COMMONWEALTH OF PENNSYLVANIA
JOINT LEGISLATIVE AIR AND WATER POLLUTION
CONTROL AND CONSERVATION COMMITTEE

SENATE HEARING ROOM 8E-B
EAST WING
STATE CAPITOL BUILDING
HARRISBURG, PENNSYLVANIA

PUBLIC HEARING ON THE STATUS OF
PENNSYLVANIA'S ELECTRIC
COGENERATION INDUSTRY

MONDAY, FEBRUARY 3, 2020
9:00 A.M.

BEFORE:

REPRESENTATIVE PARKE WENTLING, CHAIRMAN
REPRESENTATIVE DONNA BULLOCK, SECRETARY
REPRESENTATIVE BUD COOK
REPRESENTATIVE JERRY KNOWLES
REPRESENTATIVE STEPHEN MCCARTER
REPRESENTATIVE CLINT OWLETT
REPRESENTATIVE MEGHAN SCHROEDER
SENATOR MARIA COLLETT
SENATOR PATRICK J. STEFANO
SENATOR SHARIF STREET
SENATOR JUDY WARD

ALSO PRESENT:

REPRESENTATIVE JAMES STRUZZI

ALSO PRESENT:

TONY M. GUERRIERI, EXECUTIVE DIRECTOR
COLEEN P. ENGVALL, RESEARCH ANALYST
SAKURA UNG, PROJECT MANAGER
DENISE M. PLUMMER, ADMINISTRATIVE OFFICER

BRENDA J. PARDUN, RPR
REPORTER - NOTARY PUBLIC

INDEX

P R O C E E D I N G S

CHAIRMAN WENTLING: Good morning, everybody. I'm state representative Parke Wentling, chairman of the Joint Legislative Air and Water Pollution Control and Conservation Committee, better known as the JLCC, the Joint Legislative Conservation Committee.

I'd like to welcome everyone to the public hearing concerning Pennsylvania's cogeneration industry.

Can everyone hear me okay in the back? Are we good?

Okay. Great.

Come on in here, Senator Stefano.

For generations, mountains of waste coal, black piles that leach acidic water into already polluted streams, were a fact of life in former mining towns.

During the past three decades, Pennsylvania's cogeneration industry has put a dent in the environmental disaster by chewing through millions of tons of mine waste that previous -- that had previously been discarded. In fact, I will just note that

that's how the JLCC got started over fifty years ago in regards to dealing with acid mine drainage.

The industry has played a major role in Pennsylvania and, as such, generates much discussion on a wide variety of issues.

Today's hearing, we'd like to focus primarily on two of those issues. The first is economics. We will hear testimony today regarding economic impact of a carbon cap-and-trade program on cogeneration. And that impact is diverse. Those who oversee those plans now are wondering whether that thirty years of progress will grind to a halt if a new air emission rule takes effect. While regulators contend the standards are overdue, operators argue that new rules will shutter plants, siphon power from a stressed grid, and dissolve hundreds of local jobs.

We hope to learn more about -- we hope to learn more about topics like these.

A second focus today is the environment and the impact of the industry on the environment. Again this is a broad and diverse field. Cogeneration plants that burn

waste coal are taking care of an environmental hazard. The mountains of mine waste are unsightly and contribute to acid mine drainage. Testimony today is to provide an overview of topics that have already -- that are already out there and may arise in the future.

We do have a distinguished panel of speakers that I'm sure will cover that ground and other areas as well. And we are anxious to join in a learning experience that they can provide.

I'd like to take a few moments to allow other members of our committee to introduce themselves, followed by some of the other members of the House and Senate who are joining us today.

So, if we could -- would you like to -- we would like to go ahead and allow the members to go through and introduce themselves. Thank you.

REPRESENTATIVE BULLOCK: Thank you, Chairman.

State Representative Donna Bullock. I represent parts of north and west

Philadelphia.

MR. GUERRIERI: Tony Guerrieri. I am the executive director of the Joint Legislative Conservation Committee.

REPRESENTATIVE COOK: Good morning. I represent parts of Fayette and Washington County, the Mon Valley, State Representative Bud Cook.

REPRESENTATIVE SCHROEDER: State Representative Meghan Schroeder, the 29th Legislative District in Bucks County.

REPRESENTATIVE KNOWLES: Yes, I'm Gerry Knowles. I represent portions of Berks, Schuylkill, Carbon counties, the 124th Legislative District.

SENATOR STEFANO: Good morning. Senate Pet Stefano. I represent the 32nd District, which is Fayette, Somerset, and parts of Westmoreland.

REPRESENTATIVE STRUZZI: Good morning. Jim Struzzi, 62nd Legislative District, Indiana County.

REPRESENTATIVE MCCARTER: Good morning, everyone. I'm Representative Steve McCarter, representing the 154th District, in

eastern Montgomery County.

MS. ENGVALL: I'm Coleen Engvall. I'm the research analyst for the JLCC.

CHAIRMAN WENTLING: In terms of housekeeping, I remind our witnesses and legislative members that we do have a hearing stenographer present to record the hearing proceedings. Please introduce yourself before you speak and please speak loudly and clearly.

We are now ready to begin today's testimony. Our first speaker is Mr. Patrick O'Donnell -- McDonnell -- I hope I got that right -- the secretary of the Department of Environmental Protection.

Mr. McDonnell, welcome.

And before we start, if you'd like to introduce yourself, Senator.

SENATOR STREET: Senator Sharif Street.

CHAIRMAN WENTLING: Very good, Mr. Secretary, the floor is yours.

SECRETARY MCDONNELL: I just want to thank you. As you said, I'm Patrick McDonnell, secretary of the Pennsylvania Department of Environmental Protection.

Pleasure to be here with you this morning. Thank you for hosting this, Chairman Wentling and members of the committee and members of the legislature. Look forward to sharing the Department's experience with cogeneration plants, specifically around the waste coal industry, and highlight the role of this sector in terms of the Regional Greenhouse Gas Initiative that you referenced in your opening comments.

I will explain how, in a draft proposed regulation, really a framework that we released last week in advance of our air quality technical advisory committee, we created a set-aside program for Pennsylvania's waste coal generation sector. That regulation would establish, as you said, a cap on carbon dioxide emissions from fossil fuel-fired power plants in Pennsylvania.

I will also outline some of the legacy environmental issues that, again, you summarized, like mining, and highlight why it's vital not to leave additional environmental issues, like climate change, to future generations to solve.

In terms of that legacy, during past mining operations, water was used to clean and sort coal, and streams were used for transportation via a canal system. Unfortunately, what remains of these past mining operations is expansive piles of discarded coal refuse, often adjacent to and leaching into waterways.

The material in these piles is often mobilized during storm events or extreme flow conditions, resulting in significant impacts on water and air quality. Many of the coal refuse piles have been devoid of vegetation for decades, further leaving materials susceptible to erosion. Furthermore, this material has been discarded in large piles, sometimes hundreds of feet in height, sometimes, as you see in Hazleton, the roads literally go around these piles, creating additional safety concerns related to their unstable, combustible nature.

Due to technology advancements, the waste coal in these piles, although a lower energy value resource, can be combusted to produce electricity. By harnessing this

technology, the waste coal generation industry has reduced the size, number, and impacts of these piles. Not only has the sector identified a beneficial use for this waste, they also beneficially use the combustion residual of the coal ash for use in reclaiming lands, especially our mine lands, and often creating land with economic value now suitable for redevelopment.

Since 1988, a total of 160.7 million tons of waste coal has been removed and burned in cogeneration plants to generate electricity, with an additional 200 million tons of coal ash beneficially used at these mine sites.

Federal programs exist to address these legacy mining issues; however, abandoned piles and silt dams are often a lower priority. As a result, waste coal operations and associated generation operations have been one of the most substantial watershed cleanup efforts of the past thirty years, and this sector continues to play a critical role in terms of pollution prevention, environmental cleanup, and land reclamation in the

Commonwealth that would otherwise remain for future generations.

Of Pennsylvania's over 13,000 acres of coal piles cataloged by the Department, 3700 acres, or 71 million cubic yards, have been reclaimed, with roughly 9,000 acres, or 202 million cubic yards, remaining.

Despite these successes in Pennsylvania, the coal piles in Pennsylvania's anthracite region remain one of the largest sources of nonpoint pollution in the region. Thousands of tons of coal waste and coal silt remain near streams or along stream banks that line Pennsylvania's extensive network of streams and rivers.

Additionally, of the piles that remain, approximately forty have ignited and continually burn, significantly impacting local air quality and releasing significant amounts of carbon dioxide and other pollutants. There is clearly more work to be done.

On climate change, as the governor said, it is the most critical environmental threat facing the Commonwealth as well as the

world. Right here in Pennsylvania, it has led to more flooding, which, when taken in connection with these piles, results in not just air but water quality impacts, more heat and respiratory illnesses, more vector-borne diseases and pests, and more disruptions to agricultural systems.

Since 1900, Pennsylvania has warmed 1.8 degrees Fahrenheit. Annual precipitation has increased 10 percent on average, with some areas seeing a 20 percent increase over that same time period. From 1958 through 2010, the northeast United States saw more than a 70 percent increase in the amount of precipitation falling during heavy rainfall events.

These impacts are vast, and what was predicted ten years ago is being confirmed today. Projections are even more dire. By 2050, Pennsylvania's expected to warm by 5.4 degrees Fahrenheit. The Pennsylvania that we know will not be the same Pennsylvania that our children or our grandchildren will know. By the middle of the century, Philadelphia will feel like Richmond, Pittsburgh will feel

like Washington, D.C.

Precipitation patterns will also be increased by another 8 percent by 2050, with a winter precipitation increase of 14 percent.

We know that climate change impacts are being caused by emissions, specifically of carbon dioxide and methane primarily. There is overwhelming scientific evidence that these greenhouse gas emissions are causing climate change, with modeling and prediction of impacts improving rapidly.

As one of the top greenhouse gas-emitting states in the country, Pennsylvania has an obligation to take action to reduce greenhouse gas emissions. In October of 2019, Governor Wolf tasked the department in designing a CO_2 trading program for Pennsylvania that aligns with the Regional Greenhouse Gas Initiative, while accounting for the unique environmental energy and economic intricacies of Pennsylvania. This program is being designed to reduce emissions of CO_2 in a manner that is protective of public health, welfare, and the environment, and is economically efficient.

I'll talk a little about the greenhouse gas initiative itself. It's a cooperative effort of ten New England and Mid-Atlantic states to reduce greenhouse gas emissions from the power sector. RGGI, as it's informally called, is a regional cap-and-invest program, involving carbon dioxide-emitting power plants. Participating states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

These states have set individual state caps on the total amount of CO_2 emitted -- excuse me -- from power plants in their states.

What is referred to as the RGGI "regional cap" or "the cap" is those state caps added together. In order to show compliance with the cap, power plants must purchase a credit or allowance for each ton of CO_2 emitted. These purchases are made at quarterly auctions conducted by RGGI, Inc., and in secondary markets. RGGI, Inc., is a nonprofit corporation providing administrative and technical support to participating states.

It's referred to -- RGGI is referred to as a cap-and-invest program, as the proceeds from auctions are allocated back to the participating states in proportion to the amount of CO_2 subject to regulation in each state. These states then uses these proceeds to make investments in programs that further reduce greenhouse gas emissions.

Thus RGGI has a two-pronged approach: reducing CO_2 emissions through the cap as well as investments in energy efficiency, renewable energy, and greenhouse gas abatement.

The first step which we've started on is designing a regulation that serves as a basis for our trading program. We're working to develop that regulation and to make sure it adheres to the RGGI model rule. That model rule is a template that all of the states that participate within RGGI follow, laying out exactly what the cap would be, where the allowances are, and any set-asides, et cetera.

I can give you an example of how this works in practice. Each fossil fuel power plant that has a capacity of at least 25 megawatts or greater and sends more than 10

percent of its annual gross generation to the grid would be subject to the rule. Each qualifying power plant would then have to purchase an offset or allowance for each ton of carbon emitted on annual basis. At the end of each year, each power plant would retire allowances to cover their compliance obligation. And then, over time, that cap reduces. Right now it is reducing in the other states by about 3 percent a year.

At DEP, however, we're providing additional flexibility in the rule for cogeneration plants that are interconnected with and supply manufacturing facilities, for example. If you have a Combined Heat and Power plant and you're producing electricity and providing useful thermal energy, we are proposing that, if those cogen plants supply less than 15 percent, instead of 10 percent, of their annual total usable energy to any entity, they do not have compliance obligations. Additionally, fossil fuel power plants that have a capacity of 25 megawatts or greater and supply less than 10 percent of its annual gross generation to any entity would

also not have those obligations.

Part of what makes the program economically efficient is the fact that it's a regional program, which allows qualifying power plants to achieve least-cost compliance by buying and selling allowances in the primary or secondary markets across all of the states.

RGGI allowances are fungible, meaning that though Pennsylvania has an established allowance amount for a each year, PA allowances are available to meet the compliance obligations in any other state or vice versa. Therefore, emissions from the Pennsylvania power sector are not strictly limited to the amount of PA allowances. Though each state has an annual allocation, compliance occurs at the regional level rather than on a state-by-state basis. This cooperation allows producers more flexibility in terms of compliance and allows the market to signal entrance or exit of generation.

In this respect, the market assists in achieving least-cost compliance for all participating states.

Each state also has the authority and discretion as to how they treat the allowances, which are memorialized in each state's CO_2 budget trading program regulation. Allocation of those allowances is just one mechanism through which states further public policy goals.

For example, each state must make these allowances available. In addition to states offering allowances for sale through the auction, most RGGI states have also opted to create set-aside programs. These states specifically carve out or reserve a portion of the state's allowances to assist certain sectors with part or all of their RGGI obligations or allow other sectors to monatize the allowances for further investment.

In the draft regulation, DEP has provided a set-aside option to assist Pennsylvania's waste coal generation sector with RGGI program compliance. While waste coal facilities are not exempt from the program, Pennsylvania DEP will oversee the sector's compliance using allowances that have been specifically carved out or set aside for

this purpose. In other words, waste coal facilities will not incur significant compliance costs as a result of Pennsylvania's participation in RGGI as long as the emissions from the waste coal generation sector do not exceed the set-aside amount on an annual basis.

At the beginning of each compliance year, Pennsylvania DEP will set aside allowances for the waste coal facilities, eliminating the need for them to purchase allowances in either primary auctions or secondary markets. And then, at the end of the year, Pennsylvania DEP will retire the appropriate amount of CO_2 allowances for each of these facilities. This set-aside, as explained in the draft regulation, is equal to 7.9 million tons of coal -- of CO_2 emissions, an amount which represents the waste coal generation's total 2018 emissions.

As you will hear from other panelists today, the waste coal sector has been declining in Pennsylvania, as have their resulting emissions. After reviewing the last three years of CO_2 emission data, 2018 had the

highest associated emissions, an appropriate level at which to set this amount.

This 7.9-ton set-aside is the yearly amount held for the sector. On an annual basis, if the combined emissions do not exceed the 7.9 million tons, there will be no allowance-related RGGI compliance costs for these entities. If the sector exceeds the 7.9 million-ton set-aside, then individual facilities will be responsible for procurement of allowances needed above the set-aside amount.

While the set-aside amount is the firm cap for emission assistance, this sector's emissions and generation are not limited. Any CO_2 allowances beyond the set-aside that may be required for compliance reasons would be able to be procured from the market. And any unused allowances from the annual set-aside will be offered into the market.

The department acknowledges the value of cogeneration -- the cogeneration sector and is proposing the set-aside program through which waste coal-fired generation will not

incur additional costs as a result of Pennsylvania's participation in RGGI, if the emissions do not exceed the annual set-aside.

Additionally, the proposed regulation includes greater flexibility for cogen plants that are interconnected with manufacturing facilities.

Finally, just a couple of other programs that exist. A set-aside for the waste coal generation sector is not the only program. Under Pennsylvania's Alternative Energy Portfolio Standards, waste coal is identified as a Tier II alternative resource, and qualifying facilities can receive credits equal to the amount of electricity produced.

We have a number of things that are -- in most states, it would be a renewable portfolio standard. We have the Alternative Energy Portfolio Standard, which includes things outside of the renewable sector. So, in 2008, waste coal accounted for 63.7 percent of Tier II credit obligations, compliance obligations.

Additionally, as recently as 2016, the legislature highlighted the importance of

this sector in the passage of Act 84, the Coal Refuse Energy and Reclamation Tax Credit Program, highlighting the significant and tangible benefits to the environment from this industry.

On the federal level, we've also -- Governor Wolf and the administration has also expressed his support to the Mine Affected Community Energy and Environment Act, which would create a federal coal refuse tax credit to help address the more than 220 million tons of Pennsylvania coal refuse on 9,000 acres of land.

I hope my testimony this morning has clearly conveyed what RGGI participation means for Pennsylvania and specifically the waste coal sector. We look forward to continuing to work with not just this community but the legislature and other stakeholders as we proceed down this process.

Available to take any questions you may have. Thank you.

CHAIRMAN WENTLING: Thank you, Mr. Secretary. We do have a couple questions.

The first member of the committee I'd

like to recognize is Mr. Knowles.

REPRESENTATIVE KNOWLES: Thank you, Mr. Chairman.

And thank you, Mr. Secretary. Certainly appreciate you being here.

As indicated when I introduced myself, I come from Schuylkill County. I'm a coal cracker. I am well aware of what -- when you talk about years ago, I was born and raised in Tamaqua, the entire community surrounded by mines.

I can remember as a young boy when you would look up at those mountains, you would see what we refer to as silt, as coal dust. It was horrible.

Over the course of the years, because of cogen plants, we've been able to do a considerable amount of cleanup. I'm very proud to say that when you now drive in my district and you look up on those mountains, you see green. It's pretty. It's a great area to live in and a great area to represent.

So, when we heard about RGGI, we were pretty upset about it, because we had concerns about how it would affect that, and -- because

they're struggling now. Some of them have closed and others are struggling.

So, I certainly have great interest when you talk about the set-asides. And I'm just wondering, and I want to be certain that the set-asides, are they enough to keep the cogens in the anthracite region working so that they can continue to clean up the environment?

SECRETARY MCDONNELL: Yeah. So, the way we attempted to design it was, for lack of a better way of saying it, is to make sure we're holding those plants harmless in terms of RGGI itself. So, the set-aside is set at 7.9 million, which, as I said, we looked at 2017, 2018, 2019, and 7.9 represented the 2018 year, which was the highest emissions from the plants that are operating today. So, it should be sufficient for them to continue operating at the levels they have been operating. As I said in the testimony, if there's expansion of operation or additional operation, then it would purchase credits on the market for that operation.

REPRESENTATIVE KNOWLES: Thank you

very much, and I can't impress upon you how important it is that we do everything in our power to continue to keep those cogen plants going because there is still a lot of work to be done, Mr. Secretary.

SECRETARY MCDONNELL: I will share with you, I've been in some of the plants and also the plants that have been reclaimed, and it is an incredibly important program, which is why we're crafting the regulation this way.

REPRESENTATIVE KNOWLES: Thank you, Mr. Secretary.

Thank you, Mr. Chairman.

CHAIRMAN WENTLING: Take a moment to recognize two members that joined us here, Senator Collett, our newest member of the committee.

Do you want to just take a quick moment to introduce yourself?

SENATOR COLLETT: Sure. Hi, everyone. I'm Senator Maria Collett. I represent the 12th Senatorial District. That's parts of Montgomery and Bucks counties. I'm happy to be here. Thank you.

CHAIRMAN WENTLING: Thank you.

And we also were joined by Mr. Owlett.

If you want to just take a moment.

REPRESENTATIVE OWLETT: I'm Representative Clint Owlett. I serve the 68th District, which is all of Tioga County, part of Bradford County, and part of Potter County.

CHAIRMAN WENTLING: Thank you. We will now go to Mr. Struzzi for questions of the secretary.

REPRESENTATIVE STRUZZI: Thank you, Mr. Chairman.

And thank you, Secretary McDonnell, for being here today.

SECRETARY MCDONNELL: Thank you.

REPRESENTATIVE STRUZZI: I do want to thank the committee for entertaining my presence here today. I'm not normally on this committee, but I do represent Indiana County, and we have two of the largest coal-fired electric generation plants in Pennsylvania.

And I also have introduced House Bill 2025, which would require that any implementation of something like RGGI go through the legislature before essentially the

order is given to implement.

My question is, you know, really concerned with the implementation of something like this and the burden it's going to place on our power plants. As Representative Knowles said, you know, the coal industry has been struggling for many, many years now. It's finally coming back.

These power plants, particularly the ones in Indiana County, have already invested millions and millions of dollars to make themselves environmentally compliant. They have reduced their emissions already below required levels.

I fail to see how the implementation of anything like RGGI will actually improve air quality. If they're already complying, this is simply going to put additional financial burden on these power plants when they still have to generate the electricity that the entire east coast is using.

And you know there will be other experts here today, I know, that will testify, you know, it's going to cause the consumers to pay more money. In some of the other states,

I've seen estimates that their electric bills, some of the other RGGI states, that their electric bills have already increased, like, 64 percent for the consumers, without really making any significant impact to the environment.

I've also seen an estimate that if we eliminated all the emissions in Pennsylvania, carbon emissions, that it would only increase -- or decrease the overall global temperature by one-one thousandths, which, to me, is insignificant when you look at the burden that it's going to place on the small towns in western Pennsylvania that are going to lose jobs.

You know, our communities -- we've already heard from the power plants -- and I know some of them are here today. They're going to shut down because they can't afford to pay this tax, when, the way I see it, it really doesn't have an impact on the environment.

So, can you tell me how's RGGI actually improve air quality?

SECRETARY MCDONNELL: Sure. And a

couple things. One, I think the reality of what we see in terms of market forces within a low natural gas price environment is we're seeing closure of many of those plants now. I have seen that over the course of the past several years, of course, Mansfield just being the most recent. So, we are definitely seeing the impacts from a market perspective on that particular industry.

Within the context of RGGI, one, carbon is a regulated pollutant at the federal level, which means that gets incorporated into our Air Pollution Control Act as a regulated pollutant. And this will result in a 3 percent reduction, again, under the current rules, year over year, of carbon dioxide emissions.

I think, structurally, two of the important things to recognize in terms of the program are, one, it is incremental. It's not a switch that gets thrown where there's suddenly a 30, 40, 50 percent reduction required in having those kind of impacts. It is an incremental program. And, two, that we're leveraging market forces, and not just

within the state but regionally, in order to mitigate some of the cost limits.

REPRESENTATIVE STRUZZI: Thank you. I -- obviously, I have some bias. I'm protecting the people that I represent back in Indiana County. I don't see how that offsets the impact it's going to have on Pennsylvania's economy.

But I appreciate your testimony and the opportunity to be here today. So, thank you.

CHAIRMAN WENTLING: Okay. Next Mr. McCarter, if you'd like to ask questions of the secretary.

REPRESENTATIVE MCCARTER: Thank you very much, Mr. Secretary.

Just very quickly, again, in the design to implement RGGI, from what I'm hearing in your testimony is that we are trying to make allowances for those industries, such as the waste coal industry, to be able to continue to do the good work that they actually have been doing in reclamation.

In the interest of trying to reduce

the amount of emissions that are taking place out of Pennsylvania, that the other states in RGGI, as I understand it, have actually been very successful in reducing the amount of emissions, while not to the degree that surely many of us would like to see, that overall, in a basis, those ten states that have participated so far, with Virginia and Pennsylvania now looking to add into that, it would be -- can I say, it will surely be beneficial, in the long term, not only for reducing the amount of emissions and air pollution, but also for the overall aspect of trying to address climate change as well. And that RGGI, as a model, really, for the country, has become something that other states are also looking at across the country as to how to use a regional basis for making sure that that reduction takes place.

Can you comment on that?

SECRETARY MCDONNELL: Sure. So, one, agree with the assessment in terms of the impact on emissions. Essentially in Pennsylvania as well as some other communities, we've achieved a 13 percent

reduction over the last several years within the state. Those other states have achieved I believe it's over 40 percent reduction. So, it's significant. Climate remains our most significant challenge.

In addition to us looking at entrance into RGGI, New Jersey just reentered the program. Virginia is looking at entering into it. And, again, it's a model that has been adopted in other states, in other regions in terms of the trading protocol. So, again, it's something that keeps it within the market, creates a price on things that, frankly -- and I've said this again in other testimony -- that we're paying for now: flood impacts on our roads, in towns; additional cost related to lime disease, surveillance and prevention; additional costs around the West Nile virus program. So, there's impacts that we are seeing costs for today that are currently not priced.

REPRESENTATIVE MCCARTER: And also, one of those impacts would also be the transition toward cleaner jobs -- cleaner energy jobs throughout the states that have

taken the -- have become part of RGGI as well. And for those jobs, also I think that the need -- and I think it's been expressed here today -- is that we obviously have to look towards a transition, a just transition for any of those communities in the impacts.

And I would hope that RGGI would use its money, in a sense, coming back in to help with that as well.

SECRETARY MCDONNELL: Absolutely.

And one of the big -- as I said, it's two-pronged. So, you have the cap which reduces emissions, and then investment of the revenues, the auction revenues, that come back in. In most other states, those have gone into a lot of energy efficiency, renewable energy kinds of programs. And energy efficiency, and renewable energy in particular, I think, that's not things that we're going to see outsourced. It's things that we do here. It's things that impact our homes, our businesses, help drive down costs, make us more competitive and support an industry.

REPRESENTATIVE MCCARTER: Thank you.

CHAIRMAN WENTLING: Thank you.

Okay. Next, we have Senator Stefano.

SENATOR STEFANO: Thank you, Mr. Chairman.

Good morning, Secretary.

SECRETARY MCDONNELL: Good morning.

SENATOR STEFANO: I think it's not a secret that everyone knows I'm not a great fan of this cap-and-trade program. And I didn't realize until today that we consider carbon dioxide a pollutant. So, maybe we should end the hearing quickly, because every time we start talking we're polluting. We might have to consider that. But that's not my question.

My question is, in your calculation of RGGI -- as you know, and the science has showed us that an acre of forestland will absorb 2 and a half tons of carbon dioxide. Pennsylvania has 16.9 million acres of forestland. So, quick math will tell you a little over 42 million tons of carbon are absorbed every year.

In your calculations in your testimony today and in the past and future, have you calculated the absorption of carbon

across Pennsylvania in the calculations?

SECRETARY MCDONNELL: Actually, yes. And it's not -- so, RGGI, again, is specifically in the electric sector, although there are some off-setting programs and things that you can do within that context. In our climate change action plan and the assessment that we do there, we take into account electricity, industrial, transportation, agriculture, forestry. Which, of course, forestry shows up as negative emissions within the context of that.

So, yes.

SENATOR STEFANO: Okay. Because I haven't seen it in the calculations. That's why I asked the question.

SECRETARY MCDONNELL: Sure. We can get you a copy of the action plan and assessment that we did so you can see that.

SENATOR STEFANO: Thank you.

SECRETARY MCDONNELL: Sure.

CHAIRMAN WENTLING: Okay. Next we have Senator Sharif.

Let's try that again. Go ahead, sir, if you want to do that.

SENATOR STREET: That's fine.

Secretary McDonnell, wanted to thank you for your work. Clearly, we, many of us, recognize that climate change is an existential threat, but we have to balance that against the economic challenges that many Pennsylvanians face.

That being said, I want -- if you could comment on some of the -- I know we've worked with your office, I've worked with your office on developing some ideas around increasing the natural sequestration that my colleague, Senator Stefano, pointed out, as well as geological sequestration.

Can you talk a little bit about some of the department's ideas around expanding our forestry for the purposes of carbon sequestration that could balance out some of the impact of our carbon footprint?

SECRETARY MCDONNELL: Certainly. Interestingly, I'll say it's -- we talk about it within the context of carbon. But we also talk about it within the context of water quality. You know, forests, trees are a resource that delivers a lot of benefit to the

Commonwealth. Some of it economic in terms of timber, but some of the environmental services provided by our forests are critical.

So, we've been working in very close partnership, one, with the Department of Conservation and Natural Resources to expand stream-side buffer programs, things like that, which, again, give you that carbon benefit but also lock in the soil, so we're not getting erosion and impacts -- nutrient and sediment impacts to our streams.

And then, two, we're working with the geologist branch of DCNR to better understand places where we might be able to do carbon capture, utilization, and storage. That's still nascent in terms of development. It's something that has been talked about for a number of years. In the south, they're using carbon in a variety of ways within industries. We don't have that kind of build-out of infrastructure around that yet, but it's something we want to get ahead of.

SENATOR STREET: Thank you for the work in that area. Just wanted to -- I thought it important for members to know that

there is talk about expanding both forestry for natural sequestration and also geological sequestration as well.

SECRETARY MCDONNELL: Thank you for all your support on that.

CHAIRMAN WENTLING: And thank you very much, Senator Street, for your comments.

I want to mention to the committee, too, that we are considering -- or to the general public here, we are considering a tour of a cogeneration plant in the future work of this committee.

Any other questions for the secretary?

Okay. We're going to go ahead and move on. Thank you very much, Mr. Secretary.

SECRETARY MCDONNELL: Thank you.

I'll put in a plug. Definitely recommend to get out and see one. It's a very different technology than your traditional boilers.

CHAIRMAN WENTLING: Thanks. We look forward to it.

So, thank you.

Our next testifier will be Jaret

Gibbons, a former colleague of ours from actually back home in western PA. He is the executive director of ARIPPA, and he is here to introduce himself and speak to us.

Thank you.

MR. GIBBONS: Thank you, Representative Wentling.

Well, on behalf of ARIPPA, I want to thank the JLCC for scheduling this hearing to discuss the coal refuse reclamation-to-energy industry.

So, the Appalachian Region Independent Power Producers Association, or ARIPPA for short, is a nonprofit trade association representing the coal refuse and reclamation-to-energy industry in Pennsylvania and West Virginia.

ARIPPA's membership is comprised of environmental remediation facilities that utilize circulating fluidized bed, or CFB, boiler technology to convert coal refuse into electricity and use the resulting beneficial use ash to reclaim the polluted coal refuse sites. This is a very unique industry that has helped the state turn an environmental

challenge into an economic opportunity.

So, in 2016, Econsult Solutions conducted a study of the economic and environmental impacts of Pennsylvania's coal refuse industry.

And then in 2019, they expanded upon that previous study to identify factors causing a decline in the industry, and the environmental and economic benefits that the state and federal government, as well as the public, would lose if the industry would disappear.

While the full report is available on our website, copies of the executive summary were included in the packets today. And this, the information in there, is going to make up a big focus of my presentation today.

So, as we discuss the status of the coal refuse reclamation industry, we cannot forget about the critical role it plays in addressing Pennsylvania's coal mining legacy by remediating coal refuse sites that scar the landscape, pollute our waterways, and constitute a continuing risk to the health and safety of our local communities.

The responsibility and costs of addressing the range of environmental and safety hazards associated with these coal refuse piles fall to the current residents of Pennsylvania.

The inventory of coal refuse piles that is kept by the DEP Bureau of Abandoned Mine Reclamation identified 772 piles of coal refuse as of last June, scattered across the anthracite and bituminous regions, which are estimated to consist of at least 220 million tons of coal refuse and cover nearly 8300 acres.

Okay. I guess for you guys it is red. Out here it looks blue.

But, the red in the image represents the AML problems in the Commonwealth. AML and coal refuse piles generate a range of environmental and safety hazards that directly affect residents in at least 44 of Pennsylvania's 67 counties.

This picture also shows how the coal refuse plants were strategically located in close proximity to the state's coal refuse piles so as to efficiently reclaim these sites

with nearby fuel sources.

These piles are a major source of land, air, and water pollution. More than just eyesores, coal refuse piles create acidic runoff, meaning that precipitation picks up pollutants that leach into surface and groundwaters, a process known as acid mind drainage, or AMD. Seeps and discharges from coal refuse piles significantly impair nearby streams.

At the left is a stream adjacent to the Lucerne Mine coal pile in Indiana County, which cannot support aquatic life and has a pH level of three.

At the right is Solomon's Creek, outside Wilkes-Barre, where iron in the water turns the surroundings bright orange.

AMD issues have impaired around 5,500 miles of waterways across Pennsylvania. As you can see in the third picture, the location of impaired waterways corresponds closely with the locations of the coal refuse piles.

Water quality issues related to AMD are national in scope, since impacted streams in all four of Pennsylvania's major river

basins, where they are ultimately carried into the Chesapeake Bay, Delaware, Ohio, and Mississippi rivers and the Gulf of Mexico.

Coal refuse piles also create major air quality issues for surrounding communities, with fugitive dust and burning piles releasing uncontrolled toxic air emissions into the atmosphere. These fires give rise to substantial air pollution, as seen in the image to the left, from the Loomis Culm Bank in Nanticoke.

As of June, there were 45 identified coal refuse pile fires in Pennsylvania, which can burn for decades, if left unaddressed.

Fires that can spread must be contained at considerable cost, such as the 2014 fire at Simpson Park in Lackawanna County, which required 1.6 million gallons of water daily to contain and was extinguished at a cost to the state of nearly 2.2 million dollars.

To date, Pennsylvania's coal refuse industry has removed and burned as fuel more than 225 million tons of coal refuse, improved and restored more than 1200 miles of streams,

and reclaimed more than 7200 acres of abandoned mine lands through the use of the beneficial ash that they produce.

A 2017 study of the Blacklick Creek watershed in Cambria County by the DEP found that reclamation of five coal refuse sites using CFB ash has greatly diminished the loadings of pollutants into the watershed. The process reclaimed 56 acres of land and restored aquatic life to six miles of the south branch of Blacklick Creek.

The southern fork of the creek, which ran through the pile, has now been stocked with trout by a private sportsman group and can be enjoyed for fishing and recreation.

The remediation efforts of the industry are the product of a long-standing collaboration with the Commonwealth, which closely monitors these sites.

For nearly three decades, these plants have partnered with environmental groups and public sector agencies, including, but not limited to, those listed here, to perform coal refuse pile remediation across the state.

For example, ARIPPA member Olympus Power recently partnered with the Eastern Pennsylvania Coalition for Abandoned Mine Reclamation, EPCAMR; DEP's BAMR; U.S. Department of Interior's Office of Surface Mining and Reclamation and Enforcement and others on a project to remove a 4 million-ton pile of coal refuse on a 55-acre site in the borough of Swoyersville, Luzerne County.

This project was funded in part through 4 million dollars from the federal AML pilot program to EPCAMR, with an additional 8 million dollars in private investment from Olympus.

The benefits of this project include expansion of a neighborhood community recreation field, which you can kind of see next to it in the picture, improved water quality, and reduced flooding of the Abrahams Creek watershed, and elimination of health and safety risks from air emissions as well as an attractive nuisance.

Unfortunately, the industry is not fully compensated for the positive externalities resulting from its work in

addressing these public environmental liabilities.

In recent years, market and regulatory forces have rendered energy market revenues insufficient to cover costs for many plants. This dynamic creates an existential crisis for the industry.

These forces have already resulted in the closure of multiple plants and threaten the sustainability of environmental and economic benefits that the plants -- that the industry provides.

In 2016, Pennsylvania had 14 coal refuse plants spanning the anthracite and bituminous coal regions and supporting the local economies of small communities across eight counties.

Four of these plants are currently deactivated, identified in red on this slide here.

Plants that have been closed are typically demolished and sold for scrap. As a result, once plants are shuttered, they are unable to return in the future, even if the economics of the industry were to change.

Pictured here is the demolition of the Piney Creek Power Plant, which closed in 2013. Northeastern Power and Cambria Cogen will likely meet a similar fate sometime later this year.

At historic operating levels, the industry would generally remove and consume over 10 million tons of coal refuse and reclaim over 200 acres per year, improving numerous waterways in the process.

However, plant closures and idling have led to an overall reduction in the volume of coal refuse consumed by the plants.

Thus, in recent years, plants have only consumed between 8 and 9 million tons of coal refuse annually, resulting in a corresponding reductions in economic and environmental benefits.

Current conditions in the PJM market serving Pennsylvania does not provide sufficient incentives for most of the ARIPPA plants to operate at full capacity.

There are two main revenue streams for power plants: wholesale energy revenue and capacity payment revenue.

Basic economics dictate that the revenue received for each megawatt hour of energy must be sufficient to cover the costs of production. However, since mid-2015, wholesale energy prices have usually been below the typical break-even point, as you can see in the slide, required by coal refuse plants simply to cover their cost of production.

This is due in large part to renewable subsidies and the abundant availability of low-price natural gas as well as the elevated operating costs for re-mining, limestone trucking, and costly remediation and bonding obligations that are unique to the coal refuse-to-energy industry.

It is economically sensible in the short run for some plants to remain in operation in a cycling mode, rather than shutting down, by running only when energy prices are sufficient to cover costs, and idling when costs to operate exceed pricing, so typically operating in the wintertime, when prices tend to be higher.

However, without a sustainable model

to yield viable returns, plants will ultimately close, eliminating the significant environmental benefits currently delivered by the industry.

Meanwhile, capacity payments are set years in advance in order to provide an incentive for investments in plant assets and fixed costs.

PJM's capacity market-based residual auction price fell significantly for the current period beginning June 1 of 2019 and will fall even lower for the coming year.

This level of payment further erodes the bottom line for the plants and threatens reliability when they are forced to defer needed investment and maintenance.

In addition to changes in market conditions, these plants face challenges from new federal and state regulations that increase capital and operating costs for plants.

New regulations often account only for the negative environmental externalities of coal refuse plants and not the environmental benefits of their remediation

work, subjecting the industry to an asymmetrical regulatory environment.

On October 3rd of last year, Governor Wolf signed an Executive Order instructing DEP to join RGGI, a collaboration among states that the secretary talked about. Under RGGI model rule, fossil fuel plants with a capacity of over 25 megawatts are required to hold allowances for their CO_2 emissions.

Coal refuse reclamation-to-energy facilities would potentially, under the model rule, be subject to the program. The result would be a significant increase in operating costs of these facilities, with allowances projected to cost as much as 12 dollars per megawatt of energy produced at these facilities.

Such an increase, particularly considering the current pricing in the PJM market, would lead to the immediate closure of every one of these facilities, along with the loss of their attendant environmental benefits.

However, coal refuse facilities are distinctly different from traditional fossil

fuel-fired power plants. The remediation activities of the industry deliver documented benefits to the environment, the Commonwealth, and the public at large relative to the probable alternative of leaving the coal piles unaddressed.

These benefits include water quality improvements, public health and safety benefits, and positive air quality impacts.

For example, coal refuse pile reclamation by these facilities reduces uncontrolled emissions from burning coal refuse piles and creates carbon sinks by removing coal refuse and restoring vegetation to currently bare and AML sites.

While these environmental benefits are substantial in economic terms, they are not captured within the industry's business model. Rather, they are positive externalities that accrue to the general public.

These activities yield quantifiable environmental and public use benefits, estimated to total over 9 million dollars in just one year, and growing to nearly 65

million dollars by year 20, totaling almost 740 million dollars, and averaging 36.9 million dollars per year over a 20-year period.

Since each state participating in RGGI must enact independent regulations, Pennsylvania has the option to consider the unique environmental nature of coal refuse facilities and account for these positive externalities of the industry in creating its program, particularly since these facilities do not exist in any of the other current RGGI states.

The environmental benefits resulting from the reclamation of coal refuse piles should be sufficient to justify some type of exemption, exclusion, or other mechanism to safeguard these facilities from the financial burden that RGGI would place upon them similar to the type of program that is in the proposed rule that the secretary talked about earlier.

To achieve the benefits described previously without the industry, the state can alternatively commission the removal of the piles, disposal of the coal refuse, and

rehabilitation of the sites. The cost of this effort to the state represents the avoided cost from activity that is, instead, undertaken by the industry.

Econsult reviewed bids of recently awarded DEP contract with Rosebud Mining Company for the removal, disposal, and rehabilitation of a 62-acre coal refuse pile in Ehrenfeld, Pennsylvania. Rosebud controlled the disposal costs for this project by relocating the coal refuse to nearby strip mining pits that it owned, limiting transportation and storage costs, while three other bids are likely more reflective of the typical cost the state would incur for disposal.

Combined, estimated disposal and removal costs range from 11 dollars per ton in the most ideal situation to around 33 dollars per ton under a more typical condition. Rehabilitation costs represent an additional 20 to 23,000 dollars per acre.

At these costs, replicating the annual removal of 8 million tons of coal refuse and remediation of about 240 acres as

currently generated by the industry each year would cost Pennsylvania between 93 and 267 million dollars annually. Addressing all identified piles in the state would cost as much as 7.4 billion dollars.

The industry is also a major economic generator and major employer for Pennsylvania, while playing a prominent role in disadvantaged, rural communities across the state's two legacy coal regions.

Plants are economic anchors for their host jurisdictions, serving as employment hubs and large components of the local tax base.

Direct expenditures by the industry are estimated at 363 million dollars annually, and industry employees earn an average salary of greater than 75,000 dollars per year.

The activities of the industry extend well beyond the footprint of the plants themselves, encompassing the full fuel cycle of mining, transportation, energy generation, and environmental reclamation.

Including spillover effects, the annual economic impact of the industry is 615 million dollars, supporting nearly 3,000 jobs

and generating 18 million dollars in state taxes and fees.

The coal refuse reclamation-to-energy industry is a unique private-public partnership that allows facilities to generate electricity and, at the same time, restore the environment of the Commonwealth.

While converting coal refuse to energy is not currently viable as a market-based means of energy production alone, it remains a valuable and cost effective means of environmental remediation that delivers a strong public return on investment.

We need to strengthen our partnership whereby the state and federal government help to manage a portion of our fuel cycle costs in return for saving the taxpayers from bearing the inevitable cost of state-funded remediation efforts to remove these environmentally threatening coal refuse piles.

Options include expanding on the state's Coal Refuse Energy and Reclamation Tax Credit or enacting a comparable federal tax credit, requiring purchase power agreements with local utilities and public agencies, as

most of these facilities started with back in the '90s, when they were built, but have since expired, or changes to Pennsylvania's Alternative Energy Portfolio Standards, AEPS, such as closing the program to out-of-state Tier II sources, as was done for the solar carve-out in 2017.

As the secretary mentioned, we are part of the Tier -- we are a Tier II AEPS source at the moment. However, currently -- or I should say, most recently in 2017, we received about 16 cents per megawatt, compared with Tier I price of over 12 dollars per megawatt. So, unfortunately, this amount has just been not sufficient to incentivize these facilities to be able to operate at their full capacity.

In conclusion, Pennsylvania's coal refuse reclamation-to-energy industry has served for nearly three decades as a valuable environmental remediation tool for the Commonwealth.

The industry is historically the most effective and prolific actor in the remediation of coal refuse piles. But the

current economics of the industry are unsustainable, and without some intervention will lead to further plant closures and permanent loss of their public environmental and economic benefits.

ARIPPA members want to continue partnering with environmental groups and public sector agencies to promote the values of reclamation and find ways to secure adequate resources of funding to sustain and increase the current levels of AML reclamation activities.

If you'll indulge me for about two minutes, I have a few -- I just want to -- with this industry, pictures, I think, often speak louder than words. I just want to run you through a few before-and-after pictures, just to show some of what the industry has done.

This is a site in Cambria County, the Gallitzen site.

Here we have the Ernest site in Indiana County.

Here we have the Lucerne site in Indiana County.

These are from the Cambria cogen facility that unfortunately just shut down permanently last year.

Here we have the Colver Power Project, in Cambria County.

This is the Revloc site. This is part of what was studied with the Blacklick Creek and DEP. And this as well is in Cambria County.

Here we have the Loomis Bank site in Luzerne County.

And this is the Loomis fire that was mentioned earlier, which one of the facilities helped to take out and now has that nice green field there. This is up in Luzerne County, as I mentioned.

The Bank A site, in Carbon County.

The Beaverdale site, in Cambria County, done by Seward Generation, which is in Indiana County.

This is the Seanor site, in Westmoreland County. It was also completed by Seward Generation.

This is the outside of the Schuylkill Energy Resources in Shenandoah, PA, up in

Schuylkill County, as well as near the Gilberton Power, in Frackville, up also in Schuylkill County.

Here's the Kennerdell -- the Armstrong County site, done by Scrubgrass Generating, which is up in Kennerdell, PA, in -- I'm blanking on the county now -- Representative James' district, Venango County.

And this is the Clearfield County site that they completed.

So, just -- I think if you look, just the pictures right there show you how the industry has been able to take some of these sites, which often look like the surface of the moon, and turn them into something that is a usable source, whether it's for open green space or reuse in some type of economic or residential usage.

Any question certainly I'll be glad to take.

CHAIRMAN WENTLING: Yes. Thank you very much, Mr. Gibbons.

And we have a question here from Mr. Cook.

REPRESENTATIVE COOK: More of a comment for Mr. Gibbons than anything.

Growing up in the Mon Valley, I grew up less than probably a quarter of a mile from a coal pile, and then we have some that look like moonscapes still. I know the industry gets blamed for a lot, but I just wanted to say thank you to the industry for addressing an issue and a problem that they didn't create.

We always like to see when we have partnerships, environmentalists, you know, some of our biggest assets in my district are the Mon Valley river itself and the streams that contribute.

So, on that note, just thank you, and keep up the good work. We'll try to do what we can do on this end to help assist in that.

MR. GIBBONS: Thank you very much.

Certainly, we're glad to try to address as many of these issues as we can and hope to continue doing that in the future.

CHAIRMAN WENTLING: Okay. Thank you very much again for your testimony.

Now, one of your partners here at

ARIPPA is Olympus; correct?

MR. GIBBONS: Yes.

CHAIRMAN WENTLING: Would you like to -- I guess we'll try something a little different. Do you want to introduce Vince perhaps and have Vince come on up and speak?

MR. GIBBONS: Vince Brisini represents Olympus Power, and they are one of our board members. They own two of the facilities in the northeast part of the state. And I'll let Vince talk. Vince is far more technical than I am, so he'll be able to give you a far better technical breakdown of the impacts of some of these regulations on the industry.

So, look forward -- I've seen Vince's presentation. I think you'll look forward to hearing it. It's some very good, more detailed, technical information.

CHAIRMAN WENTLING: Okay. Thank you, Mr. Gibbons.

Mr. Brisini. And I hope I got that correct.

MR. BRISINI: Yes. Thank you.

Good morning. I'm Vince Brisini, the

director of Environmental Affairs for Olympus Power. And I'd like to thank the chairman and the committee for allowing me to testify today.

Today I'm going to share some insights into the Regional Greenhouse Gas Initiative, known as RGGI, and what we know and don't know about the effects of Pennsylvania joining RGGI or developing and implementing a RGGI-like program.

As you will see on the slides I'm using today, they were prepared and submitted prior to the release of the preliminary draft rule on the 30th of January, which includes a set-aside for the coal refuse electric generating units. However, I have adjusted the data in the verbal testimony today to reflect that allowance set-aside for the coal refuse facilities.

Why am I not going forward? Did you --

CHAIRMAN WENTLING: You're just going to have to beep, when we were in school, slide, beep.

MR. BRISINI: Okay.

A big difference is that -- okay. Fine. Thank you.

While we have the website description of the Regional Greenhouse Gas Initiative, a much more simple way to understand RGGI is that it's a program that imposes costs upon the carbon dioxide emissions from electric generating units to price certain electric generation out of the market to the benefit of other types of electric generation. It's one of a number of efforts that are underway to re-regulate the industry to achieve politically desired outcomes.

As others have stated, there are a number of other cap-and-trade programs that are in place that are implemented by regulation, but RGGI is very different than most of those programs.

A big difference is that, with rare exception, the affected sources must buy the allowances. Also, there aren't commercially available technologies to capture or store or otherwise manage the captured carbon dioxide, which is not the case for sulfur dioxide and nitrogen oxides, which are the typical

pollutants regulated under the cap-and-trade programs.

The significant control of carbon dioxide can only be achieved by fuel switching, reduced utilization, or retirement. Consequently, RGGI is unlike those other cap-and-trade programs in that RGGI is designed to increase the price of electricity from the affected units, while the other cap-and-trade programs were designed to control the costs of emission reductions and price of electricity.

We do know that, based upon the current RGGI prices for carbon dioxide allowances, that certain electric generators in PJM will be made non-competitive in the PJM market. As you can see on this slide that was developed prior to the release of the draft preliminary rule, the coal refuse-fired plants were the most significantly affected by RGGI. That will be a direct increase to their bid price into the market. So, that artificially makes them more expensive. The coal-fired and certain fuel-fired -- other fuel-fired and other natural gas electric generation will

also be artificially challenged to remain economically viable, even at the reduced operating levels.

In the case of coal-fired generation, Pennsylvania's participation in RGGI will result in their retirement as quickly as PJM allows them to retire.

As you can see on this slide, in most, but not all, cases, the RGGI states and Pennsylvania electric generators reporting to EPA's Clean Air Markets division have reduced carbon dioxide emissions.

In the case of New Jersey, they left RGGI and now generate considerably more electricity with a corresponding increase in carbon dioxide emissions. But with New Jersey rejoining RGGI, it's going to be interesting to see if those trends continue.

Pennsylvania electric generators, without Pennsylvania participating in RGGI, have reduced carbon dioxide emissions by 33.2 percent from 2005 emission levels while, at the same time, maintaining over 30 percent of the electricity generated being exported to other states that no longer generate or never

did generate enough electricity for their own state's needs. And that 32 percent reduction surpasses the targets set by Governor Wolf, the Paris accord, and even the vacated Clean Power Plan, well ahead of all of their respective schedules.

We know how these carbon dioxide reductions have occurred in Pennsylvania. The reductions are due to the retirement of coal and coal refuse electric generation units and their replacement by natural gas-fired electric generations.

What we also know, by looking at the generation and sales data, is that most of the RGGI states now import more electric power on a percentage basis than they did prior to participation in RGGI. And when compared to the previous slide which identified the state-by-state carbon dioxide emissions, those RGGI-participating states that aren't importing more electricity in 2018 than they were in 2008 have carbon dioxide emissions that have either increased above 2005 levels or they have had a reduction that is far less on a percentage basis than the reduction

achieved in Pennsylvania without Pennsylvania's participation in RGGI.

This is a map of the PJM service territory. The point of this slide is to let you know that Pennsylvania is not an island.

We know from the generation and sales data provided on the previous slide that RGGI-participating states that can, will import more electric power from non-RGGI states or areas. Consequently, we really don't know if Pennsylvania's participation in RGGI will actually result in any regional carbon dioxide reductions. That's because the lost Pennsylvania electric generation can be replaced by electric generation in other PJM states not participating in RGGI, and those electric generating plants could be coal or coal refuse or natural gas-fired.

Plus, because those other states aren't part of the Ozone Transport Region, there could actually be higher nitrogen oxide emissions and, for other reasons, high sulfur dioxide emissions.

We could also be certain that the Pennsylvania electric generation that will be

lost due to RGGI participation won't be replaced by renewables. Using land-based, wind-powered electric generation for analysis purposes -- and I use that because it is the most cost effective renewable electric generation at a price between 26 and 54 dollars per megawatt hour -- it would take 3,300 wind turbines to replace the Pennsylvania electric generation lost due to RGGI participation by Pennsylvania.

To put that number into context, according to the Pennsylvania Department of Environmental Protection, there are currently 1,300 megawatts of installed wind turbine capacity in Pennsylvania. That amount of installed capacity represents approximately 600 to 700 existing wind turbines.

The failure of RGGI to achieve mass renewable electric generation installation is demonstrated by the variety of continuing state legislative efforts to mandate more renewable electric generating sources. RGGI simply does not provide that outcome.

Recognizing that the Pennsylvania lost generation would be replaced, in the

lowest-emitting case, by natural gas-fired generation, the maximum tonnage of carbon dioxide reduction that would occur would be about 19.8 million tons, or 1 percent of the annual carbon dioxide emitted by the electric generators in the United States.

This is ignoring all other sources of carbon dioxide which, if considered, would make that amount an even smaller percentage of U.S. greenhouse gas emissions. And remember that this is the maximum amount of carbon dioxide reduction that will occur, because there is a high likelihood that some of the lost generation from Pennsylvania coal-fired power plants that are retired will be replaced by other coal or coal refuse-fired plants located in other PJM states that aren't participating in RGGI.

For perspective, it's worth knowing that coal and coal refuse-fired electric generation in the United States together represent about 12 and a half percent of global coal-fired electric generating capacity. That provides some additional insight into how small a 1 percent carbon

dioxide reduction from the electric generating sector in the United States really is on a global scale.

I've heard presentations that project the Pennsylvania tax revenue that would be received from RGGI participation to be about 277 to 315 million dollars per year. I believe that is a gross overestimation. If all the Pennsylvania coal-fired electric generation lost due to participation in RGGI were to be replaced entirely by natural gas-fired electric generation located in Pennsylvania and all of the existing natural gas-fired electric generation, including the coal switched to natural gas and the older natural gas-fired plants with the nearly 4-dollars-per-megawatt-hour RGGI price adder, were operated at the same levels that occurred in 2018, then the maximum amount of annual RGGI tax revenue for Pennsylvania would be 267 million.

However, remember what we know. Those states that can import from states or areas not participating in RGGI will end up doing exactly that, which means the lost

generation is unlikely to all be replaced by Pennsylvania-based electric generation.

Consequently I believe a more realistic projection for RGGI tax revenue is about 175 to 200 million dollars annually.

Also, I have heard people talk about the price of electric being reduced in the RGGI states, so I researched that statement. I found that there were some reductions in the average price of electricity, but there were mostly increases to the residential price of electricity, including in Pennsylvania, which doesn't participate in RGGI.

The only RGGI-participating states with reductions in residential prices as well as the average price of electricity are Delaware and Maryland, both of which are in the PJM territory and both of which have increased the amount of electricity they've imported since joining RGGI. That's a really important correlation to understand and appreciate.

So, looking at just the coal and coal refuse plants located in Allegheny, Armstrong, Indiana, and Cambria counties, specifically

Cheswick, Conemaugh, Homer City, Keystone, Seward, and Ebensburg power plants, they generate a combined 36.1 million megawatt hours of electric power on an annual basis. And because of that electric generation, they represent hubs of employment and purchasing activity within the local and state economies.

On an annual basis, direct activity by the four coal-fired plants alone total almost 1.1 billion dollars in operating expenditures, including fuel costs. They employ 622 direct workers and pay 92 million dollars in employee compensation, including wages and benefits.

The coal refuse-fired plants provide 122 million dollars in annual operating expenditures, employ directly 208 workers, and pay 20 million dollars in employee compensation.

The employment and purchasing activities at these facilities generate a significant spillover impact locally and throughout Pennsylvania. Plant operations support local jobs, and those workers, in turn, recirculate or spend a portion of their

salaries and wages within the local and state economy.

Ongoing operations also require the procurement of various goods and services, which translates into economic opportunities for local and state vendors representing a range of industries.

In total, the operations of these four coal-fired electric generating plants produce 2.6 billion dollars in total economic impact within Pennsylvania, supporting 6,617 total jobs -- 622 direct and 5,995 indirect -- with 475 million dollars in total compensation, including wages and benefits.

The two coal refuse-fired plants in the study provide 500 million dollars in total economic impact, support 208 direct and 2,005 indirect jobs, with 103 million dollars in total compensation and benefits.

Direct and spillover economic activities from plant operations generate income, sales, and business taxes for the Commonwealth of Pennsylvania. Based upon the observed relationship between economic activity and Pennsylvania tax collections, the

activities at the coal-fired plants in the study generate estimated combined annual state taxes of 29.5 million dollars.

In addition, these plants pay an estimated 4.7 million dollars in environmental taxes and fees to the state from their activities. These tax revenues total 34.2 million dollars annually.

The coal refuse-fired plants in the study generate estimated combined annual state taxes of 3.2 million dollars, pay an estimated 500,000 dollars in environmental taxes and fees to the state from their activities. These tax revenues total 3.7 million dollars annually.

Additionally, these electric power plants pay an estimated 2.8 million dollars annually in property taxes to municipalities and school districts. These plants also pay an estimated 1.7 million dollars annually in municipal utility and services fees. Combined, local payments in these two categories total 4.4 million dollars.

We know that Pennsylvania joining RGGI will force the early retirement of

coal-fire electric generating units in Pennsylvania, will not cause a shift to renewable electric generation in Pennsylvania, will reduce the amount of electricity generated in Pennsylvania and exported by Pennsylvania, will result in lost Pennsylvania coal-fired electric generation being replaced by generation from other non-RGGI PJM states, will result in lost Pennsylvania coal-fired electric generation being replaced by natural gas electric generating units or coal or coal refuse-fired units either inside or outside of Pennsylvania. It will result in companies moving the development of new natural gas-fired generating units to other non-RGGI PJM states.

It will not result in carbon dioxide emission reductions that will affect local, regional, or global climates. It will only generate 175 to 200 million dollars per year in tax revenue. It will result in the loss of 622 direct jobs and 5,995 indirect jobs in the western Pennsylvania coal region as well as additional job losses in other areas of the Commonwealth. It will result in the loss of

2.6 billion dollars of annual economic benefit to Pennsylvania. And it will result in a loss of annual local and state tax revenues and service fees of 38.2 million dollars.

Thank you for allowing me to be here today and for the opportunity and present this testimony.

CHAIRMAN WENTLING: Thank you, Mr. Brisini.

I wanted to note, too, for those that don't know Mr. Brisini, I believe you were a former deputy secretary of DEP yourself; is that correct?

MR. BRISINI: I was. I was the deputy secretary for the Office of Waste, Air, Radiation, and Remediation.

CHAIRMAN WENTLING: Thank you for including that.

Do we have any questions?

Mr. Owlet.

REPRESENTATIVE OWLET: Thank you for your testimony. I felt that was very helpful for me. I have been paying attention to this somewhat, but that was very helpful.

I guess my question is, given your

experience serving, you know, as deputy secretary, were you involved in any of the negotiations of this new program and this regulation, invited to the table to talk about it?

I know the administration, seems like everybody's left.

MR. BRISINI: No, in fact, I wasn't. But what we did when I was there, when the Clean Power Plan, under the Obama administration, identified, we crafted a white paper, a DEP white paper, on that particular issue, identifying what would be, in fact, a lawful way to implement the Clean Power Plan.

And that is -- it's very interesting, because the Clean Power Plan invented new things. It invented a thing called state measures. And if Pennsylvania had done a Clean Power Plan, you, the state legislators, would have had to implement new legislation to adopt, implement, and enforce those new state measures. And those state measures could not be included in the state implementation plan, which is the place where all environmental regulations end up.

So, clearly, it wasn't a state -- it wasn't a state environmental regulation at that point. So, we had a very different perspective.

The Affordable Clean Energy Rule that has been adopted, while people have identified it as a rolling back of the Clean Power Plan, it, in fact, is the appropriate way to regulate carbon dioxide if you're going to regulate it under the Clear Air Act. And if you're going to regulate it under what they call Section 111(d) of the Clean Air Act, you go to the sources affected under that provision and you say, What can they accomplish?

The Clean Power Plan, the term you may have heard used was, they were outside the fence. If you do want 111(d), you have to be inside the fence. You have to be regulating the affected sources, not developing state energy policy plans.

REPRESENTATIVE OWLETT: I appreciate that.

Is there anybody from the department or administration around yet for this? I

would just suggest you guys talk to Vince and get together and have a chat about this.

I feel like -- the numbers that he presented, you know, if this is accurate information, we have a lot of work to do to get this right so that we can actually help improve the environment and make sure that businesses don't leave and that we can, you know, preserve the good work that they're doing.

I think we need to hold off and have a good conversation about it. I think he's got a lot of really great information. So that would be my suggestion.

MR. BRISINI: Just so you know and in full disclosure, all of my data either has come from the Energy Information Administration, sales data, total price of electricity generation data. All of those have come from the official review data by the government. My emissions data came from the EPA Clean Air markets division, which is the repository of emissions monitoring data for EPA. Very highly quality assured.

Back in my previous life, I was very

engaged in the development of Part 75, as they call it, provision in the Clean Air Act. And so it's -- as I used to tell the people in the power plants where I worked, those are the most highly quality assured data associated with any power plant.

CHAIRMAN WENTLING: Okay. Thank you, Mr. Brisini.

We're going to move to the next, I believe, group of testifiers. Thanks again.

We have Heather Smiles, and we have Mike Nerozzi. I'll let them introduce themselves. And thank you very much.

Oh, I may note that Mike is a former member -- not a member, a former employee of this committee, which is, I think, nice to note for us here in the committee. So, thank you.

MS. SMILES: Good morning, Chairman Wentling and members of the committee. My name is Heather Smiles. And I am the chief of the Division of Environmental Services, which is in the Bureau of Fisheries, the Pennsylvania Fish and Boat Commission.

I would like to thank you for the

opportunity to participate in today's hearing.

The Pennsylvania Fish and Boat Commission is the natural resource management agency tasked with managing the fish, reptiles, amphibians, and aquatic macroinvertebrates that inhabit the 85,000 miles of stream and 99,000 acres of lakes found within the Commonwealth. Our mission is to protect, conserve, and enhance these resources as well as to provide fishing and boating opportunities to the public.

Every day, we strive to fulfill this mission on behalf of our 3 million anglers and boaters, as well as for the benefit of all Pennsylvanians, as a healthy environment improves everyone's quality of life.

One of the simplest methods for determining the health of a stream is to observe the color of its water and substrate. A clear and inviting blue color generally infers a healthy, fishable, and swimmable stream, while uninviting colors, like orange, black, and white, denote degraded water quality. These latter colors are often associated with the impacts of acid mine

drainage and are a stark reminder that while coal mining is an important part of our industrial heritage, the unregulated activities of the past have led to legacy impacts on our waterways.

From the onset of industrial-scale mining in the late 1800s until the 1970s, Pennsylvania coal mines operated in a largely unregulated environment with respect to mine site restoration and water quality degradation. During this time, operators abandoned over 400 million tons of coal refuse throughout the major mining regions of the Commonwealth.

The passing of the federal Surface Mining Control and Reclamation Act of 1977 was the first step in ensuring operators were responsible for reclaiming their mine sites in a manner that restores the landscape and protects water quality. However, legacy impacts to our streams and lakes from coal extraction remain. A short drive north of our state's capital on Interstate 81, through the heart of the anthracite region, reveals massive piles of coal refuse still dotting the

landscape. That same phenomenon exists in the bituminous region of western Pennsylvania as well.

Acid Mine Drainage, or AMD, is arguably the principal pollutant associated with coal extraction impacting our waterways today. It is responsible for the impairment of 5700 miles of streams in Pennsylvania alone. AMD is caused by the mineral Pyrite, which can be found intermixed with coal and is incidentally extracted during mining operations. When Pyrite is exposed to both oxygen and water, for example when it is disposed of with mining byproducts in refuse piles, it undergoes a chemical reaction that produces acidity and heavy metals such as aluminum, manganese, and iron. These chemicals are highly toxic to aquatic life, and when they find their way to the nearby surface water, it can result in the complete loss of aquatic life.

Siltation is another form of pollution that degrades water quality and in-stream habitat. It can originate from coal mine refuse piles, especially those located in

the floodplains or on steep slopes adjacent to surface waters. In this case, small material in the coal mine refuse is washed into streams, smothering streambed habitats that support aquatic macroinvertebrates such as mayflies, stoneflies, or caddisflies. These invertebrates are critical components of the aquatic community, by providing food for brook trout, brown trout, smallmouth bass, and walleye, all game species highly prized by anglers.

This habitat is also utilized by these same fish species to complete their life cycle. Fish deposit their eggs on or in the stream bottom both haphazardly or in nests, depending on the species. When coal mine refuse is washed into streams, the subsequent siltation can cover and suffocate the eggs, leading to poor hatching rates and ultimately depressing the fish population.

Water quality in streams can be severely impacted by coal mine refuse piles. In some cases, streams have been buried beneath the piles, while in others, surface water has infiltrated unconsolidated refuse

resulting in subsurface flow. The result in both instances is the same: the elimination of surface water, which is the most critical element of aquatic life.

Physical manipulation of stream channels as a result of historical mining activity also greatly alters a stream's ability to function naturally. The placement of coal mine refuse adjacent to a stream raises its bank height and results in a disjointed connection to its floodplain. This has been shown to cause channel incision and bank erosion.

Additional historic mining activity like channel dredging, channel straightening, and stream relocations resulted in the creation of artificial stream channels which can be unstable and often lack the habitat variability required to support aquatic life.

With proper planning, the removal of abandoned coal mine refuse from stream channels and floodplains may allow for the restoration of natural stream channels well suited for recolonization of aquatic organisms.

Projects that focus on removal of abandoned coal mine refuse are critical in returning aquatic life to streams. In the 1970s, an operator disposed of coal mine refuse in an area adjacent to the west branch of the Susquehanna River near Watkins, in Cambria County. The pile, which was 18 acres in size, contained 1.3 million tons of coal mine refuse.

In addition to a discharge from a nearby abandoned underground mine, the coal mine refuse pile discharged iron, aluminum, acidity, and silt, decimating aquatic life in the river for miles. This was apparent as the commission monitored the fish population in this section of the river in the late 1990s and found little sign of aquatic life, with no evidence of natural reproduction of trout.

In 2004, the Department of Environmental Protection, Bureau of Abandoned Mine Reclamation, initiated a remediation project for this Watkins site, and by 2008 had removed all 1.3 million tons of coal mine refuse. The completion of the project resulted in reduced loading rates in the west

branch of the Susquehanna River for several chemical constituents regularly associated with AMD, including 1600 pounds of acidity, 120 pounds of iron, 245 pounds of aluminum per day.

Subsequent monitoring by the commission in 2014 revealed improvements in the health of the fish community as a result of the project.

An electrofishing survey captured enough brown trout in the river to be designated a Naturally Reproducing Wild Trout Water, using commission criteria.

In 2018, merely a decade after the project was completed, an additional survey indicated this section of the river met the criteria to be listed as a Class A Wild Brown Trout Stream. This is significant, as only 3 percent of our flowing waters in the Commonwealth are eligible for this designation.

The project demonstrates the resilience of our biological communities and the speed at which they can recover when the resources of water quality degradation, such

as coal mine refuse piles, are remediated.

These efforts and others like it have spurred many partnerships with NGOs, like Trout, Unlimited; Western Pennsylvania Conservancy; and the West Branch Susquehanna Rescue, as well as local, state, and federal government agencies, including the conservation districts, DEP, and the U.S. Environmental Protection Agency.

The commission has partnered with DEP for nearly 30 years to minimize impacts from mining operations. This has been achieved through a joint review of proposed mining projects by DEP engineers and commission biologists to ensure impacts to water quality and commission trust species are avoided, minimized, and mitigated to the greatest extent possible.

The commission acknowledges that cogeneration facilities play a significant role in coal mine refuse site remediation, as they generate energy from what was previously considered waste and would otherwise continue to impact water quality. The commission supports efforts to help restore streams

impacted by coal mine refuse but recommends that steps are taken to ensure the additional carbon emissions resulting from the use of waste coal do not outweigh the benefits to water quality.

Like AMD, climate change is a serious problem faced by natural resource agencies, with potentially damaging effects on iconic species such as the brook trout and the Eastern hellbender, which are two of Pennsylvania's state symbols.

While we acknowledge the challenges that come with trying to balance our nation's energy demand with long-term sustainability, the commission seeks policies that will help mitigate both impacts of climate change and AMD on our aquatic resources.

Thank you for giving us the opportunity to testify this morning. And we would be happy to answer any questions at this time.

CHAIRMAN WENTLING: Thank you very much.

Mr. Nerozzi, do you have anything?

MR. NEROZZI: No.

CHAIRMAN WENTLING: Excellent.

Mr. Cook.

REPRESENTATIVE COOK: I want to thank you both for being here today.

And, again, back in my district, Marianna, Pennsylvania, kind of comes to mind. We have 500 acres of waste coal pile, and the Ten Mile stream goes right through it.

What I wanted to do is give you the opportunity to share. I think, going forward, it's important that we get our young people involved in this. And the Fish and Boat Commission has an excellent program where we do Fish in the Classroom.

And the story that I want to share is, we went into one of the school districts, they raised trout in the classroom. They then took it to Ten Mile and released it.

We do not have a trash problem in that area anymore, because when the students went down there, they did water sampling, soil sampling, and they got to see it firsthand.

So, I don't want to take up the time, but if you guys could share how you get the younger people involved in this longer-term

program. Whichever one.

MR. NEROZZI: Sure. Thank you, Representative. Appreciate it.

Trout in the Classroom, certainly a very popular program. That's done in conjunction with Trout, Unlimited, some local school districts.

We actually now have started actually in some of the areas where stocking trout afterwards, after the program is complete in the classroom, isn't feasible, we've actually started to even interject catfish in the classroom, which sometimes are a more suitable species in warm water environments.

So, in addition to that, I mean we have a lot of different family and youth fishing programs. Certainly, getting youth involved and the families involved in fishing is a priority for the commission.

Coming up here, we'll be starting, the beginning of trout season, we have mentored youth fishing days. We're even doing a lot of urban outreach in Philadelphia and soon to be in Reading, trying to target populations and demographics that perhaps

haven't had the opportunity to go fishing, haven't necessarily had that experience growing up, and trying to introduce them to the outdoors, to conservation, and to what we do and our mission at the Fish and Boat Commission.

REPRESENTATIVE COOK: Serving on the Travel and Tourism Committee, one of the subjects that we always talk about is renewable industry. I don't think a lot of people realize that travel and tourism is a 40-billion-dollar industry in the Commonwealth. And by renewing this and getting different things involved, that renewable resource of travel and tourism within the Commonwealth has a grand impact.

So, thank you, Mr. Chairman.

CHAIRMAN WENTLING: I want to take a moment to recognize Senator Ward, former colleague in the House.

If you want to introduce yourself. Thank you.

SENATOR WARD: Good morning. I'm Senator Judy Ward, from the 30th District, which includes Blair County, Fulton County,

Franklin County, Huntingdon County, and Cumberland County. Thanks.

CHAIRMAN WENTLING: Thank you, Senator Ward.

Any closing comments or any other questions before we move on to our next presenter?

Thank you very much for being here.

Thanks, again, for your service to this committee, too, Mike.

Okay. Next, we're very honored to have the chairwoman of the Public Utility Commission, and I will allow her to introduce herself.

Thank you very much.

MS. DUTRIEUILLE: Good morning, Mr. Chairman and members of the Committee.

My name is Gladys Brown Dutrieuille, and I am the chair of the Pennsylvania Public Utility Commission.

I have with me Matt Wurst, who's on my left, your right, who is the policy manager in my office, to answer any technical questions that I may not be able to answer.

You have heard a lot this morning,

and I have condensed my testimony. You have the full testimony, but I am condensing it. And I'd like to be able to, in my testimony, address a few things.

I will convey a background on cogeneration and combined heat and power in Pennsylvania, summarize actions taken by the commission related to cogeneration and provide some insight on how the cogeneration sector may interact with any prospective cap-and-trade program for greenhouse gases.

The American Council for an Energy-Efficient Economy states that CHP is not a technology but an approach for applying technologies intending to harness increased efficiencies through integration of systems.

The increased efficiencies offered by CHP and cogeneration manifests benefits, including decreased emissions and improved end-use economics. Further, the distributed nature of some CHP applications offers the prospect of increased energy grid resiliency and future avoided infrastructure costs.

CHP is often utilized in industrial processes, resulting in a broad distribution

of these technological applications amongst many end-use utility customers. Some industrial end-users are often customers of PUC-regulated entities, distribution companies and natural gas distribution companies.

The EPA estimates that there are over 4400 CHP facilities nationwide. These facilities include, but are not limited to, hotels, nursing homes, universities, hospitals, prisons, refineries, chemical manufacturers, and wastewater treatment plants. The Department of Energy maintains a database of CHP installation facilities throughout the country. In their database, they list about 166 end-user sites in the Commonwealth, with an overall electric generation capacity of 2,729 megawatts, roughly the equivalent of that of the Peach Bottom Nuclear Generating Station in York County.

The proliferation of natural gas supply has manifested changes in the CHP marketplace. This includes the increased development and investment in natural gas-fueled reciprocating engines for

distributed CHP systems. According to the DOE, there are approximately 2400 reciprocating engine CHP units in the country, including 86 sites that are here in Pennsylvania. This represents the largest single CHP resource technology type, from a site number perspective, in this state.

Additionally, the centralized wholesale electricity marketplace has witnessed a similar proliferation of investment and build-out of natural gas-fueled combined-cycle combustion turbines, or combined-cycle gas turbines -- a lot of acronyms, and we call it CCGTs. While these applications are not considered cogeneration, or CHPs, they are based on similar engineering goals of increased efficiencies.

Given the myriad of benefits offered by CHP and cogeneration, the commission recently issued a policy statement seeking to advance the development of distributed CHP in the Commonwealth. In this policy statement, we encourage utilities to make CHP an integral part of their Act 129 energy efficiency programs.

In 2013, the commission released a study which detailed the amount of cost-effective CHP which was achievable within the commercial and industrial sectors of the Act 129 programs. The study concluded an achievable number of 58.7 megawatts. Several projects have already been supported by the Act 129 funds.

An example of this is the Geisinger Danville Hospital cogeneration project. And that project, which cost about 5.3 million in total, utilized about 500,000 from Act 129 funds, and now it's estimated to save the hospital over 2 million dollars annually.

The design of distribution rates for electricity end-users is a key element in analyzing the cost effectiveness of distributed energy CHP investments. One of the often-contentious components in electricity rate case proceedings is standby rates, and those are the charges levied to ensure reliability in the event a CHP unit does not generate power.

The commission has encouraged the utilities to design rates which are fair and

accommodative to such resources.

The commission created a biennial reporting requirement for electric and natural gas utilities in order to better understand the status of the distributed CHP marketplace within our Commonwealth. In March of last year, we released our first report pursuant to this requirement. The report estimates opportunities for enough CHP in the Commonwealth to power about 41,000 homes.

Further, the Commonwealth's Alternative Energy Portfolio Standards Act supports cogeneration. The AEPS includes demand-side management technologies like CHP as a Tier II resource. The Tier II resource classification, under the AEPS, also includes waste coal, and you've heard a lot about that.

In the 2019 energy year, Tier II AEPS credits sold for an average of 31 cents per megawatt hour. The overall cost of all Pennsylvania waste coal generator retired Tier II credits for that same period was 1.7 million.

Waste coal generators burns residual coal, which often contains rock and other

debris left in piles scattered throughout Pennsylvania's coal regions. And we have seen a lot of that today. These plants provide environmental benefits by clearing areas of waste coal piles, in turn helping to improve the water quality of area streams.

Some of these waste coal plants are cogeneration plants, and an example of that is the Ebensburg Power Company, whose steam heat supplies heating to the Ebensburg Center, which is a health care facility in that area.

Given the low-heat content of the coal of these piles, the application of waste coal for electricity can still result in relatively high pollution emission rates when compared with traditional coal and natural gas combustion. To no surprise, the Commonwealth, with its storied coal history, has the largest number of waste coal electric generation facilities in the country. At present, Pennsylvania has a dozen waste coal plants, with an average capacity of approximately 124 megawatts per plant and a total capacity of 1,494 megawatts.

So, understanding this, it is logical

to ask how this landscape may be affected by the governor's executive order regarding RGGI.

The commission first wishes to note that it is not advocating for or against the Commonwealth's pursuit to join RGGI. As an economic, safety, and quality of service regulator, and not the environmental regulator, we intend to facilitate the objective conveyance of any data, information, or insight which may be sought by DEP, the general assembly, and the governor as the RGGI rule-making proceeds.

With that understanding, the commission submits that there appears to be three important components when attempting to determine the effect, if any, joining RGGI will have on cogeneration. So these three components are, the first one being the exemption characteristics for resource participation, also the aggregate carbon emissions cap, and, last, the use of funds manifested from RGGI carbon allowances.

So, for the purpose of objectivity, using the RGGI model rule is likely the best starting point. So, the model rule sets an

exemption for any resource with the capacity of 25 megawatts or less. Under this design, the vast majority of distributed behind-the-meter CHP would not be subject to RGGI. Conversely, essentially all of the centralized electric generation units, such as the CCGTs, and all waste coal facilities, along with a small number of large distributed CHP units would be subject to RGGI.

To that end, these facilities would likely realize an increased cost necessary for compliance with the RGGI carbon allowance cap. While the blanket 25 megawatt exemption is part of the model rule, a state may seek to design different exemptions. Any such design may have a material effect on the cogeneration landscape, depending exactly on how it increases or decreases resource participation in RGGI.

So, you know that my testimony was provided to you before the DEP came out with their draft regulation or rule on RGGI. So, they've addressed some of these concerns in terms of how they're going to pursue moving forward.

The degree of cost for resources included in RGGI on a per-unit basis, such as a per-megawatt hour, is a direct result of the carbon intensity of the resource and the RGGI cap allowance -- RGGI carbon allowance cap. Utilizing data from RGGI and the EPA shows that the increased cost of operations for combined-cycle gas turbines, CCGT, in Pennsylvania will have approximately 2 to 3 dollars per megawatt hour in 2019.

At this time, the commission is not able to comment on any ramifications increased cost may have on applicable cogeneration resources. We are only able to acknowledge their existence, and I state that again in terms of how the rule may have been delivered by DEP or at least a draft of it.

Lastly, the utilization of proceeds from RGGI allowance auctions is an important variable to consider. Participating RGGI states may use these proceeds to support their own policy initiatives. To that end, states may support CHP or cogeneration with these funds.

In such a case, any efforts or

effects on these resources which are the result of RGGI market participation may be minimized through the allocation of RGGI revenues.

So, in closing, the commission hopes that this testimony helps to facilitate a better understanding of cogeneration in Pennsylvania, particularly those that are 25 megawatts or less. We emphasize our role as economic, safety, and quality of service regulator and how this role does not cover environmental regulation. Nonetheless, though, we are fully cognizant of the nexus that environmental regulations have with the commission's jurisdiction.

And at this time, I am ready to answer any questions that you may have of me.

CHAIRMAN WENTLING: You did such an excellent job, I polled the members and they don't have any currently. I wouldn't take that necessarily as a bad thing. You did an excellent job.

Just a moment. We'll double-check.

There are currently no questions. If you have any additional comments or --

MS. DUTRIEUILLE: No.

CHAIRMAN WENTLING: We really appreciate your testimony. It's a real honor, again, to have the chair of the PUC here. We had the secretary of DEP here earlier, as we know, and the former deputy secretary.

So, it's just been such a great thing to have all of our testifiers today. So, we're going to start wrapping up here.

I had a couple more comments. First and foremost, I did mention that we're considering taking a tour of a cogeneration plant. Also, we are looking at additional hearings on this specific topic.

I did want to mention that we do have a newsletter that comes out monthly, and it just recently was updated, kind of a new format. There's actually a listing of the current proposed -- current legislation moving forward, anything related to legislation with the general assembly, Senate and House, and always there's excellent articles in here related to everything dealing with the committee. And there's also a new listing of all the members here, for everyone to know who

our folks are.

I also want to take a moment to recognize, Coleen got to speak earlier, of course Tony's up here with us. Sakura Ung is here, and she's been very helpful in putting this all together, and also with Denise Plummer in the back. She's kind of manning the door. And thank you very much, Denise and Sakura, for helping us.

Anyone else have comments for the good of the group?

So, looks like we're right on time here. We really, really appreciate your testimony. Thank you very much and look forward to working with all of you in the future.

Thank you.

(Whereupon, the hearing concluded at 10:57 a.m.)

* * * * *

REPORTER'S CERTIFICATE

I HEREBY CERTIFY that I was present upon the hearing of the above-entitled matter and there reported stenographically the proceedings had and the testimony produced; and I further certify that the foregoing is a true and correct transcript, to the best of my ability, of my said stenographic notes.

_____
BRENDA J. PARDUN, RPR
Court Reporter
Notary Public