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Independent Regulatory Review Commission

January 13, 2021

Pennsylvania Environmental Quality Board
Rachel Carson State Office Building
400 Market Street, 16th Floor
Harrisburg, PA 17101-2301

Re: Comment on Proposed Rulemaking: CO2 Budget Trading Program

Chairman McDonnell and members of the Environmental Quality Board,

The Pennsylvania Chemical Industry Council (PCIC) advocates on behalf of the chemical manufacturers and related industries in Pennsylvania. We appreciate the opportunity to provide input on the proposal to amend Chapter 145 and establish a program to limit the emissions of carbon dioxide (CO2) from fossil fuel-fired electric generating units (EGU) located in this Commonwealth.

PCIC recognizes the global challenge presented by a changing climate and our members are actively engaged in providing solutions to this challenge by developing products and implementing practices to reduce energy consumption and carbon emissions across the industry and economy.

PCIC supports efforts by the administration to reduce greenhouse gas emissions as laid out in the governor's January 2019 executive order, specifically goals to increase the generation of electricity derived from clean energy sources, reduce reliance on carbon-intensive fuel sources and increase energy efficiency measures.

PCIC supports the development of emission reduction goals and carbon policy and regulations to effect change and create opportunities for clean energy technologies to grow within the electric market. Many of our members have set their own reduction goals and target dates to achieve carbon neutral operations.

While establishing a price on carbon will not accomplish the goals outlined in the January 2019 order alone, 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 we move toward a cleaner energy future.

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. This will ensure we are best leveraging our resources and role within the regional grid to create the greatest impact on global emissions and climate change.

Rulemaking recommendations for the EQB's consideration:
In 2018, manufacturing accounted for 12% of the state's total output at $93.75 billion. Chemical manufacturing ranks among Pennsylvania's top manufacturing sectors employing 50,000 and another 40,000 in the plastic and rubber products industry. The chemical industry generates $334 million in annual state and local taxes and invests approximately $800 million annually to build and maintain operations in the state.

The business of chemistry is energy-intensive and access to affordable and reliable electricity is a requirement and significant overhead.

20 North Market Square • Harrisburg, Pennsylvania 17101 • 717.214.2200 • pcic.org

Growth of renewable energy sources in the PJM Interconnection territory
The regional makeup of electricity sources in the PJM states is evolving. Variable energy is becoming more affordable and successfully competing in markets and integrating into the electric grid.

PJM has taken additional measures to create opportunities for intermittent sources to participate in the Real-Time and Day-Ahead Energy markets. In PJM's Queued Generation December 2019 update, the requests for capacity interconnection demonstrated a potential addition of a total of 81,832 megawatts, with the potential to increase solar generation from 0.4% to 14% and wind generation from 0.7% to 3%.

While wind generation and solar generation are growing and competing in new markets, there are still challenges with adequate and reliable storage technologies and concerns associated with the rapid retirement of baseload sources. The observed increase in requested interconnection rights from variable energy sources will still face limitations competing in markets with longer-term commitment requirements.

Natural gas proves an ideal partner to ramp up and down quickly to supplement supply from variable sources. With the most installed natural gas generation capacity in the PJM footprint, Pennsylvania can be the catalyst for the most expedient and sustained development of renewables across the PJM territory.

Where natural gas resources are deployed in the Real-Time and Day-Ahead markets to supplement variable sources, PCIC 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.

Reliability
It is important to ensure critical baseload energy sources are not prematurely forced offline by the added cost of allowances, without an adequate supply of diverse reserves to ensure reliability in extreme conditions.

Following the 2014 Polar Vortex, PJM implemented changes to programs and processes to ensure adequate supply. Those changes have enabled the PJM grid to withstand several cold snaps in recent years. In a recent report, PJM noted, *"Throughout the cold spell, PJM utilized a diverse generation fleet that includes coal, natural gas, nuclear and renewables such as wind, solar and hydropower. And we're happy to report that all types of resources performed well. Like last year, coal tended to supply a larger share of power than usual, and that was due to simple economics – when cold temperatures turn up the demand for natural gas, gas prices go up and coal becomes more cost effective."*

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.

In a report following the August 2020 blackouts in California, the California Energy Commission, Independent System Operator and Public Utilities Commission acknowledged that in transitioning to less carbon-intensive resources, planning had not kept pace to ensure sufficient resources in peak demand windows or the development of necessary battery storage. California was unable to rely on imports from neighboring states, which were also managing supply issues compounded by a downed transmission line causing congestion and blocking available supply to reach customers.

PCIC supports the rapid transition to less carbon-intensive energy sources, provided storage capacity and the development of adequate infrastructure to ensure reliability keeps pace. Battery storage and flexible resources to ramp up and down with solar on cloudy days and evenings and supplement changing wind patterns are critical to growing these energy sources responsibly and their ability to compete in all of PJM's markets.

As the largest contributor of electricity to the PJM grid, we ask that investments in storage capacity are encouraged and prioritized in Pennsylvania and DEP develop a working group that consists of representatives from PJM, NERC and ReliabilityFirst Corp. This working group 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.

PCIC 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.

PCIC also recommends the inclusion of predetermined reliability violation scenarios within the rulemaking that would require Pennsylvania to withdraw from participation in RGGI.

Infrastructure

PJM reports: From 2011 through 2018, 258 generating units totaling 31,722 MW across all fuel types retired from service. More than 24,000 MW of those retirements were from 125 coal-fired units, which have been replaced by more than 38,500 MW of new generation.

From 2011 to 2018, transmission system enhancements in PJM have enabled the interconnection of more than 29,500 MW of additional natural gas-fired generation and 5,910 MW of renewable wind and solar generation, resulting in a generation mix 30% less carbon-intensive than 10 years ago.

Through regional planning and forecasting, PJM has kept pace with this evolution, bidding out significant market efficiency projects to develop and improve transmission assets that will address congestion and allow for renewables to successfully integrate into the grid, while ensuring reliability.

New transmission assets maintain grid reliability, permitting older generators to retire without causing transmission line overloads or other reliability criteria violations. New transmission assets also provide operational flexibility necessary for incorporating new sources such as natural gas and renewables.

In a 2019 report, PJM laid out the importance of new transmission infrastructure and pipeline development for the successful incorporation of variable energy sources into the electric grid.

PCIC asks that DEP and the Public Utility Commission provide support for the development of transmission and pipeline assets by improved consistency in inspections and timeliness in the review of applications and permits.

Cogeneration and combined heat and power

Increasingly, the electric needs for commercial and industrial facilities are being met through onsite combined heat and power (CHP) units. This aligns with goals laid out in the Commonwealth's Climate Action Plan to increase and incentivize the use of CHP technologies.

These units require less fuel, produce fewer emissions for each energy output and deliver electric supply directly to their interconnected customers, avoiding the losses when electricity travels from the generator through power lines.

PCIC's members qualify as critical infrastructure under several of the Department of Homeland Security's designations. Reliable electricity is critical to maintaining operations to serve the public. CHP units provide the additional benefit of uninterrupted electric service in the event of outages on the electric grid. These units also often have black start capability allowing critical infrastructure to remain operational in a black out so utilities can focus on other customers.

PCIC appreciates the set-aside provision in the proposed rulemaking for these technologies by reducing the compliance obligation for CO2 emissions associated with the generation of thermal energy and / or electricity supplied to interconnected facilities.

PCIC asks that the condition restricting the unit's annual electrical output to the electric grid to no more than 10% of the annual gross generation of the unit include exemptions to account for grid emergencies.

Disruptions in the electric grid can result in the reliance on more readily available and carbon-intensive sources, or customers using back up diesel or oil generators. While these are unplanned events, distributed resources such as CHP can be a less carbon-intensive resource in these instances.

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. Because the owner cannot plan for these instances, but is providing a service that would benefit the environment and improve grid resiliency, electricity supplied during these instances should not count toward the 10% annual gross generation threshold and should be eligible for allowance credits.

The second condition in the proposed rulemaking would restrict the supply to less than or equal to 15% of the units annual total useful energy to any entity other than the manufacturing facility to which the CO2 budget source is interconnected.

PCIC asks that the words "manufacturing facility" be replaced with "industrial and commercial facilities" to allow for broader interconnection applications as CHP is successfully deployed across pharmaceuticals, food processing, manufacturing, refineries, hospitals, universities and commercial and industrial complexes.

In some instances, there are multiple energy production device units operating under one nameplate, serving multiple structures within the facility footprint. PCIC asks 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.

Waste coal-fired units

The proposed rulemaking would allocate up to 9,300,000 CO2 allowances annually to waste coal-fired units located in Pennsylvania, requiring operators to only purchase CO2 allowances if the set-aside amount is exceeded. At an initial five dollars per ton, this equates to $46,500,000 annually.

Based on the 2019 EPA Air Markets Program data, Pennsylvania waste coal-fired generators emitted 1.4 tons of carbon per MWh, whereas the state's bituminous coal-fired generators emitted on average 0.9 tons of carbon per MWh and natural gas generators emitted on average 0.37 tons of carbon per MWh.

PCIC recognizes the significant environmental challenge of remediating legacy coal sites. Over the last 30 years, these waste coal-fired EGUs have successfully remediated 7,200 acres and 225 million tons of waste coal, yet more than 200 million tons and 8,300 acres of waste coal piles remain in Pennsylvania.

It would take another 40 years to manage the remaining refuse if we continue to use waste coal-fired generation at its current rate of remediation as the primary tool for reclaiming these sites. PCIC suggests there are more immediate, cost effective solutions for these sites than keeping these units operational through the allowance of credits, which conflicts with the very intent of this proposed rulemaking. Additionally, waste coal is included in Tier II of Pennsylvania's Alternative Energy Portfolio Standard and receives subsidies, which would otherwise be invested in less carbon-intensive resources.

PCIC supports the practice of set-asides within the rulemaking for existing and new technologies that contribute to meeting the state's emission reduction goals, but does not support carve-outs in a carbon program for uneconomical and carbon-intensive facilities that cannot compete within the allowance credit market. The proposed set-aside allowance credits will prematurely displace cleaner and more efficient baseload generators, such as bituminous coal units, many of which have invested significant resources in emission reduction technologies.

PCIC 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. Because of the emissions associated with these refuse piles and spontaneous fires, this application should qualify as a greenhouse gas abatement program.

Offsets

PCIC appreciates the flexibility offered to EGUs to participate in offset projects. As carbon abatement technologies and methods evolve, we ask that DEP accept and review proposals on an annual basis for additional methods that demonstrate in a quantifiable way that the allowances represent CO2 emission reductions or carbon sequestration that is real, additional, verifiable, enforceable and permanent.

Allocation of revenues

Specific to the revenue allocation opportunities available within the proposed rulemaking and without the need for legislation, PCIC supports prioritized investments in energy efficiency measures, combined heat and power, energy storage and carbon capture and sequestration technologies.

PCIC encourages the requirement of an annual budget and proposed spending plan to be developed by the DEP Climate Change Advisory Committee, made available for public comment and voted on by the EQB to determine how the revenue is most efficiently utilized to meet the state's carbon emission reduction goals.

Leakage

The 2005 RGGI Memorandum of Understanding among the states requires an annual report to review potential impacts of "emissions leakage" as a result of participation in RGGI.

The most recent 2019 report, which analyzed data sets from 2006 to 2017 found that:

- Demand within RGGI decreased 25.9 million MWh
- Generation from all sources within RGGI decreased 41.2 million MWh
- Decreased demand and electric generation within RGGI decreased emissions 62.9 million short tons of CO2
- NonRGGI net electric imports increased 22.2 million MWh (primarily from Canada)
- NonRGGI sources serving load to RGGI increased generation 20.7 million MWh
- NonRGGI sources serving load to RGGI decreased emissions 2.1 million short tons of CO2

The report concluded that, "*Monitoring results show that there has been an increase in the amount of nonRGGI electric generation serving load in the RGGI region, combined with a decrease in the CO2 emissions rate of this generation… Emissions leakage may manifest through an increase in CO2 emissions from this aggregate category of nonRGGI electric generation, all other factors being equal."*

According to the Energy Information Administration, in 2019, West Virginia's net generation was 63,925,639 MWh, 92% of which was generated by coal, with eight coal and two natural gas facilities as its top generating sources. This generation resulted in 63,925,639 tons of carbon emissions, with an average of 0.98 tons per MWh generated.

In Ohio, net generation equaled 120,001,126 MWh, 45% of which was generated by coal, 34% by natural gas and 21% by nuclear with four coal, four natural gas and two nuclear facilities as the top generating sources. This generation resulted in 68,040,638 tons of carbon emissions with an average of 0.57 tons per MWh generated.

In Pennsylvania, net generation equaled 228,995,331, 60% of which was generated by nuclear, 22% by coal and 18% by natural gas. This generation resulted in 77,171,426 tons of carbon emissions with an average of 0.34 tons per MWh generated.

PJM addresses market-efficiency constraints on the electric grid by ensuring low-cost supply is evenly distributed across the territory to avoid discriminatory pricing. As the largest exporter of electricity to the grid, with the lowest tons of carbon emitted per megawatt, maintaining Pennsylvania's generation cost-competitiveness within the regional markets will improve air quality, displace older facilities in other states more rapidly and avoid leakage. Although Pennsylvania is responsible for Pennsylvania's emission reductions, emissions are not contained within state borders and promoting Pennsylvania's continued role as a net exporter will result in fewer carbon emissions regionally than curbing the state's generation and export market.

PCIC 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.

Cost-benefit analysis

Climate change is a societal challenge with far-reaching impacts on human health and the environment. PCIC appreciates that cost-benefit analyses were completed on the proposed rulemaking. However, the quantified health benefits included in the report were not related to carbon, but other gases and particulate matter.

The significant economic opportunities associated with investments in renewable technologies were included in the report, but no analysis was included on the inverse economic impact of lost generation, associated tax revenue and jobs.

PCIC recommends an updated, comprehensive regulatory impact analysis be completed and presented to the EQB, as well as a modeling analysis from PJM on the regional impacts of this rulemaking to ensure leakage and locational marginal pricing are considered in the analysis.

Conclusion

The chemical industry is a critical ally in reaching state and national emission reduction goals because it supports more than 25 percent of the U.S. gross domestic product.

From renewable energy technologies, to building efficiency materials and plastic vehicle parts to increase fuel efficiency, chemicals are providing the building blocks for the products and tools we need to combat climate change. The chemical industry is leading on efficiency improvements in processes to drive greater economic output from each energy unit, ultimately helping the world's largest manufacturers transition to a low-carbon economy.

According to the Environmental Protection Agency, from 1970 to 2017, U.S. gross domestic product increased by 262 percent while carbon emissions decreased by 23 percent. Unfortunately, we are losing the battle on global emissions and progress will require uncomfortable and necessary changes in our culture, policy and regulations.

Pennsylvania's chemical manufacturers operate and compete in a global market. Comprehensive policies that consider all impacts and the regional, national and global effects are critical to ensuring we are making real progress and not simply checking a box.

PCIC supports these types of policy decisions at the federal level to ensure maximum participation, benefit to the environment and human health and to help minimize potential negative impacts to the economy. In the absence of federal policy, PCIC supports Pennsylvania's creation of goals, the development of policy to meet those goals and asks for the EQB's consideration on the points laid out in these comments specific to the proposed carbon trading program.

A sustainable policy requires a cultural change and participation from both the public and private sector. PCIC looks forward to participating in future conversations as we continue to move forward in developing long-term solutions to the challenges presented by climate change.

Thank you for your consideration.

Sincerely,

Abby Foster, President
Pennsylvania Chemical Industry Council