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Testimony to the Senate Consumer Protection and Professional Licensure
Committee and Senate Environmental Resources and Energy Committee
Joint Hearing on the Alternative Energy Portfolio Standards (AEPS) Act

On behalf of the
Appalachian Region Independent Power Producers Association
(ARIPPA)

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Organized in 1989, the Appalachian Region Independent Power Producers Association (ARIPPA) is a nonprofit trade association based in Camp Hill, Pennsylvania, comprised of independent electric power producers, environmental remediators, and service providers that use coal refuse as a primary fuel to generate electricity. The association represents 14 unique environmentally beneficial electric generation facilities located in Pennsylvania and West Virginia that remediate abandoned mine lands (AML) by utilizing circulating fluidized bed (CFB) boiler technology to convert coal refuse into alternative energy and steam.

On behalf of ARIPPA, I want to thank the Senate Consumer Protection and Professional Licensure Committee and Senate Environmental Resources and Energy Committee for inviting us to participate in this hearing to address the Pennsylvania Alternative Energy Portfolio Standards (AEPS) Act. Both the federal government and the Commonwealth of Pennsylvania have long-recognized and embraced the environmental benefits of the consumption and reclamation of coal refuse. In Pennsylvania, the AEPS program recognizes coal refuse energy as a Tier II alternative energy source.

WHAT IS COAL REFUSE?

Coal refuse is a legacy of the pre-1970's coal mining industry that currently scars the land and pollutes waterways across Pennsylvania. It consists of low-quality coal mixed with rock, shale, slate, clay and other material. Also known as waste, culm, gob and boney, it was discarded as a "waste" during the original coal extraction process and randomly disposed in piles near the mine sites. These piles represent public health and safety hazards, as they can spontaneously combust or catch fire from lightning strikes, leach acid mine water and hazardous substances, and are major sources of ground, air, and water pollution.

Due to the costs associated with the removal of coal refuse and fiscal constraints governing public funding, the air and water pollution, human health and safety threats posed by these piles are mostly backburner issues for government authorities unless or until the mounds suddenly combust and become an immediate threat to nearby residents. Prior to the development of CFB technology in the 1980's, there was no productive use for coal refuse and no other technology available for the disposal or remediation of these

piles. As a result, these hazardous piles have littered the local landscapes and polluted nearby land and water for decades.

According to the inventory of Abandoned Mine Land (AML) sites maintained by the Pennsylvania Department of Environmental Protection (DEP) Bureau of Abandoned Mine Reclamation (BAMR), approximately 766 coal refuse banks covering 8,244 acres remain unreclaimed. The estimated amount of coal refuse in these banks is nearly 217 million tons of material potentially suitable for being reclaimed by coal refuse to energy facilities. Other studies have projected the amount of coal refuse placed on lands in the anthracite and bituminous coal fields of Pennsylvania approaches 1 or 2 billion tons. Frankly, if these piles are not removed during the refuse to energy generation process, the likelihood is that they will remain in place indefinitely.

COAL REFUSE TO ENERGY INDUSTRY

The coal refuse to energy industry is the only energy source that provides a tangible, quantifiable environmental benefit to the Commonwealth in terms of air, water and land remediation. There are currently 13 coal refuse to energy plants operating in Pennsylvania. Twelve of these plants were originally constructed as Qualifying Facilities (QFs), subjected to size restrictions pursuant to the Public Utility Regulatory Policy Act of 1978 (PURPA) and co-located alongside the offending piles. As a result, these facilities are relatively small in size, with all but one facility designed between 33 to 112 megawatts (MW) net operating capacity. Today the industry possesses a combined electricity generation capacity of just under 1,400 MW.

These plants play a critical role in environmental remediation in the coal regions where they are located by removing coal refuse piles, remediating and reclaiming mining affected lands and reducing, or even eliminating, surface and groundwater pollution by acid mine drainage (AMD) from coal refuse piles. By converting coal refuse into alternative energy, ARIPPA members are removing one of the principal sources of contamination to surface water and groundwater in the coal mining regions of the Pennsylvania.

Since its inception, the coal refuse to energy industry in Pennsylvania has removed and consumed as fuel more than 230 million tons of coal refuse, improved more than 1,200 miles of streams and reclaimed

more than 7,000 acres of previously polluted mining affected land. At full capacity this industry can remove over 10 million tons of coal refuse from the environment and reclaim approximately 200 acres of mining-affected land in Pennsylvania each year. Unfortunately, since 2016 the industry has removed only about 8 million tons of coal refuse per year and that amount continues to decline as more facilities close.

In the past five years, two Pennsylvania coal refuse to energy plants have permanently closed. Piney Creek discontinued operations in 2013 and abandoned its permits in 2015. During 2018, Northeastern Power Company also discontinued operations and another facility announced that it is converting to natural gas later this year. Additionally, four of these facilities are currently operating on a seasonal basis, meaning they only operate during periods of high energy demand in the peak of the winter and the summer, leading to reduced jobs and less reclamation work being performed. Another facility has a power purchase agreement (PPA) set to expire next year, and the future of this plant and several others are currently at risk.

Thousands of people are directly or indirectly employed by the coal refuse to energy industry, and live, along with their children, families, and extended families, in communities within close proximity of these alternative energy plants. The surrounding communities, lands, and streams have experienced vast environmental and economic improvements due mainly to the decades of hard work and dedication these workers and the coal refuse to energy industry have provided, in addition to the downstream environmental benefit of improved water quality provided to the Delaware, Susquehanna, and Ohio River Watersheds.

ARIPPA plants work closely with state environmental agencies, various local watershed groups, and environmental groups such as Earth Conservancy, the Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR), and the Eastern Pennsylvania Coalition for Abandoned Mine Reclamation (EPCAMR), to reclaim abandoned mine lands and convert polluted streams into clean and usable waterways.

State and federal dollars available for reclamation and remediation of mining affected lands are quite limited and the magnitude of the environmental detriment associated with coal mining's legacy in the Pennsylvania is immense. ARIPPA members remove, remediate, and reclaim coal refuse piles that will otherwise remain in communities and other areas throughout the coal regions producing acid mine

discharges to surface waters and groundwater. In a number of locales, uncontrolled air pollution caused by coal refuse pile fires is a significant risk. In fact, PA DEP Estimates that as of April 30, 2019 there are about 92 active coal refuse fires and 38 underground mine fires burning in the Commonwealth.

BENEFITS OF THE COAL REFUSE ENERGY INDUSTRY

The coal refuse to energy industry represents a unique paradigm for mine land reclamation in which environmental and economic objectives overlap. The Commonwealth is typically forced to address the environmental impacts of coal refuse piles on a reactive, rather than proactive basis, due in part to the cost structure of remediation for the state government relative to the coal refuse to energy industry. The industry, on the other hand, has developed a comprehensive fuel cycle approach to the problem. By removing coal refuse piles from the environment, remediating the sites and restoring them to productive uses and using the refuse as an alternative fuel for the production of electricity, the coal refuse to energy industry's reclamation fuel cycle provides a range of environmental, economic, and societal benefits to the Commonwealth.

The coal refuse is removed from these blighted areas and transported to the facilities where it is used to produce energy – offsetting mining and transportation costs – and beneficial use ash is then returned to mining sites for remediation and restoration. The Commonwealth, by contrast, cannot generate energy and attendant revenue with coal refuse, does not have beneficial ash available for reclamation, and most crucially, must pay to safely remove, transport, and dispose of the coal refuse to a new location. As a result, the remediation activities of the industry are far more cost effective than those of the Commonwealth and result in a greater volume of environmental remediation.

According to the Econsult Solutions' 2016 Report, "Economic and Environmental Analysis of Pennsylvania's Coal Refuse Industry," the environmental benefits of this activity total more than \$520 million, averaging over \$26 million per year over a twenty-year period. Additionally, the fiscal impact of the industry to the Commonwealth in terms of fees and local taxes totals almost \$20 million per year.

Not only has Pennsylvania's coal refuse to energy industry saved the Commonwealth millions of dollars in environmental clean-up costs, it is also an economic engine, generating annual economic benefits to Pennsylvania of nearly \$740 million. As of 2016, the industry directly and indirectly supported 3,600 jobs with total earnings of more than \$220 million. These high value family and community sustaining jobs, with salaries over \$70,000 per year, relate to every facet of our fuel cycle, ranging from mining, transportation, plant operations and management to environmental remediation.

Not to be overlooked is the fact that these benefits are primarily concentrated in the financially distressed rural communities of Pennsylvania which are not only disproportionately burdened by the environmental legacy of past mining, but also struggle to create new economic opportunities. Despite the efforts of the coal refuse to energy industry, the volume of remaining coal refuse across the Commonwealth is daunting.

CHALLENGES FACING THE COAL REFUSE ENERGY INDUSTRY

These plants face unique challenges that jeopardize their financial viability as employers and taxpayers. The problem simply is that a variety of economic forces have recently conspired to undermine the fundamentals of our industry. As the industry declines so too does the amount of environmental remediation that can be accomplished.

Relative to most other energy producers, coal refuse plants are labor intensive and have an expensive environmental reclamation fuel cycle with several components. Both coal refuse and limestone must be transported to plants, and the resulting beneficial use ash is then transported back to the mining sites for use in environmental remediation. This series of steps and the attendant cost structure relative to decreasing energy and capacity prices in the PJM market have created major marketplace challenges for the industry.

Many coal refuse facilities are, today, a victim of their own success. Distances to retrieve fuel, and related transportation costs, have increased as piles adjacent to the plants have already been successfully removed and remediated by the industry. Thus, they must travel farther and farther afield, away from the energy facilities, to site and permit coal refuse piles for reclamation. Similarly, the rising cost to ship the

beneficial ash back to remediate mining sites has increased operating costs. These costs are reflected in our fuel cycle reclamation costs which represent, on average, about 70% of the operating costs of these facilities.

Pennsylvania coal refuse plants participate in the PJM Interconnection, a Regional Transmission Operator that runs the wholesale electricity market for most of Pennsylvania and all or part of 12 other states and the District of Columbia. Participation in wholesale energy markets, for which these facilities were never designed, has become challenging due to the corrosive effect upon electricity pricing of suppressed natural gas costs in Pennsylvania and increasing federal and state market subsidies for other forms of generation. Furthermore, the PJM pricing scheme undervalues coal refuse generated electricity because it fails to recognize its externalities, the inherent environmental value of remediating hazardous abandoned refuse sites and the manifest environmental benefits attendant to this industry.

The wholesale electricity prices in PJM have gone down dramatically in recent years. On a weighted average basis the price we can receive for generated electricity is significantly below the cost to produce it. The actual price per MWh realized by coal refuse plants can be several dollars lower than the average wholesale pricing due to various factors, including congestion, line losses and the location of plants and PJM's price nodes. While costs vary from plant to plant, the 2016 Econsult study found a significant shortfall and this situation has subsequently deteriorated. The viability of the coal refuse energy industry has also been adversely affected by a bevy of burdensome environmental regulations at both the federal and state level. Federal and state environmental regulatory requirements, reclamation bonding expense and the corresponding capital and operating and maintenance costs represent an escalating expense threatening the facilities' survival.

AEPS TIER II

While coal refuse energy is a Tier II source under the Pennsylvania AEPS program, the program fails to produce a significant incentive for these facilities to increase their beneficial use of coal refuse for energy production and environmental remediation. There is a total of more 9,500 MW of installed capacity

registered in Pennsylvania's Tier II AEPS program. Of this total, more than 5,500 MW, or over half, are derived from out of state sources.

In 2017, coal refuse accounted for 61.4% of the retired Tier II AEPS credits, which was the highest year to date. While the weighted average price for Tier II AECs in 2017 was only \$0.16 per credit, most of our coal refuse credits sold for significantly less. For example, one Pennsylvania coal refuse to energy facility sold 344,662 Tier II AEPS credits between 2016-2018 at an average price of \$0.05 per credit totaling only \$17,233.10 in AEPS funding during this three-year period (less than \$6,000 per year).

CONCLUSION

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

However, we need to strengthen the partnership whereby the Commonwealth helps us to manage a portion of our environmental reclamation 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.

While the industry is appreciative of your continued support for the coal refuse to energy industry, our plants continue to struggle in the face of costly regulations and low energy prices.

One final anecdote, last year, Vistra Energy Corp. announced that at the end of the year it was closing the Northeastern Power Company (NEPCO), a waste coal facility in McAdoo, Schuylkill County, that you can clearly see now sitting idle from I-81, citing "uneconomic operations and negative financial outlook." In 2017, this 52 MW facility reclaimed and consumed 270,675 tons of coal refuse, while at historical levels it consumed up to 559,000 tons per year. The coal refuse sites that this facility could have reclaimed will now continue to scar the land, pollute the water, and create a safety and environmental hazard for years to come until the taxpayers of Pennsylvania are forced to pick up the full tab to clean them up – and it is a hefty bill.

The coal refuse to energy industry is historically the most effective and prolific actor in the remediation of coal refuse piles across the Commonwealth. As public funding of Abandoned Mine Land (AML)

remediation continues to dwindle, ARIPPA and our members want to partner with the Commonwealth to promote the values of reclamation and find ways to secure funding that will sustain and increase the current level of AML reclamation activities. No one but the coal refuse to energy industry can remove the abandoned coal waste piles and address these attendant environmental and safety hazards in a holistic, efficient, and permanent manner.

By partnering with private industry, the Commonwealth receives environmental remediation of these polluted sites at a fraction of the cost were it to be performed by a state agency or subcontractor. If the state does not continue to partner in the environmentally beneficial efforts of these facilities and ensure that they remain open, not only will family sustaining jobs be lost, but the massive environmental problem of abandoned coal refuse piles and pits will continue to scar our land and pollute our air and waterways for generations to come.

Pollution Caused by Coal Refuse



Seward Generation – Reclaimed Seanor Site, Westmoreland County



Ebensburg Power Company – Reclaimed Revloc Site, Cambria County



Northampton Generating – Loomis Bank Mine Fire, Luzerne County



Northampton Generating – Reclaimed Loomis Bank Site, Luzerne County



Colver Power Project – Lily Sports Complex, Cambria County



2011

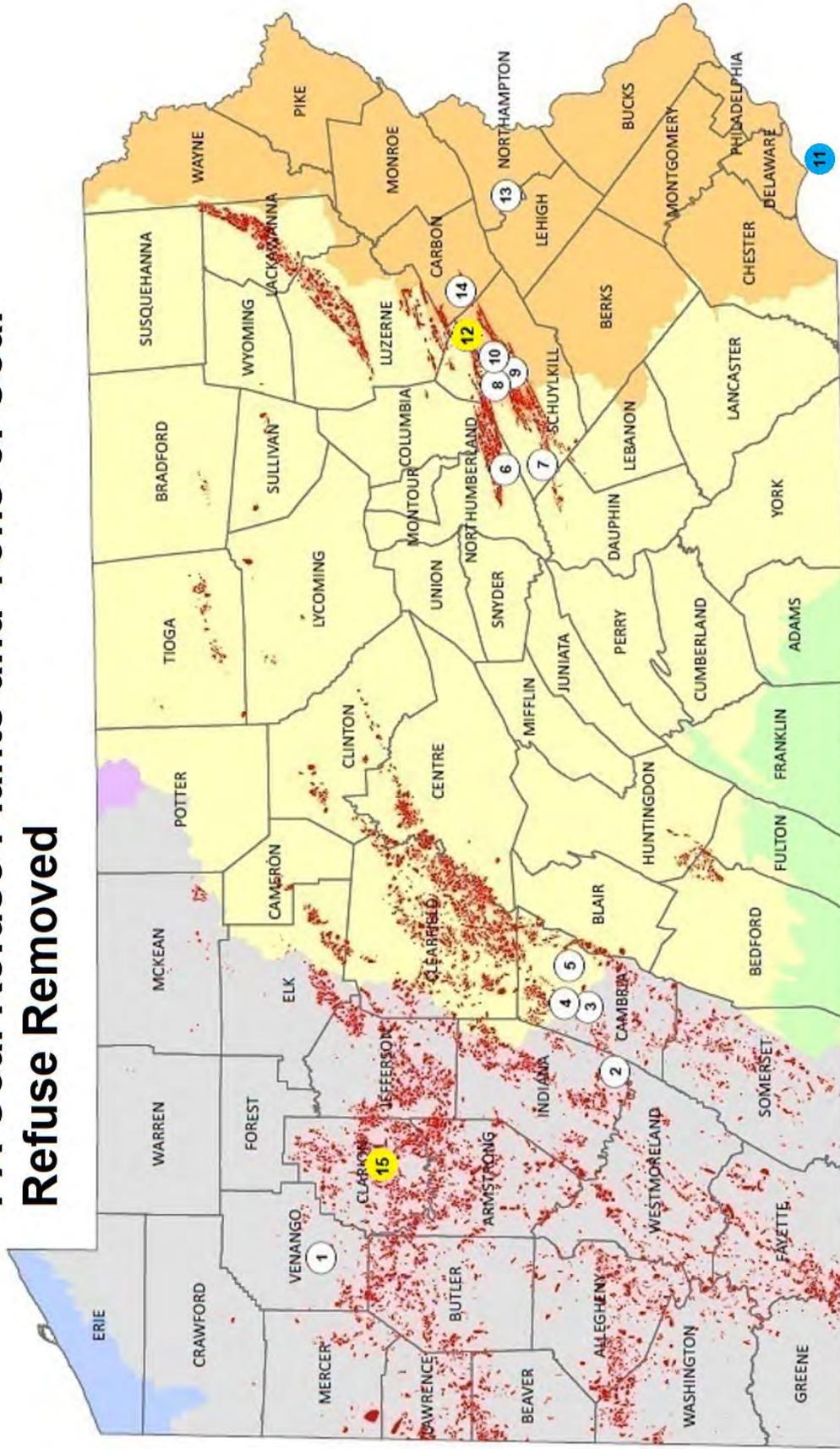


2015

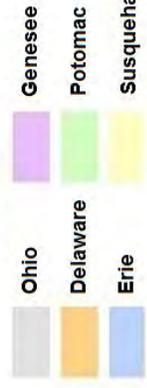
ARIPPA Plants by County

County	Plant	Operating Capacity (MW)	Year First Unit in Service	Tons of Coal Refuse Burned in 2016
Cambria	Cambria Cogeneration	87.5	1991	585,921
Cambria	Colver Power Project	110	1995	591,795
Cambria	Ebensburg Power Company	50	1991	276,362
Carbon	Panther Creek	83	1992	143,620
Delaware	Kimberly Clark Chester Operations (converting to natural gas in 2019)	67	1986	171,285
Indiana	Seward Waste Coal	521	2004	2,428,714
Northampton	Northampton	112	1995	217,392
Northumberland	Mount Carmel Cogeneration	43	1990	602,452
Schuylkill	John B. Rich Memorial Power Station (Gilberton)	80	1988	663,535
Schuylkill	Northeastern Power Cogeneration Facility (retired in 2018)	52	1989	232,413
Schuylkill	St. Nicholas Cogeneration (SER)	86	1990	1,478,011
Schuylkill	Westwood Generating Station	30	1987	105,354
Schuylkill	Wheelabrator Frackville Energy Company	42.5	1988	505,328
Venango	Scrubgrass	86.1	1993	440,519
TOTALS		1450.1		8,442,701

PA Coal Refuse Plants and Tons of Coal Refuse Removed



Watersheds



1. Scrubgrass Generating - 83 MW; 517,092 tons
2. Seward Generation - 521 MW; 2,103,272 tons
3. Ebensburg Power Company - 50 MW; 423,635 tons
4. Colver Power Project - 111 MW; 657,410 tons
5. Cambria Cogen Company - 87 MW; 536,977 tons
6. Mt. Carmel Cogen - 43 MW; 577,962 tons
7. Rausch Creek Generation - 33 MW; 369,693 tons
8. Schuylkill Energy Resources - 80 MW; 1,529,810 tons
9. Gilberton Power Company - 80 MW; 723,885 tons
10. Wheelabrator Frackville Energy Company - 42 MW; 521,062 tons
11. Kimberly Clark Chester Plant - 67 MW; N/A
12. Northeastern Power Company - 52 MW; 256,878 tons [2018]
13. Northampton Generating Company - 112 MW; 193,183 tons
14. Panther Creek Energy - 80 MW; 159,995 tons
15. Piney Creek LP - 32 MW; N/A [2013]

*MW = Net capacity; Tons of coal refuse removed in 2018

- Abandoned Mine Land Problem Areas
- Closed or Announced Closure
- Converting to Natural Gas