		Jenkintown	PA
Francine	Cohen		Philadelphia	PA
J.	Cohen		Huntingdon Valley	PA
Joshua	Cohen	Greenlots	Washington	DC
Lawrence	Cohen		Schwenksville	PA
Lillian	Cohen		Philadelphia	PA
Lynne	Cohen		Philadelphia	PA
Melissa	Cohen		Huntingdon Valley	PA
Rachel Val	Cohen		Stroudsburg	PA
Susan	Cohen		Allison Park	PA
Robert M.	Cohen, MD		Philadelphia	PA
Melanie	Cohick		Boiling Springs	PA
Herb	Cohlberg		Lower Merion	PA
Donald	Colagrande		Pittsburgh	PA
Nicholas	Colaluca		Pittsburgh	PA
Bruce	Colamarino		Pitcairn	PA
Ellen	Colangelo		Palmerton	PA
John	Colantonio		Cranberry	PA
Geraldine	Colasante		Philadelphia	PA
Richard	Colberg		Lancaster	PA
Ellen	Cole		Chalfont	PA
Larry	Cole		Bear Lake	PA
Lynn	Cole		State College	PA
Richard	Cole		West Norriton	PA
Don	Coleman		Pittsburgh	PA
Ellis	Coleman		Kennett Square	PA
Mariah	Coleman		Pittsburgh	PA
Morris	Coleman		Upper Darby	PA
Nancy	Coleman		Hollsopple	PA
Rosemarie	Coleman		Philadelphia	PA
Shawn	Coleman		Philadelphia	PA
Sherreese	Coleman		West Chester	PA
Tara	Coleman		Pittsburgh	PA
Donald	Coley		Philadelphia	PA
John	Colgan-Davis		Philadelphia	PA
Ashley	Colkitt		Philadelphia	PA
Ivelisses	Collado		Bushkill	PA
Scania	Collado		Lebanon	PA
Victoria	Collazo		Philadelphia	PA
Amparo	Collazos		Philadelphia	PA
Gary	Coller		Reading	PA
Marsha	Collier		Philadelphia	PA
Sarah	Collier		Wayne	PA

Anne	Collins		Newtown Square	PA
Beth	Collins		Havertown	PA
Brendan	Collins		Jeffersonville	PA
Carol	Collins		Dover	DE
Elizabeth	Collins		Washington	PA
Emily	Collins	Exec Dir & Managing Atty,Fair Shake Legal Services	Akron	OH
Jenny	Collins		Stroudsburg	PA
Joanne	Collins		Philadelphia	PA
Maureen	Collins		Downingtown	PA
Michelle	Collins		Dilliner	PA
Michelle	Collins		Philadelphia	PA
Patricia	Collins		Latrobe	PA
Anthony	Colon		Philadelphia	PA
Christen	Colon		Lancaster	PA
Marilyn Reyes	Colon		San Juan	PR
Miguelina	Colon		Bensalem	PA
Olga	Colon		Philadelphia	PA
Tomas	Colon		Philadelphia	PA
Ulysses	Colon		Kane	PA
Dwayne	Colter		Monroeton	PA
Jacqueline	Colyer		East Fallowfield	PA
John	Comella		Philadelphia	PA
Tom	Comerci		Wynnewood	PA
Donna	Comiskey		Plymouth	PA
Lisa	Comitz		Sugar Notch	PA
Fran	Comly		Greentown	PA
Hunter	Commins		York	PA
Vic	Compher		Philadelphia	PA
Melinda	Compton		Dingmans Ferry	PA
Lewis	Conboy		Long Pond	PA
Anthony	Concilio		Sycamore	PA
Thomas	Condego		Pittsburgh	PA
Irvin	Confer		Bellefonte	PA
Jeffrey	Confer	Con-Stone, Inc	Bellefonte	PA
John	Confer		Daisytown	PA
Mary	Confer		Bellefonte	PA
Karina	Conkrite		Philadelphia	PA
James	Conley		Pittsburgh	PA
Katherine	Conlon		Bethlehem	PA
Sandra	Conn		West Chester	PA
Chris	Conner		Yardley	PA
Cody	Conner		Eighty Four	PA
Janet	Conner		Langhorne	PA
Debbie	Conners		Tannersville	PA
Louis	Conni		Bensalem	PA
Laurie Pisarcik	Connolly		Middletown	PA

Mark	Connolly		Phoenixville	PA
Megan	Connolly		Phoenixville	PA
Suzanne	Connolly		Enola	PA
Jack	Connor		Philadelphia	PA
Kathleen	Connor		Pittsburgh	PA
Katlyn	Connor		Philadelphia	PA
Ellen	Conrad		Pittsburgh	PA
Kathryn	Conrad		Duncannon	PA
Laurie	Conrad		Philadelphia	PA
Brita	Conroy		Huntingdon Valley	PA
Elizabeth	Conroy		Cheswick	PA
Tom	Conroy		Irwin	PA
Tony	Consbruck		Grove City	PA
Susan	Constantine		Dalton	PA
Robert	Consylman		Bausman	PA
John	Conte		Hellertown	PA
Joseph	Contegiacomo		Phoenixville	PA
Janice	Conti		Erie	PA
Jennifer	Conti		Fredericktown	PA
Juliet	Conti		Philadelphia	PA
Rich	Conti		Rutledge	PA
Dorothy	Continental		Havertown	PA
T. Kipp	Contrael		Kittanning	PA
Amanda	Conway		Philadelphia	PA
Annie	Conway		Bremerton	WA
Lawrence	Conway		Monroeville	PA
Charles	Conzatti		Johnstown	PA
Aaron	Cook		Beaver	PA
Bill	Cook		Kingston	PA
Elizabeth	Cook		Pittsburgh	PA
Gregory	Cook		Bethlehem	PA
John	Cook		East Pittsburgh	PA
Kevin	Cook		*Submitted via email*	PA
Kimberly	Cook		Port Carbon	PA
Nicola	Cook		Chester Springs	PA
Robert	Cook		New Britain	PA
Ronni	Cook		Chambersburg	PA
Valerie	Cook		York	PA
Brian	Cooke		Philadelphia	PA
John	Cooke		Haverford	PA
Maren	Cooke		Pittsburgh	PA
Robert	Cooke Jr.		Mount Joy	PA
Monica	Cooley		Oreland	PA
Ashley	Coombe		Philadelphia	PA
Janelle	Cooney		Wallingford	PA
Marie	Cooney		Plymouth Meeting	PA

Brian	Cooper		Shelocta	PA
David	Cooper		Pittsburgh	PA
Deborah	Cooper		Cranberry Township	PA
Dorothy	Cooper		Phoenixville	PA
Jane	Cooper		Philadelphia	PA
John	Cooper		Lewisburg	PA
Jon	Cooper		Quarryville	PA
Julianna	Cooper		Lewisburg	PA
Justin	Cooper	Homer City Generating Station	Heilwood	PA
Margaret	Cooper		Philadelphia	PA
Maurice	Cooper		Philadelphia	PA
R. Bruce	Cooper		Cranberry Township	PA
Ramona	Cooper		Chester	PA
Ronald	Cooper		Mercer	PA
Tiesha	Cooper		Philadelphia	PA
Scott	Coots		Hummelstown	PA
Julie	Cope		Lansford	PA
Thomas	Cope		Medina	OH
Betty Jean	Copeland		Mohnton	PA
Doug	Copeland		Spring City	PA
Lavonya	Copper		Philadelphia	PA
Veronica	Coptis (Fike)*		Carmichaels	PA
Dennis	Corbett		Petrolia	PA
Eugene	Corbin		Beaver Falls	PA
Elowyn	Corby		Philadelphia	PA
Anne	Corcoran		Rockledge	PA
Christina	Corcoran		Royersford	PA
Juanita	Cordell		Chambersburg	PA
Mercedes	Cordero		Allentown	PA
Donna	Cordner		Philadelphia	PA
Giovanna	Coriano		Shippensburg	PA
Jared	Cornelia		Wilmington	DE
Amy	Cornelius	Green Building United	Philadelphia	PA
Roberta	Corona		Pittsburgh	PA
Solangela	Correa		Philadelphia	PA
Gabrielle	Corson		Pittsburgh	PA
Liz	Corson		Wallingford	PA
Dujuan	Cortez		Philadelphia	PA
Clare	Cosenza		Richboro	PA
Donna	Cosgrove		Philadelphia	PA
Erin	Cosgrove	Keystone Energy Efficiency Alliance	Philadelphia	PA
Marie	Cosgrove-Davies		Pittsburgh	PA
Rafael	Cosme		Shippensburg	PA
Pamela	Costanzi		West Chester	PA

Marla	Costanzo		Pittston	PA
Denise	Costello		Philadelphia	PA
Kathleen	Costello		Collegeville	PA
Patrick	Costello		Carnegie	PA
Quinn	Coston		Philadelphia	PA
Dawn	Cottee		Lansdale	PA
Lisa	Cotter		Pittsburgh	PA
Nancy	Cotter		Avondale	PA
Suzanne	Cotter		Reading	PA
Cruz	Cotto		Allentown	PA
Denise	Cottrell		Philadelphia	PA
Joyce	Cottrell		Pittsburgh	PA
Caroline	Cotugno		Croydon	PA
Randall	Couch		Philadelphia	PA
Peter	Couchman	Exec. Director, Bowman's Hill Wildflower Preserve	New Hope	PA
Carla	Coughenour		Windber	PA
Jacki	Coughlin		Norristown	PA
Susan	Coulson		Carlisle	PA
Anthony	Coulter		Pittsburgh	PA
Mark	Coulter		Franklin	PA
Cindy	Courtney		Lancaster	PA
Shareeda	Cousins		Harrisburg	PA
D. Rafael	Coven	Pace Controls	Philadelphia	PA
Andrea	Cover		Middletown	PA
Phil	Covert		York	PA
Dava	Cowan		Brooklyn	PA
Christopher	Cowden		Philadelphia	PA
Cody	Cowper		Philadelphia	PA
Brian	Cox		Lititz	PA
David	Cox		Dillsburg	PA
Jessica	Cox		Philadelphia	PA
Joe	Cox		Philadelphia	PA
Leonard	Cox		Pittsburgh	PA
Lynn	Cox		Morrisville	PA
Mary	Cox		Pottstown	PA
Rosalie	Cox		Berwyn	PA
Sharonda	Cox		Harrisburg	PA
Stephan	Cox		Media	PA
Susan	Cox		New York	NY
Victoria	Cox		Pottstown	PA
Tari	Coxe		Philadelphia	PA
Lisa	Coyle		Philadelphia	PA
Jane	Coyne		Selinsgrove	PA
Peter	Coyne		Easton	PA
Quoetta	Coyne		Pittsburgh	PA

William	Cozzens	Germantown Monthly Mtg Religious Society Friends	Philadelphia	PA
Lewis	Crader		Huntingdon	PA
Barbara	Craig		Dallas	PA
Evelyn	Craig		Easton	PA
Morgan	Craig		Philadelphia	PA
Nakesha	Craig		Philadelphia	PA
Carol	Craige		Pittsburgh	PA
Kay	Cramer		Liverpool	PA
Mark	Cramer		Sycamore	PA
Sean	Crampsie	Councilman,Carlisle Borough Council	Carlisle	PA
Claudia	Crane, RN		Philadelphia	PA
Annalisa	Crannell		Lancaster	PA
Shelley	Crannell		Squirrel Hill	PA
David	Cranston Jr.		McKees Rocks	PA
Corey	Crawford		Philadelphia	PA
Ezra	Crawford		Holtwood	PA
Flynell	Crawford		Philadelphia	PA
Jason	Crawford		Lancaster	PA
Jim	Crawford		New Holland	PA
Jonathan	Crawford		New Holland	PA
Maria Luisa	Crawford		Haverford	PA
Pam	Crawford		Chadds Ford	PA
Steven	Crawford		*Submitted via email*	PA
Heather	Creasy		Birdsboro	PA
John	Creasy		Pittsburgh	PA
Maryalice	Creasy		Glenshaw	PA
Tina	Crees		Beaver Falls	PA
Anna	Crenshaw		Reading	PA
Stephen	Crescimanno		Hatfield	PA
Walt	Cressler	Chairperson, Borough of Media EAC	Media	PA
William	Cressler		Dillsburg	PA
Charles	Cresson		Swarthmore	PA
Anne	Cresswell		Pittsburgh	PA
Justin	Cresswell		Watsontown	PA
Kevin	Cresswell		West Chester	PA
Suzanne	Cresswell		West Chester	PA
Suzanne	Crilley		Carversville	PA
Dawn	Crilley-Shank		Greencastle	PA
Shinita	Crippen		Philadelphia	PA
Harrington	Crissey Jr		Elkins Park	PA
Susan	Cristiano		Broomall	PA
Louis	Cristillo		Saylorsburg	PA
Lisa	Cristo		Harrisburg	PA

Tammy	Crittonden		Erie	PA
Bridgette	Crockett		Aston	PA
	Crofoot		Hellertown	PA
Emani	Cromer		Philadelphia	PA
Sandy	Cromer		Abbottstown	PA
Doug	Crompton		Richboro	PA
Edward	Cron		East Stroudsburg	PA
Em	Crone		Coatesville	PA
Christopher	Crook		Nazareth	PA
Dennis	Crook		East Fallowfield	PA
Candace	Cropper-Silverman		Philadelphia	PA
Charlotte	Croquette		Philadelphia	PA
William	Crosby		Erie	PA
Glenn and Nancy	Crosen		West Chester	PA
Joseph	Croskey		Clarion	PA
Heather	Cross		Hamtramck	MI
Michael	Cross		Upper Darby	PA
Sarah	Crothers		Reading	PA
Gianna	Croumbley		Brookhaven	PA
Jesse	Crouse		West Chester	PA
Todd	Crouse		Millersville	PA
David	Crowe		Reading	PA
Elizabeth	Crowell		Radnor	PA
Susan	Crowle		Auburn	PA
Thomas	Crown		Pittsburgh	PA
Cynthia	Crowner		Stroudsburg	PA
Peter	Crownfield		Fountain Hill	PA
Jayne	Crowther		Orefield	PA
Michael	Crowther		York	PA
Amanda	Croydon		Kunkletown	PA
Jeffrey	Cruciani	Councilman, Blakely Borough	Blakely	PA
Patricia	Cruikshank		Belleville	PA
Brenda	Cruise		Scranton	PA
Janice	Crum		Pittsburgh	PA
John	Crum		Upper Black Eddy	PA
Stephanie	Crute		Tamaqua	PA
Kimberly	Cruz		Philadelphia	PA
Marixsa	Cruz		Philadelphia	PA
Moises	Cruz		Philadelphia	PA
Yamil	Cruz		Easton	PA
Joshua	Cryer		Bethlehem	PA
John	Csaszar		Fleetwood	PA
Ronald	Cubbage		Quakertown	PA
Katherine	Cubeta		Newtown Square	PA
Shalea	Cuff		Harrisburg	PA
Jo	Cuffari		Philadelphia	PA
Catherine	Cullen		State College	PA

Edward	Cullen		State College	PA
J. Joseph	Cullen	Building Performance Association	Moon Township	PA
Brinton	Culp		Lititz	PA
Olivia	Cummings		Henryville	PA
Shawn	Cummings		Natrona Heights	PA
Isaac	Cunning		Chester	PA
Cornelius	Cunningham		Philadelphia	PA
James	Cunningham		Strasburg	PA
Margot	Cunningham		Nether Providence Township	PA
Reena	Cunningham		York	PA
Tameya	Cunningham		Lancaster	PA
Dona	Cuppett		Telford	PA
Andre	Cureton		Philadelphia	PA
Danielle	Curley		Gladwyne	PA
Robert	Curley		Philadelphia	PA
Donna Adamson	Curlis		Minersville	PA
Annette	Curran		West Grove	PA
Faith	Curran		New Cumberland	PA
Jennifer	Curran		Pittsburgh	PA
Tim	Curran		Canonsburg	PA
Michael	Currera		Norristown	PA
Susan	Curry		Elizabethtown	PA
Cynthia	Curtin		Pottstown	PA
Donna	Curtis		Kennett Square	PA
James	Curtis		Port Matilda	PA
Warren	Curtis		New Cumberland	PA
Marjorie	Curtis-Cohen		Abington	PA
Zelda	Curtiss		Pittsburgh	PA
Dan	Cush		Aspinwall	PA
Rebecca	Custer		Doylestown	PA
Stuart	Custer		Lilly	PA
Joseph	Cuthbert		Philadelphia	PA
Barry	Cutler		Springfield	PA
Bernard	Cutler		Reading	PA
Edward	Cutler		Pittsburgh	PA
Todd	Cutler		Merion Station	PA
Carl	Cyphers		Stroudsburg	PA
Sheila	Cypriotis		Marcus Hook	PA
Stephany	Czech		East Stroudsburg	PA
Bob	Czerniewski		Pittsburgh	PA
Shannon	Czincila		Lansdale	PA
April	D.		Monongahela	PA
G.	D.		Philadelphia	PA
Theresa	D.		Philadelphia	PA
W. Bruce	D.		Lincoln Park	IL
Kathy	Dabanian		Sellersville	PA

Lois	Dabney		Philadelphia	PA
David	Daffern		Beaver Falls	PA
Lori	Dafilou		Narberth	PA
Jennifer	Dages		Jim Thorpe	PA
Michelle	D'Agostino		York	PA
Udav	Dahal		Scranton	PA
Emily	Daigle		State College	PA
Steven	Daigneault		Lackawaxen	PA
Darlene	Dailey		Philadelphia	PA
Troy	Dailey		Philadelphia	PA
Jeff	Daise		Reading	PA
Diana	Dakey		Dalton	PA
M. Fevzi	Daldal	Professor,University of Pennsylvania	Philadelphia	PA
Cynthia	Dale		Guys Mills	PA
Keith	D'Alessandro		Canton	MI
Paula	Daley		Jeffersonville	PA
Teala	Dalfonso		Johnstown	PA
James H.	Dalton, Jr.		Bloomsburg	PA
Christopher	Daly		Rosemont	PA
Deborah	Daly		Carlisle	PA
George	Dalzell		Pittsburgh	PA
Cynthia	D'Ambrosio		Norristown	PA
Marie	Damm		Doylestown	PA
Olivia	D'Andrea		Blue Bell	PA
Al	Dandridge		Biglerville	PA
Paulette	Dandridge		Philadelphia	PA
Larry	Dandy		Philadelphia	PA
Scott	Danehower		Lancaster	PA
John	Danek		Charleroi	PA
Damien	Danenas		McKees Rocks	PA
Toni	Dang		Philadelphia	PA
Patricia	Dangle		Montoursville	PA
Bill	Daniels		Wilkes-Barre	PA
Jody	Daniels		Reading	PA
Judith N.	Daniels		Waymart	PA
Karen	Daniels		Philadelphia	PA
Mary	Daniels		Reading	PA
Tahyetta	Daniels		Philadelphia	PA
Toni	Daniels		Pittsburgh	PA
Tracy	Daniels		Philadelphia	PA
Raymond	Dankel		Collegeville	PA
Jen	Danner		Nazareth	PA
Amy	Danowski		Bethel Park	PA
K.	Danowski		Pittsburgh	PA
Lanaa	Dantzler		Philadelphia	PA
Margaret	Darby		Philadelphia	PA

Ashley	D'Archangelo		Reading	PA
Tina	Darden		Harrisburg	PA
Scott	Darkes		Lebanon	PA
Beth	Darlington		Poughkeepsie	NY
David	Darlington		Auburn	PA
Kimberly	Darr		Johnstown	PA
Kenneth	Darrell		Tobyhanna	PA
Puja	Das		Upper Darby	PA
Jesse	Dashefsky		Philadelphia	PA
Arlene	Dashiell		Philadelphia	PA
Deborah	Dashiell		Philadelphia	PA
Barbara	Daub		Pottstown	PA
Darla	Daub		Clearfield	PA
Paul	Daube		Harrisburg	PA
Charley	Daughenbaugh		Vintondale	PA
Catherine	Daugherty		Williamsport	PA
Doris	Daughety		Washington	PA
Melanie	Daum		Penn run	PA
Anne I.	Davenport		Philadelphia	PA
Douglas	Davey		Shermans Dale	PA
Alexander	David		Philadelphia	PA
Clifford	David		Ambler	PA
Courtney	David		Orefield	PA
Ruth	David		Philadelphia	PA
Susan	David		Philadelphia	PA
Donna	Davidheiser		Centerport	PA
Bill	Davidson		Monaca	PA
MaryEllen	Davidson		Reading	PA
Phyllis	Davidson		Pittsburgh	PA
Richele	Davidson		Olyphant	PA
Sarah	Davidson		Philadelphia	PA
William	Davidson	PNHP/PSR	Jonestown	PA
Jerry	Davies		Harrisburg	PA
Mesharck	Davies		Philadelphia	PA
Denise	Davila		Philadelphia	PA
Glorisel	Davila		Philadelphia	PA
Barbara	Davis		Fort Washington	PA
Brinton	Davis		Philadelphia	PA
Candra	Davis		Philadelphia	PA
Cathy	Davis		Collingdale	PA
Crystal	Davis		Chester	PA
Cynthia	Davis		Saint Clair	PA
Donna	Davis		*Submitted via email*	PA
Edward	Davis		Blairsville	PA
Elderrobert	Davis		Chester	PA
Ellen	Davis		Norristown	PA

Emily	Davis		Lancaster	PA
Emily	Davis		Media	PA
Emily	Davis		Philadelphia	PA
Franklin	Davis		Bethlehem	PA
Glenn	Davis		Apollo	PA
Herman	Davis		Philadelphia	PA
Jade	Davis		Bridgeville	PA
Jamie	Davis		Ambler	PA
Jan	Davis		Somerset	PA
Jennilou	Davis		Benton	PA
Jesseca	Davis		East Greenville	PA
Joan	Davis		Latrobe	PA
Joe	Davis		Latrobe	PA
Jolynn	Davis		Trout Run	PA
Kathleen	Davis		Chalfont	PA
Kenneth	Davis		Warrior's Mark	PA
Kim	Davis		Philadelphia	PA
Larissa	Davis		Pittsburgh	PA
Lashawn	Davis		Pittsburgh	PA
Melvin	Davis		Pittsburgh	PA
Naomi	Davis		Philadelphia	PA
Nicholas	Davis		Nescopeck	PA
Norma	Davis		Drexel Hill	PA
Paul	Davis		Philadelphia	PA
R.	Davis		Harrisburg	PA
Rachel	Davis	Geologist, Environmental Resources Management	Philadelphia	PA
Richard	Davis		Stroudsburg	PA
Rinardo	Davis		Philadelphia	PA
Roberta	Davis		Pittsburgh	PA
Roger	Davis		Philadelphia	PA
Shawn	Davis	Assistant Professor, Slippery Rock University	Slippery Rock	PA
Shirley	Davis		Hummelstown	PA
Susan Schaefer	Davis		*Submitted via email*	PA
Tamar	Davis		Wilkes-Barre	PA
Timothy	Davis		Sarver	PA
Toshia	Davis		Duquesne	PA
Wendy	Davis		Pittsburgh	PA
Willard	Davis		Coatesville	PA
William	Davis		Chalfont	PA
William	Davis		Philadelphia	PA
Zachary	Davis	Upper Merion Environ. Advisory Council Chairperson	Upper Merion	PA
Aiden	Davis-Diaz		Philadelphia	PA
Adelyn	Dawes		Williamsport	PA

R. John	Dawes	Executive Director, Foundation for PA Watersheds	Alexandria	PA
Larry	Dawley		Bethlehem	PA
Debbie	Dawson		Folsom	PA
Elizabeth	Dawson		Pennington	NJ
Ian	Dawson		Philadelphia	PA
John	Dawson		York	PA
Larry	Dawson		Pittsburgh	PA
Peggy	Dawson		Drumore	PA
Dorothy	Day		Carlisle	PA
John	Day		Braddock	PA
Rhyana	Day		Gettysburg	PA
Roger	Day		Pittsburgh	PA
Ryan	Day		Mineral Point	PA
Thomas	Day		Philadelphia	PA
Daniel	Dayton		Bensalem	PA
Lori	Dayton		Waynesburg	PA
Nelson	Dayton		Wayne	PA
R.A.	Dayton		Pittsburgh	PA
Terry	Dayton		Waynesburg	PA
Lucyna	de Barbaro	Rebuilding Together Pittsburgh	Pittsburgh	PA
Ellyn	De Guida		Flourtown	PA
Tiffany	Deal		Red Lion	PA
Ernestine	Dean		Uniontown	PA
Jo	Dean		Philadelphia	PA
Kathy	Dean		New Castle	PA
Lacey	Dean		Cochranville	PA
Loretta	Dean		Uniontown	PA
Stacy	DeAngelis		Aspinwall	PA
Margaret	DeArdo		Pittsburgh	PA
Robert	Deas		Bristol	PA
Joseph	Deasey		Morton	PA
JoEllen	Deasy		East McKeesport	PA
David	Deaville		West Chester	PA
Garrett	DeBacco		Cowansville	PA
Jake	Debellis		Mohnton	PA
Robert	Decamp		Wellsboro	PA
Tina	DeCarla		Telford	PA
Madlen	Decembre		Tobyhanna	PA
Diana	Decembrino		North Wales	PA
Joshua	Decker		Elizabethville	PA
Kim	Decker		Pittsburgh	PA
Richard	Decker		Bethlehem	PA
Jim	Decort		Lilly	PA
Philip	DeCubellis		Elizabethtown	PA
Tomeka	Dedmon		Philadelphia	PA
Ronald	Deeley		Philadelphia	PA

Ashleigh	Deemer		Cranberry Township	PA
Tessa	Deems		Pittsburgh	PA
Colleen	DeFazio		Pittston	PA
Bill	DeFelice		McKeesport	PA
Gina	Defrancesco		Hatboro	PA
Kathleen	Degaris		Girard	PA
Steve	Degenaro		Pittsburgh	PA
Rodney	Degler		Lebanon	PA
Thomas	Degnan		Philadelphia	PA
Neena	Deibler		Upper Chichester	PA
Kathleen	Deis		Pittsburgh	PA
John	Deisinger		Allentown	PA
Mitzi	Deitch		Langhorne	PA
Todd	Deitrick		Pittsburgh	PA
David	Dejesus		Allentown	PA
Julio	Dejesus		Philadelphia	PA
Maria	Dejesus		Allentown	PA
Kathleen	DeJongh		Indiana	PA
Kathy	Dekorte		Lehighton	PA
Adam	Del Conte		Oakdale	PA
Susan	Del Monte		Pottsville	PA
Anastacio	Del Valle		Philadelphia	PA
Betsy	Delaney		Mountain Top	PA
Linda	Delaney		Spotsylvania	VA
Donna	Delany		Chester Springs	PA
Ronald	DeLauter		*Submitted via email*	PA
Judith	Delestienne		Pittsburgh	PA
Carmen E. Rivera	Delgado		York	PA
Emily	Delhunty		Ridgway	PA
Betsy	Delisle		Lancaster	PA
Frances	DeLisle		Philadelphia	PA
Angela	Dell		Highspire	PA
Kat	Dell		Hanover	PA
Elaine	Dellande		Fountain Hill	PA
Mike	Dellapenna		Malvern	PA
Garth	Dellinger		Pittsburgh	PA
Tracey	Dellinger		Pequea	PA
Roy	DeLorenze		West View	PA
Suzanne	Delp		Lancaster	PA
Rosemary	delPino		Baden	PA
Diana	DeLucca		Orrtanna	PA
Marilyn	Delvalle		Reading	PA
Jackie	Demarais		Whitehouse	TX
Patricia	DeMarco, PhD		Pittsburgh	PA
David	DeMaria		Warrington	PA

Stacey	Dembele		Chesterbrook	PA
Ann	Demerlis		Ambler	PA
Anastasia	Demetriou		Perkasie	PA
Matthew	DeMichele		Albion	PA
Fran	DeMillion		Kennett Square	PA
Marion	Demma		Pittsburgh	PA
R.	Dempfield		*Submitted via email*	PA
Craig	Dempsey		Waynesboro	PA
Barbara	Dempsey-West		Gettysburg	PA
George	Dempsie		Huntingdon	PA
Alexander	DeNadai	Green Building United	West Chester	PA
Ann	DeNadai	Green Building United	West Chester	PA
Ronald	DeNadai	Green Building United	West Chester	PA
Susan	DeNadai	Green Building United	West Chester	PA
Beth	Dennis		Howard	PA
Deldorita	Dennis		Allentown	PA
Terry	Dennis		Philadelphia	PA
Michael	Dennison		Finleyville	PA
Lyndsay	Denny		Mercer County	PA
Ron	Denson		Ithaca	NY
Catherine	Dentino		Philadelphia	PA
Rick	Denzien		Ambler	PA
Michelle	DeOcampo		Peach Bottom	PA
Sheri	DeOrio		Pittsburgh	PA
Claire	DePaola		Philadelphia	PA
Jillian	Depete-Mcmahon		Stroudsburg	PA
Robert	Depew		Newtown	PA
Tom	DePonty	Framatome, Inc	Washington	DC
Marie	Deresky		East Stroudsburg	PA
Kate	Deriel		*Submitted via email*	PA
Therese	Derita		Newtown Square	PA
Bianca	DeRito		Abington	PA
Gary	Derk		Mount Joy	PA
John	Dernbach	Environmental Law and Sustainability Center at Widener Commonwealth Law School	Harrisburg	PA
Kathleen	DeRosa		Upper Chichester	PA
Pamela	DeRose		Monongahela	PA
Chris	Derr		Pittsburgh	PA
Aum	Desai		New Hope	PA
Avinash	Desai		Ringoes	NJ
Lyndon	DeSalvo		Philadelphia	PA
Nathan	DeSantis		Downingtown	PA
Carol	DeSanto		Forksville	PA
Lamarr	Deshields		Coatesville	PA

Jessica	DeSimone		Devon	PA
LaNita	Desire		Aliquippa	PA
Mary C.	Desmone		Erie	PA
Peterson	Desmoulin		Tobyhanna	PA
C. Melinda and Jim	Desposito		Lackawaxen	PA
James	Destefano		Phoenixville	PA
Maria	DeStefano		Old Forge	PA
Roger	Desy		Verona	PA
Nicole	Deter		DuBois	PA
Kelli	DeThomas		Indianola	PA
John	Detisch		New Salem	PA
Richard	D'Ettorre		Tobyhanna	PA
John	Detweiler		Camp Hill	PA
L.	Detweiler		Bethlehem	PA
Michael	Detwiler		Middletown	PA
Linda	Deutsch		Butler	PA
Robin	Devaney		Middletown	PA
Stephen	DeVault		Seven Fields	PA
Dorothy	DeVecchis		Quakertown	PA
Anita	Devenney		West Finley	PA
Bernice	Deverter		Paradise	PA
Sheila	Devine		Newmanstown	PA
Lisa	Devineni		Johnstown	PA
Aislinn	Devlin		Downingtown	PA
Jeff and Maureen	Devlin		Downingtown	PA
Kate	Devlin		Philadelphia	PA
Marylyn	Devlin		Monroeville	PA
Trieste	Devlin		Pittsburgh	PA
Vicky	Devyver		Beaver Falls	PA
James	DeWalt		Philadelphia	PA
Mark	Dewitte		Lyndell	PA
Trudy	DeWolf		Erie	PA
Linda	Dezotelle		Allentown	PA
Virginia	Di Ilio		Ephrata	PA
Adham	Diab		Secane	PA
Aboubacar	Diallo		Philadelphia	PA
Matthew	Diamond		Holland	PA
Nicholas	Diamond		White Oak	PA
Zach	Diamond		Blairsville	PA
Deborah	Diana		Butler	PA
Amara	Diarrassouba		Philadelphia	PA
Beatrice	Dias	Co-Director of Outreach, Carnegie Melon University	Pittsburgh	PA
Leel	Dias		West Windsor	NJ
Armando	Diaz		Norristown	PA
Kiara	Diaz		Philadelphia	PA

Maritsa	Diaz		Reading	PA
Myriam	Diaz		Reading	PA
Pablo	Diaz		Allentown	PA
Bea	Diaz-Cothen		Beaver	PA
Mary	DiBello		Pittsburgh	PA
Sandy	DiBruno		Philadelphia	PA
Genevieve	Dicamillo		Philadelphia	PA
Edward	Dicesare		Pottstown	PA
Mario	DiCioccio		Narberth	PA
Joseph	Dick		Gilbertsville	PA
Lou Ann	Dick		Roaring Spring	PA
Lily	Dickason		Hingham	MA
Sharon	Dicker		Huntingdon Valley	PA
Craig	Dickerson		Canonsburg	PA
Harold	Dickerson		Marcus Hook	PA
Taunya	Dickerson		Canonsburg	PA
Diana	Dickinson		McDonald	PA
Richard	Dickson		Blairsville	PA
Stacy	Diddens		Philadelphia	PA
Devon	Didomenico		Philadelphia	PA
Darlene	DiDonato		Pittsburgh	PA
Greta	Didonato		Philadelphia	PA
Branden	Diehl	Earth Wise Consulting	Saxton	PA
Ken	Diehl		Reading	PA
Thomas	Diehl		Stroudsburg	PA
Christopher	Diem		Philadelphia	PA
John	DiEnna	Geothermal National & International Initiative	Springfield	PA
Pamela	Diesel		Rockwood	PA
Keith	Dieter		Walnutport	PA
Maria	Dietrich		Bethlehem	PA
Linda	Dietrichson		Millville	PA
Frank	Dietrick		Philadelphia	PA
Ian	DiFalco		Philadelphia	PA
Diane	DiFante		West Decatur	PA
Lawrence	Diggs		Philadelphia	PA
Kathryn	DiGiorgio		Philadelphia	PA
Maria	DiGiovanni		Wallingford	PA
Marie	Digiulio		Kennett Square	PA
Teri	Dignazio		Oxford	PA
Bruno	DiLeccio		Philadelphia	PA
Scott	Dilger		Palmyra	PA
Charles	Dilks		Philadelphia	PA
Nyaira	Dillard		Brookhaven	PA
Cherilyn	Diller		Glenshaw	PA
Pamela	Dillett		Lock Haven	PA
Michael	Dillette		Philadelphia	PA

Cynthia	Dillon		Renfrew	PA
Mary	DiLonardo		Belle Vernon	PA
John	DiMaio		Rural Valley	PA
Elaine	Dimarsico		Langhorne	PA
David	Dimm		Sunbury	PA
John	Dimoff		Pittsburgh	PA
Sue	DiMoia		Levittown	PA
Ann	Dimond		Glenside	PA
Michael	DiMonte	St. Paul United Methodist Church, Working for Justice Ministry	Cranberry Township	PA
Bernie	DiNardo		Erie	PA
Claudia	DiNardo		Erie	PA
Janet	Dingle		Philadelphia	PA
Shenandoah	Dingle		Philadelphia	PA
Sherry	Dinnen		Allison Park	PA
Celsie	Dionne		Johnstown	PA
Janet	Dipiero		Huntingdon Valley	PA
Joseph	DiRisio		Plains	PA
Boris	Dirnbach		Philadelphia	PA
Ronald	DiSabatino		Kennett Square	PA
Matthew	DiSantis		Feasterville Trevose	PA
Stephen	Disch		Hummelstown	PA
Kimberly	Dischinger		Mars	PA
Jill	Diskin		Pittsburgh	PA
Lisa	Ditalia		Bethlehem	PA
John	Ditty		Airville	PA
Renae	Ditty		Airville	PA
Virginia	Ditzel		Mohnton	PA
Amanda	Dixon		Clearfield	PA
Calvin	Dixon		Philadelphia	PA
Chris	Dixon		Philadelphia	PA
Don	Dixon		Pittsburgh	PA
Donald	Dixon		Ingomar	PA
James	Dixon		West Mifflin	PA
Joy	Dixon		Philadelphia	PA
Latise	Dixon		Coatesville	PA
Lemuel	Dixon		Philadelphia	PA
Mark	Dixon		Pittsburgh	PA
Marlene	Dixon		Sharon	PA
Pearl	Dixon		Philadelphia	PA
Shellee	Dixon		Pittsburgh	PA
Tamika	Dixon		Philadelphia	PA
Brandon	DiZebba		Dillsburg	PA
Aurora	Dizel		Havertown	PA
Nina	Dmetruk		Pittsburgh	PA
Jamie	Doan		Oxford	PA

Alexandra	Dobell		Pittsburgh	PA
Kristiana	Dobell		Pittsburgh	PA
Susan	Dobson		Upper Chichester	PA
Kathleen	Doctor		Kittanning	PA
Sue	Dodds		Pittsburgh	PA
Deborah	Dodorico		Pittsburgh	PA
Donald	Dodson		Derry	PA
Ryan	Dodson		Lancaster	PA
Peter	Doerschler		*Submitted via email*	PA
Melanie	Doitteau		Philadelphia	PA
Susan	Dolan		Lock Haven	PA
John	Doleman		York	PA
Brett	Dolente		Kennett Square	PA
Christine	Dolle		Philadelphia	PA
Renee	Dolney		Pittsburgh	PA
Nicole	Dominguez		Easton	PA
Isaac	Domsky		Waterbury	VT
Anne	Donagher		Swarthmore	PA
Kevin	Donahoe		McKeesport	PA
Lisa	Donahue		Pittsburgh	PA
Martha	Donahue		Lewisburg	PA
Maurice	Donald		Philadelphia	PA
Nathan	Donaldson		Reading	PA
Sean	Donaldson		Philadelphia	PA
Joseph	Donati		McDonald	PA
Elvin	Donato		Reading	PA
Mina	Donato		Philadelphia	PA
Robert	Donchez	Mayor, City of Bethlehem	Bethlehem	PA
Tim	Donegan		Doylestown	PA
William	Donlen		Levittown	PA
Gloria	Donley		West Newton	PA
Robert	Donnan		McMurray	PA
Francis	Donnelly		Philadelphia	PA
Thomas	Donnelly III		South Park	PA
Christine	Donofrio		Erie	PA
Karen	Donofrio		Philadelphia	PA
Roseann	Donoghue		West Chester	PA
Sean	Donoghue		Pittsburgh	PA
Jillian	Donohue		Media	PA
Tracy	Donolo		South Park	PA
William	Donolo		South Park	PA
Kimberly	Donovan		Ellwood City	PA
Stephanie	Donovan		Pottstown	PA
Edward	Doogan		Glenside	PA
Denise	DoramLowman		Philadelphia	PA
Declan	Doran		Gilbertsville	PA

Meredith	Doran		State College	PA
William	Doran		Bellevue	PA
Margaret	Dorazio		West Chester	PA
Nancy	Dorfman		Bethlehem	PA
Chanel	Dorman		Philadelphia	PA
Wilma	Dorman		Lansdale	PA
Kristin	Dormuth		Devon	PA
Kenneth	Dorney		Allentown	PA
Marilyn	Dorogi		Republic	PA
Aiko	Dorr-Dorynek		Philadelphia	PA
Brandy	Dorsey		Prosperity	PA
Gary	Dorward		Bath	PA
William	Dorwart		Bala Cynwyd	PA
Staci	Doss		Havertown	PA
Denise	Dost		Albrightsville	PA
Robert	Dostal	Professor, Bryn Mawr	Bryn Mawr	PA
Katie	Doster		Manheim	PA
Christine	Dotterer, MD		*Submitted via email*	PA
Theresa	Dotts		Media	PA
Candidus	Dougherty		Aston	PA
Eric	Dougherty		Perkiomenville	PA
Frank	Dougherty		Newtown Square	PA
John	Dougherty		Lancaster	PA
Lynne	Dougherty		Warrington	PA
Mark	Dougherty	Kelly Generator & Equipment	Coal Center	PA
Rachel	Dougherty		Levittown	PA
Ryan	Dougherty		Cheltenham	PA
Sheila	Dougherty		Mayport	PA
Tom	Dougherty		Pittsburgh	PA
Beatrice	Douglas		Philadelphia	PA
Bob	Douglas		Eagleville	PA
Larry	Douglas		Atglen	PA
Maggie	Douglas	Assistant Prof. Environ. Science,Dickinson College	Carlisle	PA
Matthew	Douglas		Norristown	PA
Josephine	Dover		Darby	PA
Chad	Doverspike		Punxsutawney	PA
Helene	Dow		Philadelphia	PA
Deirdre	Dowdakin		Elkins Park	PA
Ralph	Dower		Springfield	PA
Stephen	Dower		Pottstown	PA
Sandy	Dowling		West Chester	PA
Tammis	Dowling		Landenberg	PA
Frani	Downey		Philadelphia	PA
Jennifer	Downey		Quarryville	PA
William	Downey		Philadelphia	PA

Rachael	Doxtader		Lansdale	PA
Carrie	Doyle		Pottstown	PA
Jean-Marie	Doyle		Midland	PA
Maria	Doyle		Philadelphia	PA
Michael	Doyle		Philadelphia	PA
Sally	Doyle		Phoenixville	PA
Amanda	Dozier		Philadelphia	PA
Delores	Dozier		Philadelphia	PA
Ron	Dragon		Cecil	PA
Elizabeth	Dragovich		Ogden	PA
Lawrence	Drake		Carbondale	PA
Annette	Draper		Philadelphia	PA
Frederick	Drayton		Philadelphia	PA
Steven	Drayton		Bethlehem	PA
Daniel	Drecksage		Philadelphia	PA
Jeff	Dreier		Glenshaw	PA
Karen	Drennen		South Park	PA
Steven l.	Dreuitt		Monroeville	PA
Barbara	Drew		Newtown	PA
Laurel	Drew		Philadelphia	PA
Rev. Edward Allen	Drew	Climate Witness Project et al.	Philadelphia	PA
David	Drews		Alexandria	PA
Beth	Dreyer-DeGoede		Mount Joy	PA
Anthony	Drezewski		Washington	PA
Sally	Dries		Sunbury	PA
Edward	Drinkwater		Malvern	PA
Dana	Driscoll		Penn Run	PA
John	Driver		Lewisburg	PA
Valerie	Driver		Girard	PA
Mary Ellen	Droll		Pittsburgh	PA
Heather	Drost		McKeesport	PA
Herman	Drownes		Pittsburgh	PA
Marcia	Druga		Oakdale	PA
Dawn	Drumin		Dallas	PA
Christopher	Drumm		Willow Street	PA
Brandon	Drummond		Allentown	PA
Faith	Drummond		Lancaster	PA
Kaliyah	Drummond		Philadelphia	PA
Michelle	Dubay		Wynnewood	PA
Christian	Dubbs		Pittsburgh	PA
Elizabeth	Dubnicay		Munhall	PA
Gilbert	Dubois		Bethlehem	PA
Sandra	DuBois		Furlong	PA
Susan	Dubosky		Spring Mills	PA
Michalle	Dubots		Coudersport	PA
Robert	Dubreucq		Portage	PA

Judy	Dubs		Hanover	PA
Maria	Duca		Philadelphia	PA
Cecelia	Ducar		York	PA
John	Dudash		Homer City	PA
Michelle	Dudeck		Monessen	PA
Jose	Duenas	Program Manager, Schuylkill Center for Enviro Edu	Philadelphia	PA
Lynne	Duerr		Doylestown	PA
Charles	Duey		Glenside	PA
William	Duffield		Altoona	PA
Sean	Duffin		Paoli	PA
John	Duffy		Hatboro	PA
Kevin	Duffy		Saint Davids	PA
William	Duffy		Drums	PA
Julia	Dugan		Marysville	PA
Michelle	Dugan		Upper Darby	PA
Mark	Dugan*		Canonsburg	PA
Brian	Dugas		Allentown	PA
Jane	Dugdale	Phoenixville Area Transition	Phoenixville	PA
Jeanne	Dugery		Doylestown	PA
Annie	Duggan		Havertown	PA
Elaine	Dukes		Quakertown	PA
Margaret	Dula		Philadelphia	PA
John	Dulik		Philadelphia	PA
Evan	Dull		Wexford	PA
Jessie	Dull		Wexford	PA
Joseph	Dullinger		Elizabethtown	PA
Joseph	Dullinger		Lititz	PA
Jason	Dunaway	Day & Zimmermann NPS, Inc.	Philadelphia	PA
Niema	Dunbar		Philadelphia	PA
Phillip	Dunbar		Steelton	PA
Alison	Duncan		Wexford	PA
Allison	Duncan		Immaculata	PA
Carol	Duncan		Philadelphia	PA
Charles	Duncan		Upper Darby	PA
John	Duncan		Uniontown	PA
Leslie	Duncan		Reading	PA
Patricia	Duncan		Philadelphia	PA
Peter	Duncan		Elizabethtown	PA
Sandra	Duncan		Wexford	PA
Sharifa	Duncanson		York	PA
Joseph	Dunfee		Gordonville	PA
Elizabeth	Dunford		Collingdale	PA
Alice	Dunham		Sayre	PA
Christopher	Dunham		Feasterville Trevose	PA
Jack	Dunham		Sayre	PA

Robert	Dunham		Lansdale	PA
Norma	Dunkelberger		Elizabethtown	PA
Joan	Dunkerley		Beaver Falls	PA
Tobin	Dunklebarger		Warfordsburg	PA
W. Bruce	Dunkman		Radnor	PA
Enoss	Dunlap		Pottstown	PA
Jonathan	Dunlap		Pittsburgh	PA
Thomas	Dunlap		Latrobe	PA
Michael	Dunlay	Operations Manager, Dancing Gnome Beer	Pittsburgh	PA
Michael	Dunleavy		Blue Bell	PA
Michael	Dunleavy		Nescopeck	PA
Patrick	Dunleavy		Moosic	PA
Andrew	Dunn		Chester Springs	PA
Curtis	Dunn		Ambler	PA
Daniel	Dunn		Newtown	PA
Ed	Dunn		Drexel Hill	PA
Eileen	Dunn		Bellefonte	PA
Jessica	Dunn		Easton	PA
Leif	Dunn		Abington	PA
Mary	Dunn		Bryn Mawr	PA
Mary	Dunn		State College	PA
Max	Dunn		Altoona	PA
Preston	Dunn		Pittsburgh	PA
Anne	Dunne		Narberth	PA
Loretta	Dunne		Philadelphia	PA
Christi	Dunning		New Cumberland	PA
Robert	DuPlessis		Philadelphia	PA
Anne Garcia	Dupont		Paoli	PA
Patrick	Dupont		Broomall	PA
Danielle	Dupuis		Stroudsburg	PA
Mary	Durando		Landenberg	PA
Joyce	Durkin		Mountville	PA
Gab	Duszak		Philadelphia	PA
Cindy M.	Dutka		Philadelphia	PA
Floyd	Dutter		Scranton	PA
Emma	Dutton		Berwyn	PA
Linda	Dwyer		Maple Glen	PA
Milena	Dwyer		Pittsburgh	PA
Sandy	Dwyer		Norristown	PA
Barbara	Dye		Pittsburgh	PA
Nam	Dyee		Norwood	PA
James	Dyer		Bellevue	PA
Stanley F.	Dylinski		Philadelphia	PA
Sharon	Dyson		Philadelphia	PA
John	Dziak		State College	PA
Samantha	Dzielski		Shelocta	PA

Dennis	Dziemianowicz		Olyphant	PA
K.	E.		Lewistown	PA
Christine	Eadley		Easton	PA
Dawn	Eagle		Bath	PA
Jill	Eagles		Downingtown	PA
Nancy	Eales		Newtown Square	PA
Sara	Earl		Bala Cynwyd	PA
Brian	Earley		Lancaster	PA
Lisa	Earll		Erie	PA
Kevin	Earls		Philadelphia	PA
Amber	Early		Pittsburgh	PA
Rebecca	Eash		Camp Hill	PA
Charles	Easley		Philadelphia	PA
Kenneth	Easley		Morrisville	PA
Tiffany	Easley		Philadelphia	PA
Mary	Eason		Lancaster	PA
Shirley	Eason		Philadelphia	PA
Janice	Eastbourn-Bloom		Ebensburg	PA
Celia	Ebanks		Pittsburgh	PA
Helen	Ebersole		Lancaster	PA
John	Ebling		Saint Clair	PA
Jessy	Ebonzo		Easton	PA
Robert	Eby		Scottdale	PA
Sarah	Eby		Akron	PA
Gwyneth	Eckberg		Springfield	PA
Brian	Eckert		Bethel Park	PA
Carol	Eckert		Myerstown	PA
Marian	Eckert		Lititz	PA
Richard	Eckrote		Palmerton	PA
Melissa	Eddy		North Wales	PA
Amy	Edelman		Bala Cynwyd	PA
Beth	Edelman		Philadelphia	PA
William	Edelman		Philadelphia	PA
David	Edelstein		Bensalem	PA
Jess	Edleblute		York	PA
Sandra	Edmiston		Allentown	PA
Kameia	Edmonds		Philadelphia	PA
Selorm	Edor		Centre Hall	PA
Joshua	Edsall		Norristown	PA
Aubrey	Edwards		Shillington	PA
Brianna	Edwards		Willow Grove	PA
Curtis	Edwards		Philadelphia	PA
Daryn	Edwards		Philadelphia	PA
Deborah	Edwards		Indiana	PA
George	Edwards		Glen Mills	PA
June	Edwards		Philadelphia	PA
Mary Dawn	Edwards		Pittsburgh	PA

Melantha	Edwards		Philadelphia	PA
Michael	Edwards		Bellefonte	PA
Robert	Edwards		Wilkes-Barre	PA
Susan	Edwards		Swarthmore	PA
Katherine	Egan		Philadelphia	PA
Moira	Egler		Pittsburgh	PA
Wesley	Egli		Picture Rocks	PA
Kimberly	Egresits		King of Prussia	PA
Ellen	Ehinger		Lansdale	PA
Stacey	Ehrhardt		Reading	PA
Anne	Ehrhart		Bryn Mawr	PA
Leslie	Ehrin		Collegeville	PA
Garth	Ehrlich		Philadelphia	PA
Heather	Ehrlich		Reading	PA
Sharon Newman	Ehrlich		Philadelphia	PA
Sherrie	Ehrlich		Penllyn	PA
Judith	Ehrman		Bryn Mawr	PA
Marge	Eiben		Canonsburg	PA
Reece	Eiben		Canonsburg	PA
Ron	Eiben		Canonsburg	PA
Paul	Eichelberger		Irwin	PA
Tony	Eichelberger		Sewickley	PA
Robert	Eichem		New Hope	PA
Betty and Barrie	Eichhorn		West Chester	PA
Kaitlin	Eichhorn		Philadelphia	PA
Judy	Eidelson		Bala Cynwyd	PA
Clifford	Eike		Willow Grove	PA
Alysse	Einbender		Glenside	PA
Elliot	Eisenberg		Conyngham	PA
Emily	Eisenberg		Philadelphia	PA
Wendy	Eisenberg		Willow Grove	PA
Bonnie	Eisenfeld		Philadelphia	PA
Josh	Eisenfeld		Pittsburgh	PA
James	Eisenstein		Boalsburg	PA
Robin	Eisman		Glenside	PA
Harrison	Eiteljorg		Haverford	PA
Fayten	El-Dehaibi		Pittsburgh	PA
David	Elder		Kennett Square	PA
Melissa	Elder		Marysville	PA
Jessi	Eldred		Tobyhanna	PA
Alex	Eldridge		Glenside	PA
Scott	Elgin		Indiana	PA
Bianca	Elias		New Castle	PA
Karen	Elias		Lock Haven	PA
Scott	Elias	Solar Energy Industries Association	Washington	DC
John	Elick		Cherry Tree	PA
Jennifer	Eliker		Venetia	PA

Natalie	Eline		Hanover	PA
Megan	Elizabeth		Salix	PA
Rick	Elizondo		Greensburg	PA
Helen	Elkins		Coatesville	PA
Demetrius	Elleby		Lebanon	PA
Samara	Ellerby		Philadelphia	PA
Chris	Ellerkamp		Warminster	PA
Sheila	Ellingsworth		Orviston	PA
Sharon	Elliot		Fairfield	PA
Charles	Elliott	City of Easton Environmental Advisory Council	Easton	PA
Charles	Elliott		Philadelphia	PA
Dante	Elliott		Linwood	PA
David	Elliott		Friedens	PA
Deborah	Elliott		Wexford	PA
Eric M.	Elliott		*Submitted via email*	PA
Russell	Elliott		Philadelphia	PA
Shannon	Elliott		Bensalem	PA
Christopher	Ellis		Stroudsburg	PA
Dave	Ellis		Philadelphia	PA
Jennifer	Ellis		Flourtown	PA
Linear	Ellis		Lancaster	PA
Nick	Ellis		Philadelphia	PA
Reem	Ellis		Philadelphia	PA
Shawna	Ellis		Erie	PA
TreVaughn	Ellis		East Stroudsburg	PA
Robert	Ellis*		Philadelphia	PA
Kenneth	Ellsperman		New Bloomfield	PA
Nora	Elmarzouky	Power Interfaith	Philadelphia	PA
Delana	Elo		Philadelphia	PA
Kelly	Elphin		Pittsburgh	PA
Derrick	Elrod		Philadelphia	PA
Jailan	Elsarha		Levittown	PA
Tina	Elton		Coraopolis	PA
Lori	Eltz		Allentown	PA
Herbert	Elwell		Lawrenceville	PA
Collin	Elwood		Apollo	PA
Greg	Ely		Elkins Park	PA
Ken and Deborah	Ely		Brooklyn	PA
Frank	Emanuele		Oil City	PA
Matthew	Embert		Collegeville	PA
Michael	Emerick		Walnutport	PA
Jackie	Emerson		Philadelphia	PA
Justin	Emery		Allentown	PA
Travis	Emigh		Johnstown	PA
Amy	Emmett-Rardin		Lansdowne	PA

Mason	Emnett	Exelon Corporation	Washington	DC
Brittany	Encke		Duryea	PA
Hannah	Enderby		Bethel Park	PA
Julie	Enders		Harrisburg	PA
Evan	Endres	The Nature Conservancy, Pennsylvania/Delaware	Harrisburg	PA
William	Engard	MVE Group	Ephrata	PA
Ella	Engberg		Pittsburgh	PA
Linda	Engelbrecht		Emmaus	PA
Karen	Engelke		Philadelphia	PA
Leslie	Engelmeier		Wexford	PA
Julie	Engiles		Landenberg	PA
Bill	England		Elkins Park	PA
Patricia	England		Roaring Spring	PA
David	Engle		Dushore	PA
Donna	Engle		Towanda	PA
Patricia	Engle		Feasterville Trevose	PA
John	Englert	SAUL EWING Arnstein & Lehr LLP	Pittsburgh	PA
T.	English		Philadelphia	PA
Victoria	English		Villanova	PA
Steven	Enos		Pottstown	PA
Margee	Ensign	President, Dickinson College	Carlisle	PA
Deedrah	Ensle		Franklin	PA
Joshua	Enterline		Lewisburg	PA
Baleigh	Epperly		Huntington	WV
Yvonne	Eppinger		Harrisville	PA
Kathryn	Epps		Aldan	PA
Ronald	Epps		Bywood	PA
Andrea	Epstein		Narberth	PA
William	Erat	Rev., Erat Enterprises	Jenkintown	PA
Zuleikha	Erbeldinger-Bjork		Pittsburgh	PA
George	Erceg		Natrona Heights	PA
Joseph	Erdeljac		West Chester	PA
Zachary	Erdeljac		Sycamore	PA
MaryAnn	Erdmann		East Stroudsburg	PA
Judy	Erdner		Pittsburgh	PA
Mark	Erickson		Honey Brook	PA
Sheila	Erlbaum		Philadelphia	PA
Robert	Ermisch		Laceyville	PA
Bryan	Ernest		Pittsburgh	PA
Lorraine	Erney		Emmaus	PA
Kathleen	Ernst		Abington	PA
Ron	Errera		Grove City	PA
Debbie	Ertola		Milford	PA
Patricia	Ervin		McAdoo	PA
Grant	Ervin*	City of Pittsburgh	Pittsburgh	PA

Jeff	Erwin		Chalfont	PA
Jose	Escalera		Philadelphia	PA
Robert	Eshbach		Shrewsbury	PA
Kenneth	Eshbaugh		Indiana	PA
Kathleen	Espamer		Camp Hill	PA
Arlene Judy	Esposito		Ephrata	PA
Gerald	Esposito		Camp Hill	PA
Maureen	Esposito		North Wales	PA
Selena	Esposito		Philadelphia	PA
Vicky	Esposito		Reading	PA
Rocky	Esquilin		Berwick	PA
Char	Esser		Villanova	PA
Diane Christin	Esser	Plan it Forward Community Tree Planting Initiative	Erie	PA
David	Estabrook		Philadelphia	PA
Joel	Esterman		Havertown	PA
Brianna	Esteves	Ceres	Boston	MA
Juan	Estevez		Reading	PA
Jamie	Estock		Pittsburgh	PA
Barbara	Estomin		Willaimsport	PA
Esther	Estrada		Scranton	PA
Robert	Etchie		Taylor	PA
Janice	Etchison		Erie	PA
Carol	Etheridge		Lehighton	PA
Rachel	Ettenger		Philadelphia	PA
William	Eubanks		Harrisburg	PA
Kathleen	Evanina		Olyphant	PA
Jim	Evanisko	Councilmember, Stroudsburg	Stroudsburg	PA
Anna	Evans		Pittsburgh	PA
Annie	Evans		Honesdale	PA
April	Evans		Allentown	PA
Caitlin	Evans		Pittsburgh	PA
Cakky	Evans	Green Building United	Rydal	PA
Christopher	Evans		Pittsburgh	PA
Darien	Evans		Philadelphia	PA
Dave	Evans		Easton	PA
Deborah	Evans		Washington	PA
Fred	Evans		Pittsburgh	PA
Jeremy	Evans		Glen Mills	PA
Joseph	Evans		Lansdale	PA
Keith	Evans		Pittsburgh	PA
Kelvin	Evans		Monaca	PA
Martha	Evans		Buena Vista	PA
Nick	Evans		Hanover Township	PA
Robert	Evans		Philadelphia	PA
Sherlene	Evans		Reading	PA
Tyla	Evans		McKees Rocks	PA

David	Eveart		Williamsport	PA
Frank	Evelhoch		Mechanicsburg	PA
Erich	Everbach		Wallingford	PA
Edward	Everdale		Pottsville	PA
Victor	Evereklian		Newtown Square	PA
Jerry	Everett		Lancaster	PA
Sarah	Everett		Erie	PA
Ann	Everetts		Hunlock Creek	PA
Dave	Everhart		Lancaster	PA
David	Everly		Carmichaels	PA
Janice	Everly		Elizabeth	PA
Wilson	Evert		Bloomsburg	PA
Arimar	Evren Gould		Pittsburgh	PA
Dennis	Ewing		Feasterville Trevose	PA
Kenny	Exline		Warfordsburg	PA
Jill	Exter		Pittston	PA
Richard	Eynon		Villanova	PA
Adam	Eyring		Philadelphia	PA
Emily	Fabian		Pottstown	PA
Adele	Fagan		Orefield	PA
John	Fagan		Carbondale	PA
Mary Lou	Fagan		Hermitage	PA
Meg	Fagan		Spring City	PA
Cassandra	Fair		Philadelphia	PA
David	Fair		Clearville	PA
Jennifer	Fair		Philadelphia	PA
Elizabeth	Fairchild	Business Forward	Washington	DC
Lauren	Faison		Philadelphia	PA
Robin	Faison		Glenside	PA
Monique	Faison-Dearden		Willow Grove	PA
Amy	Faivre	Cedar Crest College	Allentown	PA
Laura	Fake		Womelsdorf	PA
Gail	Falcione		Canonsburg	PA
Nancy	Falcon		Philadelphia	PA
Vita	Falcone		Whitehall	PA
Diane	Falk		Jeannette	PA
Holton	Falk		Drexel Hill	PA
Larry	Falkenau		Landenberg	PA
Tara	Falkenbach		East Stroudsburg	PA
Laurel	Falkenstein		Boiling Springs	PA
James	Fall		Muse	PA
Mark	Fallon	Munhall Councilperson	Pittsburgh	PA
Mark	Fallon		Philadelphia	PA
Todd	Faltin		Pittsburgh	PA
Sasha	Falu		Philadelphia	PA
Carol	Famariss		Somerset	PA

Antonia	Fanaro		Collegeville	PA
CJ	Fanelli		Philadelphia	PA
Martin	Fanrak		Upper Black Eddy	PA
Dianne	Fantaskey		Winfield	PA
Jonathan	Fantazier		Pittsburgh	PA
Fred	Farabaugh		Colver	PA
Marcella	Farbotnik		Doylestown	PA
Douglas	Farnham	PFBC Environmental Energy Technology, Inc.	Monessen	PA
Melissa	Farr		Lancaster	PA
James	Farrell		Philadelphia	PA
Jeanine	Farrell		Philadelphia	PA
Susan	Farrell		Lake City	PA
Tony	Farren		Portage	PA
Tawnya	Farris		Pittsburgh	PA
Edward	Farrow		Lansdale	PA
Jane	Farry		Scotrun	PA
Laura	Farver		Hanover	PA
Carlie	Fasano		State College	PA
Steve	Fast		Port Matilda	PA
Catherine	Fasy		Philadelphia	PA
Karen	Faul		Philadelphia	PA
Christopher	Faulk		Philadelphia	PA
Kristin	Faulkner		Aston	PA
Daniel	Faust		Douglassville	PA
George	Faust		Ambler	PA
Jackie	Faust		Maple Glen	PA
Susan	Faust		Clifton Heights	PA
Warren F.	Faust	NE PA Buidling & Construction Trades Council	Wilkes-Barre	PA
Daniel	Favis		Doylestown	PA
Nicholas	Favorito		Glenmoore	PA
Brian	Fay		York	PA
Robert	Faytock		Aliquippa	PA
Danielle	Fazio		Avondale	PA
Duane	Feagley	Pennsylvania Anthracite Council	Pottsville	PA
Patricia	Fear		Newtown	PA
Kathleen	Feathers		Darlington	PA
Lloyd	Febles		Allentown	PA
Jennifer	Fed		Aliquippa	PA
Laura	Fedder		Marysville	PA
Tracy	Fedder		Levittown	PA
Sabrina	Fedel		Pittsburgh	PA
Mark	Feder		East Stroudsburg	PA
Jean	Federinko		Northern Cambria	PA
James	Fedorka		North Huntingdon	PA
Francis	Fedoroff		Philadelphia	PA

Colleen	Fehrle		Glenolden	PA
Roni	Feierstein		Haverford	PA
Elizabeth	Feinberg		Paoli	PA
Kenneth	Feinour	St. Paul's Lutheran Church, Glenside, PA	Jenkintown	PA
Nathan	Feinstein		Pittsburgh	PA
Thomas	Fejka		Beaver Falls	PA
Pearlean	Felder		Lancaster	PA
Troy	Felder		Philadelphia	PA
Matthew	Feldman		Philadelphia	PA
Doris	Feliciano		Philadelphia	PA
Elizabeth	Feliciano		York	PA
Luis	Feliciano		Philadelphia	PA
Maria	Feliciano		Reading	PA
Asha	Felix		Philadelphia	PA
Mike	Felix		Meadville	PA
Patrick	Felix		Philadelphia	PA
Mary	Felley	League of Women Voters ACJ Area	Jenkintown	PA
Joshua	Felton		Patton	PA
William	Felton		Johnstown	PA
Sandra	Felver		Pocono Manor	PA
Benjamin	Felzer	Associate Professor, Lehigh University	Bethlehem	PA
Robert	Fencil		Mount Pleasant	PA
Cheryl	Fendell		Bensalem	PA
Naomi	Fenlin		West Chester	PA
Joy	Fennal		Upper Darby	PA
Vivienne	Fennimore		Quakertown	PA
Kenneth	Fenske		Quakertown	PA
Susan	Fenstermacher		Harrisburg	PA
Robert	Fenstermaker		Covington Township	PA
Johnluca	Fenton		Haverford	PA
Mark	Fenwick		Pittsburgh	PA
Cindy	Ferencak		Clinton	PA
Ashley	Ferguson		Philadelphia	PA
Cyreal	Ferguson		Braddock	PA
Frank	Ferguson		Gibsonia	PA
Helen	Ferguson		Ebensburg	PA
Kair	Ferguson		Philadelphia	PA
Keira	Ferguson		Philadelphia	PA
Rebecca	Ferguson		Morton	PA
William	Ferguson		Erie	PA
Manny	Feris		Emmaus	PA
George J.	Ferrante, Jr.		Johnstown	PA
Heather	Ferranti		Stowe	PA
Blaine	Ferree		York	PA

Jill	Ferreira		Pittsburgh	PA
Marcus	Ferreira		Philadelphia	PA
Marla	Ferrency		Pittsburgh	PA
Mary	Ferrigno		Philadelphia	PA
Debra	Ferringer		Indiana	PA
Hanna	Ferris		Philadelphia	PA
Vince	Ferrizzi		Fleetwood	PA
Patricia	Ferro		Phoenixville	PA
Al	Ferrucci		Pittsburgh	PA
Jody	Ferry		Springfield	PA
Kurtis	Ferry		Irvine	PA
Patti	Ferry		Bloomsburg	PA
Judith	Ferson		Sharpsburg	PA
J. Allen	Feryok		Monessen	PA
Joe	Fescenmyer		Royersford	PA
Rev. Daniel	Festog		Bobtown	PA
Holden	Fett		Santa Monica	CA
Chris	Fetterhoff		Penbrook	PA
Diane	Fetterman		*Submitted via email*	PA
Kim	Fetterman		Ringtown	PA
Kim	Fetters		Osceola Mills	PA
Michele	Fetting		Pittsburgh	PA
Stephanie	Feyne		New York	NY
Nicole	Fichera		Havertown	PA
Mark	Fichman		Pittsburgh	PA
Susan	Fidelman		Venetia	PA
Jacqueline	Fidler	CONSOL Energy	Canonsburg	PA
David	Fiedler		Bensalem	PA
Byron	Fiegel		Oley	PA
Jaimie	Field		Philadelphia	PA
Sandy	Field	Climate Reality Project (Susquehanna Valley)	Lewisburg	PA
Ethan	Field*		Lewisburg	PA
Charlotte	Fieldcamp		Huntingdon Valley	PA
Chante	Fields		East Stroudsburg	PA
Damon	Fields		Elizabethtown	PA
Karen	Fields		McKees Rocks	PA
Randal	Fields		Hopwood	PA
Ravanna	Fields		Phoenixville	PA
Antoinette	Fife		Sharon Hill	PA
Brian	Fife	Professor of PoliSci & Chair,Lehigh University	Bethlehem	PA
William	Fife		Erie	PA
Dolores	Fifer		Pittsburgh	PA
Gaye	Fifer		Pittsburgh	PA
Stefanny	Figuereo		Philadelphia	PA

Anthony	Figueroa		Philadelphia	PA
Edwin	Figueroa		Philadelphia	PA
Elizabeth	Figueroa		Philadelphia	PA
Johnny	Figueroa		Philadelphia	PA
Richard	Figueroa		Bristol	PA
Janet	Filante		Philadelphia	PA
Steven	Filante		Towanda	PA
Jaime	Filipek		Pittsburgh	PA
Ronald	Filippelli	Mayor, Borough of State College	State College	PA
Lisa	Filippi		Pittsburgh	PA
Jamie	Fillmore		Portland	OR
Howard	Filtz		Pittsburgh	PA
Lucille	Filyaw		Cabin John	MD
Jennifer	Finan		Philadelphia	PA
Kelly	Finan		Hop Bottom	PA
Mary	Findlay		Abington	PA
Janet	Finesilver		Prospect Park	PA
Carl	Finger		Southampton	PA
Barry	Fink	StonePoint Materials	Lake Lynn	PA
Beverly	Fink		York	PA
Fred	Fink		Highspire	PA
Jan	Fink		Morrisville	PA
Matthew	Fink		Newportville	PA
Carl and Dru	Finkbeiner		Media	PA
Wesley	Finkbeiner		Womelsdorf	PA
Bonnie B.	Finkelstein		Elkins Park	PA
Patricia	Finley	Eco Justice Collaborative of Philadelphia Yearly Meeting (Quakers)	Ardmore	PA
Sigmund	Finman		Canonsburg	PA
Thomas	Finn		Havertown	PA
Andrew	Fiorentino		Philadelphia	PA
Doris	Fiorentino		Lansdale	PA
Michelle	Fiorentino		Feasterville Trevose	PA
David	Firely		Coatesville	PA
Richard	Firestine		Myerstown	PA
Victor	Firment		Kittanning	PA
Adrienne	Fischer		Pottstown	PA
Barbara	Fischl		Nazareth	PA
Margie	Fischman		Philadelphia	PA
Stuart	Fishelman		Hanover	PA
Cynthia	Fisher		Philadelphia	PA
David	Fisher		Pittsburgh	PA
Elly	Fisher		Pittsburgh	PA
Jerry	Fisher		Corry	PA
Keith	Fisher		Willow Grove	PA

Kurt	Fisher		Wyndmoor	PA
Lori	Fisher		Sinking Spring	PA
Robert	Fisher		Villanova	PA
RW	Fisher		Bryn Mawr	PA
Wayne	Fisher		Newtown	PA
Harris	Fishkin		Doylestown	PA
Lana	Fishkin, MD		Bala Cynwyd	PA
Janet	Fishman		Philadelphia	PA
Joel	Fishman		Chadds Ford	PA
Temma	Fishman		Medford	NJ
Michele Frenza	Fisk		Henryville	PA
Kate	Fissell		Pittsburgh	PA
Jeannie	Fissinger		Levittown	PA
Thom	Fistner		Bethlehem	PA
Antoinette Volkar	Fitch		Amity	PA
William	Fitch		Berwick	PA
Michael	Fite		Newtown Square	PA
Linda	Fitterer		Pittsburgh	PA
Silvio	Fittipaldi		Philadelphia	PA
Josephine	Fitts		Bryn Mawr	PA
Alea	Fitz		Allentown	PA
Gary	Fitzgerald		North Wales	PA
Lynn	Fitzgerald		Ardmore	PA
Joseph	Fitzmyer		Ardmore	PA
Emily	Fitzpatrick		Lebanon	PA
Timothy	Fitzpatrick		Shenandoah	PA
Bradley	Flamm		Philadelphia	PA
Alison	Flanagan		Hanover	PA
Eileen	Flanagan	Earth Quaker Action Team	Philadelphia	PA
William	Flanagan		Philadelphia	PA
Lori	Flanagan-Cato		Merion Station	PA
Bernadine	Flanigan		Yukon	PA
Kelly	Flanigan		Philadelphia	PA
Laura	Flannery		Mt Lebanon	PA
Melissa	Flannery		Reading	PA
Ellen	Flannery-Roth		Lititz	PA
Jerry	Flavelle		Easton	PA
Connie	Fleeger		Butler	PA
Carol	Fleischman		Ardmore	PA
Lorraine	Fleming		West Grove	PA
Shirley	Fleming		Philadelphia	PA
Vanessa	Fleming		Philadelphia	PA
Bay	Fletcher		Philadelphia	PA
Benjamin	Fletcher		Philadelphia	PA
Teresa	Fletcher		Easton	PA
LaShawn	Flewellen		Pittsburgh	PA
Elliott	Flick		West Chester	PA

Betty	Flinchbaugh		Collegeville	PA
Sam	Flint		Media	PA
Robert	Flipse		Malvern	PA
Jenna	Flohr		Pittsburgh	PA
John	Flohr		Fleetwood	PA
Felton	Flonard		Marcus Hook	PA
Marlene	Flood		Philadelphia	PA
Richard	Flood		Lewistown	PA
David	Flora		Carrolltown	PA
Kathryn	Florentz		Glen Mills	PA
Alfredo	Flores		Philadelphia	PA
Barbara	Flowers		Morgantown	PA
Gregory	Flowers		Elizabethtown	PA
Synquis	Floyd		Philadelphia	PA
Tyrone	Floyd		Aldan	PA
Jahyana	Fluellen		Philadelphia	PA
Andrew	Flynn		Pittsburgh	PA
Jeff	Flynn		Pittsburgh	PA
Rory	Flynn		Philadelphia	PA
Vicky	Flynn		Osceola	PA
Judith	Focareta		Pittsburgh	PA
Denise	Foehl		Royersford	PA
Sandra	Foehl		Philadelphia	PA
Magnalen	Fofana		Philadelphia	PA
Ousmane	Fofana		Marcus Hook	PA
Sky	Fogal	CFO, Pocono Whitewater	Jim Thorpe	PA
Amanda	Fogarty		Quarryville	PA
Dave	Fogelman		Watsontown	PA
Andre	Fogg		Philadelphia	PA
Owen	Foizen		Souderton	PA
Andrew	Foley		Lancaster	PA
Frank	Foley		Philadelphia	PA
Marguerite	Foley		Philadelphia	PA
Morgan	Folger*	Environment America	Ardmore	PA
Brooke	Folk		Fleetwood	PA
Tim	Folk		Duncannon	PA
Susie	Folks		Pottstown	PA
Eric	Folmar		West Chester	PA
Kait	Folweiler		Philadelphia	PA
Kathleen	Folwell		Wayne	PA
Sandra	Folzer		Philadelphia	PA
Cathy	Fong		Philadelphia	PA
Cheryl	Fontaine		Lancaster	PA
Bobbie	Forba		Springville	PA
Edward	Forbes		Lock Haven	PA
Angela	Ford		Philadelphia	PA
Breann	Ford		Everett	PA

Crystal	Ford		Pittsburgh	PA
Elise	Ford		Pittsburgh	PA
Kylie	Ford		Chalfont	PA
William	Ford		Pittsburgh	PA
Brian	Foreacre		Springfield	PA
Kelly	Forest		State College	PA
Ana	Forgey		Philadelphia	PA
Cathie	Forman		Southampton	PA
Valeri	Fornagiel		Wellsboro	PA
Edward	Forney		Glen Rock	PA
Sharon	Forney		Glen Rock	PA
Jphine	Fornsmce		Norristown	PA
Aubrey	Fornwalt		Williamsport	PA
Gay	Forrest		York	PA
Anna	Forrester		Philadelphia	PA
Jonathan	Forrester		Easton	PA
Jean	Forsberg		Julian	PA
James	Forster		Chesterbrook	PA
Andy	Forston		Jenkintown	PA
Kathryn	Forsyth		Bentleyville	PA
Charles	Forsythe		Harleysville	PA
Bobby	Forte		Philadelphia	PA
Rhoda	Forte		Philadelphia	PA
Barbara	Fortner		Narberth	PA
Thomas	Fortson		Darby	PA
June	Fortunato		Philadelphia	PA
Otis	Fortune		Philadelphia	PA
Kevin	Foskett		Ardmore	PA
Jack	Fossett		Stroudsburg	PA
Abby	Foster	PA Chemical Industry Council	Harrisburg	PA
Amy	Foster		Creekside	PA
Ann	Foster		Cresco	PA
Brian	Foster		Chester	PA
David	Foster		Mechanicsburg	PA
Gary	Foster		Carlisle	PA
Janaye	Foster		Philadelphia	PA
Julie	Foster		Philadelphia	PA
Ken	Foster		Homer City	PA
Marguerite	Foster		Mechanicsburg	PA
T.	Foster		Hershey	PA
Christopher	Fountain		Philadelphia	PA
Deborah	Foust		Huntingdon	PA
Abby	Fowler		Pittsburgh	PA
Antoine	Fowler		Philadelphia	PA
Heather	Fowler		Irwin	PA
Danielle	Fox		Pittsburgh	PA
Kathy	Fox		Bethlehem	PA

Richard	Fox		Harrisburg	PA
Walter	Fox		Philadelphia	PA
Jack	Foxall		Meadville	PA
Mary	Foxall		Meadville	PA
Bev	Fraim		Robesonia	PA
Adam	Frain		Delta	PA
Hannah	Frame		Pittsburgh	PA
Clifford	Frampton		New Florence	PA
Anne	Francis		Philadelphia	PA
Christine	Francis		Philadelphia	PA
John	Francis		New Hope	PA
Kevin	Francis		Downingtown	PA
Randy	Francisco		Verona	PA
Barbara	Franck		Philadelphia	PA
Fallon	Franco		York	PA
Mary	Franco		Plainfield	PA
Abram	Frank		Orrtanna	PA
Andy	Frank	Sealed	New York	NY
Henry	Frank		Philadelphia	PA
Janelle	Frank		New York	NY
Myra and Ivan	Frank		Pittsburgh	PA
Robert	Frank		Monaca	PA
Troy	Frank	Network Administrator, UUFCC Green Sanctuary Comm.	State College	PA
Victor	Frank		East Berlin	PA
Stanley	Frankel		Lewisburg	PA
Susan	Frankel		Mountain Top	PA
Rachel	Frankford		Philadelphia	PA
Cathy	Franklin		Clifton Heights	PA
Craig	Franklin		Harrisburg	PA
Darlene	Franklin		Philadelphia	PA
Elliott	Franklin		East Stroudsburg	PA
Nico	Franklin		Philadelphia	PA
Shawn	Franklin		Munhall	PA
Halie	Franks		Harrisburg	PA
Nadine	Franks		Philadelphia	PA
Suzanne	Franks		Downingtown	PA
Eric	Frantz		Renfrew	PA
Glenn	Frantz		Paoli	PA
Amy	Franz		Philadelphia	PA
Patricia	Franz		Pittsburgh	PA
Thom	Franz		Pittsburgh	PA
Andrew	Fraser		Sharon Hill	PA
Evelyn	Fraser		Washington	DC
Will	Fraser		Philadelphia	PA
Michael	Fratangelo		Pleasant Gap	PA
Rashon	Frazier		Philadelphia	PA

Jacquelynn	Freas		Philadelphia	PA
Elaine	Frech		Downingtown	PA
Lucy	Freck		Gilbert	PA
George	Freckleton		Philadelphia	PA
Richard	Frederick		Philadelphia	PA
Ryan	Fredericks		Johnstown	PA
Bryn	Frederickson		Landenberg	PA
Kelly	Freed		Middleport	PA
Lamar	Freed		Elkins Park	PA
Ronald	Freed		Carlisle	PA
Allan	Freedman		Elkins Park	PA
D.	Freedman		Pittsburgh	PA
Joanne	Freedman		Bala Cynwyd	PA
William	Freedman		Philadelphia	PA
Robert	Freeland		Columbia	PA
Andrew	Freeman		Darby	PA
Connie	Freeman		Philadelphia	PA
Geraldine	Freeman		Philadelphia	PA
Kendall	Freeman		Philadelphia	PA
Michael	Freeman		New Milford	PA
Rachel	Freeman		Philadelphia	PA
Thomas	Freeman		Madera	PA
Marion	Freiberg		Doylestown	PA
Michele	Freiberg		Penn Valley	PA
Erika	Freiberger		Pittsburgh	PA
Sandy	Freid		Bala Cynwyd	PA
Roger and Carol	Freidinger		Rose Valley	PA
Linda	Freimark		Elkins Park	PA
Erich	Freimuth		Wayne	PA
Ayres	Freitas		Pittsburgh	PA
Jennifer	French		Flourtown	PA
Mary	French		Havertown	PA
Christiana	French-Franco		Philadelphia	PA
John R.	Frey		Franklin	PA
Larry	Frey		Stahlstown	PA
Sherry	Frey		Douglassville	PA
Carlos	Freytes		Allentown	PA
Romelo	Frias		Scranton	PA
Dennis	Frick		Lewisberry	PA
Sharon	Frick		Greentown	PA
Jacqui	Friday		West Chester	PA
Kathleen	Friedenberg		Haverford	PA
Elinor	Friedman		Wayne	PA
Leora	Friedman		Philadelphia	PA
Martin	Friedman		Yardley	PA
Mindy Engle	Friedman		Erwinna	PA
Janet	Friel		State College	PA

Michael	Friel		Philadelphia	PA
Diane	Fries		Allentown	PA
Matt	Frigm		*Submitted via email*	PA
Elaine	Frisby		Philadelphia	PA
Jim	Fritch		Pennsburg	PA
Stephanie	Fritts		Erie	PA
Lani	Fritz		Beaver	PA
Marilyn	Fritz		Bethlehem	PA
Vicki	Fritz		Lancaster	PA
Pamela	Fritzsche		Coatesville	PA
Karen	Frock		Williamsport	PA
Monica	Frolander-Ulf		Pittsburgh	PA
Joy	Fronzoli	CRANE	Erie	PA
John	Frosh		Marietta	PA
Elizabeth	Frumin		Narberth	PA
Marques	Frye		Philadelphia	PA
Arlene	Fryer		Sioux Falls	SD
Denise	Fryer		Philadelphia	PA
Sherri	Fryer		Clymer	PA
Cynthia	Frymoyer		Reading	PA
Diane	Fuchs		Philadelphia	PA
Paul	Fudge		Philadelphia	PA
David	Fulford		Edinboro	PA
Ernest	Fuller		Six Mile Run	PA
Michael	Fuller		Philadelphia	PA
Rosemary	Fuller		Media	PA
Dorothy	Fulton		Harrisburg	PA
Ron	Fulton		Home	PA
Tamier	Fulton		Tobyhanna	PA
Willard	Fulton		Homer City	PA
Tiffany	Fultz		Meyersdale	PA
Ashley	Funk	Mountain Watershed Association	Melcroft	PA
Gayle	Funk		Butler	PA
Lavetta	Fuqua		Norristown	PA
Peter	Furcht		Philadelphia	PA
Linda	Furlong		Oreland	PA
Park	Furlong		Feasterville	PA
Sharon	Furlong	Bucks Environmental Action	Feasterville	PA
Julia	Furman		Philadelphia	PA
Breeyon	Furniss		Philadelphia	PA
Preeti	Furtado		West Chester	PA
Kimberly	Fye		Lock Haven	PA
Kathleen	Fyock		Chambersburg	PA
Mysti	Fyre		Greeley	PA
Chlo	G.		New Berlin	PA
Tiffany	Gaal		Elkins Park	PA

Kathleen	Gaberson		Pittsburgh	PA
Joan	Gabrie		Perkasie	PA
Donna	Gabriele		Langhorne	PA
Linda	Gaddy		Philadelphia	PA
Monica	Gadsby		Langhorne	PA
Stephanie	Gadson		Scranton	PA
Rebecca	Gagliano		*Submitted via email*	PA
Charles	Gagliardi		Ambler	PA
Pam	Gagne		Wyndmoor	PA
Tim	Gagne		Pittsburgh	PA
Addie	Gagnon		State College	PA
Alexis	Gahagan		Levittown	PA
Mary Ann	Gahagan		Tullytown	PA
Cheryl	Gahring	YWCA Lancaster	Marietta	PA
Shilene	Gaillard		Philadelphia	PA
Markeisha	Gaines		Philadelphia	PA
Thomas	Galanek		Conshohocken	PA
Mellissa	Galarza		Philadelphia	PA
Michelle	Galbraith		Folcroft	PA
Kate	Galer		York	PA
Annie	Gales		Pittsburgh	PA
Timothy	Gallacher		Pottstown	PA
Annemarie	Gallagher		Philadelphia	PA
Bob	Gallagher		Philadelphia	PA
Grant	Gallagher		Malvern	PA
Jacqueline	Gallagher		Chalfont	PA
John	Gallagher		Bethlehem	PA
Kathryn	Gallagher		Philadelphia	PA
Suzanne	Gallagher		Silver Spring	MD
Thomas	Gallagher		Shelocta	PA
Lisa	Gallaher		Irvona	PA
Helena	Gallant		Philadelphia	PA
Gregory	Gallardy		Seward	PA
Vivia	Gallimore		Royersford	PA
Cassandra	Gallina		Windber	PA
Jasmen	Gallmore		Donora	PA
Frank	Gallo		Freeport	PA
Kelly	Gallo	Brodhead Watershed Association	Henryville	PA
Nicole	Gallo		West Chester	PA
Richard	Gallogly		York	PA
Shirley	Galloway		York	PA
Lois	Gallus		Johnstown	PA
Liz	Galst		New York	NY
Toni	Galuska		Pittsburgh	PA
Kathleen & Michael	Galvin		Jenkintown	PA

Alan	Gamble		Philadelphia	PA
Tyjae	Gamble		Philadelphia	PA
Joseph	Gammaitoni		Scranton	PA
Catherine	Gammon		Pittsburgh	PA
Sakuna	Ganbari		Philadelphia	PA
Mo	Ganey		Elkins Park	PA
Bruce	Gangawer		New Hope	PA
Cecilia	Ganier		Philadelphia	PA
Lorene	Ganster		Carlisle	PA
Gugu	Gant		Philadelphia	PA
Leatrice	Gant		Philadelphia	PA
Wayne	Garafola		Newfoundland	PA
Adam	Garber		Philadelphia	PA
Abraham	Garcia		Philadelphia	PA
Angel	Garcia		Philadelphia	PA
Anibal	Garcia		Bath	PA
Ben	Garcia		Felton	PA
Carlos	Garcia		Allentown	PA
Christina	Garcia		Edwardsville	PA
Deborah	Garcia		Macungie	PA
Ellis	Garcia		Reading	PA
Enrique	Garcia		Philadelphia	PA
Heriberto	Garcia		Reading	PA
Hiram	Garcia		Bethlehem	PA
Jose	Garcia		Lancaster	PA
Kelley	Garcia		Blue Bell	PA
Maribel	Garcia		Kennett Square	PA
Samuel	Garcia		Allentown	PA
Tracee	Garcia		Norristown	PA
Constance	Garcia-Barrio		Philadelphia	PA
Todd	Garcia-Bish		Butler	PA
Sam	Garden		Honey Brook	PA
Phyllis	Gardener		State College	PA
Joseph	Gardiner		Marysville	PA
Patsy	Gardiner		Lewisburg	PA
Carol	Gardner		Broomall	PA
David	Gardner		Coraopolis	PA
Denise	Gardner		Philadelphia	PA
Kamira	Gardner		Philadelphia	PA
Tayvin	Gardner		Philadelphia	PA
Kathleen	Gare		Camp Hill	PA
Amulya	Garimella		Pittsburgh	PA
Andrei	Garine		Gibsonia	PA
Sharon	Garlena		Frederick	MD
Carrie	Garlesky		Windber	PA
Chris	Garlesky		Davidsville	PA
Michael	Garlesky		Windber	PA

Cheryl	Garner		Lititz	PA
Naheem	Garner		Philadelphia	PA
Ava	Garno		Mechanicsburg	PA
Lucille	Garofalo		Reading	PA
Chauncey	Garrett		East Berlin	PA
Marita	Garrett	Wilkinsburg Mayor	Wilkinsburg	PA
Mary	Garrett		Annville	PA
Rosalie	Garrett		Havertown	PA
Rosalie	Garrity		Minersville	PA
Robert	Garver		Coraopolis	PA
Esther	Garvett		Miami	FL
Kathy	Garvey		Feasterville-Trevose	PA
Brian	Garvin		Ambler	PA
Penn	Garvin		Mifflinburg	PA
Thomas	Garvin		Philadelphia	PA
David	Gary		Philadelphia	PA
Craig	Gaskin		Philadelphia	PA
Jenna	Gasperi		Huntingdon Valley	PA
Donna	Gass		Philadelphia	PA
Nathan	Gaston		Blairsville	PA
Chanelle	Gasway		Lincoln University	PA
Keu	Gatemoyer		Glenside	PA
Lucille	Gathers		Philadelphia	PA
Richard	Gaughan		Warminster	PA
Alberto	Gauna		Greensburg	PA
Christine	Gaunt		Lansdale	PA
Linda	Gauntt		Bensalem	PA
Tom	Gauntt		Bensalem	PA
Lou	Gaussa		Irwin	PA
Luke	Gavaghan		Murrysville	PA
Claire	Gavin		Philadelphia	PA
James	Gavin		Newtown Square	PA
Megan	Gavin		Harrisburg	PA
Starreen	Gavin		Erie	PA
Claire	Gawinowicz		Oreland	PA
Glenn	Gawinowicz		Oreland	PA
Peter	Gawron		Hershey	PA
Kelly	Gawrys		Philadelphia	PA
Bradley	Gay	Green Building United	Philadelphia	PA
Ellen	Gay		Kennett Square	PA
Thomas	Gaydosik		Aliquippa	PA
Donna	Gayer		New Tripoli	PA
Robert	Gayner		New Hope	PA
Eugene	Gazdik		New Florence	PA
Tamela	Gazdik		New Florence	PA
Chrisphelia	Gbilee		Philadelphia	PA

Katherine	Geare		Norristown	PA
Stephen	Geary		Drexel Hill	PA
Paula	Geathers		Philadelphia	PA
Gertrude	Gebhardt		Pittsburgh	PA
Melody	Geer		Pittsburgh	PA
Jean	Geiger		Lancaster	PA
Melinda	Geiger		Freedom	PA
Robin	Geisler		Wexford	PA
Caitlyn	Geist		Royersford	PA
William	Gelm		Pittsburgh	PA
Sara	Gemind		Lancaster	PA
Mary	Gengenbach		Newtown Square	PA
Nicholas	Genger-Boeldt		Avalon	PA
Ione	Gensburger		Alverda	PA
Donna	Gensler		Pittsburgh	PA
Phyllis	Genszler		Pittsburgh	PA
Dr. Deborah	Gentile	Medical Director,Community Partners in Asthma Care	Canonsburg	PA
Jennifer	Georeno		Norristown	PA
Amelia	George		Chester	PA
Anisa	George		Philadelphia	PA
Donald	George		Reading	PA
John	George		West Chester	PA
Susan E.	George		Temple	PA
Dany	Georges		Philadelphia	PA
Joanna	Gerard		Conshohocken	PA
Rick	Gercak		Allison Park	PA
Aeden	Gerds		Susquehanna	PA
Michelle	Gergar		West Chester	PA
Jim	Gergat		Bechtelsville	PA
Gregory	Gerhard		Rockwood	PA
James	Gerhard		Philadelphia	PA
Patrice	Gerhard		Weatherly	PA
Tabitha	Gerhard		Hazleton	PA
Elizabeth	Gericke		Julian	PA
Ce-Ce	Gerlach	Councilperson, Allentown City	Allentown	PA
Trudy	Gerlach		Wyalusing	PA
Chanel	German		Philadelphia	PA
Joseph	German		Pittsburgh	PA
Jan	Gernsheimer		Bernville	PA
Shavon	Gernsheimer		Westfield	NJ
Andrew	Geronimo		Palmyra	PA
Carl	Gershenson	5th Square	Philadelphia	PA
Rabbi Nathan	Gershenson*	Society Hill Synagogue	Philadelphia	PA
Daniel	Gershey		Lake Ariel	PA
Tatyana	Gershkovich		Pittsburgh	PA
Victoria	Gershon		Philadelphia	PA

Judy	Gerzina		Knox	PA
Kathy	Geschke		Wynnewood	PA
Crystal	Gettig		Bellefonte	PA
Amy	Gewirtzman		Ambler	PA
Ken	Gfroerer		Pittsburgh	PA
Sa	Gg		Harrisburg	PA
Adam	Ghazzawi		Philadelphia	PA
Sreemati	Ghosh		Oreland	PA
Lori	Giagnacova		Harleysville	PA
Christopher	Giambrone		Royersford	PA
Deb	Giampa		Barto	PA
Peter	Gianaros		Pittsburgh	PA
Lauren	Giarratani		Pittsburgh	PA
Dr. Robert	Gibb		Homestead	PA
Chris	Gibbons		Philadelphia	PA
Jaret	Gibbons	ARIPPA	Camp Hill	PA
Keya	Gibbons		Verona	PA
Pat	Gibbs		Easton	PA
Tonya	Gibbs		Glen Mills	PA
Vanessa Banks	Gibbs		Philadelphia	PA
Deborah	Gibby		Glenside	PA
Carmen	Giboyeaux		Allentown	PA
Alberta	Gibson		Philadelphia	PA
Barry	Gibson		Phoenixville	PA
Betty	Gibson		Philadelphia	PA
Brenda	Gibson		Pittsfield	PA
David	Gibson		Philadelphia	PA
Denise	Gibson		Woodlyn	PA
Nicholas	Gibson		Philadelphia	PA
Richard	Gibson		New Plymouth	ID
Stephon	Gibson		Philadelphia	PA
Erika	Gidley		Pittsburgh	PA
Robert	Giegengack	Prof. Emeritus, UPENN	Winston-Salem	NC
Jessica	Gieringer		Fleetwood	PA
Daniel	Giesecke		Downingtown	PA
Mark	Gift		Pottstown	PA
Allison	Gilbert		Munhall	PA
Cheryl	Gilbert		Allentown	PA
Chyna	Gilbert		Philadelphia	PA
Donna	Gilbert		Enola	PA
Edwin	Gilbert		Warrington	PA
Jenelle	Gilbert		Albion	PA
Ruth	Gilbert		Somerset	PA
Sharon	Gilbert		Philadelphia	PA
Thomas	Gilbert		Doylestown	PA
Troy	Gilbert		Portage	PA
Deb	Gilchrest		Lancaster	PA

Alexander	Gilchrist		Philadelphia	PA
Kathy	Gilchrist		Lancaster	PA
Sandra	Gilchrist		Reading	PA
Gwen	Gilens		Gladwyne	PA
Vincent	Gilhool		Wynnewood	PA
Anthony	Gillespie		Philadelphia	PA
Sharon	Gillespie		Austin	TX
Derek	Gilliam		Pittsburgh	PA
Donna	Gilliam		Pittsburgh	PA
George	Gilliam		Pittsburgh	PA
Margo	Gilliam		Philadelphia	PA
Kenyetta	Gilliard		Philadelphia	PA
Donald	Gilligan	National Association of Energy Service Companies	Washington	DC
Kenneth	Gilliland		Philadelphia	PA
Patty	Gilliland		Clearfield	PA
Kathi	Gillin		Yardley	PA
Michael	Gillin		Sanatoga	PA
Cory	Gillins		Allentown	PA
Angela	Gillis		Harrisburg	PA
Amanda	Gillooly		Pittsburgh	PA
Alan	Gilmore		Ellwood City	PA
Jessie	Gilmore		Philadelphia	PA
Joyce	Gilmore		Kutztown	PA
Kipp	Gilmore-Clough	Associate Pastor,Chestnut Hill United Church	Philadelphia	PA
Josephine	Gimelson		Quakertown	PA
Cheryl	Gimera		Canonsburg	PA
Terry	Gindrow		Philadelphia	PA
Emilie	Ginn		Landenberg	PA
Mark	Giordano		Glenside	PA
Mike	Giordano		Dunmore	PA
Marilyn	Giorgio-Poole		Ligonier	PA
Vinnie	Gipson		Lock Haven	PA
Damili	Gissendanner		Fountain Hill	PA
Risa	Gitman		Blue Bell	PA
Marian	Gittelman		Wynnewood	PA
Louise	Giugliano		Narberth	PA
Vicki	Giunta-Abbot		Media	PA
Karla	Givner		Pittsburgh	PA
Alfred	Gizenski		Wapwallopen	PA
Catherine	Glackin		Philadelphia	PA
Lyndell	Gladden		Philadelphia	PA
Sofia	Glantz		Blue Bell	PA
Theresa	Glatfelter		Elizabethville	PA
Valerie	Glauser		Philadelphia	PA
Keely	Gleason		Bethel Park	PA

Rachel	Gleason	Pennsylvania Coal Alliance	Harrisburg	PA
William	Gleason		Harrisburg	PA
John	Gleeson		Holland	PA
Cameron	Glenn		Philadelphia	PA
Allison	Glick		Pittsburgh	PA
Maya	Glicksman		Pittsburgh	PA
Lynn	Glielmi		Lancaster	PA
Lynn	Glorieux		Pittsburgh	PA
Beatrice	Glover		Philadelphia	PA
Brandi	Glover		Harrisburg	PA
Hayley	Glover		Golden	CO
Marlon	Glover		Harrisburg	PA
Patricia	Glovier		Upper Darby	PA
Elizabeth	Glowczewski		Pittsburgh	PA
Jeff	Glumac		Pittsburgh	PA
Stephen	Glynn		Old forge	PA
Angel	Gober		Pittsburgh	PA
Jesse	Goble		Scranton	PA
Shawn	Goda		Greenville	PA
Yi-Li	Godfrey		Broomall	PA
Marcia	Godich		Trafford	PA
Deborah	Godio		Philadelphia	PA
Deborah	Goetz		Mechanicsburg	PA
Lauren	Gogal		Kittanning	PA
Bruce	Gold		Bushkill	PA
Jeanette	Gold		Bushkill	PA
Joshua	Goldberg		Bryn Mawr	PA
Danielle	Golden		Philadelphia	PA
Penny	Goldman		Philadelphia	PA
Leslie	Goldsmith		Media	PA
Bernard	Goldstein		Pittsburgh	PA
Matthew	Goldstrohm		Rural Valley	PA
Marion	Goldyn		Portage	PA
Debra	Golenko		Greeley	PA
James	Goll		Bath	PA
Rachel	Golman		Pittsburgh	PA
Russell	Golman		Pittsburgh	PA
Allene	Golub		Media	PA
Artemis	Gomez		Lancaster	PA
Danny	Gomez		Philadelphia	PA
Dr. Felipe	Gomez		Pittsburgh	PA
Gleny	Gomez		Philadelphia	PA
Guillermo	Gomez		York	PA
Larry	Gomez		York	PA
Mario	Gomez		Chambersburg	PA
Mike	Gomez		Allentown	PA
Roy	Gomez		Albrightsville	PA

Aissibina	Gomis		Harrisburg	PA
Harriet	Gomon		Jenkintown	PA
Steven	Gonchoff Jr.		Sycamore	PA
Sandra	Gonzale		Reading	PA
Elicia	Gonzales	Exec Dir, Women's Medical Fund	Philadelphia	PA
Anna	Gonzalez		Manheim	PA
Daniel	Gonzalez		Pottstown	PA
Doris	Gonzalez		Reading	PA
Elizabeth	Gonzalez		Ashley	PA
Isman	Gonzalez		Mountville	PA
Jose	Gonzalez		Bethlehem	PA
Leidy	Gonzalez		Lebanon	PA
Lori	Gonzalez		Fairview	PA
Lydia	Gonzalez		Philadelphia	PA
Maribel	Gonzalez		York	PA
Miguel	Gonzalez		Philadelphia	PA
Ainsley	Good		Pittsburgh	PA
Ellen	Good		Kunkletown	PA
Kim	Good		Lebanon	PA
Sarah	Good		Edinboro	PA
Kerry	Goodballet		Canonsburg	PA
Walter	Goodboy		North Belle Vernon	PA
John	Goodbred		Mountain Top	PA
Karen	Goode		Elkins Park	PA
Tina	Goode		Philadelphia	PA
Emily	Goodfellow		Shrewsbury	PA
Michael	Goodlin		Latrobe	PA
Debra	Goodman		Reading	PA
Eileen	Goodman		Wyncote	PA
James	Goodman		Glenside	PA
Margaret	Goodman		Glen Mills	PA
Walter	Goodman		Malvern	PA
Zyair	Goodmond		Harrisburg	PA
Willette Gilliam	Goods		Pittsburgh	PA
Nathaniel	Goodson		Upper Darby	PA
Becky	Goodwin	Tula organic salon	Pittsburgh	PA
Donald	Goodwin		Daisytown	PA
Jill	Goodwin		Delaware Water Gap	PA
Luana	Goodwin		Philadelphia	PA
Sandra	Goodwin		Monroe Township	PA
Asti	Goodwine		Pittsburgh	PA
Renee	Goodyear		Ambler	PA
Bennie	Gordon		Philadelphia	PA
Bob	Gordon		Lansdale	PA
Corey	Gordon		Warren	PA
Donald	Gordon		Broomall	PA

Jessica	Gordon		Pittsburgh	PA
Joan	Gordon		Pittsburgh	PA
Leigh	Gordon		Feasterville	PA
Marcia	Gordon		West Chester	PA
Mary	Gordon		Kennett Square	PA
Michelle	Gordon		Philadelphia	PA
Natasha	Gordon		Chester	PA
Peggy	Gordon		Milford	PA
Terry	Gordon		Pittsburgh	PA
Timothy	Gordon		Williamsport	PA
Valentina	Gordon		Langhorne	PA
William	Gordon		Glenolden	PA
William	Gordon		Warren	PA
Jesse	Gore		Nashville	TN
Michelle	Gorecki		Etters	PA
Gerry	Gorelick		Harrisburg	PA
Kim	Goren		Langhorne	PA
Shannon	Gority*	Chesapeake Bay Foundation	Harrisburg	PA
MaryAnn	Gorka		Cochranton	PA
Debra	Gorman		Pittsburgh	PA
Kim	Gorman		Philadelphia	PA
Patrick	Gorman		Yardley	PA
Brendt	Goss		Marion Center	PA
Glenn	Goss		Pittsburgh	PA
Lisa	Goth		New Bethlehem	PA
Peter	Gottemoller		Glenside	PA
Susan	Gottfried		State College	PA
Arlana	Gottlieb		Havertown	PA
Court	Gould		Erie	PA
Amy	Goulet		Chester Springs	PA
Rita	Gouse		Sharon Hill	PA
Ella	Graban		Doylestown	PA
Gillian	Graber	Executive Director, Protect PT (Penn-Trafford)	Harrison	PA
Patti	Grabowski		Lancaster	PA
Catherine	Grace		Abington	PA
Kenneth	Grada		Pittsburgh	PA
Caroline	Graettinger		Canonsburg	PA
Tim	Graettinger		Canonsburg	PA
Christian	Graham		East Earl	PA
Gayle	Graham		Drexel Hill	PA
Grace	Graham		Philadelphia	PA
Jackson	Graham		Ford City	PA
Jove	Graham	Health Services Researcher, Geisinger	Mechanicsville	PA
Rita	Graham		Norristown	PA
Yumkia	Graham		Mount Carmel	PA

Ellen	Graham-Buchanan		Carlisle	PA
Doug	Grainge		Philadelphia	PA
Linda	Granato		Philadelphia	PA
Charles	Granberry		Chester	PA
Clarence	Granberry		Chester	PA
Virginia	Grandy		Secane	PA
Kenneth	Grannum		Philadelphia	PA
Catherine	Grant		Media	PA
Darrell	Grant		Philadelphia	PA
Eveline	Grant		Pen Argyl	PA
John	Grant		Plymouth Meeting	PA
Makesia	Grant		Philadelphia	PA
Margaret	Grant		North Apollo	PA
Renee	Grant		Pen Argyl	PA
Denise	Grasser		Devon	PA
Allison	Gratton		Philadelphia	PA
Joshua	Grauel		Mountain Top	PA
Desiree	Graves		Brookhaven	PA
Harold	Graves		Spartansburg	PA
June	Graves		Wallingford	PA
Kevin	Graves		Pittsburgh	PA
Robin	Graves		Philadelphia	PA
Thomas	Graves		Holtwood	PA
Maia	Gravina		Pittsburgh	PA
Collin	Gray		Export	PA
Daniel	Gray		Erie	PA
Eric	Gray		Punxsutawney	PA
Karen	Gray		Danville	PA
Kathryn	Gray		Elysburg	PA
Latina	Gray		East Stroudsburg	PA
Leta	Gray		Philadelphia	PA
Raymond	Gray		Doylestown	PA
Scott	Gray		Pittsburgh	PA
Tom	Gray		Pittsburgh	PA
Yvette	Gray		Philadelphia	PA
Chad	Graybill		Paradise	PA
Christine	Graziano	President, Plant Five for Life	Pittsburgh	PA
Gianna	Graziano		Mount Airy	MD
Kaela	Grazier		Philadelphia	PA
John	Greager		Natrona Heights	PA
Michelle	Greaver		Stewartstown	PA
Bill	Greb		Pittsburgh	PA
Jennifer	Grebis		Blue Bell	PA
Kathy	Greely	Performance Systems Development	Philadelphia	PA
Donald	Greemspan		West Chester	PA
Barbara	Green		Chester	PA
Barbara	Green		Lawrence	PA

Brett	Green		State College	PA
Cynthia	Green		Marcus Hook	PA
Danea	Green		Philadelphia	PA
Dawn	Green		Philadelphia	PA
Derek	Green	City of Philadelphia Councilmember	Philadelphia	PA
Doreen	Green		Philadelphia	PA
Ellen	Green		Downingtown	PA
Forest	Green		Philadelphia	PA
Glen	Green		Wenonah	NJ
James	Green		Philadelphia	PA
Katherine	Green		Apollo	PA
Keith	Green		Philadelphia	PA
Margaret	Green		Philadelphia	PA
Marita	Green		Swarthmore	PA
Michelle	Green		Philadelphia	PA
Natasha	Green		Sewickley	PA
Patricia	Green		Philadelphia	PA
Quanita	Green		Philadelphia	PA
Robin	Green		Wynnewood	PA
Sharon	Green		Pittsburgh	PA
Stephan	Green		Philadelphia	PA
Tahira	Green		Philadelphia	PA
Tasha	Green		Upper Darby	PA
William	Green		Philadelphia	PA
Tracie	Green		Sharon	PA
Tony	Greenawalt		*Submitted via email*	PA
Bernard	Greenberg		West Chester	PA
Hans	Greenberg		Philadelphia	PA
Julie	Greenberg		Philadelphia	PA
Keiko	Greenberg		West Chester	PA
Mindy	Greenberg		Philadelphia	PA
Suzan	Greenberg		Bala Cynwyd	PA
Ahnori	Greene		McKeesport	PA
David	Greene		North Huntingdon	PA
Frank	Greene		Willow Grove	PA
Melissa	Greene		Harrisburg	PA
Peggy	Greenfeld		Penn Valley	PA
Marjorie	Greenfield		Philadelphia	PA
Larry	Greenkof		Lemont	PA
Melissa	Greenley		Harleysville	PA
Karen	Greenspan		New York	NY
Sally	Greenspan		Brooklyn	NY
Steven	Greenspan		Philadelphia	PA
Wendy	Greenspan		Philadelphia	PA
Chelsea	Greenspon		Elkins Park	PA
Robert	Greenstein		Glenside	PA

Pamela	Greenwood		Newville	PA
Tracy	Greggs		Houston	PA
Michael	Gregorchik		Johnstown	PA
Joseph	Gregorio		West Chester	PA
Brian	Gregory	Assoc. Prof. and Grad. Chair of Bio,Univ. of Penn	Philadelphia	PA
Faith	Gregory		Allentown	PA
Kenneth	Gregory		Philadelphia	PA
Alison	Greifenstein		Havertown	PA
David	Greineder		Harrisburg	PA
Patricia	Greiss		Carlisle	PA
Eileen	Grenell		Shippensburg	PA
Cyane	Gresham		Glenside	PA
Earl	Gresham		Philadelphia	PA
John	Gresko		Benton	PA
Fran	Gress		Philadelphia	PA
Trina	Gribble		Harrisburg	PA
Pat	Grier		McAdoo	PA
Howard	Griest		Drums	PA
Pat	Griffey		Secane	PA
Alexander	Griffin		Scranton	PA
Dawn	Griffin		Broomall	PA
Erica	Griffin		Lebanon	PA
Michael	Griffin		East Petersburg	PA
Miranda	Griffin		Pottsville	PA
Shan	Griffin		Philadelphia	PA
Stacey	Griffin		Wynnewood	PA
Eric	Griffin-Shelley		Lafayette Hill	PA
Doug	Griffith		Kennett Square	PA
Jeffrey	Griffith		Delta	PA
Shelly	Griffith		Delta	PA
Elizabeth	Griggs		Marcus Hook	PA
John	Grillo		Orono	ME
Louise	Grim		Wyomissing	PA
Cody	Grimm		Smithfield	PA
Tim	Grimme		Oxford	PA
tyrhonda	Grissom		Philadelphia	PA
Jennifer	Grob		Lancaster	PA
Brent	Groce		Philadelphia	PA
Dennis	Groce*		North East	PA
Tim	Groeger		Williamsville	NY
Susanne	Groenendaal		State College	PA
Joan	Groff		Mount Joy	PA
Nicole	Groff		Ambler	PA
Aniya	Groover		Philadelphia	PA
Harriet	Grose		Morristown	NJ
Charles	Gross		Reading	PA

Donna	Gross		Fairfield	PA
Joseph	Gross		Franklin	PA
Nathan	Gross	Estimator/Project Manager/Treasurer,GC Electric Co	Allentown	PA
Robert	Gross		Bethlehem	PA
Wendy	Gross		Dillsburg	PA
Anna Marie	Grossman		Wayne	PA
Barry	Grossman		Philadelphia	PA
Jay	Grossman		Philadelphia	PA
Sara	Grossman	Assistant Professor of Env. Studies, Bryn Mawr	Philadelphia	PA
John	Grosso		Aston	PA
Eric	Grote		West Chester	PA
Brenda	Grove		West Chester	PA
Barbara	Grover		Pittsburgh	PA
Angie	Grubb		Dover	PA
Rex	Grubb		Quarryville	PA
John	Grubbs		Philadelphia	PA
Kate	Gruber		Coopersburg	PA
Claire	Gruen		Ambler	PA
Karen	Gruen		Ambler	PA
ML	Grumblat		Erie	PA
Ann	Grundstrom		Lewisburg	PA
Alexandra	Gruskos		Pittsburgh	PA
Edward	Gruver		Lancaster	PA
Tom	Gruver		Carlisle	PA
Stan	Grzasko		Oil City	PA
Mark	Grzegorzewski		Saint Petersburg	FL
Steven	Grzegorzewski		Meadville	PA
Karen	Grzywinski	Allegheny County Clean Air Now (ACCAN)	Ben Avon	PA
Alicia	Gu		Pittsburgh	PA
Qun	Gu		Edinboro	PA
Annie	Guadagnino*		Pittsburgh	PA
Yohanne	Guadalupe		Gurabo	PA
Eugene	Gualtieri		Philadelphia	PA
Pablo	Guardado		West Chester	PA
Matthew	Guarno		Yardley	PA
Kathleen	Guckavan		Colmar	PA
Lisa	Guercio		Philadelphia	PA
Frances	Guerrero		Waterford	PA
Luis	Guerrero		Parkesburg	PA
Aurora	Gueva		Steelton	PA
Veronica	Guevara		Bethlehem	PA
Maire	Guggenheim		Malvern	PA
Joseph	Gugliotti		Finleyville	PA
Susan	Guido		Gibsonia	PA

Barbara	Guidos		Washington	PA
Christopher	Guignon		Pittsburgh	PA
Rachel	Guilliams		Douglassville	PA
Linda	Guittare		Marcus Hook	PA
Joel	Guity		West Mifflin	PA
Harry	Gula		Windber	PA
Claudine	Gulasky		Oakdale	PA
Elizabeth	Guldan		Erie	PA
Lana	Gulden		Northumberland	PA
David	Guleke		Chester	PA
Grant	Gulibon	Americans for Prosperity-Pennsylvania	Wormleysburg	PA
Katherine	Gulick		Philadelphia	PA
Robert	Gumlock		Bethlehem	PA
Michael	Gumpert		Douglassville	PA
Emily	Gunkel		Philadelphia	PA
Louise	Gunkel		Leesport	PA
Kimberley	Gunn		Penn	PA
Syd	Gunn		New Berlin	PA
Barbara	Gunsel		Hanover	PA
David	Gunyuzlu		Kennett Square	PA
Greg	Gurev		Chadds Ford	PA
Matt	Guro		Coopersburg	PA
Paula	Guro		Ann Arbor	MI
Stephanie	Guro		Coopersburg	PA
Amy	Guskin		Malvern	PA
Joseph	Gusler	Central PA Building & Construction Trades Council	Harrisburg	PA
Jon	Gustafson		Lewisburg	PA
Jennifer	Gustkey		Johnstown	PA
Mark	Guth		Polk	PA
Diane	Guthlein		Lancaster	PA
Patricia	Guthrie		Chalfont	PA
Cathy	Guthrie-Smetzer		Greencastle	PA
Migdalia	Gutierrez		Philadelphia	PA
Thomas	Gutowski		Eagleville	PA
Marta	Guttenberg		Philadelphia	PA
Kenneth	Guy		Chester	PA
Richard	Guy		Yeadon	PA
Adriana	Guzma		Philadelphia	PA
Luz	Guzman		Reading	PA
Stephanie	Guzman		Philadelphia	PA
Helgaleena	H.		Monona	WI
William	Haaf		Kennett Square	PA
Nancy	Haag		Seneca	PA
William	Haarz		Philadelphia	PA
Gretchen	Haas		Wynnewood	PA

Karen	Haas		Erie	PA
Kenneth	Haas		Wernersville	PA
Shirley	Haas		Reading	PA
Dorothy	Habecker		Centre Hall	PA
Sue	Habecker		Lebanon	PA
Joerg	Haberma		Trafford	PA
Chris	Habovick		Bridgeville	PA
Darlene	Hack		Philadelphia	PA
Joseph	Hackett		Collegeville	PA
Janis	Hadley		Springtown	PA
William	Haegele		Philadelphia	PA
Fern	Hagedorn		Philadelphia	PA
Paul	Hagedorn		Philadelphia	PA
Gwynne	Hagee		Phoenixville	PA
Chris	Hagenbuch		Allentown	PA
Fran	Hager		Hughesville	PA
Marie	Hagerty		Morrisville	PA
Mary Ann	Haggerty		Emmaus	PA
Douglas	Hagler	Pastor, The First Presby. Church of Phoenixville	Phoenixville	PA
James	Haglund		Philadelphia	PA
Barbara	Hagofsky		Kittanning	PA
Connie	Hahn		Hanover	PA
John and Janice	Hahn		Shohola	PA
Mildred	Hahn		Shenandoah	PA
Joshua	Hailstones		Plum	PA
Joseph	Hainan		New Alexandria	PA
Letitia	Haines		Pittsburgh	PA
Mia	Haines		White Oak	PA
Patrica	Haines		Philadelphia	PA
Tammy	Haines		Waynesburg	PA
Theresa	Haines		Lemont	PA
Robert	Haire		Sellersville	PA
Edwin	Hairston		Philadelphia	PA
Judy	Hake		Dover	PA
Pekka	Hakkarainen	Lutron Electronics Co., Inc.	Coopersburg	PA
Terry	Haldin		Black Lick	PA
Bob	Haley		St Charles	IL
Emma	Haley		Pittsburgh	PA
Maggie	Haley		St Charles	IL
Marina	Haley		West Chester	PA
Mick	Haley		Gordonville	PA
Marsha	Haley*		Seven Fields	PA
Adam Glenn	Hall		Philadelphia	PA
Amanda	Hall		Ellwood City	PA
Amber	Hall		Philadelphia	PA
Cheryl	Hall		Coatesville	PA

David	Hall		Plum	PA
Jerome	Hall		Quakertown	PA
Joanne	Hall		West Newton	PA
Joshua	Hall		Williamsport	PA
Lex	Hall		Drexel Hill	PA
Margie	Hall		Lititz	PA
Michael	Hall		Philadelphia	PA
Nicole	Hall		Pittsburgh	PA
Phillis	Hall		Darby	PA
Roxanne	Hall		Norristown	PA
Shawnice	Hall		Philadelphia	PA
Spencer	Hall		Philadelphia	PA
Stephanie	Hall		Cameron	WV
Suzanne	Hall		Mont Alto	PA
Ashley	Hallacker		Allentown	PA
Bethany	Hallam	Councilperson, Allegheny County	Pittsburgh	PA
Jason	Hallmark		Finleyville	PA
Leah	Hallow		Albany	NY
Kristin	Hallowell		East Norriton	PA
Lisa	Hallowell	Senior Attorney, Environmental Integrity Project	Washington	DC
Lisa	Hallowell		Philadelphia	PA
Rosemary	Halpern		Stroudsburg	PA
Bernard	Halpin		Washington	PA
Jeanne	Hamann		Philadelphia	PA
Pamela	Hameen		Philadelphia	PA
Chris	Hamilton		Dallastown	PA
Daryn	Hamilton		Philadelphia	PA
Marshall	Hamilton		Media	PA
Nina	Hamilton		Pittsburgh	PA
Kelly	Hamm		Fawn Grove	PA
Thomas	Hamm		Scottdale	PA
Bryn	Hammarstrom*		Middlebury Center	PA
Colleen	Hammel		Philadelphia	PA
Katie	Hammer		Gibsonia	PA
Kenda	Hammer		Gibsonia	PA
Ronald	Hammill		Pittsburgh	PA
Barbara	Hammond		Royersford	PA
Joyce	Hammond		Chester	PA
Mari	Hammond		Abington	PA
Taj	Hammond		Marietta	PA
Terry	Hampson		Chambersburg	PA
Krystal	Hamrick		Orrtanna	PA
Dennis	Hamsher		Mechanicsburg	PA
Cynthia	Hanadel		Noxen	PA
Billy	Hanafee	Founder, PHLASK Ecosystem	Philadelphia	PA
William	Hance		Media	PA

Kristina	Hancock		Washington	PA
Lisa	Handel		Philadelphia	PA
Barbara	Handelin		Malvern	PA
Jerry	Hanes		Grampian	PA
Rosemary McCarthy	Hanes		Elkins Park	PA
Amanda	Haney		pittsburgh	PA
Robert	Haney		Ottsville	PA
Colette	Hanlon		Greensburg	PA
Mark	Hanlon		Wilkes-Barre	PA
Tammy	Hanlon		Seven Valleys	PA
Justin	Hann		Martins Creek	PA
Patricia	Hann		Everett	PA
Douglas	Hanna		Bethel Park	PA
Susan	Hanna		Harrisburg	PA
Carlton	Hannah		Philadelphia	PA
Mark	Hannah		Gibsonia	PA
Theresa	Hannigan		Philadelphia	PA
Kathy	Hannun	Dandelion Energy	Peekskill	NY
Robert	Hansberry		York	PA
Constantina	Hanse		Pittsburgh	PA
Linda	Hansell		Philadelphia	PA
Beth	Hansen		Abington	PA
Harry	Hansen		Philadelphia	PA
Robert	Hansen		Philadelphia	PA
Martha	Hanson		Wynnewood	PA
Johanna	Hantel		Malvern	PA
Anne-Marie	Hanzes		West Mifflin	PA
Shanzeh	Haque		Philadelphia	PA
Rachel	Hara		Philadelphia	PA
Jaime	Harasym		Phoenixville	PA
Clarissa	Harcum		Philadelphia	PA
Gentry	Hard		Philadelphia	PA
Kim	Hardaway		Chester	PA
Kate	Harder		Glen Ellyn	IL
Celeste	Hardester	President, Central Roxborough Civic Association	Philadelphia	PA
Diana	Harding		Bryn Mawr	PA
Eleanor	Harding		White Haven	PA
Joan	Harding		Pittston	PA
Yvonne	Harding		Philadelphia	PA
Gentry	Hardy		Philadelphia	PA
Jesse	Hare		Jamison	PA
Eric	Hargrove		Philadelphia	PA
Ethel	Hargrove		Lancaster	PA
Edward	Harkins		Philadelphia	PA
Edward	Harkins		Pittsburgh	PA

Frances	Harkins		Munhall	PA
Margie	Harkins		Philadelphia	PA
Nancy	Harkins		West Chester	PA
Sharon	Harlan		Mifflin	PA
Mark	Harley		Oakmont	PA
Amy	Harlib		New York	NY
Patricia	Harlow		Plymouth Meeting	PA
Jodi	Harman		Levittown	PA
Alverena	Harmon		Philadelphia	PA
Bob	Harmon		Glenside	PA
Gwen	Harper		Lemoyne	PA
James	Harper		Carlisle	PA
Marilynn	Harper		Media	PA
Melissa	Harper		East Earl	PA
Pamela	Harper		Philadelphia	PA
Rory	Harper		Wayne	PA
Justmella	Harrell		Allentown	PA
Nena	Harrell		Pittsburgh	PA
James	Harrier		Tyrone	PA
Angela	Harrington		Philadelphia	PA
Luis	Harrington		Shamokin	PA
Audrey	Harris		Wyoming	PA
Christina	Harris		Philadelphia	PA
David	Harris		Harrisburg	PA
Debra	Harris		Monongahela	PA
Debra	Harris		Philadelphia	PA
Drew	Harris		Philadelphia	PA
Elizabeth Dale	Harris	Member, Lansdowne Environ. Advisory Committee	Lansdowne	PA
Frank	Harris		Philadelphia	PA
Gerald	Harris		Philadelphia	PA
Janina	Harris		Philadelphia	PA
Kim	Harris		Philadelphia	PA
Lakeria	Harris		Philadelphia	PA
Mariah	Harris		Bywood	PA
Mia	Harris		Philadelphia	PA
Michael	Harris		Philadelphia	PA
Queen	Harris		Marcus Hook	PA
Richard	Harris		Pittsburgh	PA
Rita	Harris		Oil City	PA
Samuel	Harris		New Kensington	PA
Sheila	Harris		Philadelphia	PA
Steven	Harris		Sharon Hill	PA
Tina	Harris		Ohiopyle	PA
Tom	Harris		Leechburg	PA
Ty	Harris		Clymer	PA
William	Harris		Pittsburgh	PA

Willie	Harris		Mohnton	PA
Robert	Harris, Jr.		Upper Dublin	PA
Angelo	Harrison		Chambersburg	PA
Fred	Harrison		Philadelphia	PA
Gerald	Harrison		Upper Darby	PA
Randy	Harrison		Eugene	OR
Sandy	Harrison		Ardmore	PA
Scott	Harrison		Elkins Park	PA
Mary	Hart		Swissvale	PA
Monique	Hart		Philadelphia	PA
Rebecca	Hart		Monroeville	PA
Sondra	Hart		Pittsburgh	PA
Kevin	Harte		Gettysburg	PA
Dennis	Hartenstine		Birdsboro	PA
Barbara	Hartford		Gilbertsville	PA
Alex	Hartle		Pittsburgh	PA
Karen	Hartley		Collegeville	PA
Brenda	Hartman		Reading	PA
Dennis	Hartman		Elizabeth	PA
Evan	Hartman		Philadelphia	PA
James	Hartman		Fountain Hill	PA
Vladimir	Hartman		Havertown	PA
Joseph	Hartnett		North Wales	PA
Carol	Hartpence		New Hope	PA
Bronwen	Hartranft		Lancaster	PA
James	Hartsfield		Philadelphia	PA
Connie	Hartwick		Pittsburgh	PA
Shane	Harty		Allgheny	PA
Brendan	Hartz		Levittown	PA
Peggy	Hartzell		Glenmoore	PA
Jim	Harven		Langhorne	PA
LeAnne	Harvey	Green Building United	Philadelphia	PA
Mark	Harvey		Great Bend	PA
Melissa	Harvey		Peckville	PA
John	Harvey*		Philadelphia	PA
Marian	Harvey*		Philadelphia	PA
Steve	Harvey*	Lawyers for Climate Action	Philadelphia	PA
Elizabeth	Haschets		Daisytown	PA
Mohsin	Hashim	Professor of PoliSci, Muhlenberg College	Muhlenberg	PA
Saima	Hashmi		North Wales	PA
Jeffery	Haskins		Philadelphia	PA
Mo	Hassan		Philadelphia	PA
Maggie	Hassett		Philadelphia	PA
Carol	Hassler		Levittown	PA
Greg	Hassler		West Chester	PA
Nicholas	Hasson		New Florence	PA

Rodney	Hataway		Allentown	PA
Barbara	Hatch		McMurray	PA
Charles	Hatcher		Philadelphia	PA
Matthew	Hatcher		Lancaster	PA
Raquell	Hatcher		Philadelphia	PA
Jeanne	Hauck		Pittsburgh	PA
Lucille	Haun		Huntingdon	PA
Carol	Hauptfuhrer		Philadelphia	PA
Robin Greenspan	Hausman		Pittsburgh	PA
Artineh	Havan		Burbank	CA
Heather	Haverilla		Indiana	PA
Kraig	Haverstick		Mechanicsburg	PA
R.	Havrilla		Pittsburgh	PA
Robert	Havrilla		Pittsburgh	PA
David	Hawk		Nesquehoning	PA
Floyd	Hawk		S. Connellsville	PA
Don	Hawkins		Braddock	PA
Ebony	Hawkins		Braddock	PA
Lonnie	Hawkins		Montoursville	PA
Timothy	Hawver-Scott		Buckingham	PA
Bonita	Hay		Wyncote	PA
Jami	Hay		Philadelphia	PA
Erin	Hayes		Danville	PA
Latosha	Hayes		Chester	PA
Taezyanna	Hayes		Philadelphia	PA
Tyrone	Hayes		Philadelphia	PA
Marti	Haykin		Greensburg	PA
Deb	Hayner		Phoenixville	PA
Tyler	Haynes		Tobyhanna	PA
Michael	Hays		Phoenixville	PA
Verlyn	Hays		Mechanicsburg	PA
Peter	Hayward		Philadelphia	PA
Laura	Hazeltine		Birdsboro	PA
Steve	Hazen		Cranberry Township	PA
Chris	Hazynski		Burlington	NJ
Niconnia	Headen		Philadelphia	PA
Richard	Headley		Pittsburgh	PA
Judy	Heald		Kennett Square	PA
Mike	Heaney		Philadelphia	PA
George	Heard		Philadelphia	PA
Ken	Heard		Philadelphia	PA
Anne	Hearn		Coatesville	PA
Jeff	Hearn		*Submitted via email*	PA
Jeffrey	Hearn		Hatboro	PA
Nancy	Hearn		Macungie	PA

Sharon	Hearne		Philadelphia	PA
Carmela	Heartsfield		Philadelphia	PA
Nicole	Heath		Mohnton	PA
Rachel	Heath		Royersford	PA
Steve	Heath		Warren	PA
Tamara	Heath	Coal industry	Washington	PA
David	Heayn-Menendez	Pennsylvania Interfaith Power & Light	Lewisburg	PA
David	Heayn-Menendez	Councilmember, Lewisburg Borough Council	Lewisburg	PA
Martin	Hecht		Pittsburgh	PA
Peter	Hecht		Philadelphia	PA
Allen	Heck		Reading	PA
Charles	Heck		Greenville	PA
Richard	Heckert		McKees Rocks	PA
Richard	Heckler		Pottsville	PA
James	Heckman		Halifax	PA
Melvin	Heckman		Mercersburg	PA
Steven	Heckman		Harrisburg	PA
Susan	Heckrotte		Philadelphia	PA
Joseph	Hedden Jr.		Murrysville	PA
James	Hedges		Needmore	PA
Elizabeth	Hedin		Pittsburgh	PA
Laura	Heemer		Mount Joy	PA
Theresa	Heerey		Catasauqua	PA
Evelyn	Heffelfinger		Norristown	PA
Becky	Heffner		Fairhope	PA
Clinton	Heffner		Tremont	PA
Nevin	Heffner		Pottstown	PA
William	Heffner		Media	PA
Patricia	Heffron		North Versailles	PA
Kevin	Hegarty		Allentown	PA
Susan	Hegberg		Selinsgrove	PA
Meredith	Hegg		Clifton Heights	PA
Veronica	Heggs		Philadelphia	PA
Linda	Heibel		Erie	PA
Jean	Heiberger		Ardmore	PA
John	Heidelbaugh		Boyertown	PA
Rashann	Height		Philadelphia	PA
Ken	Heil		Philadelphia	PA
Rick	Heil		Greensburg	PA
Barbara	Heilman		Kittanning	PA
Deb	Heim		Selinsgrove	PA
Sandra	Heim		Sunbury	PA
Jackie	Heiney		Columbia	PA
Michael	Heinsdorf		Philadelphia	PA
Theresa	Heinslewr		Philadelphia	PA

Jennifer	Heitler-Klevans		Cheltenham	PA
Jenn	Held		Evans City	PA
Jeanne	Held-Warmkessel		North Wales	PA
Marc	Helhowski		Oreland	PA
Laurie	Heller		Pittsburgh	PA
Teresa	Heller		Bethlehem	PA
Bennett	Helm		Lancaster	PA
Julie	Helman		Latrobe	PA
Winifred	Helton-Harmon		Bethlehem	PA
Nancy	Hemberger		Reading	PA
Gladys	Hemingway		Philadelphia	PA
Debbie	Hemler		Royersford	PA
Neal	Hemmelstein	Child, Adult, & Family Psychological Center	Lemont	PA
Judith	Henckel		Mount Bethel	PA
Charles	Hendersn		Philadelphia	PA
Angela	Henderson		Gilbertsville	PA
Beatrice	Henderson		Philadelphia	PA
Cheryl	Henderson		Philadelphia	PA
F.	Henderson		Philadelphia	PA
Janet	Henderson		Gwynedd	PA
Laura	Henderson		Gibsonia	PA
Michael	Henderson		Darby	PA
Michelle	Henderson		Pittsburgh	PA
Patrick	Henderson	Marcellus Shale Coalition	Harrisburg	PA
Steve	Henderson		Canonsburg	PA
Ella	Henderson*		Doylestown	PA
Judith	Hendin		Easton	PA
Edgar	Hendon		Newark	DE
Sean	Hendry		Scranton	PA
Bill	Hengst		Philadelphia	PA
Rebecca	Henik		Philadelphia	PA
Todd	Henkelmann		Allison Park	PA
Annette	Henley		Philadelphia	PA
Kendra	Henley		Duquesne	PA
DeVon	Henne		Bernville	PA
Brandy	Hennie		Philadelphia	PA
Grace	Henning		Penn Hills	PA
Maryann	Henninger		Boyertown	PA
Joshua	Henrie		Berwick	PA
Eric	Henry		Windsor	PA
Grayson	Henry		Colmar	PA
Janice	Henry		Cherry Tree	PA
Jeff	Henry		Bessemer	PA
Jessica	Henry		Lancaster	PA
Kurt	Henry		Mechanicsburg	PA
Luke	Henry		Pittsburgh	PA

Michelle	Henry		Greensburg	PA
Nicole	Henry		Willow Grove	PA
Patricia	Henry		Lancaster	PA
Robert	Henry	Advance Mining Services	Oakmont	PA
Rodney	Henry		Philadelphia	PA
Derek	Hensley	Ben's Courier	*Submitted via email*	PA
Gerald	Hepler		Vandergrift	PA
Gwen	Hepler		Pittsburgh	PA
Steven	Hepler		Schuylkill Haven	PA
Lisa	Herb		Philadelphia	PA
Arnetta	Herbert		Philadelphia	PA
Lynne	Heritage		Bellefonte	PA
Janice	Herman		Conestoga	PA
John	Herman		New Paris	PA
Mary	Herman		Barto	PA
Tim	Herman		Hershey	PA
Francisco	Hernandez		Pittsburgh	PA
Gloria	Hernandez		Philadelphia	PA
Johanna	Hernandez		Philadelphia	PA
Luis	Hernandez		Philadelphia	PA
Maria	Hernandez		Pittsburgh	PA
Maria	Hernandez		Reading	PA
Mary	Hernandez		Allentown	PA
Nydia	Hernandez		Philadelphia	PA
Regla	Hernandez		Philadelphia	PA
Ted	Heron		Philadelphia	PA
David	Herr		Dallastown	PA
John	Herr		East Petersburg	PA
Doug	Herren		Philadelphia	PA
Maureen	Herrick		Philadelphia	PA
Karrin	Herring		Aliquippa	PA
Larry	Herrold		Sunbury	PA
Connie	Hershman		Philadelphia	PA
Sarah	Hertica		Pittsburgh	PA
Steve	Hertler		Holmes	PA
Tina	Herzog		Slatington	PA
Zig	Herzog*		Chambersburg	PA
Cheryl	Hess		Philadelphia	PA
Elaine	Hess		Philadelphia	PA
Heidi	Hess		Glenside	PA
Justin	Hess		Philadelphia	PA
Keith	Hess	Vice-President Berwick Area School Board	Berwick	PA
Nancy	Hess		Lititz	PA
Peter	Hess		Lambertville	NJ
Richard	Hess		Berwyn	PA

Steven	Hess		Strasburg	PA
Walter	Hess		Weatherly	PA
Elizabeth	Hessek		Philadelphia	PA
Joseph	Hessler		Norristown	PA
Constance	Hester		Pittsburgh	PA
Erika	Hester		Philadelphia	PA
Michael	Hester		Pittsburgh	PA
Moses	Hetfield		Pittsburgh	PA
Deborah	Hetrick		DuBois	PA
Eileen	Hetrick		Telford	PA
Jennifrr	Hetrick		Doylestown	PA
Richard	Hetro		Pringle	PA
Betty	Hettich		Honesdale	PA
Angel	Hetzel		Chester	PA
Stephen	Heverin		Oreland	PA
Robert	Hewitt		Philadelphia	PA
Susanne	Hewitt		Newtown	PA
Mitchell	Hexcox	Evangelical Environmental Network	New Freedom	PA
Susan	Heyner		Philadelphia	PA
Bart	Hickman		Nether Providence Township	PA
Darren	Hickman		Bethlehem	PA
Delores	Hickman		East Stroudsburg	PA
Edward	Hickman		Douglassville	PA
Jesse	Hickman		Kittanning	PA
Joel	Hicks	Councilor, Borough of Carlisle	Carlisle	PA
Lashae	Hicks		Philadelphia	PA
Roger	Hicks		Hopewell	PA
Tracy	Hicks		Harrisburg	PA
Tremayne	Hicks		Philadelphia	PA
Joel	Hicks*	Clean Jobs for Pennsylvania	Carlisle	PA
Laurie	Higgins		Collegeville	PA
Linda	Higgins		Flourtown	PA
Patricia	Higgins		Narberth	PA
Thomas	Higgins		Newtown Square	PA
Eric	Highsmith		Philadelphia	PA
Paul	Hightower		Harrisburg	PA
Sandra	Hilbert		Fort Littleton	PA
John	Hilditch		Broomall	PA
Linda	Hilf		Pittsburgh	PA
Barbara	Hill		Harrisburg	PA
Clayon	Hill		Philadelphia	PA
Gregory	Hill		Richboro	PA
Jeffrey	Hill		Muncy	PA
Joshua	Hill		Levittown	PA
Keith	Hill		Reading	PA
Kerian	Hill		Ardmore	PA

Lana	Hill		Pocono Pines	PA
Linda	Hill		Schwenksville	PA
Luke	Hill		Blairsville	PA
Maurice	Hill		Philadelphia	PA
Mike	Hill		Harrisburg	PA
Renea	Hill		Philadelphia	PA
Samara	Hill		Philadelphia	PA
Wardell	Hill		Bethlehem	PA
Frank	Hillary		State College	PA
Barry	Hillegass		Manns Choice	PA
Mark	Hillman		Wayne	PA
Thomas	Hillman		Philadelphia	PA
Elaine	Hills		Oreland	PA
Alan	Hillyard		Tidioute	PA
Kevin	Hilt		Industry	PA
Sandra	Hilt		Langhorne	PA
Cortasia	Hilton		Sharon	PA
Herbert	Hinderliter		Elderton	PA
Juan carlos	Hinds		Reading	PA
Judy	Hinds		Kennett Square	PA
Ricardo	Hinds		Philadelphia	PA
Amy	Hines		Phoenixville	PA
John	Hines	Shell Oil Company	Palmyra	PA
victor	Hines		Norristown	PA
Estelle	Hinkle		Harleysville	PA
Juawana	Hinson		Philadelphia	PA
Rason	Hinton		Philadelphia	PA
H.	Hinzman		Shippenville	PA
Spomenka	Hionis		Upper Darby	PA
Peter	Hirsch		Bala Cynwyd	PA
Kathleen	Hirst		Philadelphia	PA
Elizabeth	Hirt		Coopersburg	PA
Sharon	Hirth		Philadelphia	PA
Amanda	Hish		Philadelphia	PA
Cindy	Hissick		Harrisburg	PA
Therese	Hitt		Ambridge	PA
Matthew	Hoag		Oreland	PA
John	Hoback		East Stroudsburg	PA
Kimberly	Hobbs		New Providence	PA
Zachary	Hober		Plymouth Meeting	PA
Jeffrey	Hoch		Wexford	PA
Harry	Hochheiser		Pittsburgh	PA
Jason	Hochreiter		Pittsburgh	PA
Evelyn	Hockenbroch		Richfield	PA
Matthew	Hockensmith		Summerhill	PA
Ty	Hockin		Bethlehem	PA
Anne	Hodapp		Pitcairn	PA

Marquita	Hodges		Philadelphia	PA
Zachary	Hodges		Johnstown	PA
Robert	Hodies		West Chester	PA
Mary	Hodson		Grove City	PA
Lisa Jean	Hoefner		Ephrata	PA
Michelle	Hoff		Allentown	PA
Heather	Hoff*	Mothers for Nuclear	San Luis Obispo	CA
Ana	Hoffman	Air Program Engagement, CREATE Lab	Pittsburgh	PA
Bruce	Hoffman		*Submitted via email*	PA
Elisabeth	Hoffman		Lancaster	PA
Jennifer	Hoffman		Harrisburg	PA
Karan Michelle	Hoffman		Bala Cynwyd	PA
Matt	Hoffman		Holland	PA
Ryan	Hoffman		Blue Bell	PA
Sharon	Hoffman		Pittsburgh	PA
Wayne	Hoffman		Fairless Hills	PA
Alisha	Hoffman-Mirilovich		Mountain Top	PA
Anna	Hoffmaster		New Boston	PA
Daryln	Hoffstot		Ligonier	PA
Janice	Hofmann		Slatington	PA
Barbara	Hogan		Landenberg	PA
Betty	Hogan		Philadelphia	PA
Shawn	Hogan		Philadelphia	PA
Dawn	Hogg		Freeport	PA
Donald	Hogg		Freeport	PA
Eileen	Hoggard		Philadelphia	PA
Tim	Hogue		Davidsville	PA
Gabriel	Hohag*		Philadelphia	PA
James	Hohmann		Langhorne	PA
Charles	Hojdus		Philadelphia	PA
Steven	Hoke		Harrisburg	PA
Kim	Holbrook		Birdsboro	PA
Eli	Holden		King of Prussia	PA
Christine	Holder		Erie	PA
Marcia	Hole		Radnor	PA
Gale	Holger Hansen		Newtown Square	PA
Christe	Holland		Philadelphia	PA
Dianna	Holland		Philadelphia	PA
Tracey	Holland		Harrisburg	PA
Andrew	Hollander		Hadley	MA
Roger	Hollander		Sewickley	PA
Gregory	Hollanf		Scranton	PA
Cindy	Hollenbaugh		Tarentum	PA
Fonda	Hollenbaugh		Pittsburgh	PA

Marian	Holleran		West Mifflin	PA
Tammy	Holleran		North Huntingdon	PA
Allison	Holliday		Bethlehem	PA
Anthony	Hollinger		York	PA
Orion	Hollings		Pittsburgh	PA
Jill	Hollingshead		Gibsonia	PA
Caril	Hollis		Mechanicsburg	PA
Joanna	Hollis		Wyomissing	PA
Jane	Hollister		Erie	PA
Donna	Holloway		Kennett Square	PA
Payton	Hollway		Newtown Square	PA
Rhonda	Holly		Glenmoore	PA
Larry	Holman		Philadelphia	PA
John	Holmberg		Hatfield	PA
Felicia	Holmes		Philadelphia	PA
Jennifer	Holmes		Philadelphia	PA
Matthew	Holmes		Hummelstown	PA
Shakia	Holmes		Philadelphia	PA
Angela	Holos		Coatesville	PA
Catherine	Holt	League of Women Voters of Clarion County	Clarion	PA
Chris	Holt		Stoystown	PA
Darrell	Holt		Elkins Park	PA
Debbie	Holt		Elkins Park	PA
Linda	Holt		Newmanstown	PA
Merrill	Holt		Pittsburgh	PA
Sonya	Holt		Philadelphia	PA
Jayne	Holtman		Philadelphia	PA
Dorothy	Holton		Reading	PA
Alicia	Holtry		Shippensburg	PA
Arthur	Holtz		Berwyn	PA
Harold	Holtzinger		York	PA
Alison	Holtzman		Swiftwater	PA
Marguerite	Holz		Villa Maria	PA
David	Holzer		Scenery Hill	PA
Frances	Homer		*Submitted via email*	PA
Shelly	Homer		Plymouth Meeting	PA
Kerri	Homerick		Scranton	PA
Jason	Honse		Greensburg	PA
Nick	Honyak		Philadelphia	PA
Darrell	Hoober		Ronks	PA
Kelly	Hood		Shickshinny	PA
Kim	Hood		Upper Black Eddy	PA
Nick	Hood		Clemmons	NC
Thomas	Hood		Ashland	PA
Nick	Hood*		Washington	PA

Debby	Hook		Shippensburg	PA
Jennifer	Hook		*Submitted via email*	PA
Mark	Hooker		Greensburg	PA
Charles	Hooper		Apollo	PA
Jonathan	Hooper		Camp Hill	PA
Nicole	Hooper		Pittsburgh	PA
Thomas	Hoopes		Newtown	PA
Brandon	Hoover		Mechanicsburg	PA
Brenda	Hoover		Allentown	PA
Gail	Hoover		State College	PA
Gregory	Hoover		Lemont	PA
Timothy E.	Hoover		Punxsutawney	PA
Wade	Hoover		Quakertown	PA
Mary	Hope		Harrisburg	PA
Phillip	Hope		New York	NY
Winifred Shaw	Hope		Chesterbrook	PA
Kaleema	Hopewell		Williamsport	PA
Anthony	Hopkins	Hub Co-Coordinator, Sunrise Movement Philadelphia	Philadelphia	PA
Chris	Hopkins		Jamison	PA
Lisa	Hopkins		Philadelphia	PA
Michael	Hopkins		Lewistown	PA
Mister	Hopkins		Harrisburg	PA
Phillip	Hopkins		Warminster	PA
Nancy	Hopko		Newtown Square	PA
Susan	Hoppe		Pittsburgh	PA
Denn s	Hopple		Milton	PA
Martin	Hopple		New Cumberland	PA
Deb	Horan		Springfield	PA
Olivia	Horgan		Pittsburgh	PA
Andy	Horn		Bangor	PA
Dan	Horn		Pittsburgh	PA
Donald	Horn		*Submitted via email*	PA
Paula	Horner		Kennett Square	PA
Jay	Horning		Ephrata	PA
Stacy	Hornstein		Bristol	PA
Shanon	Hornung		Waymart	PA
Jacqueline	Horocofsky		Upper Darby	PA
Janie	Horowitz		River Edge	NJ
Judy	Horowitz		Wynnewood	PA
Laura	Horowitz		Pittsburgh	PA
Keith	Horr		Philadelphia	PA
Robert	Horrell		New Florence	PA
Derek	Horsey		Philadelphia	PA

Emma	Horst-Martz	Pennsylvania Public Interest Research Group	Philadelphia	PA
Chris	Horwitz	Electrogrip Company	Pittsburgh	PA
Stanley	Horwitz		Philadelphia	PA
Stephen	Horyon		Ephrata	PA
Loretta	Hosack		Ford City	PA
Val	Hoski		York Springs	PA
William Benton	Hoskins		Lewisburg	PA
Jennifer	Hotaling		Philadelphia	PA
Joe	Houde		Vista	CA
Chelsea	Houenou		Pittsburgh	PA
Brian	Houghtaling		Wellsboro	PA
Annalise	Houghton		Erwinna	PA
Clarence	House		Reading	PA
Chadd	Houser		Penn Run	PA
Katie	Houser		Pittsburgh	PA
Tammy	Housholder		Coral	PA
Charmaine	Houston		Philadelphia	PA
Jane	Hovde		Haverford	PA
Katherine	Hovde		Philadelphia	PA
Benjamin	Hover	Council President, Lansdowne Borough Council	Lansdowne	PA
Camille	Howard		Philadelphia	PA
Connie	Howard		Montoursville	PA
Danielle	Howard		Philadelphia	PA
Ieasha	Howard		Philadelphia	PA
Jessica	Howard		Philadelphia	PA
Lerselle	Howard		Bristol	PA
Mary	Howard		Pittsburgh	PA
Nancy	Howard		Lewis Run	PA
Rashida	Howard		Pittsburgh	PA
Veronica	Howardfunchez		Philadelphia	PA
Velvet	Howard-Reed		Philadelphia	PA
Kathleen	Howe		Saylorsburg	PA
David	Howell	Westinghouse Electric Company	Cranberry Township	PA
Keith	Howell		Wyncote	PA
Pat	Howell		Fairview	PA
Shaliesa	Howell		Philadelphia	PA
Sandra	Howze		Kennett Square	PA
Justin	Hoxter		Glenmoore	PA
Robin	Hoy		Newtown	PA
Michael	Hoysock		New Philadelphia	PA
Nancy	Hoyt		Southampton	PA
Kathy	Hrabovsky		Mount Lebanon	PA
John	Hranitz	Biologist, Professor, Bloomsburg Univ. of PA	Bloomsburg	PA

Ben	Hreha		Phoenixville	PA
David	Hrobuchak		Harrisburg	PA
Luan	Hua		Philadelphia	PA
Lynda	Hubbell		Philadelphia	PA
Shara Simmons	Hubble		State College	PA
Carol	Huber		Erie	PA
Darren	Huber		Butler	PA
James	Huber	Council person, Bloomsburg	Bloomsburg	PA
William	Huber		Tobyhanna	PA
Michael	Hubert		Drexel Hill	PA
Warren	Hudak		New Cumberland	PA
Margaret	Hudgings		West Chester	PA
Bonnie	Hudson		Clearfield	PA
Keenan	Hudson		Dover	PA
Vanlon	Hudson		Lancaster	PA
Ricardo	Huertas		Philadelphia	PA
Jessica	Huether		Philadelphia	PA
Erich	Huff		Pittsburgh	PA
Richard	Huff		Johnstown	PA
Riley	Huff		Mount Holly Springs	PA
Katie	Huffling	Exec Dir, Alliance of Nurses for Healthy Environment	Mount Rainer	MD
James	Hufford		Bloomsburg	PA
William	Hufford		Latrobe	PA
Stephanie	Hug		West Chester	PA
George and Alice	Huggins		Indiana	PA
Laretha	Huggins		Wilkes-Barre	PA
Gerald Mc	Hugh		Chambersburg	PA
Bobby	Hughes	Executive Director, EPCAMR	Ashley	PA
Carolyn	Hughes		Hanover	PA
Cyncere	Hughes		Wilkes-Barre	PA
David	Hughes	President, Citizen Power, Inc.	Pittsburgh	PA
Jan	Hughes		Reading	PA
Janine	Hughes		Canonsburg	PA
John	Hughes	Boilermakers Local 154	Pittsburgh	PA
Judith	Hughes		Derry	PA
Malena	Hughes		Pittsburgh	PA
Mary	Hughes		Doylestown	PA
Merritt	Hughes		Doylestown	PA
Michelle	Hughes		Philadelphia	PA
Payton	Hughes		Gilbertsville	PA
Peter	Hughes	President,Valley Forge Trout Unlimited	Chester Springs	PA
Ravi	Hughes		Pittsburgh	PA
Roger	Hughes		Robesonia	PA
Dianne	Hughes-Habyan		York	PA

Neil	Huizenga		Havertown	PA
Diana	Hulboy		Philadelphia	PA
Lacey	Hules		Nanticoke	PA
Chad	Hull		Latrobe	PA
Donna	Hull		West Chester	PA
Mike	Hull		Windber	PA
Alan	Hulshart		Palmyra	PA
William	Humbert		Philadelphia	PA
Bonnie	Hume		Cambridge Springs	PA
Patrick	Hume		Abington	PA
Georgia	Humphrey		Bethlehem	PA
J.R.	Humphrey		Bellefonte	PA
Lydia	Hunn		Philadelphia	PA
Genevieve	Hunsinger		Scranton	PA
Jen	Hunsinger	Millville Friends Meeting (Quakers)	Millville	PA
Andrea	Hunt		Washington	PA
Ann	Hunt		Pittsburgh	PA
Douglas	Hunt		Haverford	PA
Henry	Hunt		Stewartstown	PA
Jno	Hunt		Pittsburgh	PA
Kristine	Hunt		Pittsburgh	PA
Winston	Hunte		Philadelphia	PA
Gene	Hunter		Bethlehem	PA
John	Hunter		Gilbertsville	PA
Jozette	Hunter		Philadelphia	PA
Sharon	Hunter		North Wales	PA
Dana	Hunting		Newtown	PA
Celeste	Hupert		Pittsburgh	PA
Marian	Huq		Pittsburgh	PA
Charles	Hurd		Pittsburgh	PA
Lynne	Hurd		Hanover	PA
Colin	Hurley		Erie	PA
Patrick	Hurley		Royersford	PA
Karen	Hurst		Stroudsburg	PA
Shameaka	Hurst		Philadelphia	PA
Ricki	Hurwitz		Harrisburg	PA
Diane	Husic		Kunkletown	PA
Jack	Hutchens		Temecula	CA
Rebecca	Hutcherson		St Marys	PA
Joy	Hutchinson		Coraopolis	PA
Macklyn	Hutchison		Monterey	CA
Andy	Huynh		Phoenixville	PA
Jonathan	Huynh		Norristown	PA
Steven	Hvozdovich	Pennsylvania Campaigns DirectorClean, Water Action	Pittsburgh	PA
Ed	Hyde	Citizens Climate Initiative	Pittsburgh	PA
Jane	Hyland		Pittsburgh	PA

Karyn	Hyland		Pittsburgh	PA
Vincent	Hymonsr		Reading	PA
Kathryn	Hynes		State College	PA
Howard	I.		Philadelphia	PA
Ima	I.		Philadelphia	PA
Tyler	I.		Philadelphia	PA
Nancy	Iannuzzelli		Boothwyn	PA
Anita	Iasiello		Walnutport	PA
Louis	Iatarola		Philadelphia	PA
Carmen	Iglesias		Reading	PA
Victor	Ignaczak		Kittanning	PA
Paul	Ihlenfeld		Mantua	NJ
Paul	Iii		King of Prussia	PA
Jeffrey	Iliff		Sewickley	PA
Jeffrey	Imboden		Enola	PA
Patrick	Imbrogno	GEO-COM LLC	Moon Township	PA
Dave	Imgrund		Carlisle	PA
Janet	Imhof		Gibsonia	PA
Donald	Imler		Duncansville	PA
Jim	Ingalzo		Hershey	PA
Donna	Ingenito		Mount Joy	PA
Mikala	Ingersoll		Philadelphia	PA
Denise	Ingoe		Stewartstown	PA
Rebecca	Ingram		Harrisburg	PA
Ronald	Inskeep		Gwynedd	PA
Judith	Inskeep*		Gwynedd	PA
Dora	Ion		Pittsburgh	PA
Cynthia	Ipanag		Marcus Hook	PA
Suzette	Ippolito		Pittsburgh	PA
Bridget	Irons		Philadelphia	PA
Rachel	Irvin		Easton	PA
Bethany	Irwin		Pittsburgh	PA
Christopher	Irwin		North Versailles	PA
John	Irwin		Lancaster	PA
Opal	Irwin		New Cumberland	PA
Sheldon	Isaac		Philadelphia	PA
Aisha	Iseley		Philadelphia	PA
Mrs. Tom	Isett		Reading	PA
Sean	Isgan		Somerset	PA
Dina	Ishler		Lititz	PA
Ashley	Ishmael		Philadelphia	PA
Hareem	Ismail		Downingtown	PA
Brittany	Isom		Philadelphia	PA
Debra	Istvanik-Strotman		Monongahela	PA
Isaiah Le	Istya		Monroe Township	PA
Steven	Iszauk		McDonald	PA
Paulette	Ivanchan		Ambridge	PA

Boyan	Ivanov		Coatesville	PA
Jennifer	Ivers		Forty Fort	PA
Tim	Ivers		Wexford	PA
Erika	Iyengar		Emmaus	PA
Kanak	Iyer		Carnegie	PA
Manisha	Iyer		Pittsburgh	PA
Jo Ann	Jablon		Glenside	PA
Timothy	Jablon		Hermitage	PA
Kenneth	Jac		Philadelphia	PA
Maliqa	Jack		Pottstown	PA
Laura	Jacko		Verona	PA
Alvin	Jackson		Philadelphia	PA
Anne	Jackson		Birdsboro	PA
Dana	Jackson		Philadelphia	PA
Darryl	Jackson		Philadelphia	PA
David	Jackson		Wellsboro	PA
Dawn Sedora	Jackson		Lake Ariel	PA
Faheem	Jackson		Philadelphia	PA
Floyd	Jackson		Philadelphia	PA
Glennie	Jackson		Pittsburgh	PA
Gregory	Jackson		Philadelphia	PA
Javon	Jackson		Philadelphia	PA
Kopia	Jackson		Pittsburgh	PA
Lashon	Jackson		Philadelphia	PA
Lavon	Jackson		Philadelphia	PA
Redding	Jackson		Millvale	PA
Richard	Jackson		Philadelphia	PA
Sheldon	Jackson		Philadelphia	PA
Vanessa	Jackson		Philadelphia	PA
Vickie	Jackson		Harrisburg	PA
Zack	Jackson		Reading	PA
Patricia Flowers	Jacobina		Ligonier	PA
Betty Jo	Jacobs		Chester	PA
David	Jacobs		Pittsburgh	PA
Deborah	Jacobs		Philadelphia	PA
Joe	Jacobs		Monaca	PA
Joel	Jacobs		Carlisle	PA
Lisa	Jacobs		Philadelphia	PA
Martina	Jacobs		Pittsburgh	PA
Maura	Jacobs		Pittsburgh	PA
Regina	Jacobs		Brookhaven	PA
Robert	Jacobs		Philadelphia	PA
Jakes	Jacobson		*Submitted via email*	PA
Rachel	Jacobson		Philadelphia	PA
Cassandra	Jacobus		Lancaster	PA
Rebecca	Jacoby		Philadelphia	PA

Devi	Jagadesan		Wyomissing	PA
Kelly	Jagadesan		Reading	PA
Meera	Jagadesan		Wyomissing	PA
Rajavel	Jagadesan		Wyomissing	PA
Divya	Jain	Co-President, Penn State Eco Action Club	State college	PA
Cassandra	James		Philadelphia	PA
Clifford	James		Philadelphia	PA
Deborah	James		Darby	PA
Kent	James		Washington	PA
Kevin	James		Philadelphia	PA
Mary	James		Lewisburg	PA
Mike	James		Haverford	PA
Robert	James		Ligonier	PA
Sharon	James		Archbald	PA
Vanita	James		Philadelphia	PA
Clare	Jameson		Wayne	PA
Peter	Jameson		Ligonier	PA
Linda	Jamison		Philadelphia	PA
Tammy	Jamison		Dilltown	PA
Ember	Jandebeur		Harrisburg	PA
Joseph	Jandrasits		Canonsburg	PA
Candice	Janeda		Coraopolis	PA
Raquel	Janes		Philadelphia	PA
Raquel	Janes		Walla Walla	WA
Kennedy	Janet		Newtown Square	PA
Dan	Janicik		Irwin	PA
Allen	Janis		Monroeville	PA
Sally	Janis		Pittsburgh	PA
Laura	Janocko		Pittsburgh	PA
Kirk	Jansa		Pittsburgh	PA
Onnolee	Jansen		Carlisle	PA
Peter	Jansson	Associate Prof. / Electrical Engineering, Bucknell	Lewisburg	PA
Jill	Jansto		Beaver	PA
Ellen	Jantzen		Phoenixville	PA
Robert	Janusko		Bethlehem	PA
Corinne	Jaques		Philadelphia	PA
Jana	Jaran		Downingtown	PA
Dieve	Jardine		Philadelphia	PA
John	Jardine, Jr.		Wynnewood	PA
Barb	Jarmoska*	Responsible Drilling Alliance	Montoursville	PA
Sally	Jarvis		Wayne	PA
Edward	Jasiewicz		Pittsburgh	PA
Jonathan	Jaso	Councilmember, Sharpsburg Borough	Pittsburgh	PA
Robert	Jasper		York	PA

Saja	Jawara		Philadelphia	PA
Marcia	Jaworowski		Avella	PA
Emma	Jaworski		Philadelphia	PA
Roger	Jayne		Newportville	PA
Esteker	Jeanot		Philadelphia	PA
Felicity	Jeans		Kimberton	PA
Peter	Jefferson		Allison Park	PA
Robin	Jefferson		Darby	PA
Wendell	Jefferson		Philadelphia	PA
Sally	Jegier		Holland	PA
Robert	Jehn		Cochranton	PA
Tom	Jenik*		Swarthmore	PA
Chaka	Jenkins		Philadelphia	PA
Daphne	Jenkins		Philadelphia	PA
Dawn	Jenkins		Pittsburgh	PA
Geraldine	Jenkins		Philadelphia	PA
Raymond	Jenkins		Philadelphia	PA
Sandra	Jenkins		Elkins Park	PA
Shayikeena	Jenkins		Philadelphia	PA
Vicki	Jenkins		Philadelphia	PA
Dave	Jenkins*	Conservatives for Responsible Stewardship	Oakton	VA
Robert	Jenks		Landisburg	PA
Belinda	Jennings		Philadelphia	PA
Anne	Jensen		Philadelphia	PA
Barbara	Jensen		Cassville	PA
Pamela	Jensen		Wayne	PA
Helen	Jeral		Trevose	PA
Fran	Jermain		Stroudsburg	PA
Diane	Jernigan		Pittsburgh	PA
Elliot	Jerud		Philadelphia	PA
Dylan	Jervis		Erie	PA
Herbert	Jeschke		Bala Cynwyd	PA
James	Jessick		Elysburg	PA
Nicholas	Jessick		Elysburg	PA
Jane	Jesteadt		Valencia	PA
Donald	Jeter		Midland	PA
Linda	Jeub		Pittsburgh	PA
Xinkai	Jiang		Fairview	PA
Frances	Jimenez		Columbia	PA
Maria	Jimenez		Pittsburgh	PA
William	Johnakin		Reading	PA
Barbara	Johns		Harrisburg	PA
Susan	Johns		Dauphin	PA
Aaron	Johnson		Philadelphia	PA
Alexander	Johnson		Dauphin	PA
Andrew	Johnson		Gibsonia	PA

Anna	Johnson		Pittsburgh	PA
Anthony	Johnson		Abington	PA
Anthony	Johnson		Philadelphia	PA
Armando	Johnson		Pottstown	PA
Barbara	Johnson		Lansdowne	PA
Candace	Johnson		Philadelphia	PA
Carol	Johnson		Philadelphia	PA
Christopher	Johnson		Allentown	PA
Clifford	Johnson		Pittsburgh	PA
Cordelia	Johnson		Coatesville	PA
Darlene	Johnson		York	PA
Dawn	Johnson		Pottstown	PA
Dorise	Johnson		Philadelphia	PA
Douglas	Johnson		Cranberry Township	PA
Edward	Johnson		Pittsburgh	PA
Gamal	Johnson		Philadelphia	PA
Gary	Johnson		Philadelphia	PA
Geraldine	Johnson		Philadelphia	PA
Gilda	Johnson		Philadelphia	PA
Heather	Johnson		Warren	PA
Henry	Johnson		Philadelphia	PA
Henry	Johnson		Philadelphia	PA
Janice	Johnson		Sayre	PA
Jean	Johnson		Harrisburg	PA
Jeanne	Johnson	Fogle & Johnson Inc	Berlin	PA
Jerry	Johnson		Philadelphia	PA
Jesse	Johnson		Philadelphia	PA
Johnny	Johnson		Philadelphia	PA
Judith	Johnson		Philadelphia	PA
Julian	Johnson		Philadelphia	PA
Julie	Johnson		Pittsburgh	PA
Julie	Johnson		Trappe	PA
Kathleen	Johnson		Bloomsburg	PA
Keisha	Johnson		Philadelphia	PA
Kelly	Johnson		Pine Grove Mills	PA
Krys	Johnson		Philadelphia	PA
Kyle	Johnson		Philadelphia	PA
Lakisha	Johnson		Philadelphia	PA
Latasha	Johnson		Chester	PA
Laura	Johnson		Ashley	PA
Lisa	Johnson		Philadelphia	PA
Mark	Johnson		Coraopolis	PA
Mary	Johnson		Philadelphia	PA
Melvin	Johnson		Trout Run	PA
Michael	Johnson		Brookhaven	PA
Michele	Johnson		Altoona	PA

Nora	Johnson		Pittsburgh	PA
Patsy Ann	Johnson		Butler	PA
Patti	Johnson		Perkasie	PA
Paul	Johnson		Havertown	PA
Paul	Johnson		Philadelphia	PA
Paula	Johnson		Philadelphia	PA
Rachel	Johnson		Philadelphia	PA
Ricardo	Johnson		Philadelphia	PA
Richard	Johnson		Curwensville	PA
Rita	Johnson		Lake City	PA
Robert	Johnson		Boyertown	PA
Robert	Johnson		Philadelphia	PA
Shari	Johnson		Wyncote	PA
Sherwood	Johnson		Gibsonia	PA
Twanda	Johnson		Pittsburgh	PA
Velverlee	Johnson		Philadelphia	PA
Yvonne	Johnson		Dickson City	PA
Morgan A.	Johnson, Esq.	Waterkeepers Chesapeake	Takoma Park	MD
Christine	Johnston		Greensburg	PA
Christopher	Johnston		Oakmont	PA
Clifford	Johnston		Morrisdale	PA
Grace	Johnston		Moon Township	PA
Hilarie	Johnston		Gladwyne	PA
Judith	Johnston		Fairview	PA
Gregory	Johnstone		Cheswick	PA
Suze	Johnstone		Pittsburgh	PA
Harry	Jointer		East Stroudsburg	PA
George	Jolley		Franklin	PA
Albert	Jones		Philadelphia	PA
Alexis	Jones		Phoenixville	PA
Alford	Jones		Upper Darby	PA
Barbara	Jones		Wilkes-Barre	PA
Brian	Jones		Sycamore	PA
Carol	Jones		Quarryville	PA
Charnelle	Jones		Upper Darby	PA
Clarence	Jones		Philadelphia	PA
Claudette	Jones		Philadelphia	PA
David	Jones		Midland	PA
David	Jones		Brackney	PA
Diane	Jones		Philadelphia	PA
Donna	Jones		York	PA
Elijah	Jones		Philadelphia	PA
Elizabeth	Jones		East Stroudsburg	PA
Elvin	Jones		Philadelphia	PA
Frank	Jones		Washington	PA
Glenn	Jones		Bethel park	PA
Gregory	Jones		Moon Township	PA

Gregory	Jones		Philadelphia	PA
Hannah	Jones		Pittsburgh	PA
Jennifer	Jones		Willow Street	PA
Keith	Jones		Dillsburg	PA
Keith	Jones		Philadelphia	PA
Leslie	Jones		West Mifflin	PA
Linda	Jones		North Wales	PA
Linda	Jones		Tioga	PA
Matthew	Jones		Springfield	PA
Melody	Jones		Reading	PA
Myra	Jones		Philadelphia	PA
Owen	Jones		Philadelphia	PA
Patricia	Jones		Philadelphia	PA
Paul	Jones		Philadelphia	PA
Peggy	Jones		Pottstown	PA
Renee	Jones		Clairton	PA
Resa	Jones	Chair and Associate Prof.,College of Public Health	Philadelphia	PA
Ricardo	Jones		Philadelphia	PA
Richard	Jones		State College	PA
Rodney	Jones		Narvon	PA
Sarita	Jones		Philadelphia	PA
Shakeena	Jones		Philadelphia	PA
Shirley	Jones		Philadelphia	PA
Sonya	Jones		Philadelphia	PA
Susan	Jones		Carnegie	PA
Thomas	Jones		Pittsburgh	PA
Tuairay	Jones		Philadelphia	PA
Veronica	Jones		Pittsburgh	PA
Walter	Jones		Marcus Hook	PA
Kimyatta	Jones-Cooper		Philadelphia	PA
Deserie	JonesWright		Philadelphia	PA
John	Jonik		Philadelphia	PA
Brian	Joos		Bethel Park	PA
Jessica	Jopp		*Submitted via email*	PA
Donald	Jordan		Shelocta	PA
Robert T.	Jordan		Cresco	PA
Sandy	Jordan		Pittsburgh	PA
Elizabeth	Joseph		Elysburg	PA
Kevin	Joseph	Joseph Maintenance Service	Blairsville	PA
Nancy	Joseph		Glenmoore	PA
Thomas	Josephi		Pittsburgh	PA
Ira	Josephs		Media	PA
Lawrence	Josephs		Jeannette	PA
Erin	Joyce		Apollo	PA
Mike	Joyce		Philadelphia	PA

Evelyn	Juanacio		Philadelphia	PA
Julissa	Juck		Pottstown	PA
Ann	Judson		Mechanicsburg	PA
David	Judy		Indiana	PA
Karol	Judy		Clinton	PA
Kasey	Jueds		Philadelphia	PA
Katherine	Jueds		*Submitted via email*	PA
Rosie	Jules		Upper Darby	PA
Pamela	Jumet		Albrightsville	PA
Musa	Jumu		Primos	PA
Louis	Juran		Nazareth	PA
Lauren	Jusek		Zelienople	PA
Nancy	Juskowich		Waynesburg	PA
Cathy	K.		Lancaster	PA
Dave	K.		Pittston	PA
Melissa	K.		South Heights	PA
Ruth	K.		Lincoln University	PA
Ruth	K.		Shavertown	PA
Peter	Kabatek		Harrisburg	PA
Emily	Kabeshita		St Charles	IL
Karina	Kacala		Merion Station	NM
Lori	Kachmar		Reading	PA
Michael	Kadas		Reading	PA
Sam	Kaefer		McKeesport	PA
Nikolaus	Kaehler		Wrightsville	PA
Kiara	Kahan		Lansdowne	PA
Laura	Kahl		Monongahela	PA
Don	Kahle		Shippenville	PA
Patrick	Kahle		Sligo	PA
Tom	Kahler		Ephrata	PA
Sidney	Kahn	Board member,Physicians for Social Responsibility	Philadelphia	PA
Sidney	Kahn		Wyncote	PA
Lauren	Kahn*	Ecopsychology Alliance of Philadelphia	Philadelphia	PA
Luciana	Kairns		Philadelphia	PA
Melinda Tatum	Kaiser		Wyndmoor	PA
Andrew	Kalan		Bryn Mawr	PA
Ashley	Kalan		Bryn Mawr	PA
Michael	Kalbach		Reading	PA
Marlene	Kalick		Philadelphia	PA
Susan	Kalinowski		Wyndmoor	PA
Amy	Kalish		Erie	PA
Paul	Kalka		Binghamton	NY
Rebekah	Kallatch		Pennsburg	PA
Neville	Kallenbach		Philadelphia	PA

Mary Jane	Kalnas		Allentown	PA
Derek	Kalp		State College	PA
Hillis	Kaltenbaugh		Renfrew	PA
Brian	Kaltreider		Spring Grove	PA
Mohammad	Kamal		Philadelphia	PA
Tom	Kamarck		Pittsburgh	PA
Stephanie	Kaminskas		Imperial	PA
Marino	Kaminski		Exton	PA
Susan	Kaminski		Sewickley	PA
Chad	Kaminsky		Johnstown	PA
Jean	Kammer		Hawley	PA
John	Kammer		Aspers	PA
Kai	Kamppari		Ambler	PA
Shobhana	Kanal		Bala Cynwyd	PA
Kristen	Kanaske		White Haven	PA
Christine	Kane		Lehighton	PA
Dylan	Kane		Essington	PA
Heather	Kane		Pittsburgh	PA
Kim	Kane		Lititz	PA
Mike	Kane		Johnstown	PA
Sara	Kane		Blandburg	PA
Micah	Kane Hanson	Green Building United	Philadelphia	PA
Carol	Kangas		Strafford	PA
Jallah	Kanneh		Philadelphia	PA
Ethan	Kannel		Yeadon	PA
Jared	Kannel		Philadelphia	PA
David	Kannerstein		Lafayette Hill	PA
Karen	Kantz		Bethlehem	PA
Richard	Kaplan		Blue Bell	PA
Rochelle	Kaplan		Fogelsville	PA
Sally	Kapner		St Davids	PA
Kathleen	Kapp		West Chester	PA
Adam	Kapp*		West Chester	PA
Audrey	Kappel		Pittsburgh	PA
Mitchell	Karaica	IBEW Local 29	Springdale	PA
Marc	Karasek		Media	PA
James	Karayanis		Stroudsburg	PA
Jill	Karkosak		Philadelphia	PA
Debra	Karl		Glenside	PA
Lucy	Karlsson		Berwyn	PA
Meghan	Karn		Pittsburgh	PA
Andrew	Karns		Zelienople	PA
Eric	Karolak		Pittsburgh	PA
Zigmund	Karpa		Birdsboro	PA
Molly	Karpin		Philadelphia	PA
Elizabeth	Karpinski		Norristown	PA
Jennifer	Karras		Reading	PA

Marcia	Karuba		Pittsburgh	PA
Marylou	Kasa		Cranberry Township	PA
Debra	Kaschak		Drums	PA
Mark	Kaschak		Drums	PA
Pari	Kasotia	Mid-Atlantic Director, Vote Solar	Oakland	CA
Andrea	Kasper		Havertown	PA
Duane	Kasprzyk		White Oak	PA
Lloyd	Kass	Willdan Group	Newark	NJ
George	Kasten		Bradfordwoods	PA
Colleen	Katen		Philadelphia	PA
Andrew	Katronick		Plymouth Meeting	PA
Marlene	Katz		Philadelphia	PA
Deborah	Katzman		Camp Hill	PA
Eleanor	Kaubner		Allentown	PA
Bonnie	Kauffman		Gladwyne	PA
Gary	Kauffman		Biglerville	PA
Richard	Kauffman		Seven Valleys	PA
Tim	Kauffman		Lancaster	PA
Cindy	Kaufman		Seward	PA
David	Kaufman		Bartonsville	PA
Gerald	Kaufman		Philadelphia	PA
Sandy	Kavoyianni		Athens	PA
Trudy	Kay		Pittston	PA
Julie	Kaye		Emmaus	PA
Va	Kazan		Warrington	PA
Myra	Kazanjian		Bethel Park	PA
Victoria	Kazmerski		Erie	PA
Gloria	Kearney		Philadelphia	PA
Terrance	Kearney		Breinigsville	PA
Kimberly	Kearse		Philadelphia	PA
Madilyn	Keaton	Pennsylvania Utility Law Project	Harrisburg	PA
Robert	Keck		Annville	PA
Vernon David	Keck		Latrobe	PA
Charles	Kedra		Downingtown	PA
Ann	Keech		Haverford	PA
Elizabeth	Keech		Wynnewood	PA
Marjorie	Keefe		Rockledge	PA
Lawrence	Keehner		York	PA
Jonathan	Keeler		Hummelstown	PA
Richard	Keeler		Bensalem	PA
Mark	Keels		Philadelphia	PA
James	Keenan		Lansdowne	PA
Ron	Keeney		Warren	PA
Kay	Keenze		Philadelphia	PA
Nicole	Keer		Norristown	PA
Philip	Keese		Philadelphia	PA

Melissa	Kefauver		Delta	PA
T.	Kehagias		Damascus	PA
Linda	Kehew		Winterville	NC
Linda	Keiffer		Manheim	PA
Darya	Keiko		Langhorne	PA
Mary	Keil		Bloomsburg	PA
Jennifer	Keim		Reading	PA
Karen	Keim		Gray	PA
Robert	Keiter		State College	PA
David	Keith		Marion Center	PA
R. Michael	Keith	Indiana County Board of Commissioners	Indiana	PA
Mary	Kelchak		Monroeville	PA
Jake	Kelk		State College	PA
Melanie	Kellam		Philadelphia	PA
Joanne	Kellar		Springfield	PA
Deirdre	Keller		Pittsburgh	PA
Dennis	Keller		Middletown	PA
Jeri	Keller		Harrisburg	PA
Joline	Keller		Reading	PA
Kevin	Keller		Allentown	PA
LeRoy	Keller		Williamsport	PA
Rhonda	Keller		Willow Street	PA
Richard	Keller	Teamsters Local 110	Ebensburg	PA
Conor	Kelley		Leetsdale	PA
David	Kelley		Lewisburg	PA
Sandra	Kelley		East Stroudsburg	PA
Amber	Kelly		Pittsburgh	PA
Daniel	Kelly		Mount Carmel	PA
Donald	Kelly		Lancaster	PA
Donna	Kelly		Plymouth Meeting	PA
Dorothea	Kelly		Doylestown	PA
Edith	Kelly		McDonald	PA
Kim	Kelly		Milford	PA
Sye	Kelly		South Park	PA
Timothy	Kelly		Sewickley	PA
Maya	Kelty	3Degrees Group, Inc.	San Francisco	CA
Ed	Kemp		Irwin	PA
Kristin	Kemp		Chester Springs	PA
Kyle	Kemp		Reading	PA
Marty	Kemp		Northern Cambria	PA
Keith	Kemper		Royersford	PA
Karen	Kenderdine		Pine Grove	PA
Dennis	Keneavy		Glenshaw	PA
Jennifer	Kenenitz		Schuylkill Haven	PA
Nancy	Kenepp		Wynnewood	PA
Adam	Kennedy		York	PA

David	Kennedy		Middletown	PA
Granville	Kennedy		Pittsburgh	PA
Jennifer	Kennedy		Philadelphia	PA
Lawrence	Kennedy		Doylestown	PA
Mary	Kennedy		Philadelphia	PA
Mary	Kennedy		State College	PA
Mary Carol	Kennedy	East Pittsburgh Borough Council President	Pittsburgh	PA
Kathleen	Kennel		Lititz	PA
Cherish	Kennelley		Indiana County	PA
Mark	Kennelley		Indiana County	PA
Carole	Kenney		King of Prussia	PA
Dave	Kenney		*Submitted via email*	PA
David	Kenosian		Berwyn	PA
Dianne	Kenosky		Mount Pocono	PA
Joseph	Kenosky		Mount Pocono	PA
Michael	Kenosky		Mount Pocono	PA
MaryBeth	Kensicki		Collegeville	PA
Kevin	Kent		Douglassville	PA
Joseph	Kerecman	Calpine Corp	Delta	PA
Dennis	Kergick		Frackville	PA
Debby	Kern		Kennett Square	PA
Mark	Kern		Elverson	PA
William	Kern	Executive Director, Countryside Conservancy	La Plume	PA
Mary	Kernan		Greensburg	PA
Ryan	Kerney		Gettysburg	PA
Dorothy	Kerns		Morton	PA
Chris	Kerr		Butler	PA
David	Kerr		Pipersville	PA
Aly	Kerrigqn		Philadelphia	PA
Tonia Lynn	Kersey		Philadelphia	PA
Lori	Kershner		Selinsgrove	PA
Luke	Kerstetter		Millerstown	PA
Boris	Kerzner		Philadelphia	PA
Jennifer	Kesler		McKeesport	PA
Allison	Kessler		Frederick	MD
Beverly	Kessler		York	PA
Debra	Kessler		Philadelphia	PA
Ellen	Kessler		Newtown	PA
Sharon	Kessler		Rochester	PA
Wayne	Kessler		Norristown	PA
Kimberly	Kessleski		Philadelphia	PA
Heather	Kester		Berwick	PA
Laura	Keth		Brookville	PA
Hannah	Ketner		Center Valley	PA

Robie	Ketner		Center Valley	PA
Lisa	Ketrick		Hummelstown	PA
Diane	Kett		Willow Grove	PA
Edward	Ketyer		Venetia	PA
Rhonda	Key		Erie	PA
Alice	Keyes		Cresco	PA
Donna	Keys		Philadelphia	PA
Jason	Keys		Gilbertsville	PA
William	Keyser		Berwyn	PA
Sanjeev	Khanna		Philadelphia	PA
Arundhati	Khanwalkar	AVK Counsel, PLLC	Allentown	PA
Nang	Khen		Philadelphia	PA
Mohammad	Kiani		Wynnewood	PA
David	Kichman		Elysburg	PA
Joyce	Kichman		Elysburg	PA
Ed	Kida		Pocono Lake	PA
Edward	Kida		East Stroudsburg	PA
Carolyn	Kidder		Chesterbrook	PA
Carol	Kiefer		Washington Crossing	PA
Marion	Kiefer		Pittsburgh	PA
Joe	Kiefner		Jenkintown	PA
Julie	Kiene		Merion Station	PA
Cecily	Kihn		Philadelphia	PA
Nancy	Kilgallon		Philadelphia	PA
Donna	Kilgore		Airville	PA
Brian	Killeen		Reading	PA
M.	Killinger		Carlisle	PA
Robin	Killon		New Oxford	PA
Elizabeth	Killough		Glenside	PA
Devon	Kim		Hanover	PA
Tom	Kimmel		Somerset	PA
Tanya	Kinder		McDonald	PA
Ian	Kindle	Chair,Easton Environmental Advisory Council	Easton	PA
Carolyn	King		Philadelphia	PA
Chardonnay	King		Pottstown	PA
Clarc	King		Philadelphia	PA
Diamond	King		Lancaster	PA
Eric	King		Philadelphia	PA
Gregory	King		Waynesburg	PA
Honey	King		Carmichaels	PA
Isaac	King		Philadelphia	PA
Jeanne	King		West Chester	PA
Jesse	King		Philadelphia	PA
Kelly	King		Mt Pleasant	PA
Kelly	King		Oreland	PA

Kimberly	King		Hanover	PA
Raymond	King		Eagleville	PA
Sara	King, Ph.D.		Indiana	PA
Kristy	Kingan		Lancaster	PA
Michael	Kingan		Canonsburg	PA
Douglas	Kingsbury		Philadelphia	PA
Judith	Kinman		Rutledge	PA
Dale	Kinney		Bala Cynwyd	PA
Laureen	Kinsey		Philadelphia	PA
Janis	Kinslow		Aston	PA
Margaret	Kinter		Blairsville	PA
Karen M.	Kintz	Armstrong County	Kittanning	PA
Jim	Kippen		Plymouth Meeting	PA
Anne	Kirby	Green Building United	Wilmington	DE
Connie	Kirby		Rockton	PA
John	Kirby		West Chester	PA
Sabrina	Kirby		Lewisburg	PA
Deb	Kirchdoerfer		West Chester	PA
Karen	Kirchdoerfer		*Submitted via email*	PA
Michael	Kirchner		Harrisburg	PA
Barton	Kirk		Pittsburgh	PA
Claudia	Kirk		Paradise	PA
Jenny	Kirk		California	PA
Karen	Kirk		Williamsport	PA
Sam	Kirk, Jr.	Armstrong School District	Kittanning	PA
Brad	Kirkmon		Lincoln University	PA
Shelley	Kirkpatrick		Gallitzin	PA
Don	Kirkwood		Ellwood City	PA
Cynthia	Kirsch		Pittsburgh	PA
Stephen	Kirsch		Emmaus	PA
Julie	Kirsh		Shrewsbury	NJ
Ralph	Kisberg	Responsible Drilling Alliance	Williamsport	PA
Allison	Kiser		Camp Hill	PA
Paul	Kiser		Pittsburgh	PA
Cynthia	Kishinchand		Philadelphia	PA
Ted	Kisiel		Erie	PA
Gary	Kislak		Indiana	PA
Joseph	Kiss	Kiss Electric	Croydon	PA
Robert	Kistler		Bechtelsville	PA
Lorraine	Kittner		Feasterville-Trevose	PA
Vanessa	Kitts		Mount Wolf	PA
Mary	Kizakavich		Lock Haven	PA
Kirk	Klasnick		Vandergrift	PA
Laurie	Klatscher		Pittsburgh	PA
Larry	Klauer		Hummelstown	PA

Valerie	Klauscher		Crescent	PA
Tracey	Kleber		Shillington	PA
Geni	Klein		Philadelphia	PA
Jane	Klein		Berwyn	PA
Joan	Klein		Gibsonia	PA
Kelyn	Klein		Elverson	PA
Tani	Klein		Carnegie	PA
Mary	Kleinbach		Mertztown	PA
Karl	Kleiner	Assoc. Professor of Biology, York College of Penn.	York	PA
Richard	Kleiser		Bethel Park	PA
Paul	Kleschick		Philadelphia	PA
Bobbie	Klimek		Johnstown	PA
Joanne	Kline		Glenolden	PA
Paula	Kline	Westtown Monthly Meeting (Quaker)	West Chester	PA
Sally	Kline		Mars	PA
Vicki	Kline		Munhall	PA
Tracey	Kline-Carey		Palmerton	PA
Robert	Klinedinst		Hanover	PA
Alexandra	Klinger		Glenside	PA
William And Nancy	Klink		Bloomsburg	PA
Mike	Kluczan		Pittsburgh	PA
Robert	Kmecak		Johnstown	PA
Christine	Knapp	City of Philadelphia	Philadelphia	PA
Susan	Knapp		Titusville	PA
Suzanne	Knapp		King of Prussia	PA
Theresa	Knapp		Towanda	PA
Katie	Knect		Coatesville	PA
William	Knellinger		Huntington Pike	PA
Hannah	Knerr		Hatfield	PA
Sheila	Knerr		Chalfont	PA
Dominique	Knight		Pittsburgh	PA
Kristy	Knight		Dallas	PA
Marcy	Knight		Philadelphia	PA
Mark	Knight		Saint Davids	PA
Michelle	Knight		Erie	PA
Russell	Knight		State College	PA
Tracy	Knisely		Windsor	PA
Jenifer	Knittel		Bristol	PA
Heather	Knizhnik		Philadelphia	PA
Nichelle	Knobloch		Spring Grove	PA
James	Knott		Braddock	PA
Shian	Knouse		Kinzers	PA
John	Knox		Philadelphia	PA
Mary Jo	Knox		Millvale	PA

Nancy	Knox		Conway	PA
Judy	Knueven		Beaver Falls	PA
Karen	Knutson*		Allison Park	PA
Beth	Koblitz		York	PA
Samuel	Koby		Pittsburgh	PA
John	Kocer		Northampton	PA
Ad	Koch		Littleton	CO
Albert	Koch		Philadelphia	PA
Tara	Koch		Harrisburg	PA
Timothy	Koch		Orwigsburg	PA
Greg	Kochanski		Pittsburgh	PA
Walt	Kochirka		Pittsburgh	PA
Kenneth	Kodama	Professor, Lehigh University	Riegelsville	PA
Doris	Kodikian		Doylestown	PA
Christine	Koehler		Vineland	NJ
Scott	Koehler		Lafayette Hill	PA
Spencer	Koelle		Philadelphia	PA
Shary	Koenig		Doylestown	PA
Scott	Koerber		Pittsburgh	PA
Charles	Koerwer		Philadelphia	PA
Michael	Koffler		Washington	PA
Arnold	Kohen		Conshohocken	PA
Brad	Kohler		Pittsburgh	PA
Lynn	Kohler		York	PA
Jeff	Kohlmann		Lakeville	PA
Donna	Kohut		Macungie	PA
Tony	Kojundic		Coraopolis	PA
Jestina	Koker		Philadelphia	PA
Steve	Kokol		Wallingford	PA
Diane	Kokowski		Pittsburgh	PA
Aaron	Kolenc		Shippensburg	PA
Anne	Kolesar		Munhall	PA
Lynda	Kolesar		Monroeville	PA
Joan	Kolessar		New Columbia	PA
Karen	Kolkka		Wyndmoor	PA
Rachel	Koll		Pittsburgh	PA
David	Koller		Gilbertsville	PA
Claire	Kolmansberger		Glen Mills	PA
Jack	Kolva		Hummelstown	PA
Paul	Komishock Jr.		Wilkes-Barre	PA
Pam	Komm		Chesterbrook	PA
Steve	Konarzewski		York	PA
Elizabeth	Koniers Brown	Dir., Del. River Watershed Program Audubon Mid-atl	Philadelphia	PA
C.	Konold		Philadelphia	PA
Angie	Kontur		Erie	PA
Margee	Kooistra		Mechanicsburg	PA

Jon	Koontz		Homestead	PA
David	Kopanic		Belle Vernon	PA
Ashley	Kopeck		Wilkes-Barre	PA
Stephen	Kopera		Phoenixville	PA
Badger	Kopnitsky		Pittsburgh	PA
Benjamin	Koprowski		Wilkes-Barre	PA
James	Korff		Beaver	PA
Laura	Kornak		Upper Black Eddy	PA
Louis	Korpar		Irwin	PA
Kevin	Korpas		Stroudsburg	PA
Maria	Korsnick	Nuclear Energy Institute	Washington	DC
Maggie	Kosierowski		Waverly Township	PA
Randolph	Kosky		Bethel Park	PA
Thomas	Koslo		Mount Bethel	PA
Joanne	Kosloski		Wernersville	PA
Tom	Kosmala	Councilmember, Bradfordwoods Counci	Bradfordwoods	PA
Aleks	Kosowicz		Abrams	WI
Michelle	Kostelac		Mechanicsburg	PA
Susan	Kosteleski		Langhorne	PA
Jeffrey	Kosterich		Wayne	PA
Michele	Kostura-Koskinen		Philadelphia	PA
Pam	Kosty	Envtl. Justice Team of Main Line Unitarian Church	Havertown	PA
Margaret	Kotoski		Churchville	PA
Evangelia	Kotsias		East Stroudsburg	PA
Carolyn	Kottmeyer		Downingtown	PA
Gregory	Kotyk		Washington	PA
Kelly	Koutsavlis		Irwin	PA
Michael	Kovach	Pennsylvania Farmers Union	Sharpsville	PA
Bob and Anne	Kovalcik		Clarksburg	PA
McKenna	Kovatch		Glenmoore	PA
Mary	Kowalski		North Wales	PA
Roseann	Kowaluk		Brisbin	PA
Susan	Koza		Lawrence	PA
Constance	Kozel		Dallas	PA
Jean	Kozel		Eagleville	PA
Mary	Kraeszig		Zionsville	IN
Nancy	Krajnikovich		Hazleton	PA
Natalie	Krall		Munhall	PA
Troy	Krall		Indiana	PA
Donald J.	Krally		Carnegie	PA
Allen	Krantz		Philadelphia	PA
Diana	Krantz		Philadelphia	PA
Diane	Krassenstein		Philadelphia	PA
Mikie	Kraus		McKees Rocks	PA
Eileen	Kraus-Dobratz		Pittsburgh	PA

Cheryl	Krause		Lancaster	PA
Doug	Krause		Philadelphia	PA
Debra	Krauss		Crescent	PA
Steve	Kravetsky		*Submitted via email*	PA
Darla	Kravetz		Lehighton	PA
Marilyn	Kray		Phoenixville	PA
Fred	Kraybill	Thomas Blvd Group	Pittsburgh	PA
Kathleen	Krebs		Pittsburgh	PA
Karen	Kreeger		York	PA
Catherine	Kreider		Philadelphia	PA
Karen	Kreller		Plumsteadville	PA
Jackie	Kremser		Reading	PA
Charlotte	Kresge		Saylorsburg	PA
Kathryn	Kresge		Cherryville	PA
Jason	Kress		North Charleroi	PA
Michael	Krestar		Latrobe	PA
Bill	Krieger		Philadelphia	PA
Patricia	Krimmel		Pittsburgh	PA
Doug	Krings		Pittsburgh	PA
Sonya	Kripke		Narberth	PA
Allison	Kritzer		Levittown	PA
kimberly	Krofchok		Ashley	PA
Alexandra	Kroger	WRISE Philadelphia	Philadelphia	PA
Diane	Krogstad		Allentown	PA
Karen	Krohn		Milton	PA
Kanyn	Kromka		Leechburg	PA
Amelia	Kroth		Milford	NJ
Juliet	Krouse		Royersford	PA
Paul	Krueger		Reading	PA
Kyler	Kruel		Ligonier	PA
Bruce	Krug		Ebensburg	PA
Steve	Krug	Krug Architects	West Chester	PA
Henry	Kruger		North Wales	PA
Kr	Krupinski		Los Angeles	CA
Deborah	Krupp		Huntingdon Valley	PA
Edwin	Kruse		Reading	PA
Jane	Kruse		Pottsville	PA
John	Kruse		Mechanicsburg	PA
Marilyn	Krushinski		Blairsville	PA
Natalie	Kubiak		Erie	PA
Dennis	Kubrak		Philadelphia	PA
Diane	Kuc		Camp Hill	PA
Peg	Kucek		Pottstown	PA
Leo	Kucewicz		Phoenixville	PA
Len	Kuch		Lincoln University	PA
Mike	Kucharski		Punxsutawney	PA

William	Kuczinski		Pittsburgh	PA
Mark	Kudela		Weissport	PA
Crystal	Kuehn		Allentown	PA
Jessica	Kugler		Hawley	PA
Chris	Kuhn		Schuylkill Haven	PA
Fabian	Kuhn		Hanover	PA
Kelly	Kuhns	Professor and Chair, Millersville	New Cumberland	PA
Joe	Kujawski		Scranton	PA
Anton	Kukharev		Port Matilda	PA
Rosario	Kukla		Ambler	PA
Rudy	Kukurin		Murrysville	PA
Carol	Kulik		Levittown	PA
Claudette	Kulkarni		Pittsburgh	PA
Elizabeth	Kulp		Pottstown	PA
Jan	Kulp		Blue Bell	PA
Mary	Kumasaka		Hanover	PA
David	Kumpf		New Cumberland	PA
Lisa	Kuncher		Greensburg	PA
Joanne	Kundrat		Philadelphia	PA
Marie	Kundrat		McKees Rocks	PA
Mohanan plavila	Kunjuraman		Upper Darby	PA
George	Kunkel		Hershey	PA
Dennis	Kunkle		Mohrsville	PA
Terry	Kunkle		Creekside	PA
Brian	Kunsman		Philadelphia	PA
John	Kunst		Kittanning	PA
Robin	Kuo		Pittsburgh	PA
Eugene	Kupchella		Johnstown	PA
Mary	Kupferschmid		Bethlehem	PA
Sandy	Kuritzky		Blue Bell	PA
Jasmine	Kurjakovic		Pittsburgh	PA
Minuet	Kurjakovic		Pittsburgh	PA
Jennifer	Kurtz		Pittsburgh	PA
Jim	Kurtz	President, RER Energy Group	Reading	PA
Kalie	Kurutz		Perryopolis	PA
Franklin	Kury		Hummelstown	PA
Carole	Kushner		Pittsburgh	PA
Joseph	Kushner		Indiana	PA
Jackson	Kusiak	Solar Energy Consultant, Solar States	Philadelphia	PA
Mary Ann	Kusner		West Chester	PA
Laura	Kuster		Pittsburgh	PA
Ed	Kuszajewski		Greensburg	PA
Ann	Kuter		Warrington	PA
David	Kutish		Chalfont	PA
Colleen	Kutschera		Philadelphia	PA
Kathleen	Kutz		Erie	PA

Matthew	Kuza		Turtle Creek	PA
Susan	Kuzy		Pittsburgh	PA
Nikki	Kvitka		Harrisburg	PA
Aaron	Kwia		Philadelphia	PA
Louis	Kyle		Philadelphia	PA
Daniel	Kyper		Alexandria	PA
Elaine	Labalme		Pittsburgh	PA
James	Labella		Tobyhanna	PA
Julie	LaBella	Talen Energy	Allentown	PA
Luz	Laboy	NAC Coordinator,Hunting Park Neighborhood Advisory	Philadelphia	PA
Rita	Lacca		Philadelphia	PA
Tiffany	Lackey		Philadelphia	PA
Conway	Lackman		Pittsburgh	PA
Pat Stanley	Lackman		Glenside	PA
Stanley	Lackus		Sharon Hill	PA
Kim	Lacost		PenArgyl	PA
Jm	Lacroix		Philadelphia	PA
Eric	Lacter		Oxford	PA
Lisa	Ladd-Kidder		Kutztown	PA
Michael	Ladson		Radnor	PA
Jonathan	Lady		Hershey	PA
Theresa	Lafer	Council Member, Borough of State College	State College	PA
Charles	Lafevre		Laurys Station	PA
Melissa	Laffen		Fort Washington	PA
Hannah	Laffend		Media	PA
Patricia	Laffey		Pittsburgh	PA
Francoise	Lagasse		Pittsburgh	PA
Joseph	Lahm		Somerset	PA
Robert	Lahner		Levittown	PA
Jeffrey	Laird		Latrobe	PA
Mr. and Mrs. H.Scott	Laird		Wayne	PA
Elizabeth	Lakata		Huntingdon Valley	PA
Ingrid	Lakey		Philadelphia	PA
Roger	Lalley		Somerset	PA
Alvin	Lam		Philadelphia	PA
Stephen	Lam		Havertown	PA
Donald	Lambert		York Haven	PA
Eileen	Lambert		Philadelphia	PA
Grace	Lambert		Nazareth	PA
Taylor	Lamborn		Reading	PA
Nicole	Lamina		Philadelphia	PA
Cassie	Lamison		Apollo	PA
David	Lampe		Glenshaw	PA
Nicholas	Lampe		Pottstown	PA

Nina	Lamplugh		Downingtown	PA
Patrick	Lampman		York	PA
Donald	Lancaster		Indiana	PA
Cindy	Lance		Honolulu	HI
Bernadette	Land		West Chester	PA
Michelle	Landau		Pittsburgh	PA
Latrell	Landers		Philadelphia	PA
Bea	Landis		Lancaster	PA
Brian	Landis		Royersford	PA
Christy	Landis		Chalfont	PA
Heather	Landis		Harborcreek	PA
Jesse	Landis		Mount Joy	PA
Juliana	Landis		Murrysville	PA
Rozalyn	Landisburg		Philadelphia	PA
Thomas	Landman		Philadelphia	PA
Ron	Landon		Downingtown	PA
Loren	Landor		Reading	PA
Santiago	Landrau		Reading	PA
Fa	Lane	Christ Church UCC Elizabethtown	Elizabethtown	PA
Laura	Lane		Philadelphia	PA
Melissa	Lane		Lititz	PA
Melody	Lane		Harrisburg	PA
Pamela	Lane		Harrisburg	PA
Patricia	Lane		Abington	PA
Rodell	Lane		Pittsburgh	PA
Sean	Lane	PowerPA Jobs Alliance	Harrisburg	PA
Trish	Lane		Pittsburgh	PA
Liana	Lang		White Haven	PA
Suzanne	Lang		Philadelphia	PA
Barbara	Langan		Huntingdon	PA
Victoria	Lange		Levittown	PA
Wieslawa	Langenfeld		Drexel Hill	PA
Eric	Langenmayr		Philadelphia	PA
Wanda	Langley		Orwigsburg	PA
Antonio	Lanier		Philadelphia	PA
Charles	Lanier	Hunting Park Community Revitalization Corp.	Philadelphia	PA
Christopher	Lankenau		Philadelphia	PA
Gary	LaNoce	Inclime Soluutions	Philadelphia	PA
Samuel	Lanza		Mars	PA
Frank	Lapera		Carbondale	PA
Amanda	Lapham		Philadelphia	PA
Peter	Lapham		Wyndmoor	PA
Kim	Lapidus		Reading	PA
Robert	Laplace		Lackawaxen	PA
Candace	LaPorte		Las Vegas	NV
Wayne	Lapp		Strasburg	PA

Daniel	Lara		Philadelphia	PA
Lauren	Lareau		Langhorne	PA
Andree	Larsen		Philadelphia	PA
Betsy	Larsen	Councilperson, Swarthmore Borough Council	Bryn Mawr	PA
Margaret	Larsen		Sciota	PA
Charlotte	Larson		Pittsburgh	PA
David	Larson		Pittsburgh	PA
Deborah	Larson		Pittsburgh	PA
Keevin	Larson		Montoursville	PA
Magali and Charles	Larson		Philadelphia	PA
Lance	LaRue		Beaver Falls	PA
Frank	Lasee	Truth in Energy and Climate	Mount Pleasant	WI
Hans	Lashlee		James creek	PA
Margaret	Laske		Pittsburgh	PA
Kathleen	Lasota		Patton	PA
Deb	Laspas		King of Prussia	PA
Chris	Latch		Lincoln University	PA
Roger	Latham		Rose Valley	PA
Lee	Lathan		Harrisburg	PA
Ruth	Latimer		Transfer	PA
Mike	Latsch		Oxford	PA
Herbert	Lau		Philadelphia	PA
Victoria	Laubach	Executive Director, Green Valleys Watershed Assoc.	Pottstown	PA
Anna	Laudenslager		Williamsport	PA
Donna	Laudenslager		Etters	PA
Don	Lauderbach		Altoona	PA
Mary Beth	Lauer		Media	PA
Amy	Laughlin		Chester Springs	PA
Michael	Laughlin		Verona	PA
Andrea	Laughton		Upper Darby	PA
Natalie	Laurie		Philadelphia	PA
Claude	LaVallee		Pittsburgh	PA
Viola	Lavender		Philadelphia	PA
David	Laverne		Dickson City	PA
Mike	Lavigne		Moosic	PA
Lynn	Lavin		Watsontown	PA
Amira	Law		Sharon	PA
Michael	Lawer		Indiana County	PA
Sherron	Lawhorn		Philadelphia	PA
Anna	Lawler		Yardley	PA
Kathleen	Lawless		Harleysville	PA
Helen	Lawman		West Chester	PA
Angi	Lawrence		Swarthmore	PA

Kira	Lawrence	Professor & Chair Dept.Geology &Enviro Geosciences	Easton	PA
Michael	Lawrence		Harrison City	PA
Thomas	Lawrence		Philadelphia	PA
Issy	Lawrie	Our Air Our Water Our Rights	Girard	PA
Tracy	Lawry		Claysville	PA
Donna	Laws		Philadelphia	PA
Jason	Lawson		Coral	PA
Jeff	Lawson		*Submitted via email*	PA
John	Lawson		Penn Valley	PA
Kathleen	Lawson		West Mifflin	PA
Latasha	Lawson		Pittsburgh	PA
Martha	Lawson		McKees Rocks	PA
Richard	Lawson		Coraopolis	PA
Melissa	Laycock		Dillsburg	PA
Melissa	Layfield		Reading	PA
Dan	Layton		Johnstown	PA
Joseph	Layton		Delta	PA
Morgan	Lazenby		Salem	VA
Joy	Lazer		Mahanoy City	PA
Janet	Lazrow		Philadelphia	PA
Joe	Leach		Media	PA
Theresa	Leach		New Cumberland	PA
Kayla	Leahy		Bridgeport	PA
Darla	Learn		Erie	PA
Neil	Leary	Dir, Center for Sustainability Edu, Dickinson	Carlisle	PA
Natalie	Lebair		Philadelphia	PA
Lucie	Lebourgeois*		Media	PA
Hannah	Lebowitz-Lockard		Philadelphia	PA
Evelyn	Lebron		Philadelphia	PA
Debbie	Lechner		Altoona	PA
Karen	Lecks		Wyncote	PA
Sebastien	Leclercq		Philadelphia	PA
Megan	LeCluyse		Philadelphia	PA
Marion L.	Ledbetter		Philadelphia	PA
Mary St	Ledger		Philadelphia	PA
Ashley	Lee		Grindstone	PA
Charles	Lee		Belle Vernon	PA
Ferne	Lee		Philadelphia	PA
Gerald	Lee		Braddock	PA
Gloria	Lee		Philadelphia	PA
James	Lee		Donora	PA
Jaron	Lee		Mifflinburg	PA
Jim	Lee	Commissioner,Springfield Township	Springfield Township	PA

John	Lee		Philadelphia	PA
Joyce	Lee	President, IndigoJLD Green + Health	Philadelphia	PA
Kevin	Lee	President, Lee Supply Co., Inc.	Charleroi	PA
Laura	Lee		Milford	PA
Monica	Lee		Portage	PA
Noi	Lee		Philadelphia	PA
Stephanie	Lee		Reading	PA
Thomas	Lee		Boston	MA
Willie	Lee		Chambersburg	PA
Jared	Lee Santos Sr.		Reading	PA
Sein	Lee*		Pittsburgh	PA
Donna	Leegard		Glenside	PA
Michael	Leeling		Souderton	PA
Rebecca A	Leeper		Blairsville	PA
Mark	Leeson		Orwigsburg	PA
Jack	Lefebvre		Ambridge	PA
Elizabeth	LeFever		Philadelphia	PA
Yvonne	LeFever		Prospect Park	PA
Karen	Lefkovitz		Philadelphia	PA
Thomas	Legeckas		Southampton	PA
Shawn Megill	Legendre		Philadelphia	PA
Roberta	Legge		Pittsburgh	PA
Linda	Leghart		Jacobs Creek	PA
Angelia	Legrand		Norristown	PA
Louise	Legun		Blandon	PA
Alexandria	Lehman		Downingtown	PA
Annabelle	Lehman		East Berlin	PA
Loretta	Lehman		Duncannon	PA
Paula	Lehman		Camp Hill	PA
Zachary	Lehman	CAMS – Conemaugh Station	Johnstown	PA
Otto	Lehrbach		Alburtis	PA
Dorothea	Leicher		Columbia Cross Roads	PA
Charles	Leiden		Altoona	PA
David	Leidholdt		Mill Hall	PA
Jack	Leiss		Pittsburgh	PA
Rebecca	Leist		Pittsburgh	PA
Mary Ann	Leitch		Philadelphia	PA
Howard And Arlene	Leiter		Langhorne	PA
Leann	Leiter*	Pennsylvania & Ohio Field Advocate, Earthworks	Canonsburg	PA
Dorothy	Lellock		Pittsburgh	PA
Nicole	Lemanski		Philadelphia	PA
Pat	Lemay		Millersville	PA
Helen	Lembeck		Philadelphia	PA
J Alfred	Lemire		Coatesville	PA

Doug	Lemley		Dillsburg	PA
Douglas	Lemley		Waynesburg	PA
Stacy	Lemley		Wayneburg	PA
Maria	Lemmo		Brooklyn	NY
David	Lemons	Green Building United	Philadelphia	PA
Kate	Lenahan		Havertown	PA
Steve	Lenavitt		Ford City	PA
Nicholas	Lenchner		Santa Rosa	CA
Lisa	Lendl-Lander		Mcknight	PA
Brook	Lenker	FracTracker Alliance	Camp Hill	PA
Melissa	Lenner		Pittsburgh	PA
Timothy	Lennox		Landenberg	PA
Timothy	Lenox		*Submitted via email*	PA
John	Lentz		Rural Valley	PA
George E.	Lenz	Supervisors of White Township	Indiana	PA
Pamela	Leombruni		Throop	PA
Francois	Leon		Philadelphia	PA
Jessica	Leon		Tunkhannock	PA
Saskia	Leon		Lancaster	PA
Don	Leonard		Media	PA
Francis	Leone		Landenberg	PA
David	Leonhard		Womelsdorf	PA
Art	Leopold		Erie	PA
Yvonne	Lepiane		Reading	PA
Judy	Lepore		Lancaster	PA
Jane	Leposa		Bethlehem	PA
Sarah	Leptuck		Downingtown	PA
Marielle	Lerner		Philadelphia	PA
Kathryn	LeSage		Skippack	PA
Frank	Lesher		Hershey	PA
Lisa	Leshinsky		Mars	PA
Rebecca	Lesko		Tunkhannock	PA
John	Leskovich		Pittsburgh	PA
Karen	Lesney		Pittsburgh	PA
Joseph	Lesniewski		Erie	PA
Gail	Less		Reading	PA
Jim	Less		Reading	PA
Justin	Lesser		Munhall	PA
Ash	Lessig		Parkesburg	PA
Wayne	Lessman		Monongahela	PA
Paul	Lester		Highspire	PA
Regina	Lester		Philadelphia	PA
John	Leszczynski		Philadelphia	PA
Sanford	Leuba		Pittsburgh	PA
Markeita	Levan		Philadelphia	PA
Kate	LeVasseur		North Wales	PA

Katharine	Levengood		Philadelphia	PA
Angela	Leventis		Philipsburg	PA
Scott	Levering		Perkiomenville	PA
Jon	Levin		Emmaus	PA
Lisa	Levin		Philadelphia	PA
Michael	Levin		Philadelphia	PA
Andrew	Levine	Green Building United	Philadelphia	PA
Cathy	Levine		Bala Cynwyd	PA
Linda	Levine		Doylestown	PA
Zoe	Levine		Pittsburgh	PA
Serena	Levingston		Philadelphia	PA
Susan	Leviton		Harrisburg	PA
Amber	Levy		Devon	PA
Heidi	Levy		Philadelphia	PA
Karen	Levy		Glenside	PA
Stacy	Levy		Spring Mills	PA
Yael	Levy		Philadelphia	PA
Jeff	Lewin		Wallingford	PA
Mary	Lewin		Pittsburgh	PA
Sue Ann	Lewine		Lehighton	PA
Alexis	Lewis		York	PA
Amel	Lewis		York	PA
Brian	Lewis		Elizabethtown	PA
Cory	Lewis		Bristol	PA
Curtis	Lewis		Secane	PA
Darlene	Lewis		Philadelphia	PA
Daron	Lewis		Philadelphia	PA
David	Lewis		Pittsburgh	PA
Dreama	Lewis		Quarryville	PA
Emmitt	Lewis		Harrisburg	PA
Felicia	Lewis		Philadelphia	PA
Gary	Lewis		Phoenixville	PA
Gerald	Lewis		Hanover	PA
Gregory	Lewis		Washington	PA
James	Lewis		Morgantown	PA
Jeffrey	Lewis		Newtown Square	PA
Kaye	Lewis		Southampton	PA
Lisa	Lewis		Waynesburg	PA
Maureen	Lewis		Newtown Square	PA
Normajean	Lewis		McKeesport	PA
Peter	Lewis		Philadelphia	PA
Rhonda	Lewis		Williamstown	PA
Susan	Lewis		Houston	PA
Todd	Lewis		Lancaster	PA
Wayne	Lewis		Lansdale	PA
Kathryn	Lezenby		Philadelphia	PA
Thomas	Lezzer	Homer City Generation - NRG	Indiana	PA

Emily	Li		Cheswick	PA
Patricia	Libengood		Erie	PA
Lori	Liberatoscioli		West Chester	PA
Crystal	Lickert		Pittsburgh	PA
Christine	Liebel		Levittown	PA
Clara	Lieberman		Warminster	PA
Jan	Lieberman		Harrisburg	PA
Matthew	Lieberman		Devon	PA
Rebecca	Lieberman		Lansdale	PA
Veronica	Liebert		Drexel Hill	PA
Mordechai	Liebling*	The Shalom Center	Philadelphia	PA
Michael	Liebman		Kennett Square	PA
Joseph	Ligas		Rual ridge	PA
Denise	Liggett	Indiana County Tourist Bureau	Indiana	PA
Alec	Lijewski-Maines		Erie	PA
Harold	Lilliston		Darby	PA
Diane	Lilly		East Stroudsburg	PA
Paula	Lim		Pittsburgh	PA
Kurt	Limbach		Pittsburgh	PA
Denise	Limbert		Conshohocken	PA
Mary	Lincoln		Erie	PA
Sue	Lindborg		West Brandywine	PA
Regina	Linder		Levittown	PA
Ruby	Linder		Philadelphia	PA
Donald	Lindman		Lititz	PA
Erik	Lindquist	Chair, Dept of Bio Sci, Messiah University	Mechanicsburg	PA
Barbara	Lindsay		Philadelphia	PA
Dermesere	Lindsay		Philadelphia	PA
Cassandra	Lineares		Chester	PA
MaryAnn	Linehan		Saint Davids	PA
Amanda	Liney		Quarryville	PA
Thomas	Ling		somerset	PA
Ashok	Linganna		Philadelphia	PA
Avinash	Linganna		White Oak	PA
Roma	Linganna		Gibsonia	PA
Sanjay	Linganna		Philadelphia	PA
John	Linkes		Leechburg	PA
Chris	Linn		Philadelphia	PA
Bill	Linnell		Red Lion	PA
Rick	Lint		Spring Grove	PA
Gretchen	Linton		Centre Hall	PA
Heather	Lipkin		Bethlehem	PA
Chris	Lipnicky		Seven Fields	PA
Rickey	Lippert		Marion Center	PA
Timothy	Lippert		Riverview	FL
Julie	Lippmann		Merion Station	PA

Rochelle	Lippolis		Devon	PA
Harry	Lipschultz		Warminster	PA
Shelley	Lipsey		Sharon Hill	PA
Robert	Lipshutz		Wynnewood	PA
Marc	Lipsitt		Penn Valley	PA
Linda	Lipsky		Broomall	PA
Ellen	Liquori		Wynnewood	PA
Tracy	Lira	Climate Action Group Leader, H-CAN	Havertown	PA
Dianne	Lisher		Warrington	PA
Aaron	Lisiecki		Erie	PA
Agnes	Lisinski		Cochranville	PA
Chris	Lisowski		Pittsburgh	PA
Stephanie	Liss-Daley		Philadelphia	PA
Linda	Listing		Canonsburg	PA
John	Litchfield		Montoursville	PA
Matt	Litchfield	Competitive Power Ventures	Braintree	MA
Bruce	Litecky		*Submitted via email*	PA
Barbara	Litt		Pittsburgh	PA
Hadley	Littell		Bensalem	PA
Donna	Litten		Philadelphia	PA
Andre	Little		Pittsburgh	PA
Dave	Little		Perkiomenville	PA
Deidre	Little		Pittsburgh	PA
James	Little		Murrysville	PA
Millissa	Little		Philadelphia	PA
Raymond	Little		Marietta	PA
Thomas	Little		Harrisburg	PA
Vartez	Little		Harrisburg	PA
Robert	Little*		Harrisburg	PA
Albert	Littlepage		Philadelphia	PA
Regins	Littlepage		North Versailles	PA
Darlene	Littles		Philadelphia	PA
Emma	Liu		Bala Cynwyd	PA
Myron	Lively		Philadelphia	PA
Kim	Livingston		Somerset	PA
Bernard	Lizak		Northampton	PA
John	Lizak		Northampton	PA
Felix	Lizasuain		West Chester	PA
Michael	Lizbinski		Sugarloaf	PA
Juan	Llarena		Erie	PA
Arbor	Lloyd		Oxford	PA
Brian	Lloyd		Philadelphia	PA
Jamiir	Lloyd		Philadelphia	PA
Nancy	Lloyd		Allentown	PA
Myrna	Lloyd-Gould		McKeesport	PA

Nancy	Lo		Philadelphia	PA
Adam	Lobel		*Submitted via email*	PA
Gina	LoBiondo		Havertown	PA
Eric	Loch		Allentown	PA
Jennifer	Loch		Factoryville	PA
Debbie	Lockard		*Submitted via email*	PA
Valerie	Lockard		Columbus	OH
Beverly	Locke		Pittsburgh	PA
Bill	Lockhart		Smicksburg	PA
Breanne	Lockhart		Smicksburg	PA
Carmella	Lockhart		Philadelphia	PA
Matthew	Lockhart		Smicksburg	PA
Norma	Lockhart		Smicksburg	PA
Kristen	Locy		Canonsburg	PA
Mary	Locy		Canonsburg	PA
Cathy	Lodge		Bulger	PA
Keith	Lodge		Wexford	PA
Edward	Loeber		Hummelstown	PA
Kristen	Loeffert		Pittsburgh	PA
Linda	Loefflad		Norristown	PA
Hugh	Lofting	President, Hugh Lofting Timber Framing, Inc	West Grove	PA
Rhonda	Lofton		Yeadon	PA
William	Loftus		Blakeslee	PA
Alfred	Logan		Lyndora	PA
Annette	Logan		Philadelphia	PA
Donna	Logan		Erie	PA
Robert	Logan		Philadelphia	PA
Sharon	Logan		Plains	PA
Diane	Lohr		Indiana County	PA
Alex	Lola		Philadelphia	PA
Erin	Lomas		Media	PA
Michael	Lombardi		Levittown	PA
Clair	Long		Fleetwood	PA
Cynthia	Long		Upper Darby	PA
Greg	Long		Apollo	PA
Janis	Long		Indiana	PA
Kevin	Long		Marysville	PA
Laura	Long		Chicago	IL
Robert	Long		Hazleton	PA
Sharon	Long		Beaver	PA
Sherry	Long		Doylestown	PA
Charlene	Longacre		East Greenville	PA
Robin	Longenbach		Danielsville	PA
Wanda	Longenecker		Cochranville	PA

Arlene	Longstreth		Verona	PA
Sharon	Longyear		Yorktown Heights	NY
Frank	Looper		Valencia	PA
Marilyn Sutton	Loos		Haverford	PA
Caroline	Lopez		Philadelphia	PA
Christopher	Lopez		Allentown	PA
Hector	Lopez		Philadelphia	PA
Jose	Lopez		Lancaster	PA
Jose	Lopez		Philadelphia	PA
Justin	Lopez		East Stroudsburg	PA
John	Lopuszanski		Levittown	PA
Carol	Lord		Philadelphia	PA
Denise	Lord		Industry	PA
Douglas	Lord		Downingtown	PA
Roseann	Lord		Pittsburgh	PA
Joseph	Lord, Jr.		Philadelphia	PA
Cheryl	Lorditch		Port Allegany	PA
Evelyn	Lorenzo		Elkridge	PA
Carol	Loreski		Pittsburgh	PA
Dawn	Lorincy		Pittsburgh	PA
Elizabeth	Loser		Hanover	PA
Karen	Loster		Warminster	PA
Richard	Lotte		Allentown	PA
Susan	Loucks		Pittsburgh	PA
Doris	Loud		Millerton	PA
Alix Jean	Louis		Philadelphia	PA
Geraldine	Love		Chester	PA
Jess	Love		Brownsville	PA
Stewart	Love		Upper Darby	PA
Tess	Love		Pittsburgh	PA
Neil	Lovekin	East Marlborough Township	Kennett Square	PA
Jessica	Lovering		Pittsburgh	PA
David	Low		Flourtown	PA
Barbara	Lowe		Coatesville	PA
James	Lowe		West Mifflin	PA
Kenneth	Lowe		Pittsburgh	PA
Muhammad	Lowe		Coatesville	PA
Elizabeth D.	Lowenthal, MD MSCE		Narberth	PA
Chad	Lower		Chambersburg	PA
Toni	Lowery		Allentown	PA
Tanner	Lowmaster		Valier	PA
Jeff	Lowry		Johnstown	PA
Jessica	Lowry		Pittsburgh	PA
Jiawei	Lu		Philadelphia	PA
Jason	Lubar		East Norriton	PA
Brian	Lubawy		West Mifflin	PA

Steven	Lubin		Philadelphia	PA
Rebecca	Lubold		Slippery Rock	PA
Peter	Luborsky		Phoenixville	PA
Brian	Lucas		Bethlehem	PA
Jack	Lucas		Indiana	PA
Jesse	Lucas		Glen Mills	PA
Kathleen	Lucas		Ellwood City	PA
Natalie	Lucas		Erie	PA
Robin	Lucas		Drexel Hill	PA
Thomas	Lucas		Pittsburgh	PA
Anna	Luckenbaugh		Cresson	PA
Jessica	Luckman		Philadelphia	PA
Lateefah	Lucky		Philadelphia	PA
Alexandra	Luczak		Erie	PA
Peter	Luczkow		Nazareth	PA
Kay	Ludwig		Philipsburg	PA
Ken	Ludwig		Nazareth	PA
Sandra Skies	Ludwig		Hanover Township	PA
William	Lug		Allentown	PA
William	Lugar		Eagleville	PA
Frank	Luisi		Apollo	PA
Alexis	Lukas		Lansdowne	PA
Craig	Lukatch	President, Lacawac Sanctuary Foundation	Lake Ariel	PA
Robert	Lukens		Glenside	PA
Eve	Lukens-Day		Philadelphia	PA
Diana	Luks		Jenkintown	PA
Monica	Luna-Urban		Coatesville	PA
Pat	Lundsted	League of Women Voters PA	Jonestown	PA
Ruth	Lunt		Starrucca	PA
Laiyi	Luo		Doylestown	PA
Joanne	Luongo		Doylestown	PA
Ivis	Luperon		Lebanon	PA
Pat	Lupo	Benedictine Sisters Erie PA	Erie	PA
Pat	Lupo, OSB	Co-Chair,PA Lake Erie Watershed Association	Erie	PA
Al	Luque		Philadelphia	PA
Rich	Luquette		Fairfield	PA
Gloria	Lurie		Huntington Beach	CA
Joshua	Lurz		Pittsburgh	PA
Harold	Lusk		Pittsburgh	PA
Jean	Lutes		Bryn Mawr	PA
Christopher	Lutter		New Freedom	PA
Will	Lutton		Erie	PA
Gwendolyn	Lutz		Zelienople	PA
James	Lutz		Philadelphia	PA
Jonathan	Lutz	API	Harrisburg	PA

David	Lutzker	President, Phoenixville Green Team	Phoenixville	PA
Heather	Lyba		Adamstown	PA
Betsy	Lyman		Boyertown	PA
Don	Lynch		Saylorsburg	PA
James	Lynch		Philadelphia	PA
Julia	Lynch		Newtown Square	PA
Kathy	Lynch		Philadelphia	PA
Laura	Lynch		Downingtown	PA
Michael	Lynch		Cranberry Township	PA
Pam	Lynch		Langhorne	PA
Pat	Lynch		Wexford	PA
Peter	Lynch		Berwyn	PA
Rita	Lynch		North East	PA
Vanessa	Lynch*		Pittsburgh	PA
Kevin	Lynn		Wallingford	PA
Jeffrey	Lyon		Greensburg	PA
Justin	Lyon	Green Building United	Philadelphia	PA
Danny	Lyons		Freeport	PA
Deborah	Lyons		West Chester	PA
John	Lyons		Erie	PA
Timothy	Lyons		North East	PA
Wayne	Lyons		Philadelphia	PA
Denise	Lytle		Woodbridge	NJ
Jesse	Lytle		Narberth	PA
Andrew	M.		Harleysville	PA
Fran	M.		Wyoming	PA
Linda	M.		Horsham	PA
T.	Macauley		Allentown	PA
Matt	MacConnell	Co-Chair, Lehigh Valley Sierra Club Pa Chapters	Orefield	PA
David	MacDermott		Stillwater	PA
Cindy	Macdonald		Mechanicsburg	PA
Leo	Macdonald		Erwinna	PA
Harrison	Mace		Philadelphia	PA
John	Macera		Havertown	PA
Ian	Macfarlane		Philadelphia	PA
Erika	Mack		Philadelphia	PA
Gavin	Mack		Butler	PA
Heather	Mack		Ephrata	PA
Therese	MacKenzie		Haverford	PA
Jim	Mackey		Gettysburg	PA
Betty	MacLaughlin		Harrisburg	PA
Kirsten	MacLaughlin		Downingtown	PA
Kathy	MacNees		Pittsburgh	PA
Jonathan	Macoskey		Pittsburgh	PA
Judith	Macoskey		Pittsburgh	PA

Kristian	Macoskey		Pittsburgh	PA
Chase	MacPherson		Doylestown	PA
Mary	MacPherson		Pittsburgh	PA
Sumner	MacPherson		Doylestown	PA
Elaine	Macri		Mountain Top	PA
Brian	MacWhinney		Pittsburgh	PA
Ellen	Madarasz		West Chester	PA
Kevin	Madden	County Councilmember, Delaware County (PA)	Media	PA
Michael	Madden		New City	NY
Brad	Maddox	Next LVL Energy, LLC	Ingomar	PA
Tyrek	Maddox		Pittsburgh	PA
Susan	Madian		New Hope	PA
Ciara	Madison		Chester	PA
Hope	Madison		Chester	PA
Barbara	Maerten		Wyncote	PA
Kathleen	Maffei		Aston	PA
Jerome	Magahee		Philadelphia	PA
Char	Magaro		Enola	PA
John	Magee		Warminster	PA
Richard	Magee		West Reading	PA
Joseph	Magid		Wynnewood	PA
Ella	Magida		Macungie	PA
Linda	Magness		Yeadon	PA
Eric	Magro		Media	PA
Edward	Maguire		Folsom	PA
Kyle	Maguire		Lititz	PA
Anika	Mahadevan		Blue Bell	PA
Melissa	Mahaley		Philadelphia	PA
Bryan	Maher		Chester Springs	PA
Kay	Mahogany		Harrisburg	PA
Jacqueline	Mahon		Philadelphia	PA
Kimberly	Mahoney		Johnstown	PA
Shawanda	Mahoney		Philadelphia	PA
Douglas	Mahony		Zelienople	PA
Emily	Mai		Wynnewood	PA
Catherine	Maihoefer		Cheswick	PA
Andreas	Maihoefer*		Cheswick	PA
Ben	Mainwaring		Philadelphia	PA
Izak	Maitin		Philadelphia	PA
Charmaine	Maitland		Philadelphia	PA
William	Maiullo		Pittsburgh	PA
Carol	Majewski		Hatboro	PA
David	Majewski		Taylor	PA
Ariel	Major		Stroudsburg	PA
Richard	Major		Philadelphia	PA
Edward	Majors		Chester	PA

John	Makar		Oxford	PA
Robert	Maker		Washington	PA
Claus	Makowka		PIttsburgh	PA
Lora	Malandra		Aldan	PA
Elizabeth	Malarkey		Ephrata	PA
Hector	Malave		Reading	PA
Kevin	Malawski	Karbon Architects	Philadelphia	PA
Blair	Malcom		State College	PA
Justin	Malcomb		Hookstown	PA
Calvin	Malcome		Philadelphia	PA
L.	Maldonad		Allentown	PA
Amy	Maldonado		Pittsburgh	PA
Carmen	Maldonado		Allentown	PA
David	Maldonado		Bethlehem	PA
Marcus	Maldonado		Philadelphia	PA
Rocco	Malerbo		Pittsburgh	PA
Michele	Malinchak		*Submitted via email*	PA
Donna	Malisko		Drums	PA
Reginald	Mallard		Philadelphia	PA
Gwyneth	Mallinder		Philadelphia	PA
Francis	Mallon		Gilbertsville	PA
Lauren	Mallory		Glenshaw	PA
Marge	Malloy		Philadelphia	PA
Abby	Malmrose		Bensalem	PA
M Franceline	Malone		Philadelphia	PA
Chuck	Maloney		Erie	PA
Mark	Maloney		Fleetwood	PA
Steven	Maloney		Lincoln University	PA
Mufadal	Maloo	Green Building United	Philadelphia	PA
Dan	Maltese	Civil & Environmental Consultants, Inc.	Cheswick	PA
Nick	Manai		Philadelphia	PA
Meg	Mancenido		York	PA
Batya	Mandelbaum		Pittsburgh	PA
Rachel	Mandelbaum		Pittsburgh	PA
Rivka	Mandelbaum		Pittsburgh	PA
Yitzhak	Mandelbaum		Pittsburgh	PA
Taylor	Manetti		Philadelphia	PA
JoElla	Mang		Clairton	PA
Michael	Mangerie		Beaver Falls	PA
Kristin	Manges		Canonsburg	PA
Jessica	Mangrum		Pittsburgh	PA
Philip	Mangum		Jim Thorpe	PA
Lynn	Manheim		Factoryville	PA
Yanni	Maniates		Morrisville	PA
Jaime	Maniatis		Morrisville	PA

Jim	Manion		Coraopolis	PA
Molly	Manion		West Chester	PA
Kathleen	Manis		Oxford	PA
Shawndai	Manker		Donora	PA
Lynette	Mankey		Canonsburg	PA
Berry	Mankins		Taylor	PA
Edmund	Mann		Southampton	PA
Robin	Mann		Rosemont	PA
Ross	Mann		Philadelphia	PA
Scott	Mann		York	PA
Vicki	Mann		Beaver	PA
Joe N.	Mann, Jr.		Philadelphia	PA
Mary Beth	Mannarino	Professor emerita, Chatham University	Pittsburgh	PA
Laura	Mannas		Pittsburgh	PA
Michelle	Mannello		Danville	PA
Alexa and Kevin	Manning		Downingtown	PA
Michael	Manning		Tobyhanna	PA
Steve	Manns		Monroeville	PA
James T	Mansfield		New Hope	PA
Marty	Manson		Huntingdon Valley	PA
Donna	Manze		Perkasie	PA
Ingrid	Mapanao		Philadelphia	PA
Nonthuthuzelo	Mapuvire		Philadelphia	PA
Janice	Maravich		Aliquippa	PA
Janice	Marburger		Wayne	PA
Cindy	March		Dallas	PA
Deborah	Marchand		Gibsonia	PA
Kirby	Marchand		North Versailles	PA
Evelyn	Marchese		New Kensington	PA
Dave	Marcheskie*		Chester Springs	PA
Alana	Marchetti		Sewickley	PA
Judith	Marchock		Pittsburgh	PA
Diane	Marciano		Bethlehem	PA
Richard	Marcil	Envtl Law & Policy Society Widener Cmwlth Law	Harrisburg	PA
Stephen	Marconi		Ridgway	PA
Lily	Marcotte		Sewickley	PA
Aaron	Marcum		Harrisburg	PA
Debra	Marge		Shamokin	PA
John	Margerum		Philadelphia	PA
Deborah	Margulies		Media	PA
Eugene	Mariani		Pittsburgh	PA
Kimberly	Mariani		Exton	PA
Gamal	Marikar		Feasterville Trevose	PA
Jose	Marin		Erie	PA

Regina	Marinelli	Owner/Manager,Agri-Dynamics Inc.	Martins Creek	PA
Paul	Marino		Stroudsburg	PA
Vermor	Marino		Philadelphia	PA
Rachel	Mark		Hummelstown	PA
Damien	Marken		Bloomsburg	DC
Weston	Markham		Pittsburgh	PA
Craig	Markle		Trooper	PA
Jason	Markovich		Pittsburgh	PA
Anne	Markowitz		Holland	PA
Bonnie-Kay	Marks		Philadelphia	PA
Lawrence	Marmol		Jeannette	PA
Ariella	Maron	Green Building United	Union Dale	PA
Ray	Maroney		Lehighton	PA
Regis	Maroney		Smithton	PA
Carolina	Marquez		Pottstown	PA
Frank	Marquez		Frank	PA
Mimi	Marquez		Hawley	PA
Ernest L.	Marraccini		Elizabeth	PA
Carl	Marrara*	PA Manufacturers' Association	Harrisburg	PA
Patrice	Marrero		Philadelphia	PA
Victoria	Mars		Newtown Square	PA
Vivian	Mars		Braddock	PA
Leslie	Marsden		New Hope	PA
Christopher	Marsh		Brownsville	PA
Larry	Marsh		Somerset	PA
Andrea	Marshall		Philadelphia	PA
Angela	Marshall		Philadelphia	PA
Christi	Marshall		West Chester	PA
Cindy	Marshall		Fairfield	PA
Dean	Marshall		Benton	PA
Jeffrey	Marshall	President, Heritage Conservancy	Doylestown	PA
John	Marshall	Secretary, Philadelphia Ethical Society	Philadelphia	PA
Lisa	Marshall		Spring Mills	PA
Lissi	Marshall		Philadelphia	PA
Luis	Marshall		Philadelphia	PA
Paul	Marshall		Philadelphia	PA
Robert	Marshall		Penn Run	PA
Robert	Marshall		Penn Run	PA
Robert	Marshall		Pittsburgh	PA
Annette	Marshall*	Inner-City Neighborhood Art House	Erie	PA
Chuck	Marshall*		Paoli	PA
Laura	Marsico		Pittsburgh	PA
William	Marston		Philadelphia	PA
Christopher	Marteney		Irwin	PA
Ingo	Martens		West Norriton	PA

Mary	Marth		Aliquippa	PA
Sarah	Martik		Coal Center	PA
Amy	Martin		Lincoln University	PA
Ayana	Martin		Harrisburg	PA
Carl	Martin		East Earl	PA
Carl	Martin		Wayne	PA
Cynthia	Martin		Lincoln University	PA
David	Martin		York	PA
Filomena	Martin		Donora	PA
George	Martin		Bensalem	PA
George E.	Martin		Chester Springs	PA
Greg	Martin		Westfield	PA
Hellois	Martin		Philadelphia	PA
Jean	Martin		McKeesport	PA
Jessica	Martin		Pottstown	PA
Lance	Martin		Lincoln University	PA
Linda	Martin		Harleysville	PA
Louis	Martin		Palmyra	PA
Madison	Martin		Yardley	PA
Marilyn	Martin		Stroudsburg	PA
Michael	Martin		Philadelphia	PA
Michelle	Martin		Downingtown	PA
Patricia	Martin		Philadelphia	PA
Qiana	Martin		Philadelphia	PA
Rodney	Martin		Lititz	PA
Sally	Martin		Pottstown	PA
Samuel	Martin		Scranton	PA
Susanna	Martin		Philadelphia	PA
Taylor	Martin		Bensalem	PA
Tina	Martin		Lemont Furnace	PA
William	Martin		West Chester	PA
Mary	Martin*		Hunlock Creek	PA
Kathleen	Martincic		Fredericktown	PA
Savannah	Martincic		Oley	PA
Brenda	Martinez		Philadelphia	PA
Edgardo	Martinez		East Stroudsburg	PA
Esperanza	Martinez		Malvern	PA
Melishsa	Martinez		Philadelphia	PA
Ruby	Martinez		Philadelphia	PA
Sergio	Martinez		Allentown	PA
Peter	Martino		New Hope	PA
John	Martone		Meadville	PA
Jasmin	Martoral		Bethlehem	PA
john	Martrano		Verona	PA
Debra	Martz		Danville	PA
Danell	Martzall		Adamstown	PA
Tim	Martzall		New Holland	PA

Kristina	Marusic		Pittsburgh	PA
Dave	Marx		Pittsburgh	PA
Elizabeth	Marx	Pennsylvania Energy Efficiency for All (PA-EEFA)	Harrisburg	PA
Jan	Marx		New Hope	PA
Shawn	Marx		Pittsburgh	PA
Elizabeth	Marx*	Pennsylvania Utility Law Project	Harrisburg	PA
Gerard	Maryak		North Huntingdon	PA
Mallory	Marzolf		Cheswick	PA
Christopher	Masciantonio	United States Steel Corporation	Pittsburgh	PA
Kelly	Mashulambiras		Media	PA
Jamie	Maslinski		Olyphant	PA
Daniel	Maslo	Sheetmetal workers local #12	Pittsburgh	PA
Bob	Mason		Trafford	PA
Brad	Mason		Pittsburgh	PA
Douglas	Mason	Chair,Sierra Club Moshannon Group	Port Matilda	PA
Janice	Mason		Willow Grove	PA
Kem	Mason		Littlestown	PA
Tatia	Mason		Harrisburg	PA
Theresa	Mason		Philadelphia	PA
Dawn	Mason-Lutsky		Pottsville	PA
John	Massari		Lincoln University	PA
Mike	Massari		New Ringgold	PA
Kim	Massena		Erie	PA
Carolyn	Massey		Quincy	IL
Lynn	Massini		Easton	PA
George	Master		Media	PA
Francis	Mastri		Monroe	CT
Rocco	Mastricolo		Springfield	PA
Tom	Mastrilli		Harmony	PA
Paulina	Mastryukov		Bryn Mawr	PA
Brian	Masucci		Pittsburgh	PA
Robbinn	Mater		Milford	PA
Randall	Matheny		Brookville	PA
Patsy	Mather		Levittown	PA
Lynn	Mather*		Philadelphia	PA
Chad	Mathews		Hermitage	PA
Jeffrey	Mathews		Pittsburgh	PA
Raylene	Mathews		Munhall	PA
Tracey	Mathews		Philadelphia	PA
Bonita	Mathis		Harrisburg	PA
Carla	Mathis		Pottstown	PA
Bertha	Mathis-Goodwin		Allentown	PA
WilmaJeanne	Matlack		Imperial	PA
Sean	Matlawski		Spring City	PA
Scott	Mato		State College	PA
Emily	Matos		Paupack	PA

Ninon	Matos		Philadelphia	PA
Steve	Mattan		Southampton	NJ
Lisa	Matthew		Sinking Spring	PA
Cateena	Matthews		Philadelphia	PA
David	Matthews		Glenshaw	PA
John	Matthews		Chester Springs	PA
Kelly	Matthews		Manheim	PA
William	Matthews		Bethlehem	PA
William	Matthews		Philadelphia	PA
Priscilla	Mattison		Bryn Mawr	PA
Tiffani	Mattson		Pittsburgh	PA
Rich	Matusz		Washington Crossing	PA
James	Mauch		Cranberry Township	PA
Julio	Mauras		Pocono Summit	PA
Dennis	Maurer		Downingtown	PA
Marilyn	Maurer		Wynnewood	PA
Joseph	Maurizi		North Versailles	PA
Lisa	Maust		Avella	PA
Alice	Maxfield		Southampton	PA
Anita	Maximo		New Hope	PA
Leland	Maxwell		Bryn Mawr	PA
Regina Bembery	Maxwell		Philadelphia	PA
Richard	Maxwell		Lincoln University	PA
Ronald	Maxwell		Lehighton	PA
Elaine	May		Easton	PA
Michael	May		Doylestown	PA
Robert	May		Reading	PA
Sarah Sargent	May		Doylestown	PA
Qiana	Mayberry		Shrewsbury	PA
Ken	Mayer		Mohnton	PA
Marilyn	Mayer		Easton	PA
Michael	Mayer		Pittsburgh	PA
Velma	Mayer		Upper Darby	PA
Carole	Mayers		King of Prussia	PA
Corinne	Mayland		Lansdale	PA
David	Maynard		Philadelphia	PA
Debbie	Maynard		West Chester	PA
Carmela	Mayo		Springfield	PA
James	Mayrides		Thorndale	PA
Kyle	Mays		Philadelphia	PA
Jose	Mazariegos		Philadelphia	PA
Lipika	Mazumdar		Pittsburgh	PA
Kenny	Mazzarella		Philadelphia	PA
Sally	Mazzarella		Philadelphia	PA
Lisa	Mazzola		Tampa	FL

Garrett	McAdams		Philadelphia	PA
Alice	McAfee		Newfoundland	PA
Nathaniel	McAlister		Phoenixville	PA
Andrew	McAllister	Western PA Coalition for Abandoned Mine Reclamatio	Luxor	PA
Michael	McAmis		Philadelphia	PA
Joshua	McAvoy		Ambler	PA
James	McBride		Hermitage	PA
Kerri	McBride		Philadelphia	PA
Robert	McBride		Greensburg	PA
Cynthia	McCabe		Saint Clair	PA
Elaine	McCabe		Wyoming	PA
Erica	McCabe	Council Person, Stroudsburg Boro	Stroudsburg	PA
James	McCaffrey		Washington	PA
Keara	McCaffrey		Drexel Hill	PA
Jay	McCahill		Lansdowne	PA
Barbara	McCall		Philadelphia	PA
Patrick	McCandless		Philadelphia	PA
Annie	McCann		Warrington	PA
Sean	McCarson		Malvern	PA
Anne	McCarthy	Erie Benedictines for Peace	Erie	PA
Donna	McCarthy		Evans City	PA
Emilie	McCarthy		Souderton	PA
Kevin	McCarthy		McKees Rocks	PA
Patricia	McCarthy		Irwin	PA
Hugh	McCartney		North East	PA
Thomas	McCartney		Pittsburgh	PA
George	McCarty		Lancaster	PA
Joan	McCarty		Orangeville	PA
A.	McCaughan		Philadelphia	PA
Edward	McCauley		Upper Darby	PA
Neil	McCauley		Birdsboro	PA
Melissa	McCay		Ardmore	PA
Sharon	McChancy		Benton	PA
Joyce	McClafferty		Hookstown	PA
Angelina	McClain		Philadelphia	PA
Howard	McClain		Willow Street	PA
James	McClain		Mount Wolf	PA
Tom	McClain		Pittsburgh	PA
Thomas	McClellan		Lafayette Hill	PA
Caitlyn	McClennen		Media	PA
Charod	McClenny		Philadelphia	PA
Rob	McClimon		Pottstown	PA
Celestina	McClinton		Philadelphia	PA
Eileen	McCloskey		Newtown	PA
Tanya	McCloskey	Office of Consumer Advocate	Harrisburg	PA
Camellia	McCloud-Moore		Harrisburg	PA

Will	McColley		Philadelphia	PA
Melissa	McCombs		McKeesport	PA
Ed	McConnell		West Chester	PA
Elisa	McCool		Philadelphia	PA
Sharon	McCool		Sellersville	PA
Douglas	McCormick		Trabuco Canyon	CA
Margaret	McCourt		Philadelphia	PA
Carolyn	McCoy		Philadelphia	PA
Tiffany	McCoy		Philadelphia	PA
Brennan	McCracken		Cherry Tree	PA
Douglas	McCracken		York	PA
Lorie	McCracken		Media	PA
Cassandra	McCrae		Philadelphia	PA
Lakebra	McCraw		Harrisburg	PA
Tammy	McCray		Henryville	PA
Tony	McCray		Elkridge	PA
Amy	McCready		Lewisburg	PA
Joseph	McCreery		Altoona	PA
Shanell	McCubbin		Cheltenham	PA
Elizabeth	McCue		Yardley	PA
Marylyle	McCue		Philadelphia	PA
Abby	McCullough		Aliquippa	PA
David	McCullough		York	PA
Fred	McCullough		Pittsburgh	PA
Joseph	McCullough		Woodlyn	PA
Nancy	McCullough		Drexel Hill	PA
Thomas	McCullum		Upper Darby	PA
Tiffany	McCullum		Philadelphia	PA
Carolyn	McCully		Pittsburgh	PA
Mingo	McCutcheon		Philadelphia	PA
James	McDaid		Drexel Hill	PA
Cherie	McDaniel		Olyphant	PA
Patrick	McDaniel		Mercersburg	PA
John	McDermott		State College	PA
Matt	McDermott		Philadelphia	PA
Michael	McDermott	IBEW Local 81	Scranton	PA
Patrick	McDermott		Loretto	PA
Sally	McDermott		State College	PA
Kathy	McDevitt		Chester Springs	PA
William	McDevitt		Havertown	PA
William	McDevitt		Philadelphia	PA
Alycia	McDonald		Kulpmont	PA
Daisha	McDonald		Johnstown	PA
Nancy	McDonald		Dunmore	PA
Robin	McDonald		Wilmerding	PA
Derek	McDonnell		Blue Bell	PA
Cristine	McDonough		Connellsville	PA

Graham	McDonough		Canonsburg	PA
Nancy	McDonough		Scranton	PA
Judy	McDougall		Pittsburgh	PA
Bobby	McElroy		Easton	PA
Robert	McElroy		Easton	PA
Jack	McEwen		Eighty Four	PA
Caitlyn	McFadden		Philadelphia	PA
Dolores	McFadden		Malvern	PA
Marguerite	McFadden		Malvern	PA
Mary	Mcfadden		West Chester	PA
Terry	McFadden		Allentown	PA
Tyler	McFadden		Pittsburgh	PA
Robin	McFall		Hermitage	PA
Devona	McFarland		Philadelphia	PA
Wallace	McFarland		Port Carbon	PA
Ann	McGaffey		Pittsburgh	PA
Michael	McGahan		Philadelphia	PA
Robert	McGarry		Perkasie	PA
Terry	McGarry	Chapel Hill United Church of Christ	Camp Hill	PA
Domonique	McGhee		Philadelphia	PA
Aimee	Mcgill		Horsham	PA
Bonnie	McGill		Conneaut Lake	PA
Bonnie	McGill		Pittsburgh	PA
Erin	McGinley		Oreland	PA
John	McGinley		Cochranville	PA
Mark	McGinnis		Willow Street	PA
William	McGinnis		Johnstown	PA
Diana	McGlory		Verona	PA
Patty	McGlynn		Philadelphia	PA
Brian	McGonigle		Zelienople	PA
Kevin	McGough		Indiana	PA
Karen	McGovern		Philadelphia	PA
Lisa	McGovern		Kittanning	PA
Brian	McGowan		Coatesville	PA
Meredith	McGowan	Uplight	Boulder	CO
James	McGowen		Doylestown	PA
Linda	McGrady		Plains	PA
Kristen	McGranaghan		Morgantown	PA
Patricia	McGranahan		Greenville	PA
Carol	McGrath		Narvon	PA
Ida	McGrath		Philadelphia	PA
Mark	McGrath		Greenville	PA
Jim	McGraw		Malvern	PA
Michael	McGregor		Ringtown	PA
Dino	McGrosky		Pittsburgh	PA
Joseph	McGuigan		Philadelphia	PA
Joyce	McGuigan		Braddock	PA

Lisa	McGuigan		Chalfont	PA
Cynthia	McGuire		Warrington	PA
Eileen	McGuire		Drexel Hill	PA
Ellie	McGuire		Bethlehem	PA
Michael	Mcguire		Royersford	PA
Bernard	McGurl	Exec Dir, Lackawanna River Conservation Association	Scranton	PA
John	McHale		Quakertown	PA
William	McHargue		Littlestown	PA
Robert	McHenry		Berwick	PA
Maureen	McHugh		Chambersburg	PA
Ryan	McHugh		Erie	PA
Ryan	McHugh		Pittsburgh	PA
Cathy	McIlvain		Sellersville	PA
Deborah	McIlvaine		Philadelphia	PA
Daniel	McIntosh		Reading	PA
Duncan	McIntosh		Tarzana	CA
Ian	McIntosh		Pittsburgh	PA
Nadyenka	McIntosh		Jackson Township	NJ
Tom	McIntosh		Langhorne	PA
Derek	McIntyre		Pittsburgh	PA
Howard	McIntyre		Erie	PA
Sean	McIntyre		Philadelphia	PA
Sterling	McIntyre Sr		Harrisburg	PA
Mark	McKamey		Carlisle	PA
Henry	McKay	Solar United Neighbors	Philadelphia	PA
Donna	McKee		Lederach	PA
Patricia	McKee		Carnegie	PA
Tim	McKee		Altoona	PA
Tim	McKee		Lederach	PA
Patricia	McKellop	Titusville School District	Blooming Valley	PA
Mary	McKenna		Philadelphia	PA
Scott	McKenna		State College	PA
Brian	McKenzie		*Submitted via email*	PA
William	McKeown		New Brighton	PA
Daniel	McKinley		Pittsburgh	PA
Jim	McKinney		Philadelphia	PA
Joan	McKinney		Stroudsburg	PA
Robert B.	McKinstry, Jr.*	Environmental and Climate Law & Consulting	Kennett Square	PA
Sandra	McKissock		Allison Park	PA
Jason	McKnight		Connellsville	PA
Gino	McLain		Auburn	PA
Sherry	McLain		Dauphin	PA
Shiela	McLane		Verona	PA
Suzanne	McLaren		Pittsburgh	PA

TJ	McLaren		York	PA
Cassidy	McLaughlin		Media	PA
Diane	Mclaughlin		Howard	PA
Karen	McLaughlin		Philadelphia	PA
Kelly	McLaughlin		Philadelphia	PA
Michael	McLaughlin	Keystone Station_CAMS	Indiana	PA
William	McLaughlin		Philadelphia	PA
Haydn	McLean		*Submitted via email*	PA
Tamika	McLean		Philadelphia	PA
Judith	McLean Ph.D.		Waynesboro	PA
Karen	McMahon		Gibsonia	PA
Mary	McMahon		Philadelphia	PA
Jeffrey	McManus		Lancaster	PA
Ieshia	McMillan		Braddock	PA
Amanda	McMillan Lequieu		Philadelphia	PA
Vickie	McMurray		Clearfield	PA
Daniel	McNair		Rochester	PA
Linda	McNair		Pittsburgh	PA
Patrick	McNair		Sycamore	PA
Larry	McNally		Tyrone	PA
Karla	McNamara		Baden	PA
Sharon	McNamara		Morrisville	PA
Lisa	McNany		Butler	PA
Kelsey	McNaul		Lancaster	PA
Sandy	McNeal		Aston	PA
Ernie	McNeely	Lower Merion Township	Ardmore	PA
Sherry	McNeil		Butler	PA
David	McNichol		Wyndmoor	PA
Aryel	McNulty		Cochranville	PA
Richard	McNutt		Pipersville	PA
Deanna	McPeak		Gibsonia	PA
Stephen	Mcpher		Coatesville	PA
Cheri	McPherson		Creekside	PA
Gerald	McPherson		Philadelphia	PA
Jonathan	McPherson		Shadyside	OH
Timothy	McPherson		Pittsburgh	PA
Jon	McQuillen		Rochester Mills	PA
Meghan	McQuiston		Kennett Square	PA
Gail	McQuown		Coopersburg	PA
Ellen	McRieber		Pittsburgh	PA
Mari	McShane		Pittsburgh	PA
Ann	McStay*		Pittsburgh	PA
Melissa	McSwigan		Pittsburgh	PA
Doreen	McVan		Bristol	PA
Harry	McVey		Mount Joy	PA
Jean	McWilliams		Glenside	PA

Susan	MD		Winfield	PA
Sylvia	Meachum		Philadelphia	PA
David	Meade		Apollo	PA
Ernest	Meade		West Chester	PA
Sharon	Meader		DuBois	PA
Rick	Mealy		Tionesta	PA
Tashay	Meares		Philadelphia	PA
Gregory	Mears		Philadelphia	PA
Richard	Mease	Vice President, Selinsgrove Borough Council	Selinsgrove	PA
Michael	Mechling		kittanning	PA
Edwin	Medina		Philadelphia	PA
Jasmine	Medina		Philadelphia	PA
Leonor	Medina		Philadelphia	PA
Lioosjdh	Medina		Philadelphia	PA
Ann	Medis		Allison Park	PA
James	Meenan		Manheim	PA
Frank	Meggie		Bethlehem	PA
Garen	Meguerian	Way Forward	Phoenixville	PA
Matthew	Mehalik	Breathe Project	Pittsburgh	PA
Cindy	Mehallow		Newtown Square	PA
Kimberly	Mehler		Jenkintown	PA
Michael	Mehrazar		Harrisburg	PA
Carol	Meiners		Morrisville	PA
Robert	Meinert		Industry	PA
Mary	Meininger		Doylestown	PA
Angela	Meister		West Grove	PA
Gail	Meister		Irwin	PA
Christopher	Mejia		Lancaster	PA
Thomas	Melcher	Pittsburgh Regional Building Trades Council	Pittsburgh	PA
Vito	Mele		Mount Pocono	PA
Hector	Melendez		Philadelphia	PA
Jose	Melendez		Bristol	PA
Virgen	Melendez		Philadelphia	PA
Zoya	Melkova		Philadelphia	PA
Lisa	Mell		Philadelphia	PA
Nancy	Mellinger		West Grove	PA
Deb	Mellon		Glenmoore	PA
Linda	Mellott		Warfordsburg	PA
Lynn	Mellow		Philadelphia	PA
Drew	Melman		Wynnewood	PA
Chris	Melograna		Collegeville	PA
Dale	Melton		Dale	PA
Karen	Melton		Philadelphia	PA
Rashanna Myaira	Melton		Philadelphia	PA
Gwenn	Meltzer		Woodlyn	PA

Faith	Melvin		Philadelphia	PA
Mike	Melvin		Media	PA
Rachel	Melvin		Media	PA
Stacy	Melvin		Easton	PA
Adrienne	Mendell		Philadelphia	PA
Ciani	Mendez		Philadelphia	PA
Caroline	Mendis		Pittsburgh	PA
Elvin	Mendoza		Philadelphia	PA
Henry	Mendoza		Reading	PA
Patricia	Mendys		South Park	PA
Wayne	Mengel		Coopersburg	PA
Tobi	Mengle		Birdsboro	PA
Larry	Menkes		Warminster	PA
Patricia	Mensing		Plymouth Meeting	PA
Ashley	Menszak		Philadelphia	PA
Paula	Menteer		Kane	PA
Robert	Mercer		Yardley	PA
Sheila	Mercer		Pitcairn	PA
Susan	Merchant		Ligonier	PA
Arlene	Mercurio		New Kensington	PA
Mark	Merdinger		Mechanicsburg	PA
Jill	Meredith		Mount Carmel	PA
Robin	Merkel		Freedom	PA
Lou Ann	Merkle		Plymouth Meeting	PA
Wesley	Merkle		Philadelphia	PA
Teresa	Merone		Lebanon	PA
Dr. Alfred	Merritt		Philadelphia	PA
William	Merritt		Denver	PA
Peter	Merritts		Friedens	PA
Allen	Merry		Philadelphia	PA
Jean	Messaros		Dallas	PA
Linda	Messatzzia		Southampton	PA
John	Messeder		Gettysburg	PA
Jeffrey	Messenger		Masontown	PA
Vicki	Messina		Fountainville	PA
Scott	Messner		Douglassville	PA
Mary	Mester		Bridgeport	PA
Bernard	Metro		Monroeville	PA
William	Mettler	BucksMont Chapter LeaderCitizens Climate Lobby	Wyncote	PA
Richard	Metz		Erdenheim	PA
Abigail	Metzel		Lemont	PA
Holly	Metzgar		Wrightsville	PA
Carol	Metzger		Kents Store	VA
Debra	Metzger		Irwin	PA
Gary	Metzger		Hughesville	PA

Paul	Metzloff	Lutheran Advocacy Ministry in PA (LAMPa)	Kingston	PA
AnneMarie	Meyer		Oley	PA
Evan	Meyer		Philadelphia	PA
Melva	Meyer		Beach Lake	PA
Rachel	Meyer		Aliquippa	PA
Regina	Meyer		Philadelphia	PA
Sydney	Meyer		Philadelphia	PA
Theodore	Meyer		Harrison City	PA
Bruce	Meyers		Armagh	PA
Donna	Meyers		Pottstown	PA
Jonathan	Meyers	Vice Chair,Phoenixville Area Clean Energy Alliance	Phoenixville	PA
Sharon	Meyers		Verona	PA
Eve	Miari		Media	PA
Deborah	Miccicke		Reading	PA
Marni	Micek		Camp Hill	PA
Allie	Michael		Slatington	PA
Marissa	Michael		Pittsburgh	PA
Nancy	Michael		Pottstown	PA
Philip	Michael		Emmaus	PA
Laura	Michaels		Maple Glen	PA
Karen	Michalczyk		Philadelphia	PA
Christopher	Michalowski		Kennett Square	PA
Chris	Michaux		Irwin	PA
Richard	Micheletti		Bear Creek Township	PA
Alanna	Michinock-Kimbel		Telford	PA
Susan	Michler		Eighty Four	PA
Brad	Mickatavage		Ashland	PA
Dominique	Mickens		Philadelphia	PA
Vytautas	Mickus		Mars	PA
Erika	Midcap		Washington	PA
Perry	Middleman		Philadelphia	PA
Jessica	Middleton		Bensalem	PA
Evan	Midler*		Avella	PA
Gloria	Miele		Muncy	PA
Kathleen	Mielnicki		Pittsburgh	PA
Leonard	Mielnicki		Pittsburgh	PA
Marian Liza	Mientus		Mt Pleasant	PA
Matthew	Mier		Sewickley	PA
Sarah	Mier		Sewickley	PA
Rosa Maria	Miguel		York	PA
Michael	Mikita		Rural Valley	PA
Jenn	Mikitka		Pittsburgh	PA
Nick	Milam		Pittsburgh	PA
Richard	Milanak		Willow Street	PA

Thomas	Milanak		Wexford	PA
Christopher	Milani		Penn Valley	PA
Pamela	Milavec		Windber	PA
Gregory	Milbourne		Swarthmore	PA
Shantel	Milbourne		Philadelphia	PA
Joseph	Milcarek		Pittsburgh	PA
Chris	Miles		Philadelphia	PA
Regina	Milione		Plymouth Meeting	PA
Alexus	Milks		Harrisburg	PA
Theresa	Millar		Richboro	PA
Wendy	Millard		Titusville	PA
Ada	Miller		Sellersville	PA
Arden	Miller		Easton	PA
Ashley	Miller		Beaver	PA
Betty	Miller		Harrisburg	PA
Bobbie	Miller		New Castle	PA
Bonnie	Miller		Laceyville	PA
Brenda	Miller		Erie	PA
Bridget	Miller		Allentown	PA
Bryan	Miller		Philadelphia	PA
Cathy	Miller		Philadelphia	PA
Chris	Miller		Apollo	PA
Christina	Miller		Media	PA
Daniel	Miller		Bloomsburg	PA
Denileia	Miller		Philadelphia	PA
Donna	Miller		Media	PA
Earl	Miller		Pittsburgh	PA
Elna	Miller		Philadelphia	PA
Eric	Miller	PA Bloomsburg Citizens' Climate Lobby	Bloomsburg	PA
Eric	Miller		Brookville	PA
Gerald	Miller		Hawley	PA
Gerald	Miller		Williamsport	PA
Glenn	Miller		Aliquippa	PA
Harry	Miller		Reading	PA
Jack	Miller		Lewisburg	PA
Jack	Miller		McClure	PA
James	Miller		Erie	PA
James	Miller		State College	PA
James	Miller		West Chester	PA
Janie	Miller		Washington	PA
Jaunita	Miller		East Stroudsburg	PA
Jeffrey	Miller	North Central PA Building Trades Council	Clearfield	PA
Joanna	Miller		Pennsburg	PA
John	Miller		Philadelphia	PA
Joleen	Miller		Philadelphia	PA

Kathleen	Miller		Wilkes-Barre	PA
Ken	Miller		Wyndmoor	PA
Khayla	Miller		Philadelphia	PA
Laura	Miller		Bellefonte	PA
Lenora	Miller		York	PA
Lisa	Miller		Harrisburg	PA
Madeline	Miller		Philadelphia	PA
Madelon	Miller		Pottstown	PA
Martha	Miller		Allentown	PA
Maureen A.	Miller		Glenside	PA
Merle	Miller		Pittsburgh	PA
Naomi	Miller		Philadelphia	PA
Nicholas	Miller		Philadelphia	PA
Patti	Miller		Manchester	PA
Paul G.	Miller		Harrisburg	PA
Phyllis	Miller		Reading	PA
Ronald	Miller		Latrobe	PA
Ronald	Miller		Murrysville	PA
Rory	Miller		Philadelphia	PA
Scott	Miller		Reading	PA
Selisa	Miller		Philadelphia	PA
Susan	Miller		White Haven	PA
Tammy	Miller		Elizabethville	PA
Therese	Miller	Lewisburg Friends Meeting (Quaker)	Lewisburg	PA
Tim	Miller		Philadelphia	PA
Tom	Miller		Dillsburg	PA
Tonya	Miller		Wrightsville	PA
Valerie	Miller		Pittsburgh	PA
Vincent	Miller		Philadelphia	PA
William	Miller		Girard	PA
Yvette	Miller		Philadelphia	PA
Michael	Miller Jr.		Philadelphia	PA
Syreeta	Milligan		Pittsburgh	PA
Terry	Milliron		Hawthorn	PA
Sharrell	Millner		Philadelphia	PA
Susan	Millner		Washington Crossing	PA
Steven	Milloy	JunkScience.com	Potomac	MD
Andrew	Mills		Spring House	PA
Angela	Mills		Oak Ridge	PA
David	Mills		Grove City	PA
Debra	Mills		Northampton	PA
Loletaa	Mills		Pittsburgh	PA
Reginald	Mills		Chester	PA
Todd	Mills		Oak Ridge	PA
Walter	Mills		Washington	PA

Janis	Millu		Franklin	PA
Phyllis	Milner		Philadelphia	PA
Alexander	Milone		Philadelphia	PA
Bridget	Milorey		Philadelphia	PA
Svetlana	Milutinovic		Philadelphia	PA
Robert	Mincemoyer		Montandon	PA
Ann	Miner		Wexford	PA
Susan	Miner		Downingtown	PA
Xue	Ming	Professor, Dept. of Neurology, Rutgers Univ.	Newark	PA
Barbara	Minges		Pittsburgh	PA
Carolyn	Minguez		Middleburg	PA
Kali	Minick		Pittsburgh	PA
Daniel	Mink		Lancaster	PA
Jeffrey	Minney		Bridgeville	PA
Stephen	Minnick		Millersville	PA
Linda	Minton		Milmont Park	PA
Marcel	Minutolo		Pittsburgh	PA
August	Mirabella		North Wales	PA
Patrick	Miralles		Philadelphia	PA
Ralph A	Miranda		Acme	PA
Susan	Misa		Biglerville	PA
Mary Jo	Miserendino		Bethlehem	PA
Timothy	Mishic		Kane	PA
John	Miskelly		Baltimore	MD
Tamara	Misner		Union City	PA
Robert D.	Missimer Jr.		Clearwater	FL
Donna	Mistek		Minersville	PA
Sherry	Mister		Aston	PA
Christine	Mistysyn		Cumbola	PA
Anne	Mitchell		Drexel Hill	PA
Belinda	Mitchell		Philadelphia	PA
Brenda	Mitchell		Philadelphia	PA
Ed	Mitchell		Willow Street	PA
Edward	Mitchell		Norristown	PA
Ellen	Mitchell		Philadelphia	PA
Gregory	Mitchell		Homer City	PA
Jefferine	Mitchell		Philadelphia	PA
Jennifer	Mitchell		Telford	PA
Katie	Mitchell		Coraopolis	PA
Laurel	Mitchell		Lake City	PA
Lauren	Mitchell		Sewickley	PA
Leslie	Mitchell		Pittsburgh	PA
Michele	Mitchell		Selinsgrove	PA
Ogden	Mitchell		Philadelphia	PA
Pashyun	Mitchell		Philadelphia	PA
Rachele	Mitchell		Harrisburg	PA

Randolph	Mitchell		Pittsburgh	PA
Stephanie	Mitchell		Erie	PA
Trinity	Mitchell		Whitehall	PA
Tyra	Mitchell		Stroudsburg	PA
Seth	Mitten		Blandon	PA
Greg	Mittereder		Pittsburgh	PA
Robert	Mittleman		Philadelphia	PA
Andrew	Mix		Downingtown	PA
Sam	Miyamoto		Los Angeles	CA
Carlos	Miyares		Brownsville	PA
Rebecca	Mize		Blandon	PA
Raymond	Mlynczak		Horsham	PA
Lynn	Moats		Fayetteville	PA
Mohammad	Mobeen		Upper Darby	PA
Akinola	Mobolaji		Philipsburg	PA
James	Mock		Bellwood	PA
Katie	Modic	Executive Director,Communitopia	Pittsburgh	PA
Jan	Modjeski		Murrells Inlet	SC
Colin	Modrzynski		Broomall	PA
Eric	Moeller		Clarks Summit	PA
Ali	Moftakharghasrahmad		Philadelphia	PA
Amira	Moghal		Easton	PA
Kindra	Mohr	Sustainable Business Network Greater Philadelphia	Philadelphia	PA
Faisal	Moid		Downingtown	PA
Raymond	Moleski		Philadelphia	PA
John	Molinda		Pittsburgh	PA
Charles	Molnar		Coraopolis	PA
Jennifer von	Molnar		Dingmans Ferry	PA
Brian	Moloney		Oreland	PA
Elizabeth	Mols		Trafford	PA
Kate	Monahan	Friends Fiduciary Corporation	Henryville	PA
Rhonda	Monahan		*Submitted via email*	PA
Tom	Monahan		Lancaster	PA
Victor	Moncion		Allentown	PA
Marc	Mondor	evolveEA	Pittsburgh	PA
Anthony	Mongelluzzo		Pittsburgh	PA
Henry	Mongrain		Pittsburgh	PA
Valerie	Monick		Dallas	PA
Madge	Monser	Chair, Ambler Environmental Advisory Council	Ambler	PA
John	Monserrat		Horsham	PA
Sean	Mont		Philadelphia	PA
Barbara	Montabana		Aldan	PA
Anthony	Montague		Philadelphia	PA

Paul	Montell		Baden	PA
Ji	Montgomery		Shiremanstown	PA
Karen	Montgomery		Bethlehem	PA
Patricia	Montgomery		Portersville	PA
Sheila	Montgomery		Philadelphia	PA
William	Montgomery		Pottstown	PA
John	Monti		Meadville	PA
Vell	Montiel		Philadelphia	PA
Kendall	Montney		Bensalem	PA
Richard	Moodey	Assistant Professor, Gannon University	Erie	PA
Cynthia	Moody		Lemoyne	PA
Kevin	Moody	Pennsylvania Independent Oil & Gas Association	Harrisburg	PA
Marjorie	Moody		Philadelphia	PA
Tawana	Moody		Philadelphia	PA
Lauri	Moon		Williamsport	PA
Melony	Moon		Somerset	PA
Susan	Moorcroft		Pittsburgh	PA
Abel	Moore		Murrysville	PA
Alicia	Moore		Kennett Square	PA
Antwuan	Moore		Philadelphia	PA
Brad	Moore	Cree Lighting	Durham	NC
Brian	Moore		Philadelphia	PA
Carol	Moore		Broomall	PA
Carolyn	Moore		Willow Grove	PA
Christine	Moore		Philadelphia	PA
Christopher	Moore		Venetia	PA
Danielle	Moore		Philadelphia	PA
Debra	Moore		Norristown	PA
Deyona	Moore		Philadelphia	PA
Ivery	Moore		Philadelphia	PA
Jacqueline	Moore		Ambler	PA
Jahkier	Moore		Harrisburg	PA
Jeffrey	Moore		York	PA
Joyce	Moore		Emmaus	PA
Juanita	Moore		Coatesville	PA
Kathleen	Moore		Beaver	PA
Katie	Moore		Philadelphia	PA
Marcellus	Moore		Harrisburg	PA
Mariya	Moore		Waterford	PA
Mary	Moore		Cambridge	MA
Nicole	Moore		Ambridge	PA
Pamela	Moore		Erie	PA
Rena	Moore		Canonsburg	PA
Rochelle	Moore		Philadelphia	PA
Sandra	Moore		Glenshaw	PA

Shantae	Moore		Allentown	PA
Shaquana	Moore		Philadelphia	PA
Shawn	Moore		Lancaster	PA
Sondra	Moore		Downingtown	PA
Thomas	Moore		West Alexander	PA
Vanessa	Moore		Kutztown	PA
William	Moore		Wyncote	PA
Leonor	Mora		Philadelphia	PA
Edda	Morales		Norristown	PA
Gabriella	Morales		Philadelphia	PA
Jose	Morales		Philadelphia	PA
Nelissa	Morales		Philadelphia	PA
Richard	Morales		Reading	PA
Anita	Moran		Pittsburgh	PA
Frances	Moran		Lansdale	PA
Vera	Morangello		Philadelphia	PA
James	Morano		Doylestown	PA
Marc	Morano	CFACT Climate Depot	Washington	DC
Matthew	Moravec		Beaver Falls	PA
Daphne	More	Daphne More AIA LLC	West Chester	PA
Edwin	More		York	PA
Nadege	Morel		Elkins Park	PA
Mary	Morell		Flourtown	PA
Megan	Morelli		Easton	PA
Maureen	Morello		Philadelphia	PA
Karen	Moreno		Coatesville	PA
Rafael	Moreno		Philadelphia	PA
Debra	Moresi		Plymouth Meeting	PA
Dante	Morg		Doylestown	PA
Adrienne	Morgado		Newtown	PA
Bill	Morgan		Pottstown	PA
Carol	Morgan		Greencastle	PA
Donna	Morgan		Bangor	PA
Joanne	Morgan		Northern Cambria	PA
John	Morgan		Sharon Hill	PA
Judy	Morgan		Philadelphia	PA
Kelly	Morgan		Philadelphia	PA
Maren	Morgan		Lancaster	PA
Marie	Morgan		Philadelphia	PA
Martha	Morgan		Philadelphia	PA
Mike	Morgan		Duncansville	PA
Tarlisa	Morgan		Mount Joy	PA
Keith	Morgan III		Brownfield	PA
Caroline	Morgan-cox		Parkesburg	PA
Charles	Morgante		Harmony	PA
Brian	Moriconi		Northern Cambria	PA
Jonathan	Morley		Philadelphia	PA

Jennifer	Moroney		Chalfont	PA
Jason	Morria		Pittsburgh	PA
Charles	Morris		Philadelphia	PA
Chrys	Morris		Wampum	PA
Craig	Morris		East Stroudsburg	PA
Doug	Morris		Mechanicsburg	PA
Jaime	Morris		Philadelphia	PA
Jesse	Morris		Philadelphia	PA
Kevin	Morris		McKees Rocks	PA
Lynne	Morris		Fairless Hills	PA
Mary Beth	Morris		Pittston	PA
Opal	Morris		Philadelphia	PA
Scott B.	Morris		Waynesburg	PA
Sue	Morris		Mill Hall	PA
Suzie	Morris		Dunbar	PA
Todd	Morris		Spring City	PA
Joyce	Morrison		Norwood	PA
Rob	Morrison		Erie	PA
Sophia	Morrison		Wayne	PA
Kathryn	Morrow		State College	PA
Gary	Morse		Pittsburgh	PA
JoAnn	Morse		Pittsburgh	PA
Shannon	Morsell		York	PA
Shawn	Mort		Fairfield	PA
Antowine	Morton		Wilkes-Barre	PA
Stephanie	Mory		Clarks Summit	PA
Frank	Morzano		Beaver Falls	PA
Brian	Moscatello		Rio Grande	NJ
George	Mosee		Philadelphia	PA
Tom	Moser		Murrysville	PA
Charmell	Moses		Munhall	PA
Samantha	Moses		Philadelphia	PA
Edward	Moskol		Drifting	PA
Ann	Moskowitz		Phoenixville	PA
Oliver	Mosley		Philadelphia	PA
Charlotte	Moss		Benton	PA
India	Moss		Williamsport	PA
Lawrence	Moss		Philadelphia	PA
Linda	Moss		Wilkes-Barre	PA
Traci	Moss		Coraopolis	PA
Michael	Most		Northern Cambria	PA
George	Mostoller		Philadelphia	PA
Arthur	Motta		State College	PA
Mary	Motz		Sewickley	PA
William	Moul		Bradfordwoods	PA
Angela	Mountain		Ambler	PA
Ron	Mountin		Pittsburgh	PA

Stephen	Mourar		Spring City	PA
Katie	Mowery		Amity	PA
Margaret	Mowrer		Bethlehem	PA
Ray	Moye		Willow Street	PA
Charmaine	Moye		McKees Rocks	PA
Alice	Moyer		Ulster	PA
Barbara	Moyer		Blandon	PA
Bob	Moyer		Harleysville	PA
Bruce	Moyer		Harleysville	PA
Chris	Moyer	PA Foundry Association	Plymouth Meeting	PA
Diana	Moyer		Fleetwood	PA
Glenn	Moyer		Sounderton	PA
Kensley	Moyer		Orwigsburg	PA
M.	Moyer		Lewisburg	PA
Reed	Moyer		Port Matilda	PA
Stephen	Moyer		Pottsville	PA
Terrence	Moyer		Sinking Spring	PA
Whitney	Moyer		Gilbertsville	PA
David	Moyle		Athens	PA
Carl	Mozeleski		Scott	PA
Blaise	Mucci		Derry	PA
Charles	Muehlhof		Danville	PA
Judith	Mueller		York	PA
Patricia	Mueller		Pittsburgh	PA
Joey	Mueser		Pittsburgh	PA
Kevin	Muir		Seward	PA
Nancy	Muir		Armagh	PA
Matt	Mujica		Fairless Hills	PA
Gabe	Mukherjee		Flemington	NJ
Gabriel	Mulbah		Pittsburgh	PA
Troy	Mulgueen		Shohola	PA
Virginia	Mulky		Pittsburgh	PA
Margaret	Mullen		Indiana	PA
Patrick	Mullens		East York	PA
Cheryl	Muller		Dresher	PA
Deborah	Mulligan		Downingtown	PA
Margi	Mulligan		Bryn Mawr	PA
Maureen	Mulligan	Sustainable Futures Communication, LLC	Lebanon	PA
Peter	Mulligan		Cinnaminson	NJ
Chris	Mullin		Pittsburgh	PA
Sally	Mulno		Wysox	PA
William	Mulrennan		*Submitted via email*	PA
Rhonda	Mulroy		Indiana	PA
Ben	Mummert		Carlisle	PA
Michelle	Munett		Wilkes-Barre	PA

Joe	Munford		Philadelphia	PA
Dawn	Munion		Narvon	PA
Guadalupe	Muniz		Philadelphia	PA
Heidi	Munn		Pittsburgh	PA
Maria	Munoz-Grandes		Philadelphia	PA
Susan	Murawski		North East	PA
Anne	Murcek		Lewisburg	PA
Robert	Murcek		Lewisburg	PA
Ryan	Murdick		Shelocta	PA
Scot	Murdock		Bensalem	PA
Laura	Murillo		Glenside	PA
Alexandria	Murphy		Philadelphia	PA
Andrea	Murphy		Pittsburgh	PA
Brittany	Murphy		Levittown	PA
Colin	Murphy		Pittsburgh	PA
Dennis	Murphy		Wallingford	PA
Gwen	Murphy		West Chester	PA
John	Murphy		Ashland	PA
John	Murphy		Doylestown	PA
Karen	Murphy		Newtown Square	PA
Kelsey Stanton	Murphy		Wallingford	PA
Michael	Murphy		Pittsburgh	PA
Patricia	Murphy		Lackawaxen	PA
Patricia	Murphy		Pittsburgh	PA
Sean	Murphy		Pittsburgh	PA
Sherrie	Murphy		Warrington	PA
Tammy	Murphy	Medical Advocacy Director, PSRPA	Philadelphia	PA
Victoria	Murphy		Thorndale	PA
Angela	Murray		Glenside	PA
Carol	Murray		Philadelphia	PA
Dan	Murray		Coraopolis	PA
Denise	Murray		Brookhaven	PA
Gail	Murray	Communications Director Communities First Sewickle	Pittsburgh	PA
Gail	Murray		Sewickley	PA
Janet	Murray		Philadelphia	PA
Marty	Murray		Pittsburgh	PA
Michael	Murray		Brookhaven	PA
Timothy	Murray		Ringgold	PA
William	Murray		Pittsburgh	PA
Georgia	Murray*	Appalachian Mountain Club	Gorham	NH
Maureen	Murray-Jaklic		Hermitage	PA
Danetta	Murrell		Philadelphia	PA
Louis	Murri		Slatington	PA
Don	Murtaugh		Malvern	PA
Susan	Murtha		Philadelphia	PA

Dave	Musser		Elizabethtown	PA
Ronald	Musser	Pennsylvania Mining Professionals	Central City	PA
Ronald	Musser	Musser Engineering	Central City	PA
Scarlett	Musser		Millersville	PA
Jan	Muth		Wilkes-Barre	PA
Melissa	Muth		Narberth	PA
Stanley	Mutzabaugh		Duncannon	PA
Swipy	Muzik		Philadelphia	PA
Eva	Muzika		Chalfont	PA
Anne Marie	MvcShea		Doylestown	PA
Regina	Mycek		New Hope	PA
Veronica	Myer		Lititz	PA
Brad	Myers		Pittsburgh	PA
Bradley	Myers		Midland	PA
James	Myers		Valley Township	PA
Janice	Myers		Harrisburg	PA
Linda	Myers		Petersburg	PA
Melissa	Myers		Shippenville	PA
Michael	Myers		Freeport	PA
Pam	Myers		Akron	PA
Stacy	Myers		New Kensington	PA
Stephanie	Myers		York	PA
Tammy	Myers		Berlin	PA
Tara	Myers		Birdsboro	PA
Theodore	Myers		Dallastown	PA
Vanessa	Myers		Telford	PA
Jeanne Carol	Myers, PhD		Philadelphia	PA
Michelle	Naccarati-Chapkis	Exec Dir, Women for a Healthy Environment	Pittsburgh	PA
Kraig	Nace		Duncannon	PA
Barbara	Nadel		Milford	PA
Lawrence	Nader		Canonsburg	PA
Jonathan	Nadle		Pittsburgh	PA
Benjamin	Nadolny		Pottstown	PA
Mary Ann	Nagel		Downingtown	PA
Vanessa	Naglak		Chalfont	PA
George	Nagle		Harrisburg	PA
John	Nagle		Pittsburgh	PA
Al	Nagy		Lititz	PA
Prash	Naidu		Philadelphia	PA
Jean	Najjar		State College	PA
Raymond	Najjar*		University Park	PA
Julia	Nakhleh		Collegeville	PA
Renee	Nalls		Philadelphia	PA
S.	Nam		New York	NY
Susan	Namachar		Pittsburgh	PA
Jessica	Nami		Philadelphia	PA

Lee	Namiotka		Clarks Summit	PA
Laura	Napier		Doylestown	PA
Rodney	Napier		Pottstown	PA
David	Naples		Duncannon	PA
Alexandra	Napoleon		Morrisville	PA
James	Napolitana		Altoona	PA
Patricia	Napotnik		*Submitted via email*	PA
Don	Naragon	League of Women Voters Board of Directors	Sewickley	PA
Scarlett	Naranjo		Philadelphia	PA
Cara	Nardone		Havertown	PA
Cynthia	Narkoff		Souderton	PA
Sharon	Narushoff		Hanover	PA
Jessenia	Narvaez		Bethlehem	PA
Nora	Nash	Sisters of St Francis of Philadelphia	Aston	PA
Michael	Nass		Towanda	PA
Amy	Nassif		Mars	PA
Robert	Nast		Factoryville	PA
Marian	Nasuti		Philadelphia	PA
Michael	Natelson		Pittsburgh	PA
Stephen	Natishin		Elizabethtown	PA
Ernest	Naugle		Montoursville	PA
Barry	Naum	Industrial Energy Consumers of Pennsylvania	Mechanicsburg	PA
Charlie	Naumowicz		Slatington	PA
Helen	Navaline		Philadelphia	PA
Cassie	Navalta		Philadelphia	PA
Greg	Navarro		Drexel Hill	PA
Edith	Naveh		Pittsburgh	PA
Patrick	Navin		Washington Boro	PA
Olga	Navros		Pittsburgh	PA
Richard	Naylor		Chester	PA
Sharon	Naylor		Chadds Ford	PA
Rachel	Nazareth		Philadelphia	PA
Judith	Neece		Williamsport	PA
Heidi	Needleman		Doylestown	PA
Sylvia	Neely		State College	PA
Aida	Negron		York	PA
Ana	Negron		Allentown	PA
Carmen	Negron		Easton	PA
Efren Maldonado	Negron		Allentown	PA
Maggie	Negron		Reading	PA
Maria	Negron		Allentown	PA
Sophia	Neiblum		West Chester	PA
Ruth	Neifeld		Philadelphia	PA
Janet	Neihart		Cottage Grove	MN

Sophia	Nekoranik		Yardley	PA
Nora	Nelle		Collegeville	PA
Carlyn	Nelson		Narberth	PA
Fred	Nelson		Pittsburgh	PA
Heather	Nelson		Douglassville	PA
Janet Lawrence	Nelson		Spring City	PA
Kara	Nelson		Philadelphia	PA
Lynn	Nelson		Reading	PA
Richard	Nelson		West Chester	PA
Robert	Nelson		Lebanon	PA
Taiji	Nelson		Pittsburgh	PA
Thomas	Nelson		Lansdowne	PA
Tia	Nelson		Altoona	PA
Vanessa	Nelson*		Mechanicsburg	PA
Ganga	Neopaney		Pittsburgh	PA
Nickole	Nesby	Mayor, City of Duquesne	Duquesne	PA
Donald	Nesmith		Philadelphia	PA
Sarah Boucas	Neto		Merion Station	PA
George	Neuhof		Hooversville	PA
Janet	Neukirchner		Philadelphia	PA
CJ	Neumann		Pittsburgh	PA
Inger	Neumann		Devon	PA
Linda	Neumann		Pittsburgh	PA
Christine	Neuwirth		Pittsburgh	PA
Jeffrey	Neveil		Philadelphia	PA
Crystal	Newcomer		Enola	PA
Rebecca	Newcomer		Greencastle	PA
Thomas	Newhart		Littlestown	PA
Chris	Newman		Collegeville	PA
Melissa	Newman		Uniontown	PA
Sharon	Newman		West Chester	PA
Stephanie	Newman		Jenkintown	PA
Talia	Newman		Ambler	PA
Raymond	Newmaster		Sinking Spring	PA
Rick	Newsome		Horsham	PA
Karen	Newsuan		Philadelphia	PA
Joanna	Newton		Lancaster	PA
Juliane A.	Newton		Clinton	PA
Gerald	Ney		Philadelphia	PA
Diana	Ngo		Pittsburgh	PA
Duong	Nguyen		King of Prussia	PA
Hong	Nguyen		York	PA
James	Nhial		Souderton	PA
Kathleen	Nicholas		Pittsburgh	PA
Sara	Nicholas	Pasa Sustainable Agriculture	Harrisburg	PA
Amanda	Nichols		Bradford	PA
David	Nichols		Havertown	PA

Dexter	Nichols		Philadelphia	PA
Kristen	Nichols		Philadelphia	PA
Susan	Nichols		Carlisle	PA
William	Nichols		Philadelphia	PA
Brandon	Nicholson		Saint Clairsville	OH
Greg	Nicholson		Philadelphia	PA
Honora	Nicholson		Philadelphia	PA
Thomas	Nicholson		Chester	PA
Gale	Nichtula		East Stroudsburg	PA
John	Nickey		Hanover	PA
Bonnie	Nickle		West Chester	PA
Richard	Nickson		Peach bottom	PA
Nicola	Nicolai		*Submitted via email*	PA
Leah	Nicolich-Henkin		Pittsburgh	PA
Dominic	Nicotra		McKeesport	PA
Jason	Niecgorski		Pittsburgh	PA
JoAnna	Niecgorski		Pittsburgh	PA
Kaitlyn	Niecgorski		Pittsburgh	PA
Claire	Niederberger		Pittsburgh	PA
Richard	Niederberger		Hallstead	PA
Melissa	Niemczura		Horsham	PA
Richard	Niesenbaum	Professor Muhlenburg College	Allentown	PA
Anthony	Nieves		Reading	PA
Joan	Nikelsky		Upper Darby	PA
Barbara	Nilsen		State College	PA
John	Ninni		Center Valley	PA
Delaney	Niper		Hatboro	PA
Diane	Nissen		Haverford	PA
Cheryl	Nixon		Philadelphia	PA
Provided	*No Name*	Sustainability Advisory Committee East Goshen Twp	West Chester	PA
Provided	*No Name*	hmkb19@gmail.com	*Submitted via email*	PA
Provided	*No Name*	dgarrett83@yahoo.com	*Submitted via email*	PA
Provided	*No Name*	bmanos11@comcast.net	Indiana	PA
Stephanie	Noberini		Quakertown	PA
Elizabeth	Noble		Allentown	PA
null	Noble		Philadelphia	PA
Tammy	Noble		Pottstown	PA
Jennica	Nobre		Huntingdon Valley	PA
James	Noden	Bright Eye Solar LLC	Lancaster	PA
Janet	Noel		Croydon	PA
Cathy	Noga		Carnegie	PA
Anita	Nolan	League of Women Voters of Chester County	Chadds Ford	PA

Carol	Nolan		Allentown	PA
Nuala	Nolan		Upper Darby	PA
Amber	Nolder		Harrisburg	PA
Kate	Noll		Laureldale	PA
Sean	Nolon		*Submitted via email*	PA
Galen	Nolt		Bethel	PA
Elliot	Nolter		Bethlehem	PA
Linda	Noonan	Chestnut Hill United Church	Philadelphia	PA
Nancy Anne	Noonan		Broomall	PA
Barbara	Noone		Haverford	PA
Stephen	Norcross		Dillsburg	PA
Erik	Nordgren		Philadelphia	PA
Mark	Nordyke		Kunkletown	PA
Norma	Norman		Oil City	PA
Tamar	Norquist		Lansdowne	PA
Brenda	Norris		Brookhaven	PA
Paula	Norris		Harrisburg	PA
Anne	Norton	Professor,University of Pennsylvania	Philadelphia	PA
Glenavie	Norton		Philadelphia	PA
Tracey	Norton		Elkins Park	PA
Karen	Norvig Berry*		Bethlehem	PA
Gerald	Notaro		Kelayres	PA
Ian	Notte		Philadelphia	PA
Clare	Novak		Chester Springs	PA
Donna	Novak		Bethlehem	PA
John	Novak		Blawnox	PA
Robin	Novak		Philadelphia	PA
Mary	Novella		Cresson	PA
Theresa	Novelli		Philadelphia	PA
Mary	Nuahn		Allentown	PA
James	Nuccetelli		*Submitted via email*	PA
Tricia	Nudo		Connellsville	PA
Vildenia	Nuesi		Reading	PA
Diane	Nugent		East Norriton	PA
Becca	NuMani		Ambler	PA
Margaret	Nunn		Philadelphia	PA
Michael	Nush		Bensalem	PA
Ryan	Nuss		Lansdale	PA
Judy	Nussbaum		Newtown	PA
Mujahid	Nyahuma		Philadelphia	PA
Christine	Nye		Fredericksburg	PA
Sara	Nye		Philadelphia	PA
Warren	Nystrom		Pittsburgh	PA
Oliver	Nze		Upper Darby	PA

Helene	Oakes		Philadelphia	PA
John	Oakes		Rockwood	PA
John	Oakes		Scott Twp	PA
Robert	Oakman		Philadelphia	PA
Wilfred	Oakman		Harrisburg	PA
Mara	Obelcz		Hatfield	PA
Bill	Obenour		Sewickley	PA
Jeffrey	Ober		Pittsburgh	PA
Kathy	Ober		Pittsburgh	PA
Mary	Oberheu		Indiana	PA
Mitch	Oberly		Newmanstown	PA
Joseph	Oberneder		Kittanning	PA
Michael	Oblinski		Corry	PA
Susan	O'Boyle		West Reading	PA
Beverly	O'Brien		Wayne	PA
Daniel	O'Brien		Milton	NY
Kathleen	O'Brien		Philadelphia	PA
Michele	O'Brien		Media	PA
Philip	O'Brien		Philadelphia	PA
Tom	O'Brien		Broomall	PA
Tom	O'Brien		Pittsburgh	PA
Trish	O'Brien		Lansdowne	PA
Kenneth	Obryant		Orrtanna	PA
James	Obst		Philadelphia	PA
Angel	Ocasio		Reading	PA
Evelyn	Och		Pittsburgh	PA
Holona	Ochs	Associate Professor, Lehigh University	Bethlehem	PA
Kimberly	Ocipa		*Submitted via email*	PA
Barbara	O'Connell		Kennett Square	PA
David	O'Connell	City Council Person, City of Easton, PA	Easton	PA
Mary Lou	O'Connell		Aliquippa	PA
Rob	O'Connell		Pottstown	PA
Corey	O'Connor	Councilman, Pittsburgh City Council	Pittsburgh	PA
Eric	O'Connor		Spring City	PA
Kathryn	O'Connor		Downingtown	PA
Kevin	O'Connor		Philadelphia	PA
Laura	O'Connor		Stroudsburg	PA
Mary	O'Connor		Kingston	PA
Terry	O'Connor		Clearfield	PA
Tabatha	Oden		Leechburg	PA
Francine	Odom		Philadelphia	PA
Martin	Odom		Kennett Square	PA
Daniel	O'Donnell		Glen Mills	PA
Deanne	O'Donnell		Derry	PA

Edward	O'Donnell	IBEW Local 81	Scranton	PA
Kate	O'Donnell		Louisville	CO
Kim	O'Donnell		Pittsburgh	PA
Matthew	O'Donnell		Oreland	PA
Sean	O'Donnell		Pittsburgh	PA
Johan	Offermans		New Hope	PA
Russell	Offringa		Lansdowne	PA
Charles	Ogle		Kunkletown	PA
Jermaine	Ogletree		Clairton	PA
Rosemary	Ogline		Pittsburgh	PA
Vincent	O'Grady	Maxwell Lighting & Energy	King of Prussia	PA
Michele	Ogrodnick		Forty Fort	PA
Akinwunmi	Ogundipe		Upper Darby	PA
Larista	O'Harra		Indiana County	PA
Nina	O'Hella		Allison Park	PA
Zefra	Ohlson		Bethlehem	PA
Marguerite	Ohmstedt		Philadelphia	PA
Joseph	Ohrt		Furlong	PA
Patrick	O'Keefe		Zelienople	PA
Beth	Olanoff		New Hope	PA
Glenn	Olcerst	Co-Founder, Rail Pollution Protection Pittsburgh	Pittsburgh	PA
Victoria	Oldroyd		Bensalem	PA
Jill	O'Leary		Phoenixville	PA
Sean	O'Leary	Ohio River Valley Institute	Johnstown	PA
Terence M.	O'Leary		King of Prussia	PA
Vickie	Oles		Ligonier	PA
Candy	Olesh		Boyertown	PA
Alan	Oley		Allison Park	PA
Reyes	Olivares		Harrisburg	PA
Kimberly	Oliver		Pittsburgh	PA
Vivian	Oliver		Philadelphia	PA
Jean	Olivett		Emporium	PA
Jonathan	Olm		Bethlehem	PA
Stacey	Olphin		*Submitted via email*	PA
Bret	Olpp		Bethlehem	PA
Lawrence	Olsavsky		Hastings	PA
Steve	Olshevski	Radnor Meeting of the Religious Society of Friends	Philadelphia	PA
Donna	Olson		Pittston	PA
Wayne	Olson		Manheim	PA
Ronald	Olszewski		Erie	PA
Watson	Olszewski		Norristown	PA
Shawn	Omalley		Runnemede	NJ
Jean	O'Malley		Pittsburgh	PA
Maria	O'Matz*		Pittsburgh	PA

Cecelia	Ondrey		North Versailles	PA
Ray	Ondrusek		Myerstown	PA
Jacklyn	O'Neil		Perkiomenville	PA
Sheena	O'Neil		Pittsburgh	PA
Anthony	O'Neill		Richboro	PA
Carol	O'Neill		Warrior's Mark	PA
Donna	O'Neill		Ashland	PA
Karen	O'Neill		Collegeville	PA
Kelly	O'Neill		Harrisburg	PA
Stephen	O'Neill		Reading	PA
Robert	Onyshko	Harsco Environmental	*Submitted via email*	PA
Ann	Opilo		Palmyra	PA
Miriam	Oppenheimer		Philadelphia	PA
Robert	Oppenheimer		Wyomissing	PA
Danya	Oquendo		Allentown	PA
Juan	Oquendo		Reading	PA
Douglas	Orbaker		Mifflinburg	PA
Daniel	Orbanus		Pennsville	NJ
Debra	Orben		Springtown	PA
Olga	Oretsky		Easton	PA
Daniel	Orfe		Harleysville	PA
Kelly	Organ		East Lansdowne	PA
Tom	Orgeron		Philadelphia	PA
Judi	Orgie-Hoffer		West Pittston	PA
John	Oriente		Havertown	PA
Nancy	Orons		Wexford	PA
Eileen	O'Rourke		Flourtown	PA
Regina	Orozco		*Submitted via email*	
Ray	Orsi		Beechview	PA
Laura	Orsini		Elverson	PA
Austin	Orth		Pittsburgh	PA
Angel	Ortiz		York	PA
Felix	Ortiz		Philadelphia	PA
Isnoema	Ortiz		Philadelphia	PA
Joanna	Ortiz		Philadelphia	PA
Robert	Ortiz		Novato	CA
Linda	Ortman		Lancaster	PA
Helen	Ortmann		Pittsburgh	PA
Linda	Ortmann		Forest City	PA
Risha	Ortwein		Allentown	PA
David	Orvis		East Brady	PA
Steven	Orvis		Chicora	PA
Wayne	Orvis	Worthington Baptist Church	East Brady	PA
Zachary	Orvis		East Brady	PA
Raymond	Orzechowski		Newtown Square	PA

Mary	Osbakken		Philadelphia	PA
Dawn	Osborn		Girard	PA
Ian	Osborne		Nottingham	PA
Nathan	Oscarson		Union Dale	PA
Tanya	Osidach		Schwenksville	PA
Jeff	Oskin		Jefferson Hills	PA
Doris	Ostrowski		Reading	PA
Brian	Oswald		Philadelphia	PA
Evelyn	Otero		Mount Pocono	PA
Douglas	Ott		Greencastle	PA
Thomas	Ott		Pipersville	PA
Wayne	Ott		Orbisonia	PA
Loretta	Ottinger	Project Developer, Suntuity	Breinigsville	PA
Belinda	Otusanya		Philadelphia	PA
Deborah	Outlaw		Philadelphia	PA
Rahsheema	Outlaw		Philadelphia	PA
Leighann	Ovelman		Broomall	PA
Kate	Overath-Speck		Ardmore	PA
Patricia	Overbey		Effort	PA
Hunter	Overdorff	United School Board	Homer City	PA
P.	Overdorff		*Submitted via email*	PA
Susan	Overdorff		Indiana County	PA
Richard	Overmoyer	Fourth Economy	Pittsburgh	PA
Frederick	Owen		Northumberland	PA
Michael	Owen		Philadelphia	PA
Lora	Owens		Pittsburgh	PA
Nevaeh	Owens		Philadelphia	PA
Sharon	Owens		Harrisburg	PA
Skylar	Owens		Tobyhanna	PA
Terry D.	Oxenreider		Reading	PA
Rebecca	Oyler	National Federation of Independent Business	*Submitted via email*	PA
Chris	Ozbun		Wynnewood	PA
B.	P.		McKeesport	PA
Barbara	Pace		Pittsburgh	PA
Cheryl	Pace		Philadelphia	PA
Dennis	Pace		Hawley	PA
Sheree	Pace		Philadelphia	PA
Joyce	Packer		Philadelphia	PA
Richard	Packer		Gibsonia	PA
Lou Ann	Pacocha		Coal Township	PA
Elizabeth	Padden		Kutztown	PA
Lawrence	Padgett		Aliquippa	PA
Paris	Padgett		East Stroudsburg	PA
Josephine	Padilla		Reading	PA
Julie	Padovan		Philadelphia	PA

Alberto	Pagan-Ramirez		Philadelphia	PA
Amy	Page		Philadelphia	PA
Bonnie	Page		Lancaster	PA
Cheryl	Page		Reading	PA
Nancy	Page		Upper St Clair	PA
Morris	Pagni		Wind Gap	PA
Judy	Painter		Williamsport	PA
Jess	Pak		*Submitted via email*	PA
Jill	Palcho		Pittsburgh	PA
Grace	Palermo		Yardley	PA
Thomas	Palguta		*Submitted via email*	PA
Paul	Palla		Greencastle	PA
Melanie	Pallone		Oakmont	PA
Byron	Palmer		East Stroudsburg	PA
Candice	Palmer		Philadelphia	PA
Denise	Palmer		Philadelphia	PA
Jacqueline	Palmer		Holland	PA
Joe	Palmer		Holland	PA
John	Palmer		Athens	PA
Laura	Palmer		Reading	PA
Sarah	Palmer		Kennett Square	PA
William	Palmer		Spring Mills	PA
Gene	Palmieri		Ardsley	PA
Tina	Paloskey		Julian	PA
Zsuzca	Palotas		Warrington	PA
Bernard	Pamer		Philadelphia	PA
James	Panaro	Seward Generation, LLC	New Florence	PA
Greta	Panasiti		Port Matilda	PA
Philip	Pandolfi		Glenshaw	PA
Cassie	Paoli		Glenside	PA
Niki	Papageorgiou		Garnet Valley	PA
Natalie	Papaleo		Glenolden	PA
Gary	Papay		Hughesville	PA
Adina	Papinchak		Harrisburg	PA
Marguerite	Papineau		Philadelphia	PA
Paul and Mary	Pappas		Bernville	PA
Robin	Pappas		Pocono Manor	PA
Andrew	Paradisi		Havertown	PA
Yvonne	Paranick		Cranberry	PA
Jordan	Pardee		Blairsville	PA
Donald	Park		Newtown Square	PA
Samuel	Park	CEO, Arsenal Solar	Philadelphia	PA
Carolyn	Parker		East Stroudsburg	PA
John	Parker		*Submitted via email*	PA

Judith	Parker		Philadelphia	PA
Kathleen	Parker		Exton	PA
Lisa	Parker		Kyle	TX
Myron	Parker		Northampton	PA
Sherman	Parker		Pittsburgh	PA
Walter	Parker		Charleroi	PA
Kelsey	Parkin		Philadelphia	PA
Markeita	Parks		Philadelphia	PA
Nancy	Parks		Aaronsburg	PA
Shelby	Parks*		New York	NY
Janet	Parlett		Coatesville	PA
Antoine	Parmentier		Upper Black Eddy	PA
Darla	Parmer		Hummelstown	PA
Leo	Parnell		Philadelphia	PA
Jerome	Parness		Pittsburgh	PA
William	Parr		Langhorne	PA
Kelsey	Parra		Erie	PA
Andrew	Parrish		Landenberg	PA
Denita	Parrish		Pittsburgh	PA
Katy	Parrish		Philadelphia	PA
John	Parry		Mount Carmel	PA
Michael	Parson Sr.		Philadelphia	PA
Judy	Parsons		Philadelphia	PA
Kathleen	Parsons		Hershey	PA
Keith	Parsons		Media	PA
Kelli	Parsons		Elkins Park	PA
Melisa	Parsons		Philadelphia	PA
Tom	Parsons		Philadelphia	PA
Joshua	Partner		West Chester	PA
Elizabeth	Pascarella		Pittsburgh	PA
Khadija	Paschall		Pottstown	PA
Eric	Pash		Indiana	PA
Donna	Pashko		Aston	PA
Dominic	Pasqualino		Wynnewood	PA
Robert	Pasquantonio	Councilmember, Brentwood Borough Council	Brentwood	PA
Gregory	Pasquarello		Phoenixville	PA
Karen	Pastor	Council Woman, Sharpsburg Borough	Sharpsburg	PA
Richard	Pastor		Bethlehem	PA
Nancy	Pastorok		Doylestown	PA
Manisha	Patel		Phoenixville	PA
Nilkanth	Patel		Bridgeport	PA
Preena	Patel		Pittsburgh	PA
Deb	Paterline		West Newton	PA
Elaine	Paterson		Carnegie	PA
Amanda	Patrick		Mechanicsburg	PA

Leslie	Patrick		Mifflinburg	PA
Nanette	Patrick		Philadelphia	PA
Susan	Patrone		Philadelphia	PA
Lynn	Patsiga		New Brighton	PA
Uma	Pattarkine	Green Building United	Philadelphia	PA
Guy	Patten		Perryopolis	PA
Erin	Patterso		New Castle	PA
Bill	Patterson		Harrisburg	PA
Hayley	Patterson		Vicksburg	MS
Mike	Patterson		Swarthmore	PA
Quentin	Patterson		Harrisburg	PA
Sue	Patterson		Philadelphia	PA
Wanda	Patterson		Clymer	PA
Avis	Pattishall		Hershey	PA
Lisa	Pattock		Murrysville	PA
Linda	Patton		Malvern	PA
Peter	Patton		Havertown	PA
Mark	Patzkowsky		State College	PA
Karen	Paul		Trevose	PA
Nancy	Paul		Cranberry Township	PA
Merin	Paul		Glenmoore	PA
Michael	Paules		York	PA
Nina	Paules		New Freedom	PA
Lisa	Pauley		Harrisburg	PA
Alan	Paulson		Gettysburg	PA
Candice	Paulus		Hanover	PA
Robin	Paur		Center Valley	PA
Gregory	Pauwels		Glenside	PA
Jennifer	Pavao*	Lower Merion Township EAC	Haverford	PA
Bronwen	Paviglianiti		West Grove	PA
Eric	Pavlak		Norristown	PA
Bernie	Pavlick		Homer City	PA
Jill	Pavlovitz		Pottsville	PA
Raina	Pawloski		Schnecksville	PA
Marc	Pawlowski		Lancaster	PA
Lisa	Payakovich		Philadelphia	PA
Kim	Paymaster		Philadelphia	PA
Angela	Payne		Philadelphia	PA
Imani	Payne		Philadelphia	PA
James	Payne		State College	PA
Kaden	Payne		Philadelphia	PA
Vincent	Payne		Philadelphia	PA
Bonnie	Peace		Apollo	PA
Dante	Peace		Philadelphia	PA
Rufus	Peachey		Reedsville	PA
Angela	Peak		Philadelphia	PA

Beverly	Peake		New Oxford	PA
Mike	Peale		Aston	PA
Karen	Pearlstein		Exton	PA
Wytonya	Pearsall		Norristown	PA
Ali	Pearson		Philadelphia	PA
Christopher	Pearson		Philadelphia	PA
Kiyana	Pearson		Philadelphia	PA
Rhonda	Pearson		Pittsburgh	PA
Michael	Pechter		Philadelphia	PA
Emily	Peck		East Stroudsburg	PA
Eric	Peck		Fleetwood	PA
Jerry	Peck		Pottstown	PA
Olivia	Peck	League of Women Voters of Pennsylvania	Philadelphia	PA
Chrissa	Pedersen		Philadelphia	PA
Christian	Pedersen		Landenberg	PA
Ron	Pedersen		Wayne	PA
Julian	Pedraza		Williamsport	PA
Angelo	Pedro		Dushore	PA
Dianne	Peeling*		Montgomery	PA
Carmen	Peguero		Hazleton	PA
Janice	Peischl		Allison Park	PA
Joan	Pelc		Newtown Square	PA
Aaron	Peles		*Submitted via email*	PA
Brad	Pellegrini		Waynesburg	PA
Sam	Pellerite, Jr.		Fogelsville	PA
Victor	Pelletier		West Grove	PA
Samuel	Pellom		Philadelphia	PA
Michelle	Pelone		Chalfont	PA
Safessa	Pemberton		Philadelphia	PA
Whitney	Pemberton		York	PA
Terrance	Pembrook		Erie	PA
Katy	Pena		Philadelphia	PA
Shannon	Pendleton	Principal, Sanderson Architectural	Lahaska	PA
Eugene	Pendolino		DuBois	PA
Cynda	Penfield		Downingtown	PA
David	Penfield		Downingtown	PA
Stanley	Penkala		Pittsburgh	PA
Barbara	Pennell		Harrisburg	PA
Judy	Penney		Swarthmore	PA
Caleb	Pennington		Bradford	PA
Dennis	Pennington		Norristown	PA
Julie	Pennington		Benton	PA
Lindsey	Pennington		Oreland	PA
Saundra	Pennington		Pittsburgh	PA
Kathleen	Penrod		Hanover	PA

Natalie	Penrod		Johnstown	PA
Christina	Penrose		Philadelphia	PA
Mike	Pentarek		Connellsville	PA
Patricia	Pentis		Waynesboro	PA
Beverly	Peoples		Huntingdon Valley	PA
Dan	Pepin		Cranberry Township	PA
Michelle	Pepitone		Pittsburgh	PA
Nona	Pepkowski		Perkasie	PA
Billy	Pepmeyer		Glenshaw	PA
Angela	Perachio		Upper Darby	PA
Corey	Perchinski		Williamsport	PA
Jose	Pereira		Cranberry Township	PA
Linda	Pereira		Palmerton	PA
Christina	Perella		Intercourse	PA
Dennys	Perez		Harrisburg	PA
Felix	Perez		Philadelphia	PA
Florencio	Perez		Philadelphia	PA
Henry	Perez		Bethlehem	PA
Johana	Perez		Allentown	PA
Jose	Perez		Philadelphia	PA
Juan	Perez		Norristown	PA
Ruben	Perez		Philadelphia	PA
Yolanda	Perez		Philadelphia	PA
Angela	Perfetti		Philadelphia	PA
Olivia Ross	Perfetti		Pittsburgh	PA
Shawn	Perigo		Pittsburgh	PA
Aggie	Perilli		Lancaster	PA
David	Perkins	Citizen's Climate Lobby	Doylestown	PA
Elizabeth	Perkins		Pittsburgh	PA
Jeanne	Perkins		Philadelphia	PA
Nikia	Perkins		Philadelphia	PA
Tanell	Perkins		Darby	PA
Phyllis	Permar		Mc Murray	PA
Peter	Perno		Warrior Run	PA
Judith	Perreault		Downingtown	PA
Treasa	Perrier		Harrisburg	PA
Connie	Perris		Pittsburgh	PA
Candice	Perry		Clairton	PA
Dale	Perry		West Middlesex	PA
Deborah	Perry		New Kensington	PA
Doreen	Perry		Pittsburgh	PA
Eric	Perry		Shamokin	PA
Greg	Perry	Libertarian Party of Bradford County PA	Towanda	PA
Holly	Perry		Abington	PA

Jen	Perry		Morton	PA
Jeremiah	Perry		Osceola Mills	PA
Jim	Perry		Canonsburg	PA
Joseph	Perry		Harrisburg	PA
Nathaniel	Perry		Lancaster	PA
Ryan	Perry		New Florence	PA
Sandra	Perry		Holtwood	PA
Xavier	Perry		Pittsburgh	PA
Johnie	Perryman		Clairton	PA
Sabine	Persenaire		Phoenixville	PA
Rita	Pesini		North Wales	PA
Nancy	Pesti		Yardley	PA
Joanne	Petaccio		Harleysville	PA
Craig	Peterman		Clymer	PA
Ann	Peters		Philadelphia	PA
Earl	Peters		Middletown	PA
Heather	Peters		Philadelphia	PA
Jeanne	Peters		Lansdale	PA
KB	Peters		Newtown Square	PA
Neomi	Peters		Allentown	PA
Pamela	Peters		Lancaster	PA
Renrick	Peters		Philadelphia	PA
Sherwood	Peters		Pittsburgh	PA
William	Peters Jr.		Philadelphia	PA
Carolyn	Peters-Eckel		Southampton	PA
Susan	Petersen		Pittsburgh	PA
Alan	Peterson	Physicians for Social Reponsibility	Willow Street	PA
Eric	Peterson	Manager, Peterson's Ski & Cycle, Inc.	Blakeslee	PA
Jodi	Peterson		Glen Mills	PA
Katherine	Peterson		Pittsburgh	PA
Leyla	Peterson		Philadelphia	PA
Tina	Peterson		Myerstown	PA
Danny	Peticca		Delaware county	PA
Maureen	Petito		Allentown	PA
Isabella	Petitta		Cranberry Township	PA
Florence	Petrella		Langhorne	PA
Saundra	Petrella		Beaver	PA
Albert	Petrof		*Submitted via email*	PA
Chris	Petrone	International Union Operating Engineers Local 66	Pittsburgh	PA
Dom	Petrore		Johnstown	PA
Matthew	Petrovich		McMurray	PA
Emily	Petrucci		Media	PA
Steve	Petrun		Perkasie	PA

George	Petrus	Colona Transfer LP	Monaca	PA
Brooke	Petry		Philadelphia	PA
Quinton	Pettaway		Bushkill	PA
Gloria	Pettinato		Pittsburgh	PA
Antoinnette	Pezzino		Pittston	PA
Amanda	Pfannenstiel		Newtown	PA
Debi	Pfeiffer		Pittsburgh	PA
Hans	Pfister	Professor of Physics, Dickinson College	Carlisle	PA
Marian	Pflaumer		West Chester	PA
Jane	Pflieger		Kane	PA
Jennifer	Pfluger	Vis. Ass. Prof. of Enviro. Studies, Swarthmore Col	Swarthmore	PA
Hue	Phan		Philadelphia	PA
Neil	Phelan		Phoenixville	PA
Rebecca	Phelan		Ardmore	PA
Cynthia	Phillips		Effort	PA
Kenneth	Phillips		Mountain Top	PA
Larry	Phillips		Lancaster	PA
Mark	Phillips		Philadelphia	PA
Mindy	Phillips		Lancaster	PA
Sandy	Phillips		Allentown	PA
Stacy	Phillips		Wallingford	PA
Tina	Phillips		Tremont	PA
Vince	Phillips	PA Septage Management Assn. & PA State Grange	Mechanicsburg	PA
Victoria	Phoenix		Glenside	PA
Courtney	Phone		Cresco	PA
Bradley	Piatt		Allentown	PA
John	Piazza		Lititz	PA
Kate	Piccolo		Camp Hill	PA
Daniel	Pickens		Wyndmoor	PA
Gloria	Pickens		Philadelphia	PA
Jacqueline	Pickering		Exton	PA
Stephanie	Pickett		Forsyth	IL
Linda	Pickford		Greensburg	PA
James	Piech		Wapwallopen	PA
Elizabeth	Pierce		White Oak	PA
Jason	Pierce		Philadelphia	PA
Louis	Pierce		Glenside	PA
Tom	Pierotti		Ludlow	PA
Jon	Piersol		Wexford	PA
Conor	Pierson		Pittsburgh	PA
Robert	Pierson	Director/Owner, Farm to City LLC	Philadelphia	PA
Susan	Pierson		Doylestown	PA
William	Pietryka		Brookhaven	PA
Thomas	Pietrzak		Bethlehem	PA

Aneetra	Pike		Philadelphia	PA
Tom	Pike		Murrysville	PA
Cathy	Pilat		Blandon	PA
Sharon	Pillar*	Environmental Entrepreneurs (E2)	Pittsburgh	PA
Mercedes	Pillette		Pittsburgh	PA
Sara	Pilling		Rosemont	PA
Carmella	Pinckney		Philadelphia	PA
Jesse	Pinckney		Springfield	PA
Anne	Pinkerton		Phoenixville	PA
Shalaree	Pinkney		Norristown	PA
Meryl	Pinque		Bangor	ME
Carmen	Pinto		Philadelphia	PA
Cheryl	Pinto		Pittsburgh	PA
Joseph	Pinto		Newtown Square	PA
Juliann	Pinto		Philadelphia	PA
Joan	Piotrowski		Douglassville	PA
Carlo	Pipitone		Horsham	PA
Erica	Pirrung		Sewickley	PA
Michael	Pisano	Hub Coordinator, Sunrise Pittsburgh	Pittsburgh	PA
Molly	Pisciottano	American Lung Association in Pennsylvania	Pittsburgh	PA
Cindy	Piscitelli		Woodlyn	PA
Sarah	Pisegna		Sharpsville	PA
Jeremy	Pitcairn		Jenkintown	PA
Michael	Pitcavage	Endless Energy	Wilkes-Barre	PA
Emily	Pitner		Washington	PA
Norman	Pitt		Gilbertsville	PA
Alfonzo	Pitts		Upper Darby	PA
Mary	Pivarnik		New Castle	PA
Christine	Pixley		Pittsburgh	PA
Laurie	Plank		Hummelstown	PA
Adam	Platt		Hollsopple	PA
David	Platt		Halifax	PA
Jim and Judy	Platt		Derry	PA
Kat	Platt		Halifax	PA
Lenka	Platt		Halifax	PA
Rodney	Platt		Phoenixville	PA
Jeffrey	Plaut		Elkins Park	PA
Rosemarie	Plavi		Dixonville	PA
Emily	Plaza		Chester	PA
Chris	Plehal		Philadelphia	PA
Alexa	Plisiewicz	President,The Biological Sciences Society, PSU	State College	PA
Jean	Plough		Philadelphia	PA
Susan	Plubell		Clearfield	PA
Donna M	Plummer		Harrisburg	PA
George	Plummer		Downingtown	PA

James	Plummer		Philadelphia	PA
Robert	Plummer		Fleetwood	PA
Emily	Pochet		Royersford	PA
Jill M	Podczaski		Oil City	PA
Eddie	Poder		Johnstown	PA
Eric	Podietz		Dresher	PA
Scott	Poethig		Philadelphia	PA
Kari	Pohl	Sisters of St. Joseph Baden	Baden	PA
Stanley	Pohlit		Sinking Spring	PA
Robert	Pohlman		East Stroudsburg	PA
Ellen	Poist		Philadelphia	PA
Ginny	Pokoj		Titusville	PA
Lauren	Pokras		Philadelphia	PA
Joseph	Polansky		Scranton	PA
Carol	Poleno		New Castle	PA
Alexander	Policicchio		Pittsburgh	PA
Linda	Polinski		Pittsburgh	PA
Kerry	Polite		Philadelphia	PA
Grace	Polito		Philadelphia	PA
Deborah	Polk		Pittsburgh	PA
Lillian	Polk		Philadelphia	PA
Jordan	Pollack		Canonsburg	PA
Dwayne	Pollard		Pittsburgh	PA
Finnigan	Pollard		Newtown	PA
Kathryn	Pollard		State College	PA
Marcus	Pollard		Philadelphia	PA
Joseph	Pollock		Glen Mills	PA
Rebecca	Polsinelli		Springdale	PA
Joshua	Polys		Lancaster	PA
Zuleyka	Pomales		Lancaster	PA
Ted	Pomerantz		Philadelphia	PA
Marcus	Pomeroy		Berwyn	PA
Gregg	Pompe		Cheswick	PA
Mark	Pompe		New Kensington	PA
Samuel	Ponce		Philadelphia	PA
Joseph	Ponisciak		Willingboro	NJ
Nancy	Pontone		Philadelphia	PA
Karen	Pooley	Dir. of Enviro Policy Program, Lehigh University	Bethlehem	PA
Lorraine	Poore		Muncy Valley	PA
Dick	Poot	Council Member, Coopersburg Borough	Coopersburg	PA
Cynthia	Pope		Doylestown	PA
Gevona	Pope		Philadelphia	PA
James	Pope		New Castle	PA
Jerelyn	Pope		Pittsburgh	PA
Warren	Pope		Pittsburgh	PA

Nathaniel	Popkin		Philadelphia	PA
Jane	Popko		Palmyra	PA
Alexander	Poplar		Pottstown	PA
Thaddeus	Popovich		Sewickley	PA
Christopher	Popp		Canonsburg	PA
Eugenie Von	Poppe		Honesdale	PA
Priscilla	Porch		Bryn Mawr	PA
Lori	Porreca	A1 Restoration Inc	Manheim	PA
Amy	Portenlanger		Pittsburgh	PA
Andrew	Porter	Solar Sales Manager, Envinity, Inc.	State College	PA
Barbarette	Porter		Pittsburgh	PA
Carl	Porter		Pittsburgh	PA
Lawrence	Porter		Harrisburg	PA
Linda	Porter		Bristol	PA
Lynn	Porter		Harrisburg	PA
Nm	Porter		Ypsilanti	MI
Pat	Porter		Huntingdon Valley	PA
Susan	Porter		Avondale	PA
Susan	Porter		Hawley	PA
Leah	Porterfield		Philadelphia	PA
Lynne	Porterfield		Pittsburgh	PA
Keith	Portka		Cheswick	PA
Joylette	Portlock	Executive Director, Sustainable Pittsburgh	Pittsburgh	PA
Thomas	Posey		Yardley	PA
Karen	Poshefko		Emmaus	PA
Della	Post		Oakdale	PA
Jessica	Potte		Honey Brook	PA
Eric	Potter		West Chester	PA
Dane	Potts		East Brady	PA
Dawn	Potts		Brookhaven	PA
Timothy	Potts		Carlisle	PA
Christophe	Pouchot		Chester Springs	PA
Andrea	Poulsen		Philadelphia	PA
Erica	Pouncey		Philadelphia	PA
Barry	Pounder		Reading	PA
Brian	Poveromo		Tobyhanna	PA
Barry	Powell		Philadelphia	PA
Gregory	Powell		Philadelphia	PA
Randy	Powell		Punxsutawney	PA
Stephanie	Powell		Chester	PA
Van	Powell		Bristol	PA
Brianna	Powers		Warren	PA
Dawn	Powers		New Britain	PA
Kenneth	Powers		Philadelphia	PA
Lauren	Powers		Philadelphia	PA
Marjorie	Powers		Newton	PA

Catherine	Poynton		Havertown	PA
Annetta	Pozzuto		McKeesport	PA
Meg	Prat		Richboro	PA
valerie	Prater		Philadelphia	PA
April	Prather		East Texas	PA
Adam	Pratt		Scranton	PA
Dashaun	Pratt		Uniontown	PA
Eleanor	Pratt		Philadelphia	PA
Brenda F.	Pree	Pittsburgh City Council	Pittsburgh	PA
John	Prellwitz		Greensburg	PA
Michael	Prendergast	Councilman, Bellefonte Borough Council	Bellefonte	PA
Susan	Prentiss		Pittsburgh	PA
Patrick	Prescoot		Easton	PA
Albert	Presto	Assoc. Research Prof, Carnegie Mellon University	Pittsburgh	PA
Kim Black	Preston		Philadelphia	PA
Nora	Prevoznak		Philadelphia	PA
Dawn	Price		Morrisville	PA
Guindalina	Price		Morris	PA
Ian	Price		Pittsburgh	PA
Joline	Price	Community Legal Services of Philadelphia	Philadelphia	PA
Judith and Mark	Price		Wynnewood	PA
Lorraine	Price		Philadelphia	PA
Seanmarie	Price		Philadelphia	PA
Sharda	Price		Philadelphia	PA
Susan	Price		Elizabethtown	PA
Susan	Price		Levittown	PA
Tom	Price		New Britain	PA
Adam	Price-Butler		Philadelphia	PA
Ellen	Price-Maloy		Lansdale	PA
Nancy	Primus		Connellsville	PA
Ruth	Prince		New Hope	PA
Allen	Prindle		Swarthmore	PA
Sarah	Prindle		Lords Valley	PA
Chris	Prinkey		Saltsburg	PA
James	Prioleau		Wilkes-Barre	PA
Fiona	Priskich		Swan View	CA
James	Pritt		Aliquippa	PA
Anita	Prizio	County Council Member, Allegheny County Council	Pittsburgh	PA
Carey	Probst		Lock Haven	PA
Katrina	Probst		Downingtown	PA
Tarah	Probst	Mayor, Stroudsburg, PA	Stroudsburg	PA
Jason	Proch		Cranberry Township	PA

Arlene	Prohaska		Allentown	PA
Susan	Proietta		Philadelphia	PA
Calvin	Propst		Philadelphia	PA
Lisa	Provident		Tarrs	PA
Vincent	Prudente		Philadelphia	PA
Trish	Prusch		Quakertown	PA
Laura	Prushinski		Kingston	PA
D. Michael	Prushnok		Indiana	PA
Dan	Prushnok		Indiana County	PA
George	Prushnok		Indiana	PA
Jessica	Prushnok		Indiana	PA
John	Prushnok		Indiana	PA
John P.	Prushnok		Indiana	PA
Sandra	Prytherch		Albrightsville	PA
Jeff	Pryzbylowski		Chalfont	PA
Rene	Pugh		Downingtown	PA
James	Pugliese		Glen Mills	PA
Andrew	Puglionesi		Pittsburgh	PA
Joseph	Pulgini		Pittsburgh	PA
Michele	Pullano		Reading	PA
Christina	Pulli		Philadelphia	PA
David	Pundzak		Johnstown	PA
Hope	Punnett		Philadelphia	PA
Kali	Pupo		Pottstown	PA
Patricia	Purcell		Broomall	PA
Roberta	Purcell		Philadelphia	PA
Sonja	Purnell		Philadelphia	PA
Dee	Pursel		Pottstown	PA
Debra	Purter		Pittsburgh	PA
Cynthia	Purvis		Erie	PA
Tazhanay	Purvis		Philadelphia	PA
Greg	Puschnigg	Boss Controls	Pittsburgh	PA
Alex	Puskar		Pittsburgh	PA
Christy	Puskarich		Harrisburg	PA
Susan	Putney		Albrightsville	PA
Marcie	Putt		Indiana	PA
Anisa	Pyle		Franklin	PA
Freda	Pyles		Russell	PA
Tracey	Quackenbush		Troy	PA
Richard	Quails		Philadelphia	PA
Howard	Quaintance		Reading	PA
Daniel	Quaka		Carnot-Moon	PA
James	Qualk		Brownsville	PA
James	Quarles		Philadelphia	PA
Robert J.	Quarture Jr.		McMurray	PA
Salvatore	Quattrocchi		York	PA
Kathy	Queen		Chambersburg	PA

Flora	Quevedo		Spring City	PA
Clarence	Quick		Scranton	PA
Debbie	Quick		Morrisdale	PA
Eugene	Quick		Morrisdale	PA
Jennifer	Quick		Hummelstown	PA
Jennifer B.	Quick		Philadelphia	PA
Margaret	Quickel		Dover	PA
Patricia	Quigley		Norristown	PA
David	Quinley		Norristown	PA
Mari	Quinn		Scranton	PA
Manuel	Quinones		Bethlehem	PA
Harry	Quitmeyer		Bala Cynwyd	PA
Chris	R.		Erie	PA
K.	R.		Bellevue	PA
Kim	R.		Friedens	PA
Lewis	R.		Forkston Township	PA
Tracy	R.		Malvern	PA
Frances	Raab		Quakertown	PA
Carolyn	Raasch		*Submitted via email*	PA
Brian	Rabbitt		Clairton	PA
Christopher	Rabbitt		Canonsburg	PA
Jeffrey	Rabbitt		Finleyville	PA
Kathi	Rabbitt		Clairton	PA
Jerilynn	Radcilffe		Bryn Mawr	PA
Douglas	Radcliffe		Bryn Mawr	PA
Dorine	Rader		Collegeville	PA
Scott	Radwin		Collegeville	PA
Victoria	Radzanowski		Carnegie	PA
John	Radziak		Warwick	PA
Beverly	Rae		Hellertown	PA
Janice	Rael		Elkins Park	PA
Edith	Rafalski		Warren	PA
Carol	Rafferty		Levittown	PA
Bryan	Raffle		Uniontown	PA
Suzan	Ragan		Pittsburgh	PA
E. John	Rager		Red Lion	PA
Jessica	Rago		Philadelphia	PA
Marie Elaina	Rago		Northampton	PA
Paul	Rahe		York Springs	PA
Dina	Raihall		West Chester	PA
Doug	Raihall		West Chester	PA
Terri	Raimondo		Pottstown	PA
Yvonne	Rainey		Pittsburgh	PA
Glynis	Raisch		Wyncote	PA
Dorothy	Raizman		Ligonier	PA
Jordan	Rajan		Glenmoore	PA

Krishna	Rajan		Scranton	PA
Meena	Rajesh		Blue Bell	PA
Kristina	Ramanauskas		Tobyhanna	PA
Michael	Ramberg		Elkins Park	PA
Kirk	Ramble		York	PA
Dilip	Ramchandani, MD		Narberth	PA
Jason	Ramer		Indiana	PA
Terry	Ramer		North Belle Vernon	PA
John	Ramirez		Berwyn	PA
Leslie	Ramirez		Norristown	PA
Sebastian	Ramirez		Palmyra	PA
Desiree	Rammon		Oreland	PA
Harry	Ramo		Philadelphia	PA
Ana	Ramos		Philadelphia	PA
Christian	Ramos		Philadelphia	PA
Natalie	Ramos		Johnstown	PA
Richard	Ramos		Reading	PA
David	Rampolla		Elizabethtown	PA
Ashley	Ramsay		Lancaster	PA
Khalid	Ramsay		Philadelphia	PA
Bryant	Ramsey		Philadelphia	PA
George	Ramsey		Pittsburgh	PA
John	Ramsey		Zelienople	PA
Deborah	Randall		State College	PA
Rich	Randall		Gettysburg	PA
Stephanie	Randall		Gray	PA
Erin	Randolph		Philadelphia	PA
Jean	Randolph		Stroudsburg	PA
Paul	Ranello		Hawley	PA
Nancy	Ranieri		Collegeville	PA
Donald	Rank		Southampton	PA
Larry	Rankin		Pittsburgh	PA
Gianfranco	Rao		Oakdale	PA
Santino	Rao		Oakdale	PA
Katherine	Rapin		Philadelphia	PA
Marcia	Rapone		West Grove	PA
Jeffrey	Rapp		Philadelphia	PA
Cynthia	Rasemas		Kennett Square	PA
Jason	Rash		Wallingford	PA
Kelly	Rasmussen		Bangor	PA
William	Rastetter		Philadelphia	PA
Cheryl	Rathbun		Pennsburg	PA
Uma	Rathis		Exton	PA
Monet	Raths		Elverson	PA
Joseph	Rattman		Stroudsburg	PA
Harris	Rattray		Philadelphia	PA
Victoria C.	Raucci		Philadelphia	PA

Carolyn	Raudenbush		Hellertown	PA
David	Raupach		Somerset	PA
Daniel	Rauscher		Ambler	PA
Nancy	Rauscher		Yardley	PA
Meenal	Raval		Philadelphia	PA
Genie	Ravital		Philadelphia	PA
David	Ravitz		Langhorne	PA
Michele	Rawson		Pittsburgh	PA
Dennis	Ray		Phoenixville	PA
Nakia	Ray		Norristown	PA
Ned	Ray		Canonsburg	PA
Robert	Rayford		Philadelphia	PA
Catherine	Raymond		Penn Valley	PA
John	Raymond		McKeesport	PA
Thomas	Raynor		Philadelphia	PA
Edward	Razzis		Coplay	PA
Carlos B o	rbon		San Juan	PR
Felix	Rdriguez		Philadelphia	PA
Sa	Re		Villanova	PA
Brad	Rea		Pittsburgh	PA
Shannon	Rea		Conshohocken	PA
Mel	Reader		York	PA
Brian	Readinger		Schuylkill Haven	PA
Erin	Reagan		Philadelphia	PA
Ryan	Reagan		Pittsburgh	PA
Ahren	Ream		Kutztown	PA
Molly	Rearden		Exton	PA
Louise	Reardon		Lancaster	PA
Jack	Rearick		Pittsburgh	PA
Celie	Reaves		Philadelphia	PA
Sandy	Reber		Coatesville	PA
Carol	Recchia		Easton	PA
John	Rech		Wyncote	PA
Jewel	Reddick		Montgomery	PA
Barbara	Redding		Wyncote	PA
Brandon	Redfearn		Chester	PA
Bob	Redfern		Media	PA
Zy'Ira	Redhead		New Hope	PA
Matthew	Reecher		Gettysburg	PA
Aquela	Reed		Philadelphia	PA
Eileen	Reed		Newtown	PA
Jeffrey	Reed		Cranberry Township	PA
Lewis	Reed		Lancaster	PA
Lorna	Reed		Allentown	PA
Mary	Reed		Philadelphia	PA
Rakia	Reed		Philadelphia	PA

Renea	Reed		Pittsburgh	PA
Shawn	Reed		Sharon	PA
Tene	Reed		Philadelphia	PA
Theodore	Reed		Philadelphia	PA
Valerie	Reed		Coraopolis	PA
Stacy	Reedy		Sinking Spring	PA
Rochelle	Reel		Philadelphia	PA
Phillip	Reese		Bethlehem	PA
Phoebe	Reese*	Climate Reality Project (Pittsburgh and Southwestern Pennsylvania Chapter)	Pittsburgh	PA
Keith	Reeser		Orwigsburg	PA
Kim	Reesman		Dayton	PA
Tammy	Reesman		*Submitted via email*	PA
Karen	Reever		Doylestown	PA
Charles	Reeves	Tasker Morris Neighborhood Association	Philadelphia	PA
Roland	Reeves		Philadelphia	PA
Diane	Reeves-Pak		Quakertown	PA
Deborah	Reeves-Tuddles		Bushkill	PA
William	Reffner		Mineral Point	PA
Annie	Regan		Gibsonia	PA
Sharon	Reganato		Springfield	PA
Ryan	Regula		Johnstown	PA
Andrew	Rehrig		Quakertown	PA
Donna	Reicher		Pittsburgh	PA
Linda	Reichert		Chester Springs	PA
Alexandria	Reid		Allentown	PA
Alfonzo	Reid		Philadelphia	PA
Ina	Reid		Glenside	PA
Jamie	Reid		Philadelphia	PA
Jeffrey	Reid		Pipersville	PA
Meaghan	Reid		Media	PA
Theresa	Reid		Philadelphia	PA
Jennifer	Reidenberg		Philadelphia	PA
Ella	Reiff		East Earl	PA
Kathleen	Reifke		Pottstown	PA
Chris	Reilly		Hatboro	PA
Jennifer	Reimenschneider		Eagleville	PA
Kay	Reinfried		Lititz	PA
Gladys	Reinhard		Oley	PA
Susan	Reinhardt		North Wales	PA
Beth	Reinhart		Garnet Valley	PA
Susan	Reinhart		New Providence	PA
Dana	Reinhold	Central Philadelphia Monthly Meeting of Friends	Philadelphia	PA

Gloria	Reisman		Philadelphia	PA
Terese	Reitbauer		Annville	PA
Lindsay	Reiter		Bethlehem	PA
Margaret	Reiter		Saylorsburg	PA
Leo	Reitmeyer		South Park	PA
Caroline	Reitter		Schwenksville	PA
Richard	Remaly		Slatington	PA
Nyah	Rembert		Philadelphia	PA
Kimberly	Remsky		Pittston	PA
Nicholas	Remsky		Pittston	PA
Ron	Remsky		Pittston	PA
Michael	Rendleman		Milford	PA
Brittany	Reno	Council President, Sharpsburg Borough	Pittsburgh	PA
Derek	Reno		Allison Park	PA
Cheryl Albright	Repko		Boyertown	PA
Carol	Reppert		Philadelphia	PA
Donna	Reppert		Allentown	PA
Rev. David	Reppert		Norristown	PA
Ann	Repplier		Maple Glen	PA
Christine	Resch		Fullerton	PA
Jo	Resciniti		Gibsonia	PA
Tim	Resciniti		Gibsonia	PA
Brian	Resh		Pequea	PA
James	Resh		Indiana	PA
Pennsylvania	Resident		Reading	PA
Thomas PA	Resident		Philadelphia	PA
Daniel	Resnick		Pittsburgh	PA
Eva	Resnick-Day	PA Sierra Club	Pittsburgh	PA
Matt	Restaino		Avondale	PA
Anne	Rettenmair		Media	PA
Barbara	Reuben		Bala Cynwyd	PA
Shelton	Revelle		Upper Chichester	PA
Philip	Reveron		Philadelphia	PA
Heidi	Reyburn		Lititz	PA
Jasmine	Reyes		Allentown	PA
Jerry	Reyes		Allentown	PA
Jose	Reyes		Louistown	PA
Modesto	Reyes		Lancaster	PA
Cory	Reyman		Philadelphia	PA
Deborah	Reynolds		Greensburg	PA
Heather	Reynolds		Strasburg	PA
Kenneth	Reynolds		State College	PA
Ronda	Reynolds		Aliquippa	PA
Shelia	Reynolds		Philadelphia	PA
Stephen	Reynolds		Willow Street	PA
Trista	Reynolds		Franklin	PA

Willie	Reynolds*	Bethlehem City Council	Bethlehem	PA
Elvis	Reynoso		Reading	PA
Rassmeiry	Reynoso		Philadelphia	PA
Ned	Rhine		Howard	PA
Bobbie	Rhoads		Palmyra	PA
Ashley	Rhodes		Blakeslee	PA
Demetria	Rhodes		Philadelphia	PA
Derek	Rhodes		*Submitted via email*	PA
Khanesha	Rhodes		Philadelphia	PA
Penny	Rhodes		Kempton	PA
Robert	Rhodes		Mercersburg	PA
Yvonne	Rhodes		Philadelphia	PA
Ellen	Riberts		Allentown	PA
Stephen	Riccardi		Pittsburgh	PA
Linda	Ricci		Warminster	PA
Melissa	Ricci		Skippack	PA
Colleen	Rice		Mechanicsburg	PA
Daryl	Rice		Perkasie	PA
David	Rice		Grindstone	PA
Harriet	Rice		Philadelphia	PA
Joan	Rice		York	PA
Lawrence & Carolyn	Rice		Womelsdorf	PA
Scott	Rice		Beaver	PA
Sherri	Rice		New Castle	PA
Sunday	Rice		Philadelphia	PA
Janet	Rich		Paoli	PA
Georgann	Richard		Erie	PA
Randy	Richard		Phoenixville	PA
Danette	Richards		Horsham	PA
Donald	Richards		Sturgeon	PA
Leslie	Richards	SEPTA	Philadelphia	PA
Susan	Richards		Ardmore	PA
Lawrence	Richardson		Philadelphia	PA
Lisa	Richardson		State College	PA
Nahmira	Richardson		Chester	PA
Sandra	Richardson		Reading	PA
Tony	Richardson		Philadelphia	PA
Marin	Richeson		Ardmore	PA
Nina	Richey		Coatesville	PA
Charlene	Richline		York	PA
Christiana	Richter		Philadelphia	PA
Ron	Richter		Bethlehem	PA
Sherry	Richter		Uniontown	PA
Jennifer	Rick		Pittsburgh	PA
Annette	Rickards		Pottsville	PA

Barbara Ann	Ricker		Bath	PA
Doreen	Rickett		Pottstown	PA
Ashley	Rickey		Coatesville	PA
Sharodd	Ricks		Philadelphia	PA
Polly	Riddle		Warminster	PA
Sonja	Rideout		Chambersburg	PA
Barbara	Rider		Reading	PA
Jeffrey	Ridge		Saint Clair	PA
Willam	Ridgeway		Scranton	PA
William	Ridgeway		*Submitted via email*	PA
Kate	Rieder		Pittsburgh	PA
Ronald	Riedi		Bath	PA
Howard	Rieger	Convener,E End Neighbors Concerned Abt Pollution	Pittsburgh	PA
Kathleen	Rieger		Philadelphia	PA
Paul	Riermaier		Philadelphia	PA
Brian	Riffle		Johnstown	PA
Carol	Rigdon		Pittsburgh	PA
Laura	Rigell		Philadelphia	PA
Martha	Riggle		Mercersburg	PA
Tyler	Riggle		Vandergrift	PA
Melissa	Rightenour		Mount Union	PA
Justin	Righter		Phoenixville	PA
Brooke	Rihn		Emlenton	PA
Joanne	Rile		Jenkintown	PA
Alison	Riley		Philadelphia	PA
Deandre	Riley		Pittsburgh	PA
Eileen	Riley		West Chester	PA
Helena	Riley		Philadelphia	PA
Kelly	Riley		Hatfield	PA
David	Rinaldi	Clarks Green Borough Councilperson	Clarks Green	PA
Philip	Rinaldi		Coraopolis	PA
Steven	Rinaldi		Tobyhanna	PA
Richard	Rinck		Selinsgrove	PA
Anita	Rinehart		New Freedom	PA
Connie	Rinehart		Hamburg	PA
Richard	Rinehart		Lansdale	PA
David	Ringle		Macungie	PA
Matt	Rinker		Hillsgrove	PA
Gisela	Rios		Philadelphia	PA
Ebony	Risher		Pittsburgh	PA
Mike	Risko		*Submitted via email*	PA
Tori	Riso		Malvern	PA
Susie	Rissler		Pittsburgh	PA

Lauren	Ristvet	Associate Professor,University of Pennsylvania	Philadelphia	PA
Nicole	Ritchey		Everett	PA
Peter	Ritchie		Ambler	PA
Russell	Ritchie		*Submitted via email*	PA
Donna	Rito		Johnstown	PA
Joan & George	Rittenberger		Indiana	PA
Darlene	Ritter		Harrisburg	PA
Deborah	Ritts		New Eagle	PA
Rolanda	Ritzman		New Berlin	PA
Xavier	Riva		Ardmore	PA
Franklin	Rivas		Philadelphia	PA
Margaret	Rivello		West Chester	PA
Alma	Rivera		Philadelphia	PA
Anarelis	Rivera		Reading	PA
Destiny	Rivera		Allentown	PA
Ines	Rivera		Philadelphia	PA
Johnny	Rivera		Reading	PA
Jose	Rivera		Lancaster	PA
Jose L.	Rivera		Philadelphia	PA
Juan	Rivera		Bethlehem	PA
Luis	Rivera		Camp Hill	PA
Maria	Rivera		Allentown	PA
Patricia	Rivera		Philadelphia	PA
Robert	Rivera		Aston	PA
Rosalba	Rivera		Philadelphia	PA
Sabrina	Rivera		Allentown	PA
Solimar	Rivera		Philadelphia	PA
Yamarie	Rivera		Lebanon	PA
Jorge	Riveraguadalupe		Harrisburg	PA
Brianna	Rivers		Reading	PA
Michael	Rivers		Philadelphia	PA
Virginia	Rivers		Bryn Mawr	PA
Kyle	Rivers*	CASA	Lebanon	PA
Carolyn	Rizza		Grove City	PA
Paul	Rizzo		Doylestown	PA
Adele	Rizzuto		Yardley	PA
Bob	Roach		Pittsburgh	PA
Diane	Roach		Greensburg	PA
Ellen	Roane		Camp Hill	PA
Lydia	Roark		Washington	PA
Donald	Robb		Mechanicsville	PA
Alyssa	Robbins		Chesterbrook	PA
Darlene	Robbins		Pottsville	PA
William	Robbins		Landisville	PA
Kerry	Roberson		Philadelphia	PA

Suzanne	Roberson		Downingtown	PA
Allen	Roberts		Chadds Ford	PA
Ava	Roberts		Pittsburgh	PA
Barry	Roberts		Upper Darby	PA
Calvin	Roberts		Philadelphia	PA
David Thomas	Roberts		Bellefonte	PA
Jack	Roberts		Lancaster	PA
Jeffrey	Roberts		Upper Black Eddy	PA
Joan	Roberts		Philadelphia	PA
Judith	Roberts		State College	PA
Martha	Roberts		Lancaster	PA
Milanj	Roberts		Chester	PA
Millard	Roberts		Philadelphia	PA
Patricia	Roberts		Philadelphia	PA
Patrick	Roberts		Holtwood	PA
Ray	Roberts	Citizens' Climate Lobby Pennsylvania	Pittsburgh	PA
Roberta	Roberts		Kennett Square	PA
Samuel	Roberts		Bristol	PA
Thomas	Roberts	Ebensburg Power Company	Ebensburg	PA
Elizabeth	Robertshaw		Finleyville	PA
Anne	Robertson		Pittsburgh	PA
Brandy	Robertson		Johnstown	PA
Don	Robertson		York	PA
Martha	Robertson		Quarryville	PA
Ruby	Robertson		Johnstown	PA
Sandera	Robertson		Pittsburgh	PA
Thomas	Robertson		Washington	PA
Angela	Robinson		York	PA
Anthony	Robinson		Philadelphia	PA
Carl	Robinson		Harrisburg	PA
Carol	Robinson		Philadelphia	PA
Charquetta	Robinson		Philadelphia	PA
Chris	Robinson	Green Party of Philadelphia	Germantown	PA
Dana	Robinson		Lansdowne	PA
Dwayne	Robinson		Philadelphia	PA
Dwayne	Robinson		Reading	PA
Edward	Robinson		Philadelphia	PA
Frank	Robinson		Philadelphia	PA
Glen	Robinson		Lincoln University	PA
Howard	Robinson		Philadelphia	PA
Jacqueline	Robinson		Philadelphia	PA
James	Robinson		Reading	PA
Janeene	Robinson		Philadelphia	PA
Jerry	Robinson		Philadelphia	PA
Joanna	Robinson		Newville	PA
Joseph	Robinson		Catasauqua	PA

Leonard	Robinson		Philadelphia	PA
Linda	Robinson		Philadelphia	PA
Liz	Robinson	Philadelphia Solar Energy Association	Philadelphia	PA
Lynn	Robinson		Philadelphia	PA
Marianne	Robinson		Pittsburgh	PA
Mark	Robinson		Philadelphia	PA
Marquis	Robinson		Philadelphia	PA
Maurine	Robinson		Williamsport	PA
Mchael	Robinson		Shoemakersville	PA
Rishad	Robinson		Philadelphia	PA
Sandra	Robinson		Philadelphia	PA
Trisha	Robinson		Gettysburg	PA
Vershawn	Robinson		Hanover	PA
Melinda	Robinson-Paquette		Riegelsville	PA
Mark	Robinsony		Darby	PA
Scott	Robison		Johnstown	PA
Beth	Rocca		West Chester	PA
Chris	Roche		Reading	PA
Marilynne	Roche		Newtown	PA
Jenn	Rock		Waynesboro	PA
Steve	Rock		Doylestown	PA
Paulette	Roden		Lancaster	PA
Beverly	Rodenhaver		Abington	PA
Amir	Rodgers		Lansdowne	PA
Deborah	Rodgers		Havertown	PA
Sheila	Rodgers		Homestead	PA
Steven	Rodgers		Lititz	PA
Jonathan	Rodkey		Red Lion	PA
Michael	Rodkey		Johnstown	PA
Cindy	Rodney		Scranton	PA
Ester	Rodrguez		Philadelphia	PA
Alfredo	Rodriguez		Tobyhanna	PA
Angelica	Rodriguez		Philadelphia	PA
Carmen	Rodriguez		Breinisgville	PA
Christina	Rodriguez		Dingmans Ferry	PA
Doris	Rodriguez		Lancaster	PA
Gabriel	Rodriguez		Lancaster	PA
Glorimar	Rodriguez		Mayaguez	PR
Isaiah	Rodriguez		Philadelphia	PA
Jesus	Rodriguez		Philadelphia	PA
Juan	Rodriguez		Reading	PA
Luis	Rodriguez		Philadelphia	PA
Selena	Rodriguez		Avis	PA
Sheila	Rodriguez		Allentown	PA
Theresa	Rodriguez		Northumberland	PA
Thomas	Rodriguez		East Stroudsburg	PA

Albert	Roe		Easton	PA
Linda & Joseph	Roe		Fairless Hills	PA
Lydia	Roe		Newtown	PA
Kristin	Roehl		Perkasie	PA
Sandra	Roehrer		Sellersville	PA
Elizabeth	Roger		New Hope	PA
Caryn	Rogers		PIttsburgh	PA
Christopher	Rogers		Berwyn	PA
Christopher	Rogers		Philadelphia	PA
Dawn	Rogers		Hazleton	PA
Kelly	Rogers		Cornwall	PA
Lucinda	Rogers	President, Evergreen Conservancy	Indiana	PA
Sean	Rogers		Harrisburg	PA
Thomas	Rogers		Howard	PA
Veronica	Rogers		Philadelphia	PA
Kara	Roggenkamp	Member of Council, Ben Avon Borough	Pittsburgh	PA
Kristy	Roggio		Stroudsburg	PA
Maria	Rohena		Allentown	PA
Patricia	Rohm		Pittsburgh	PA
John	Rohrer		New Cumberland	PA
Stacy	Rohrer		Carlisle	PA
Marino	Rojas		Pittston	PA
Sherry	Roland		Philadelphia	PA
Kaylee	Roles		Pittsburgh	PA
Emily	Rolley		*Submitted via email*	PA
Amin	Rollie		Chester	PA
Adam	Roman		Sycamore	PA
Daniel	Roman		Philadelphia	PA
Luis	Roman		Philadelphia	PA
Madelyn	Roman		Philadelphia	PA
Doreen	Romano		Donora	PA
Melisa	Romano		Havertown	PA
Carl	Romanski		Danville	PA
Nikki	Rombaugh		Indiana	PA
Scott	Rombaugh		*Submitted via email*	PA
Clarke	Romesberg		Somerset	PA
Mr.	Romesburg		Washington	PA
Donald	Rone		Philadelphia	PA
Barbara	Rooney		York	PA
Joseph	Rooney		Falls Creek	PA
Patricia	Rooney		Honey Brook	PA
Patrick	Rooney		Holmes	PA
Suzanne	Roose		Media	PA
Charles	Root		Lewisburg	PA

RoseMaria	Root		New Oxford	PA
Iliana	Rosado		Philadelphia	PA
Iris	Rosado		Philadelphia	PA
Christina	Rosan		Philadelphia	PA
Marcella	Rosario		Philadelphia	PA
Maria	Rosario		Lancaster	PA
Rosita	Rosario		Stevens	PA
Sarai	Rosario		Reading	PA
Sonia	Rosario		Dover	PA
George	Rosato		Pittsburgh	PA
Jameil	Rose		Philadelphia	PA
Katherine	Rose		Kennett Square	PA
Lisa	Rose		Narberth	PA
Rose	Rose		Erie	PA
Terry	Rose		Harrisburg	PA
Annie-Rae	Rosen		Erdenheim	PA
Eileen	Rosen		West Chester	PA
Helene	Rosen		Ivyland	PA
Rona	Rosen		Philadelphia	PA
Stephen	Rosen		*Submitted via email*	PA
Karl	Rosenbaum		Philadelphia	PA
Kayla	Rosenbaum		Bryn Mawr	PA
Pauline	Rosenberg		Philadelphia	PA
James	Rosenberger		Berlin	PA
Lisa	Rosenberger		Philadelphia	PA
Maria	Rosenberger		Elverson	PA
Suzann	Rosenberger		Walnutport	PA
Richard	Rosenbloom		Harleysville	PA
Daniel	Rosencrance		Cogan Station	PA
Dennis	Rosencrance		Glenshaw	PA
Diane	Rosencrance	Executive Director, Delaware Highlands Conservancy	Hawley	PA
Deborah	Rosene		Whitehall	PA
Sally	Rosensteel		Orrtanna	PA
Lynn	Rosenstock		Maple Glen	PA
Linda	Rosenwein	Peace Committee Chestnut Hill Friends Meeting	Glenside	PA
Bertha	Rosin		Garnet Valley	PA
James	Ross		Wrightsville	PA
John	Ross		Kennett Square	PA
Kuiona	Ross		Philadelphia	PA
Lain	Ross		Philadelphia	PA
Rhshida	Ross		Philadelphia	PA
Shelley	Ross		Pittsburgh	PA
Susan	Ross		King of Prussia	PA
Robert	Rossachacj		Glenolden	PA

Kay	Rossall		Trumbauersville	PA
Pamela	Rossetti		Plymouth Meeting	PA
Anita	Rossi		Brookhaven	PA
Daniela	Rossi		Boise	ID
Donna	Rossi		Ardmore	PA
John	Rossi		Erie	PA
Patricia	Rossi		Levittown	PA
Daniel	Rossi-Keen	RiverWise	Aliquippa	PA
Thomas	Rossmell		Plymouth	PA
JoAnn	Rostek		Pittsburgh	PA
Robby	Rotfeld		Wynnewood	PA
Joseph	Roth		Indiana	PA
Michelle	Roth		Indiana	PA
Suzanne	Roth		Birchrunville	PA
Tim	Roth		Greensburg	PA
Trevor	Roth		State College	PA
Lois	Rothenberger		North Wales	PA
Linda	Rothenhoefer		York Springs	PA
Jim	Rothwell		Lancaster	PA
Kelly	Rottmund		Pittsburgh	PA
Elizabeth	Rotz		Bethel Park	PA
M. Drew	Rotz		Bethel Park	PA
Lois	Roupe		Rogersville	PA
Valerie	Rousse		Media	PA
Marilyn	Rousseau		East Stroudsburg	PA
Robert	Routh	Clean Air Council	Philadelphia	PA
Jennifer	Rovner		Philadelphia	PA
Dennis	Rowan	Managing partner, Rowan Energy Integration	Lansdowne	PA
Robert	Rowcotsky		Springfield	PA
Tahira	Rowe		Philadelphia	PA
Noreen	Rowland		Scranton	PA
Stephen	Rowland		Allentown	PA
Jaime	Rowzer		Johnstown	PA
Diana	Roy		*Submitted via email*	PA
Joanna	Roy		Philadelphia	PA
Simonne	Roy		Lewisburg	PA
Thomas	Royster		McKeesport	PA
Dwayne	Royster*	POWER	Philadelphia	PA
Nate	Rozic		Shelocta	PA
Maya	Rozin		Swarthmore	PA
Joe	Rozinsky		Somerset	PA
Tina	Rozinsky		Somerset	PA
Rachel	Rozum		State College	PA
Dale	Rubbo		Brookhaven	PA
Katherine	Rubel		Glenshaw	PA

Morton	Rubenstein		Mechanicsburg	PA
Myrna Lippman	Rubenstein		Mechanicsburg	PA
Lionel	Ruberg		Newtown	PA
Allan	Rubin		Philadelphia	PA
Allan	Rubin		Upper Darby	PA
Theresa	Rubin		Philadelphia	PA
John	Ruby		Hopwood	PA
Kim	Ruby		Mayport	PA
Steven	Ruby		Haverford	PA
Susan	Ruby		Pittsburgh	PA
Jon	Ruch		Coopersburg	PA
Victor	Ruch		Lykens	PA
Thomas S.	Ruch III		Danielsville	PA
Joyce	Rucker		Philadelphia	PA
Sharon	Rucker		Philadelphia	PA
Matthew	Ruckle		Waynesburg	PA
Joe	Rudek		Wynnewood	PA
Joseph	Rudek		Wynnewood	PA
Natalia	Rudiak		Pittsburgh	PA
Beverley Johnson	Rudolph		Manheim	PA
Karen	Rudy		New Cumberland	PA
Kathleen	Rueppel		McKees Rocks	PA
Cody	Ruff		Bethlehem	PA
Kwame	Ruffin		Philadelphia	PA
Dawn	Rufo		Allentown	PA
Dominique	Ruggieri	Core Teaching Faculty, MPH Program	Philadelphia	PA
Edith	Ruiz		Gibsonia	PA
Jared	Ruiz		Pittsburgh	PA
Linda	Ruiz		Philadelphia	PA
Teresa	Ruley		Pottstown	PA
San	Rum		Brownsville	PA
Louise	Rumbaugh		Dunbar	PA
Roy	Rummel		Saint Thomas	PA
Diane	Rump		Pittsburgh	PA
Bruce	Runk		Emmaus	PA
William	Runyan		Bradford	PA
Alison	Rupert	Lycoming County Democratic Committee	Hughesville	PA
Nikisha	Rupp		Alum Bank	PA
Tina	Rupp		Weedville	PA
Charlene	Rush		Allison Park	PA
James	Rush		Norristown	PA
Shameka	Rush		Philadelphia	PA
Shannon	Rush		Pittsburgh	PA
Laurie	Rushin		McMurray	PA
Michael	Russ		Norristown	PA

Alex	Russell		Boalsburg	PA
Christine	Russell	Organizing Grp Leader,Citizens for Equality Action	King of Prussia	PA
Eliza	Russell		Flourtown	PA
Lauren	Russell		Montoursville	PA
Laverne	Russell		Pittsburgh	PA
Martin	Russell		Downingtown	PA
Matthew	Russell		Shippensburg	PA
Ruth and Ronald	Russell		Towanda	PA
Shawn	Russell		Brackenridge	PA
Teresa	Russell		Quakertown	PA
Theresa	Russell		Pottstown	PA
Erin	Russell-Story		*Submitted via email*	PA
Ernest	Russo		Philadelphia	PA
Joan	Russo		Hawley	PA
Judith	Ruszkowski		Pittsburgh	PA
Margery	Rutbell		New Hope	PA
John	Ruth		Harrisburg	PA
Mary	Ruth		Philadelphia	PA
Kimberly	Rutherford		Camp Hill	PA
Jane	Rutkoski		Wilkes-Barre	PA
Paul	Rutkowski		Brackenridge	PA
Shaleeta	Rutledge		Philadelphia	PA
Mary	Ruttenberg		Elkins Park	PA
Ann	Ryan		New Brighton	PA
Gary	Ryan		Doylestown	PA
Hannah	Ryan		Philadelphia	PA
Henry	Ryan		Glenside	PA
John	Ryan		Newtown	PA
Kevin	Ryan		Pittsburgh	PA
Luci	Ryan		Philadelphia	PA
Roz	Ryan		Doylestown	PA
Steven	Ryan		Effort	PA
Tony	Ryan		Pottstown	PA
Ruth	Ryave		Gwynedd Valley	PA
Spencer	Rybinski		Bloomsburg	PA
Frank	Ryczak		Scott Township	PA
Alyssa	S.		Warrington	PA
Irene	S.		Port Matilda	PA
M.	S.		Stroudsburg	PA
Maria	S.		Philadelphia	PA
Marissa	S.		Chambersburg	PA
Sara	S.		Doylestown	PA
Mitchel	Saare		Red Lion	PA
Frank	Sabatini		Exeter	PA
Rev. Joan	Sabatino	UUJusticePA	Harrisburg	PA

William B.	Sabey, Jr.		Plymouth Meeting	PA
Emma	Sabin*		Philadelphia	PA
Jill	Sablosky		Philadelphia	PA
Petronella	Sabol		Tamaqua	PA
Aasiyah Abdul	Sabur		Upper Darby	PA
Wendy	Sacco		McKeesport	PA
Tom	Sacino		Philadelphia	PA
Jillan	Sackett		Bala Cynwyd	PA
Seleke	Sackor		Philadelphia	PA
Donna	Saddler		Pittsburgh	PA
JJ	Sadow		Media	PA
Terri	Saeger		Harleysville	PA
Lisandra	Saez		Allentown	PA
Daniel	Safer		Philadelphia	PA
Keith	Safford		Stewartstown	PA
Allison	Saft		Philadelphia	PA
Abha	Saini	Climate Reality Project: Philadelphia & SE PA Ch.	Collegeville	PA
Rishi	Saini		Collegeville	PA
Kathleen	Salada		DuBois	PA
Margaret	Salamon	Green Building United	Philadelphia	PA
Mario	Salcedo		Peach Bottom	PA
Mary	Salcedo		Red Lion	PA
Kelsey	Salerno*		Pittsburgh	PA
Stephen	Salgaller		Elkins Park	PA
Ehab	Salib		Mountville	PA
Maryanne	Salicondro		Philadelphia	PA
Martin	Salisbury		Stewartstown	PA
Jack T.	Sall		Shelocta	PA
Daniel	Salmen		Pittsburgh	PA
Amos	Salmon		Pittsburgh	PA
Elisabeth	Salmon		Edwardsville	PA
Jesse	Salmons		Philadelphia	PA
Susan	Saltzman		Philadelphia	PA
Antonio	Salvati		Monaca	PA
Hannah	Salvatore		Robesonia	PA
Ralph	Salvia		Mechanicsburg	PA
Trisha	Salvia	Chesapeake Bay Foundation	Harrisburg	PA
Kathy	Sam		Philadelphia	PA
Madeline	Sambuchino		Philadelphia	PA
Bonnie	Samms-Overley		Altoona	PA
Charles	Sample		Philadelphia	PA
Patricia	Sample		Philadelphia	PA
Robin	Sampson		Gettysburg	PA
Joseph	Sams		Philadelphia	PA
Ginger	Samsel		Berwick	PA
Gayle	Samuels		Villanova	PA

Jeannette	Samuels		Linwood	PA
Maurice	Samuels		Pittsburgh	PA
Maki	San Miguel Paulson	Verde Architecture Consulting	Philadelphia	PA
Eneida	Sanabria		Philadelphia	PA
Ada	Sanchez		Philadelphia	PA
Emmanuel	Sanchez		Philadelphia	PA
Glicelis	Sanchez		Erie	PA
Olga	Sanchez		Philadelphia	PA
Linda	Sander	Co-Chair,Unitarian Cong. of West Chester Soc.Just.	West Chester	PA
Berterlena	Sanders		Philadelphia	PA
David	Sanders		Telford	PA
Mina	Sanders		Media	PA
Nicholas	Sanders		Philadelphia	PA
Shannon	Sanders		Lenhartsville	PA
Tashima	Sanders		Reading	PA
Lucinda	Sanderson		Bethlehem	PA
Justin	Sandherr		Pittsburgh	PA
Jason	Sandman		Philadelphia	PA
Jim	Sandoe	Citizens Climate Lobby	Ephrata	PA
E. Meryl	Sands		Philadelphia	PA
Mervin	Sands		Lancaster	PA
Carol	Sandt		Willow Street	PA
Mary	Sandusky		Merion Station	PA
Mina	Sandusky		Connellsville	PA
Susan	Sandusky		Denver	PA
Chris	Sandvig		Pittsburgh	PA
Giselle	Sandy-Phillips		Lansdale	PA
John	Saner		Steubenville	OH
Christine Virginia	Sanford		Allentown	PA
Gigi	Sanford		Philadelphia	PA
Alida	Santa		Philadelphia	PA
Genevieve	Santalucia		Philadelphia	PA
Nicholas	Santamala		Philadelphia	PA
Eva	Santamaria		Dingmans Ferry	PA
Carmen	Santana		Bethlehem	PA
Nancy	Santana		Reading	PA
Bryan	Santangelo		Lancaster	PA
Diana	Santiago		Bethlehem	PA
Joselyn	Santiago		Philadelphia	PA
Yesenia	Santiago		Reading	PA
Joanne	Santini		Pottstown	PA
Migdalia	Santini		Reading	PA
Carlos	Santoni		Philadelphia	PA
Barbara	Santoro		Reading	PA
Mary	Santos		Allentown	PA

Carl	Sapelli		Buckingham	PA
Zachary	Sapienza		Saint Thomas	PA
David	Sapp		York	PA
Nanci	Sarcinello		Swarthmore	PA
Joseph	Sardello		Coraopolis	PA
Ann Marie	Sardineer		Trafford	PA
David	Sarge		Elverson	PA
Audrija	Sarkar		Westford	MA
Tiyasha	Sarkar		Princeton	NJ
Sophie	Sarnitsky		Allentown	PA
Elizabeth	Sasada		Philadelphia	PA
Anthony	Sasso		*Submitted via email*	PA
Ciera	Satchell		Philadelphia	PA
Tricia	Satifka		Washington	PA
Arthur	Satter		Beach Lake	PA
Christine	Saul		Easton	PA
Rachel	Saula		Pittsburgh	PA
Aileen	Saunders		Wayne	PA
Andrea	Saunders		Sellersville	PA
Earl	Saunders		Philadelphia	PA
Elsia	Saunders		Pittsburgh	PA
Junius	Saunders		Pittsburgh	PA
Kim	Saunders		Philadelphia	PA
Lynnette	Saunders		Huntingdon Valley	PA
Michael	Saunders		Gettysburg	PA
Timothy	Saunders		Blue Bell	PA
Virginia	Saunders		Langhorne	PA
James and Dolores	Saurer		Mentcle	PA
Sharon	Sauro		Southampton	PA
Eric	Sauselein		West Chester	PA
Tammy	Sauter		State College	PA
Paul	Sauvageau		Littlestown	PA
Merle	Savedow		Philadelphia	PA
Tina	Saville		Philadelphia	PA
Barbara	Savini		West Chester	PA
Shawn	Savitz		Langhorne	PA
Robert	Savolskis		Grove City	PA
Robert	Savoy		Philadelphia	PA
David	Sawhill		Philadelphia	PA
Martha	Sawyer		State College	PA
Tonya	Sawyer		Cogan Station	PA
Michael	Saxon		Palmerton	PA
Chris	Saxton		Cranberry Township	PA
Mary Carol	Sayles		Lititz	PA

Craig	Saylor		Newville	PA
Shawn	Saylor		Rockwood	PA
Margaret	Sayvetz		Philadelphia	PA
Lance	Scalise		Aliquippa	PA
Amy	Scanlon		Pittsburgh	PA
Kathleen	Scanlon		Philadelphia	PA
Paul	Scarborough		Airville	PA
R A	Scariot		Cecil	PA
Kathleen	Schaaf	City Councilperson, Erie City	Erie	PA
Bob	Schachner		Philadelphia	PA
Lizzy	Schad		Etna	PA
Kathy	Schadler		Berne	PA
Dennis	Schaef		Meadville	PA
Robin	Schaef		Guys Mills	PA
John	Schaefers		Mars	PA
Brandy	Schaeffer		Kittanning	PA
Debra	Schaeffer		Montgomery County	PA
Karl	Schaeffer		Kittanning	PA
Rodney	Schaeffer		Reading	PA
David	Schaff		Chadds Ford	PA
David	Schaff		Mendenhall	PA
Terry	Schall		Bethlehem	PA
Emily	Schapira	Philadelphia Energy Authority	Philadelphia	PA
Ann	Schatzel		Bear Creek Township	PA
Richard	Schauer		Erie	PA
Robin	Schaufler	Swarthmore PA EAC, member	Swarthmore	PA
Abigail	Schaus		Aliquippa	PA
Laurence	Scheck		Pittsburgh	PA
Kimmie	Scheetz		Reading	PA
Lowell	Scheetz		Willow Grove	PA
David	Scheid		Philadelphia	PA
Edward	Scheid		Pittsburgh	PA
Edna	Scheifele		Emmaus	PA
Quennie	Schelberg		Quakertown	PA
Derek	Schell		Pittsburgh	PA
Elaine	Schell		Chambersburg	PA
Carolin	Schellhorn		Ardmore	PA
Rasheed	Schenck		Philadelphia	PA
Hilary	Schenker*		Pittsburgh	PA
Jean	Scherfcunningham	PHS	Hatboro	PA
Allen	Schertz		Pittsburgh	PA
Suzanne	Scheuer Leone		Erie	PA
Marguerite	Scheuermann		Mount Carmel	PA
Leslie	Scheunemann		Swissvale	PA
Peggy	Schiavo		Royersford	PA

Liz	Schiavone		Bethlehem	PA
Julianne	Schieffer		East Greenville	PA
Todd	Schifeling		Philadelphia	PA
Bill	Schill		Pittsburgh	PA
Mike	Schiller		Pittsburgh	PA
Stephen	Schiller		Bethel Park	PA
Richard	Schimmel		Bethlehem	PA
Eric	Schimp		Lancaster	PA
William	Schimp		Sinking Spring	PA
Kevin	Schindler		Chadds Ford	PA
Joseph	Schipani		Pittsburgh	PA
Salvatore	Schipani		Pittsburgh	PA
Amanda	Schlegel		Columbia	PA
Nathan	Schlingmann	Professional Counselor, Walk Your Path LLC	Philadelphia	PA
Glenn	Schlippert		Goldsboro	PA
Lucia	Schlossberg		Havertown	PA
Kevin	Schlosser		Saegertown	PA
Kolson	Schlosser*		Philadelphia	PA
David	Schlow		State College	PA
Joan	Schlueter		Venetia	PA
Tammy	Schmeer		Temple	PA
Chris	Schmehl		Laureldale	PA
Mark	Schmerling		Sabinsville	PA
David	Schmid		Pittsburgh	PA
Victoria	Schmid		Philadelphia	PA
Christina	Schmidlapp		Pittsburgh	PA
Damon	Schmidt		Doylestown	PA
Jeff	Schmidt		Shermans Dale	PA
Kris	Schmidt		Abington	PA
Krista	Schmidt		Philadelphia	PA
Linda	Schmidt		Gibsonia	PA
Margaret	Schmidt		Philadelphia	PA
Pattie	Schmidt		Spring City	PA
Peg	Schmidt		Pittsburgh	PA
Ruth Ann	Schmidt		New Kensington	PA
Stephanie	Schmidt	Prioress, Benedictine sisters of erie	Erie	PA
April	Schmitt		*Submitted via email*	PA
Michael	Schmotzer		York	PA
Constance	Schmtozer		York	PA
Jennifer	Schnakenberg		Pittsburgh	PA
Kathy	Schneide		Altoona	PA
Barbara	Schneider		Elverson	PA
Cynthia	Schneider		Levittown	PA
Susanne	Schneider		Lancaster	PA
Kristin	Schnelle		Pittsburgh	PA

Michael	Schnierle		Mechanicsburg	PA
Robert	Schnitzler		Rebersburg	PA
Terry	Schnur		Pittsburgh	PA
Rebecca	Schoen		Pittsburgh	PA
Arline	Schoenberger		Glen Mills	PA
Blair	Schoenborn		Pittsburgh	PA
David	Schogel		Philadelphia	PA
Daniel	Scholnick		Philadelphia	PA
Lauren	Scholtz		Glenshaw	PA
Brandon	Schooley		Cheswick	PA
Joan	Schooley		Sweet Valley	PA
Karen	Schrader		Bedford	PA
Bruce	Schrager		Warminster	PA
Joe	Schreiber		Glenshaw	PA
Joe	Schreiber		Philadelphia	PA
John	Schreiber		Trenton	NJ
Peggy	Schreiber		Drexel Hill	PA
Robert	Schreier		Gilbertsville	PA
Andrea	Schriver		Coraopolis	PA
Jerene	Schroeder		Philadelphia	PA
Linda	Schubert		New Kensington	PA
Nicole	Schuler		Lebanon	PA
Chase	Schulte		Philadelphia	PA
Joseph	Schulter		Allentown	PA
Andrea	Schultz		Pittsburgh	PA
Brett	Schultz		Wernersville	PA
Dan	Schultz		Coalport	PA
Deborah	Schultz		Erie	PA
Edward	Schultz		Elkins Park	PA
Emma	Schultz		Philadelphia	PA
Karissa	Schultz		Bethlehem	PA
Rebecca	Schultz		Elkins Park	PA
Robert	Schultz		Pittsburgh	PA
Sheryl	Schultz		Ephrata	PA
Tegan	Schultz		Brookhaven	PA
Betty	Schulz		Hazleton	PA
Robert	Schulz		Kemblesville	PA
Andrew	Schumacher		Philadelphia	PA
Karen	Schumann		Doylestown	PA
Renay	Schurr		Philadelphia	PA
Joseph	Schuster		Bethel Park	PA
Loree	Schuster		Philadelphia	PA
Tom	Schuster	Clean Energy Program Dir., Sierra Club PA	Johnstown	PA
Ray	Schwalb		Carlisle	PA
Alison	Schwartz		Pittsburgh	PA
Ann	Schwartz		Langhorne	PA

Brian	Schwartz		Freehold	NJ
Dan	Schwartz		Bath	PA
Jenny	Schwartz		Mohrsville	PA
Jerry	Schwartz	American Forest & Paper Association	Washington	DC
Michele	Schwartz		Morgantown	PA
Rebecca	Schwartz		Delta	PA
Robert	Schwartz		Pittsburgh	PA
Gale	Schwartz*	Housing Alliance of Pennsylvania	Harrisburg	PA
Eric	Schwarz		Lancaster	PA
Liesel	Schwarz		Glenside	PA
John	Schwarzenbach		Penllyn	PA
Larry	Schweiger		*Submitted via email*	PA
Vincent	Schwenk		New Eagle	PA
Christine	Schwer		Wexford	PA
Laura	Schwingel		Philadelphia	PA
Ginny	Sciorra		Easton	PA
Kathleen	Scipione		Chalfont	PA
Shanna	Scone		Holtwood	PA
Alfreda	Scott		Philadelphia	PA
Charles	Scott		Philadelphia	PA
Cindy	Scott		Johnstown	PA
Darren	Scott		Johnstown	PA
David	Scott		Reading	PA
Diane	Scott		Philadelphia	PA
Gary	Scott		Coopersburg	PA
Jeanette Brooks	Scott		Abington	PA
Kevin	Scott		Bryn Mawr	PA
Kimberly	Scott		Philadelphia	PA
Lydia	Scott		Oakdale	PA
Markitia	Scott		Philadelphia	PA
Megan	Scott		Beaver	PA
Nathan	Scott		Coatesville	PA
Pamela	Scott		Philadelphia	PA
Theresa	Scott		Pittsburgh	PA
Thomas	Scott		Harrisburg	PA
Tiffany	Scott		Philadelphia	PA
William	Scott		*Submitted via email*	PA
Wm	Scott		Mansfield	PA
Judy	Scriptunas		Chambersburg	PA
Keith	Scutchlng		Philadelphia	PA
Ginger	Seabold		Montoursville	PA
Melissa	Searle		Grimes	IA
Steve	Sears		Hatboro	PA
A.	Seawell		Reading	PA

Andrew	Seawright		Philadelphia	PA
Sandra	Seay		Pittsburgh	PA
Heidi	Secord	President,Pennsylvania Farmers Union	Stroudsburg	PA
Ron	Seebacher		Hampton Twp	PA
Robert	Seeley		Philadelphia	PA
Ruth	Seeley		Philadelphia	PA
Sally	Seeton		Furlong	PA
Richard	Seevers		Indiana	PA
Fernando	Segade		Springfield	PA
John	Segars		Philadelphia	PA
Kimberly	Seger		Kittanning	PA
Joselyn	Segura		Harrisburg	PA
Erika	Seibel		Eighty Four	PA
Doreen	Seiberlich		Philadelphia	PA
Benat	Seid		Philadelphia	PA
Carole	Seidel		Boyertown	PA
Stephen	Seidel		Schaefferstown	PA
Suzanne de	Seife		Ridley Park	PA
Barbara	Seiple		Philadelphia	PA
Blair	Seitz		West Reading	PA
Joseph	Seitz		Berlin	PA
Paul	Selapack		Sidman	PA
Leah	Selekman		Wynnewood	PA
Cynthia	Self		Dillsburg	PA
David	Seliga		Ebensburg	PA
Meg	Sellers		Kintnersville	PA
Chloe	Selles		Harrisburg	PA
Geoffrey	Selling		Philadelphia	PA
Robert	Sellinger		*Submitted via email*	PA
Sarah	Selph		Media	PA
Elizabeth	Seltzer		Brookhaven	PA
Elizabeth	Seltzer		Willow Grove	PA
Terry	Seltzer		Palmyra	PA
Eric	Selvage		Philadelphia	PA
Diane	Selvaggio		Gibsonia	PA
Malina	Sem		Philadelphia	PA
Carolyn	Semelsberger		Northern Cambria	PA
Scott	Semelsberger		Northern Cambria	PA
Frank	Senatore		West Chester	PA
Kristin	Senecal		Carlisle	PA
Amy	Seng		Philadelphia	PA
Charles	Seng		Allentown	PA
James	Sennett		Kersey	PA
Heaven	Sensky*		Washington	PA

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Sumer	Serany		Reading	PA
James	Serene		State College	PA
Vince	Serianni		Worcester	PA
Ivana	Seric		Philadelphia	PA
Andrea	Serra		Canonsburg	PA
Philip	Serra		Glenshaw	PA
Christian	Serrano		Pitcairn	PA
Jeanette	Serrano		Philadelphia	PA
Juan	Serrano		Philadelphia	PA
Lisa	Serrano		New Providence	PA
Roxana	Serrano		Easton	PA
Dave	Serrian		Punxsutawney	PA
Joanne	Servansky		Lancaster	PA
Brian	Sesack		Pittsburgh	PA
Tina	Settles		York	PA
Kaitlyn	Seward		Pittsburgh	PA
Gloriana	Sewell		Milford Square	PA
Jeannette	Sewell		Pittsburgh	PA
Nanette	Sewell		Pittsburgh	PA
Christopher	Seymour		Pittsburgh	PA
Elizabeth	Seymour		Philadelphia	PA
Larry	Seymour		Factoryville	PA
Ronald	Sgrignuoli		Reading	PA
Aziza	Shaaban		Pittsburgh	PA
Everick	Shackelford		Philadelphia	PA
Marc	Shackelford-Rowell		Philadelphia	PA
Herbert	Shade		Mount Joy	PA
Gerald	Shaeffer		Dresher	PA
Ann Marie	Shaffer		Stoystown	PA
Carolyn	Shaffer		Erie	PA
Chase	Shaffer		Waynesburg	PA
Chris	Shaffer		Prospect	PA
Diana	Shaffer		Punxsutawney	PA
Judy	Shaffer		Scranton	PA
Malinda	Shaffer		Hermitage	PA
Patrick	Shaffer		Cresson	PA
Randy	Shaffer		Punxsutawney	PA
Suzanne	Shaffer		Spring Grove	PA
Vaughn	Shaffer		Stoystown	PA
William	Shaffer		Smithfield	PA
Suhail	Shafi		Mechanicsburg	PA
Paula	Shafransky		Sedro Woolley	WA
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Naim	Shakir		Philadelphia	PA
Megan	Shakow		Narberth	PA
Michael	Shalis		Morrisville	PA
Mimi	Shalitta		Glenside	PA
Gail	Shamberger		Philadelphia	PA
Algernon	Shamble		Allentown	PA
Amelia	Shamble		Philadelphia	PA
Julie	Shames-Rogan		Boynton Beach	FL
Cheryl	Shank		Fredericksburg	PA
Dennis	Shank		Cochranville	PA
Gina	Shank		McKeesport	PA
Adele Bon	Shannon		Center Valley	PA
Keri	Shannon		West Chester	PA
Monique	Shannon		Philadelphia	PA
Daniel	Shapiro		Pittsburgh	PA
Fern	Shapiro		Narberth	PA
Jonathan	Shapiro	Chair, Dem. Committee of Lower Merion & Narberth	Wynnewood	PA
Judith	Shapiro		Bryn Mawr	PA
Julie	Shapiro		Philadelphia	PA
Stanley	Shapiro	Vice-Chair,Philadelphia Neighborhood Networks	Philadelphia	PA
Jadyn	Sharber		Allentown	PA
Qaadirah	Sharif		Philadelphia	PA
Michelle	Sharkey		West Grove	PA
Patrick	Sharkey		Glen Lyon	PA
Mary Jean	Sharp		Altoona	PA
Florence	Sharpe		Philadelphia	PA
Kathleen	Sharpe		Radnor	PA
Leslie	Sharper		Philadelphia	PA
Martha	Sharples		Haverford	PA
Karen	Sharrar		Philadelphia	PA
Boris	Shatson		Feasterville Trevose	PA
Carrie	Shaw		Collegeville	PA
Eddie	Shaw		Pittsburgh	PA
Fitzhugh	Shaw		Braddock	PA
Joe	Shaw		Quakertown	PA
Margaret	Shaw		Philadelphia	PA
Bobbie	Shawley		Uniontown	PA
Tollari	Shawn		Charleroi	PA
Linda	Shea		Harborcreek	PA
Thomas	Shea		Glenmoore	PA
Marian	Shearer		Reading	PA
David	Shedlock		Nanty Glo	PA
Melvin	Sheets		New Brighton	PA

Patricia	Sheets		New Brighton	PA
Ruth	Sheets		Brookhaven	PA
Marcus	Sheffer	Energy Opportunities	Columbia	PA
Marcus	Sheffer	7group	Washington Boro	PA
Terrance	Sheffey Jr		Carnegie	PA
David	Sheffield		Carlisle	PA
Cynthia	Sheikh		West Chester	PA
Gary	Shellenberger		Beaver Springs	PA
Mimi	Sheller		Penn Valley	PA
Kiera	Shellhammer		Fogelsville	PA
Arthur	Shelly		Easton	PA
Catherine	Shelton		Philadelphia	PA
Paul	Shenal		McClellandtown	PA
Raymond	Shenise		Ransom Township	PA
Donald	Shenoster		Philadelphia	PA
Candace	Shepard		Middletown	PA
Michael	Shepard	Professor, Town of Bloomsburg	Bloomsburg	PA
Erica	Shepherd		Philadelphia	PA
Scott & Debbie	Shepler		Harrisburg	PA
Deborah	Sheppard		Philadelphia	PA
Scott	Sheppard		Canonsburg	PA
Dena	Sher		Philadelphia	PA
Michelle	Sheridan		Allentown	PA
Jacob	Sherk		Mount Joy	PA
Amberle	Sherman		Pittsburgh	PA
Amy	Sherman		Pittsburgh	PA
Dan	Sherman		Boyertown	PA
Don	Sherman		Philadelphia	PA
Howard	Sherman		Landsdowne	PA
Kate	Sherman		Pittsburgh	PA
William	Sherman	Combined Heat and Power Alliance	Arlington	VA
Brian	Shermeyer		Waynesboro	PA
Penny	Sherrow		Royersford	PA
Kevin	Sherry		Pittsburgh	PA
Marilyn	Shertzer		Mount Joy	PA
Richard	Shertzer		Hummelstown	PA
Jennifer	Sherwood		Jenkintown	PA
Kenneth	Sherwood		Indiana	PA
Janice	Shields		Lykens	PA
Karen	Shields		Bethlehem	PA
Kolya	Shields		Arlington	MA
Michael	Shields		Pittsburgh	PA
Samantha	Shields		Pittsburgh	PA
Towanda	Shields		Philadelphia	PA
Annette	Shimer	League of Women Voters of Greater Pittsburgh	Mt. Lebanon	PA
Preston	Shimer		Mt Lebanon	PA

John	Shimshock	Keystone-Conemaugh Projects, LLC	New Florence	PA
Zelda	Shingler		Meshoppen	PA
Dottie	Shinko		Leechburg	PA
Wendy	Shipps-Hatchell		Huntingdon	PA
Casey	Shirk		Bellefonte	PA
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Melinda	Shirk		Hanover	PA
Daniel	Shirley		Glenolden	PA
Heidi	Shiver		Doylestown	PA
John	Shiver		Doylestown	PA
Rachel	Shiver		Easton	PA
Rebecca	Shives		Manchester	PA
Harry	Shleifer		Bethlehem	PA
Gregory	Shoback		Dallas	PA
Elizabeth	Shober		Lafayette Hill	PA
Devonna	Shoemaker		Gallitzin	PA
Clinton	Shoffstall		Brookville	PA
Johanna	Sholder		Pittsburgh	PA
Alysia	Shollenberger		Reading	PA
Brian	Shopsky		Mount Pleasant	PA
Alima	Shoranova		Ambler	PA
Christopher	Shore		Pittsburgh	PA
Patsy	Shores		Lewistown	PA
Matt	Shorraw	Mayor, City of Monessen	Monessen	PA
Kurt	Short		State College	PA
Patricia	Short		Lancaster	PA
Sylvia	Shostek		Johnstown	PA
Robert	Showalter		Hershey	PA
Regina	Showers		Pittsburgh	PA
Joyce	Shreckengast		Lock Haven	PA
Faris	Shreim		Philadelphia	PA
Chelsey	Shreve		Lancaster	PA
Jeffrey	Shuben		Philadelphia	PA
Joy	Shuchart		York Springs	PA
Crystal	Shuford		Philadelphia	PA
Katie	Shuhart		Levittown	PA
Jane	Shultz		Lititz	PA
Sean	Shultz	Carlisle Borough Council	Carlisle	PA
H. Dennis	Shumaker		Cornwall	PA
Eileen	Shupak		Philadelphia	PA
Kristi	ShuppGeorge		Chambersburg	PA
Lacey	Shurtz		North Versailles	PA
Kaleigh	Shuster		Smithton	PA
Zachary	Shuster		Smithton	PA
Alex	Sickert		Jenkintown	PA
Gail	Sickles		Dalton	PA

Janet	Sidewater		Coatesville	PA
Marie	Sidor		West Chester	PA
Barbaranne	Siebert-Rodriguez		Philadelphia	PA
Bonnie	Siefers		Pittsburgh	PA
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Elissa	Siegel		Cheltenham	PA
Sheila	Siegel		Philadelphia	PA
Stanley	Siegel		*Submitted via email*	PA
Brenda	Sieglitz		Mount Joy	PA
Patricia	Siegrist		Havertown	PA
Michael	Siemek		Pottstown	PA
Nancy	Sierra		Harrisburg	PA
Nestor	Sierra		Bethlehem	PA
William	Sigler		Philadelphia	PA
Sherry	Signoriello		New Castle	PA
Magdalena	Sikora		State College	PA
Stanley	Silber		Philadelphia	PA
Scott	Silberman		Downingtown	PA
Dea	Silbertrust		Bala Cynwyd	PA
Dana	Siler		Pittsburgh	PA
Charles	Silio*	Prospect14	Ardmore	PA
Melissa	Sillah		Philadelphia	PA
Yolanda	Sills		Glenolden	PA
Cindy	Silva		Bethlehem	PA
Johanna	Silva		Allentown	PA
Sherlyse	Silva		Philadelphia	PA
Mary Jean	Silvasy		Pittsburgh	PA
Genie	Silver		Wynnewood	PA
Sara	Silver		Levittown	PA
Raquel	Silverman		Bensalem	PA
Seth	Silverman		New York	NY
Sondra	Silverzweig		Philadelphia	PA
Elise	Silvestri		Pittsburgh	PA
Joshua	Silvis		Pittsburgh	PA
Brenda Rose	Simkin		Ardmore	PA
Jacqueline	Simko		Philadelphia	PA
Toni	Simmers		Camp Hill	PA
Bruce	Simmeth		Monaca	PA
Brian	Simmons		Gap	PA
Denise	Simmons		New Freedom	PA
Howard	Simmons		Philadelphia	PA
Joe	Simmons		Philadelphia	PA
Kayla	Simmons		Harrisburg	PA
Khaliq	Simmons		Philadelphia	PA
Robert	Simmons		Philadelphia	PA

Scott	Simmons		Lititz	PA
Tishonda	Simmons		Philadelphia	PA
Amy	Simms		Philadelphia	PA
Frank	Simms		Reading	PA
Melanie	Simms		Selinsgrove	PA
Barry	Simon		Warren	PA
Donald	Simon		Philadelphia	PA
Erica	Simon		Abington	PA
Jamie	Simon		Erie	PA
Jim	Simon		Rochester	PA
Natalie	Simon		Wyncote	PA
Pierre-Clement	Simon		State College	PA
Sam	Simon		Philadelphia	PA
Zachary	Simon		Abington	PA
Barbara	Simonds		Chadds Ford	PA
Tom	Simonet		Yardley	PA
Vernon	Simonet		Dingmans Ferry	PA
Heather	Simons		New Milford	PA
Brad	Simpson	Pennsylvania NewsMedia Association	Harrisburg	PA
Elisabeth	Simpson		Easton	PA
Karen	Simpson		Boothwyn	PA
Nora	Simpson		Philadelphia	PA
Thomas	Simpson		Lancaster	PA
Yvette	Simpson		Philadelphia	PA
Arielle	Sims		Philadelphia	PA
Belinda	Sims		Stroudsburg	PA
Richard	Sims		Harrisburg	PA
Robert	Sims		Yardley	PA
Sally	Sims		West Chester	PA
Samuel	Sims		Reading	PA
Sylvia	Sims-Linkish		Canonsburg	PA
Amy	Sinden		Philadelphia	PA
Rhonda	Sine		La Belle	PA
Ella	Singer		Bala Cynwyd	PA
Frank	Singer		Erie	PA
Manav	Singh		Huntingdon Valley	PA
Sukhwans	Singh		Cranberry Township	PA
Adrianna	Singleton		Philadelphia	PA
Debbie	Singleton		Philadelphia	PA
Laura	Singleton		Philadelphia	PA
Salina	Singleton		Philadelphia	PA
Laura	Singo		Meadville	PA
Sarani	Sinha		Harleysville	PA
Rachel	Sink		Harrisburg	PA
Carole	Sipe		Pine Grove	PA

Rosalind	Sipe		Philadelphia	PA
Becki	Siravo		Lansdale	PA
Frank	Sirianni	Pennsylvania State Building Trades Council	Harrisburg	PA
Michelle	Sirianni		Fort Washington	PA
Clifford	Siry		Pittsburgh	PA
Yayah	Siryon		Drexel Hill	PA
Mark	Sitler		Williamsport	PA
Stephanie	Sitler		Philadelphia	PA
Ginny	Sivak		Erie	PA
Pam	Sivertsen		Drexel Hill	PA
Barbara	Siwik		Pottstown	PA
Michael	Siwy		Whitehall	PA
Patricia	Skabla		Bensalem	PA
David	Skellie		Erie	PA
Richard	Skelskey		Kennett Square	PA
Cynthia	Skema		Philadelphia	PA
Mark	Skevofilax		Dallas	PA
Stacy	Skiavo		Pittsburgh	PA
Karen	Skiba		Fairmount City	PA
Kristin	Skiendzielewski		Philadelphia	PA
Erin	Skiff		Pittsburgh	PA
Ronald	Skinne		Philadelphia	PA
Jody	Skinner		Waterfall	PA
Kate	Skinner		Pittsburgh	PA
Leila	Skinner		Somerville	MA
Michael	Skinner		Burgettstown	PA
Sharon	Skinner		Charleroi	PA
Victor	Skloff		Lower Gwynedd	PA
Phyllis	Skok		Camp Hill	PA
Rosie	Skovron		Longmont	CO
Sasha	Skulsky		New Hope	PA
Gregory	Skutches		Bethlehem	PA
Sharon	Sladick		Washington	PA
Dallas	Slagle		Richeyville	PA
Francess	Slanger		Upper Darby	PA
Bert	Slater		Indiana	PA
Meghan	Slatowski		Blue Bell	PA
Aaron	Slatton		Uniontown	PA
Julie	Slavet		Philadelphia	PA
Nancy	Sleasman		Rockwood	PA
Wesley	Slebrich		Pittsburgh	PA
Mary	Slegel		York	PA
Jennifer	Sleva		Saint Clair	PA
Jody	Slider		Cuddy	PA
Lynn	Sliwinski		Ebensburg	PA
David	Sloan		Downingtown	PA

Patricia	Sloan		Butler	PA
Jim	Sloane		Cabot	PA
William	Slobodin		*Submitted via email*	PA
Lori	Slocum		Moosic	PA
Brendon	Slotterback		Pittsburgh	PA
Kenneth	Slough		Pottstown	PA
Robert	Slowik		Yardley	PA
Karen	Slywczak		Espyville	PA
Kerri	Smalec		Willow Street	PA
Isaac	Small		Philadelphia	PA
Jacqueline	Small		Scranton	PA
Vince	Small		Wynnewood	PA
Beverly	Smalley		Feasterville Trevose	PA
Belinda	Smalls		Philadelphia	PA
Holly	Smallwood		Aliquippa	PA
Alycyn	SmallwoodRoye		Philadelphia	PA
Barbara	Smarsh		Beaver	PA
Eric	Smeak		Stoystown	PA
Vicki	Smedley		Jersey Shore	PA
Paul	Smego		Erie	PA
Robert	Smeigh		Mechanicsburg	PA
Pamela	Smeltz		Dornsife	PA
Nancy	Smeltzer		Smicksburg	PA
Roxanne	Smeltzer		Windsor	PA
Karin	Smerker		Philadelphia	PA
Dennis	Smiddle		Canonsburg	PA
Abigail	Smith		Downingtown	PA
Andrew	Smith		Hermitage	PA
Angela	Smith		Pittsburgh	PA
Ann	Smith		New Castle	PA
Ann	Smith		Washington Boro	PA
Anna	Smith		Effort	PA
Anne Marie	Smith		Rose Valley	PA
Badley	Smith		Warren	PA
Barbara	Smith		Stroudsburg	PA
Betty	Smith		Easton	PA
Bill	Smith		Chester Springs	PA
Bonnie	Smith		Philadelphia	PA
Brad	Smith		Berwick	PA
Brenda	Smith		Pittsburgh	PA
Charles	Smith		Philadelphia	PA
Christopher	Smith		Birdsboro	PA
Christopher	Smith		Morgantown	PA
Ciara	Smith		Chester	PA
Cindy	Smith		Chalfont	PA

Cody	Smith		Allentown	PA
Constance	Smith		Havertown	PA
Corey	Smith		Pittsburgh	PA
Dan	Smith	Nuclear Matters	Washington	DC
David	Smith		Hatfield	PA
Dennis	Smith		Temple	PA
Diane	Smith		New Hope	PA
Donna	Smith		*Submitted via email*	PA
Donna	Smith		Havertown	PA
Donna	Smith		Perkasie	PA
Douglas	Smith		Perkasie	PA
Douglas	Smith		West Chester	PA
Eric	Smith		Mars	PA
Eric	Smith		Philadelphia	PA
Erik	Smith		Seward	PA
Gerald	Smith		Philadelphia	PA
Ghazi	Smith		Philadelphia	PA
Helen	Smith		Norristown	PA
Idyle	Smith		New Tripoli	PA
J.T.	Smith		Sellersville	PA
James	Smith		Holtwood	PA
Jayla	Smith		Munhall	PA
Jeanne	Smith		Pen Argyl	PA
Jeffrey	Smith		Philadelphia	PA
JoMarie	Smith		Willow Street	PA
Joseph	Smith		Philadelphia	PA
Karen	Smith		Springfield	PA
Karen Kay	Smith		Harrisburg	PA
Kelly	Smith		Derry	PA
Kelly	Smith		Pottstown	PA
Kevin	Smith		Hatfield	PA
Larissa	Smith		Mercersburg	PA
LaTrice	Smith		Philadelphia	PA
Laura Henderson	Smith		Philadelphia	PA
Leon G.	Smith		Kutztown	PA
Lorraine	Smith		Philadelphia	PA
Louise	Smith		Pittsburgh	PA
Marjorie	Smith		Brodheadsville	PA
Mark	Smith		Glenside	PA
Mary	Smith		Tobyhanna	PA
Mary Ann	Smith		Fort Washington	PA
Natasha	Smith		Philadelphia	PA
Nate	Smith		Philadelphia	PA
Nathaniel	Smith		West Chester	PA
Pam	Smith		Allentown	PA
Pamela	Smith		Philadelphia	PA

Rachel	Smith		Shickshinny	PA
Ray	Smith		Johnstown	PA
Robert	Smith		Downingtown	PA
Robert	Smith		Feasterville Trevose	PA
Robert	Smith		Pittsburgh	PA
Roger	Smith		Bangor	PA
Roger	Smith		Stroudsburg	PA
Royer	Smith		Philadelphia	PA
Ryan	Smith		Mercersburg	PA
Sarah	Smith		East Stroudsburg	PA
Scott	Smith		Pittsburgh	PA
Selvin	Smith		Philadelphia	PA
Shakada	Smith		Philadelphia	PA
Sharon	Smith		Folcroft	PA
Sharon	Smith		Philadelphia	PA
Shawn	Smith		Knoxville	PA
Siera	Smith		Philadelphia	PA
Stacy	Smith		Bloomsburg	PA
Stephen	Smith		Bethlehem	PA
Susan	Smith		Coraopolis	PA
Susan	Smith		Lemont	PA
Suzanne	Smith		Morrisville	PA
Tammy	Smith		Pittsburgh	PA
Taurus	Smith		Philadelphia	PA
Terry	Smith		Altoona	PA
Timothy	Smith		Erie	PA
Travis	Smith		Meyersdale	PA
Tyrone	Smith		Philadelphia	PA
Valerie	Smith		Sharpsville	PA
Vincent	Smith		Jenkintown	PA
Virginia	Smith		Philadelphia	PA
Wendy	Smith		Camp Hill	PA
William	Smith		Philadelphia	PA
William	Smith		York	PA
William E.	Smith		Harrisburg	PA
Winston	Smith		New York	NY
Zach	Smith		Langhorne	PA
Hannah	Smith-Brubaker*	Village Acres Farm	Mifflintown	PA
Michelle	Smithson		Pittsburgh	PA
James and Joanne	Smoker		York	PA
Bridget	Smolcynski		Glen Mills	PA
Chet	Smolenski		Murrysville	PA
Marcus	Smolensky		Dalmatia	PA
Carla	Smolka		Jeannette	PA
Joyce	Smolka		Pittsburgh	PA
Janet	Smolko		Lebanon	PA

Hannah	Smull		Elkins Park	PA
Michael	Smyer	Growing-Greener.org	Lewisburg	PA
David E.	Smyers	Center Township Board of Supervisors	Homer City	PA
Glenn	Smyers		Coral	PA
Elizabeth	Smyser		Doylestown	PA
Eamonn	Smyth		Sunbury	PA
James	Smyth		Yardley	PA
Noel	Smyth		Havertown	PA
J. Richard	Snavely		Elizabethtown	PA
Kathie	Snavely		Wrightsville	PA
Donnelle	Snead		Philadelphia	PA
George	Snedden		Philadelphia	PA
William	Snodgrass		Monroeville	PA
William	Snook		Kittanning	PA
Christine	Snow		Media	PA
Mike	Snow		Lock Haven	PA
Tim	Snow		Media	PA
Richard	Snowden		New Brighton	PA
Alexander	Snyder		Wayne	PA
Alexis	Snyder		Denver	PA
Alyssa	Snyder		Carnegie	PA
Brad	Snyder		Maple Grove	MN
Cathy	Snyder	Exec Dir and Founder,Rolling Harvest Food Rescue	Lumberville	PA
Dan	Snyder		Baden	PA
Gabriela	Snyder		Devon	PA
Howard	Snyder		Hawley	PA
James	Snyder		Ridgway	PA
Jason	Snyder		Philadelphia	PA
Judy	Snyder		Allentown	PA
Pamela	Snyder		Harrisburg	PA
Stephanie	Snyder		Lititz	PA
Savun	So		Philadelphia	PA
Rita	Sobbe		Thomasville	PA
Frank	Sobeck		Wyoming	PA
Kris	Soffa		Philadelphia	PA
Christopher	Sohnly		Philadelphia	PA
Margery	Soifer		Wynnewood	PA
Vickilynn	Sojourner		Philadelphia	PA
Mara	Sokol		Benton	PA
Marianna	Sokol		Benton	PA
Laura	Sokolovic		Pittsburgh	PA
John	Sokso		Gap	PA
Joseph	Solar		Glen Mills	PA
Ronda	Soldano		Fairbank	PA
Melissa	Soles		Lower Burrell	PA

Clete	Solomon		Bridgeville	PA
Elba	Solomon		Stroudsburg	PA
Lily	Solomon		Blue Bell	PA
Mark	Solomon		Robinson twp	PA
Sharyn	Solomon		Philadelphia	PA
Wendy	Solomon		Pittsburgh	PA
Bernadette	Soltis		Downingtown	PA
David	Soltysiak		North Huntingdon	PA
Nicole	Somers		Lafayette Hill	PA
Ashley	Somerville		Pittsburgh	PA
Naomi	Somerville		Mechanicsburg	PA
Tyleta	Somerville		Pittsburgh	PA
Scott	Sommer		Phoenixville	PA
Kelly	Sones		Mountain Top	PA
Charlotte	Song		Pittsburgh	PA
Barbara	Sonies		Narberth	PA
Devorah	Soodak		Philadelphia	PA
Thomas	Soper		Philadelphia	PA
Sue	Soraruf		Kennett Square	PA
Richard	Sorek		Bradford	PA
Rayden	Sorock		Pittsburgh	PA
Theresa	sorokaput		Wilkes-Barre	PA
Grant	Sorrell		Quakertown	PA
JoAnn	Sorrell		Collegeville	PA
Ciro	Sorrentino		Coplay	PA
Dr. John	Sorrentino	Temple U ECON & Abington Township EAC	Glenside	PA
Beryl	Sortino		Doylestown	PA
Alberto	Sosa		Walnutport	PA
Chad	Sosa		Lower Burrell	PA
Carole	Soskis		Bala Cynwyd	PA
Joyce	Sotiriou		New Brighton	PA
Jonathan	Soto		Norristown	PA
Jovani	Soto		Chester	PA
Merian	Soto		Philadelphia	PA
Ruth Kay	Souder		Red Hill	PA
Virginia	Soules, MD		Atlanta	PA
Evelyn	Southerland		Philadelphia	PA
Michele	Southworth		Lansdowne	PA
Crystal	Souza		Philadelphia	PA
Margot	Soven		Haverford	PA
Michael	Sowko		Monongahela	PA
Mekala	Sowmya		Pittsburgh	PA
Chris	Spaar		Trout Run	PA
Riley	Spahr	Defend Our Future	Camp Hill	PA
Terry	Spahr	Executive Director, Earth Overshoot	Ardmore	PA
Susan	Spallone		Altoona	PA

David	Spangenberg		Philadelphia	PA
Jodi	Spangenberg		Breinigsville	PA
Sara	Spangler		Hanover	PA
John	Spanitz		Walnutport	PA
MelVina	Spann-Johnson		Philadelphia	PA
Karen Guarino	Spanton		Philadelphia	PA
Joan	Spaventa		Berwyn	PA
Joshua	Spears		Indiana	PA
Matthew	Speck		Reading	PA
Kayla	Speedy		Philadelphia	PA
Timothy	Speelman		Friedens	PA
Rich	Speer		Wexford	PA
John	Speers		Atglen	PA
Mary	Speight		Philadelphia	PA
Eric	Speights		Philadelphia	PA
Jakob	Speksnijder	Board Member, Plastic Free Please	West Chester	PA
Douglas	Spencer		Kennett Square	PA
Janet	Spencer		Kennett Square	PA
Norman	Spencer		Ephrata	PA
Scott H.	Spencer		Philadelphia	PA
Cynthia	Spering		Philadelphia	PA
Libba	Spiegel		Pittsburgh	PA
Paul	Spiegel*	Practical Energy Solutions	West Chester	PA
John	Spiegelman	President,Abington Township Board of Commissioners	Abington	PA
Hannah	Spielberg		Philadelphia	PA
Carole	Spina		Southamton	PA
John	Spinella		Philadelphia	PA
Brittany	Spinelli		Pittsburgh	PA
Chrystal	Spinelli		Philadelphia	PA
Sean	Spink		Conshohocken	PA
Nicole	Spinosa		Philadelphia	PA
Charles	Spiroff		Harrisburg	PA
Lenwood M.	Spivey		Philadelphia	PA
William	Spohn		Wexford	PA
Leda	Sportolari		Wynnewood	PA
Nicholas	Sposaro		Philadelphia	PA
Ashley	Spotts		Lancaster	PA
Mary	Sprajcar		Pittsburgh	PA
Jenna	Spray		Wayne	PA
Justin	Spriggs		York	PA
Rudy	Sprinkle		Philadelphia	PA
Helen	Sproat		Bristol	PA
Wilson	Sproehnle III		Philadelphia	PA
Jonathan	Sprout		Southampton	PA
Mark	Squilla	Philadelphia City Councilmember, First District	Philadelphia	PA

Bruno	Squillace		Glenolden	PA
Janet	Sredy		Elizabeth	PA
Robert	Sroufe*		Blawnox	PA
John	St. Clair	Rosebud Mining Company	Kittanning	PA
Karen	Stabenow		Philadelphia	PA
Ronald	Stabile		Warminster	PA
Lea	Stabinski		Norristown	PA
Genevieve	Stacey		Lancaster	PA
Guy	Stackhouse		Vandling	PA
Lesa	Stacknick		Mechanicsburg	PA
Gwen M.	Stadler		Nazareth	PA
Lindsay Weltman	Staeger		Broomall	PA
Stephanie	Staerk		Philadelphia	PA
Roslyn	Stafford		Norristown	PA
Suzanne	Staggenborg		Pittsburgh	PA
Verlinda	Staggers		Minersville	PA
Stanley	Stahl		Lancaster	PA
Kathleen	Stahlman		Corry	PA
Will	Stahlman		Jonestown	PA
Sandra	Stahman		Oil City	PA
Tricia	Staible		Zelienople	PA
Michael	Stake		Chambersburg	PA
Stephen	Stales		Philadelphia	PA
Rosemary	Stallone		Effort	PA
Eric	Stalnaker		Monroeville	PA
Joanne	Stamm		Kutztown	PA
William	Stamm		Aliquippa	PA
Daaimah	Stancil		Philadelphia	PA
Christine	Stangl		Collegeville	PA
Donald	Stanko		New Kensington	PA
Deirdre	Stanley		Philadelphia	PA
Lee	Stanley		Bethlehem	PA
Chris	Stanton		Morton	PA
Duane	Stanton		Kimberton	PA
Leroy	Stanton		Philadelphia	PA
Michael	Stanton		Pittsburgh	PA
Tina	Stanton		Morton	PA
Mary	Staples		Devon	PA
Beth	Stapleton		*Submitted via email*	PA
Rodney	Stark		*Submitted via email*	PA
Shirley and Rick	Stark		Lemoyne	PA
Tyler	Stark		Montoursville	PA
Andre	Starks		Philadelphia	PA
Ronny	Starks		Abington	PA
Stephen	Starr		Ambler	PA

Wendy	Staso	Huckestein	Pittsburgh	PA
James	Staszewski		Pittsburgh	PA
Cindy	States		Barto	PA
Missy	Staub		Souderton	PA
Beth	Stauber		Allison Park	PA
Greg	Stauffer		Saint Marys	PA
Byron G.	Stauffer, Jr.	Indiana County Development Corporation	Indiana	PA
Susan	Staugaard		Ardmore	PA
Robert	Staurowsky		Mertztown	PA
Levi	StClair		Stoystown	PA
Garlie	St-Cyr		Morrisville	PA
Catherine	Stearns		Pittsburgh	PA
Melissa	Stearns		Pittsburgh	PA
John	Stech		Monongahela	PA
Lisa	Steckhouse		Pennsburg	PA
Susan	Stedman		Paoli	PA
DB	Steele		Hatfield	PA
Lauren	Steele		Maple Glen	PA
Nancy	Steele		Macungie	PA
Shawn	Steffee	Boilermakers Local 154/South Central BT	Pittsburgh	PA
Amy	Steffen		Philadelphia	PA
Robert	Steffes		Aliquippa	PA
susan	Steffey		Leetsdale	PA
Heidi	Steffy		Erie	PA
Alice	Stehle		Butler	PA
Adam	Stein		Philadelphia	PA
Annalise	Stein		Washington Crossing	PA
Susan	Stein		Ambler	PA
Chea	Steinbach		Narberth	PA
Arlene	Steinberg		Philadelphia	PA
Barbara	Steinberg		Avalon	PA
MaryAnne	Steinert		Northampton	PA
Bob	Steininger		Phoenixville	PA
Elizabeth	Stelle	Commonwealth Foundation	Harrisburg	PA
Richard	Stempien		Fayetteville	PA
Carole	Stengel		Mars	PA
Christine	Stenner	Secretary Indivisible HOPE	Harleysville	PA
Jo	Stepaniak		Pittsburgh	PA
John	Stephany		Wexford	PA
Lisann	Stephany		Pottsville	PA
William	Stephens		Easton	PA
William	Stephenson		Cherry Tree	PA
Kathy	Stepp		Phoenixville	PA
David L.	Stermer, Sr.		Windsor	PA

Daniel	Stern		Harrisburg	PA
Deborah	Stern		Philadelphia	PA
Eddie	Stern		Martinsburg	PA
George	Stern		Philadelphia	PA
Sam	Stern		Media	PA
Stephanie	Stern		Narberth	PA
Rhonda	Sternowski		Bernville	PA
Mae	Sterrett		Kennett Square	PA
Emily	Stetler		Dover	PA
Sari	Steuber	Operations Coordinator, Transition Town Media	Springfield	PA
Craig	Stevens		*Submitted via email*	PA
Daniel	Stevens		Bethlehem	PA
Elizabeth	Stevens		York	PA
F.	Stevens		Chester	PA
Hussein	Stevens		Pittsburgh	PA
Janet M.	Stevens		Jenkintown	PA
Kathryn	Stevens		Pittsburgh	PA
Linda	Stevens		King of Prussia	PA
Mark	Stevens	Managing Partner, EnableHealth	West Chester	PA
Sheila	Stevens		Ft Washington	PA
Sidney	Stevens		Coopersburg	PA
Thaddeus K.	Stevens		Gaines	PA
Ellen	Stevenson	Founder, Social Justice Group mont/PHL indivisible	Flourtown	PA
Robert	Stevenson		Lebanon	PA
Kimberly	Stever Nelson	Principal, Eastwick Solutions	Doylestown	PA
Thomas	Steves		Ambler	PA
Shaun	Steward		Allentown	PA
Bernard	Stewart		Coatesville	PA
Denis	Stewart		West Chester	PA
Duwayne	Stewart		Belle Vernon	PA
Frank	Stewart		Philadelphia	PA
Glenn	Stewart		Ridley Park	PA
Janet	Stewart		Pittsburgh	PA
Jonathan	Stewart		Phoenixville	PA
Kacie	Stewart		Blawnox	PA
Susan	Stewart		Centre Hall	PA
Teresa	Stewart		Curwensville	PA
Mark	Stickel		Export	PA
Beverly	Stickley		Harrisburg	PA
Ron	Stidmon		Enon Valley	PA
Mary Virginia	Stieb-Hales		Gwynedd	PA
Marty	Stiffler		Marysville	PA
Jeffrey	Stifnell		Barto	PA
Mj	Stigliano		Bushkill	PA

Craig	Stiles		Windber	PA
Floyd	Stiles		Ebensburg	PA
Marsha	Stiles		Quarryville	PA
John	Stilley		Butler	PA
JD	Stillwater		Harrisburg	PA
Ryan	Stiltner		Glen Mills	PA
William	Stimeling		Strasburg	PA
Kathi	Stinner		Allentown	PA
Vivian	Stockman	Exec Dir., OVEC-Ohio Valley Environmental Coalition	Huntington	PA
B. L. and P. J.	Stoeckl		Pequea	PA
Bonnie	Stoeckl		Pequea	PA
John	Stofko		Allentown	PA
Grace	Stokan		Pittsburgh	PA
Jerome	Stokes		Rostraver Township	PA
Lauren	Stokes		Philadelphia	PA
Joyce	Stoltzfus		Elizabethtown	PA
Dr. John	Stolz	Professor, Duqesne University	Glenshaw	PA
Barbara	Stone		Media	PA
Margaret	Stone		Douglassville	PA
Meredith	Stone		Philadelphia	PA
Russell	Stone		Philadelphia	PA
Sedona	Stone		Carlisle	PA
Stacy	Stone		Malvern	PA
Rob	Stonecipher		Lansdowne	PA
James	Stoner		Monroeville	PA
Kevin	Stoner		Mount Holly Springs	PA
Delano	Stones		Philadelphia	PA
John	Storck		Red Lion	PA
Donald	Storm		Harleysville	PA
Kristie Jo	Stormer		Brockway	PA
Stephen	Storozenko		Philadelphia	PA
Danita	Story		Chester	PA
Ethan	Story*	Center for Coalfield Justice	Pittsburgh	PA
Barbara	Storz		Glenside	PA
Kenneth	Stossel		Cherry Tree	PA
Richard	Stott		Conestoga	PA
Sharon	Stout		Quarryville	PA
Su	Stout	Co-Chair, Progressive Montco	Wyndmoor	PA
Worrell	Stout		Huntingdon Valley	PA
Marcia	Stoute		Stroudsburg	PA
Dustin	Stover		Apollo	PA
George	Stradtman		Elkins Park	PA
Eric	Straffin		Union City	PA
Robert	Strahosky		Enola	PA
Darren	Strain		Brookhaven	PA

Gina	Strang		Collegeville	PA
Terri	Strang		Allentown	PA
Karen	Strange		Mansfield	PA
William	Strange		Philadelphia	PA
Adrien	Strano		Sewickley	PA
Jacob	Strano		Ambridge	PA
George	Strasbaugh		Pittsburgh	PA
Erika	Strassburger	Council MemberPittsburgh City Council	Pittsburgh	PA
Meredith	Strasser		Kutztown	PA
Louanne	Stratton		Philadelphia	PA
Derek	Straub	Associate Prof, Susquehanna University	Selinsgrove	PA
Martha	Straus		Oxford	PA
Janice	Strausbaugh		York	PA
Elaine	Strause		Paoli	PA
Rev. Sandra L.	Strauss	Pennsylvania Council of Churches	Harrisburg	PA
Kris	Strausser		Mohnton	PA
Faye	Straw		Johnstown	PA
Linda	Straw		Harrisburg	PA
Steve	Strawitz		Blue Bell	PA
Aleta	Streett-Leavy		Butler	PA
Paul	Strenko		Nicktown	PA
Barbara	Strickland		Philadelphia	PA
Gregory	Strickland		Philadelphia	PA
Chris	Striegel		Philadelphia	PA
Laurie	Strine		Kennett Square	PA
Blaine	Strittmatter		New Castle	PA
Howard	Stritzinger		Nanticoke	PA
Patricia	Stroble		Sunbury	PA
Cindy	Strohecker		Washington	PA
Karilynn	Stroje		Pittsburgh	PA
Lisa	Stroman		Philadelphia	PA
Patricia	Stroman		Abington	PA
Betty	Stroud		Erie	PA
Robert	Stroufe		Pittsburgh	PA
Mayor Ron	Strouse	Mayor, Doylestown Borough	Doylestown	PA
Andrea	Strout		Doylestown	PA
M.	Struble		Philadelphia	PA
Charles	Strum		Chester	WV
Chuck	Strum		Bridgeville	PA
Doug	Stuart		Ardmore	PA
Jeff	Stuby	Councilor, Carlisle Borough	Carlisle	PA
Thomas	Studenroth		Kingston	PA
Rebecca	Studer		Pittsburgh	PA
Norman	Stupp		Norristown	PA
Boaz	Stuppard		Philadelphia	PA

Frank	Sturniolo		Wayne	PA
Peter	Stuve		Philadelphia	PA
Steven	Styers		Mifflinburg	PA
Carl	Stypinski		Reading	PA
Daniel	Suarez		Philadelphia	PA
Mary Ann	Suchma		Lansdowne	PA
Melanie	Suchowierski		Royersford	PA
Thomas	Suda		Homer City	PA
Truman	Sudler		Philadelphia	PA
Margery	Sudsataya		Philadelphia	PA
Awilda	Suero		Philadelphia	PA
Fred	Suffian		Warrington	PA
Debra	Sulai	Lewisburg Borough Council President and Ward 3 Rep	Lewisburg	PA
Ali	Sullivan		Wayne	PA
Marilyn	Sullivan		Freedom	PA
Nathan	Sullivan		Pittsburgh	PA
Robert	Sullivan		Pittsburgh	PA
Russell	Sullivan	Pastor, Pine Street Presbyterian	New Kingston	PA
Saeed	Sullivan		Philadelphia	PA
Siobhan	Sullivan		Pittsburgh	PA
Susan	Sullivan		Wapwallopen	PA
Jamar	Summers		Philadelphia	PA
JC	Summers		Darlington	PA
Joey	Summers		Philadelphia	PA
Kevin	Sunday	PA Chamber	Harrisburg	PA
Yixing	Sung		Monroeville	PA
Simi	Sunny		Huntingdon Valley	PA
Lauren	Sunstein		Spring Mount	PA
Terri	Supowitz		Pittsburgh	PA
Kathi	Suprek		Uniontown	PA
Rich	Surdyk		Pittsburgh	PA
Family of Dr.	Susang-Talamo		Export	PA
Mrs.	Susang-Talamo		Export	PA
Mark	Sustarsic		Pittsburgh	PA
Christine	Suszkowski		Blue Bell	PA
Philip	Sutter		Lancaster	PA
Daniel	Sutton		Wynnewood	PA
Jim	Sutton		Lancaster	PA
Linda	Sutton		Philadelphia	PA
Nathaniel	Sutton		Philadelphia	PA
Abbey	Sutzko		Harveys Lake	PA
Kristen	Suzda	Green Building United	Philadelphia	PA
Nick	Svokas		Colliers	WV
Angela	Svonavec	Heritage Coal	Rockwood	PA
Angela	Svonavec	Fearless One, Inc	Rockwood	PA
Angela	Svonavec	Banshee Crane & Farm	Rockwood	PA

Anna	Swailes		Fannettsburg	PA
Marie	Swalm		Coatesville	PA
Karen	Swam		Lancaster	PA
Dave	Swanger		Hummelstown	PA
Carrie	Swank		Reading	PA
Christina	Swanson		Oreland	PA
Michael	Swanson		Lancaster	PA
Jordan	Swartz		Pittsburgh	PA
Lily	Swartz		New Hope	PA
Daniel	Swartz*	Temple Hesed/Coalition on the Envt. & Jewish Life	Clarks Summit	PA
John	Swatkoski		Everett	PA
Diane	Sweeney		Philadelphia	PA
Eleanor	Sweeney		Newmanstown	PA
Mark	Sweeney		East Petersburg	PA
Shawn	Sweeney		Philadelphia	PA
Amy	Sweigart		Coatesville	PA
James R.	Swenson		State College	PA
Naomi	Swerdlow		Pittsburgh	PA
Brian	Swiderski		Pottstown	PA
Edward J.	Swiderski Jr.		Quakertown	PA
Eva-Maria	Swidler		Philadelphia	PA
Charles	Swigart		Fayetteville	PA
Annabella	Swilley		Philadelphia	PA
Thomas	Swimley		Knoxville	PA
Edward	Swinnerton		Levittown	PA
Allison	Swinty		King of Prussia	PA
John	Swisher		State College	PA
Patrick J.	Swope		*Submitted via email*	PA
Terry	Swope		Waynesboro	PA
Todd	Swoyer		Reading	PA
Cleette	Swymer		Coatesville	PA
Helen	Syen		Philadelphia	PA
Edward	Sykes		Camp Hill	PA
James	Sykes		Reading	PA
Lynnette	Sykes		Philadelphia	PA
Mary K.	Sykes		Uniontown	PA
Quintin	Sykes		East Stroudsburg	PA
Timothy	Sykes		Pittsburgh	PA
Mohamed	Sylla		Morrisville	PA
Paul	Sylvester	Assistant Professor,West Chester University	West Chester	PA
Peter	Syre		Abington	PA
Terri	Syvret		Allentown	PA
Charlie	Sywulak-Herr		Elkins Park	PA
James	Szalankiewicz		Indiana	PA

Linda	Szeerba		Harrisburg	PA
Daniel	Szetela		Hanover	PA
Alexis	Szkotak		Haddonfield	NJ
Carol	Szott		Bellevue	PA
Kathy	Szpak		Reading	PA
Mark	Szybist	Natural Resources Defense Council	New York	NY
Lyn	Szymkiewicz		Baden	PA
John	T.		Philadelphia	PA
Allyssa	Taddei		Philadelphia	PA
Lynn T.	Tadej		Holicong	PA
Hugh	Taft-Morales	Philadelphia Ethical Society	Philadelphia	PA
Peter	Tafuri		Fleetville	PA
Brian	Taggart		Saylorsburg	PA
Rush	Taggart		Valley Forge	PA
Anthony	Tagliati		Indiana	PA
Patricia	Tahan	President, Lower Moyamensing Civic Association	Philadelphia	PA
Roya	Taheri		Philadelphia	PA
Helen	Tai		New Hope	PA
Stephen	Takacs		Pittsburgh	PA
Kathie	Takush		Reading	PA
Evelyn	Talbott*		Pittsburgh	PA
Christine	Talley		Allentown	PA
Dorothy	Talley		Media	PA
Patrick	Talley		Philadelphia	PA
Raymond	Talley		Harrisburg	PA
Johnny	Talley Jr		Harrisburg	PA
Jonathan	Tamarin		Plymouth Meeting	PA
Patricia	Tancredi		Alburtis	PA
Anna	Tangi		Philadelphia	PA
Irma	Tani		Pittsburgh	PA
Joseph	Tann		Philadelphia	PA
Regina	Tannenbaum		Paoli	PA
Deston	Tanner		Tarentum	PA
Charles	Taormina		Johnstown	PA
Anthony	Tapia		Philadelphia	PA
Angelo	Taranto		Pittsburgh	PA
Larry	Tarboro		Philadelphia	PA
Matthew	Tarlecki		Phoenixville	PA
Austin	Tarman		Red Lion	PA
David	Tarnalicki		Bear Creek Township	PA
Garry	Taroli		Wilkes-Barre	PA
Virginia	Tarry		Philadelphia	PA
Eric	Tars		Philadelphia	PA
Lori	Tartar-Ewen		Fort Washington	PA
Eugene	Tarver		Pittsburgh	PA

Pamela	Tashjian		Telford	PA
Mary Ann	Tatara		Camp Hill	PA
Melanie	Tate		York Springs	PA
Nancy	Tate		Bethlehem	PA
Lyla	Taube		Pittsburgh	PA
Tiffany	Taulton	Hazelwood Initiative, Inc.	Pittsburgh	PA
Brian	Taussig-Lux	President, www.untours.com	Media	PA
Agnes	Tavani		Lebanon	PA
Jessica	Tawney		Windsor	PA
Annalisa	Taylor		Philadelphia	PA
Arlene	Taylor		Harrisburg	PA
Carol	Taylor		Newtown Square	PA
Christine	Taylor		Delta	PA
Crystal	Taylor		Darby	PA
Donald	Taylor		Lancaster	PA
Eve	Taylor		Media	PA
Grace	Taylor		Philadelphia	PA
Jeffrey	Taylor		Spring Grove	PA
Lou	Taylor		Lock Haven	PA
Malinda	Taylor		Bethlehem	PA
Marlene	Taylor		Downingtown	PA
Mecca	Taylor		Philadelphia	PA
Megan	Taylor		Erie	PA
Michael	Taylor		Essington	PA
Monica	Taylor	Delaware County Council	Media	PA
Patrick	Taylor		Dushore	PA
Rhonda	Taylor		Springfield	PA
Richard	Taylor		Sugarloaf	PA
Robbin	Taylor		Philadelphia	PA
Roslyn	Taylor		Huntingdon Valley	PA
Special	Taylor		Philadelphia	PA
Terrell	Taylor		Philadelphia	PA
Tracy	Taylor		Sharon	PA
Wendi	Taylor		Camp Hill	PA
Amy	Tecosky-Feldman		Narberth	PA
Jeffrey	Tecosky-Feldman		Narberth	PA
Peggy	Teitsworth		Berwick	PA
Douglas	Telenko		Jerome	PA
Douglas	Telenko		Johnstown	PA
Timothy	Telenko		Jerome	PA
Tracy	Tellep		Union Dale	PA
Alberta	Tempalski		Pittsburgh	PA
Joan	Tempesta		Havertown	PA
John	Tempo		Greensburg	PA
Cindy	Tenaglia		Langhorne	PA
Carol	Tenneriello		Philadelphia	PA
Randall	Tenor		Mechanicsburg	PA

Freda	Tepfer	Erie County Democratic Party Environmental Caucus	Erie	PA
Kim	Teplitzky		Pittsburgh	PA
Cassandra	Tereschak		Scranton	PA
Christal	Terrell		Avella	PA
David	Terrell		Elizabethtown	PA
Stephanie	Terrell		Philadelphia	PA
Lauren	Terrick		West Mifflin	PA
Bonnie	Terry		Bethlehem	PA
Theresa	Terry		Philadelphia	PA
Mark	Terwilliger		York	PA
Phyllis	Terwilliger		York	PA
Joseph	Tesauro		Drexel Hill	PA
John	Tesmer		Elizabethtown	PA
Constancelouise	Testa		Irwin	PA
Abigail	Testament		Thompsontown	PA
Anya	Tewari		Bridgewater	NJ
Jeancarlos	Texeira		Philadelphia	PA
Amanda	Tharp		Pittsburgh	PA
Jody	Theiss		Exton	PA
Linda	Theophilus		Pittsburgh	PA
Edward	Theurkauf		Chester Springs	PA
Susan	Thibadeau		Pittsburgh	PA
Chantelle	Thomas		Philadelphia	PA
Costango	Thomas		Pittsburgh	PA
Diane	Thomas		Williamsport	PA
Elmer	Thomas		Kintnersville	PA
Isabel	Thomas		York	PA
Janet	Thomas		Throop	PA
Joseph	Thomas		Pittsburgh	PA
Kelly	Thomas		Kingston	PA
Kenneth	Thomas		Brookhaven	PA
Kevin	Thomas		Pittsburgh	PA
Kimberly	Thomas		Titusville	PA
Lauren	Thomas		Doylestown	PA
Myrtle	Thomas		Uniontown	PA
Nichole	Thomas		Philadelphia	PA
Renee	Thomas		Indiana	PA
Robeana	Thomas		Philadelphia	PA
Roland	Thomas		Springfield	PA
Roseann	Thomas		Elverson	PA
Tiffani	Thomas		Harrisburg	PA
Tom	Thomas		Philadelphia	PA
Tyanna	Thomas		Philadelphia	PA
Tyrone	Thomas		Philadelphia	PA
Brad	Thomason		Philadelphia	PA
Aneesa	Thompson		Chester	PA

Barty	Thompson		Mohnton	PA
Brenda	Thompson		Rochester	PA
Carl	Thompson		Norristown	PA
Carol	Thompson		South Park	PA
Carolyn	Thompson		South Fork	PA
Chris	Thompson		Glenside	PA
Chris	Thompson		Upper Darby	PA
Cyndi	Thompson		Wellsboro	PA
Debra	Thompson		Pittsburgh	PA
Gwendolyn	Thompson		Philadelphia	PA
Hannah	Thompson		Pittsburgh	PA
James	Thompson		Erie	PA
James	Thompson		Knox	PA
John	Thompson		Blooming Grove	PA
Karen	Thompson		Hatfield	PA
Kathryn	Thompson		Philadelphia	PA
Linda	Thompson		Glen Mills	PA
Lorie	Thompson		Port Royal	PA
Matt	Thompson		Elverson	PA
Pat	Thompson		Vandergrift	PA
Patricia	Thompson		Philadelphia	PA
Richard	Thompson		Harrisburg	PA
Ronald	Thompson		Chester	PA
Sarah	Thompson		Long Pond	PA
Scott	Thompson		state college	PA
Stephanie	Thompson		Camp Hill	PA
Susan	Thompson		Audubon	PA
Susan	Thompson		Philadelphia	PA
Tiffany	Thompson		Philadelphia	PA
William	Thompson		Glenwillard	PA
Zabrina	Thompson		Erie	PA
Lauren	Thomsen, AIA, LEED	Green Building United	Philadelphia	PA
Jennifer	Thomson		Lewisburg	PA
Henry David	Thoreau		Eighty Four	PA
David	Thornton		Ephrata	PA
Edward	Thornton		Swarthmore	PA
Roberta	Thornton		Pittsburgh	PA
Susan	Thornton		Philadelphia	PA
Tamaqua	Thornton		Philadelphia	PA
Rashena	Thorpe		Glenolden	PA
Jeremy	Thoryk		Lansdale	PA
Joseph	Thrash		Friedens	PA
Christopher	Threats		Cheltenham	PA
Susanna	Throop		Collegeville	PA
Robert	Thumpston		Pittsburgh	PA
Alice	Thurau		Clarion	PA

Kim	Thurber		Lyndora	PA
Daniel	Tibbens		Bellefonte	PA
Judy	Tiberi		Butler	PA
Jennifer	Tieman		Pittsburgh	PA
Danniel	Tigreros		Budd Lake	PA
John	Till		Canonsburg	PA
Richard	Tiller		Philadelphia	PA
Agnes	Tillerson		Erie	PA
Barbara	Tilley		Southampton	PA
David	Tilli		Levittown	PA
Steven	Tillman		Philadelphia	PA
Cynthia	Tilson		Pittsburgh	PA
Monique	Timberlake-Brady		Philadelphia	PA
Gene	Timberman		Needmore	PA
Marla	Timmins		Bloomsburg	PA
Lenora	Timms		Philadelphia	PA
Tiana	Tindal		Philadelphia	PA
Alyssa	Tino		Havertown	PA
Gerald	Tipton		Pittsburgh	PA
Sam	Titus*		Philadelphia	PA
Ted	Toadvine	PSU Rock Ethics Institute, Director	Centre Hall	PA
Wayne	Tobac		Pittsburgh	PA
Christopher	Tobias		Pittsburgh	PA
Crystal	Tobias		Lebanon	PA
Maryanne	Tobin		Philadelphia	PA
Tom	Tobin		Lancaster	PA
Natasha	Tokowicz		Pittsburgh	PA
Richard	Tolin		Villanova	PA
Arvid	Tomayko-Peters		Pittsburgh	PA
Tyrone	Tomblin		Pittsburgh	PA
Patrice	Tomcik		Gibsonia	PA
Noah	Tomkiewicz		Sarver	PA
Jodie	Tomko		New Paris	PA
Danielle	Tomlin		Upper Darby	PA
Mark	Tomlinson		Levittown	PA
Asia	Tomoney		Philadelphia	PA
Charles	Tompkins		Jones Mills	PA
Lynda	Tompkins		Middleburg	PA
Jacqueline	Toney		Upper Darby	PA
Julie	Tonnessen		Pottstown	PA
Amy	Tonti		Pittsburgh	PA
Denise	Torman		Bethlehem	PA
Mark	Tornetta		Collegeville	PA
Joseph	Toro		Reading	PA
Maylyn	Torpey		New Kensington	PA
Alex	Torres		Philadelphia	PA
Amalia	Torres		Philadelphia	PA

Blanca	Torres		Lebanon	PA
Brian	Torres		Ambler	PA
Jara F.	Torres		Harrisburg	PA
Karina	Torres		Reading	PA
Maite	Torres		York	PA
Margarita	Torres		Philadelphia	PA
Nelly De	Torres		Ephrata	PA
Wilfredo Bobet	Torres		Reading	PA
Kristin	Toscano		Narberth	PA
Joanne	Tosti-Vasey	President of Council, Bellefonte Borough	Bellefonte	PA
Christina	Toth		Richboro	PA
Cindy	Toth		New Castle	PA
David	Toth		Fairchance	PA
Marianne	Toto		Norristown	PA
Christine	Totten		Philadelphia	PA
Bangaly	Toure		Tobyhanna	PA
Mehran	Toussi		Wynnewood	PA
Shawn	Towey		Phoenixville	PA
Christal	Townsend		Harrisburg	PA
Kelly	Townsend		Phoenixville	PA
Brian	Tracy		Elverson	PA
L. Michelle	Tracy		Harrisburg	PA
Lee	Tracy		Philadelphia	PA
Leonard	Tracy		Wellsboro	PA
Jeanne	Tracz		Wallingford	PA
Melanie	Trainum		Canonsburg	PA
Ken	Traister		Edinboro	PA
Dat	Tran		Upper Darby	PA
Jaimee	Tranchida		Dresher	PA
Susan	Trantules		Fayetteville	PA
Sandra	Traphagen		Erie	PA
Esen	Traub		Bala Cynwyd	PA
Milo	Trauss		Philadelphia	PA
Claire	Travers		Philadelphia	PA
Felicia	Travis		Philadelphia	PA
Jeff	Travis		Houston	PA
Roxanne	Trayer		Brookville	PA
Pat	Traynor		Hatfield	PA
Brenda	Treadway		Lancaster	PA
Jay	Treat		King of Prussia	PA
Scott	Trees		Aliquippa	PA
Toni	Treese		Alverda	PA
Ted	Trefsgar		Souderton	PA
Richard	Tregidgo		Holtwood	PA
Joshua	Trembley		Downingtown	PA
Joe	Trendler		Chester Springs	PA

Jill	Tressel		Newtown	PA
Mel	Trew		Pittsburgh	PA
Eric	Trexler		Martinsburg	PA
Marymichael	Tribone		Pittsburgh	PA
Denise	Triest		Lebanon	PA
Clayton	Trimble		Dayton	PA
Thomas	Trimble		Aliquippa	PA
Jacob	Trimbur		Bridgeville	PA
LeRoy	Troester		Mifflinburg	PA
John	Trofe		Stevens	PA
Anne	Troiani		Frackville	PA
Jeanette	Trok		Verona	PA
Thomas	Trok		Pittsburgh	PA
John	Trout		West Chester	PA
Larry	Trout		Havertown	PA
Rona	Trout		Lancaster	PA
Louise	Troutman	Executive Director, Pocono Heritage Land Trust	East Stroudsburg	PA
Jack Stewart	Troutwine		Indiana	PA
Gloria	Trower		Philadelphia	PA
Madeline	Troyer		Mechanicsburg	PA
Wayne	Truax		Dillsburg	PA
Benjamin	Trudeau		Conshohocken	PA
terrill	Trueblood		Mechanicsburg	PA
Sharon	Truitt		Philadelphia	PA
Rosemary	Trump		Murrysville	PA
Olga	Trushina		Clarks Green	PA
Tamela	Trussell	Conodoguinet Creek Watershed Association	Carlisle	PA
Brad	Trutt		White Haven	PA
Leon	Tschantre		Pottstown	PA
Mandy	Tshibangu		Devon	PA
Ronald	Tshudy		East Earl	PA
Dr. Walter	Tsou	Physicians for Social Responsibility Pennsylvania	Philadelphia	PA
Khary	Tuck		Philadelphia	PA
Delicia	Tucker		Philadelphia	PA
Mary	Tucker		Norristown	PA
Susan	Tucker		Warren	PA
Thomas	Tucker		Philadelphia	PA
Mica	Tufillaro		York	PA
Paul	Tullis		State College	PA
Gary	Tuma		Mechanicsburg	PA
Elizabeth	Tuminski		Stamford	CT
Frank	Tuminski		Langhorne	PA
Robert	Tuminski		Langhorne	PA
Sophia	Tumolo		Media	PA

Erica	Tunnell		Philadelphia	PA
Jill	Turco		Philadelphia	PA
Pam	Tureck		Bryn Mawr	PA
Kate	Turkeltaub		Bethlehem	PA
Leann	Turley		West Decatur	PA
Amanda	Turner		Windber	PA
Carol	Turner		Carlisle	PA
Deborah	Turner		Lake Ariel	PA
Donna	Turner		Pittsburgh	PA
Esther	Turner		New Castle	PA
Fernanda	Turner		West Chester	PA
Joyce	Turner		Philadelphia	PA
Kathy	Turner		Clearfield	PA
Lana	Turner		Philadelphia	PA
Margaret	Turner		Shohola	PA
Nancy	Turner		Philadelphia	PA
Nikki	Turner		Pittsburgh	PA
Roger	Turner		Carlisle	PA
Roger	Turner		Gettysburg	PA
Ronald	Turner		Aliquippa	PA
Rosemary	Turner	Conemaugh Power Plant	Johnstown	PA
Sean	Turner		Philadelphia	PA
Taiwo	Turton		Philadelphia	PA
Denise	Tushingham		Hanover	PA
Adam	Tuttle		Ligonier	PA
Holly	Tuttle		Perkasie	PA
Grant	Twiss		Erie	PA
Joy	Twomey		Gettysburg	PA
Deborah	Twyman		Philadelphia	PA
Leon	Tyer		Lansdowne	PA
Delores	Tyler		Sharon Hill	PA
Ebonaye	Tyler		Pittsburgh	PA
Felicia	Tyler		Philadelphia	PA
Liz	Tymkiw		Newark	DE
Darcelia	Tyson		York	PA
Holly	Tyson		Philadelphia	PA
Nancy	Tyson		Gaines	PA
Jameela	Tyus		Philadelphia	PA
Brenda	Uhler		Landisburg	PA
Jane	Uhr		Havertown	PA
Sharafat	Ullah		Upper Darby	PA
Margaret	Ullman		Newtown	PA
Yoma	Ullman		Newtown	PA
Stephanie	Ulmer		Pittsburgh	PA
Jenna	Ulrich	PSU BRS Club Secretary	Oley	PA
Rob	Ulsh		Harrisburg	PA
Karen	Umberger		Langhorne	PA

Michael	Uncapher		Blairsville	PA
Aaron	Underwood		Philadelphia	PA
Fred	Ungar		Airville	PA
Heather	Unger		Downingtown	PA
Chanda	Unmack		Santa Clara	CA
Jude	Vachon		Pittsburgh	PA
Tom	Vafias		Lancaster	PA
Shani	Vagnoni-Hull		Latrobe	PA
Rajani	Vaidyanathan		Pittsburgh	PA
Browne	Val		Thompson	PA
Deborah	Valdez		Meyersdale	PA
Megan	Valentin		Lancaster	PA
Nina	Valentin		Riegelsville	PA
Jennifer	Valentine		Massa Pk	NY
Charles	Valenza		West Chester	PA
Nicole	Valiant		Dickson city	PA
Donnella	Vample		Philadelphia	PA
Richard	Van Aken		Southampton	PA
Nichole	van Beek		State College	PA
Scott	Van Bramer		Philadelphia	PA
Juli	Van Brown		Philadelphia	PA
Zachary	Van Horn		Lemont	PA
Crystal	Van Hoye		Centennial	CO
Susan	Van Noy		Mechanicsburg	PA
Rachel	Van Orden		Annville	PA
Nathan	Van Velson		Lancaster	PA
Beth	VanBuren		Plymouth Meeting	PA
Meredith	Vance		Pittsburgh	PA
John	Vanco	ReLeaf, Lake Erie Arboretum's tree planting prgram	Erie	PA
Paul R	Vancosky		Scranton	PA
Cynthia	Vanda		Pittsburgh	PA
Dianna	Vandall		Pittsburgh	PA
Kristen	VanDerburgh		Munhall	PA
Christina	VanDergrift		Wellsboro	PA
Stephanie	Vanderpoel		Mechanicsburg	PA
Dean	Vanderpool		Canton	PA
Robert	Vanderpool	Solar Opportunities LLC	Towanda	PA
Faye	VanDevender		Waynesburg	PA
Alex	Vandevere		Wayne	PA
William	Vandivier		Pittsburgh	PA
Ilene	Vandyke		Philadelphia	PA
Kristie	Vankirk		Philadelphia	PA
Noelle	Vanlue		Philadelphia	PA
Bob	Vann		Johnstown	PA
JaDeine	Vann		Philadelphia	PA
Shemika	Vann		Philadelphia	PA

James	VanNostrand		Montrose	PA
Terry	VanSickle		Mount Wolf	PA
Donna	Varcoe		Bellefonte	PA
Peter	Vargas		Philadelphia	PA
Arun	Varghese		Glenmoore	PA
Charles	Varner		Carmichaels	PA
LeeAnn	Varrone		Plymouth Meeting	PA
James	Vash		Mechanicsburg	PA
Jamie	Vasquez		Pittsburgh	PA
Norma	Vasquez		Philadelphia	PA
Marianne	Vassallo		Hawley	PA
Cher	Vatalaro		Allentown	PA
Seth And Marissa	Vatsky		Philadelphia	PA
Joan	Vaughan		Newtown Square	PA
Rachel	Vaughan		Pittsburgh	PA
Wilford	Vaulx-Smith		Indiana	PA
Karl	Vauter		Clarks Summit	PA
Shanay	Veal		Boston	PA
Diana	Vecellio		Leechburg	PA
Dawne	Veet		Middletown	PA
Micah	Veilleux		Philadelphia	PA
Laura	Vélez		Royersford	PA
Cheri	Velto		Clinton	PA
Laurine	Venable		Philadelphia	PA
Julianna	VenDouern		Millersville	PA
Kannan	Venkatachalam		Lansdale	PA
Joetta	Venneman		Pittsburgh	PA
Lois	Ventura		Ohiopyle	PA
Richard	Ventura		Canonsburg	PA
Andrew	Verbeke		Harleysville	PA
Bruce	Verbit		Westville	NJ
Anna	Verde		Pottstown	PA
Thomas	Vergara		Tobyhanna	PA
Kellie	Vergerio		Springdale	PA
Paco	Verin		Media	PA
Barbara	Verlich		Clairton	PA
Ray	Verna		Philadelphia	PA
Raluca	Verona		Swarthmore	PA
Michael	Veronesi		Seminole	PA
Donna	Verros		Reading	PA
Ryan	Vesely	President, Green Solar Systems LLC	Greensburg	PA
Vesper	Vesper		Philadelphia	PA
Dwayne	Vessels		Philadelphia	PA
Tracy	Vettet		Pittsburgh	PA
Alisha	Vialet		Allentown	PA
Joan	Vick		Atglen	PA
Donna	Vickers		West Chester	PA

Thomas	Vickers III		Garnet Valley	PA
Holly	Victor		Doylestown	PA
Kukina	Victorino		Philadelphia	PA
Keilah	Vidal		Pittsburgh	PA
C. Ben	Vila	Temple Environmental Law Society	Philadelphia	PA
Xiomara	Villa		Allentown	PA
Lindsey	Villacis		Philadelphia	PA
Lissette	Villarreal		Lititz	PA
Joseph	Villella		Erie	PA
Jason	Vinansky		Henryville	PA
Jerena	Vincent		Philadelphia	PA
Dean	Vining		Royersford	PA
Vernay	Vinson		Philadelphia	PA
William	Vinson		Spring City	PA
Joe	Vinston		Pittsburgh	PA
Tracy	Viola		Wayne	PA
Valerie	Viscusi		Lansdale	PA
Melissa	Vitale		Hughestown	PA
William	Vitale*		Reading	PA
Donny	Vith		Pittsburgh	PA
John	Vizza		Philadelphia	PA
Thy	Vo		Pittsburgh	PA
Cynthia	Vodopivec	Vistra	Irving	TX
Renae	Voelkel		Shelocta	PA
Summer	Voelker		Canonsburg	PA
Eric	Vogelman		Philadelphia	PA
Kathy	Vogelsong		Newville	PA
Patrick	Vogelsong		Harrisburg	PA
Connie Kerr	Vogt		Erie	PA
Jim	Vogt	President,Aquashicola/ Pohopoco Watershed Conserva	Stroudsburg	PA
Susan	Vogt		Fairbanks	AK
Josepht	Voicheck		Lansdale	PA
Alex	Voissard		Bryn Mawr	PA
Dan	Volpatti		Pittsburgh	PA
Anthony	Volpe		Perkasie	PA
Jason	Volpe		Philadelphia	PA
Joseph	Volpe		Elkins Park	PA
Regina	Volpicelli		Reading	PA
Chris	Von Drach		Boyertown	PA
Andrea	Vonada		Media	PA
Sharon	VonBlohn		Milton	PA
Joan	Vondra		Allison Park	PA
Stacey	VonStein		Marietta	PA
Jeanne	Voronin		Doylestown	PA
Rachel	Vresilovic		Swarthmore	PA
Thao	Vu		Upper Darby	PA

Joseph	Vullo	Commission on Economic Opportunity	Forty Fort	PA
Anne	W.		State College	PA
Devin	Wachs		Ardmore	PA
Joan	Waddell		Coatesville	PA
Nuiko	Wadden		Pittsburgh	PA
Derrick	Wade		Philadelphia	PA
Diane	Wade		Philadelphia	PA
James	Wade		Chester	PA
Monique	Wade		Philadelphia	PA
Andrew	Wadsworth		Reading	PA
Susan	Waggoner		Pittsburgh	PA
Molly	Wagle		Spring City	PA
Ben	Wagner		Friedens	PA
David	Wagner		New Castle	PA
Gerren	Wagner		Harrisburg	PA
Glenn	Wagner		Richboro	PA
Hudson	Wagner		Washington	PA
Joseph	Wagner		Oakdale	PA
Kaitlyn	Wagner		Pottstown	PA
Katie	Wagner		Brooklyn	NY
Linda	Wagner		Williamsport	PA
Mark	Wagner		Bechtelsville	PA
Mark	Wagner		Pittsburgh	PA
Richard	Wagner		Chalfont	PA
Robert	Wagner		Slatington	PA
Ronald	Wagner		Boyertown	PA
Juliet	Wahlenmayer		Freedom	PA
Jeffrey	Waige		Philadelphia	PA
Pamela	Waiters		Tobyhanna	PA
Claudia	Waits		Lehighton	PA
Lindsey	Walaski		Philadelphia	PA
Elizabeth	Walcott		Philadelphia	PA
Robert	Waldbauer		Allentown	PA
Anthony	Waldron		Hawley	PA
Don	Waldron		Gouldsboro	PA
J.	Waldron		Hershey	PA
Amanda	Walker		Oil City	PA
Bahiyah	Walker		Philadelphia	PA
Bernice	Walker		Chester	PA
Beverly	Walker		Philadelphia	PA
Chessina	Walker		Pittsburgh	PA
Debra	Walker		Pittsburgh	PA
Dolores	Walker		Wellsboro	PA
Frank	Walker		Washington Crossing	PA
Hakim	Walker		Philadelphia	PA

Heather	Walker		Oil City	PA
Jasmine	Walker		Philadelphia	PA
Jasmine	Walker		York	PA
Joseph	Walker		Hazelwood	PA
Joseph	Walker		Philadelphia	PA
Linda	Walker		Lansdowne	PA
Melissa	Walker		Philadelphia	PA
Naquanda	Walker		Philadelphia	PA
S.R.	Walker		Bloomsburg	PA
Steven	Walker		Pitman	PA
Thomas	Walker		Clifton Heights	PA
Theresa	Walko		Connoquenessing	PA
Jere	Walkow		Pittsburgh	PA
Howard	Wall		Philadelphia	PA
Thomas	Wall		Philadelphia	PA
Bob	Wallace		Allison Park	PA
Darrell	Wallace		Old Forge	PA
Kelsey	Wallace		Stevens	PA
Michael	Wallace		Philadelphia	PA
Pamela	Wallace		Conneautville	PA
Patrick	Wallace		Aliquippa	PA
Joyce	Wallack		Muse	PA
Melina	Walling		Wayne	PA
John	Walliser*	Pennsylvania Environmental Council	Pittsburgh	PA
Gary	Walls		*Submitted via email*	PA
S.	Walls		New Castle	PA
Sam	Wallton		Castle Shannon	PA
Alec	Walsh		Moon Township	PA
Gerald	Walsh		Claysville	PA
Kevin	Walsh		Newtown Square	PA
Lois	Walsh		Pittsburgh	PA
Marria	Walsh		Pottsville	PA
Mary	Walsh		Aston	PA
Mary	Walsh		Pittsburgh	PA
Monica	Walsh		Wexford	PA
Susan	Walsh		Aliquippa	PA
Timothy	Walsh		Reading	PA
Shariff	Walston		Philadelphia	PA
Matt	Waltemyer		Bethlehem	PA
Janessa	Walter		Pittsburgh	PA
Linda	Walter		New Providence	PA
Marcie	Walter		Littlestown	PA
Richard	Walter		Williamsport	PA
Sandra	Walter		Enola	PA
Darrel	Walters		Ambler	PA
Jack	Walters		New Albany	PA

Robyn S	Walters, Ph.D.		Montoursville	PA
Sherry	Walton		Souderton	PA
Christine	Walturz		Easton	PA
Gregor	Waltz		Kirkwood	PA
Randall	Wambold		Bethlehem	PA
James	Wandell		Chambersburg	PA
Whitney	Wandelt		Philadelphia	PA
Deborah	Wanichko		Greensburg	PA
Alyssa	Wankewicz		Perkasie	PA
Cherly	Wanko		Coatesville	PA
Becky	Wantman		Drexel Hill	PA
Alice	Ward		Hanover	PA
Diane	Ward		Hermitage	PA
Jacqueline	Ward		McKees Rocks	PA
Joanna	Ward		Philadelphia	PA
Melika	Ward		Philadelphia	PA
Mike	Ward		Tinicum Township	PA
Rysheeda	Ward		Philadelphia	PA
David	Warden		Beaver Falls	PA
Michael	Warden		East Stroudsburg	PA
Shanee	Waring		Philadelphia	PA
Tom	Warms		Erdenheim	PA
Mandy	Warner	Environmental Defense Fund	Fairfax	VA
Zoe	Warner		Malvern	PA
J. Douglas	Warning		Monroeville	PA
Jonathan	Warnock	Indiana Borough Council	Indiana	PA
Andrew	Warren	Appalachia Technologies	Hershey	PA
Kavonne	Warren		Williamsport	PA
Kevin	Warren	Warren Energy Engineering	West Grove	PA
Kevin	Warren	Elk Creeks Watershed Association	Lincoln University	PA
Michael	Warren		Philadelphia	PA
Sally	Warren		Landenberg	PA
Jay	Warshaw		Wynnewood	PA
Yasmine	Wasfi		Doylestown	PA
Conchita	Washington		Philadelphia	PA
Kathy	Washington		Philadelphia	PA
Kevin	Washington		Philadelphia	PA
Love	Washington		Philadelphia	PA
Wanda	Washington		Collingdale	PA
Justina	Wasicek	Clean Air Board of Central Pennsylvania	Carlisle	PA
David	Wasilewski		Hunlock Creek	PA
Robert	Wasilewski		Wilkes-Barre	PA
Pamela	Wassell		Erie	PA
Sue	Watchko		Sewickley	PA
Connie	Waterman		Narberth	PA
Ann	Waters		Pomeroy	PA

Joe	Waters		Philadelphia	PA
Kimyetta	Waters		Philadelphia	PA
Steven	Waters		Landsdowne	PA
Theodore	Waters		Philadelphia	PA
Adrienne	Waterston		State College	PA
Aliya	Watkins		Philadelphia	PA
Diane	Watkins		Palmyra	PA
Jessica	Watkins		Philadelphia	PA
Marrietta	Watkins		Bensalem	PA
Megan	Watkins		Johnstown	PA
Tim	Watkins		Baden	PA
Jacqueline	Watson		Hummelstown	PA
John	Watson		Annville	PA
Lisa	Watson		West Mifflin	PA
Mark	Watson	IBEW Local 459 Member / Keystone Station Employee	Pittsburgh	PA
Amy	Watt		New Alexandria	PA
Chris	Watt		Pottstown	PA
Bill	Watters		Kingston	PA
Suzanne	Watters		Sewickley	PA
Anndrienne	Watts		Philadelphia	PA
Margaret	Watts		Edinboro	PA
Michael	Watts		Downingtown	PA
Quinton	Watts		Darby	PA
Susan	Watts		Asheville	NC
Alec	Watts*		Pittsburgh	PA
Edward	Wawriw III		Millmont	PA
Marilyn	Waxman		Havertown	PA
Craig	Way		Pottstown	PA
Daniel	Way		Philadelphia	PA
David	Way		Pottstown	PA
Donald	Way		Girard	PA
Michele	Way		Philadelphia	PA
Brittney	Waylen	Greater Lehigh Valley Chamber of Commerce	Allentown	PA
Christine King	Waymer		Philadelphia	PA
Todd	Waymon		Newtown	PA
Alan	Wayne		Bensalem	PA
Jill	Wayne		Erie	PA
Sonya	Wayne		Philadelphia	PA
Tracy	Weader		McClure	PA
Brian	Weakland		Coalport	PA
Mark	Weakland		Hollsopple	PA
Patricia	Weathers		Philadelphia	PA
Bernadette	Weaver		Philadelphia	PA
Christine	Weaver		Carlisle	PA
Dylan J.	Weaver		Indiana	PA

Eva	Weaver		Wyalusing	PA
Jeff	Weaver		Ephrata	PA
Jeff	Weaver		Indiana	PA
John	Weaver		Flinton	PA
Mike	Weaver		Lewisburg	PA
Robin	Weaver		Mahaffey	PA
Rodney	Weaver		Mill Hall	PA
Sandy	Weaver		Honesdale	PA
Shawn	Weaver		Flinton	PA
Sherry	Weaver		Lebanon	PA
Stephanie	Weaver		Flinton	PA
Yvonne	Weaver		Loganton	PA
Alexa	Webb		Perkiomenville	PA
Earl	Webb		Philadelphia	PA
James	Webb	Abington Township Environmental Advisory Council	Abington	PA
Thomas	Webb		McKees Rocks	PA
Troy	Webber		Chester	PA
Beth	Weber		Bradfordwoods	PA
David	Weber		Chester Springs	PA
Mary Ellen	Weber		Philadelphia	PA
Robert	Weber		Nazareth	PA
Thomas	Weber		Erie	PA
Earl	Webster		Elkins Park	PA
Mary Anne	Webster		Pottstown	PA
Tim	Wedding		Johnstown	PA
Santee	Weddington		Bristol	PA
Samantha	Weekley		Windsor	PA
Kalle	Weeks		New Hope	PA
Ruby	Weeks		Carlisle	PA
Lydia	Wegrzynowicz		Pittsburgh	PA
Kathy	Wehn		New Kensington	PA
Emily	Wei	Green Building United	Philadelphia	PA
Chris	Weichler		Strasburg	PA
Scott	Weichler		Strasburg	PA
Mary	Weidner		Pittsburgh	PA
Frazier	Weih		Mountville	PA
Michael	Weiher		Ford City	PA
Jeffrey	Weik		Coplay	PA
Kelly	Weikel	Univ. Affairs Officer, PSU Soc. of Women Engineers	State College	PA
Courtney	Weikle-Mills		Pittsburgh	PA
Lori	Weiler		New Holland	PA
Stephanie	Wein		Philadelphia	PA
Abigail	Weinberg		Philadelphia	PA
Danielle	Weinberg		Philadelphia	PA
S.	Weinberg		Philadelphia	PA

Sheila	Weinberg		Philadelphia	PA
Steven	Weinberg		Elkins Park	PA
Tyler	Weinberger		Pittsburgh	PA
Arlene	Weiner		Pittsburgh	PA
Beth	Weiner		Glen Mills	PA
Paula	Weiner		Bethel Park	PA
Cathleen	Weinert		Pittsburgh	PA
Larry	Weingart		Coconut Creek	FL
Akiva	Weinstein		Philadelphia	PA
Bob and Leslie	Weinstein		Monongahela	PA
Paul	Weinstein		Doylestown	PA
Mark	Weis		Phoenixville	PA
Ransome	Weis		Doylestown	PA
Michael	Weisberg	Professor, University of Pennsylvania	Philadelphia	PA
Dwight	Weise		Lebanon	PA
Lorie	Weisend		Turtle Creek	PA
Nancy	Weishew		Chalfont	PA
Adrienne	Weiss		Monroeville	PA
Bailee	Weiss		New Kensington	PA
Barry	Weiss		Philadelphia	PA
Brenda	Weiss		Coopersburg	PA
Glenn	Weiss		Mohnton	PA
Jo	Weiss		Radnor	PA
Seth	Weiss		Wynnewood	PA
Sharon	Weiss		Souderton	PA
Zack	Weiss		New Kensington	PA
Elissa	Weiss*		Glenshaw	PA
Charlene	Weitzel		Lancaster	PA
Austin	Welch		Elkland	PA
Geralyn	Welch		Lancaster	PA
Lisa	Welch		Thomasville	PA
Louise A.	Welch		Philadelphia	PA
Shawn	Welch		Hellertown	PA
Teresa	Welch		Bellefonte	PA
Logan	Welde		Philadelphia	PA
Anne	Weller		Quakertown	PA
Christopher	Welles		Wyalusing	PA
Stephanie	Welling		Pittsburgh	PA
Toni	Wellington		Macungie	PA
Erica	Wells		Pittsburgh	PA
Jenise	Wells		Philadelphia	PA
Thomas	Wells		Yardley	PA
Charles	Welsh		Wayne	PA
Michael D.	Welsh	IBB IBEW UMWA	*Submitted via email*	PA
Karen	Welshons		Jeannette	PA

Joan	Welte		Philadelphia	PA
Mj	Welz		Erie	PA
Patricia	Wendell		Jeannette	PA
David	Wenger		Harrisburg	PA
Rebecca	Wenhold		*Submitted via email*	PA
Betsy	Wenny		Kennett Square	PA
Edward	Wenrich		Willow Grove	PA
Tanya	Wenrich		Selinsgrove	PA
Bruce	Wenrick		Bellefonte	PA
Kaye	Wentling		Monroeville	PA
Liva	Wentworth		Latrobe	PA
Jeffrey	Wentzel		Downingtown	PA
Carol	Wenzel		Coudersport	PA
Johanna	Werbach	Co-Chair, Green Team of Beth Am Israel	Narberth	PA
Judy	Werfel		Friedens	PA
Josef	Werne	Professor and Chair, University of Pittsburgh	Pittsburgh	PA
Arlene	Werner		Easton	PA
Janelle	Werner		Philadelphia	PA
Lora	Werner		Media	PA
Robert	Werner		Elkins Park	PA
Susan	Werner		Valencia	PA
Brad	Wertz		Montoursville	PA
Brenda	Wesley		Philadelphia	PA
John	Wesner		Pittsburgh	PA
Paul	Wesneski		Dickson City	PA
Karen	Wess		Indiana	PA
Michelle	Wessant		Pittsburgh	PA
Robert	Wessel		Tarentum	PA
William	Wessel		Pittsburgh	PA
Leslie	Wessner		Pittsburgh	PA
Susan	Wessner		Kutztown	PA
Alexandra	West		Pittsburgh	PA
April	West		Philadelphia	PA
Cheryl	West		Royersford	PA
Christina	West		*Submitted via email*	PA
Debbie	West		Pittsburgh	PA
Donald	West		Philadelphia	PA
Maddie	West		Franklin	PA
Randy	West-bey		Philadelphia	PA
Earl	Westerlund		Pittsburgh	PA
Kathryn	Westman		Gibsonia	PA
Lori	Westman		Reading	PA
Nancy	Weston		Bethlehem	PA

Linda	Westrick		*Submitted via email*	PA
Evan	Wetzel		Washington	PA
Jamie	Wetzel		Marion Center	PA
Rose	Wetzel		Pittsburgh	PA
Tim	Wetzel		Carlisle	PA
Peter and Maria	Weygandt		*Submitted via email*	PA
Paul	Weyhmuller		Media	PA
sandra	Whalen		Ashland	PA
Francyne	Wharton		Lansdowne	PA
Susan	Wheaton		Rockingham	VA
Sarah	Wheeler		Indiana	PA
Tracy	Wheeler		Philadelphia	PA
Derrick	Whethers		Philadelphia	PA
Venus Marie Diana	Whisenhunt		Pittsburgh	PA
Mary	Whitcroft		Philadelphia	PA
Andrea	White		Pittsburgh	PA
Byniesha	White		Philadelphia	PA
Carmelena	White		Friedens	PA
Christa	White		Levittown	PA
Christine	White		State College	PA
Douglas	White		Collegeville	PA
Edward	White		Orefield	PA
James	White		Farrell	PA
Johnathon	White		Gallitzin	PA
Katherine	White		Lansdowne	PA
Leona	White		Philadelphia	PA
Lois	White		Grants Pass	OR
Mark	White		Pittsburgh	PA
Pamela	White		Cochranton	PA
Patricia	White		Philadelphia	PA
Renatta	White		East Pittsburgh	PA
Rhonda	White		Pittsburgh	PA
Robert	White		Harrisburg	PA
Sandy	White		Orwigsburg	PA
Theresa	White		Enola	PA
Timothy	White		Centre Hall	PA
Wayne	White		Mount Joy	PA
Richard	Whiteford		West Chester	PA
Bert	Whitehair		Lake City	PA
Genevieve	Whitehaus		Hummelstown	PA
Ricky	Whitehead		Airville	PA
David	Whiteman		Centre Hall	PA
Thomas	Whiteman		Whitehall	PA
Megan	White-Marley		Havertown	PA

Marco	Whitfield		Philadelphia	PA
Ken	Whitford		Erie	PA
Gordon	Whitman	Faith in Action	Philadelphia	PA
Michael	Whitman		New Holland	PA
Michael	Whitman		Schwenksville	PA
Tracy	Whitman		Wayne	PA
Andria	Whitney		Conneaut Lake	PA
Denise	Whitney		Erie	PA
Donna	Whitney		Lancaster	PA
Maureen	Whitsett		Philadelphia	PA
Cheryl	Whittaker		Kennett Square	PA
Janet	Whittaker		Southampton	PA
Greeg	Whitted		Pittsburgh	PA
Jean	Wiant		Glenolden	PA
Melissa	Wiant		New Bethlehem	PA
Lynn	Wichmann		Coopersburg	PA
Staci	Wickard		Newville	PA
Sandra	Wickham		Girard	PA
Judy	Wicks		Philadelphia	PA
Michelle	Wideman		Philadelphia	PA
Joan	Wider		Springfield	PA
Patricia	Widin		Doylestown	PA
Steven	Widtfeldt		Reading	PA
Carl	Wiedersum		West Chester	PA
Marissa	Wiercinski		Dickson City	PA
Eric	Wiertel		Red Lion	PA
Jonathan	Wieskamp		Pittsburgh	PA
Kerry	Wiessmann		State College	PA
Barbara	Wiggin		Mechanicsburg	PA
Heather	Wiggins		Levittown	PA
Jeff	Wiggins		Cheswick	PA
Jhalen	Wiggins		Philadelphia	PA
Kimberly	Wigington		Chester	PA
Joseph	Wigmore		Eagleville	PA
Deborah	Wiiams		Holmes	PA
Kevin	Wiker		Phoenixville	PA
Kevin	Wilbanks		Philadelphia	PA
David	Wilbert		Reading	PA
Damyon	Wilbur		Nicholson	PA
Michael	Wilcox		Philadelphia	PA
Kathy	Wilde		Lafayette Hill	PA
Dave	Wilder		Gladwyne	PA
Brett	Wiley		Southampton	PA
David	Wiley		Philadelphia	PA
Kimberly	Wiley		Rochester	NY
Robert	Wiley		Northampton	PA
Violet	Wiley		Woodlyn	PA

Diane	Wilgan		Milford	PA
Richard	Wilhide		Fayetteville	PA
Delores	Wilkerson		Philadelphia	PA
Derrick	Wilkerson		Philadelphia	PA
James	Wilkie		Harleysville	PA
Bettina	Wilkinson		Valencia	PA
Frances	Wilkinson		Homestead	PA
William	Wilkinson		Altoona	PA
Aaron	Willard		McKeesport	PA
Gene	Willard		West Chester	PA
Lee	Willard		Pittsburgh	PA
Courtenay	Willcox	Moderator, BMPC Environmental Justice Committee	Wayne	PA
Susan	Willenbrock		Downingtown	PA
Heather	Willever-Farr		Jenkintown	PA
Christine	Willhite		Schwenksville	PA
Brian	William		Philadelphia	PA
Kay	William		Harrisburg	PA
Acquilla	Williams		Philadelphia	PA
Allan	Williams		East Lansdowne	PA
Anthony	Williams		Coatesville	PA
Antoinette	Williams		Philadelphia	PA
Antonio	Williams		Philadelphia	PA
Ashleigh	Williams		Philadelphia	PA
Ashley	Williams		Philadelphia	PA
Barbarajene	Williams		Kennett Square	PA
Bernice	Williams		Easton	PA
Brain	Williams		Philadelphia	PA
Charlene	Williams		Philadelphia	PA
Charles	Williams		Philadelphia	PA
Claudette	Williams	Borough Council PresidentMount Pocono Borough	Mt. Pocono	PA
Debbie	Williams		Allentown	PA
Deborah	Williams		Harrisburg	PA
Denise	Williams		Reading	PA
Donte	Williams		Philadelphia	PA
Douglas	Williams		Pittsburgh	PA
Gary	Williams		*Submitted via email*	PA
Holly	Williams		Lancaster	PA
Janaeyah	Williams		Philadelphia	PA
Jeff	Williams		McKees Rocks	PA
John	Williams		Brookville	PA
John	Williams		Pittsburgh	PA
Julia	Williams		Friendsville	PA
Karen	Williams		York	PA
Keneisha	Williams		Philadelphia	PA

Kristine	Williams		Kintnersville	PA
Larry	Williams		Philadelphia	PA
Laurie	Williams		East Pittsburgh	PA
Linda	Williams		Bethel Park	PA
Maricar	Williams		Harrisburg	PA
Martin	Williams	International Brotherhood of Boilermakers	Harrisburg	PA
Martisha	Williams		Philadelphia	PA
Matt	Williams		New Kensington	PA
Merrily	Williams		Philadelphia	PA
Michael	Williams		Philadelphia	PA
Michelle	Williams		York	PA
Monique	Williams		Philadelphia	PA
Robert	Williams		Blandburg	PA
Sally	Williams		Wallingford	PA
Sandra	Williams		Philadelphia	PA
Sandra	Williams		Philadelphia	PA
Sayauna	Williams		Philadelphia	PA
Sha	Williams		Philadelphia	PA
Sherry	Williams		Reading	PA
Stevan	Williams		Marcus Hook	PA
Steven	Williams		Pittsburgh	PA
Tahjae	Williams		Philadelphia	PA
Tammy	Williams		Canonsburg	PA
Tatia	Williams		Philadelphia	PA
Tina	Williams		Philadelphia	PA
Tyray	Williams		Philadelphia	PA
Vincent	Williams		Philadelphia	PA
William	Williams		Pittsburgh	PA
Willie	Williams		Bristol	PA
Judith	Williams-Channell		Finleyville	PA
Brandon	Williamson		Hickory	PA
Bruce	Williamson		Camp Hill	PA
Cynthia	Williamson		Garnet Valley	PA
David	Williamson		Glenmoore	PA
Denise	Williamson		Kirkwood	PA
Mark	Williamson		Pittsburgh	PA
Phyllis	Williamson		Berwyn	PA
Beverly	Williamson-Pecori		McKees Rocks	PA
Anthony	Willingham		Philadelphia	PA
Darene	Willis		Philadelphia	PA
Kara	Willis		Philadelphia	PA
Louise	Willis		King of Prussia	PA
Rosa	Willis		Philadelphia	PA
Will	Willis		Mercersburg	PA
Emily	Willner		Pittsburgh	PA
Nancy	Willoughby		West Chester	PA

Robert	Wills		Clarks Summit	PA
Andrew	Wilson		Philadelphia	PA
Bernice	Wilson		Lake City	PA
Bob	Wilson		*Submitted via email*	PA
Bobby	Wilson	City Councilman, City of Pittsburgh	Pittsburgh	PA
Bryan	Wilson		Philadelphia	PA
Byron J.	Wilson		Philadelphia	PA
Carla	Wilson		Pocono Lake	PA
Colleen	Wilson		Pittsburgh	PA
Delphine	Wilson		Philadelphia	PA
Dion	Wilson		Parksburg	PA
Donald	Wilson		Philadelphia	PA
Eric	Wilson		Glen Lyon	PA
Erica	Wilson		Chester	PA
Gwendolyn	Wilson		Philadelphia	PA
Jeanne	Wilson		Washington	PA
Jeannie	Wilson		Easton	PA
Jon	Wilson		Swissvale	PA
Kara	Wilson		Mount Morris	PA
Marian	Wilson		Pittsburgh	PA
Marisa	Wilson		Philadelphia	PA
Meghan	Wilson		Cheshire	CT
Molly	Wilson		DuBois	PA
Nancy	Wilson		Paoli	PA
Paul	Wilson		Breinigsville	PA
Richard	Wilson		New Freedom	PA
Robyn	Wilson		Glenshaw	PA
Rydesha	Wilson		Philadelphia	PA
Steven	Wilson		South Fork	PA
Tess	Wilson		Pittsburgh	PA
Todd	Wilson		Philadelphia	PA
Trudy	Wilson		Philadelphia	PA
Cathy	Wilt		Drexel Hill	PA
Madeline	Wimberly		Darby	PA
Michael	Wimer		Breingsville	PA
Beth	Winarski		Harleysville	PA
Linda	Winchester		Norristown	PA
Jeffrey	Winckelbleck		State College	PA
Courtney	Windju		Sandpoint	ID
Jessica	Winer		Media	PA
Allan	Winey		Lewisberry	PA
Tia	Wingate		Philadelphia	PA
George	Winger		Harmony	PA
Ivan and Saundra	Wingert		Greencastle	PA
Dane	Winkler		Butler	PA
Nancy	Winkler		Narberth	PA

Greg	Winks		Pittsburgh	PA
Peter	Winslow		Philadelphia	PA
David	Winston		Riegelsville	PA
Jean	Winston		Philadelphia	PA
Richard	Winston		Philadelphia	PA
Bonnie	Winter		Shrewsbury	PA
Heather	Winters		Falls	PA
Jo Ellen	Winters		Philadelphia	PA
Kennedy	Winters		Sunbury	PA
Robert	Winters		Oakdale	PA
Bonnie	Winwood		Springdale	PA
Christopher	Winwood		Springdale	PA
Philip	Wion		Pittsburgh	PA
Chuck	Wise		Blue Bell	PA
Erin	Wise		Philadelphia	PA
Marva	Wise		Harrisburg	PA
Scott	Wise		York	PA
Edward	Wisman		Harrisburg	PA
Karen	Wisniewski		Philadelphia	PA
Linda	Wisniewski		Doylestown	PA
Ronald	Wisniewski		Erie	PA
J.	Wisnosky		Lancaster	PA
Nicole	Witcher		Philadelphia	PA
Lisa	Witham		Mentor on the lake	OH
Raymond	Withers		Emsworth	PA
Carl	Witherspoon		Elkridge	PA
Christine	Witman		Philadelphia	PA
Philip	Witmer		Wayne	PA
Kimberly	Witt	Mid Atlantic Policy Mgr, Appalachian Mountain Club	Bethlehem	PA
Kristin	Witt		Strasburg	PA
Andrea	Wittchen	President, Lehigh Valley Sustainability Network	Bethlehem	PA
Andrea	Wittchen	iSpring Associates	Bethlehem	PA
Bruce	Wittmershaus		Erie	PA
George	Wochley		Pittsburgh	PA
Daniel	Wodak	Assistant Professor of Philosophy and Law, UPenn	Philadelphia	PA
Stacy	Woeppel		Newfoundland	PA
Peterlyn	Wojeska		Edwardsville	PA
Peter	Wolanin		Philadelphia	PA
Janice	Wolbach		Bethlehem	PA
Deborah	Woleslagle		Altoona	PA
David	Wolf		Philadelphia	PA
Karen	Wolf. RN, NP, PhD, DFNAP	Alliance of Nurses for A Healthy Environment	Lewisburg	PA
Audra	Wolfe		Philadelphia	PA

Cheyanna	Wolfe		New Cumberland	PA
Gerald	Wolfe		Lititz	PA
Marie	Wolfe		Annville	PA
Sarah	Wolfer		Hazleton	PA
K.E.	Wolff		Lansdowne	PA
Nancy	Wolff		Bernville	PA
Mara	Wolfgang		Philadelphia	PA
Lawrence	Wolfson		Glenshaw	PA
Sharon	Wolfson		Merion Station	PA
Arlene	Wolk		Pittsburgh	PA
Daniel	Wolk		Penn Valley	PA
Scott	Wolovich	Executive Director, New Sun Rising	Ross Twp	PA
Wendy	Woltman		Doylestown	PA
Karen	Wolverton		Holland	PA
Kenneth	Wonderland		Bensalem	PA
Robert	Wondoloski		Bear Creek Village	PA
Kelly	Wong		Merion Station	PA
Debra	Wontor		Hawley	PA
Carol	Wood		Philadelphia	PA
Daniel	Wood		Greenburg	PA
Ezra	Wood		Merion Station	PA
Glenn	Wood		Moon Township	PA
Karen	Wood		Pittsburgh	PA
Katherine	Wood		Philadelphia	PA
Lucy	Wood		*Submitted via email*	PA
Cindy	Woodall		Upper Black Eddy	PA
Brenda	Woodard		Erie	PA
Susan	Woodcox		Greensburg	PA
Suzanne	Woodring		State College	PA
Joseph	Woodroffe		Hulmeville	PA
Joshua	Woodruff		Towanda	PA
Gerald	Woods		Franklin	PA
Mark	Woods		York	PA
Marvin	Woods		Washington	PA
Rodney	Woods		Philadelphia	PA
Eloise	Woodsbey		Erie	PA
Lisa	Woodside		Wallingford	PA
Ann	Woodward		Reading	PA
John	Woodward		New Stanton	PA
R.	Woodward		West Chester	PA
Kimberly De	Woody		Wayne	PA
Curt	Woolford		Havertown	PA
Thomas	Woomer		Grand Junction	CO
Jennifer	Wooten		Cochranville	PA
Anne	Wootten		Wynnewood	PA
Danielle	Workman		Houston	PA

Jean	Workman		New Castle	PA
E.K.	Worthington		Greencastle	PA
Charles	Worthy		Philadelphia	PA
Heidi	Wosak		Phoenixville	PA
Edward	Wrenn		Pittsburgh	PA
Alice	Wright		Chester	PA
Alice	Wright		Philadelphia	PA
Alisha	Wright		Townville	PA
Annie	Wright		Philadelphia	PA
Claritta	Wright		Philadelphia	PA
Fay	Wright		Bala Cynwyd	PA
Frances	Wright		Yeadon	PA
Joanne	Wright		Scranton	PA
Katherine	Wright		Morrisville	PA
Markeith	Wright		York	PA
Norman	Wright		Harrisburg	PA
Shamar	Wright		Philadelphia	PA
Tashanna	Wright		Philadelphia	PA
Thomas	Wright		Northumberland	PA
Tom	Wright		York	PA
William	Wright		Philadelphia	PA
Huron	WrightCampbell		York	PA
Gregory	Wrightstone	CO2 Coalition	Allison Park	PA
Kathleen	Wroblewski		Erie	PA
Sheila	Wroten		Philadelphia	PA
Renna	Wrubleski		Canonsburg	PA
Blake	Wu		Lafayette	CA
Theodor	Wukovich		Monongahela	PA
Sharon	Wushensky		Kennett Square	PA
William	Wyant		Wampum	PA
Susan	Wyble		Pittsburgh	PA
Jim	Wylie		West Chester	PA
Katherine	Wynn		Wayne	PA
Jean	Wynter-Barrett		Scranton	PA
Milly	Wyse		Reading	PA
Thomas	Wyse, Jr.		West Homestead	PA
Joe	Wyzkoski		Pittsburgh	PA
Sarah	Xenophon		*Submitted via email*	PA
Jing	Xiao		Doylestown	PA
Youping	Xiao		Doylestown	PA
Shirley	Xu		Glen Mills	PA
Zijun	Xu		Chalfont	PA
Frank	Yaccino		Livingston	PA
Jasmine	Yancey		Philadelphia	PA
Daniel	Yanchak		*Submitted via email*	PA

Jingsong	Yang		Norristown	PA
Charles E	Yankel		Bridgeville	PA
Thakiyah	Yankowy		Philadelphia	PA
Mike	Yankuskie		Elderton	PA
David	Yanosik		Lebanon	PA
Paul	Yarger		Houtzdale	PA
Maxim	Yaskolko		Pittsburgh	PA
George	Yates		Philadelphia	PA
Sharon	Yates		*Submitted via email*	PA
Linda	Yborra		Newtown Square	PA
Mark	Yeager		Chambersburg	PA
Ryan	Yeager		Pittsburgh	PA
Terri	Yeager		Glenshaw	PA
Ryan	Yeaglin		Elizabethtown	PA
Jennifer	Yeckley		Hatboro	PA
Hunter	Yedlowski		Pittsburgh	PA
Mary	Yee		Philadelphia	PA
Peter	Yeomans		Philadelphia	PA
Jan	Yerkes-Roop		Warminster	PA
S.	Yerky		Munhall	PA
John	Yesenosky		Garards Fort	PA
Audrey	Yeung		Philadelphia	PA
Seung	Yi		Philadelphia	PA
Laura	Yim		Saint Davids	PA
David	Yingling		Friedens	PA
Heather	Yochum		Bensalem	PA
Elise	Yoder	350 Pittsburgh	Pittsburgh	PA
JB	Yoder		Manheim	PA
Donald	Yoest		Pittsburgh	PA
Malkie	Yoffe		Merion Station	PA
Emily	Yokopenic		Downingtown	PA
Crystal	Yordy		Dewart	PA
Charles	York		Patton	PA
Scott	York		Beaver	PA
Steve	York		*Submitted via email*	PA
Desiree	Yost		Northampton	PA
Ayva	Yots		Pittsburgh	PA
Adrienne	Young		Sewickley	PA
Amy	Young		Johnstown	PA
Andrea	Young		Muncy	PA
Barbara	Young		Chalfont	PA
Brian	Young		Philadelphia	PA
Carolyn	Young		Red Lion	PA
Cheryl	Young		Carlisle	PA
Clarence	Young		Philadelphia	PA

Ed	Young		Harleysville	PA
Elliott	Young		Philadelphia	PA
Kevin	Young		West Chester	PA
Lakeeta	Young		Chester	PA
Montez	Young		Philadelphia	PA
Richard	Young		Greensburg	PA
Robert	Young		*Submitted via email*	PA
Shannon	Young		Philadelphia	PA
Sherley	Young		Philadelphia	PA
Tammy	Young		Harrisburg	PA
Traci	Young		Primos	PA
Jennifer	Youngers		Drexel Hill	PA
Gail	Youngs		Phoenixville	PA
Charles	Youtz		Lebanon	PA
Lawrence	Yozwiak		Saylorsburg	PA
Linda	Yuhnke		Huntingdon	PA
Albert	Yurinko		Greensburg	PA
Christie	Yurisic		New Brighton	PA
Katie	Yust		Philadelphia	PA
Harry	Zabetakis		Pittsburgh	PA
Teresa	Zabierowski		Philadelphia	PA
Allen	Zabkar		Scottdale	PA
Shannon	Zabko		Phoenixville	PA
Kimberly	Zacharias		Pittsburgh	PA
Peter	Zacharias		Lancaster	PA
Stephen	Zacherl		Indiana	PA
Ilana	Zahavy	Founding Organizer, Beth Am Israel JYCM chapter	Merion	PA
William	Zahorchak		Lucerne Mines	PA
Zach	Zahorchak		Shelocta	PA
Rebecca	Zajac		Villanova	PA
Sophia	Zajac		Hermitage	PA
Virginia	Zajac		Pittsburgh	PA
Linda	Zak		Saylorsburg	PA
Maryanne	Zakreski		Cheltenham	PA
Shawn	Zaliznock		Saint Benedict	PA
Mina	Zalnasky		Coraopolis	PA
Maria	Zambrano		Philadelphia	PA
David	Zanardelli		Eighty Four	PA
Jeanne	Zang		Sewickley	PA
Marisa	Zangari		Etters	PA
Hilary	Zankel		Philadelphia	PA
Michael	Zankman		Collegeville	PA
Melodye	Zapalac		norristown	PA
Jeaneen	Zappa		Glenshaw	PA
Amos	Zaroe		Darby	PA

William	Zavala		Pittsburgh	PA
Daniel	Zazworsky		Mechanicsburg	PA
Deborah	Zdobinski		Wallingford	PA
Judi	Zdziera		Southampton	PA
Angela	Zebo-Hosterman		Bellefonte	PA
William	Zednik		Downingtown	PA
Orly	Zeewy		Bala Cynwyd	PA
Megan	Zeigler	Green Building Alliance	Pittsburgh	PA
Peter	Zeitler		Bethlehem	PA
Susan Brennan and Parker	Zeizel		Penn Valley	PA
Joseph	Zelanko		Cranberry Township	PA
Regis	Zelenz		Zionsville	PA
Hollis	Zelinsky		State College	PA
Linda	Zellem		Friedens	PA
Sadie	Zellem		Berlin	PA
Florence	Zeller		Haverford	PA
Kenneth	Zenkevich		Pittsburgh	PA
Laurie	Zepka		Drexel Hill	PA
Russell	Zerbo		Philadelphia	PA
Nikitas	Zervanos	NJ Zervanos	Lancaster	PA
Yuxiang	Zheng		New York	NY
Sydney	Ziatek*		Cranberry Township	PA
Jennifer	Zickefoose		South Park	PA
Eden	Zickler		Albany	NY
James	Ziegenfuss		Bangor	PA
Dave	Ziegler		Royersford	PA
Henry	Ziegler		Philadelphia	PA
Nora	Ziegler		West Chester	PA
Elayne	Zielinski		Allentown	PA
Grace	Ziesing		St Davids	PA
Ben	Zifferblatt		Philadelphia	PA
Judy	Zimbardi		Doylestown	PA
Bina	Zimm		Lancaster	PA
Diane	Zimmerman		Philadelphia	PA
Ephraim	Zimmerman		Ben Avon	PA
Michael	Zimmerman		*Submitted via email*	PA
Steven	Zimmerman		Pine Grove	PA
Waynette	Zimmerman		Waynesburg	PA
Wayne C.	Zimmerman, Sr.		West Chester	PA
Patricia	Zlatkin		Fairless Hills	PA
David	Zlotowski		Malvern	PA
Karen	Zohos		Fairview	PA
Paul	Zolna		Altoona	PA

Julia	Zorzi		Coraopolis	PA
Sydelle	Zove		Conshohocken	PA
Beatrice	Zovich		Philadelphia	PA
Kelley	Zuber		Lenhartsville	PA
Beverley	Zuccarello		Philadelphia	PA
Mary	Zuccaro		Carnegie	PA
Ellen	Zucker		Philadelphia	PA
Michael	Zuckerman		Philadelphia	PA
Brian	Zukauckas		Lancaster	PA
Dorothy	Zukauckas		Mechanicsburg	PA
Ken	Zukauckas		State College	PA
Faith	Zurick		York	PA
Jody	Zwick		Coatesville	PA
Shannon	Zwick		Pittsburgh	PA
Iain	Zwiebel		Philadelphia	PA

Commentators Requesting a Copy of the Final-Form Rulemaking

Colleen Avni
6832 Marshall Road
Upper Darby, PA 19082

Claire Binkley
1206 Clearbrook Rd
West Chester, PA 19380

Nancy Boxer
2414 Hirst Terrace
Havertown, PA 10983

Bonnie Calhoun
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Hanover, PA 17331

Ibraheem Choudhry
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Glenmoore, PA 19343

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McMurray, PA 15317

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Harrisburg, PA 17109

Sister Pat Lupo
Benedictine Sisters of Erie
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Erie, PA 16503

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PA State Representative, 41st District
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Lancaster, PA 17603

Tom Monahan
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Lancaster, PA 17601

Kevin J. Moody
PA Independent Oil & Gas Association
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Harrisburg, PA 17101-1510

Maureen Mulligan
Sustainable Futures Communication, LLC
1049 Bell Tower Drive
Lebanon, PA 17042

Senator Joe Pittman
459 Main Capitol Building
Harrisburg, PA 17120

Abha Saini
The Climate Reality Project: Philadelphia and SE PA Chapter
2 Norsham Way
Collegeville, PA 19426

Betty Schulz
584 Lyon Ct. Apt.4
Hazleton,PA 18201

Joanne Tosti-Vasey
Bellefonte Borough Council President
236 W. Lamb St.
Bellefonte, PA 16823

Tamela Trussell
Conodoguinet Creek Watershed Association
612 Belvedere Street
Carlisle, PA 17013

Theresa Walko
P.O. Box 85
Connoquenessing, PA 16027

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

July 28, 2021

David Sumner
Executive Director
Independent Regulatory Review Commission
333 Market Street, 14th Floor
Harrisburg, PA 17120

Re: Final Rulemaking: CO_2 Budget Trading Program (#7-559 / IRRC # 3274)

Dear Mr. Sumner:

Pursuant to Section 5.1(a) of the Regulatory Review Act (RRA), please find enclosed the CO_2 Budget Trading Program (#7-559 / IRRC # 3274) final-form rulemaking for review by the Independent Regulatory Review Commission (IRRC). The Environmental Quality Board (Board) adopted this rulemaking at its July 13, 2021, meeting.

The Board adopted the proposed rulemaking at its meeting on September 15, 2020. On November 7, 2020, the proposed rulemaking was published in the *Pennsylvania Bulletin* at 50 Pa.B. 6212 for a 69-day public comment period. The public comment period closed on January 14, 2021. The Department received 14,038 comments from 11,803 commentators. The Board provided the Environmental Resources and Energy Committees and IRRC with copies of all comments received in compliance with Section 5(c) of the RRA.

The Department will provide assistance as necessary to facilitate IRRC's review of the enclosed rulemaking under Section 5.1(e) of the Regulatory Review Act.

Please contact me by e-mail at laurgriffi@pa.gov or by telephone at 717.772.3277 if you have any questions or need additional information.

Sincerely,

Laura Griffin
Regulatory Coordinator

Enclosures

0120-FM-PO0011 6/2015

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLICY OFFICE

TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO THE REGULATORY REVIEW ACT

I.D. NUMBER: 7-559

SUBJECT: CO_2 Budget Trading Program

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION, Environmental Quality Board

TYPE OF REGULATION

- ☐ Proposed Regulation
- ☒ Final Regulation
- ☐ Final Regulation with Notice of Proposed Rulemaking Omitted
- ☐ 120-day Emergency Certification of the Attorney General
- ☐ 120-day Emergency Certification of the Governor
- ☐ Delivery of Tolled Regulation
  a. ☐ With Revisions b. ☐ Without Revisions

RECEIVED
JUL 28 2021
Independent Regulatory Review Commission

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
7/28/21	Pamela J. Maynard	Majority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative Daryl Metcalfe
7/28/21		Minority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Representative Greg Vitali
7/28/21	electronic submittal	Majority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator Gene Yaw
7/28/21	electronic submittal	Minority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY Senator Carolyn Comitta
		INDEPENDENT REGULATORY REVIEW COMMISSION David Sumner
		ATTORNEY GENERAL (for Final Omitted only)
		LEGISLATIVE REFERENCE BUREAU (for Proposed only)

Kathy Cooper

From: Eyster, Emily <Emily.Eyster@pasenate.com>
Sent: Wednesday, July 28, 2021 10:41 AM
To: Griffin, Laura; Troutman, Nick
Cc: Shirley, Jessica; Reiley, Robert A.; Kauffman, Gregory; Hartman, Michael; Lisa.Fuller
Subject: Re: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)

Received. Thank you!

Emily Eyster
Legislative Director, Office of Senator Carolyn T. Comitta
Executive Director, Environmental Resources and Energy Committee
Cell: (717) 756-4702
Phone: (717) 787-5709
www.pasenatorcomitta.com

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Wednesday, July 28, 2021 9:50 AM
To: Eyster, Emily <Emily.Eyster@pasenate.com>; Troutman, Nick <ntroutman@pasen.gov>
Cc: Shirley, Jessica <jesshirley@pa.gov>; Reiley, Robert A. <rreiley@pa.gov>; Kauffman, Gregory <grekauffma@pa.gov>; Hartman, Michael <Michael.Hartman@pasenate.com>; Fuller, Lisa <Lisa.Fuller@pasenate.com>
Subject: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)

■ EXTERNAL EMAIL ■

Good morning,

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find attached the CO_2 Budget Trading Program (#7-559) final rulemaking for review by the Senate Environmental Resources and Energy Committee. Also attached is the transmittal sheet showing delivery to the House Environmental Resources and Energy Committee this morning.

Please confirm receipt of this rulemaking by replying to all recipients.

Thank you,
Laura

Laura Griffin | Regulatory Coordinator
she/her/hers
Department of Environmental Protection | Policy Office
Rachel Carson State Office Building
400 Market Street | Harrisburg, PA
Phone: 717.772.3277| Fax: 717.783.8926
Email: laurgriffi@pa.gov
www.dep.pa.gov

Connect with DEP on: Twitter | Facebook | LinkedIn | YouTube | Instagram

Kathy Cooper

From: Troutman, Nick <ntroutman@pasen.gov>
Sent: Wednesday, July 28, 2021 11:09 AM
To: Griffin, Laura; Emily.Eyster
Cc: Shirley, Jessica; Reiley, Robert A.; Kauffman, Gregory; Hartman, Michael; Lisa.Fuller
Subject: RE: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)

Received. Thank you

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Wednesday, July 28, 2021 9:51 AM
To: Eyster, Emily <Emily.Eyster@pasenate.com>; Troutman, Nick <ntroutman@pasen.gov>
Cc: Shirley, Jessica <jesshirley@pa.gov>; Reiley, Robert A. <rreiley@pa.gov>; Kauffman, Gregory <grekauffma@pa.gov>; Hartman, Michael <Michael.Hartman@pasenate.com>; Fuller, Lisa <Lisa.Fuller@pasenate.com>
Subject: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)
Importance: High

Good morning,

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find attached the CO_2 Budget Trading Program (#7-559) final rulemaking for review by the Senate Environmental Resources and Energy Committee. Also attached is the transmittal sheet showing delivery to the House Environmental Resources and Energy Committee this morning.

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Thank you,
Laura

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Phone: 717.772.3277| Fax: 717.783.8926
Email: laurgriffi@pa.gov
www.dep.pa.gov

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Kathy Cooper

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Wednesday, July 28, 2021 11:47 AM
To: IRRC; David Sumner
Cc: Scott Schalles; Lehr, Marisa (GC); Rizzi, Alicia (GC)
Subject: Delivery of Final Rulemaking #7-559 (IRRC #3274) (EMAIL 1 of 2)
Attachments: IRRC_7-559_Final.zip; Transmittal Sheet_7-559_Final_House Senate ERE.pdf; Re: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559); RE: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559); Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)

Importance: High

Good morning,

Please see the attached rulemaking documents, signed transmittal sheet, and confirmations of receipt for Final Rulemaking – CO_2 Budget Trading Program (#7-559). All rulemaking documents, including cover letter, are included in the attached zip file.

Email confirmations showing transmittal and receipt by the Senate Environmental Resources and Energy Committee chairs are attached.

The House Environmental Resources and Energy Committee chairs received the proposed rulemaking in hard copy. Please see attached transmittal sheet verifying receipt.

Please confirm delivery of the rulemaking is complete.

Thank you,
Laura

Laura Griffin | Regulatory Coordinator
she/her/hers
Department of Environmental Protection | Policy Office
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400 Market Street | Harrisburg, PA
Phone: 717.772.3277| Fax: 717.783.8926
Email: laurgriffi@pa.gov
www.dep.pa.gov

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Kathy Cooper

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Wednesday, July 28, 2021 9:51 AM
To: Emily.Eyster; Troutman, Nick
Cc: Shirley, Jessica; Reiley, Robert A.; Kauffman, Gregory; Hartman, Michael; Lisa.Fuller
Subject: Delivery of Final Rulemaking - CO2 Budget Trading Program (7-559)
Attachments: Transmittal Sheet_7-559_Final_House ERE.pdf; Comitta_SenateERE_7-559_Final.pdf; Yaw_SenateERE_7-559_Final.pdf

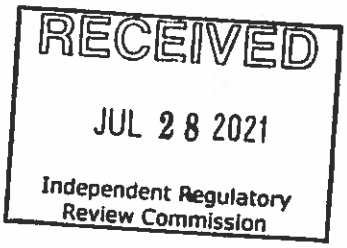
Importance: High

Good morning,

Pursuant to Section 5.1(a) of the Regulatory Review Act, please find attached the CO_2 Budget Trading Program (#7-559) final rulemaking for review by the Senate Environmental Resources and Energy Committee. Also attached is the transmittal sheet showing delivery to the House Environmental Resources and Energy Committee this morning.

Please confirm receipt of this rulemaking by replying to all recipients.

Thank you,
Laura



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Email: laurgriffi@pa.gov
www.dep.pa.gov

Connect with DEP on: Twitter | Facebook | LinkedIn | YouTube | Instagram

Kathy Cooper

From: David Sumner
Sent: Wednesday, July 28, 2021 1:34 PM
To: Griffin, Laura; IRRC
Cc: Scott Schalles; Lehr, Marisa (GC); Rizzi, Alicia (GC); Fiona Cormack
Subject: RE: Delivery of Final Rulemaking #7-559 (IRRC #3274) (EMAIL 1 of 2)

This confirms delivery to, and receipt by, IRRC. Thank you.

From: Griffin, Laura <laurgriffi@pa.gov>
Sent: Wednesday, July 28, 2021 11:47 AM
To: IRRC <irrc@irrc.state.pa.us>; David Sumner <dsumner@irrc.state.pa.us>
Cc: Scott Schalles <sschalles@irrc.state.pa.us>; Lehr, Marisa (GC) <malehr@pa.gov>; Rizzi, Alicia (GC) <arizzi@pa.gov>
Subject: Delivery of Final Rulemaking #7-559 (IRRC #3274) (EMAIL 1 of 2)
Importance: High

Good morning,

Please see the attached rulemaking documents, signed transmittal sheet, and confirmations of receipt for Final Rulemaking – CO_2 Budget Trading Program (#7-559). All rulemaking documents, including cover letter, are included in the attached zip file.

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The House Environmental Resources and Energy Committee chairs received the proposed rulemaking in hard copy. Please see attached transmittal sheet verifying receipt.

Please confirm delivery of the rulemaking is complete.

Thank you,
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