

THE COAL REFUSE
RECLAMATION TO ENERGY
INDUSTRY AND CARBON
TRADING MARKETS

June 2020



JOINT LEGISLATIVE
Air and Water Pollution Control &
CONSERVATION COMMITTEE

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2019 – 2020 Session

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EXECUTIVE SUMMARY

This report addresses the environmental and economic benefits of the coal refuse reclamation to energy industry alongside climate and pollution policies.

The coal refuse reclamation to energy industry is unique in the energy sector. These plants are able to use coal refuse that was discarded decades ago to generate power using circulating fluidized bed technology (CFB), which means they can source their fuel from the hundreds of legacy waste coal piles across the Commonwealth.

While these plants do burn coal waste and release the pollutants and carbon dioxide associated with fossil fuels, the process also helps rid the Commonwealth of waste coal piles which contribute to particulate pollution, acid mine drainage and other environmental and health hazards.

The alternative to this successful public-private partnership would be for Pennsylvania public agencies to take on these remediation projects directly using federal and state funds. However, this would come at a higher cost to the taxpayer and these sites tend to be a lower priority for federal funds.

In 2020, the Joint Legislative Conservation Committee held hearings and informational sessions to understand how the Commonwealth intended to strike a balance between the remediation services the coal refuse to energy industry provides and the current initiative to reduce greenhouse gas emissions (GHGs) and pollutants.

The events brought together experts and stakeholders to provide Committee members with a complete understanding of the picture of the industry, the role that Pennsylvania's agencies play and the impact of regulatory factors such as state and federal tax credits and carbon markets.

EXECUTIVE SUMMARY

ENVIRONMENTAL AND HEALTH IMPACTS

Coal refuse exists in piles around the Commonwealth, frequently containing over tens of millions of tons of waste coal each. The DEP's inventory has catalogued 772 existing coal piles, but the full number remains unknown.

The combined area of the piles is over 8 thousand acres. They are often incapable of supporting vegetation, making them unstable and unsightly. They are also a source of dangerous pollutants like aluminum, manganese, iron and volatile particulate matter that can be dislodged by rain or wind.

Runoff from coal refuse is acidic and can kill or drive off aquatic wildlife and vegetation. Besides decimating waterway ecosystems, this water is unusable and dangerous to humans as well.¹

Lightning strikes, arson and accidents can ignite a pile, filling the air with smoke and uncontrolled carbon dioxide (CO²) emissions. All of these factors combined can make a community unlivable - causing long-term health problems and lowering property values.

1 - Pennsylvania. House. Joint Legislative Conservation Committee. *Hearing on the Status of the Coal Refuse Reclamation to Energy Industry. Feb. 2, 2020. (Statement of Patrick McDonnell, Secretary, Department of Environmental Protection).*

GOVERNMENT-LED REMEDATION

One way to address coal refuse is to have public agencies and organizations use state and federal funding to remove the piles. This was the case in the Barnes-Watkins site in Cambria County. The project took 4 years and removed 1.3 million tons of refuse.¹

The refuse that was usable as fuel was taken to the newly opened FBC facility, Seward Generation Station, owned by Reliant Energy. The unusable refuse was moved to a nearby disposal site where it was stabilized and vegetated using ash from the generation facility.

The project funding was broken down as:

- **\$4,284,157.86 from a DEP Abandoned Mine Lands grant, which distributed federal funds from the federal fee on underground and surface coal mining;**
- **\$90,000 from Pennsylvania's Growing Greener funds;**
- **and \$202,575.82 from the Cambria County Conservation and Recreation Authority, who was paid \$0.25 per ton of fuel refuse by Robindale Energy Services.**²

While the process was lengthy, the final re-

sult improved the water quality of the West Branch of the Susquehanna so dramatically that it met the Pennsylvania Fish and Boat Commission's (PFBC) Naturally Reproducing Wild Trout Water criteria - a designation that only 3 percent of Pennsylvania's waterways receive.²

INDUSTRY-LED REMEDATION

The main benefit of an industry-led solution is funding. As private companies, coal refuse reclamation to energy facilities generate their own funds by selling their electricity, removing most of the burden to taxpayers.

They do claim the Coal Refuse Energy and Reclamation Tax Credit, which has an annual cap of \$20 million, as well as credits as a Tier II Alternative Energy producer, which has a weighted average price of approximately \$0.25 per credit.³

In addition to being more economically viable, the plants also generate coal ash which the industry returns to the pile site for reclamation purposes. To date, the industry has removed and burned over 200 million tons of coal and restored over 7,000 acres. It also employs 3,000 Pennsylvanians, pays \$18 million in taxes and stimulates the economy with over \$350 million in direct expenditures.³

1 - Pennsylvania. House. Joint Legislative Conservation Committee. *Hearing on the Status of the Coal Refuse Reclamation to Energy Industry*. Feb. 2, 2020. (Statement of Heather Smiles, Chief, PFBC Division of Environmental Services).

2 - Pennsylvania Department of Environmental Protection BAMR. (2010, April 15). *Barnes-Watkins Refuse Pile Reclamation Project*. <http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/Abandoned-MinePortalFiles/2010Nomination.pdf>.

3 - Pennsylvania. House. Joint Legislative Conservation Committee. *Hearing on the Status of the Coal Refuse Reclamation to Energy Industry*. Feb. 2, 2020. (Statement of Jaret Gibbons, Executive Director, Appalachian Region Independent Power Producers Association).

THE INDUSTRY'S FINANCIAL CRISIS

The abundance of low-price natural gas and the growth of the renewable energy sector has lowered prices below the break-even cost for these plants. However, the positive externalities caused by the mining and disposal of coal refuse goes uncompensated.

While this is the case for other industries' positive externalities, the coal refuse reclamation to energy industry argues that they are the best, lowest-cost solution for remediating legacy waste coal.

In the Econsult report, *The Coal Refuse to Energy Industry: A Public Benefit in Jeopardy*, they estimate that state funded remediation and disposal - if done without the industry - would cost \$267 million annually.¹

In contrast, the Pennsylvania Coal Refuse to Energy and Reclamation Tax Credit costs taxpayers just \$20 million per year. Between this and the Alternative Energy Portfolio Standards, the industry argues that they are still not meeting break-even prices which they require to continue operating and providing their services. Only ten coal refuse to energy plants remain because of this trend.²

In December of 2019, Governor Wolf directed the DEP to draft a greenhouse gas

cap-and-trade program that aligns with the Regional Greenhouse Gas Initiative (RGGI). For most fossil fuel burning electricity generators, the plan would have them purchase offsets for their emissions. These can then be traded to reduce compliance costs.

Currently, the proposed RGGI rulemaking has a set-aside for the coal refuse reclamation to energy industry, which will exempt these plants from buying emission credits as long as plant emissions do not increase past a set limit.

On May 7, 2020, the proposed rule announced a 9.3 million tons of CO² set-aside for the industry.³ This amount was derived from the highest industry emissions in the past five years, and plant operators voiced concerns that this is not representative of the industry's capacity. Instead of running full time, the facilities have been cycling to save costs when electricity is cheap and the set-aside might not be adequate if their capacity rebounds.⁴

RECOMMENDATIONS

The industry and the state agencies are in agreement about the benefit of using coal refuse as fuel. However, as these plants have similar pollution and CO² outputs to a standard coal-fired power plant, sustaining these plants seems to be at odds with the administration's proposed climate goals.

1 - Econsult Solutions Group Inc. (2019, June). *The Coal Refuse Reclamation to Energy Industry: A Public Benefit in Jeopardy*. <https://arippa.org/wp-content/uploads/2019/07/ARIPPA-Report-FINAL-June-2019.pdf>.

2 - *Statement of Gibbons*.

3 - Pennsylvania Department of Environmental Protection. (2020, May 7). *Draft Proposed Rulemaking: Chapter 145. Interstate Pollution Transport Reduction*. <https://files.dep.state.pa.us/>.

4 - Pennsylvania. House. Joint Legislative Conservation Committee. *Hearing on the Status of the Coal Refuse Reclamation to Energy Industry*. Mar. 5, 2020. (*Statement of Gary Merritt, Regulatory Affairs Manager, Northern Star Generation*).

However, many coal refuse piles have ignited and continuously burn, representing an uncontrolled release of CO² and toxic compounds, severely impacting local air quality. Currently there are 40 documented fires but more could occur in the future.

Additionally, the coal refuse reclamation to energy industry represents a small part of the fossil fuels burned in Pennsylvania. In total, their capacity is less than 1,200 megawatts. Creating an exception for this small subset in exchange for remediating legacy coal piles at significantly lower cost to the taxpayer could be a sensible move.

The Joint Legislative Conservation Committee offers these recommendations:



- Increase the Coal Refuse to Energy and Remediation annual cap to \$40 million from the current \$20 million, while also removing caps to allow the full amount to be accessed by the industry.
- Advocate for a long-term, industry-sustaining federal credit of at least \$12 per ton of refuse burned to eventually replace Pennsylvania's current credit.
- Create a Power Purchase Agreement with local utilities or state and federal agencies to ensure the plants continue to operate regardless of fluctuations in the energy market.
- The coal refuse to energy industry set-aside in the DEP's Draft CO² rule is vital, however, consider increasing the set-aside amount to 12.5 million tons of coal equivalent to account for decreased production in recent years.
- Limit participation in Tier II of the Alternative Energy Portfolio Standards program to in-state resources to increase credit value.



The Coal Refuse Reclamation to Energy Industry and Carbon Trading Markets

Prepared by Research Analyst
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Pictured: Colver Power Project



THE HISTORY OF THE COAL REFUSE TO ENERGY INDUSTRY

With the advent of CFB boilers, Pennsylvania recognized an opportunity to address the legacy waste coal problem across the coal regions of the Commonwealth.

Coal refuse piles plagued communities for decades, but several attempts to regulate the sites ended in failure. The most tragic of which was the Buffalo Creek Disaster. The Buffalo Creek Dam in West Virginia, owned by the Buffalo Mining Company, was an attempt to contain a coal mining waste site. However, the dam failed in 1972, killing 125 people and leaving 4,000 homeless. The aftermath caused Pennsylvania to reassess their own coal refuse regulations.

Then in 1978, to lessen the impacts of the fuel crisis, the U.S. government passed laws and distributed funds to support and create alternative fuel generators.

The Public Utility Regulatory Policies Act (PURPA) was passed to this end, encouraging innovation in the market by requiring utilities to purchase this alternative energy. These two factors coincided to set the stage for the coal refuse reclamation to energy industry.

Waste coal, or coal refuse, has created environmental and safety hazards since the 1700s, and until the advent of CFB boilers there was no practical way to use or dispose of it.

Pennsylvania's Energy Development Authority issued two bonds to build new plants to capitalize on PURPA's purchase agreement, to reduce the amount of waste coal in the environment and to create jobs in distressed coal communities.

However, the coal refuse reclamation to energy industry, the energy market and the regulatory landscape have changed since the 70s and waste coal burning plants have struggled to remain open. In fact, only ten remain in Pennsylvania and they are facing existential threats.

The industry acknowledges its disadvantages in the current market, especially with the low prices seen during the natural gas boom. However, they argue that they are the most cost-effective way to remove coal refuse and remediate abandoned mining lands. The burden of which would fall to the government in the absence of the industry.



LEGACY COAL REFUSE'S IMPACTS TO COMMUNITIES AND THE ENVIRONMENT

Coal has been mined in Pennsylvania since the country's founding, with peak extraction in the 1910s. At this time, there were virutally no considerations given to the human and environmental impacts of mining activities.

Unproductive mines were left open and abandoned, producing acid mine drainage and safety hazards across the coal region. Coal that was of substandard quality to be used as fuel was discarded in massive piles. Those piles still remain and many of them contain tens of millions of tons of coal and rock. Together they cover over 8,000 acres in Pennsylvania according to the DEP, though some piles are currently undocumented.

AIR POLLUTANTS

Dry piles also release dangerous particulate matter into the wind. Black coal dust has been known to blanket whole towns. Worse yet, piles can catch fire from lightning strikes, arson, spontaneous combustion or other causes. These fires are very difficult to contain and trying to douse them can cost millions of dollars. Even then, many fires reignite after containment efforts cease.

Once lit, the piles emit toxic chemicals such as carbon monoxide, hydrogen sulfide, sulfur dioxide, ammonia, sulfur trioxide and many others. Nearby residents often attribute coughs and breathing difficulties to the dust and smoke from piles.¹ There are known health impacts to each of these chemicals, depending on the concentration and exposure duration.

In addition to the health concerns, these fires represent uncontrolled GHGs. The CO² given off by the 45 piles around the Commonwealth is unmeasured and unregulated. Without intervention, these fires could continue until the coal refuse is consumed.

1 - *Barnes-Watkins Refuse Pile Reclamation Project*. 2010.

POLLUTION RUNOFF

Refuse piles are exposed to the elements, and the toxic compounds contained in them leach into the surrounding surface and ground water each time it rains. The water picks up harmful contaminants and acidifies the water. Streams near these piles have been shown to have pH levels as low as 4.5, which is comparable to the acidity of soda or tomato juice.

Water effluent from piles contain levels of several elements above the constituent criteria maximum concentration for freshwater organisms. Silver, arsenic, barium, cadmium, chlorine, chromium, lead, nickel, antimony, selenium, vanadium and more have all been documented in coal refuse effluent.¹

According to the PA Fish and Boat Commission, silt from piles is also a concern for many species of fish:

“When coal mine refuse is washed into streams, the subsequent siltation can cover and suffocate the eggs, leading to poor hatching rates.”²

Aquatic plants, animals and microscopic organisms often die or vacate waterways near piles. This can lead to a negative feedback loop, as healthy aquatic ecosystems are vital for filtering and purifying polluted water.

COMMUNITY AND SAFETY CONCERNS

Piles can attract illegal recreational activities such as kids riding dirtbikes or ATVs attempting to drive up the steep ridges. However, the slopes of piles are made of loose coal chunks and do not support plants that can anchor surfaces. This makes their slopes very unstable - able to shift or collapse with even small disturbances. Many piles have reported injuries related to recreational activities. Some of these accidents have even ended in fatalities.³

However, members of the communities who don't engage in dangerous activities are also affected. Ugly, dangerous coal piles and the pollution that results from them depresses property values in the coal region which is already suffering from economic downturn. The chemicals and particulate matter given off by piles can lead to chronic health problems as well.

1 - Cravotta, C.A., Brady, K.B.C. (2015). Priority Pollutants and Associated Constituents in Untreated and Treated Discharges from Coal Mining or Processing Facilities in Pennsylvania, USA. *Applied Geochemistry*. <https://doi.org/10.1016/j.apgeochem.2015.03.001>.

2 - *Statement of Smiles*.

3 - Pennsylvania Department of Environmental Protection. (n.d.) *The Sugar Creek Coal Refuse Pile and Mine Drainage Discharge Reclamation Project*. <https://files.dep.state.pa.us/mining/>.

OPTIONS FOR ENVIRONMENTAL REMEDiation

GOVERNMENT-LED REMEDiation

Governmental programs and agencies have engaged in public-private-partnerships to address coal refuse piles and the resulting problems. The DEP's Bureau of Abandoned Mine Reclamation (BAMR) has taken on large remediative projects in the past with successful results, though the coal refuse reclamation to energy industry has been a key player in these projects.

The majority of DEP-BAMR's funds for remediating refuse piles are sourced from the Abandoned Mine Lands (AML) funds, a federal program managed by the Office of Surface Mine Reclamation and Enforcement (OSMRE). However, unless a pile is actively burning, coal refuse piles are a low priority for this funding.¹ To complete a project, BAMR will often partner with coal refuse to energy facilities or other private organizations.

1 - Econsult Solutions Group Inc. (2019, June).

BARNES-WATKINS SITE

The 18 acre refuse pile near Watkins, Pennsylvania, had combusted and was continuously burning. It was the source of significant iron and aluminum contamination in local waterways and many local residents filed complaints with the DEP.

The pile had been tested for its value as a fuel source in the past, but the energy content and contaminants were inconsistent through the pile, therefore unattractive to prospectors.

In 2004, BAMR received AML funds to begin the project after partnering with local electric generators and the Cambria County Conservation and Recreation Authority (CCCRA).

Funding was broken down as:

- **\$4,284,157.86 from an Abandoned Mine Lands grant, which DEP allocated to the project;**
- **\$90,000 from Pennsylvania's Growing Greener funds;**
- **and \$202,575.82 from the CCCRA, who was paid \$0.25 per ton of fuel refuse by Robindale Energy Services.***

Robindale Energy Services mined, transported and amended the coal refuse to be able to be burned at the Seward CFB facility.¹

SWOYERSVILLE CULM PILE

In 2018 the effort to remove the 4 million ton Swoyersville refuse pile began. The general contractor for this project is Olympus Power, LLC, a member of ARIPPA. They not only carried out the work of reclaiming the site, but also provided the majority of the funding. They were unable to take on this project alone due to low energy prices.

The partners included the DEP, Eastern PA Coalition for Abandoned Mine Reclamation, the U.S. Surface Mining Control and Reclamation office, Pagnotti Enterprises and the Foundation for PA Watersheds.

- **\$8 million was provided by the Keystone Reclamation Fuel Management, LLC, a subsidiary of Olympus Power.**
- **\$4 million grant from the Abandoned Mine Land program and the Surface Mining Control and Reclamation Act.**

The current project only addresses 500 thousand tons of the pile, with the rest to be reclaimed in the future.

The project aims to improve water quality in the Abrahams Creek which is currently impacted by the pile, and reclaim the land for development.²

1 - *Barnes-Watkins Refuse Pile Reclamation Project*. 2010.

2 - Eastern Pennsylvania Coalition for Abandoned Mine Reclamation. (n.d.) *Swoyersville Culm Pile Removal AML Pilot Project*. <http://epcamr.org/home/current-initiatives/funding-project-management/swoyersville-culm-pile-removal-aml-pilot-project/>.

OPTIONS FOR ENVIRONMENTAL REMEDiation

COAL REFUSE RECLAMATION TO ENERGY INDUSTRY

To date, the industry has removed more than 225 million tons of refuse coal and at historic operating levels, 10-12 million tons were taken from the Pennsylvania landscape annually. Now, with just ten plants remaining, the industry still manages to remove and burn 8 million tons of coal per year.

Over the course of their operation, coal refuse burning plants have removed and remediated over 7,200 acres of land.¹

The main benefit to the industry-led remediation is funding. In order to remediate a pile, coal refuse must either be removed, flattened or buried. Without refuse burning facilities, the refuse is often just covered and planted over with vegetation. The industry's standards, in contrast, require the removal and landfilling of the polluting coal refuse at higher cost. They are also privately funded and earn their operating costs by selling their electricity.

They do claim the Coal Refuse Energy and

Reclamation Tax Credit, which has an annual cap of \$20 million, as well as credits as a Tier II Alternative Energy producer,¹ which have a weighted average price of approximately \$0.25 per credit from 2008 to 2018. In 2016, the price fell as low as \$0.10 per credit.²

With these exceptions, their operations which re-mine, transport, burn and remediate, come at no cost to the taxpayer and work continuously year-round. On the other hand, grants for publicly funded projects are often difficult to obtain and meeting all regulatory requirements can take years. Unless a pile is actively burning, federal Abandoned Mine Land funds consider them low priority.

According to ARIPPA's 2019 report, in order to remove 8 million tons per year, it would cost the government from \$93 to \$267 million dollars without the industry's help.³ This avoided cost, the industry argues, is what makes them indispensable for perma-

nently clearing coal refuse from Pennsylvania.

In addition, while these plants are operational, they employ residents from struggling legacy coal areas and support the economy with \$363 million in direct purchases. They also pay \$18 million in state taxes and fees.¹

LOOMIS BANK OPERATION

Northampton Fuel Supply Company, Inc., (NFS) was awarded the "Excellence in Surface Coal Mining and Reclamation" award in 2016 for their work at the Loomis Bank Operation in Luzerne County, Pennsylvania.

This 100 acre, actively burning bank was mined for 11 years, providing NFS with over a million tons of coal. According to OSMRE:

The project "saved the state millions in AML funding while also providing the potential for future jobs in the small town."

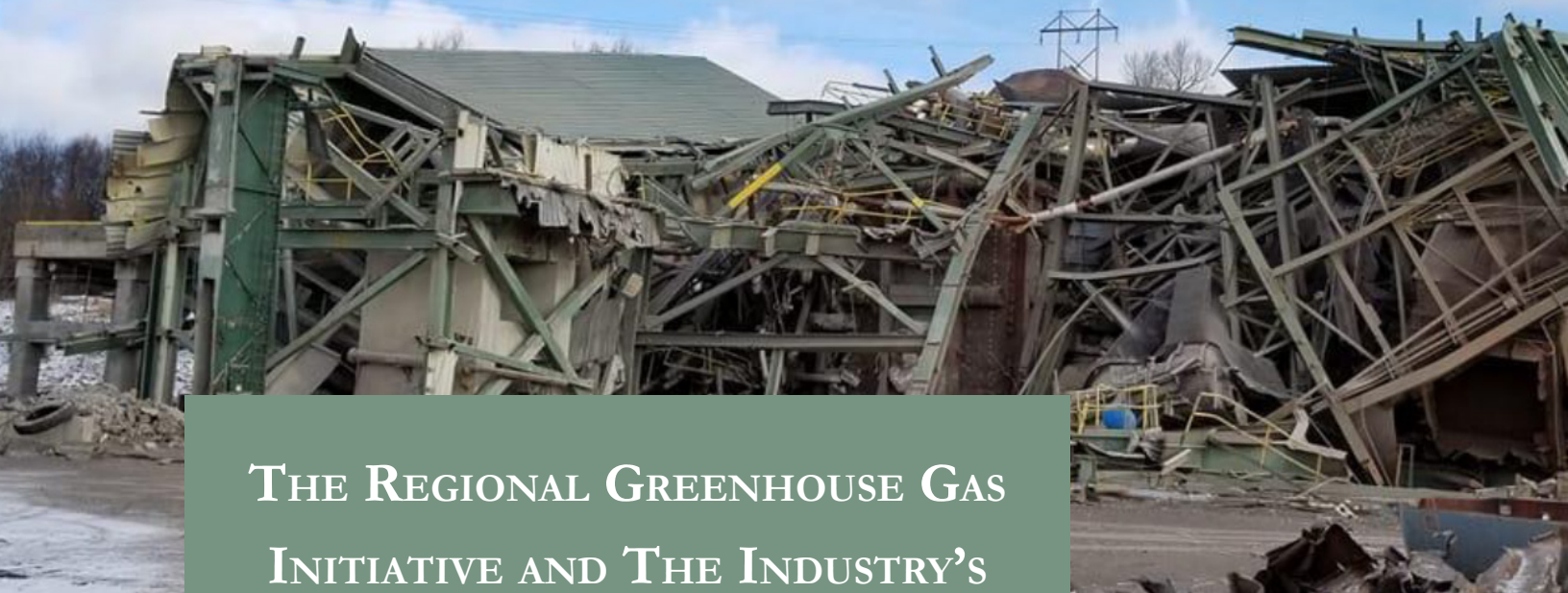
1 - *Statement of Gibbons.*

2 - Pricing. (2020). Retrieved April 17, 2020, from <https://www.pennaeps.com/reports/>.

3 - Econsult Solutions Group Inc. (2019, June).

Pictured below: The Loomis Bank coal refuse pile fire (left), and the remediated land after NFS removed and remediated the pile.





THE REGIONAL GREENHOUSE GAS INITIATIVE AND THE INDUSTRY'S FINANCIAL CRISIS

The Regional Greenhouse Gas Initiative (RGGI) is a cap and invest program that includes several Northeastern states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont. The program implements a greenhouse gas cap, or maximum limit for the region for the year. This cap then reduces by 2.5 percent each year - leading the state to lower GHG emissions over time with the goal of addressing climate change. Fossil fuel-fired power plants in participating states with more than 25 megawatts of capacity are required to participate.¹

In 2019, Governor Tom Wolf directed the DEP to draft a proposed rule in line with RGGI's requirements. In the DEP's draft proposed rulemaking, there is a set-aside for the coal refuse reclamation to energy industry. The Department's first proposed set-aside looked at the emissions from the industry for the past three years and set the limit as the highest emitting year. In 2018, all plants combined were responsible for 7.9 million tons of CO² emissions. However, on May 7, 2020, the DEP announced revisions to the proposed trading program. Now, the calculation is based on a 5-year period, increasing it to 9.3 million tons.²

This allows the industry's capacity to increase somewhat without having to purchase emission allowances. However, avoiding additional expenses alone will not keep them from facing closure. Wholesale electricity prices have dropped due to low natural gas prices and growth in renewable energy. These prices are too low for coal refuse reclamation to energy plants to recoup costs from operating.

The two state-sourced funds that the industry uses are the Coal Refuse Energy and Reclamation (CRER) Tax Credit and credits for being classified as a Tier II Alternative Energy producer. The

1 - Regional Greenhouse Gas Initiative. (2020). <https://www.rggi.org>

2 - Pennsylvania Department of Environmental Protection. (2020, May 7). *Draft Proposed Rulemaking: Chapter 145. Interstate Pollution Transport Reduction*. <https://files.dep.pa.us/AirQuality/>.

original intended assistance that the CRER tax credit was meant to provide the industry was \$4 per ton of waste coal. However, the \$20 million cap has been reached each year, limiting the average price that the industry receives per ton to approximately \$1.20.

Coal refuse reclamation to energy is also included under Tier II of the Alternative Energy Portfolio Standards. Like the tax credit, these credits have been devalued, with the weighted average price falling to \$0.25 per credit or lower.¹

Between the stunted governmental reimbursement, low market prices and asymmetrical regulations from the federal, state and local government, the industry is on the brink of collapse.

Many plants have been forced to switch from full-time operation to idling when energy prices are low. This is not sustainable in the long run and many plants face the possibility of shutting down. Once plants are closed, they are usually demolished immediately, removing the possibility of reopening them once economic conditions are more favorable. For this reason, in order to maintain the environmental services they provide, supportive measures would need to take place within the year.¹

1 - *Statement of Gibbons.*

Pictured: Former coal refuse site in Clearfield



Pennsylvania CRRTE Plant Closures to Date

*2013: Piney Creek Power
Plant
Clarion County*

*2018: Northeastern Power
Company
Schuylkill County*

*2019: Cambria Cogen
Cambria County*

*2019: Kimberly Clark Ches-
ter Operations (Converted to
natural gas)
Delaware County*

*2020: Wheelabrator Frack-
ville
Schuylkill County*

*2020 (Pending): Colver Power
Cambria County*



RECOMMENDATIONS

Circulating fluidized bed boilers are currently the only way to extract value from coal refuse. Otherwise, the piles simply represent a future cost to taxpayers either via pollutants or tax dollars used to remediate them. Public projects taken on without partnerships with the coal refuse to energy industry will be even more costly than they are currently. The industry invests private funds into the removal and remediation projects, they eliminate the refuse permanently and they generate beneficial coal ash to return to the site.

However, with the current trajectory of lowering GHGs, sustaining fossil-fuel fired plants seems counter-intuitive, but beyond removing coal refuse, there are climate benefits to supporting the industry.

For example, 40 coal refuse piles that Pennsylvania is aware of have ignited and continuously burn, representing an uncontrolled release of CO² and toxic compounds. If these piles remain, more will likely combust and continue releasing GHGs and pollutants until the coal refuse is exhausted. This burning is not only uncontrolled, but it is unproductive. Failure to capitalize on the energy potential in refuse piles would mean more electricity generated elsewhere on the grid.

Additionally, the coal refuse reclamation to energy industry represents a small section of the GHGs generated in Pennsylvania. In total, their capacity is less than 1,200 megawatts and they release significantly less dioxins and toxic metals per ton than a traditional bituminous coal plant.¹ Creating an exception for this small subset in exchange for remediating legacy coal piles at significantly lower cost to the taxpayer could be a sensible move.

With that in mind, the Joint Legislative Conservation Committee offers these recommendations. Note that these are various options and not all would need to be enacted to preserve the industry.

1 - Pennsylvania Department of Environmental Protection. (2004). *Analysis of Emissions from Waste Coal-fired Combustion Units in Pennsylvania*. <https://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/>.

- Increase the Coal Refuse Energy and Reclamation tax credit's annual cap to \$40 million from the current \$20 million, while also amending the credit to allow the full price per pound to be accessed by the industry, including reassessing facility based caps.
- Advocate for a long-term, industry-sustaining federal credit of at least \$12 per ton of refuse burned to eventually replace Pennsylvania's current credit.
- Create a Power Purchase Agreement with local utilities or state and federal agencies to ensure the plants continue to operate regardless of fluctuations in the energy market.
- The coal refuse to energy industry set-aside in the DEP's Draft CO² rule is vital, however, consider increasing the set-aside amount to 12.5 million tons of coal equivalent to account for decreased production in recent years. Alternatively, a flexible cap could be adopted to allow for future growth.
- Limit participation in Tier II of the Alternative Energy Portfolio Standards program to in-state resources to increase credit value.

Joint Legislative Conservation Committee

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APPENDIX A

JLCC HEARING TESTIFIERS AND GUEST SPEAKERS

FEBRUARY 3, 2020 - HARRISBURG

- Patrick McDonnell, Secretary, Department of Environmental Protection
- Jaret Gibbons, Executive Director, ARIPPA
- Vince Brisini, Director of Environmental Affairs, Olympus Power, LLC.
- Heather Smiles, Division Chief, PAFBC Environmental Services Division
- Mike Nerozzi, Director of Policy and Planning, PAFBC
- Gladys Brown Dutrieuille, Chairman, Public Utility Commission

FEBRUARY 21, 2020 - McADOO

- Vince Brisini, Director of Environmental Affairs, Olympus Power, LLC.
- Henry Zielinski, Fuels Manager, Northampton Generating Company
- Robert Hughes, Executive Director, EPCAMR
- William Reichert, President, Schuylkill Headwaters Association
- Jaret Gibbons, Executive Director, ARIPPA
- John Bland, Business Manager, Boilermakers Union Local 13, Philadelphia
- Terry Kaufman, Former Senior Mechanic, Northeastern Power Company
- Matthew Cochran, Asset Manager, Olympus Power, LLC.
- John Rampolla, Chief Financial Officer, Gilberton Coal Company

MARCH 5, 2020 - MON VALLEY

- Gary Merritt, Regulatory Affairs Manager, Northern Star Generation
- Tom Roberts, Plant Manager, Ebensburg Power Company
- Jaret Gibbons, Executive Director, ARIPPA

APPENDIX B

- Cravotta, C.A., Brady, K.B.C. (2015). *Priority Pollutants and Associated Constituents in Untreated and Treated Discharges from Coal Mining or Processing Facilities in Pennsylvania, USA*. Applied Geochemistry. <https://doi.org/10.1016/j.apgeochem.2015.03.001>.
- Eastern Pennsylvania Coalition for Abandoned Mine Reclamation. (n.d.) *Swoyersville Culm Pile Removal AML Pilot Project*. <http://epcamr.org/home/current-initiatives/funding-project-management/swoyersville-culm-pile-removal-aml-pilot-project/>.
- Econsult Solutions Group Inc. (2019, June). *The Coal Refuse Reclamation to Energy Industry*. <https://arippa.org/wp-content/uploads/2019/07/ARIPPA-Report-FINAL-June-2019.pdf>.
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- Pennsylvania Department of Environmental Protection BAMR. (2010, April 15). *Barnes-Watkins Refuse Pile Reclamation Project*. <http://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/2010Nomination.pdf>.
- Pennsylvania Department of Environmental Protection. (2004). *Analysis of Emissions from Waste Coal-fired Combustion Units in Pennsylvania*. <https://files.dep.state.pa.us/>.
- Pennsylvania Department of Environmental Protection. (2020, May 7). *Draft Proposed Rulemaking: Chapter 145. Interstate Pollution Transport Reduction*. <https://files.dep.state.pa.us/>.
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- Pennsylvania. House. Joint Legislative Conservation Committee. Hearing on the Status of the Coal Refuse Reclamation to Energy Industry. Feb. 2, 2020. (Statement of Heather Smiles, Chief, PFBC Division of Environmental Services).
- Pennsylvania. House. Joint Legislative Conservation Committee. Hearing on the Status of the Coal Refuse Reclamation to Energy Industry. Feb. 2, 2020. (Statement of Jaret Gibbons, Executive Director, Appalachian Region Independent Power Producers Association).
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APPENDIX C

MEMORANDUM

TO: All House Members

FROM: Representative Doyle Heffley and Rep. Frank Burns

SUBJECT: Investing in Pennsylvania Energy and Environment: Close AEPS Tier II Border

DATE: May 28, 2020

In the near future, we will be introducing legislation to limit participation in Tier II of the Pennsylvania Alternative Energy Portfolio Standards (AEPS) program to energy sources originating in Pennsylvania. Currently, eligible Tier II resources may originate within Pennsylvania or anywhere in the PJM regional transmission organization (RTO). Pennsylvania is a net electricity exporter, yet our ratepayers are currently subsidizing out-of-state energy facilities, including utility owned resources in other PJM states.

The AEPS Act of 2004 requires that 18 percent of the electricity supplied by Pennsylvania's electric distribution companies (EDCs) and electric generation suppliers (EGSs) come from alternative energy resources by 2021. EDCs and EGSs can comply with AEPS by procuring Alternative Energy Credits (AECs) from qualified alternative energy resource facilities. AEPS establishes two tiers of eligible energy sources. Tier II sources include new and existing waste coal, distributed generation (DG), demand-side management, large-scale hydro, municipal solid waste, wood pulping and manufacturing byproducts, and integrated gasification combined cycle (IGCC) coal facilities. By 2021, EDCs and EGSs must supply 10 percent from Tier II energy sources.

AEPS was intended to provide economic development opportunities by increasing alternative electricity generation in Pennsylvania. However, in the 2018 AEPS Annual Report, the Pennsylvania Public Utility Commission (PUC) identified a nameplate capacity of 5544.3 MW from out-of-state Tier II resources compared to only 4177.6 MW of capacity from resources located in Pennsylvania. This leads to an oversupply of available credits from outside of Pennsylvania that depresses the value of Tier II AECs and limits the ability of the AEPS program to adequately support Tier II resources located in Pennsylvania.

Since 2008, the average price of Tier II AECs is only \$0.25 and has fallen as low as \$0.10, whereas during the same timeframe the price for Tier I AECs averaged \$8.00 and reached as much as \$14.56. The comparatively low price for Tier II credits has failed to incentivize the growth of Tier II resources and instead lead to many existing Tier II resources closing in recent years. For example, four waste coal reclamation-to-energy facilities have closed in the past two years. This industry alone provides \$37 million in annual environmental and public use benefits while supporting 3,000 jobs and \$615 million in annual economic benefits in Pennsylvania.

Please join us in co-sponsoring this legislation incentivizing Pennsylvania-based Tier II alternative energy resources to support jobs and alternative energy production in Pennsylvania and stop ratepayer dollars from continuing to flow to out-of-state resources.