



House of Representatives
COMMONWEALTH OF PENNSYLVANIA

HOUSE DEMOCRATIC POLICY COMMITTEE HEARING
Topic – Climate Change: Should PA Join RGGI?
Haverford Township Building – Havertown, PA
November 1, 2019

AGENDA

- 10:00 a.m. Welcome and Opening Remarks
- 10:15 a.m. Panel One:
- Franz Litz, Principal, Litz Energy Strategies, LLC
 - Gary Helm, Lead Market Strategist, PJM Interconnection
 - Chris Hoagland, Program Manager, Maryland Department of Environment
- 10:45 a.m. *Questions & Answers*
- 11:05 a.m. Panel Two:
- Patrick McDonnell, Secretary, Pennsylvania Department of Environmental Protection
 - John Hanger, President, Hanger Consulting LLC
- 11:25 a.m. *Questions & Answers*
- 11:45 a.m. Panel Three:
- Andrew Williams, Director of Regulatory and Legislative Affairs, U.S. Climate and Energy, Environmental Defense Fund
 - Mark Szybist, Senior Attorney, Climate & Clean Energy Program, Natural Resources Defense Council
 - Tanya McCloskey, Acting Consumer Advocate, Pennsylvania Office of Consumer Advocate
- 12:15 p.m. *Questions & Answers*
- 12:35 p.m. Closing Remarks

REGIONAL GREENHOUSE GAS INITIATIVE

RGGI 101

HOUSE DEMOCRATIC POLICY COMMITTEE HEARING

NOVEMBER 1, 2019



Franz T. Litz
Litz Energy Strategies LLC

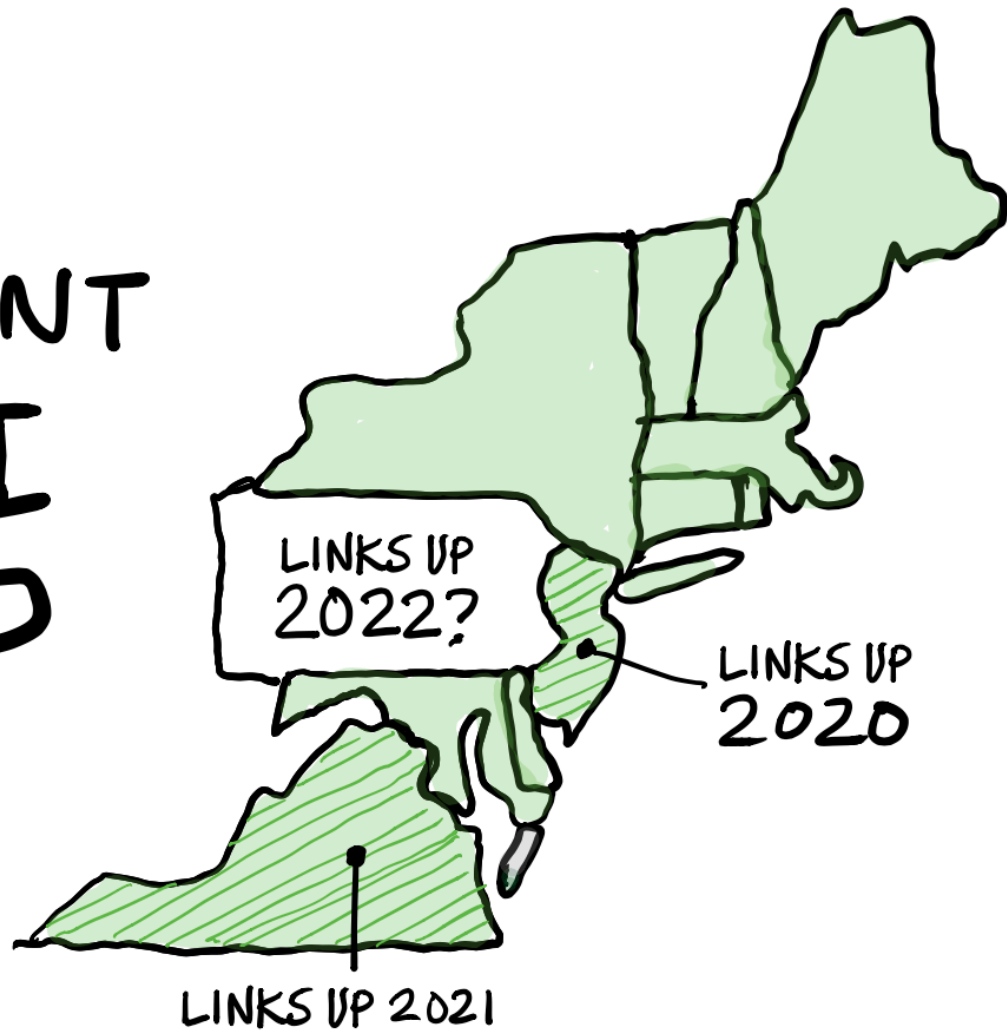


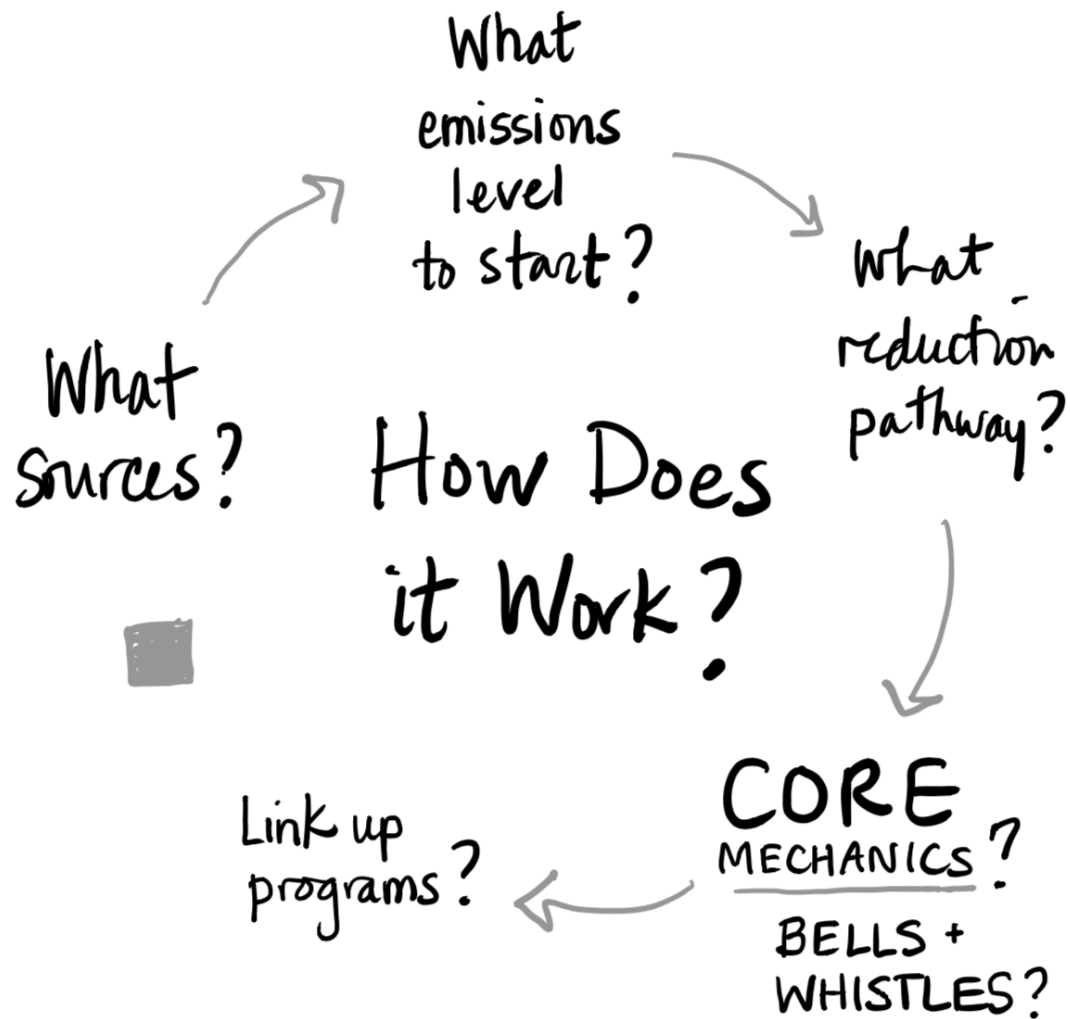
Franz Litz



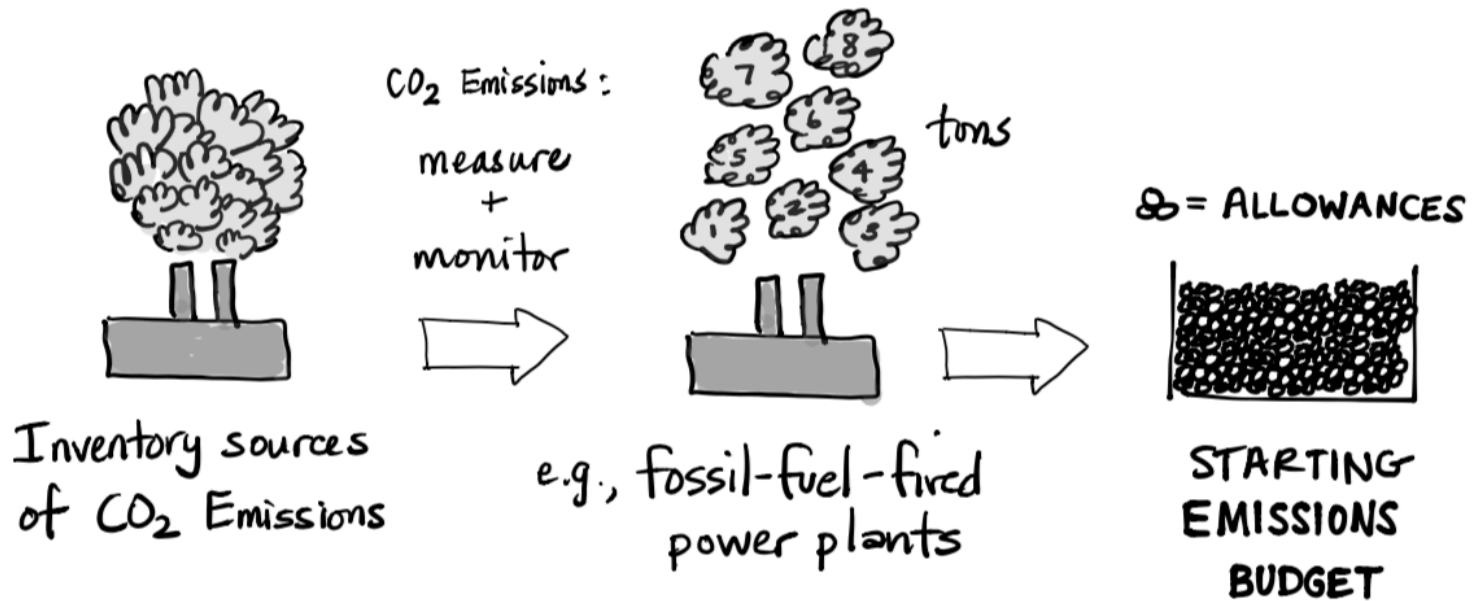
- Lead for New York in initial RGGI development
- Past Facilitator of RGGI Collaborative — Group of utilities, generators, environmental groups supportive of RGGI
- Worked with Commonwealth of Virginia on its program to link with RGGI
- Energy Foundation supported to educate on RGGI.

CURRENT RGGI MAP



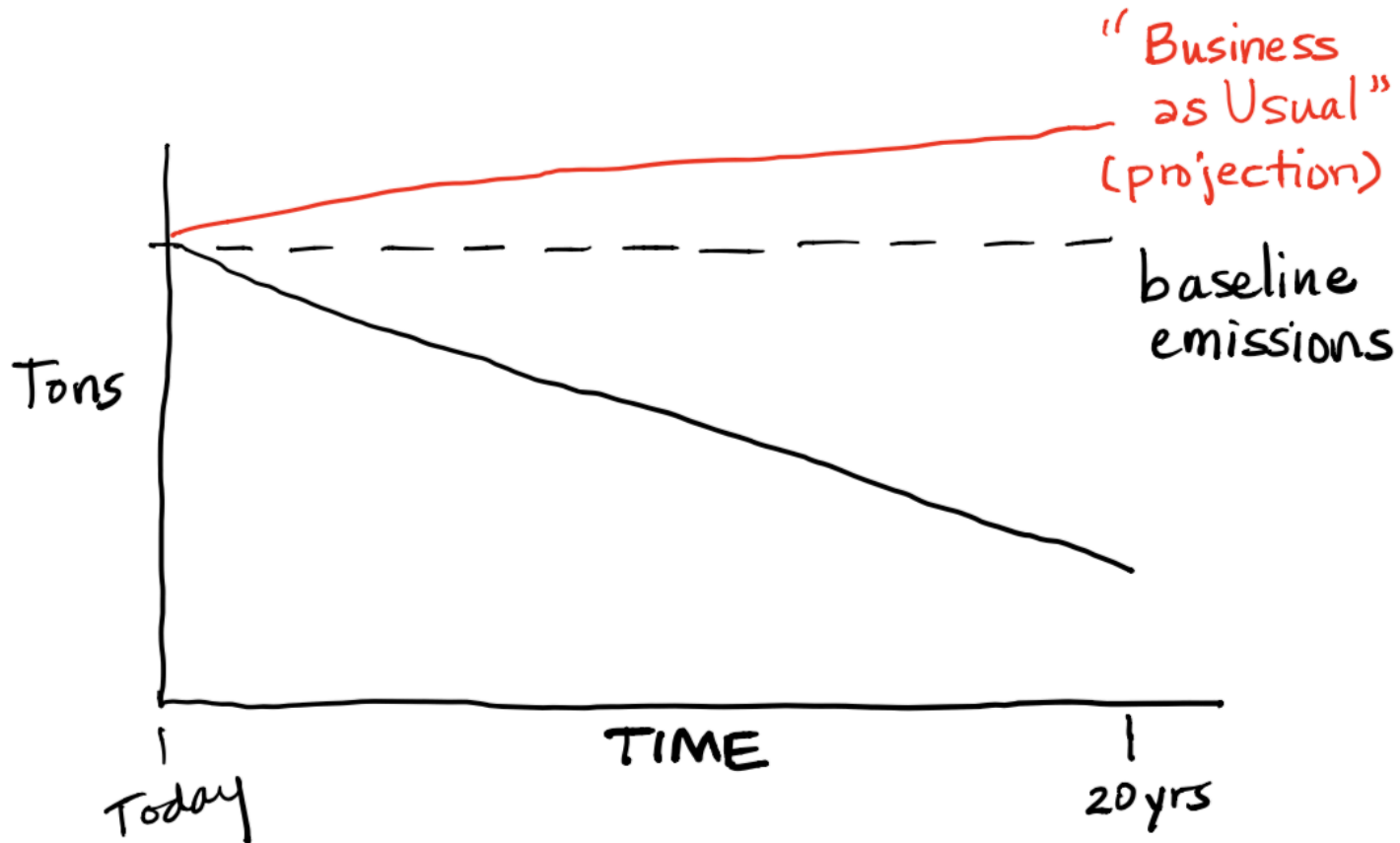


What is the starting point for the cap?



Which sources? What are the current emissions? Where to start?

CAP + RATE OF DECLINE



HOW RGGI WORKS

EMISSIONS BUDGET

The
"Cap" \Rightarrow



\circ = ALLOWANCES



ALLOWANCES ARE DISTRIBUTED
INTO THE MARKETPLACE

ALLOWANCES ARE DISTRIBUTED

DIRECT
ALLOCATION
TO
AFFECTED UNITS
OR
OTHER ENTITIES

AUCTION



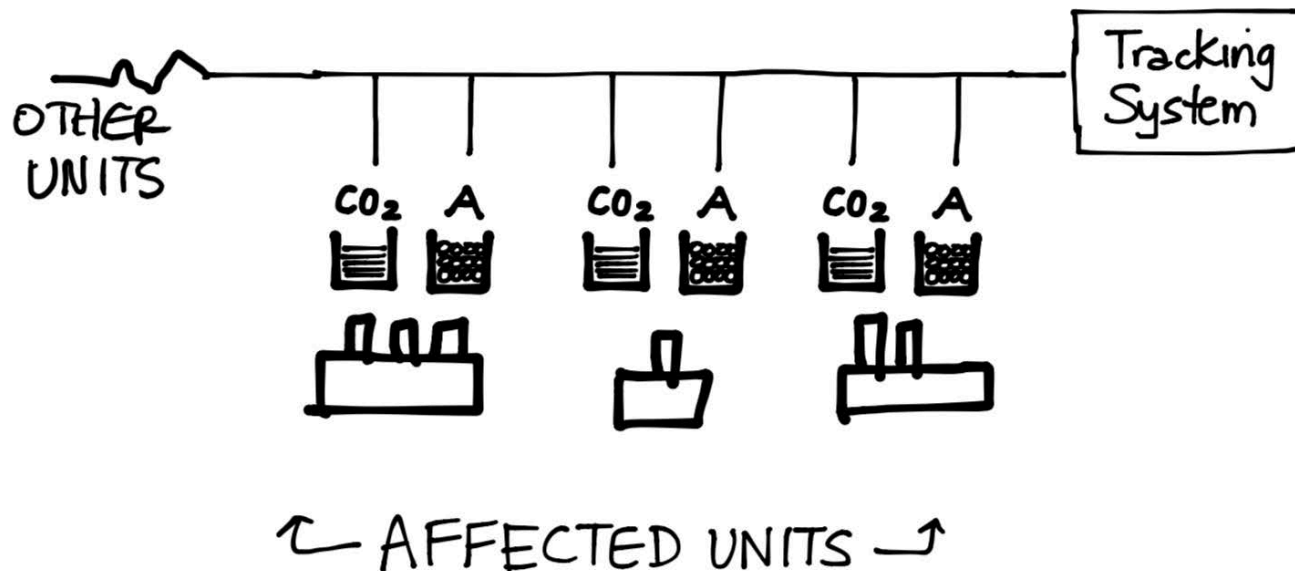
SET ASIDES



CONSIGN TO
AUCTION?

ALLOWANCE DISTRIBUTION MATTERS

COMPLIANCE: FLEXIBLE and SIMPLE



THESE PLANTS MEASURE, MONITOR + REPORT EMISSIONS
AND "TURN IN" ALLOWANCES TO "COVER" EMISSIONS
AT THE END OF EACH COMPLIANCE PERIOD

WHAT IS THE ALLOWANCE PRICE ?



AUCTION
CLEARING
PRICE

and



Trading
↔



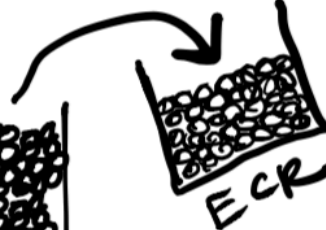
"Secondary Market"

IF THE UNEXPECTED HAPPENS

COST
CONTAINMENT
RESERVE
(CCR)

+

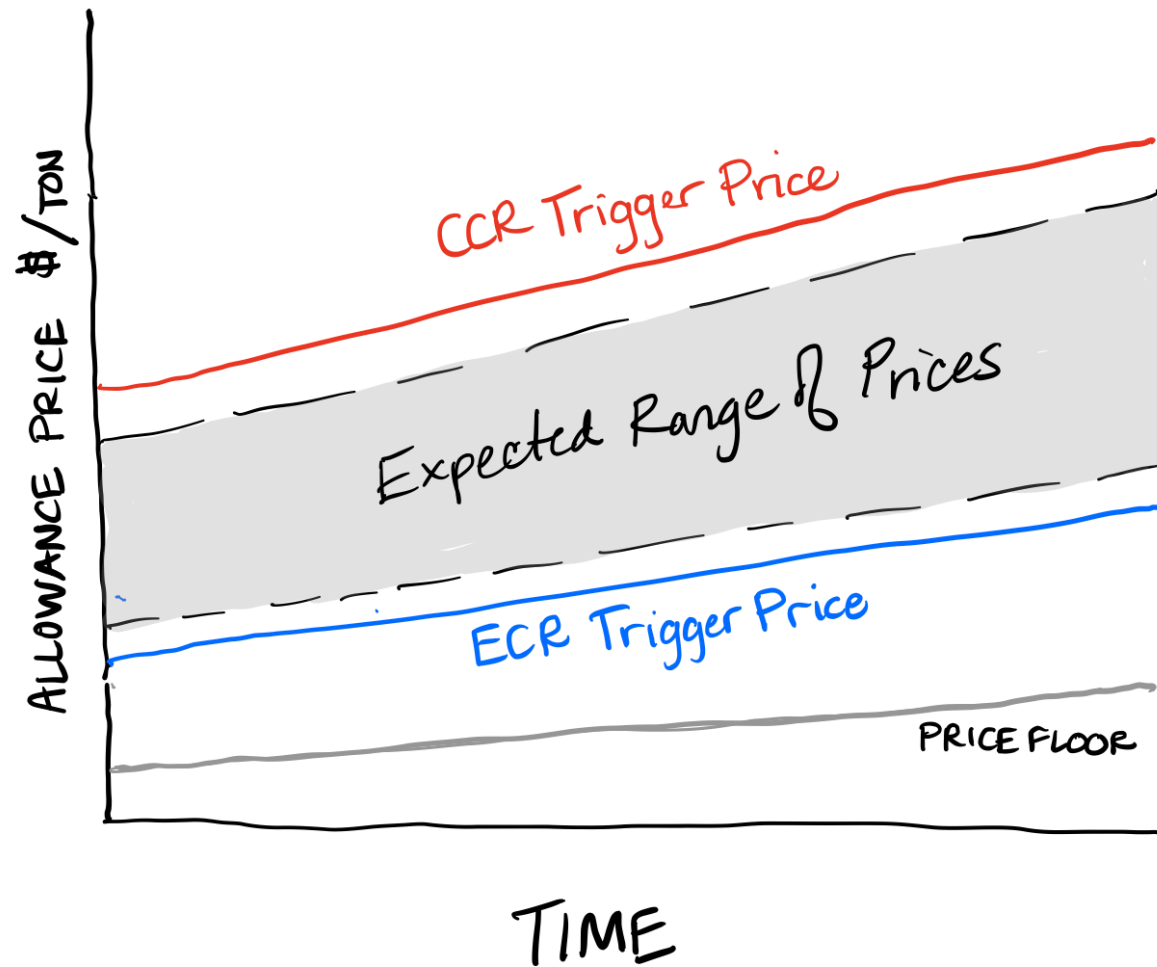
EMISSIONS
CONTAINMENT
RESERVE
(ECR)



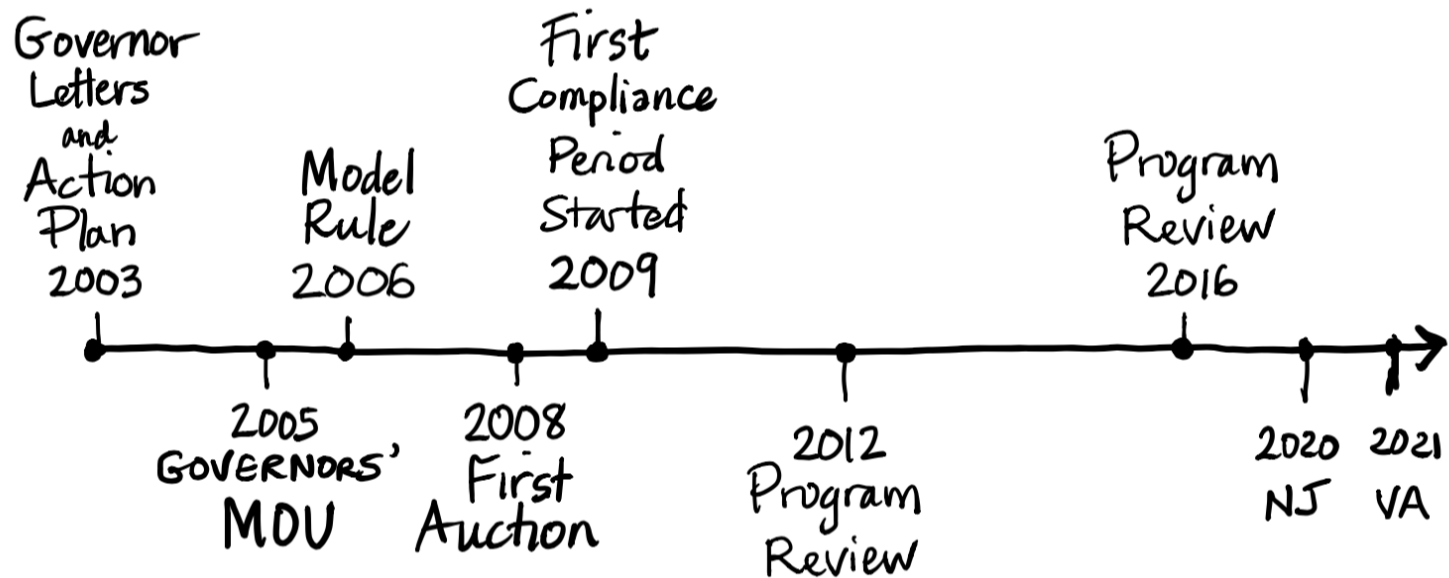
If allowance
prices higher
than expected,
CCR adds
allowances

EMISSIONS
"BUDGET"
(each year)

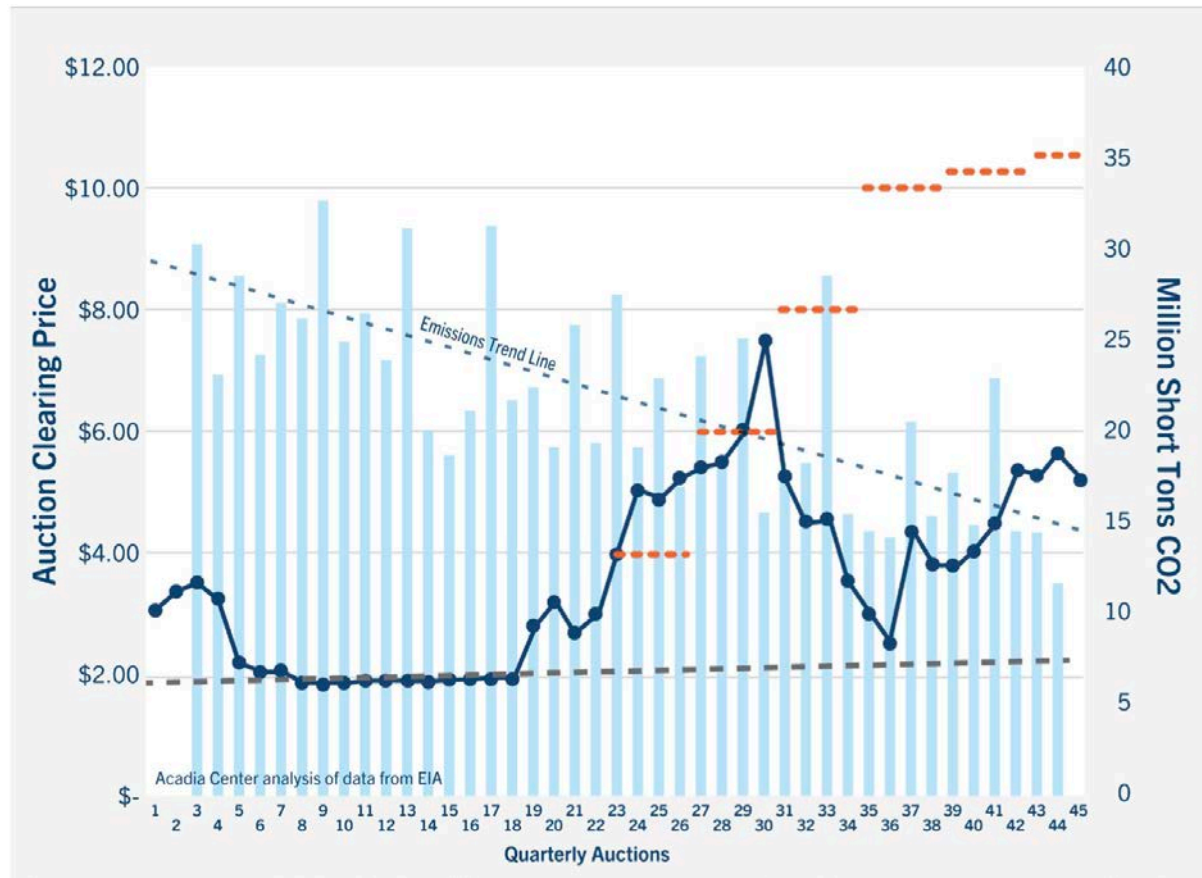
If allowance
prices are lower
than expected,
ECR removes
allowances



TIMELINE



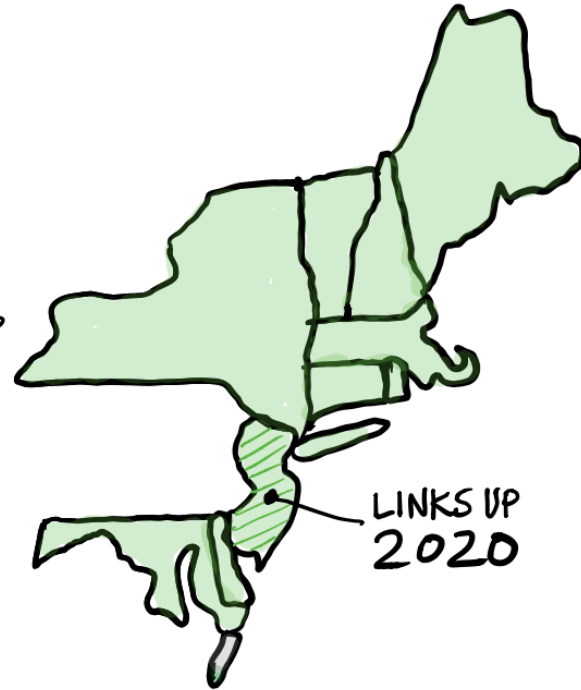
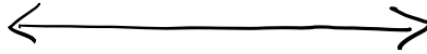
THE TRACK RECORD



Source: Acadia Center, Sept 2019

LINKING

CONSIDERATIONS:
THE VIRGINIA EXAMPLE



- COMPATABILITY
OF DESIGN
(MODEL RULE)

- COMPARABLE STRINGENCY (ALLOWANCE PRICE)

- SHARE IN ONGOING
ADMINISTRATION
(RGGI, Inc., Program Review)

Thank You!



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PENNSYLVANIA HOUSE OF REPRESENTATIVES

DEMOCRATIC POLICY COMMITTEE

Remarks from PJM Interconnection

November 1, 2019

Introduction

PJM Interconnection, L.L.C. ("PJM") is pleased to provide these remarks to the Committee's hearing regarding Pennsylvania joining the Regional Greenhouse Gas Initiative ('RGGI'). PJM is the Federal Energy Regulatory Commission (FERC)-regulated independent Regional Transmission Organization (RTO) responsible for ensuring the reliable operation of the bulk power system serving over 65 million people in all or parts of 13 states plus the District of Columbia. As part of its core function, PJM:

- coordinates and directs the operation of the region's transmission grid, which includes over 84,000 miles of transmission lines;
- administers the world's largest competitive wholesale electricity market; and
- plans regional transmission expansion improvements to maintain grid reliability and relieve congestion.

As the Governor's Executive Order directs the State to engage with PJM, consistent with our past work with the State, PJM underscores its commitment to serve as an independent, neutral, fact-based source of information. To this end, we have already had a call with the Public Utility Commission, and have a call set for next month with the Department of Environmental Protection.

PJM's Experience with RGGI

In PJM the states participating in RGGI are Delaware, Maryland and New Jersey. New Jersey was a participant from 2009 to 2011, and will rejoin at the beginning of next year. RGGI requires fossil fuel-fired electric generators greater than 25 MW in participating states to submit one allowance for each ton of carbon dioxide emitted. As such, the cost to hold a RGGI allowance becomes part of the generators' variable operating cost, much like a fuel cost, which may be reflected in their offers in the energy market.

The energy market is used to secure electricity in real-time and near-term. It operates similar to a stock exchange, in that electricity generators provide offers of electricity and wholesale consumers provide bids for electricity. PJM "clears," matches sellers with buyers, from the lowest- to highest-priced seller until it meets the bid-in demand for electricity. Generator offers incorporate costs for fuel, operations and maintenance, and emissions allowances. Thus generators participating in RGGI, with lower carbon emissions have lower allowance costs, making them more competitive with higher carbon emitting generators. This internalization of emission allowance costs for certain generators in PJM has been occurring since the markets began in 1997, with the Federal Acid Rain Program to control sulfur dioxide

PENNSYLVANIA HOUSE OF REPRESENTATIVES

DEMOCRATIC POLICY COMMITTEE

Remarks from PJM Interconnection

November 1, 2019

emissions, as well as more recent programs to control emissions of nitrogen oxides. The ability to reflect these allowance costs in energy offers enables PJM to maintain orderly dispatch at least cost.

Closing

In its role, PJM does not take a position on whether Pennsylvania should regulate greenhouse gas emissions; however, PJM does wish to serve as an independent source of information for the State. Given PJM's critical role in administering markets and ensuring reliability of the bulk power system, PJM wishes to ensure that any legislative program can be implemented reliably, effectively and at least cost to consumers.

MDE Opening Remarks

Good morning. Thank you to Chairman Sturla, Representative Vitali, and members of the committee for hosting this discussion.

My name is Chris Hoagland, and I am the Program Manager for the Maryland Department of the Environment's Climate Change Program. The mission of Maryland's Climate Change Program is to mitigate the effects of Climate Change in Maryland by reducing greenhouse gas emissions in the State of Maryland, and by serving as a model and proving ground for programs that can reduce emissions everywhere else. As part of that mission, we administer Maryland's participation in the Regional Greenhouse Gas Initiative, or RGGI.

I am excited that the Commonwealth is considering participation in this important and successful program.

RGGI is a carbon dioxide cap-and-invest program for power plants, and was the first program of its kind in the United States. It was established, and continues to be administered, on a bipartisan basis by a diverse set of participating states whose partnership has endured for more than a decade. The RGGI partnership has been so durable because of:

1. The states' commitment to the shared goals of reducing greenhouse gas emissions and improving our economies;
2. The value we place on state sovereignty and consensus, and designing a program that serves the needs of all participating states; and
3. The program's demonstrated success in reducing greenhouse gas emissions, improving public health, and improving our economies.

Pennsylvania has an extraordinary opportunity to make a real difference for the climate and benefit its economy at the same time by participating in RGGI. RGGI has an impressive record of results over the 11 years it has been in effect, delivering numerous benefits to the participating states. Independent analyses have shown that not only has RGGI reduced carbon dioxide emissions in the participating states, it has also generated billions of dollars of economic benefit, has created tens of thousands of jobs, and has substantially improved public health.

A key to RGGI's success is the "cap-and-invest" model, where the allowances created to implement the emissions cap are distributed by the states through a quarterly auction, which raises funds for the states to invest in energy efficiency, renewable energy, and ratepayer assistance. So far, the RGGI states have raised more than \$3.2 billion for their programs, including \$673 million for Maryland.

There are a couple of things to keep in mind as Pennsylvania embarks on this path.

We often refer to RGGI as a regional program, but it is in fact ten independent state programs with "linked" allowance markets, which means we have designed our programs to be consistent enough that the regulated power plants in the different states can all participate in one regional market for carbon dioxide emission allowances.

[MORE ON BACK]

There is no central RGGI authority who tells anyone what to do. The regional organization, RGGI, Inc., performs various administrative functions on behalf of the states, including managing quarterly allowance auctions. The states are sovereign, and choose to work together toward our common goals, while recognizing that each of us has a unique set of needs and interests.

By deciding to work with other states, Pennsylvania would not sacrifice its independence; it would amplify its impact by securing partners who match its efforts. The RGGI approach is very flexible, and has been successfully adapted to a variety of states with very different economies and electricity systems.

Independent analysts have already begun to evaluate the impacts of RGGI in Pennsylvania, finding that it would be effective at reducing carbon dioxide emissions. Analysts have also identified ways Pennsylvania could achieve different objectives through its RGGI design, including achieving greater emissions reductions, reducing electricity prices for consumers, and accelerating clean energy development.

Maryland has benefited greatly from RGGI, and we want our neighbors in Pennsylvania to benefit, as well. Maryland and the other RGGI participating states stand ready to assist Pennsylvania in its efforts to establish a RGGI program. I am happy to answer any questions you may have.



Testimony of Secretary Patrick McDonnell
Department of Environmental Protection
Hearing on Regional Greenhouse Gas Initiative
House Democratic Policy Committee
Friday, November 1, 2019

Good morning Representative Vitali and members of the committee. On behalf of Governor Wolf, I'd like to thank you for the opportunity to participate in this hearing on Pennsylvania's participation in the Regional Greenhouse Gas Initiative (RGGI). Climate change is the most critical environmental threat confronting the world. Promulgating a regulation that links with RGGI will better protect the health and safety of Pennsylvanians by reducing greenhouse gas emissions from power plants.

Carbon emissions are having catastrophic impacts on public health and the climate. Increasingly severe weather patterns are having a devastating effect on Pennsylvanians across our commonwealth. In fact, 2018 was Pennsylvania's wettest year on record, and the storms that came brought pounding rain, causing flood after flood in communities of all sizes and locations. In just 2018, these extreme storms caused an estimated \$144 million in damage to residents' property, and another \$125 million in damage to state-maintained roads and bridges throughout the state. Pennsylvania residents are bearing the brunt of these costs through increased insurance costs and higher taxes to pay for infrastructure repairs.

Each year, the DEP inventories greenhouse gas (GHG) emissions from each source in Pennsylvania. The good news is that GHGs are decreasing, the bad news is that they aren't decreasing fast enough and are actually projected to increase.

Pennsylvania's GHG emissions come from a number of different sectors, including residential, commercial, industrial, transportation, electricity production, agriculture, waste management, and forestry and land use. The sectors with the largest contribution to the Commonwealth's GHG emissions are the transportation, industrial, and electricity production sectors, all of which combine to account for approximately 82 percent of Pennsylvania's gross emissions. Recently, we have seen the industrial sector, which includes natural gas production and coal mining, become the leading emissions producing sector. Historically, the electricity sector was the

leading emissions source but has recently seen decreasing emissions primarily due to flat electricity demand and fuel switching at power plants from coal to natural gas.

Overall, Pennsylvania's emissions have shown a relative decrease of 12 percent in net emissions from 2005 to 2015¹. This is a good start, but it's still not enough. DEP projects overall emissions to increase from 2015 levels by 2025 and even more so by 2050 if no additional policies are implemented². One recent estimate by Resources for the Future approximates that emissions from the power sector will increase 27% between 2020 and 2026³. These projected increases are due to expected closing of some nuclear power plants, which do not produce any carbon emissions, and a slowdown of fuel switching from coal to natural gas. Greenhouse gas emissions must decrease further, not increase, if we are to have any hope of effectively mitigating anthropogenic climate change.

It was in that spirit that Governor Wolf signed Executive Order 2019-01, which states that Pennsylvania shall strive to reduce net greenhouse gas emissions 26 percent by 2025 from 2005 levels, and 80 percent by 2050 from 2005 levels. If all states achieved similar GHG reduction targets, and other nations met comparable goals, climate science analysis suggests that global temperature rise could be kept below the 2-degree Celsius threshold cited by experts as the level beyond which dire consequences would occur, including sea level rise, superstorms, and crippling heat waves.

There are some who may agree that humans are causing climate change but question why Pennsylvanians should take action, especially given that we account for approximately one percent of worldwide emissions and other national or sub-national governments may not be taking action. However, that is simply not true. The Paris Agreement was signed by nearly every country in the world and most are already implementing the actions they committed to doing. This is significant as the Federal Government has re-committed to withdrawing the country from the agreement.

Per person, the United States ranks tenth for the highest greenhouse gas emissions in the world. As one of the top GHG emitting states in the country, Pennsylvania has an obligation to take action to reduce greenhouse gas emissions and has a duty to act to combat climate change.

One promising opportunity for Pennsylvanians to combat climate change is in clean electricity generation. Clean energy jobs now account for one out of every three energy jobs in Pennsylvania and employs more than twice the number of workers as Pennsylvania's entire fossil fuel industry⁴. Pennsylvania is the third highest electricity generating state in the nation and the top electricity exporter. This means that the Commonwealth generates more electricity than it consumes, and the remaining amount is used in other states. Fifty-seven percent of Pennsylvania's electricity comes from coal and natural gas, so there are significant opportunities to reduce emissions from the electricity generation sector.

¹ [DEP Greenhouse Gas Inventory](#)

² [DEP Climate Action Plan](#)

³ <https://www.rff.org/publications/issue-briefs/options-issuing-emissions-allowances-pennsylvania-carbon-pricing-policy/>

⁴ <https://www.e2.org/reports/clean-jobs-pennsylvania-2019/>

Last month, Governor Wolf's Executive Order directed DEP to begin a rulemaking process that will allow Pennsylvania to join the Regional Greenhouse Gas Initiative, with the goal of reducing carbon emissions from the electricity sector.

RGGI is composed of individual carbon budget trading programs in each state, based on each state's independent legal authority. RGGI provides a "model rule" for each state to adopt independently that then "links" with other states to allow for the interstate buying, selling, and trading of auction credits. This allows states to essentially regulate independently, while it increases the supply of available credits to level the price.

Pennsylvania would first set a limit on the amount of carbon pollution that power plants are allowed to emit and sell pollution permits up to this limit through quarterly auctions administered by RGGI Inc. The program would require large carbon-emitting power plants to buy pollution credits from the auction and the number of credits auctioned is lowered each year. One credit is typically equal to one ton of carbon pollution.

The overall emissions cap is reduced over time. In August 2017, the RGGI states announced a commitment for an additional 30 percent cap reduction by the year 2030, relative to 2020 levels.

The RGGI states have reduced power sector CO₂ pollution over 45 percent since 2005, while the region's per-capita GDP has continued to grow. RGGI-funded programs also save consumers money and help support businesses.

- RGGI investments in 2015 are estimated to return \$2.31 billion in lifetime energy bill savings to more than 161,000 households and 6,000 businesses which participated in programs funded by RGGI investments.
- 1.5 million households and over 37,000 businesses which received direct bill assistance. Clean and renewable energy makes up 16 percent of 2015 RGGI investments and 14 percent of cumulative investments.
- RGGI investments in these technologies in 2015 are expected to return \$785.8 million in lifetime energy bill savings to 19,600 participating households and 122 businesses in the region.
- RGGI-driven reductions in pollutant emissions have resulted in over \$5.7 billion in health and productivity benefits in the states participating in RGGI.

RGGI is a well-established and active carbon trading mechanism for which all the Northeast and most of Pennsylvania's neighboring states are participating, which is an example of a successful market-based program that has significantly reduced and continues to reduce emissions through a carbon pricing mechanism.

Governor Wolf's Executive Order directs DEP to develop and present a regulation to the Environmental Quality Board by July 31, 2020. The regulatory process will include significant opportunity for engagement by the General Assembly, key stakeholders, and residents of Pennsylvania who by a wide margin support the state taking concrete steps to address climate change. In fact, Yale studies show that nearly 70% of Pennsylvanians think global warming will harm future generations and 78% of Pennsylvanians support regulating CO₂ as a pollutant.

Looking forward, assuming the Environmental Quality Board adopts the proposed rulemaking, the regulation will be enacted consistent with the requirements of the Regulatory Review Act, which can take upwards of two years.

Opponents of RGGI state that this is a carbon tax or a new government price on carbon. The reality is that there is already a price on carbon, it's just that the wrong people are paying it. RGGI is a low-cost solution to a high-cost problem. With RGGI, electricity generators incorporate the price of carbon pollution into their product. This is in contrast to the current system – in which residents of Pennsylvania are paying for the pollution through worsened air quality, increased health care costs, and climate change impacts to infrastructure, agriculture, and more.

Developing a regulation that links with RGGI states is one of many actions that we plan to take to combat climate change. The impacts of climate change are real and will continue to put Pennsylvanians at risk from increased flooding, higher temperatures, and more. These impacts can be alleviated if all Pennsylvanians—including citizens and businesses, but especially leadership—understand their responsibility to combat and adapt to climate change and take action. The benefits of acting include economic growth, jobs, cleaner air, resilience and more. Pennsylvanians want to provide a prosperous commonwealth with clean air, water, and land for generations to come, now is the time to take action on climate change.

Thank you again for inviting DEP to participate in a discussion on this very important topic. I am available to respond to any questions you may have.



House Democratic Policy Committee Hearing

Establishing a Binding, Declining Carbon Limit for Pennsylvania's Power Sector

November 1, 2019

Testimony of Andrew Williams

Good morning, and thank you very much to Chairmen Sturla and Vitali, members of the House Democratic Policy Committee and all other elected officials present today for hosting this important hearing and for the opportunity to speak to you today.

My name is Andrew Williams and I am Director of Regulatory and Legislative Affairs, U.S. Climate and Energy, at Environmental Defense Fund and I am here representing our over 75,000 members across Pennsylvania. EDF is an international environmental advocacy organization with more than one million members nationwide. We are dedicated to finding innovative solutions to some of the most difficult environmental challenges. Whenever possible, we aim to collaborate with private-sector partners, state and federal leaders, and other environmental organizations interested in capitalizing on market-based solutions to cost-effectively tackle environmental problems.

I've been invited today to provide EDF's perspective on Pennsylvania and the Regional Greenhouse Gas Initiative (RGGI) in light of Executive Order 2019-07ⁱ signed by Gov. Wolf last month to launch the regulatory process for Pennsylvania to move forward with its own program to establish a binding, declining limit on carbon pollution for the power sector that is compatible with RGGI. We strongly support Gov. Wolf's decision to move forward to cap power sector carbon emissions and point out that Pennsylvania has expansive authority pursuant to the Pennsylvania Air Pollution Control Act ("APCA")ⁱ to regulate carbon pollution.

Pennsylvania Needs a Limit on Carbon Pollution

Pennsylvania is the country's third largest emitter of greenhouse gases. While emissions have been falling in the power sector due in part to market drivers and the transition to low- and zero-emitting resources like renewables and natural gas, they are not falling fast enough. And even more importantly, they are projected to start *increasing* again by 2020.ⁱⁱ

¹

35 Pa. Stat. § 4001 et seq.

Pennsylvania emitted roughly 77 million metric tons of carbon pollution from the electric power sector in 2018ⁱⁱⁱ – this is more than one-third of the total carbon pollution in the state, and the fifth dirtiest power sector in the country. Pennsylvania is the only state in the northeast without a hard limit on carbon pollution from the power sector.

Pennsylvania is already feeling the impacts of climate change. Global temperatures have increased by 2 degrees Fahrenheit since the beginning of the 20th Century, leading to an increase in dangerous nor'easters and cyclones; extreme heat, especially in urban areas; and coastal flooding as sea levels rise. Increased warming is likely to adversely impact agriculture, the state's number one industry, further deteriorate air quality, and threaten outdoor recreation, including winter sports. Pennsylvania has the opportunity to be a leader in addressing these issues by acting now to limit carbon emissions.

Regional Greenhouse Gas Initiative and Considerations for Pennsylvania

RGGI is a proven success story with nine states currently in the program and New Jersey and Virginia on the path to participate very soon. The program has been in effect over a decade and has continued to drive emissions reductions and economic benefit under Democratic and Republican governors alike. RGGI states have returned nearly \$3 billion^{iv} to participating states while also reducing overall power sector carbon emissions. According to Electricity Bill Analysis^v from the Analysis Group, the average monthly residential electricity bill will be 35% lower in 2031 than it is today in the current RGGI states due to investments made by member states in energy efficiency and in direct bill assistance.

Other panelists today have discussed the basics of the RGGI program, so I will focus my comments on the significant opportunity and key considerations for Pennsylvania as it begins the regulatory process to deploy a market-based program to reduce carbon pollution from the power sector.

First, we've heard many claim that there is no one size fits all approach on how best to cost-effectively reduce carbon pollution. Market-based programs, like RGGI, recognize this and do not pick winners and losers in the energy sector. Instead, these programs let companies innovate to determine how best to reduce pollution. Through the regulatory process, Pennsylvania can craft an approach that works best for the diverse fuel mix and economy in the commonwealth.

Second, by developing a market-based program, including one that can link with RGGI, Pennsylvania can be part of a larger marketplace to buy and sell emission allowances, which may lower the cost of compliance in Pennsylvania. Pennsylvania would not have to link with RGGI to have an effective market-based program to reduce carbon but as we have seen in many other states, collaborating with other states can lead to cheaper pollution reductions, added flexibility for regulated entities, innovation, and better environmental outcomes. Indeed, analysis has shown that the market-based Acid Rain Program, for example, cost less than a non-market-based approach would have.^{vi} Linking to RGGI does not in any way limit the autonomy of Pennsylvania to devise and implement a Pennsylvania-led solution. What it does is allow the state to capitalize on a large regional marketplace and play a leading role in creating value for the pollution reductions made in Pennsylvania.

As well, new analysis EDF and M. J. Bradley and Associates recently presented at a PJM task force meeting showed that linking with RGGI would enable Pennsylvania to achieve its environmental objectives at low cost while at the same time increasing net exports for the state compared to current levels.^{vii} The analysis finds that linking with RGGI, and designing the program in a way that ensures that all electric power used in PA is covered under the cap, would produce roughly \$200 million in net savings for Pennsylvania in 2030, compared to a business-as-usual scenario without RGGI. These lower costs are driven by reduced new build capital expenditures and declining fossil fuel costs due to more of the existing nuclear fleet remaining in operation. These findings are also consistent with recent analysis by Resources for the Future.^{viii}

Third, the time for action is now. Pennsylvania has been sitting on the sidelines for far too long, and as the climate crisis unfolds before our eyes, it requires urgent action from everyone, including Pennsylvania. The good news is that Pennsylvania can build on planning it has already completed as part of previous compliance work. Governor Wolf's Executive Order sets a deadline of July 31, 2020 for a proposed rule to cut carbon emissions to be presented to the Environmental Quality Board. yet there's no reason not to move forward more quickly, recognizing that there are strong models in the region and significant advantages to PA creating certainty about the state's emissions trajectory on a short-term time horizon, not the least of which is creating regulatory certainty for the affected industries.

As part of the preparation and information gathering process for the Clean Power Plan, the Pennsylvania Department of Environmental Protection (DEP) undertook a robust public engagement effort to solicit public comments on key issue areas to include in the draft state implementation plan. Specifically, DEP extensively evaluated which program design options would work best for the commonwealth, including how to drive investments in energy efficiency. DEP focused on how best to develop a flexible compliance program, including evaluating the advantages of implementing an emissions trading system keyed to the lowest cost options.

In tandem, DEP evaluated the options for regional collaboration, including program designs which would ensure that as emissions from sources covered by the program decreased, there wouldn't be an *increase* in emissions from sources not covered by the program. Although DEP never issued a draft implementation plan, the insights gained from the planning process can enable thoughtful and timely action from DEP to develop a market-based carbon program. Additionally, the RGGI Model Rule provides a valuable framework which Pennsylvania can look to as it designs an approach that works best for Pennsylvania and it should enable the state to move forward swiftly and unveil a draft rule by the first quarter of next year.

PJM Interconnection and Supporting State Policy Frameworks

At the same time that Pennsylvania is moving towards setting a binding, declining emission limit on carbon, conversations in PJM are underway about how PJM can enhance technical capabilities to support state policy choices, including around carbon limits. PJM is a critical manager of power flows in and around Pennsylvania and is actively exploring with its stakeholders what data needs and frameworks can best support state carbon outcomes in the

context of a regional market, and ensure that states that are controlling carbon are seeing those policy choices accurately reflected. This collaborative stakeholder process in PJM is something in which Pennsylvania should engage and can help keep Pennsylvania ahead of the curve as other states and PJM move towards regimes that appropriately allow for an accounting of power sector carbon emissions. There are many strategies available to PA as it designs its carbon program that will ensure states that are part of a carbon program are not disadvantaged in the broader marketplace relative to states that choose not to control their carbon emissions. While PA has many options available today to mitigate such concerns, the parallel PJM process can help provide PA with even more tools in its toolbox.

Conclusion

To conclude my remarks today, EDF commends the committee for hosting this important discussion on a binding emission limit for the power sector in Pennsylvania. By adopting a technology-neutral and outcomes-oriented approach, Pennsylvania can secure the emission reductions necessary at the lowest possible cost and continue to meet the energy needs of the state, securing its role as a zero-carbon net energy exporter. Placing a firm limit on carbon pollution and then letting that carbon pollution “limit” drive a price in the energy market can help ensure the most cost-effective deployment of zero-emission resources and energy efficiency. RGGI is an effective and proven model that Pennsylvania can build on and adapt to meet its climate reduction goals.

Thank you again for the opportunity to testify today.

ⁱ <https://www.governor.pa.gov/newsroom/executive-order-2019-07-commonwealth-leadership-in-addressing-climate-change-through-electric-sector-emissions-reductions/>

ⁱⁱ https://media.rff.org/documents/PA_Fact_Sheet_1906_dis.pdf; <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/20191024/20191024-item-06-carbon-pricing-modeling.ashx>

ⁱⁱⁱ <https://www.eia.gov/electricity/data/state/>

^{iv} https://www.analysisgroup.com/globalassets/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_april_2018.pdf

^v https://www.rggi.org/sites/default/files/Uploads/Program-Review/9-25-2017/Customer_Bills_Results_Overview_09_25_17.pdf

^{vi} <https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.27.1.103>

^{vii} <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/20191024/20191024-item-06-carbon-pricing-modeling.ashx>

^{viii} https://media.rff.org/documents/IB_19-08_5.pdf

TESTIMONY OF JOHN HANGER

Representative Vitali and members of the Committee, thank you for inviting me to testify on this important topic. At the outset, I wish to state again that I do advise Exelon concerning climate and nuclear policy, but I do not speak for Exelon. These remarks are my own and are based on my career working in the private and public sectors to protect public health, to combat climate change, and promote zero carbon electricity generation.

The topic of today's hearing, the Regional Greenhouse Gas Initiative or RGGI, is both timely and vital. Governor Wolf should be commended for beginning the regulatory process for Pennsylvania to join the Regional Greenhouse Gas Initiative, using existing authority to protect Pennsylvania's air quality and public health. The Governor's action to join RGGI indeed would protect Pennsylvania's air quality and public health by making power plants pay modest pollution fees for the millions of tons of carbon dioxide air pollution that they now dump into the atmosphere.

Coal and natural gas power plants in Pennsylvania currently paying nothing for their carbon dioxide air pollution. They use the atmosphere as a free dump to get rid of their carbon pollution. The failure to make coal and natural gas plants to pay something, anything for their massive costs of their carbon pollution is an enormous subsidy to coal and gas plants.

Given the recent debates about nuclear plants that emit no carbon or other air pollutants, it is ironic that coal and gas plants receive the equivalent of a large subsidy, a daily "bailout," as a result of Pennsylvania's failure to make coal and gas plants pay any of the massive costs of their carbon pollution. Homeowners and businesses in Pennsylvania pay much more to have their trash removed than coal and gas plants pay for dumping their carbon pollution into the atmosphere.

The subsidized release of enormous amounts of carbon dioxide pollution that traps heat into the atmosphere is causing the atmospheric concentrations of carbon dioxide to skyrocket. Concentrations of carbon dioxide are now a dangerous 410 parts per million and are rising at an awful rate of about 2 parts per million. Prior to the massive burning of fossil fuels, about now 250 years ago, atmospheric concentrations of carbon dioxide were 280 parts per million.

Just as scientists around the world warned would happen, including from the National Academy of Sciences and Penn State University, global temperatures already have risen about 1.8 degrees Fahrenheit due to releasing massive amounts of heat trapping carbon dioxide into the atmosphere from the burning of coal, oil and gas. Moreover, temperatures are now rising at a rate of nearly one-degree Fahrenheit per decade in Pennsylvania, according to Pennsylvania's official Climate Impact Report that was authored by scientists at Penn State University.

One-degree per decade is a calamitous rate of warming! It will cause massive economic damages and public health costs from longer, more intense, more frequent heat waves, flooding, diseases brought by mosquitos and other vectors and other climate disruptions and disasters.

[MORE ON BACK]

And what is causing these massive costs created by higher temperatures? Coal, oil and gas polluters who pay nothing in Pennsylvania to dump their heat-trapping carbon dioxide pollution into the atmosphere.

Pennsylvania joining RGGI finally would make coal and gas power plants pay a modest fee for their carbon pollution. Forcing these polluters to pay something would lessen the huge subsidy they receive now by paying nothing for their carbon pollution. To protect the public health, to fight climate change, and to have a fair, efficient electricity generation market, the atmosphere must no longer remain a free dump for coal and gas plants in Pennsylvania.

By making carbon polluters pay at least something for their carbon pollution, RGGI starts the process of making more efficient and fairer the market for electricity generation. RGGI sends a more accurate price signal by including the costs of carbon pollution to the generation market. RGGI will help to keep operating existing zero carbon resources like nuclear plants and to build new zero carbon generation facilities like wind and solar. That result will clean the air and fight climate change.

At this point, I must remind that the Three Mile Island (TMI) nuclear unit, a large zero carbon generator, closed only because it had to compete with mainly gas plants that paid nothing for their massive carbon pollution. An unfair market closed TMI.

The closure of TMI was a climate and clean air disaster, removing an amount of zero carbon electricity from the Pennsylvania market that was greater than the electricity generated by all the hydro, wind and solar plants now operating in Pennsylvania. And what will replace TMI's large amounts of zero carbon power? Dirty coal and gas, mainly gas, for many years. Gas is less dirty than coal. But it is dirty. It is not clean, no matter how many slick commercials the gas industry pays to put on television and in media.

The closure of TMI is bad enough. Yet, unfortunately, more closures of nuclear units in Pennsylvania will happen, unless Pennsylvania joins RGGI. Gas generation is not clean, and it is now subsidized because it pays nothing for its massive carbon pollution. Subsidizing gas must stop. Gas and coal polluters must pay for their carbon costs. I urge Pennsylvania to join RGGI as quickly as possible.



House Democratic Policy Committee Hearing

Establishing a Binding, Declining Carbon Limit for Pennsylvania's Power Sector

November 1, 2019

Testimony of Andrew Williams

Good morning, and thank you very much to Chairmen Sturla and Vitali, members of the House Democratic Policy Committee and all other elected officials present today for hosting this important hearing and for the opportunity to speak to you today.

My name is Andrew Williams and I am Director of Regulatory and Legislative Affairs, U.S. Climate and Energy, at Environmental Defense Fund and I am here representing our over 75,000 members across Pennsylvania. EDF is an international environmental advocacy organization with more than one million members nationwide. We are dedicated to finding innovative solutions to some of the most difficult environmental challenges. Whenever possible, we aim to collaborate with private-sector partners, state and federal leaders, and other environmental organizations interested in capitalizing on market-based solutions to cost-effectively tackle environmental problems.

I've been invited today to provide EDF's perspective on Pennsylvania and the Regional Greenhouse Gas Initiative (RGGI) in light of Executive Order 2019-07ⁱ signed by Gov. Wolf last month to launch the regulatory process for Pennsylvania to move forward with its own program to establish a binding, declining limit on carbon pollution for the power sector that is compatible with RGGI. We strongly support Gov. Wolf's decision to move forward to cap power sector carbon emissions and point out that Pennsylvania has expansive authority pursuant to the Pennsylvania Air Pollution Control Act ("APCA")¹ to regulate carbon pollution.

Pennsylvania Needs a Limit on Carbon Pollution

Pennsylvania is the country's third largest emitter of greenhouse gases. While emissions have been falling in the power sector due in part to market drivers and the transition to low- and zero-emitting resources like renewables and natural gas, they are not falling fast enough. And even more importantly, they are projected to start *increasing* again by 2020.ⁱⁱ

¹ 35 Pa. Stat. § 4001 et seq.

Pennsylvania emitted roughly 77 million metric tons of carbon pollution from the electric power sector in 2018ⁱⁱⁱ – this is more than one-third of the total carbon pollution in the state, and the fifth dirtiest power sector in the country. Pennsylvania is the only state in the northeast without a hard limit on carbon pollution from the power sector.

Pennsylvania is already feeling the impacts of climate change. Global temperatures have increased by 2 degrees Fahrenheit since the beginning of the 20th Century, leading to an increase in dangerous nor'easters and cyclones; extreme heat, especially in urban areas; and coastal flooding as sea levels rise. Increased warming is likely to adversely impact agriculture, the state's number one industry, further deteriorate air quality, and threaten outdoor recreation, including winter sports. Pennsylvania has the opportunity to be a leader in addressing these issues by acting now to limit carbon emissions.

Regional Greenhouse Gas Initiative and Considerations for Pennsylvania

RGGI is a proven success story with nine states currently in the program and New Jersey and Virginia on the path to participate very soon. The program has been in effect over a decade and has continued to drive emissions reductions and economic benefit under Democratic and Republican governors alike. RGGI states have returned nearly \$3 billion^{iv} to participating states while also reducing overall power sector carbon emissions. According to Electricity Bill Analysis^v from the Analysis Group, the average monthly residential electricity bill will be 35% lower in 2031 than it is today in the current RGGI states due to investments made by member states in energy efficiency and in direct bill assistance.

Other panelists today have discussed the basics of the RGGI program, so I will focus my comments on the significant opportunity and key considerations for Pennsylvania as it begins the regulatory process to deploy a market-based program to reduce carbon pollution from the power sector.

First, we've heard many claim that there is no one size fits all approach on how best to cost-effectively reduce carbon pollution. Market-based programs, like RGGI, recognize this and do not pick winners and losers in the energy sector. Instead, these programs let companies innovate to determine how best to reduce pollution. Through the regulatory process, Pennsylvania can craft an approach that works best for the diverse fuel mix and economy in the commonwealth.

Second, by developing a market-based program, including one that can link with RGGI, Pennsylvania can be part of a larger marketplace to buy and sell emission allowances, which may lower the cost of compliance in Pennsylvania. Pennsylvania would not have to link with RGGI to have an effective market-based program to reduce carbon but as we have seen in many other states, collaborating with other states can lead to cheaper pollution reductions, added flexibility for regulated entities, innovation, and better environmental outcomes. Indeed, analysis has shown that the market-based Acid Rain Program, for example, cost less than a non-market-based approach would have.^{vi} Linking to RGGI does not in any way limit the autonomy of Pennsylvania to devise and implement a Pennsylvania-led solution. What it does is allow the state to capitalize on a large regional marketplace and play a leading role in creating value for the pollution reductions made in Pennsylvania.

As well, new analysis EDF and M. J. Bradley and Associates recently presented at a PJM task force meeting showed that linking with RGGI would enable Pennsylvania to achieve its environmental objectives at low cost while at the same time increasing net exports for the state compared to current levels.^{vii} The analysis finds that linking with RGGI, and designing the program in a way that ensures that all electric power used in PA is covered under the cap, would produce roughly \$200 million in net savings for Pennsylvania in 2030, compared to a business-as-usual scenario without RGGI. These lower costs are driven by reduced new build capital expenditures and declining fossil fuel costs due to more of the existing nuclear fleet remaining in operation. These findings are also consistent with recent analysis by Resources for the Future.^{viii}

Third, the time for action is now. Pennsylvania has been sitting on the sidelines for far too long, and as the climate crisis unfolds before our eyes, it requires urgent action from everyone, including Pennsylvania. The good news is that Pennsylvania can build on planning it has already completed as part of previous compliance work. Governor Wolf's Executive Order sets a deadline of July 31, 2020 for a proposed rule to cut carbon emissions to be presented to the Environmental Quality Board. yet there's no reason not to move forward more quickly, recognizing that there are strong models in the region and significant advantages to PA creating certainty about the state's emissions trajectory on a short-term time horizon, not the least of which is creating regulatory certainty for the affected industries.

As part of the preparation and information gathering process for the Clean Power Plan, the Pennsylvania Department of Environmental Protection (DEP) undertook a robust public engagement effort to solicit public comments on key issue areas to include in the draft state implementation plan. Specifically, DEP extensively evaluated which program design options would work best for the commonwealth, including how to drive investments in energy efficiency. DEP focused on how best to develop a flexible compliance program, including evaluating the advantages of implementing an emissions trading system keyed to the lowest cost options.

In tandem, DEP evaluated the options for regional collaboration, including program designs which would ensure that as emissions from sources covered by the program decreased, there wouldn't be an *increase* in emissions from sources not covered by the program. Although DEP never issued a draft implementation plan, the insights gained from the planning process can enable thoughtful and timely action from DEP to develop a market-based carbon program. Additionally, the RGGI Model Rule provides a valuable framework which Pennsylvania can look to as it designs an approach that works best for Pennsylvania and it should enable the state to move forward swiftly and unveil a draft rule by the first quarter of next year.

PJM Interconnection and Supporting State Policy Frameworks

At the same time that Pennsylvania is moving towards setting a binding, declining emission limit on carbon, conversations in PJM are underway about how PJM can enhance technical capabilities to support state policy choices, including around carbon limits. PJM is a critical manager of power flows in and around Pennsylvania and is actively exploring with its stakeholders what data needs and frameworks can best support state carbon outcomes in the

context of a regional market, and ensure that states that are controlling carbon are seeing those policy choices accurately reflected. This collaborative stakeholder process in PJM is something in which Pennsylvania should engage and can help keep Pennsylvania ahead of the curve as other states and PJM move towards regimes that appropriately allow for an accounting of power sector carbon emissions. There are many strategies available to PA as it designs its carbon program that will ensure states that are part of a carbon program are not disadvantaged in the broader marketplace relative to states that choose not to control their carbon emissions. While PA has many options available today to mitigate such concerns, the parallel PJM process can help provide PA with even more tools in its toolbox.

Conclusion

To conclude my remarks today, EDF commends the committee for hosting this important discussion on a binding emission limit for the power sector in Pennsylvania. By adopting a technology-neutral and outcomes-oriented approach, Pennsylvania can secure the emission reductions necessary at the lowest possible cost and continue to meet the energy needs of the state, securing its role as a zero-carbon net energy exporter. Placing a firm limit on carbon pollution and then letting that carbon pollution “limit” drive a price in the energy market can help ensure the most cost-effective deployment of zero-emission resources and energy efficiency. RGGI is an effective and proven model that Pennsylvania can build on and adapt to meet its climate reduction goals.

Thank you again for the opportunity to testify today.

i <https://www.governor.pa.gov/newsroom/executive-order-2019-07-commonwealth-leadership-in-addressing-climate-change-through-electric-sector-emissions-reductions/>

ii https://media.rff.org/documents/PA_Fact_Sheet_1906_dis.pdf; <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/20191024/20191024-item-06-carbon-pricing-modeling.ashx>

iii <https://www.eia.gov/electricity/data/state/>

iv https://www.analysisgroup.com/globalassets/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_april_2018.pdf

v https://www.rggi.org/sites/default/files/Uploads/Program-Review/9-25-2017/Customer_Bills_Results_Overview_09_25_17.pdf

vi <https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.27.1.103>

vii <https://www.pjm.com/-/media/committees-groups/task-forces/cpstf/20191024/20191024-item-06-carbon-pricing-modeling.ashx>

viii https://media.rff.org/documents/IB_19-08_5.pdf

TESTIMONY OF THE NATURAL RESOURCES DEFENSE COUNCIL

Mark C. Szybist, Senior Attorney

**Concerning Pennsylvania Participation in
the Regional Greenhouse Gas Initiative**

Before the House Democratic Policy Committee



Havertown, Pennsylvania

November 1, 2019

Chairman Sturla, Representative Vitali, members of the Committee: thank you for inviting me to comment on the prospect of Pennsylvania's developing a regulation to limit carbon pollution from power plants and participate in the Regional Greenhouse Gas Initiative, or RGGI.

My name is Mark Szybist and I am a senior attorney for the Natural Resources Defense Council (NRDC), a member-based non-profit environmental organization with more than 90,000 members and activists in Pennsylvania. NRDC works in the U.S. and internationally to protect the air, water, and land that support human health and long-term economic growth. My job is to advocate for Pennsylvania laws and policies that reduce emissions of greenhouse gases and other air pollutants and create an equitable, sustainable, and prosperous clean energy economy.

The following testimony:

- First, by way of background, will explain how Pennsylvania's power sector was restructured, or "deregulated" under the Electricity Generation Customer Choice and Competition Act of 1996 ("Competition Act").¹ Because of the Act, the regulation of Pennsylvania's power sector occurs largely through the operation of wholesale power markets designed and administered by the PJM Interconnection. These markets do not price carbon dioxide, its climate impacts notwithstanding; that begs the need for Pennsylvania and other PJM states to price and limit carbon.
- Second, will provide a brief explanation of how RGGI works to cap emissions of carbon dioxide and invest proceeds from the sale of carbon allowances, thereby creating a more level playing field for renewables and nuclear power, creating thousands of jobs, generating funds for investment in energy efficiency and other consumer benefit programs, and adding billions of dollars of value to the participating states' economies.

¹ 66 Pa.C.S.A. § 2801 et seq.

- Third, will explain how power sector modeling by NRDC shows that carbon limits are critical to ensuring reductions of carbon pollution from Pennsylvania power plants in the near term, but that such limits must be accompanied by an increase in renewable energy and energy efficiency goals to cut carbon in a way that maximizes health and jobs benefits and builds a solid foundation for longer-term cuts.

Pennsylvania's Competition Act and the problem with PJM's competitive power markets

The Competition Act is arguably Pennsylvania's most important energy law. Enacted in 1996, it "restructured" Pennsylvania's electric power industry by dividing the generation and distribution of electricity into separate businesses. The Act was part of a wave of regulatory reform in the 1990s that sought to introduce competition in various utility functions, following the economic deregulation – seen then as successful – of many other industries, from airlines to telecommunications.²

Before the Competition Act, Pennsylvania's electric utilities were "vertically integrated," meaning that they both built and operated power plants and distributed electricity to homes, businesses, and factories. Utilities had a monopoly on both functions, subject to PUC oversight.

The Competition Act was based on the premise that while building and operating poles, wires, and substations for electricity distribution is a "natural monopoly" that can be performed most efficiently by one company under PUC supervision, the generation of electricity could be

² Borenstein and Bushnell, "The U.S. Electricity Industry After 20 Years of Restructuring," National Bureau of Economic Research (April, 2015), available at <https://www.nber.org/papers/w21113.pdf>

provided to customers more efficiently (i.e., with lower cost to customers) through a competitive market. Accordingly, the Act made three major changes to Pennsylvania's electricity system.

First, the Act forced utilities out of the generation business, requiring them to spin off their power plants and become "electricity distribution companies," or EDCs. Today, the job of Pennsylvania's EDCs is to maintain distribution infrastructure, design distribution rates, manage bills, run efficiency programs under Act 129, and offer customer assistance programs to Pennsylvania's many poor customers. All of these functions are supervised by the PUC.

Second, the Competition Act created a "retail" electricity market where customers can choose to buy electricity generation from qualified "electric generation suppliers" (EGS), including both companies that own power plants and marketers that buy power and re-sell it to customers, which market different generation "products" to customers. When customers do not shop, Pennsylvania's EDCs buy electricity for them as "default suppliers" under PUC rules that are supposed to ensure fair prices.

Third, the Competition Act effectively outsourced planning for Pennsylvania's electricity generation sector to the markets designed and run by the PJM Interconnection, LLC. PJM is a public utility authorized under the Federal Power Act to act as a "regional transmission organization" for the MidAtlantic United States. Essentially, PJM's job is to manage, in a quasi-regulatory fashion, the construction of power plants and high-voltage transmission lines and ensures the system's reliability. PJM does this in part by creating and designing "wholesale" power markets where electricity is sold as a commodity. PJM's "energy market" determines what power plants are generating electricity at any given time, as well as the price of that electricity, and PJM's "capacity market" pays power plants to be available to generate electricity three years in the future.

The restructuring of Pennsylvania’s power sector is sometimes described as “deregulation,” but it is more accurate to call it “reregulation.” Before the Competition Act, Pennsylvania’s power sector was regulated entirely by the PUC; now it is regulated through PJM market structures that are approved by the Federal Energy Regulatory Commission (FERC). PJM designs the rules for its markets based on input from its members, most of which are companies that participate in the markets. (The members of an LLC are roughly equivalent to shareholders of a corporation). The Commonwealth of Pennsylvania is not a member of PJM, and the General Assembly has no voice in the design of PJM’s markets. Pennsylvania’s formal engagement is through the Office of Consumer Advocate, which is a PJM member, and through the PUC’s participation in the Organization of PJM States (OPSI), a PJM “stakeholder.”

There are a number of serious problems with PJM’s markets,³ but the most fundamental is that they do not account for the climate impacts of carbon pollution from power plants that burn coal and gas. Practically, the effect of failing the price this “externality” is to subsidize coal- and gas-fired power plants. It has been argued that PJM itself has the legal authority to price carbon; however, while PJM is currently studying carbon pricing, it has stated that it has no intention of establishing a PJM price. Rather, the point of PJM’s study is to understand the potential impacts of carbon pricing by PJM states in order to inform decisions by policymakers in those states.⁴ It is therefore a propitious time for Pennsylvania to be establishing a legal mechanism to limit and price carbon.

RGGI: A Market-Based Approach to Help Fix Pennsylvania’s Power Sector

³ For an extensive discussion of the problems with PJM’s capacity market, and how its design has contributed to a massive build-out of gas-fired power plants, *see* Miles Farmer and Amanda Levin, “Comparing America’s grid operators on clean energy progress: PJM is headed for a climate disaster,” *available at* <https://www.utilitydive.com/news/comparing-americas-grid-operators-on-clean-energy-progress-pjm-is-headed/557994/>

⁴ PJM is especially focused on “leakage,” i.e., the increase of emissions in a jurisdiction that does not limit and price a pollutant, after a neighboring jurisdiction adopts limits and pricing.

RGGI is a market-based "cap and invest" initiative to cut carbon pollution from power plants in the Northeastern and MidAtlantic United States. Currently, nine states participate in RGGI: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. New Jersey is set to join the program on January 1, 2020, and Virginia has finalized a regulation that will allow it to participate in RGGI starting on January 1, 2021.

RGGI's emissions cap, or "budget," is a declining limit on the total amount of carbon dioxide pollution that can be emitted from the power plants in the RGGI states. The 2019 cap is 80.2 million tons (by way of context, Pennsylvania's power sector alone emitted almost 82 million tons of carbon pollution in 2018), and the cap is scheduled to tighten by 2.5 percent next year, and then 3 percent per year between 2021 and 2030. When a new state wants to join RGGI, it must negotiate a new cap with the existing states, and the new cap must be comparable in stringency to the old cap, taking into account the new state's current and projected emissions. New Jersey recently negotiated to enter RGGI in 2020 with an 18-million ton increase to the overall RGGI cap. (The total 2020 cap will be 96.2 million tons).

The "invest" part of RGGI is an extension of the "polluter pays" principle. Under RGGI, power plants must buy one "allowance" for every ton of carbon dioxide they emit. Most allowances are purchased at quarterly auctions held by RGGI, Inc., a non-profit corporation that administers the RGGI market; in addition, allowances can be bought and sold on secondary trading markets. (This makes RGGI a "cap and trade" program as well as "cap and invest" program). Auction proceeds are then returned to states for them to invest in ways that benefit consumers, including energy efficiency, renewable energy projects, and bill rebates for consumers. A Memorandum of Understanding signed by the current RGGI states provides for at least 25 percent of proceeds to be invested in consumer benefits,

Numerous studies have documented RGGI's benefits to the region. For example, independent economic experts at the Analysis Group have shown that since 2009, RGGI has created 45,000 job-years of work (a job-year equals one year's worth of full-time employment for one person) and added \$4.3 billion in economic value in the region.⁵ Another analysis found that, by cleaning up the air, RGGI has helped prevent asthma attacks, respiratory diseases, and other health conditions, with health benefits valued at \$5.7 billion.⁶

Most recently, a report released last month by RGGI, Inc. shows that in 2017, the RGGI states' investments of allowance proceeds exceeded the 25% consumer-benefit threshold, with 51% of the investments going to energy efficiency, 28% to clean and renewable energy and greenhouse gas abatement, and 16% to direct bill assistance for consumers.⁷ Thanks to these investments, RGGI helped save households and businesses \$128 million on their energy bills in 2017. Overall, the investments are expected to save \$1.4 billion because the measures states have invested in will continue to provide benefits in future years. All told, looking at RGGI's investments from previous years as well, the program has saved residents at least \$1 billion on their energy bills, with \$10 billion expected over the lifetime of RGGI-funded measures.

The RGGI states have also outperformed states outside the program both environmentally and economically. In a recent report, the Acadia Center found that over the last decade power plant carbon pollution in the RGGI region has fallen nearly twice as fast compared to other states. At the same time, the RGGI states' economies have grown 31 percent faster than non-RGGI states and electricity prices in the RGGI region have fallen by an average of 5.7 percent, even as prices

⁵ The Analysis Group, "The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeastern and MidAtlantic States," April 17, 2018, available at https://www.analysisgroup.com/globalassets/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_april_2018.pdf

⁶ ABT Associates, "Analysis of the Public Health Impacts of the Regional Greenhouse Gas Initiative," January 11, 2017, available at <https://www.abtassociates.com/insights/publications/report/analysis-of-the-public-health-impacts-of-the-regional-greenhouse-gas>

⁷ The Regional Greenhouse Gas Initiative, Inc., "The Investment of RGGI Proceeds in 2017," October, 2019, available at https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2017.pdf

have risen by 8.6 percent in other states.⁸ In 2018, retail electricity rates (measured on a cents-per-kilowatt basis) were higher in Pennsylvania than in the RGGI states, but the average monthly electricity *bills* paid by residential customers in New York, New Jersey, Vermont, Maine were actually lower than the bills paid by Pennsylvania residential consumers, in large part due to better energy efficiency in those states. Moreover, in Delaware, Rhode Island, and New Hampshire, the average bills paid by residential consumers were less than two dollars per year more than average Pennsylvania bills.

Over the last 125 years, Pennsylvania has developed or embraced a number of innovative policies to solve environmental problems. For example, in 1901, after clear-cutting of much of the state's vast forests led to a succession of catastrophic floods and fires,⁹ the General Assembly created the Department of Forestry (now the Department of Conservation and Natural Resources), to bring the land back to productive use and protect watersheds. Today, due largely to the Department's work, the total estimated annual expenditures associated with visits to state forests alone (i.e., not also state parks) are nearly \$400 million.¹⁰

⁸ The Acadia Center, "The Regional Greenhouse Gas Initiative: Ten Years in Review," 2019, available at https://acadiacenter.org/wp-content/uploads/2019/09/Acadia-Center_RGGI_10-Years-in-Review_2019-09-17.pdf

⁹ "For this industrial progress [brought by the lumber trade], the commonwealth paid an exorbitant and ruinous price. In their wake, the loggers left vast acreages of devastation. All cutover land, strewn with waste tree limbs, bark, and unwanted logs, was dry and inflammable. Fires swept over the mountains, destroying timber, creating soil erosion, silting streams, and causing incredible destruction to what we today recognize as the ecosystem. So ravaging were these forces of cutting and burning that millions of acres of once productive and beautiful sylvan landscape became acres of desolation. Joseph Trimble Rothrock called this area 'the Pennsylvania Desert.'" Henry Clepper, "Forest Conservation in Pennsylvania: the Pioneer Period, from Rothrock to Pinchot," available at <https://journals.psu.edu/phj/article/viewFile/24211/23980>

¹⁰ Ran, Hafer, et al. "An Economic Evaluation of the State Forest System" (December, 2018), available at <http://www.rural.palegislature.us/documents/reports/State-Forest-Economic-Eval-2018-print.pdf>

More recently, during the 1980s Pennsylvania had the worst acid rain in the U.S.¹¹ because of sulfur dioxide pollution from coal-fired power plants – a problem for human health, as well as the state’s ecosystems, e.g., the trout population of its streams. President George H.W. Bush proposed the nation’s first major market-based environmental law, a cap-and-trade program, and Pennsylvania embraced this program. It was a huge success, cutting emissions faster and cheaper than expected.¹²

The acid rain program is just one example of how, when legally binding, declining limits are placed on pollution and environmental costs are priced into markets, the markets work to reduce emissions. In short, send a strong and clear signal to a sector that it should move in a direction and the market responds through innovation to get there. Do nothing, and the unsustainable status quo will persist.

The critical importance of carbon limits in Pennsylvania – and of higher targets for renewable energy and energy efficiency, and equitable program design

Power sector modeling¹³ conducted by consulting firm ICF for NRDC shows the critical importance of carbon limits for Pennsylvania. In short, the analysis – which is explained in detail below – finds that if Pennsylvania does not establish limits on carbon pollution, emissions of carbon dioxide will increase over the next two decades (reversing the decline that has occurred

¹¹ New York Times, “Rain in Pennsylvania Found Most Acidic” (January 3, 1989), available at <https://www.nytimes.com/1989/01/03/science/rain-in-pennsylvania-found-most-acidic.html>

¹² Joe Goffman, “What Environmental Protection Owes to George H.W. Bush,” available at <https://eelp.law.harvard.edu/2018/12/what-environmental-protection-owes-george-h-w-bush/>

¹³ In the power sector world, computer models are used to help forecast and understand the environmental and economic effects of different energy policies. To model the effects of carbon limits and other clean energy policies in Pennsylvania, NRDC asked ICF to model three different policy scenarios using ICF’s Integrated Planning Model (IPM®). IPM is a detailed power sector model commonly used by the U.S. Environmental Protection Agency (EPA), utilities, and state regulators. IPM integrates extensive real-world information about the power sector with projections of electricity demand, fuel costs, and other information to determine the most cost-effective way for the power system to meet customers’ electricity needs under different energy policy scenarios. IPM can build new power plants, close existing plants, and ramp generation up and down to meet demand at least-cost.

over the last few years, mostly due to coal-to-gas switching) because gas plants will start to replace nuclear plants, as well as coal plants.

Carbon limits would ensure that the decline of recent years continues; however, NRDC's analysis also finds that unless such limits are accompanied by stronger incentives for renewables, emission reductions would be achieved over the next decade almost entirely by accelerating the ongoing coal-to-gas switching and reducing electricity exports. To drive growth in in-state renewables— thereby realizing the job-growth benefits of renewables development and setting the stage for continuing declines in emissions in the long term —Pennsylvania must also increase the renewable energy goals in the state's Alternative Energy Portfolio Standards Act (AEPS). If the Commonwealth does both of these things, and also establishes stronger efficiency goals, Pennsylvanians would see lower electricity bills as well as improved health and well-being.

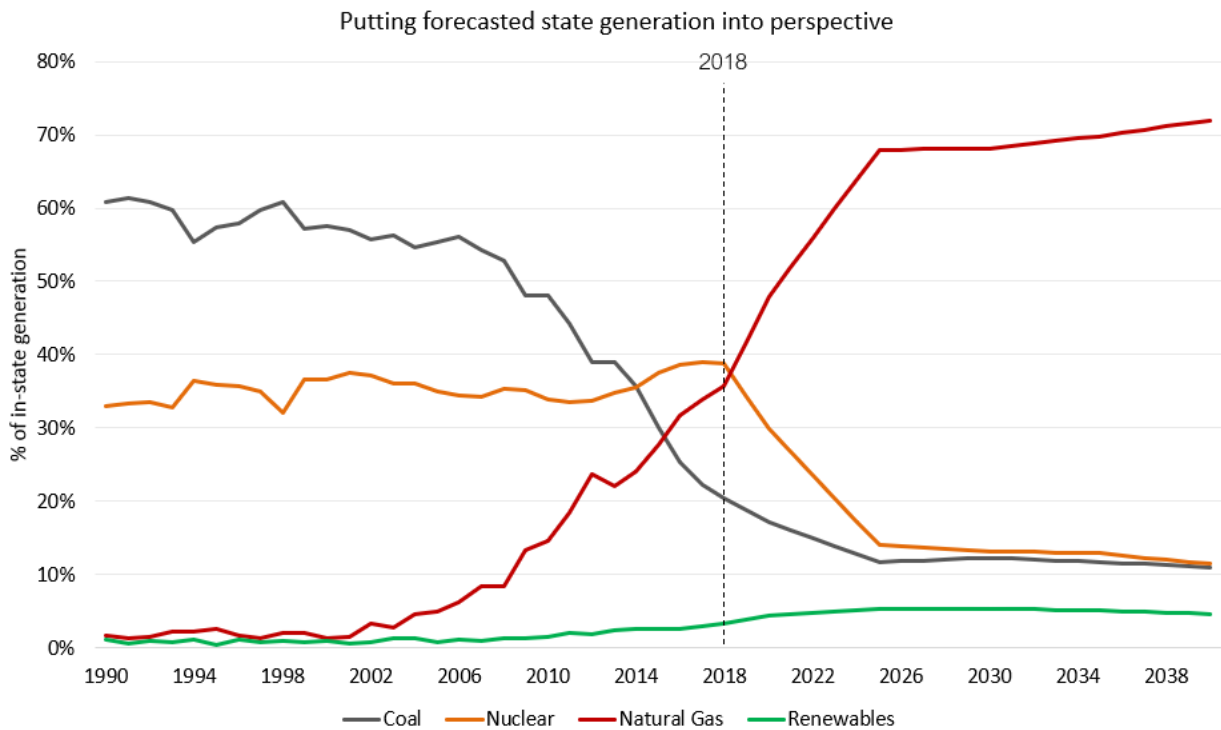
By way of more further explanation, our analysis started with a request to ICF to model three policy scenarios:

1. A **"business-as-usual" (BAU)** scenario in which Pennsylvania's energy policies remain unchanged between now and 2040. This means that the AEPS goal for renewables and other "Tier I" resources levels off at 8 percent in 2021. No carbon limits are adopted, nor are any changes made to Act 129, Pennsylvania's energy efficiency standard.
2. A **"RGGI-only" scenario** in which Pennsylvania joins RGGI in 2021, initially capping the state's pollution at the state's expected emissions in 2020 (91.7 million tons).The cap then declines by 3 percent per year through 2030. The AEPS and Act 129 are unchanged.
3. A **"RGGI + Clean Energy" scenario** in which Pennsylvania not only joins RGGI (with all the same detail as above), but also raises the Tier I (renewables) goal in the AEPS to 30 percent in 2030, with 10 percent from in-state solar projects (as proposed by Senate Bill

600 and House Bill 1195) and increases energy efficiency savings to 1.5 percent per year, as Senate Bill 232 could do.

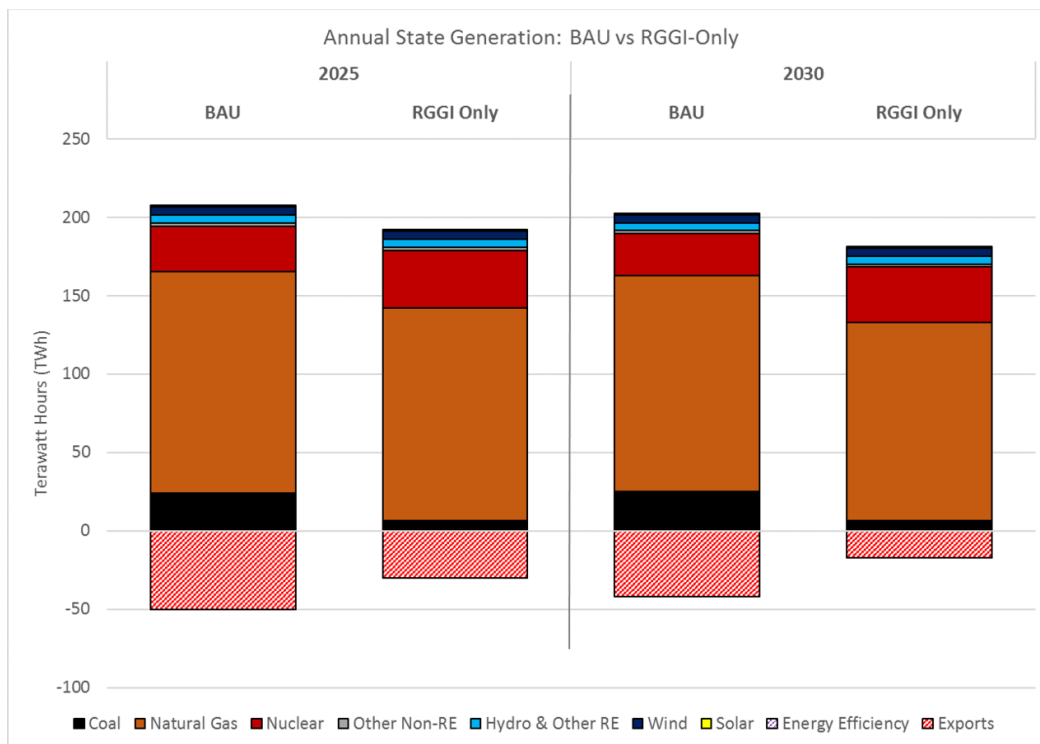
For all of these scenarios, NRDC used assumptions about fuel costs, electricity demand, and technology performance and costs based on the latest projections by the U.S. Department of Energy’s Energy Information Administration (EIA) and National Labs.

NRDC’s modeling forecasts that, under “business-as-usual,” generation from gas power plants rises to almost 70 percent of all in-state generation in 2030 (double its market share today)—as persistently cheap natural gas squeezes coal’s generation share to just 12 percent and nuclear’s share to 13 percent. At the same time, generation from renewables rises slightly, from 3 to 5 percent.

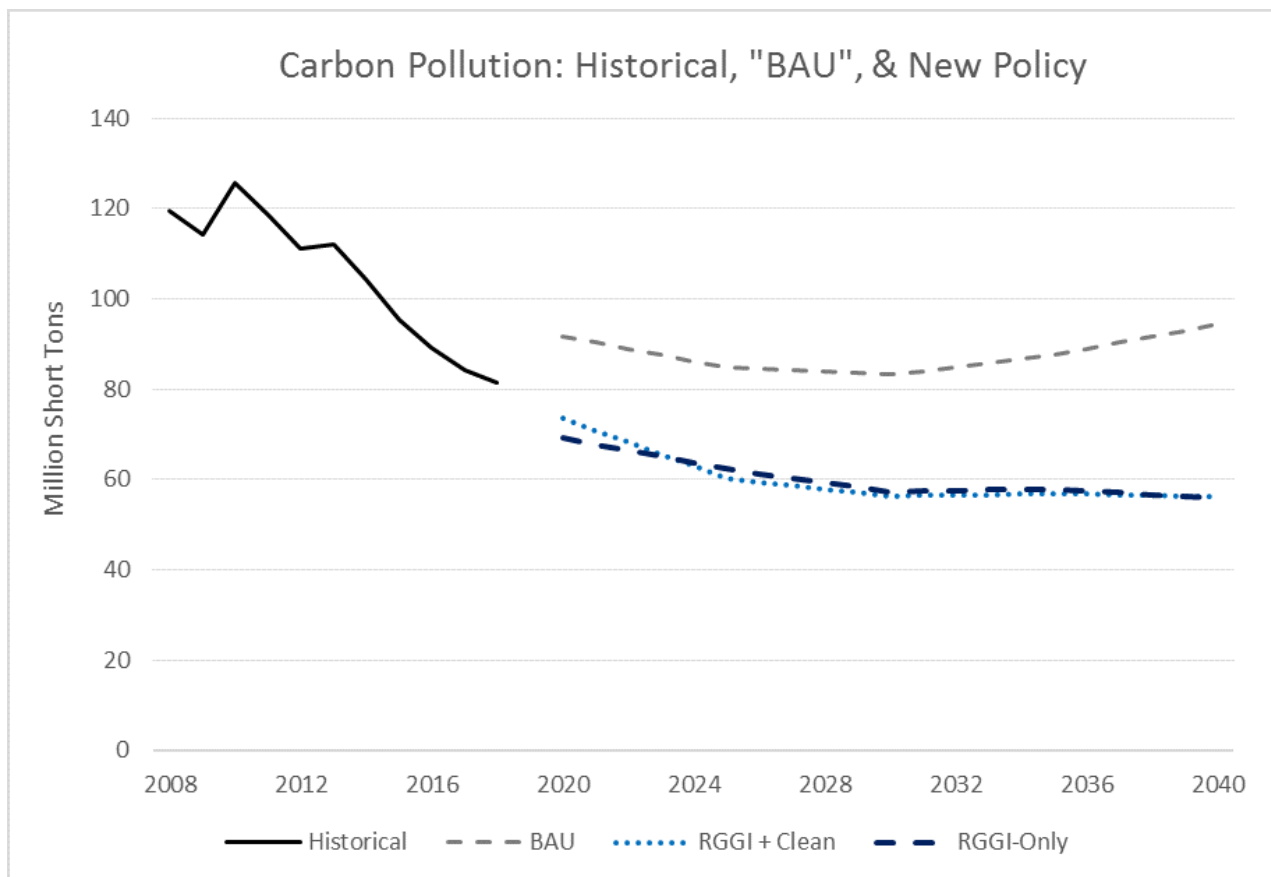


In this scenario—i.e., under Pennsylvania's current power sector policies—carbon dioxide emissions from the state's power sector increase, from about 81 million tons in 2018 to more than 83 million tons in 2030 and 94 million tons in 2040.

By contrast, participating in RGGI would ensure emissions reductions of 3 percent per year between the year that Pennsylvania enters the framework (2021 in the NRDC analysis) and 2030, when the RGGI states will implement a new phase of emissions reductions. In our modeling, when only those RGGI limits are imposed (with no strengthening of complementary clean energy policies or investment of carbon auction proceeds into clean energy programs), these emissions reductions are achieved mainly by accelerating a transition away from dirtier coal generation. This results in pollution reductions large enough to offset a large increase in gas generation and a small decrease in non-emitting nuclear generation. In-state renewable generation sees little to no change from “business-as-usual,” with just the same slight renewable growth.



The model shows essentially the same reductions in carbon pollution when, in addition to joining RGGI, Pennsylvania increases its renewable energy goals in the AEPS to 30 percent and increases energy efficiency savings to 1.5 percent per year. (Currently, the efficiency programs run by Pennsylvania's electric distribution utilities under Act 129 achieve reductions of less than 1 percent annually.) This is because, due to cheap natural gas prices in Pennsylvania, a RGGI-only approach is likely to cut emissions in the near-term more by increasing generation from gas than from building out renewables to create a stronger clean energy system in the long run.



However, increasing the renewables goals in the AEPS has other benefits besides reducing carbon pollution. With respect to public health, the model shows that a strong AEPS achieves greater cuts of in-state sulfur dioxide (SO₂) and nitrogen oxide (NO₂) emissions—pollutants that contribute to local smog issues and worsen respiratory issues like asthma—than RGGI

alone. This means fewer childhood asthma attacks, ER emergencies, and lost work days, and helps mitigate the general health impacts of climate change in Pennsylvania.

Combining RGGI and the AEPS also leads to sustained, measurable climate benefits on a national basis, because investing in non-emitting power in tandem with reducing the use of the dirtiest power plants, minimizes emissions “leakage,” where pollution merely shifts to states without carbon limits. In a RGGI-only approach, some emissions leak to nearby states.

And as we know from the *Clean Jobs Pennsylvania reports* issued annually by Environmental Entrepreneurs (E2), Keystone Energy Efficiency Alliance (KEEA), Green Building Alliance, Sustainable Pittsburgh and Sustainable Business Network of Greater Philadelphia, growing renewable energy and energy efficiency creates good-paying jobs and boosts economic development and local tax bases (including in more rural areas of the state). When states establish strong renewable energy goals—signaling to businesses an openness and interest in clean energy—they create more renewable energy jobs and a stronger clean energy economy. Modeling for the Pennsylvania DEP's *Finding Pennsylvania Solar Future* project showed that 10 percent in-state solar goal would result in 60,000 to 100,000 jobs and result in a net benefit of over \$1.6 billion annually from 2018 to 2030 from energy savings and infrastructure investments.

In addition to the job-creating benefits of energy efficiency highlighted in *Clean Jobs Pennsylvania*, NRDC's modeling highlights another benefit of efficiency: lower electricity bills. At least in the short term, implementation of RGGI is likely to cause a small increase in wholesale electricity rates as power plants first start to internalize the costs of their pollution. However, Pennsylvanians do not pay rates; they pay bills. And their bills are determined not just by wholesale rates, but by how much electricity they use. By reducing energy waste—e.g., through more efficient heating and cooling systems and better insulation—efficiency can help

households remain cool in the summer and warm in the winter with lower utility bills than they pay today—even if rates go up. NRDC’s modeling bears this out, showing that by complementing RGGI with both a stronger AEPS and greater investment in low-cost energy efficiency, the average Pennsylvanian’s electricity bill would decrease by about \$12 a year in 2030 and about \$25 a year in 2040 compared to “business-as-usual.”

The modeling performed by ICF for NRDC confirms what we already know, based on the first decade of RGGI. Each RGGI state has strengthened its renewable portfolio standard and energy efficiency programs over this period; they know that carbon limits and technology-based incentive policies serve different purposes, and have seen the huge benefit of complementary approaches to direct our energy markets toward the public goods of clean air and climate change mitigation. This multiple policy approach has also resulted in economic development, job growth, and billions of dollars of investment into their states as well as savings for their residents, businesses and communities.

In short, by establishing carbon limits, participating in RGGI’s trading markets, and legislating stronger commitments to renewable energy and energy efficiency, Pennsylvania can shape its energy markets so that they produce electricity that is not just affordable and reliable, but also clean. Pennsylvania should do so, and should ensure that these policies are designed and implemented in an equitable manner.

Environmental justice organizations, low-income advocates, and other stakeholders have expressed concerns that RGGI could be executed in Pennsylvania in a way that does not lead to further the causes of environmental, economic, and social equity. Among other things, there are concerns that in the absence of plant-specific pollution limits RGGI may not reduce emissions of carbon dioxide and harmful pollutants in low-income, Black and Brown, and environmental justice communities; and that proceeds from the sale of carbon allowances could be invested in a

way that does not reduce the energy burdens of low-income Pennsylvanians or prioritize a just transition to a clean energy economy for workers affected by the shift away from a fossil economy.

NRDC cannot speak for these stakeholders, but we agree that equity considerations should be foremost in the design and implementation of all climate policy in Pennsylvania.¹⁴ Moreover, we also have concerns. For instance, even if the Public Utility Commission's recent policy statement directing the expansion of electric utilities' Customer Assistance Programs is fully implemented,¹⁵ those programs will not alleviate the energy burdens of all of the approximately 1.5 million Pennsylvania households whose total income is below 200% of the federal poverty level. More investments will be needed, including in energy efficiency measures targeted to low-income communities.

All climate policies, including RGGI, must be part of a comprehensive approach to reducing legacy environmental and economic impacts on communities that have borne them, and must be thoughtfully designed to ensure that they do not impose further risks. As the Equitable and Just National Climate Platform states, "the national climate policy agenda should be used to reduce the disproportionate amount of pollution that is often found in EJ communities and that is associated with cumulative impacts, public health risks, and other persistent challenges."

¹⁴ NRDC is a signatory to the Equitable and Just National Climate Platform, available at <https://ajustclimate.org/#platform>

¹⁵ On September 19, the PUC adopted amendments to its Policy Statement on Customer Assistance Programs intended to expand the programs and ensure that they serve more low-income Pennsylvanians. Among other things, the amendments direct reductions in the energy burden that determine whether customers are eligible for the programs. In addition, the PUC will now require that utilities consider imposing the costs of these programs on all customers (including commercial and industrial customers), rather than just residential customers. Utilities are now to update their Universal Service and Energy Conservation Plans accordingly. See http://www.puc.state.pa.us/about_puc/consolidated_case_view.aspx?Docket=M-2017-2596907

For all these reasons, we urge the DEP, the Wolf administration, and the General Assembly to take pains to solicit input from low-income, Black and Brown, and environmental justice communities while developing Pennsylvania's carbon limits policy.

Chairman Sturla, Representative Vitali, thank you again for the opportunity to testify on the prospect of Pennsylvania's developing a regulation to limit carbon pollution from power plants and participate in RGGI. I would be happy to answer any questions you may have.

BEFORE THE PENNSYLVANIA HOUSE DEMOCRATIC POLICY COMMITTEE

Opening Remarks Of

**TANYA J. McCLOSKEY
ACTING CONSUMER ADVOCATE**

**Regarding Pennsylvania's Participation
In The Regional Greenhouse Gas Initiative**

**Havertown, Pennsylvania
November 1, 2019**

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**Representative Vitali and
Members of the House Democratic Policy Committee**

My name is Tanya McCloskey and I am serving as the Acting Consumer Advocate for the Office of Consumer Advocate. Thank you for having me here today to discuss Pennsylvania's interest in joining the Regional Greenhouse Gas Initiative (RGGI). Pennsylvania has taken an important step with Governor Wolf's Executive Order. As we begin this process, it will be critical to develop the details of a program that promotes our environmental goals while ensuring that the rates paid by Pennsylvania's electric consumers remain affordable.

In representing Pennsylvania's utility consumers, my primary responsibility is to ensure that Pennsylvania consumers enjoy safe and reliable service at reasonable prices. For electric service, it is critical in my view, that consumers have an electric system that is reliable, efficient, economic, environmentally sustainable, and diverse. We have worked over the decades, at the state, regional, and federal levels, to achieve these goals in the most cost-effective manner for consumers.

In past testimony, I have addressed the need to clearly identify the goals that the Commonwealth has for its electric power sector, and ensure that the cost of achieving the goals is commensurate with the benefits. From a ratepayer perspective, as the Commonwealth seeks to achieve the environmental goal of reducing carbon emissions from our electric generation sector, I have been, and continue to be, a proponent of using market solutions. The Governor's announcement of his intent to bring Pennsylvania into RGGI would bring a market solution to the policy objective, and is, in my opinion, the most efficient way to move forward to achieve carbon reductions from Pennsylvania's electric generation sector under the circumstances we face.

In 1996, the Commonwealth made a decision to utilize the competitive wholesale generation markets to meet the electric needs of consumers in Pennsylvania. In my view, our decision was well-placed, particularly as it concerns the wholesale markets for electricity. Our competitive wholesale markets have now produced a diverse array of generation serving the needs of customers in the PJM region, lower emissions of carbon and other pollutants, and lower prices for consumers—homeowners, businesses and industries. Importantly, markets have brought tremendous diversity to our power supply. Today’s generation mix contains large share of gas-fired, nuclear and coal production, with a rapidly expanding renewable footprint. While each one of these resources could be the least cost at various times – a truly diverse power sector brings benefits of least cost to consumers over time.

As has been discussed today, RGGI relies on market “cap and trade” principles to achieve limits on carbon emissions. These market principles have been used before to achieve environmental goals and control pollutants, such as the reduction of SO₂ and NO_x. Over the long term, the use of these market mechanisms should result in the most efficient and least cost solutions to achieving our goals, as well as serving to foster innovation in a technology neutral manner. RGGI is a well-tested market mechanism for this purpose that was launched in 2009 and includes members in six New England states, New York, Delaware, and Maryland. New Jersey is in the process of re-entering RGGI and Virginia is in the process of joining RGGI. By 2020, four states in PJM that surround Pennsylvania, as well as New York in the NYISO, will be participating in RGGI.

As I mentioned, the details of Pennsylvania’s participation in RGGI will be critical to its success for the Commonwealth. It will be important for many stakeholders to work together to develop a balanced and cost-effective program for Pennsylvania to meet the Commonwealth’s

needs. In this process, one of the key stakeholder interests will be the ratepayers of Pennsylvania. There has been a call from many interested parties for a consideration of the cost to ratepayers as we engage in this process of developing these details. I certainly agree that this is an essential consideration as joining RGGI might increase energy market prices paid by consumers in Pennsylvania and elsewhere in PJM. But this should not serve as a deterrent to joining RGGI; rather it should guide our approach to developing our plan to join RGGI and bring additional benefits to Pennsylvania ratepayers.

I must first say that an overall increase in energy prices should not be seen as a foregone result from joining RGGI in PJM's dynamic markets. There are market factors and other circumstances that effectively limit the degree to which customers could be exposed to higher energy prices. Some of these protections are built into the RGGI framework and some are a result of Pennsylvania's participation in a wider regional electricity market.

But more to the point, if we utilize the proceeds from the RGGI auction process correctly, the *total bill* for a ratepayer could decline even if the cents per kilowatthour charge for generation rises. The proceeds from the auction of emission allowances under RGGI are returned to the states and can be used for a number of purposes, including reducing ratepayer bill impacts, supporting energy efficiency or renewable resources, and supporting affected communities. These types of initiatives can help to reduce the total bill of a consumer through direct assistance, lowering energy usage, and reducing the price of renewables that are entering the market. This type of win-win solution should be the type of approach we should consider in meeting our environmental goals related to electricity production when considering RGGI.

The currently participating RGGI states have already realized these benefits for ratepayers and communities while reducing their carbon emissions. Since its inception in 2009

through December 31, 2017, RGGI has auctioned allowances resulting in revenue in the amount of \$2.7 billion, of which approximately \$2.4 billion has been returned to the participating states for investment.¹

The RGGI states have each adopted unique allocations for their proceeds. Some states have directed a substantial portion of their proceeds to direct ratepayer bill assistance reflected as a reduction to ratepayer bills. For example, in 2017, Maryland allocated 45% of its proceeds to direct ratepayer bill assistance for low income customers.² In the same year, New Hampshire allocated 71% of its proceeds to direct ratepayer bill assistance for all customers.³ Other RGGI states have directed the majority of the funds toward energy efficiency and renewable energy support. For example, in 2017, Connecticut directed 74% of its RGGI proceeds to energy efficiency.⁴

The allocation of RGGI emission allowance proceeds in each state will be unique. In developing a specific plan for Pennsylvania, we should learn from the existing programs in Pennsylvania, including consideration of how and to what extent those programs are funded, what incremental advances could be made with the additional funding, what direct benefits can be brought to ratepayers, and what other energy-related policy goals need to be achieved.

I stand ready to work with the Committees, staff, members of the General Assembly, the Department of Environmental Protection, and other stakeholders to pursue our environmental goals in a manner that protects and benefits ratepayers, assists workers and communities, benefits the Commonwealth, and advances our energy goals for reliable, efficient,

¹ “The Investment of RGGI Proceeds in 2017,” page 13, published October 2019 and available at: https://www.rggi.org/sites/default/files/Uploads/Proceeds/RGGI_Proceeds_Report_2017.pdf.

² *Id.* at 24-25.

³ *Id.* at 30-31.

⁴ *Id.* at 16.

economic, environmentally sustainable, and diverse energy supply at reasonable prices. I believe that using our generation market mechanisms through a program like RGGI is the best means to achieve these goals in the most cost-effective manner for ratepayers at this time.