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January 14, 2021

Environmental Quality Board
P.O. Box 8477
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RE: CO_2 BUDGET TRADING PROGRAM

On behalf of the members of the Pennsylvania Coal Alliance, please accept the following comments to the Environmental Quality Board and the Independent Regulatory Review Commission regarding the proposed rulemaking amending Chapter 145 to add Subchapter E establishing a CO_2 Budget Trading Program, as published in the Pennsylvania Bulletin on November 7, 2020 (50 Pa.B, 6212).

The Pennsylvania Coal Alliance (PCA) is the principal trade organization representing underground and surface bituminous coal operators in Pennsylvania, as well as other associated companies and businesses that rely on coal mining and a strong coal economy. Nationally, Pennsylvania is the third largest coal producing state, and in 2019 PCA member companies produced nearly 90 percent of the bituminous coal mined in Pennsylvania, which totaled over 48 million tons.[1]

PCA believes that the proposed CO_2 Budget Trading Program regulation will result in dire economic consequences at local and regional levels throughout Pennsylvania. Moreover, PCA contends that the proposed CO_2 Budget Trading Program regulation is based upon flawed power sector and economic modeling, represents a dramatic overstepping of the legal authority granted under the Air Pollution Control Act (ACPA) and the Pennsylvania Constitution, and does not comply with Pennsylvania's Regulatory Review Act.

PENNSYLVANIA'S BITUMINOUS COAL INDUSTRY

Economic Contributions

Bituminous coal mining helps drive Pennsylvania's economy. A report compiled in April of 2019 by the Allegheny Conference on Community Development highlights that the state's coal industry is responsible for supporting nearly 18,000 jobs. The same report points to the industry being a vital contributor to Pennsylvania's economy, providing $4.1 billion annually to the state's economy, and $7 billion in total output. The Pennsylvania coal industry creates this economic value in communities across Pennsylvania, with active mining operations in 15 counties, PCA member company locations in 22 of Pennsylvania's counties, and over $2.5 billion in annual property tax payments.[2] The industry accounts for 25 percent of

[1] https://www.eia.gov/coal/
[2] https://www.dep.pa.gov/Business/Land/Mining/BureauofMiningPrograms/Reports/Pages/2017-Coal-and-Industrial-Minerals-Mining-Activities.aspx

the employment in some regions of the state, and for every direct coal job an additional 1.97 jobs are supported in the Commonwealth. Moreover, the industry in some regions supports upwards of 40 percent of the local tax base, and often serves as a community's financial cornerstone for economic development.[3]

THE IMPACTS OF PENNSYLVANIA JOINING RGGI

Impact on Coal-Fired Generation

Overall, coal accounted for 17 percent of the net electricity generated in the Commonwealth in 2019, which is down significantly from 48 percent just a decade ago.[4] The incessant regulatory pressures experienced by coal-fired generation, coupled with the advent of shale gas over this past decade proved to be a perfect storm that resulted in a transformation of the coal-fired power generation business, and has had profound effects on Pennsylvania coal producers. Over the last decade, Pennsylvania has shuttered more than 50 percent of its bituminous coal mines.[5]

The economic hardships these plant and subsequent mine closures have had on local economies throughout Pennsylvania have been devastating. PCA member companies fully realize the electric power generation market has significantly transformed this past decade and have remained committed to working within this changing market to ensure that coal remains an affordable, reliable, and resilient resource to the grid.

Since Pennsylvania deregulated its electric generation market in 1996, 18 coal-fired electric generating units (EGUs) have deactivated or converted to natural gas, including Bruce Mansfield, a powerhouse at nearly 2,500 MW, which shuttered its doors last November. Since then, Talen Energy Montour has committed to cease coal-fired operations by the end of 2025, and Brunner Island has committed to end its coal use by the end 2028. As a result, nearly 13 GW[6] of coal nameplate capacity has or is scheduled to go offline since deregulation, and only four coal-fired EGUs remain in our state that do not currently have plans to deactivate.

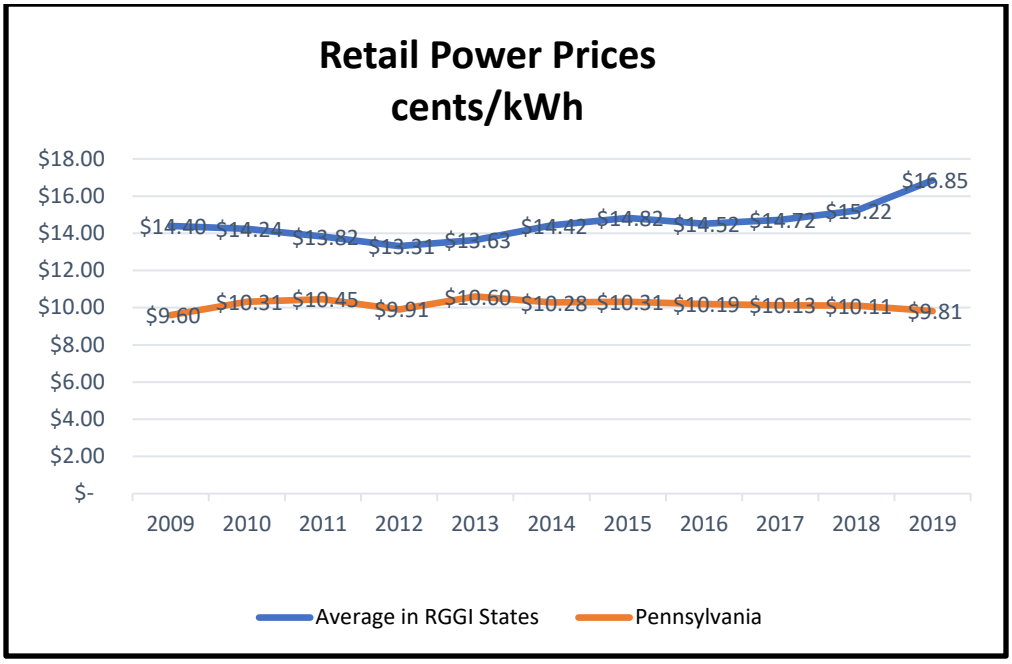
In 2019, twenty-four coal mines from twelve Pennsylvania counties sent nearly nine million tons of high BTU coal, primarily via rail, to the four-remaining coal-fired EGUs. [7] The quality of Pennsylvania's high BTU coal is superior to coal mined in other regions of the United States as the higher the BTU, the lower carbon intensity, leading to fewer CO_2 emissions. If Pennsylvania were to join the Regional Greenhouse Gas Initiative (RGGI), these four EGUs would cease operation, and the production of nine million tons of Pennsylvania-mined coal would be put at risk. As explained below, joining RGGI will not decrease coal-fired generation in PJM, the regional transmission organization (RTO) that manages the competitive wholesale market and electric grid for more than 65 million people in all or part of 13 states plus the District of Columbia. Rather, coal-fired electric generation will shift from Pennsylvania to other PJM states that do not participate in RGGI, like West Virginia and Ohio. The coal fueling EGU's in these states is primarily river-served by nearby logistically advantaged bituminous coal mines producing lower

[3] https://docs.wixstatic.com/ugd/203afb_fdd3aada0fd94deb80441c19d729196b.pdf
[4] https://www.eia.gov/electricity/data/eia923/
[5] https://www.eia.gov/coal/data/browser/
[6] https://www.eia.gov/electricity/data/eia860/
[7] https://www.eia.gov/electricity/data/eia923/

BTU coal, as opposed to Pennsylvania's EGU's which are primarily rail-served. Joining RGGI will shutter coal-fired EGUs in Pennsylvania, will have serious economic consquences to Pennsylvania's bituminous coal industry and the nearly 18,000 jobs it supports, and lead to higher CO_2 emissions in our neighboring PJM states.

RGGI's Impact on Pennsylvania Power Prices

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. [8] While Hawaii and Alaska, respectively, rank #1 and #2 for the most expensive retail electricity, RGGI states closely follow. Connecticut ranks at #3 at 18.66 cents a kWh, closely followed by Rhode Island, Massachusetts, New Hampshire, Vermont, New York, Maine, and New Jersey in descending order. Between 2009 and 2019, the average retail price of electricity has increased in RGGI states by 17.02%, yet in Pennsylvania the increase in cost has been a nominal 2.19%, a $.21 increase from $9.60 in 2009 to $9.81 in 2019. This most recent EIA data clearly illustrates that joining RGGI results in an increase in the price of electricity.



Source:EIA

Confirming the EIA data, a PJM study also found that not only would wholesale electricity prices across the Reginal Transmission Organization (RTO) increase if certain PJM-states implemented a carbon price, but those rate increases would be highest in states imposing a carbon price. [9]

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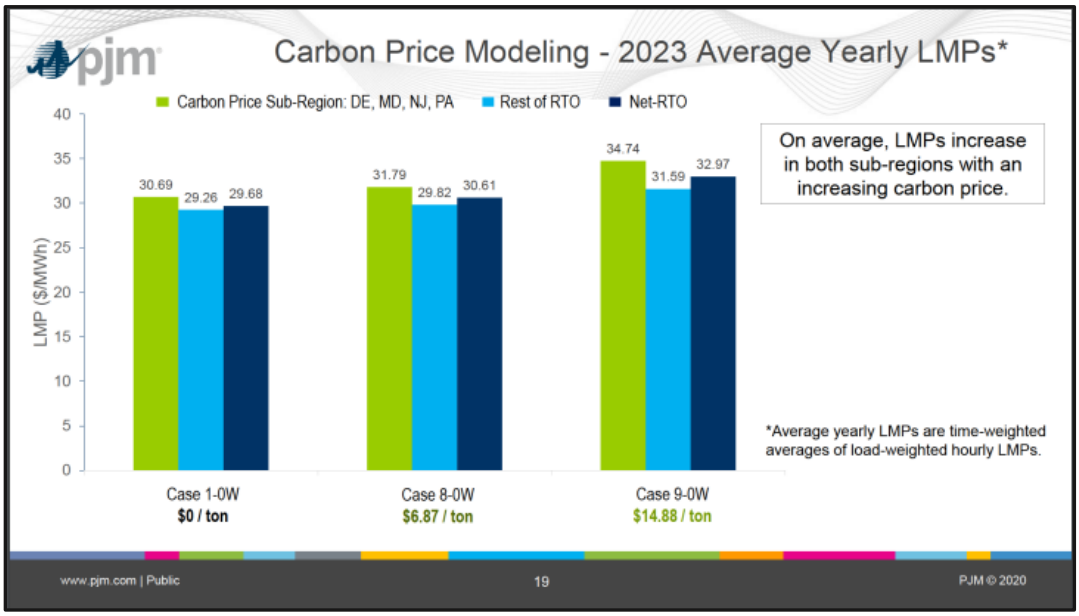
[8] https://www.eia.gov/electricity/state/

[9] http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2020/10-15-20/20201015%20PJM%20Presentation%20to%20PA%20DEP%20AQTAC%20on%20Generation%20Dispatch.pdf



Source:PJM

Pennsylvania has long ranked among the nation's top exporters of electricity. Under RGGI, however, 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.

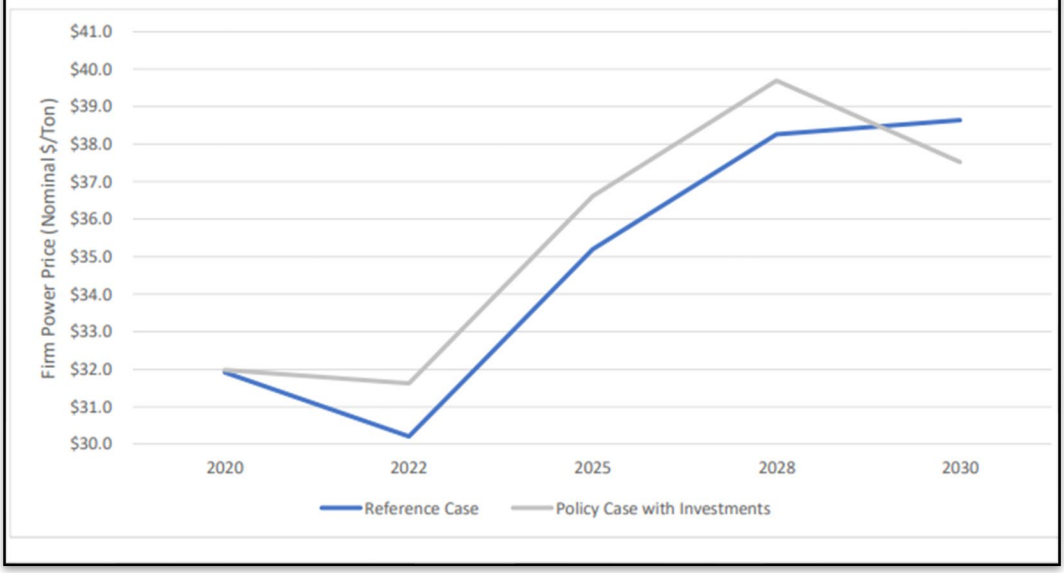
In addition, as discussed in more detail below, ICF's power price modeling does not account for the significant build-out in new transmission that will be required for the magnitude of new renewable generation that is assumed in ICF's modeling. The cost of new transmission will be passed on to the electric ratepayers, resulting in even more economic harm to low-income households, older Pennsylvanians on fixed incomes, and industrial and manufacturing businesses in our Commonwealth.

DEP Has Not Adequately Considered Effects on Small Business

The Regulatory Review Act requires the Department of Environmental Protection (DEP) to analyze the probable effect of a regulation on small businesses. As currently written, Section 24 of the Regulatory Analysis From (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. This discussion overlooks the fact that many of Pennsylvania's commercial electricity consumers are small businesses. They are not electric generators covered by the regulations, but they will be faced with higher electricity costs likely to be passed along by the generators who will have to buy CO_2 allowances. The chair of the Public Utility Commission testified before the Senate Environmental Resources and Energy Committee on June 23, 2020 during a hearing concerning Senate Bill 950 and House Bill 2025 that the PUC had not analyzed how much of this cost will be passed on to consumers. Omitting meaningful analysis of how the regulations will affect electricity costs to small businesses does not meet the requirements of the Regulatory Review Act.

Further, the discussion of electric prices in Section 12 of the RAF focuses entirely on residential electric consumer bills. However, as evident in the graph below, pulled from Section 12 of the RAF, the RGGI regulations will increase power prices each year from 2022 through 2030. Auctioning allowances at the December 2020 quarterly auction price of $7.41/allowance could add between three to nine dollars per megawatt hour to the current price of electricity depending on whether the fuel source is coal or natural gas. There is little discussion of how the regulations will affect the cost of electricity to commercial and industrial customers, particularly those in the iron and steel, chemicals, agriculture, and basic materials industries. The Regulatory Review Act requires a more thorough analysis of the projected increased cost of electricity to Pennsylvania's industrial and commercial customers.

Figure 2. Comparison of Firm Power Prices Through 2030.



Pennsylvania EGU CO_2 Emissions

Joining RGGI is unnecessary to reduce CO_2 emissions. The negative economic consequences, the lost jobs, the closed businesses, the struggling school districts and impacted communities, combined with the potential for increased power prices that are certain to accompany Pennsylvania joining RGGI are unnecessary consequences as Pennsylvania has already made significant reductions in carbon emissions from EGU's. In fact, in 2018, carbon dioxide emissions from fossil-fuel fired EGU's were 33.2% below 2005 emission levels.[10] This reduction is well in advance of Governor Wolf's stated 2025 goal of 26% below 2005 levels and exceeds those levels that would have been required by the Clean Power Plan and Paris Climate Accord.[11] Moreover, these reductions have been accomplished while Pennsylvania has maintained a stable and reliable supply of electricity at competitively priced rates. This can be attributed to the fact that over 95% of Pennsylvania's energy generation comes from in-state low-cost generation sources.

[10] EPA CAMD Data for PA EGU's, 2018 and 2005

[11] See Executive Order: 2019-01 – Commonwealth Leadership in Addressing Climate Change and Promoting Energy Conservation and Sustainable Governance

DEP'S POWER SECTOR MODELING CONTAINS SIGNIFICANT FLAWS

To meet the statutory requirement to justify its efforts to join RGGI, DEP contracted with ICF International (ICF), an energy consulting firm, to perform power sector and economic modeling in support of the proposed rulemaking. ICF has done similar modeling on behalf of every other RGGI state. This modeling contains serious flaws that undermine the justification for the proposed rulemaking thereby failing to meet the requirements of the Regulatory Review Act.

Power sector modeling that is accurate and timely is needed not only to meet the statutory requirements to justify the proposed regulation, but to provide a clear picture of the impact on specific EGU's. The Commonwealth has long ranked among the nation's top producers and exporters of electricity, which has provided Pennsylvanians great economic benefit with family-sustaining employment opportunities and low electricity rates. However, if Pennsylvania joins RGGI, the state's total electricity generation will decline, due to the reduced competitiveness of Pennsylvania coal and natural gas fired EGUs relative to those similarly fired EGUs in neighboring states that do not participate in RGGI. Reduced competitiveness means that Pennsylvania's generators will dispatch less frequently, and the state will be forced to rely on imported electric power.

Modeling Fails to Illustrate Impact of Leakage, Joining RGGI Will Not Reduce CO_2

Governor's Wolf's Executive Order 2019-07 directed DEP , in developing this proposed rulemaking, to "…engage with PJM Interconnection to promote the integration of this program in a manner that preserves orderly and competitive economic dispatch within PJM and minimizes emissions leakage." However, DEP 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 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. Furthermore, DEP has failed to have any meaningful consultation with PJM on the impacts to capacity prices that would result from Pennsylvania joining RGGI,[12] nor has there 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."* [13] This requested analysis has not yet been completed by PJM.

If this proposed regulation is promulgated and Pennsylvania joins RGGI, some EGU's will face higher compliance costs than others on a per megawatt-hour (MWh) basis that will result in their immediate closure, while creating long-term unfavorable economic challenges for others. The price adder, or RGGI tax, based on the $7.41 cost of an allowance from the most recent December 2020 RGGI auction, will likely range from a high of $8.98/MWh for traditional coal-fired EGUs, to a high of $6.87/MWh for older natural gas EGUs, with no guarantee that this price adder will not rise. ICF's modeling did not project the

[12] Section 17 of the RAF merely states DEP will conduct additional modeling with PJM's Carbon Pricing Senior Task Force to better understand and control leakage. PCA does not believe that satisfies the requirements of the Regulatory Review Act.

[13] https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020/2020q1-som-pjm.pdf

price of RGGI allowances to reach above $7.00 until 2025, yet it did so this past December, rendering their modeling assumptions invalid.

Electric power generators in PJM compete against each other in the wholesale electricity market. If Pennsylvania were to join RGGI, all fossil fuel generation in Pennsylvania would be placed at a competitive disadvantage to similar units in western PJM states that do not participate in RGGI. The shuttering of coal and some natural gas EGUs in Pennsylvania will only lead to encouraging and strengthening fossil fuel electric power generation in non-RGGI PJM states. While joining RGGI will reduce CO_2 emissions from Pennsylvania power generators, the impact of CO_2 is not local. Overall CO_2 emissions in PJM will show little to no decline. This phenomenon is referred to as leakage. Power generation from coal and natural gas and its associated emissions are expected to increase in Ohio and West Virginia, which are not part of RGGI, because of the increase in generation costs that RGGI will place on Pennsylvania EGUs. In fact, ICF's own modeling shows that while Pennsylvania's power sector CO_2 emissions will fall by a cumulative 180 million tons between 2019 and 2030 if the state joins RGGI, overall PJM CO_2 emissions will fall by less than 100 million tons, even if allowance revenue is re-invested in renewable sources generation that, as discussed below, are uncompetitive in the PJM capacity auction under the expanded MOPR and can connect to transmission. In percentage terms, absent modeling, and any consideration of the challenges a massive build of new renewable generation will face, total emissions will fall by roughly 20% in Pennsylvania, but just 2.5% in PJM during an eleven-year period. ICF notes in its report that 54% of the emissions avoided in Pennsylvania are made up for by higher emissions elsewhere in PJM, and Penn State's Center for Energy Law and Policy recently stated "…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."[14]

Change in affected carbon emissions relative to the Reference Case

mm tons

Pennsylvania	2020	2022	2025	2028	2030	2019-30
Policy Case	1	(22)	(18)	(19)	(9)	(180)
Policy + Investment Case	1	(21)	(18)	(20)	(12)	(189)

percent change

Policy Case	1.4%	-27.6%	-24.1%	-26.9%	-14.6%	-20.7%
Policy + Investment Case	1.1%	-27.1%	-25.1%	-28.8%	-19.3%	-21.7%

mm tons

PJM	2020	2022	2025	2028	2030	2019-30
Policy Case	(1)	(9)	(9)	(8)	(4)	(87)
Policy + Investment Case	(1)	(9)	(10)	(10)	(7)	(97)

percent change

Policy Case	-0.3%	-2.8%	-3.0%	-2.7%	-1.3%	-2.2%
Policy + Investment Case	-0.2%	-2.6%	-3.3%	-3.3%	-2.4%	-2.5%

Source: ICF

14 https://www.ahs.dep.pa.gov/eComment/DocumentServer.ashx?enc=1xIDOiIZQfBuB5SsbD9T0MrhM3RzfHWY%2flakx%2bwNNuk%3d

Further, on an annual emission assessment, you can see below in the Reference Case and the Policy Case, the difference in CO_2 emissions in 2030 in PJM and the Eastern Interconnection (EI) is negligible, as in the aggregate they remain nearly unchanged.

Affected CO_2 Emissions (Million Short Tons)
Reference Case – Business as Usual (No RGGI)

	2022	2025	2028	2030	2022-2030
MA	9	7	7	6	29
CT	7	6	4	3	20
ME	1	-	0	0	2
NH	1	1	0	0	3
RI	3	2	2	2	10
VT	0	0	0	0	-
NY	32	27	21	20	100
DE	1	1	1	1	4
MD	9	9	10	9	36
VA	24	25	25	24	99
NJ	17	16	14	12	59
PA	78	73	70	60	281
Total 11 state RGGI	104	94	85	79	362
Total CO_2 Emissions PJM	329	315	313	298	1,256
Total CO_2 Emissions SERC	279	287	305	305	1,175
Total CO_2 Emissions EI	1,119	1,114	1,148	1,140	4,522

Source: ICF

Affected CO_2 Emissions (Million Short Tons)
Policy Case – PA Joins RGGI

	2022	2025	2028	2030	2022-2030
MA	9	7	6	6	29
CT	7	5	4	3	20
ME	1	-	0	0	1
NH	1	1	0	0	3
RI	3	2	2	2	10
VT	0	0	0	0	0
NY	32	27	21	20	100
DE	2	1	1	1	5
MD	9	9	11	8	38
VA	25	25	25	24	100
NJ	18	17	15	13	63
PA	57	55	51	51	214
Total 12 state RGGI	163	151	138	130	582
Total CO_2 Emissions PJM	320	306	305	295	1,225
Total CO_2 Emissions SERC	283	289	306	307	1,184
Total CO_2 Emissions EI	1,116	1,109	1,143	1,138	4,506

Source: ICF

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. EIA's 2019 State Electricity Profiles underscores that Pennsylvania's electricity generation was the third largest in the nation, and in 2019 Pennsylvania's electricity exports were the largest of any state at 70.5 million MWh, or 24% of total supply.[15]

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. Maryland and Delaware imported 30 percent and 53 percent, respectively, of their electric retail sales from other PJM states like Pennsylvania and West Virginia.[16] [17] In West Virginia, a non-RGGI PJM state where the primary fuel source for generating electricity is coal, coal-fired generation makes up 91% 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.

Confirming this, the Pennsylvania Coal Alliance commissioned a study from Energy Ventures Analysis to evaluate the practical impact implementing RGGI in Pennsylvania would have on the remaining in-state coal-fired EGUs. While the study pointed to a certain decline and closure of coal fired EGUs in Pennsylvania over time, the study also determined that "PJM generators in nearby states that do not participate in RGGI will gain an advantage over Pennsylvania generators…" and "…coal plant revenues in Ohio and West Virginia will increase by an average of $320 million per year as dispatch shifts from RGGI to its non-RGGI neighbors."

As evidenced in the table below, there is over thirty-four thousand MW of installed coal capacity, and twenty-eight MW of installed natural gas capacity in PJM states that do not participate in RGGI. This does not account for the six permitted, but not yet operating, natural gas plants in Ohio along the Pennsylvania border. For comparison, Pennsylvania has slightly over 8,000 MW of installed coal capacity and 24,000 MW of installed natural gas capacity. Rendering Pennsylvania's power generation uncompetitive by joining RGGI will increase electric generation in other states not subject to the RGGI tax, the previously discussed phenomenon known as leakage, resulting in negligible CO_2 reductions over the PJM generation area and beyond.

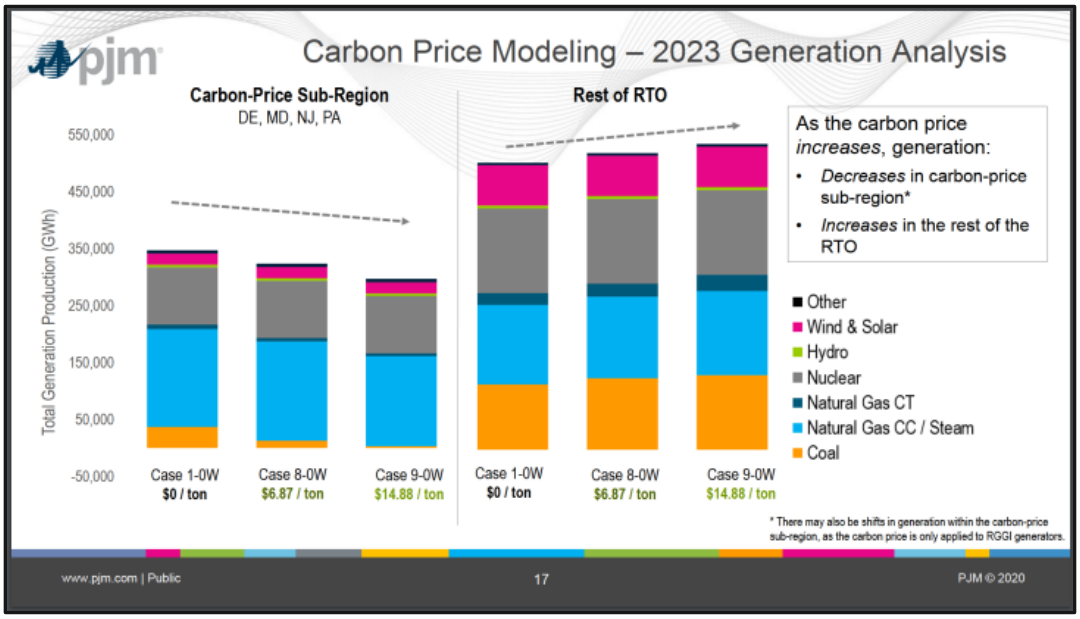
[15] https://www.eia.gov/todayinenergy/detail.php?id=46156&src=email
[16] EIA Net Generation b State at https://www.eia.gov/electricity/data/state/
[17] EIA State Electricity Profiles https://www.eia.gov/electricity/state/

Installed Nameplate Capacity in non-RGGI PJM States

By state	OH	IL	IN	KY	WV	TOTAL
	Capacity (MW)	Capacity (MW)	Capacity (MW)	Capacity (MW)	Capacity (MW)	Capacity (MW)
Coal	11,569	3,845	3,873	2,287	12,558	**34,132**
Gas CC	6,974	2,441	1,879	0	0	**11,294**
Nuclear	2,134	10,517	0	0	0	**12,651**
Gas CT	5,250	7,132	444	1,609	1,104	**15,539**
Gas ST	81	1,064	0	260	0	**1405**
Peaker	216	77	0	0	0	**293**
Oil ST	0	0	0	0	0	**0**
TOTAL	26,224	25,077	6,196	4,156	13,662	**75,315**

Source: EIA

With regards to a specific analysis of leakage by PJM, PCA recommends DEP 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 PA DEP or ICF, that clearly illustrates that leakage would occur if certain states within its footprint implemented a carbon pricing regime. [18] As shown below, total generation and emissions would fall in the sub-region with a carbon price but increase outside the sub-region.

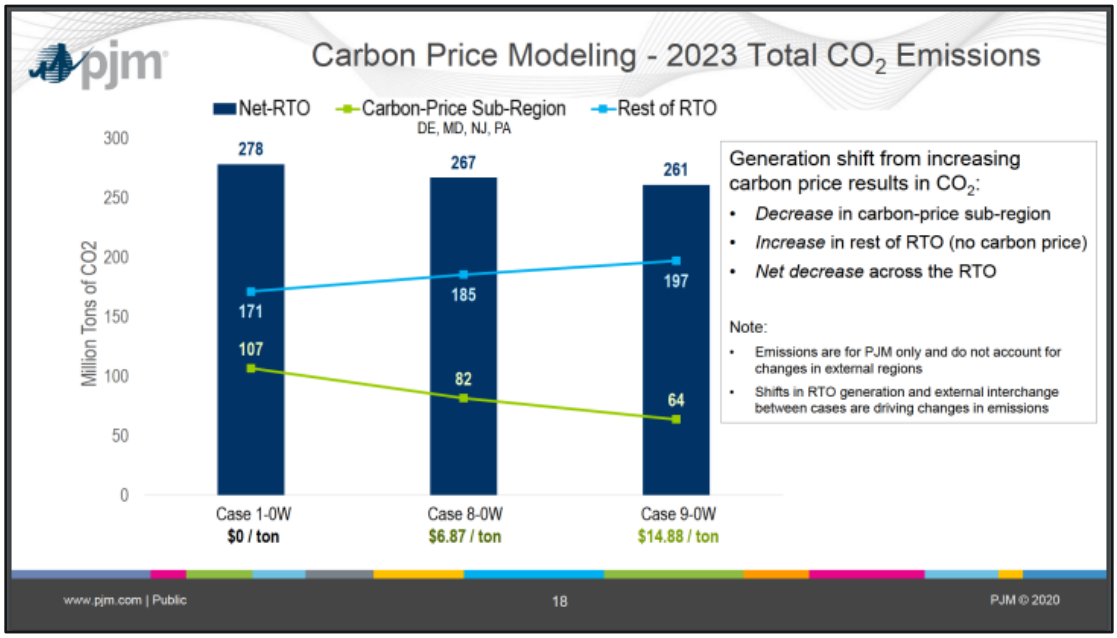


Source: PJM

[18] http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Advisory%20Committees/Air%20Quality%20Technical%20Advisory%20Committee/2020/10-15-20/20201015%20PJM%20Presentation%20to%20PA%20DEP%20AQTAC%20on%20Generation%20Dispatch.pdf

Unsurprisingly, PJM also found that CO_2 emission declines 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.

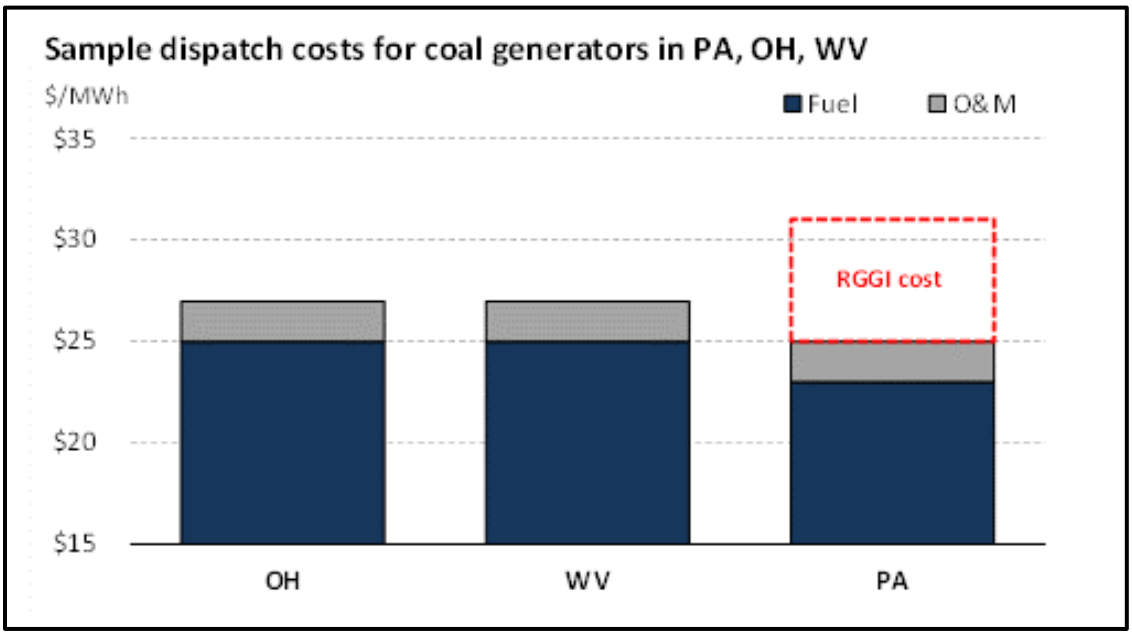
To further supplement this PJM analysis, an October 2020 study released by Energy and Environmental Economics, Inc. (E3) found that the current combination of state renewable portfolio standards and partial carbon pricing within PJM has "significant costs but limited effectiveness in reducing carbon emissions." [19] 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 CO_2 emissions by only 40 million metric tons" relative to a scenario in which these policies are not in place.



Source: PJM

Finally, as previously stated, leakage is a shift in generation from one set of resources to another based on a change in their relative costs. Displayed in the chart below, this additional cost of the RGGI tax puts Pennsylvania's generators at a disadvantage compared to competing generators in neighboring states like Ohio and West Virginia. As an example, if Pennsylvania joins RGGI, the Cheswick coal-fired plant outside Pittsburgh will be at a competitive disadvantage to the Cardinal coal-fired plant that sits just 60 miles to its west in Jefferson County, Ohio. The disadvantage will be solely based on the requirement that Cheswick purchase RGGI allowances, the RGGI tax, to offset its CO_2 emissions while Cardinal does not. The Longview coal plant in Monongalia County, West Virginia, which sits less than one mile from the Pennsylvania border, will also be at a competitive advantage to Cheswick and all Pennsylvania's coal plants because plants West Virginia is not a member of RGGI.

[19] https://www.ethree.com/wp-content/uploads/2020/10/E3-Least_Cost_Carbon_Reduction_Policies_in_PJM-1.pdf pg. 8



Source: Energy Ventures Analysis

ICF's modeling shows that coal generation in Pennsylvania will be an average of 11,473 GWh (80%) lower between 2022 and 2030 in the Policy + Investment Case than in the Reference Case, while overall PJM coal generation will be just 6,683 GWh (4%) lower. This indicates that nearly half of Pennsylvania's lost coal generation is displaced by coal generation in other PJM states. The same is the case for gas generation.

Modeling Fails to Account for Natural Gas Price Sensitivity and Volatility

Natural gas prices are one of the most important drivers of power market outcomes as they tend to set power prices and dictate the dispatch of coal and gas-fired power plants. 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.

PCA believes one possible reason for choosing this pricing assumption is that low natural gas prices reduce the cost of compliance with RGGI. Low natural gas prices produce more coal-to-gas switching and reduce the demand for RGGI allowances, which keeps allowance prices, or tax, low. 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.

However, PCA believes there are several key reasons natural gas prices likely will rise in the coming years. First, increasing exports of liquefied natural gas (LNG) will increase natural gas demand and drive prices higher. Second, the incoming administration of President-elect Joe Biden has signaled that it will

consider banning the practice of hydraulic fracturing on federal lands. Such a ban would reduce the supply of natural gas and result in higher prices. Third, the incoming Biden administration also is likely to implement regulations on CO_2 and/or methane emissions from natural gas production that increase the cost of production and therefore raise prices.

Even if average natural gas prices do not increase appreciably, the ICF 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.

Given the sensitivity of power markets and RGGI compliance costs to natural gas prices, PCA believes the ICF power sector modeling should have contained a natural gas price sensitivity analysis.

Modeling Fails to Account for the Expansion of the Minimum Offer Price Rule (MOPR)

In June 2018 Federal Energy Regulatory Commission (FERC) found PJM's capacity market rules to be unreasonable and unfair, and determined that PJM was artificially suppressing capacity prices. This was because generators could include subsidy revenue - revenue through the sale of renewable energy credits (REC), zero emission credits (ZEC), or any other state subsidy - when determining capacity market offers, effectively offering a lower price than actual cost.

In December of 2019 FERC ordered PJM to expand its Minimum Offer Price Rule (MOPR) to alleviate the market manipulation and artificially suppressed prices, and further directed PJM to expand its existing MOPR to cover all resources that receive or are entitled to receive state subsidies. The goal of the directive was to prevent state-subsidized resources from suppressing clearing prices in PJM's capacity market by setting a technology-specific price floor intended to reflect the actual costs of new and existing generators.

The ruling is widely expected to inhibit the development of renewable resources in PJM. This is because PJM's proposed minimum offer prices for solar, onshore wind, and offshore wind are significantly higher than the capacity market prices that have cleared over the past several years. Renewables and nuclear generation sources account for most of the state subsidies received in PJM.

The expanded MOPR was not included in ICF's modeling because FERC's ruling came after ICF's results were released. DEP should have directed ICF to update its analysis to determine how the MOPR ruling would affect the deployment of renewables in PJM and, more specifically, the impact of joining RGGI on Pennsylvania.

Further regarding the expanded MOPR, ICF's modeling report notes that renewable generation in its Policy + Investment Case is higher than in the Reference Case because revenue that Pennsylvania earns via the sale of RGGI allowances is invested in new wind, solar, and hydro resources through a process it terms "revenue recycling." This state investment would constitute a state subsidy under the expanded MOPR, meaning these new wind and solar resources would likely be unable to clear in PJM's capacity auction. [20] ICF notes that the incremental generation supported by the RGGI allowance revenue will displace coal and natural gas generation, which reduces the demand for RGGI allowances. However,

[20] https://www.pjm.com/-/media/committees-groups/committees/mic/2020/20200528-special-capacity/20200528-item-02a-mopr-rehearing-order-compliance.ashx pg. 13

developers may decide not to build these projects because they are unable to earn revenue in the capacity auction due to the MOPR. This would mean less displacement of coal and gas generation, higher demand for RGGI allowances, and likely higher allowance prices and electricity prices.

Even if developers still opt to build renewable resources and forego capacity market revenue, Pennsylvania ratepayers may be forced to pay twice for capacity – once via the RGGI allowances and again through the capacity auction.

A new analysis that includes the expanded MOPR must be performed to determine its impact on Pennsylvania before any further action is taken on the proposed RGGI regulations.

Modeling Fails to Account for Costs of Renewable Integration & Electric Transmission Build-out

As of the end of 2020, Pennsylvania ranked 23rd in the nation in utility-scale wind and solar capacity with less than 1,600 MW installed. In ICF's Policy + Investment Case, more than 9,300 MW of incremental wind and solar capacity is modeled to be added in the state by 2030, which would represent a dramatic acceleration in renewable development.

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.

In addition, ICF shows no battery storage installations in Pennsylvania. Battery storage is needed to balance the grid when there is high penetration of intermittent renewables like wind and solar. Without it, reliability issues such as those that occurred in California in August 2020 can emerge. California, which has the highest concentration of solar generation in the U.S. but very little battery storage capacity, faced rolling blackouts on consecutive days during a heat wave as solar output fell in the early evening hours. Wholesale power prices spiked close to $1,000 per MWh, up more than 4,000% from earlier in the day.

In addition to the need for battery storage deployment, a renewable build-out of the magnitude assumed in ICF's Policy + Investment Case would require a significant investment in transmission within Pennsylvania. ICF did not included the cost of transmission expansion in its analysis. Ratepayers are responsible for the cost of building new transmission, meaning ICF's analysis likely understated the impact on retail rates of Pennsylvania joining RGGI.

The Midcontinent ISO (MISO), which borders PJM to the west, recently performed a Renewable Integration Impact Study[21] (RIIA) to determine how increasing renewable penetration will affect the grid. The study found that power system stability concerns significantly increase beyond 35% renewable integration and that significant and expensive transmission expansion will be required to mitigate reliability issues.

[21] https://www.lec.leg.mn/2020/MISO%20for%20MN%20LEC%20Feb%202020%20vf.pdf

Building new transmission is difficult, costly, and time-consuming. Last month, an Administrative Law Judge from the Pennsylvania Public Utility Commission recommended that an application to construct a large transmission project in Pennsylvania be denied for lack of need and cited the "detrimental economic and environmental impacts on real estate values, farming practices, natural springs, trout fishing, an elementary school, the Tim Cook Memorial Cross Country Course, businesses, the Owl's Club, local government, and tourism in Franklin County" that the project would have. [22] The owner first submitted its application for the $273 million project nearly four years ago.

PCA recommends that DEP direct ICF to expand its analysis to include costs associated with renewable integration and energy transmission build-out.

Modeling Fails to Account for the Impact of COVID-19 on Electric Generation

Because ICF's analysis was released before the COVID-19 pandemic reached the U.S., its assumptions do not reflect the significant impact that the virus and associated economic turmoil have wrought on Pennsylvania. State-ordered lockdowns of businesses have contributed to monthly retail electricity sales declines of up to 13% compared to a year earlier. In March 2020, the Pennsylvania Public Utility Commission prohibited utilities in the state from shutting off customers' service during the pandemic. Since retail electricity rates are based on an assumed level of customer demand, a meaningful decline in that demand will result in utilities earning less revenue than expected. To account for the decline in revenue, utilities may be forced to raise their rates, which would negatively impact all consumers in Pennsylvania.

PCA recommends that the DEP direct ICF to re-examine its analysis to determine how the COVID-19 pandemic will impact Pennsylvania and adjust its assumptions accordingly.

REQUIREMENTS OF THE AIR POLLUTION CONTROL ACT

Pennsylvania's Air Pollution Control Act (APCA) is quite clear in what requirements must be met before any regulations regarding the control, abatement, prevention or reduction of air pollution are adopted. Section 7 of the APCA requires that public hearings be held in any region of the Commonwealth affected the regulation and requires full stenographic transcripts to be taken of all public hearings. Neither of these requirements have occurred. [23]

DEP and the EQB instead opted to ignore the requirements of the APCA hold a series of virtual hearings, which limited testifiers to five minutes and required a complicated two-step online and email registration process to virtually participate. While Governor Wolf recently acknowledged the disparity in broadband access across Pennsylvania, DEP and the EQB ignored these challenges, and disenfranchised the citizens of the Commonwealth that live in the affected communities as many do not have access to reliable broadband internet. [24]

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[22] https://www.puc.pa.gov/pcdocs/1688185.pdf

[23] https://www.legis.state.pa.us/cfdocs/legis/LI/uconsCheck.cfm?txtType=HTM&yr=1959&sessInd=0&smthLwInd=0&act=787&chpt=0&sctn=7&subsctn=0

[24] https://www.governor.pa.gov/newsroom/gov-wolf-announces-327000-pennsylvanians-will-gain-access-to-high-speed-internet-through-federal-auction/

EQB LACKS LEGAL AUTHORITY TO PROMULGATE THE PROPOSED REGULATIONS TO PARTICIPATE IN THE RGGI PROGRAM

RGGI Would Effectively Be an Unconstitutional Interstate Agreement

The General Assembly must grant specific legislative authority for Pennsylvania to enter into an interstate agreement. The Governor has no independent authority under the Pennsylvania Constitution to agree to an interstate contract of this type.

RGGI functions effectively as an interstate agreement or compact because it is an initiative among states to implement a regional CO_2 emissions budget and allowance trading program. The RGGI Memorandum of Understanding among the states ties the participating states together by creating and implementing both the Model Rule and the regional organization (RGGI, Inc.) to facilitate the administration of the program. The proposed Chapter 145 regulations adopt the Model Rule essentially as written for all practical purposes. The MOU commits states to propose a CO_2 budget trading program for legislative or regulatory approval and then implement an emissions budget and allowance trading program. Each signatory state agrees to fund and contract with RGGI, Inc. to administer the program, including facilitating quarterly auctions of allowances from any state that can be used in any state for compliance purposes. Each "Participating State" as defined in the Model Rule and discussed in the RGGI, Inc. bylaws, appoints two directors (the chair of the state's energy regulatory agency and the head of its environmental regulatory agency or other designee) to the RGGI, Inc. board of directors. RGGI, Inc. then administers the allowance auctions. Pennsylvania will be an active member of the interstate RGGI program regardless whether it signs the MOU or participates as a Participating State.

Therefore, the Chapter 145 regulations and participation in RGGI are effectively an interstate agreement.[25] The Pennsylvania General Assembly must specifically enact legislation to give DEP authority to promulgate the Chapter 145 regulations and participate in RGGI.[26]

RGGI Violates the Compact Clause and the Dormant Commerce Clause of the U.S. Constitution

The proposed regulations also 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

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[25] Each RGGI state recognizes that RGGI functions as an interstate agreement, which is why Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, Rhode Island, and Virginia have all enacted statutes authorizing their participation in RGGI. New York adopted specific legislative authority in 2011 after promulgating RGGI regulations in 2008.

[26] The Pennsylvania Uniform Interstate Air Pollution Agreements Act (35 P.S. § 4101 et seq.), although providing for coordinated administration of air pollution control programs among participating states, does not provide for interstate agreements to create and implement carbon tax and trade regulations. Nor does Section 4(24) of the APCA, under which authority is limited to formulating interstate air pollution control agreements for "submission to the General Assembly." 35 P.S. § 4004(24). Neither statute authorizes the Governor or DEP to enter an interstate agreement such as RGGI without specific legislative authority.

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.

The Air Pollution Control Act Does Not Provide Authority for the Regulations

DEP claims section 5(a)(1) of the APCA, 35 P. S. § 4005(a)(1), which grants the EQB general authority to adopt rules and regulations for the "prevention, reduction, and abatement of air pollution in the Commonwealth," is the statutory authority for this regulation. DEP also contends CO_2 constitutes "air pollution" under Section 3 of the statute, 35 P.S. § 4003.

APCA Section 5(a)(1), however, is not a broad grant of legal authority to promulgate regulations to participate in a market-based, interstate carbon tax-and-trade program. The APCA does not mention such programs. The Pennsylvania Supreme Court has made clear that the delegation of administrative rulemaking authority "must be clear and unmistakable as a doubtful power does not exist." *Eagle Environmental II v. DEP,* 884 A.2d 867 (Pa. 2005). And, contrary to DEP's assertion in the RAF, no court has concluded that CO_2 in the ambient atmosphere constitutes air pollution or is or may be "inimical . . . or injurious to human, plant or animal life or to property which unreasonably interferes with the comfortable enjoyment of life or property" for purposes of the APCA. CO_2 is more properly considered an essential element of life. And even if CO_2 in the atmosphere could be considered to constitute air pollution, the Chapter 145 regulations would not prevent, reduce or abate air pollution, given that CO_2 emissions from Pennsylvania's Budget Sources (i.e., fossil-fuel-fired power generation) are approximately 1% of total U.S. emissions and less than 0.1% of global emissions.

RGGI Would Effectively Be an Unconstitutional Tax

Regulated CO_2 Budget Sources must buy allowances for every CO_2 Budget Unit at a facility. The RAF estimates $300 million in the first year will be generated through auctioning CO_2 allowances. The Emissions Credit Reserve (ECR) in Section 145.382 is intended to ensure that revenue from allowance auctions never falls below a predetermined amount, thus ensuring revenue to the state. DEP intends to allocate this revenue by "investing" 31% of annual proceeds for energy efficiency, 32% for renewable energy, and 31% for greenhouse gas abatement. Only about 5% or less of the proceeds are projected to be used for administrative purposes. Thus, the primary purpose of the proposed regulations is to raise revenue for the Commonwealth, not to significantly or meaningfully reduce CO_2 concentrations in the ambient atmosphere, and emissions from upwind states will increase because of leakage as described earlier. As further evidence of this, there is no discussion in the preamble or RAF regarding how or whether reducing CO_2 emissions will improve or even affect Pennsylvania climate and precipitation. This means the regulations are functionally a tax because they are an enforced contribution to support general revenue.

The Pennsylvania Constitution requires all taxes to originate in the House of Representatives. *Mastrangelo v. Buckley,* 250 A.2d 447 (Pa. 1969). Absent express legislative authority to do so, DEP does not have authority to adopt the Chapter 145 regulations – i.e., a tax – to implement RGGI in the Commonwealth.

There is no Authority to Direct Auction Proceeds Widely

As noted above, DEP modeled an allowance revenue investment scenario with 31% of annual proceeds used for energy efficiency, 32% for renewable energy and 31% for greenhouse gas abatement. Presumably, proceeds from allowance auctions initially would be placed in DEP'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.

CONCLUSION

In conclusion, joining RGGI will shutter coal-fired generation in Pennsylvania, resulting in the displacement of nine million tons of high BTU coal and adversely impacting the twenty-four coal mining operations in twelve different counties that provide coal to Pennsylvania's coal-fired EGUs. These negative impacts expand well beyond the power producers and the coal operations and will lead to the loss of thousands of family-sustaining jobs, will devastate local and regional tax bases, threaten the financial stability of school districts, and will destroy local economies. Any reductions of CO_2 in Pennsylvania will be replaced in PJM states that do not tax their generation, resulting in no environmental gain and rendering the proposed regulation unnecessary. The regulation is not required by federal law and its economic costs vastly outweigh any marginal benefits.

PA DEP and the EQB lack the statutory authority to promulgate the proposed rulemaking establishing a CO_2 Budget Trading Program. The proposed rulemaking violates both the Air Pollution Control Act and the Pennsylvania Constitution, and does not reflect the will of the Pennsylvania General Assembly. Further, the proposed rulemaking and its associated modeling is based on severely flawed data and assumptions that lack significant market considerations, fails to address leakage, and fails to address the negative economic impacts that will occur in many regions of our Commonwealth. The proposed rulemaking would be the most significant change to Pennsylvania's electric power generation landscape since deregulation in 1996 and is so substantial it requires legislative input, review, and approval. Under any reasonable interpretation of Pennsylvania law, or the Regulatory Review Act, the decision on whether and how to establish CO_2 Budget Trading Program or join RGGI lies squarely with the General Assembly.

Thank you in advance for your thorough consideration of the above comments.

Sincerely,

Rachel Gleason
Executive Director
Pennsylvania Coal Alliance