

**Senate Environmental Resources and Energy Committee  
Full Committee Hearing to Examine Pennsylvania's Participation in the  
Regional Greenhouse Gas Initiative**

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**Testimony of:  
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Chairman Yaw, Chairman Santarsiero and members of the Senate Environmental Resources and Energy Committee, I am Rachel Gleason, the Executive Director of the Pennsylvania Coal Alliance (PCA) and I appreciate the opportunity to provide testimony on the Regional Greenhouse Gas Initiative, or "RGGI" as it is commonly referred.

The PCA is the principal trade organization representing underground and surface bituminous coal operators in Pennsylvania, as well as other associated companies whose businesses rely on coal mining and a strong coal economy. Nationally, Pennsylvania is the third largest coal producing state, and PCA member companies produce nearly 90 percent of the bituminous coal mined annually in Pennsylvania, which totaled over 48 million tons in 2019.<sup>1</sup>

Bituminous coal mining helps drive Pennsylvania's economy. A report compiled in April of 2019 by the Allegheny Conference on Community Development highlights that our 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,<sup>2</sup> member company locations in 22 of Pennsylvania's counties, and over \$2.5 billion in property tax contributions. The industry accounts for 25 percent of the employment in some regions of the state, and for every direct coal job an additional 1.97 jobs are supported in the state. Moreover, the

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<sup>1</sup> <https://www.eia.gov/coal/>

<sup>2</sup> <https://www.dep.pa.gov/Business/Land/Mining/BureauofMiningPrograms/Reports/Pages/2017-Coal-and-Industrial-Minerals-Mining-Activities.aspx>

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.<sup>3</sup>

While the PCA does not represent coal-fired electric generating units in Pennsylvania, in 2019 coal as a fuel source for electricity accounts for 45% of our total production, and coal's end use and a strong coal economy is vital to PCA's nearly 200 members companies. As the Executive Director of the PCA, I have been charged by our Board of Directors with advocating for a state energy policy that promotes free and fair markets and provides for a level playing field for all generation sources, and RGGI is contrary to both of those policy goals.

### **Pennsylvania Electric Generation from Coal**

Since Pennsylvania deregulated its electric generation market in 1996, 18 coal-fired electric generating units have deactivated or converted to natural gas, including Bruce Mansfield in Beaver County, a powerhouse at nearly 2,500 MW, which shuttered its doors this past November. One other coal-fired electric generating unit is scheduled to end its coal use by 2029. As a result, 11.4 GW<sup>4</sup> of coal nameplate capacity has or is scheduled to go offline since deregulation.

Following these closures, Pennsylvania will have five coal-fired electric generating units remaining. In 2019, these five remaining coal-fired units utilized over 8.5 million tons of coal extracted by bituminous coal mining operations in Pennsylvania.<sup>5</sup> 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.<sup>6</sup> 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.<sup>7</sup>

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. That

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<sup>3</sup> [https://docs.wixstatic.com/ugd/203afb\\_fdd3aada0fd94deb80441c19d729196b.pdf](https://docs.wixstatic.com/ugd/203afb_fdd3aada0fd94deb80441c19d729196b.pdf)

<sup>4</sup> <https://www.eia.gov/electricity/data/eia860/>

<sup>5</sup> <https://www.eia.gov/electricity/data/eia923/>

<sup>6</sup> <https://www.eia.gov/electricity/data/eia923/>

<sup>7</sup> <https://www.eia.gov/coal/data/browser/>

said, PCA has serious concerns about Governor Wolf's October Executive Order directing our state Department of Environmental Protection to develop regulations joining Pennsylvania to the Regional Greenhouse Gas Initiative (RGGI), and doing so with the absence of economic modeling for all communities and industries impacted, with emission modeling that shows no environmental benefit to joining RGGI, and without the involvement of the General Assembly.

### **RGGI and PJM Overlap**

RGGI is a cap and tax program that requires fossil fuel electric generating units with over 25 MW of installed capacity to purchase allowances for their carbon dioxide emissions, effectively a tax on carbon. The premise behind RGGI is to tax fossil fuel electric generators and then redistribute that tax revenue to subsidize energy efficiency and renewable energy. Implementing RGGI in Pennsylvania will have differing financial implications for each affected generating unit. Some will face higher compliance costs than others on a per MWh basis which will result in the immediate closure of those units, while creating long-term unfavorable economic challenges for others. The price adder, or RGGI tax, will likely range from \$6.65 a MWh for traditional coal electric generating units, to a high of \$5.20 MWh for older natural gas electric generating units. And, based on recent RGGI history, we anticipate that this price adder will continue to rise.

Pennsylvania participates in the PJM Interconnection, a regional transmission organization (RTO), which is a competitive wholesale electricity market that manages the electric grid for more than 65 million people in all or part of 13 states plus the District of Columbia. The operations include ensuring reliability and economic benefits, day-to-day management of the system, and annual capacity auctions. Of the PJM territory, at present only three states, Delaware, Maryland, and New Jersey, participate in RGGI. The remaining RGGI states are New York and New England states, which operate in different RTOs, and could not be more different than Pennsylvania.

In 2018, RGGI states did not create enough electric generation to support their electric retail sales, with over 55 million MWh of their retail electricity sales imported from other states and countries. New York, the largest and only RGGI state with electricity retail sales comparable to that of Pennsylvania's, which has blocked a natural gas pipeline from Pennsylvania and recently called for new transmission lines to Canada, has been importing their electricity from Canada and Pennsylvania – where our Homer City coal-fired electric generating unit has a direct transmission line into New York state. Maryland and Delaware, RGGI states that participate in the PJM RTO, imported 30 percent and 53 percent, respectively, of their electric retail sales from

other PJM states.<sup>89</sup>

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 PJM states that do not have a tax on their electric generation. The shuttering of coal and some natural gas plants in our state only leads to encouraging and strengthening fossil fuel electric power generation in non-RGGI PJM states. As you can see from the table below, of the PJM states that do not participate in RGGI, there is over thirty-four thousand MW of installed coal nameplate capacity, and twenty-eight MW of installed natural gas capacity. This does not account for the six permitted but not yet constructed or operating natural gas plants in Ohio along the Pennsylvania border. For comparison, Pennsylvania has slightly over 8,000 MW of installed coal capacity, 2,000 MW of installed waste coal capacity, and 24,000 MW of installed natural gas capacity.

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

Why is this important? Over the past several months we have heard PA DEP make statements indicating that their \$375,000 contracted modeling with ICF, who has done modeling for all of the other RGGI states, shows that Pennsylvania’s coal plants are going to close by 2030 anyway. While that very well may happen without government interference, why is the Governor and PA DEP advocating for their premature shuttering, within the next eighteen months, when that same modeling shows no long term discernable difference in CO2 emissions in PJM or the Eastern Interconnection in 2030? ICF’s modeling shows less than a 1% decrease in CO2

<sup>8</sup> EIA Net Generation by State at <https://www.eia.gov/electricity/data/state/>

<sup>9</sup> EIA State Electricity Profiles <https://www.eia.gov/electricity/state/>

emissions in 2030 in PJM and the Eastern Interconnection - and that can be directly attributed to the generation shift to fossil fuel generators in the non RGGI PJM states.

Confirming this, the Pennsylvania Coal Alliance commissioned a study from Energy Ventures Analysis to look at the practical impact implementing RGGI in Pennsylvania would have on the remaining five in-state coal-fired electric generating units. While the study pointed to a certain decline and closure of coal-fired generation units in PA, 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.”

We know that massive coal plants like Energy Harbor’s Pleasants plant in West Virginia, with 1,300 MW of installed capacity, and a recent recipient of over \$12.5 million dollars in annual tax breaks, will best any PA coal plant, and likely some natural gas plants too, for competition in PJM’s wholesale electric market. We know that future energy development in Pennsylvania will be compromised, when siting in other states will be preferred over being unfavorably taxed in PA. We know that our state’s economy and the direct and indirect jobs created by power generators will be outsourced, along with emission which, as you can see below, remain nearly unchanged in the aggregate across the PJM and the Eastern Interconnection in 2030.

**Affected CO2 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 CO2 Emissions PJM	329	315	313	298	1,256
Total CO2 Emissions SERC	279	287	305	305	1,175
Total CO2 Emissions EI	1,119	1,114	1,148	1,140	4,522

\*PA DEP Reference Case Results

**Affected CO2 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 CO2 Emissions PJM	320	306	305	295	1,225
Total CO2 Emissions SERC	283	289	306	307	1,184
Total CO2 Emissions EI	1,116	1,109	1,143	1,138	4,506

*\*PA DEP Policy Case Results*

**Innovation**

In 2019, twenty-four coal mines from twelve Pennsylvania counties sent coal, primarily via rail, to Pennsylvania’s coal-fired electric generating units. While smaller amounts of coal came from mines in Butler, Clarion, Clearfield, and Lycoming Counties, to name a few, the majority of that coal came from the southwestern corner of our state in Greene and Washington Counties. Consequently, prematurely shuttering Pennsylvania’s remaining coal plants, those that directly purchase from Pennsylvania coal operations, will significantly impact Pennsylvania’s coal supply chain. Not only will coal-fired electric generation in many of our neighboring PJM states benefit from Pennsylvania joining RGGI, but mining operations in those same states will benefit too, as those states have high concentrations of river-served plants, as opposed to rail-served plants, that are supplied by nearby, logistically advantaged mines. Considering this, we should allow for innovation, and working within and adapting to what has been a changing market to ensure that coal remains an affordable, reliable and resilient resource.

In recognizing the need to develop a smooth transition from the existing coal-fired electric generating units without compromising the coal supply chain, the operator of the largest underground coal mine in North America, located in Greene and Washington Counties, CONSOL Energy, recently embarked on a project focused on designing a 300MW coal-fueled power plant based on advanced pressurized fluidized bed combustion (PFBC) technology with carbon dioxide capture and storage. The project is part of the U.S.

Department of Energy's (DOE) Coal FIRST (Flexible, Innovative, Resilient, Small, Transformative) initiative. In April 2019, CONSOL's project was one of thirteen selected under the Coal FIRST initiative to provide a base conceptual design. In October of the same year, the design was one of seven selected to proceed with a preliminary front-end engineering and design (pre-FEED) study, which was completed last month.<sup>10</sup>

The U.S. Energy Information Administration's 2020 Annual Energy Outlook projects that for the U.S. as a whole, solar and wind energy are forecasted to account for roughly 25% of annual electric power sector generation on average during 2027-2050. However, in the same PJM West region where fossil fuel generation in nearby states will benefit from Pennsylvania joining RGGI, wind and solar are projected to account for just 10% of annual generation on average during the 2027-2050 period. While any future coal electric generating unit must be designed to operate in a more competitive power generation landscape than the current fleet, the comparatively lower availability of renewable resources in our region creates a greater need and opportunity for a coal plant of the future that can take advantage of the abundant resources that our state has been blessed with to provide reliable, baseload power with near-zero emissions.

The pre-FEED study completed last month outlines several strategic advantages, including siting within CONSOL's Bailey Central Preparation Plant site, plant design to utilize waste coal slurry and biomass fuels, plant design for 97% CO<sub>2</sub> capture (resulting in net neutral or negative CO<sub>2</sub> emissions when coupled with biomass co-firing), and location in close proximity to existing transmission lines. Further, though additional characterization is needed to confirm, preliminary work by the Pennsylvania Geologic Survey and the DOE indicates that sub surface conditions in southwestern PA should provide opportunities for deep geologic sequestration of carbon dioxide.

In the next several months, the DOE is expected to issue a funding opportunity announcement and select a subset of Coal FIRST projects to proceed with a full FEED study. Going forward, next steps include identifying technology partners and addressing permitting and project financing. CONSOL's pre-FEED study projected that, assuming financing and permitting schedules are achieved, the advanced PFBC project in southwestern PA could achieve groundbreaking by 2024 and become operational by 2027.

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<sup>10</sup> <https://netl.doe.gov/sites/default/files/2020-05/200512-CONSOL-PFBC-Pre-FEED-Final-Report-89243319CFE000020-FINAL.pdf>

Adapting and innovating during the changing wholesale electric markets is essential to the coal supply chain, and this project is the prime example of why prematurely shuttering coal-fired generation in Pennsylvania, and adversely impacting the supply chain of operators who are working to adapt and innovate, is counter intuitive to Pennsylvania's economy and future energy development in our Commonwealth.