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PennState Center for Energy Law and Policy

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Independent Regulatory Review Commission

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Dear Secretary McDonnell,

On behalf of the Center for Energy Law and Policy at Pennsylvania State University, I am pleased to submit for DEP's review and comment an interdisciplinary report, "Prospects for Pennsylvania in the Regional Greenhouse Gas Initiative," in response to the Proposed Rulemaking on the CO_2 Budget Trading Program. Along with this letter, I am attaching a copy of our report.

A high-resolution copy of the report can be found online at https://sites.psu.edu/celp/files/2021/01/CELP_RGGI.pdf.

The technical modeling appendix can be found online at https://sites.psu.edu/celp/files/2021/01/CELP_RGGI_Appendix1.pdf.

The Center for Energy Law and Policy was founded in 2018 with a mission to harness Penn State's breadth and depth of scholarly expertise, and the University's culture of interdisciplinary collaboration and stakeholder engagement, to bring an independent and science-informed voice to complex issues at the intersection of energy technology, regulation and society. Over the past several months an interdisciplinary team of Penn State faculty, researchers and students have been examining multiple aspects of Pennsylvania's move to join RGGI. Our report covers the following areas:

- The legal and administrative environment for Pennsylvania joining RGGI (analysis led by Prof. Dan Walters, Penn State Law)
- Impacts on power grid operations, pricing, and the RGGI permit market (analysis led by Prof. Joel Landry, John and Willie Leone Family Department of Energy and Mineral Engineering)
- Impacts of Pennsylvania joining RGGI on local air quality and health outcomes in Pennsylvania (analysis led by Prof. Wei Peng, School of International Affairs and Department of Civil and Environmental Engineering)
- RGGI in the context of Pennsylvania's energy policy environment, and potential avenues for RGGI revenue reinvestment (analysis led by Prof. Dan Mallinson, School of Public Affairs)

In addition to the attached report, the Center for Energy Law and Policy sponsored a series of public webinars this fall addressing different dimensions of Pennsylvania joining RGGI. These webinars were well-attended by stakeholders across the political spectrum in Pennsylvania, as well as by some DEP staff.

Our analysis is wide-ranging in scope, and the main conclusions are outlined below – more information and supporting analysis is in the full report.

RGGI would benefit Pennsylvania's energy economy overall, but the benefits and costs are not evenly distributed. Joining RGGI would likely accelerate the transition already underway away from using coal for power generation in favor of natural gas in Pennsylvania and other states in the wholesale electricity market managed by PJM. Acceleration of this transition is the primary driver of CO_2 emissions reductions from power generation in Pennsylvania. Because the carbon prices established through RGGI would likely be reflected in somewhat higher wholesale power prices in PJM, power generators in Pennsylvania as a whole are likely to see benefits in the form of higher profits. The implications for consumers' energy bills in Pennsylvania are less clear and will depend upon how allowance revenue from Pennsylvania's entry into RGGI are used.

Joining RGGI will likely reduce emissions of multiple pollutants from Pennsylvania power plants, but the potential for emissions leakage is high. Reduction of CO_2 and other air pollutants from Pennsylvania power plants is likely to be accompanied by substantial emissions leakage as power plants from other states are utilized more heavily within the PJM market. The extent of emissions leakage that we estimate varies by pollutant, with CO_2 and SO_2 leakage rates being higher and NO_x leakage rates being lower. Specifically, we estimate that 86% of the CO_2 reductions from Pennsylvania's joining RGGI would be offset by emissions increases in PJM and/or other RGGI states. This leakage rate is consistent with estimates from other states joining RGGI. Even though the emissions leakage rate is high, we find that CO_2 emissions in the multi-state PJM region decline following Pennsylvania joining RGGI and that the climate benefits exceed the monetary costs of participating in RGGI.

Governor Wolf has the legal authority to direct the Pennsylvania DEP to draft and finalize rules for joining RGGI. Our analysis of multiple potential legal areas concludes that the DEP and the Environmental Quality Board (EQB) have ample authority to create and move forward with rules for joining RGGI. New York provides an instructive comparative case to Pennsylvania, as it is the only other state to join RGGI via executive action.

Steps to mitigate emissions leakage by Pennsylvania will need to be taken with care, preferably in coordination with PJM. The high leakage rates for CO_2 and some other pollutants estimated by our power market model raise potential constitutional issues under the dormant commerce clause if Pennsylvania were to take unilateral action to mitigate leakage. This is somewhat untested legal ground, since no RGGI state (nor the RGGI organization itself) has ever proposed or tried to implement leakage reduction measures.

The health-related co-benefits of Pennsylvania joining RGGI are potentially large, and most of these co-benefits to Pennsylvanians may be concentrated in areas that see the largest reductions in power generation from conventional resources. Reductions of air emissions of pollutants other than CO_2 (including oxides of sulfur and nitrogen, fine particulate matter and volatile organic compounds) could reduce health damages associated with air pollution by between 10 percent and 20 percent per year for some pollutants. The bulk of these health-related co-benefits would arise from reductions in emissions of SO_2, NO_x and PM 2.5. We estimate that the monetary value of these reductions in health damages would amount to approximately $1 billion to $4 billion per year over the initial decade of Pennsylvania's RGGI participation.

RGGI does not impose any inherent conflict with major electricity policy measures in Pennsylvania such as Act 129 and the Alternative Energy Portfolio Standard (AEPS). Both the energy efficiency and demand reduction requirements under Act 129 and the incentives for renewable power generation under the AEPS also incentivize fewer greenhouse gas emissions from Pennsylvania's electricity sector. We find that these programs are complementary to RGGI; RGGI by itself, for example, is unlikely to incentivize large amounts of new low-carbon power generation as the AEPS with RGGI does. Some care may be needed to account for cost recovery under Act 129 if utility efficiency programs are commingled with RGGI energy efficiency investments.

With cooperative approaches across state agencies, revenues from the RGGI auction could be re-invested in ways that promote energy innovation and further decarbonization in Pennsylvania. Other RGGI states have taken a variety of approaches to re-invest auction revenues. An interpretation of Pennsylvania's Air Pollution Control Act (APCA) suggests that re-investment in Pennsylvania may be constrained to those areas featuring a strong nexus with air pollution reductions. In light of the large share of Pennsylvania's energy sector to the Commonwealth's economy, an expansive view of re-investment options merits consideration. In the absence of legislative authorization to direct RGGI revenues outside of the Clean Air Fund, we highlight some ways in which a cooperative and cross-agency approach could allow for reinvestment in targeted communities and to spur innovation that can also enhance economic development and environmental quality.

Finally, an important part of the mission of the Center for Energy Law and Policy is to bring science and scholarship to important energy issues in an independent way. Consistent with this mission, our work was funded internally by Penn State, with contributions from a number of different Colleges, Institutes and Campuses. No external funds from any source contributed to our work or to this report. We were thankful to have been able to engage stakeholders to comment on our work through our webinars and follow-up discussions, but no outside party contributed to supporting this research.

Please feel free to contact me if there are any questions about the report's contents or the Center. I can be reached at sab51@psu.edu.

Sincerely,

Seth Blumsack

PennState

Center for Energy Law and Policy

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