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Testimony of Thomas D Schuster  
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To the House Environmental Resources and Energy Committee

Re: The burning of coal refuse to generate electricity, including for cryptocurrency facilities

Good morning Chair Vitali, Chair Causer, and members of the House Environmental Resources and Energy Committee, and thank you for the opportunity to testify today. My name is Thomas Schuster, and I am speaking today on behalf of the Sierra Club Pennsylvania Chapter, of which I am the Director. Many of whom are impacted by the legacy of abandoned mines and coal refuse, as well as the electric generation facilities that burn this refuse. I live in Johnstown, which has a long history of coal mining and use, including mine abandonment, and in close proximity to three waste coal generators, so I am personally very familiar with this issue.

#### Energy Waste from Proof-of-Work Cryptocurrency

Our members are also increasingly concerned about the rising environmental and climate impacts of cryptocurrency production. Specifically, Bitcoin is the problem because it is the only major cryptocurrency that uses “proof-of-work” mining, which is **ten thousand times** more energy consuming than the “proof-of-stake” mechanism.<sup>1</sup> Ethereum is cryptocurrency that uses proof-of-stake, and a single transaction has the equivalent power usage of a credit card transaction. In stark contrast, a single Bitcoin transaction uses the equivalent of a month’s worth of the average US household’s electricity consumption.<sup>2</sup> The global energy consumption of Bitcoin is greater than that of all but 33 countries, and growing.

**Because of this profligate electricity consumption compared to a practically identical alternative, we believe that there is simply no place for proof-of-work cryptocurrency mining, regardless of how the electricity is generated.** Even using renewable energy for this purpose is problematic. If the clean energy was already existing, it is being diverted to waste and higher emitting sources are coming online elsewhere to fill the gap. If it is new purpose-built clean energy, that is still problematic because the supply chain, land, and labor dedicated to waste could be put to better use accelerating the transition of the electric sector as a whole to carbon free electricity.

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<sup>1</sup> Huestis, Samuel, 1/30/2023, “Cryptocurrency’s Energy Consumption Problem: What has been done and what still needs to be done to decarbonize crypto,” RMI, available at:

<https://rmi.org/cryptocurrencys-energy-consumption-problem/>, accessed 4/27/2023

<sup>2</sup> <https://digiconomist.net/bitcoin-energy-consumption>, accessed 4/27/2023

In fact though, most of the proof-of-work mining in Pennsylvania currently utilizes nuclear, well-head gas, or waste coal for power, and the latter will be the focus of my remaining testimony.

### Coal Refuse Problem, Subsidies for Power Plants, and Funding Alternatives

Coal refuse from abandoned mines is undeniably a problem in Pennsylvania, causing water pollution, sometimes burning in an uncontrolled fashion, and negatively impacting the economy and quality of life in the vicinity. According to an inventory maintained by the Bureau of Abandoned Mine Reclamation (BAMR), there are roughly 730 piles of abandoned coal refuse remaining, which we estimate cover roughly 7,000 acres and somewhere between 20 million and 170 million tons of material. To date, approximately 400 refuse piles have been reclaimed, in large part due to coal refuse burning generators, because public funding for other methods of reclamation has been very limited.

There are currently ten generating stations that primarily or exclusively burn waste coal in Pennsylvania, totaling roughly 1200 megawatts (MW) of capacity. These plants benefit from multiple explicit taxpayer and ratepayer subsidies:

- They enjoy a state tax credit of \$4 per ton of refuse processed, up to a total amount of \$20 million per year.
- They qualify as a Tier II resource under the Alternative Energy Portfolio Standard (AEPS). In the last reporting year, these credits had a value of nearly \$56 million, paid for by electric ratepayers.
- If the Regional Greenhouse Gas Initiative (RGGI) is upheld in court and implemented, coal refuse generators would not have to pay for their CO2 emission allowances - an avoided cost that would have totaled about \$60 million in 2021 based on emissions and allowance prices that year.

The combination of these subsidies makes Pennsylvania waste coal-fired electricity significantly cheaper than it otherwise would be, and therefore attractive to bitcoin mining operations, which are now co-located with the Scrubgrass and Panther Creek plants.

We asked the Ohio River Valley Institute (ORVI) to estimate the cost of these subsidies per ton of coal refuse processed, and they found that once the RGGI set-aside kicks in, **the public (as taxpayers and electric ratepayers) will actually be paying more per ton for reclamation via coal refuse power plants than they pay for the average ton reclaimed by the Bureau of Abandoned Mine Reclamation (BAMR) through more traditional means.**

For many years, funding for abandoned mine reclamation by more traditional means was woefully inadequate, and the waste coal generation industry billed itself as the solution to this chronic funding problem. That situation has changed dramatically with the passage of the Infrastructure Investment and Jobs Act in 2021. **Over the next 15 years, Pennsylvania is**

**eligible for more than \$3 billion in funding for abandoned mine reclamation, and the amount we received in 2022 was over 5.5 times more than 2020 funding levels.** While total reclamation costs can vary widely by project, historical data from projects funded by BAMR indicate that this level of federal funding could allow for BAMR to reclaim as much as or more annual tonnage without combustion as waste coal plants burn in an average year.

### Environmental Impacts of Waste Coal Combustion

While these plants do significantly reduce some types of water pollution, they create other negative environmental impacts that should not be overlooked, including the following:

- Waste coal produces approximately 50% more climate disrupting carbon dioxide pollution per megawatt-hour (MWh) than regular coal.<sup>3</sup>
- Fluidized bed boilers emit higher levels of polycyclic aromatic hydrocarbons (PAH's) than other types of generation. PAH's are suspected to cause cancer, birth defects, and other health problems in humans.<sup>4</sup>
- Many waste coal power plants claim to be unable to comply with the acid gas provisions of the federal Mercury and Air Toxics Standard, and in 2020 the Trump Administration created a special more lenient standard for these plants.
- Waste coal plants are subject to presumptive limits on nitrogen oxide (NOx) emissions that are nearly twice that of conventional coal plants on an equivalent heat input basis. NOx is a precursor to ground level ozone or smog.
- The amount of toxic pollution in air emissions and in ash from coal refuse combustion can vary widely by source. In 2015, the Northampton Generating Station requested, and was ultimately granted, a twenty-fold increase in its allowable hourly lead emissions, despite the fact that the surrounding area was already close to violating the Clean Air Act's standards for ambient lead levels.
- In some cases, the reclamation process itself has been conducted without effective controls to reduce fugitive dust and pollution from stormwater runoff. We have received complaints and photographic evidence from members documenting orange dust blowing off coal ash piles and coating vegetation and roadways in close proximity to where ash from coal refuse burning of the same color was being deposited. A stream in the vicinity would turn a cloudy orange color after heavy rain events after washouts were observed in the ash piles.

We also have concerns and questions about the core benefit the industry claims it provides, which is the elimination of polluted runoff from refuse piles. After the coal refuse is burned, the ash is typically returned to the site from which it was extracted, with the tonnage having been reduced by only about 25%. Coal ash contains a wide range of heavy metals and other toxic substances including Arsenic, Chromium, Lead, Mercury, Radium, and Selenium, which are variously neurotoxic, carcinogenic, and otherwise harmful to people and aquatic life. An analysis last year by Earthjustice and the Environmental Integrity Project found that fully 91 percent of coal-fired power plants in the US use coal ash impoundments that are causing unsafe levels of

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<sup>3</sup> <https://qz.com/2024423/powering-bitcoin-mining-with-waste-coal-isnt-a-green-idea>

<sup>4</sup> <http://www.energyjustice.net/coal/pah/>

groundwater contamination.<sup>5</sup> Federal regulations now require new or expanded coal ash impoundments to be built with lined landfills, but these rules do not apply to reclamation projects and no liner is installed before returning ash from coal refuse burning.

Part of the reclamation permit requires monitoring before, during, and after the reclamation, but unfortunately, data from this monitoring are not easily accessible and it is not clear whether they are analyzed in any systematic way. We did find one analysis by the DEP<sup>6</sup> of five sites in the Blacklick Creek watershed in Cambria County, and there is no question that sites reclaimed by converting coal refuse to coal ash have consistently lower pollutant loads for some types of pollution - notably acidity, iron, aluminum, manganese, and sulfate - the pollutants that cause visible acid mine drainage. However, the study also found that most sites had significantly higher discharges of potassium, calcium, sodium, and chloride post reclamation, and some sites had increased levels of Selenium, Arsenic, or Lead, which are not as visible.

### Recommendations for Future Policies

The influx of federal reclamation money over the next 15 years is a game-changer, and reduces our reliance on waste coal combustion facilities as the primary drivers of coal refuse reclamation. The appropriation in the IIJA by itself is not enough to solve the problem, but we believe that this funding in combination with a more targeted, time-limited, and environmentally accountable use of waste coal generation will actually get us very close to the end goal of eliminating abandoned coal refuse piles. It is with that vision that we offer the following recommendations:

1. BAMR should create a statewide master plan for coal refuse and acid mine drainage remediation that includes a more detailed inventory of polluting sites and prioritizes how federal money will be spent.
2. Pre- and post-reclamation water quality monitoring data that must be collected as part of the “beneficial use” permit for reclamation with coal ash should be made easily available to the public and regularly analyzed by DEP to ensure that there are no biologically significant increases of any pollutant. If such increases are detected, the permittee must be responsible for the cost of mitigation.
3. Waste coal generating facilities should not be granted any special treatment with respect to air and water pollution regulation, permitting or enforcement, including climate pollution.

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<sup>5</sup> For a more detailed summary of common coal ash contaminants and their impacts, see p12-13 of a 2022 report by the Environmental Integrity Project and Earthjustice titled, Poisonous Coverup: The Widespread Failure of the Power Industry to Clean Up Coal Ash Dumps, available at: [https://earthjustice.org/wp-content/uploads/coal-ash-report\\_poisonous-coverup\\_earthjustice.pdf](https://earthjustice.org/wp-content/uploads/coal-ash-report_poisonous-coverup_earthjustice.pdf)

<sup>6</sup> Undated presentation entitled Reclamation of Refuse Piles using Fluidized Bed Combustion Ash in the Blacklick Creek Watershed, Pennsylvania, by Gregory Aaron, Rock Martin, and Gregory Greenfield, available at: <https://blacklickcreekwatershed2.files.wordpress.com/2018/11/reclamation-of-refuse-piles-using-fluidized-bed-combustion-ash.pdf>

4. When any AEPS-eligible resource, including waste coal generation, is used to mine for Bitcoin or other proof-of-work cryptocurrency, electric ratepayers should not be forced to subsidize this wasteful activity by paying for Alternative Energy Credits (AECs).
5. Pennsylvania should consider following New York's lead and adopting a moratorium on permitting for proof-of-work data centers that utilize fossil fuels.

I appreciate the opportunity to speak with you today. This concludes my testimony.