



CYNTHIA VODOPIVEC
Senior Vice President
Environmental Health & Safety

January 14, 2021

The Honorable Patrick McDonnell, Chairman
Environmental Quality Board
P.O. Box 8477
Harrisburg, PA 17105-8477

Re: Comments of Vistra Corp on Proposed Rulemaking CO₂ Budget Trading Program

Dear Chairman McDonnell,

Vistra Corp. ("Vistra"), on behalf of its subsidiaries, submits these comments on the Environmental Quality Board's proposal to amend Chapter 145 (related to interstate pollution transport reduction) to add Subchapter E (relating to CO₂ budget trading program) to establish a program to limit the emissions of carbon dioxide (CO₂) from fossil-fuel fired electric generating units (EGUs) located in the Commonwealth and join the Regional Greenhouse Gas Initiative (RGGI).

As an owner/operator of three natural gas-fueled power plants and six gas turbine EGUs in Pennsylvania, Vistra has a substantial interest in regulations that would affect the operation of those units. Vistra is committed to being an industry leader in the effort to address climate change while transitioning our fleet to no-to-low carbon sources.

Vistra supports Pennsylvania joining the RGGI. Many states are currently taking steps to implement various policy decisions to further their own decarbonization and other goals, in part to fill the gap given a lack of national climate policy. Vistra, like an increasing number of other companies, has its own greenhouse gas reduction goals of 60% by 2030 relative to a 2010 baseline and a long-term objective to achieve net-zero carbon emissions.

While Vistra and others advocate for a national, economy-wide solution, we recognize and appreciate Pennsylvania's desire to take steps now to reduce emissions by joining RGGI as a means to place a price on carbon emissions related to energy production within the state.

We see several benefits in choosing to join RGGI: it is a tool that works seamlessly with the existing competitive markets, gives all energy producers an incentive to reduce emissions, and provides a level of regulatory certainty to guide future investment decisions. Importantly, RGGI is a regional energy policy that influences the decisions of all electricity producers, in notable contrast to other state energy policy options like Renewable Portfolio Standards or Zero Emissions Credits that target only a slice of the energy sector. RGGI places a direct cost on a negative externality, and as that cost input flows into the electricity markets, relatively less carbon-intensive electricity sources make more money as a result. In this way, a carbon price provides an incentive to find ways to operate plants and produce power with lower emissions. Notably, 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. RGGI also creates a source of revenue for participating states, which they can use to offset costs to consumers or otherwise direct to further their policy goals.

Given the conversations about how to integrate competitive electricity markets and decarbonization goals, we think that Pennsylvania's decision to join RGGI is a sound approach. Pennsylvania has a long history of strong support for competitive electricity markets and joining RGGI is a way to demonstrate its commitment to decarbonizing its electricity sector and is fully consistent with that position. It does not pick winners and losers, but rather challenges and incentivizes all of us to produce electricity with fewer emissions, and thus orients the whole market in the direction of cleaner resources.

Carbon Pricing in PJM

While we wholeheartedly support state decisions to use carbon pricing mechanisms like RGGI, we recognize that there are practical considerations and imperfections associated with establishing carbon pricing mechanisms within state boundaries, when not all states within the regional wholesale electricity market participate in a similar carbon pricing regime. Instead of providing an incentive for all resources to reduce emissions within the PJM wholesale interstate electricity market, which stretches from the Mid-Atlantic East Coast to Chicago, the subregional implementation of RGGI within only certain PJM states means that emitting resources in the states that participate in RGGI are relatively less competitive than equivalent resources in states that have not joined RGGI. This phenomenon has been dubbed "emissions leakage," because the disparity in carbon compliance costs among states means that resources in RGGI states will tend to be dispatched less than resources elsewhere in PJM, while higher emitting resources in other states take their place. The end result is that while emissions will decrease in RGGI states, there is an offsetting (or greater) emissions increase elsewhere in PJM.

Vistra acknowledges that emissions leakage is a real concern for Pennsylvania, but we believe there are workable solutions to address the issue within the PJM market so that joining RGGI will accomplish Pennsylvania's emissions reduction goals. Pennsylvania's participation in RGGI will both raise the need to consider how to address leakage, and also affect how that leakage manifests in the PJM market. Placing Pennsylvania's sizeable generation fleet under the RGGI carbon compliance framework impacts the PJM market dynamics and the overall impact of RGGI. Importantly, 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.¹ PJM's study results show that the addition of Virginia to RGGI dampens this effect so that on

¹ See <https://www.pjm.com/-/media/committees-groups/task-forces/cpsth/2020/20200114/20200114-item-03-pjm-study-of-carbon-pricing-and-potential-leakage-mitigation-mechanisms.ashx> at 30. The study results show total PJM emissions in a \$0 carbon price case of 278.1 million tons of CO₂, while a low-end RGGI price case (\$6.87/ton) shows total emissions at 279.8 million tons, and a high-end RGGI price (\$14.88/ton) case shows total emissions at 282.8 million tons. The study results also show the breakdown of emissions decreasing in RGGI states and increasing elsewhere in PJM. In the \$0 carbon price case, the RGGI region produces 29.9 million tons of carbon, while the rest of PJM produces 248.2 million tons. In the low-end RGGI price case, RGGI state emissions decrease to 19.3 million tons, while the rest of PJM increases to 260.5 million tons. In the high-end RGGI price case, RGGI state emissions further decrease to 13.8 million tons, while the rest of PJM increases to 269 million tons.

net, RGGI has a negligible impact on total PJM emissions.² 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.³ While leakage still remains an issue even with this expanded footprint, we think 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.

PJM has been hosting a series of stakeholder meetings to discuss these leakage issues and ideas for addressing them.⁴ At a high level, PJM has introduced 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. A one-way border adjustment increases the offer of a subset of generators in states without carbon pricing when the states with carbon pricing are consuming more electricity than they generate. Our impression thus far of these border adjustments is that they 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. But our view is 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.

² See <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/2020/20200225/20200225-item-03-pjm-study-results-additional-scenarios-post-meeting.ashx> at 24. The study cases including Virginia in RGGI (Cases 4 and 5) show total PJM emissions in a \$0 carbon pricing case of 278 million tons, while the low-end RGGI price case shows emissions holding steady at 278 million tons, and the high-end RGGI price case shows total emissions at 277 million tons. Of that, in the \$0 carbon price case, the RGGI region produced 52 million tons while the rest of PJM produced 226 million tons. In the low-end RGGI price case, the RGGI region emissions decreased to 44 million tons while the rest of PJM increased to 234 million tons. In the high-end RGGI price case, the RGGI region decreased to 35 million tons while the rest of PJM increased to 242 million tons.

³ See <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/2020/20200225/20200225-item-03-pjm-study-results-additional-scenarios-post-meeting.ashx> at 58. The study results including Pennsylvania in RGGI show total PJM emissions of 278 million tons in a \$0 carbon price case, which decrease to 266 million tons in a low-end RGGI price case, and further decrease to 259 million tons in a high-end RGGI price case. Of that, in the \$0 carbon price case, the RGGI region produces 129 million tons and the rest of PJM produces 149 million tons. In the low-end RGGI price case, the RGGI region emissions decrease to 103 million tons and the rest of PJM emissions increase to 162 million tons. In the high-end RGGI price case, the RGGI region emissions further decrease to 85 million tons while the rest of PJM emissions increase to 174 million tons.

We compare the percent change in total PJM emissions with the percent change in total PJM generation to evaluate emissions intensity, or put another way, to verify that the decrease in emissions represents cleaner electricity production, and not just less electricity production. Total PJM emissions decrease roughly 4% in the low-end RGGI price case, compared to a roughly 1% decrease in PJM generation production. In the high-end RGGI price case, total PJM emissions decrease roughly 7%, compared to a roughly 2.5% decrease in PJM generation production in the high-end RGGI price case. Generation production decreases are calculated from stated and estimated values on slide 57 (from the graph, we estimate total PJM generation production in the \$0 carbon price case to be roughly 870,000 GWh). Because emissions decrease more on a percentage basis than generation production, we reason that, in this RGGI footprint, carbon pricing has the effect of decreasing the emissions associated with a given amount of electricity production.

⁴ See <https://www.pjm.com/committees-and-groups/task-forces/cpstf.aspx>.

On the other hand, 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.⁵

Vistra recently introduced an alternative proposal for how PJM states could come to a mutually beneficial agreement to mitigate both emissions leakage and cost leakage.⁶ We expect to have a full report on this proposal, including representative modeling results, during the first quarter of 2021. We urge Pennsylvania and other PJM states to consider this approach, as one that can both achieve real and significant emissions reductions within the PJM footprint, as well as address concerns of states that would be negatively impacted by such changes. We believe this approach is responsive to comments from those, like the PA Chamber of Commerce, that suggest Pennsylvania work with PJM stakeholder on enacting carbon pricing across the entire PJM footprint. In an ISO/RTO like PJM, where some states are members of regional carbon price mechanism (like RGGI) and are other states are not, modeling shows that carbon pricing may have a limited impact on emission reductions. For instance, we have sponsored modeling by PA Consulting that suggests a PJM-wide carbon program would reduce emissions by more than 15% relative to the current RGGI footprint. Thus, Vistra'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. Taking a regional approach avoids the need to think of the ISO/RTO footprint as sub-divided into a carbon pricing region and a non-carbon pricing region and then trying to determine when a resource in one of those regions should be deemed to serve load in the other region.

By applying RGGI across the entire PJM footprint, emissions leakage within the footprint would be completely mitigated as all generators reflect carbon compliance costs in their offers. Non-RGGI states would get payments to insulate them from the effects of pricing carbon pricing across the region, and thus to make the case that they can be better off for acquiescing to this leakage mitigation structure.

There are several possible sources of funds to facilitate these payments to non-RGGI states, and our modeling indicates that these sources would completely cover the costs in the near-term and substantially cover the costs in the medium- and long-term:

- Carbon compliance costs from generators in non-RGGI states;
- Incremental RGGI allowance revenues due to increased emissions by RGGI generators that are no longer disadvantaged from uneven application of carbon pricing – this does not include any proceeds RGGI states currently collect with sub-regional carbon pricing;

⁵ See <https://www.pjm.com/-/media/committees-groups/task-forces/cpsth/2020/20200225/20200225-item-03-pjm-study-results-additional-scenarios-post-meeting.ashx> at 73. The study results of the RGGI footprint including Pennsylvania show that a two-way border adjustment increases carbon emissions from 266 million tons to 277 million tons in the low RGGI price scenario, and from 259 million tons to 275 million tons in the high RGGI price scenario. Of this, the two-way border adjustment increases carbon emissions within the RGGI states from 103 million tons to 129 million tons in the low RGGI price scenario, and from 85 million tons to 128 million tons in the high RGGI price scenario. Note the similarity of the two-way border adjustment outcome to the \$0 carbon price case described *supra* in note 4.

⁶ We note that the PJM Independent Market Monitor has proposed a conceptually similar solution. See Monitoring Analytics, LLC, *State of the Market Report for PJM: January through September 2020* (November 12, 2020) at 377. "The states in PJM could agree, if they decided it was in their interests, with the appropriate information, on a carbon price and on how to allocate the revenues from a carbon price that would make all states better off."

- Savings in both RGGI and non-RGGI states from clean energy payments that can decrease when supported generation earns additional revenue
 - Zero emissions credits in IL, OH, and NJ, and
 - Renewable energy credits in most states.

Ultimately, our proposal assumes that PJM states will collectively decide on a set of payments that are mutually agreeable. 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.

Conclusion

In sum, we support Pennsylvania joining RGGI, as a means of using carbon pricing to further the state's decarbonization goals. We think that it is worth considering the impacts of RGGI as they play out in the PJM market, both because that is necessary to seeing the full impact of the state's policy choice, but also because there is real potential to participate in something bigger than the state of Pennsylvania and spark a broader regional effort. We would urge Pennsylvania to consider the approach we have outlined, as one that can both achieve real and significant emissions reductions within the PJM footprint, as well as address concerns of states that would be negatively impacted by such changes. We stand ready to assist Pennsylvania in its consideration of these matters.

Thank you for the opportunity to comment on this proposal.

Sincerely,



Cynthia Vodopivec

Cc:

Asim Haque
Vice President, State Policy and Member Services, PJM Interconnection
Asim.Haque@pjm.com

Jennifer Tribulski
Sr. Director, Member Services, State & Member Services, PJM Interconnection
Chair, Carbon Pricing Senior Task Force
Jennifer.Tribulski@pjm.com

Tim Burdis
Manager, State & Member Services Division, PJM Interconnection
Timothy.Burdis@pjm.com