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To: Pennsylvania Environmental Quality Board

Subj: Proposed Rulemaking: CO2 Budget Trading Program (#7-559)

The Appalachian Mountain Club (AMC) strongly supports the Commonwealth of Pennsylvania's proposal to participate in the Regional Greenhouse Gas Initiative (RGGI) and the CO2 Budget Trading Program (#7-559). AMC has 5000 members in our Delaware Valley Chapter many of whom are Pennsylvania residents. We have been working on RGGI since its inception as an important climate action policy, and we are very supportive of Pennsylvania joining the ongoing program.

The AMC's mission is to foster the protection, enjoyment, and understanding of the outdoors. We envision a world where our natural resources are healthy, loved, and always protected, and where the outdoors occupies a place of central importance in every person's life. Addressing climate pollution and its impacts is a focus of AMC's near and long-term conservation work, and we believe action is paramount to the preservation of the outdoors for future generations.

We are encouraged that reducing greenhouse gases (GHGs) is a goal of Governor Wolf's administration as evidence of his 2019 Executive Order[1] directing DEP to develop a proposed rulemaking package to lessen carbon dioxide emission from electric power generators. The order specifically required the establishment of a carbon dioxide budget consistent with that used by Regional Greenhouse Gas Initiative participating states. The order mandated DEP present this package to the Pennsylvania Environmental Quality Board (EQB) by July 31, 2020 and was later amended[2] to extend the deadline to September 15, 2020; in order to accommodate the meeting of the EQB. The Environmental Quality Board voted to approve the

[1] Exec. Order No. 2019-7 (2019). https://www.governor.pa.gov/wp-content/uploads/2019/10/Executive-Order-2019-07-Commonwealth-Leadership-in-Addressing-Climate-Change-through-Electric-Sector-Emissions-Reductions.pdf

[2] Exec. Order No. 2019-7, As Amended (2019). https://www.oa.pa.gov/Policies/eo/Documents/2019-07.pdf

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proposed rule to establish a carbon pollution reduction program for power plants consistent with RGGI, and the rule was published in the PA Bulletin[3].

In addition to the important step to join RGGI Pennsylvania must continue to advance other programs that will reduce GHG pollution and transition towards a net zero carbon energy economy. Specifically, the Commonwealth should finalize their 2020 draft methane emission standards and commit to participation in the Transportation and Climate Initiative Program and set new Clean Vehicle standards.

Climate change and outdoor places

Climate altering pollution is already impacting many aspects of our lives, from coastal sea level rise, to increased frequency of extreme storms, to lower winter snowpack. Our region is warming faster and experiencing more extreme events – heavy precipitation and intense storms – than the rest of the nation. Maximum daily rainfall in the Northeast has increased 27% from 1901 to 2016[4] and precipitation has increased by 0.37 inches per decade in Pennsylvania over this past century. In 2011 Hurricane Irene and Tropical Storm Lee cost $87 million in damages to roads and infrastructure in the Commonwealth and caused multiple deaths. Another recent deadly storm caused a flash flooding event in July of 2019 where areas of PA saw over 4 inches of rain. Recreational trails are also impacted by intense rainfall events from erosion and washing out of foot bridges and access roads. Climate change will continue to extend the summer and shoulder seasons which will increase trail use, requiring more human resources and services. More frequent and more extreme storms are making it harder to keep up with trail maintenance and are driving a shift in strategy toward building and rerouting trails capable of withstanding intense wind and rain events, an effort that itself takes significant resources.

Pennsylvania's annual temperature has increased by 0.1 degree F per decade over the past century and is projected to see an increase of 5.4 degrees by 2050. The number of days

[3] Environmental Quality Board. (2020, November 7). *Proposed Rulemaking: [25 PA. CODE CH. 145] CO_2 Budget Trading Program.* Pennsylvania Bulletin [50 PA.B. 6212]. http://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol50/50-45/1541.html

[4] https://science2017.globalchange.gov/chapter/7/

with a heat index above 90 degrees is predicted to increase from eight to 40 per year. This will have a significant impact on those who work and exercise outside.

Winters are changing dramatically with snow cover projected to decline 20-60 percent around Pennsylvania, and PA DEP expecting that the winter outdoor recreation industry in the state will not survive to mid-century. A 2018 report *The Economic Contributions of Winter Sports in a Changing Climate* found that low-snow seasons result in 5.5 million fewer visitors to ski towns than average, resulting in close to $1 billion in reduced economic activity and 17,400 fewer jobs. In the Northeast, the continued warming is expected to further limit winter sports, and particularly those relying on natural snow, to regions furthest north. Shoulder seasons are also at risk with the important holiday season economic pulse becoming more uncertain, even with snowmaking, because of the increased likelihood of rain rather than snow. Winter fishing and other ice-dependent sports are also impacted by shorter and less reliable lake ice. Even within winter, we are seeing dramatic back-and-forth shifts in weather conditions, like the record-breaking warmup we saw this winter, followed by a return to more normal cold conditions. These "winter weather whiplash" events can set us up for major flooding, harm crops and vegetation, and cause problems for winter recreation[5]. With the shortening of the winter season, ski area demands on water for snowmaking also become compressed and magnified, impacting water resources.

The Pennsylvania DCNR Forestry Bureau identified a 14 climate change vulnerabilities and adaptation actions that include high risk to cold water habitats for native trout, severe insect outbreaks with increased tree mortality, and expansion of invasive plant and decline of rare, threatened, and endangered species (DCNR, 2018). The state has nearly 17 million acres of forested lands that cover 59% of the state dominated by oak/hickory forests with significant maple/beech/birch components (USDA Forest Service 2018). Key species like hemlock that shade cold water streams, are considered especially at risk to climate change and are declining. Forest animals are already being impacted as well. A USDA Forest vulnerability assessment for

[5] Casson et al. 2019. Winter Weather Whiplash: Impacts of Meteorological Events Misaligned With Natural and Human Systems in Seasonally Snow-Covered Regions. Earth's Future. Vol 7, Issue 12. https://doi.org/10.1029/2019EF001224

the Mid-Atlantic region reports that snow shoe hare are reducing their range to primarily northern PA due to reduction in snow cover duration. A recent study of the song bird the purple martin found that were unable to depart earlier, migrate faster, or claim breeding sites earlier in response to earlier green-up and insect emergence.

The outdoor recreational economy is strong in Pennsylvania according to the Outdoor Industry Association in a 2018 report recreation resulted in $ 29.1 billion in consumer spending, $8.6 billion in wages and salaries, $1,900 million in state and local tax revenue and resulted in 251,000 direct jobs. Additional climate change related threats to the future of this industry include increases in Lyme disease and West Nile Virus and other tick and mosquito borne illnesses which are expected to continue to rise with climate warming. Nuisance plants and organisms such as poison ivy, water borne pathogens, and blue-green algae in lakes and ponds, are expected to increase due to warmer weather and increased run-off during storms. Disruptive and disease-causing land and aquatic organisms are not only a problem for hikers, campers, and swimmers but monitoring and preventing their spread is another resource management concern and cost.

AMC believes the cumulative impact from climate change on recreational resources and related business articulated above adds significant rationale for taking swift and strong actions to reduce carbon emissions. We cannot afford to follow the status quo, and the good news is that Pennsylvania can become a leader on reducing carbon and co-pollutants through RGGI as a key step towards addressing this problem.

Benefits of RGGI

As of 2017 RGGI has resulted in net benefit of $4.7 billion to the RGGI states and more than 40,000 job-years. [6] Across the RGGI region we have seen more than a 40% decrease in carbon pollution while electricity prices have declined since the program began. Limiting GHG emissions through this regional market-based approach is an effective strategy for mitigating climate change, and by joining RGGI the Commonwealth will be one step closer to fully

[6] https://www.analysisgroup.com/uploadedfiles/content/insights/publishing/2018_hibbard_tierney_darling_cullinan_an_expanding_carbon_cap_and_trade_regime.pdf

implementing the strategies in its most recent Climate Action Plan.[7] It has been estimated that by joining RGGI, the Commonwealth will prevent more than 180 million tons of carbon dioxide pollution[8]. The program is also a job maker and for Pennsylvania it is predicted to result in a net increase of 27,000 jobs and add $1.9 Billion to the state's economy.

The co-benefits of addressing power plant emissions and investing in energy efficiency and cleaner energy generation will also improve the lives of Pennsylvanians. The Commonwealth has struggled to improve ambient air quality in some regions of the state. For example based on 2019 monitoring data three southeast PA counties saw exceedances of the 2015 ozone health standard. Pennsylvania DEP modelling predicts that joining RGGI will result in cumulative emission reductions of 112,000 tons of NOx and approximately 67,000 tons of SO2 over a decade[9], which will prevent premature deaths and hospital visits from respiratory illnesses producing $6.3 billion in health care savings and 30,000 fewer hospital visits for respiratory illnesses like asthma among children and adults. There will also be 45,000 fewer asthma attacks and a 1,000 fewer cases of childhood bronchitis[10].

Some of our most vulnerable community members will greatly benefit from reducing precursors and direct emissions of fine particulate matter ($PM_{2.5}$). A recent study from Perera et al (2020) looked at the impacts of changes in ambient $PM_{2.5}$ concentrations on health end points for children such as low birth weight (TLBW) and incidence of asthma. The study found that not only did RGGI states avoid cases of these negative health affects but the program benefited neighboring states as well, including Pennsylvania, see replicated table 3 below.

Table 3 Number of estimated avoided cases by health end point in RGGI and neighboring states (2009–2014). From: Perera, F., Cooley, D. Berberian, A., Mills, D., and Kinney, P. 2020. Co-

[7] Pennsylvania Climate Action Plan, 2018. (2019, April 29). Pennsylvania Department of Environmental Protection. 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

[8] Ramamurthy, K., Demjanick, J., Book, H., MacCracken, C., Wissell, F. (2020, April 23). *IPM Modeling Results Discussion Reference Case and RGGI Policy Scenario* [Webinar]. Pennsylvania Department of Environmental Protection. http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2020/4-23-20/RGGI%20IPM%20Modeling%20Webinar.pdf

[9] http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA_RGGI_Modeling_Report.pdf

[10] http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/RGGI/PA%20RGGI%20Health%20Benefits.xlsx

Benefits to Children's Health of the U.S. Regional Greenhouse Gas Initiative EHP Vol. 128, No. 7 https://doi.org/10.1289/EHP6706

Health end point	RGGI states	Neighboring states	Total
PTB	**58**	**54**	**112**
TLBW	**29**	**27**	**56**
ASD	**50**	**48**	**98**
Asthma	**274**	**263**	**537**

Note: RGGI states include Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Adjacent non-RGGI states include Pennsylvania, the District of Columbia, New Jersey, Virginia, and West Virginia. ASD, autism spectrum disorder; PTB, preterm birth; RGGI, U.S. Regional Greenhouse Gas Initiative; TLBW, term low birth weight.

Specific comments on regulation

Pennsylvania is one of the largest state sources of GHG emissions in the US with it's energy sector's CO2 emissions in the top 10 based on 2017 EIA data. Pennsylvania is setting a starting budget of 78 million tons of CO2 in 2022 with a declining cap through 2030 resulting in 180 million tons reduced in total. This is anticipated to reduce CO2 emissions in the Commonwealth by 31% compared to 2019. RGGI has built in reviews to ensure program goals are being met and decide whether adjustments to the overall cap or retirement of banked allowances should be made. The most recent available emissions data should be used during reviews to ensure program success. Program compliance is also evaluated at the end of each three-year control period which for current RGGI states will be 2021-2023. To avoid inconsistencies Pennsylvania should consider aligning with 2023 as the end of its first control period.

AMC is concerned that the waste coal set aside of 9.3 million tons annually is providing an advantage to the dirtiest sources both in terms of GHG emissions and other toxic pollution. While waste coal piles are an environmental hazard incentivizing their use seems counter to the goals of the RGGI program. At the very least the set aside should be reduced annually by a set percentage. We agree with the idea of a strategic set aside and that difference should be

guaranteed to go towards the strategic set aside to ensure PA is moving away from carbon intense fuels to cleaner low carbon sources.

The Pennsylvania Environmental Quality Board and DEP requested comment on ways to appropriately address the benefits of cogeneration in the Commonwealth, including whether allocation of CO2 allowances should be similar to the waste coal set-aside provision. If such a set aside is formed it should be limited to an allowance that is backed out of the actual amount of generated useful thermal energy. The program should not over reward CHP plants which can generate significant carbon dioxide emissions.

AMC supports a portion of the proceeds being used to help workers and communities who will be affected by the ongoing and important transition of the energy market away from coal to cleaner electricity generation.

Prioritizing Equity and Environmental Justice

AMC strongly encourages Pennsylvania to use funds from this program to address equity and environmental justice, with the shared recognition of the historical inequities of public health risks from power plant pollution. By joining RGGI the Commonwealth can further improve air quality for its residents, in regions with persisting high pollution, and in overburdened communities of color. The need for reducing particulates and ozone is even more urgent as the science mounts that respiratory health is linked to overall ability to fight diseases such as COVID-19. As Pennsylvania joins the RGGI market we urge the Commonwealth to ensure an open and transparent process and make efforts to incorporate input from communities directly impacted by power plant pollution. RGGI funds should be used specifically to provide low income assistance with improving home energy efficiency and GHG abatement projects that address the disproportionate impact to black and brown communities from power plant pollution. For example, GHG abatement program should not only consider electric vehicle infrastructure but should address equitable access to electric vehicles and mass transit, and support active transportation projects that improve access such as improving bike and pedestrian paths as a low-cost low-carbon approach for mobility and to reduce the reliance on personal vehicles to reach work, services and businesses, and as an essential feature of strong communities to connect with each other and the outdoors.

Investing in Energy Efficiency

The Commonwealth should prioritize energy efficiency investments measures with RGGI proceeds. EE can save the Commonwealth citizens money through lower energy costs and can result in significant create local jobs. Across the RGGI region, from 2008-2015, energy bill savings from energy efficiency investments alone add up to over $454 million in savings on energy bills (all program investments totaled $773 million in savings)[11]. Over 7,750 workers were trained as a result of RGGI EE investments demonstrating benefits go beyond the direct dollars invested. In the most recent report on RGGI proceeds investments in energy efficiency in 2018 alone are projected to save participants over $1.2 billion on energy bills and avoid the release of 1.4 million short tons of CO2 pollution.[12]

Actions to dramatically reduce greenhouse gas emission must be a priority in the next decade and by working with the ongoing and successful RGGI program Pennsylvania will make significant steps toward combatting climate change and improving air quality. Thank you for the opportunity to comment on this rulemaking.

Sincerely,

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[11] See the Investments of RGGI Proceeds 2014 and 2015 reports: https://www.rggi.org/investments/proceeds-investments

[12] https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2018.pdf