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ONE HUNDRED SEVENTEENTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE

2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-6115

Majority (202) 225-2927
Minority (202) 225-3641

August 17, 2022

Mr. Gregory A. Beard
Co-Chairman and Chief Executive Officer
Stronghold Digital Mining
2151 Lisbon Road
Kennerdell, PA 16374

Dear Mr. Beard:

Pursuant to Rules X and XI of the House of Representatives, the Committee on Energy and Commerce is continuing its review of the environmental impacts and energy consumption of certain blockchain technology. Specifically, the Committee is examining the environmental impacts and energy consumption of blockchains that use a proof of work (PoW) consensus mechanism to record and validate transactions and mine for new cryptocurrency. While we understand that blockchain technology holds immense promise that could make our personal information more secure and economy more efficient, the energy consumption and hardware required to support PoW-based cryptocurrencies may, in some instances, produce severe externalities in the form of harmful emissions and excess electronic waste (e-waste). As a cryptomining company relying predominantly, if not exclusively, on fossil-fuel generated power sources, we are writing to Stronghold Digital Mining (Stronghold) to learn more about the environmental and energy impacts of its operations.

Earlier this year, the Subcommittee on Oversight and Investigations held a hearing to examine the impacts of PoW-based blockchains and cryptomining. While it was clear from testimony that certain cryptomining companies can provide a flexible load, which may present potential benefits to grid stability and the deployment of renewable energy sources, it is also evident that these cryptomining activities pose certain risks.[1] PoW cryptomining facilities consume an immense amount of energy and require access to stable baseload power sources to achieve peak profitability.[2] Although a few PoW cryptominers have mitigated some of their energy consumption needs by investing in renewable energy projects that can offset a portion of

[1] House Committee on Energy and Commerce, *Hearing on Cleaning Up Cryptocurrency: The Energy Impacts of Blockchains*, 117th Cong. (Jan. 20, 2022).

[2] River Financial, *Is Bitcoin Mining Profitable?* (https://river.com/learn/is-bitcoin-mining-profitable/) (accessed April 13, 2022).

the energy requirements and better balance the load on the power grid, some of the largest cryptomining companies in the country continue to rely on fossil fuel assets to sustain their operations, driving up peak demand and breathing new life into fossil fuel generators. [3]

As a vertically integrated cryptomining company that owns and operates its own power generation facilities, Stronghold is uniquely situated within the industry. As of November 2021, Stronghold owns two waste coal power plants in Pennsylvania—Scrubgrass and Panther Creek—and is in the process of purchasing a third to build out 204 megawatt (MW) of generation capacity for cryptomining operations by the end of 2022.[4] Coal-fired power plants account for a disproportionate share of the energy sector's carbon pollution. Waste coal power plants produce even more climate and hazardous air pollution than standard coal power plants, as they are required to burn more material to generate the same amount of electricity.[5]

Before being purchased by Stronghold, the Scrubgrass Power Plant was an aging facility that was no longer financially viable and only operated during periods of peak energy demand—despite generous subsidies to defray the cost of its operations.[6] The plant also produced significantly more greenhouse gas (GHG) pollution per megawatt hour (MWh) than regular coal generators—emitting 1.67 tons of carbon dioxide per MWh produced in 2019, compared to 1.1 tons of carbon dioxide per MWh from regular coal.[7] Today, the Scrubgrass plant operates continuously to support Stronghold's cryptomining operations and, according to the Environmental Protection Agency (EPA), the plant increased its CO_2 emission rate by more than 3800 percent in 2021.[8] Further, 2021 emissions data on Scrubgrass from EPA show a rapid increase in sulfur dioxide and nitrogen oxides, fully or partially exceeding levels reported in the

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[3] *See* note 1; *Bitcoin-mining power plant raises ire of environmentalists*, Associated Press (Oct. 16, 2021); *Bitcoin Mining with Stranded Energy [Video]*, Bloomberg Quicktake (Jul. 1, 2021); *Coal-Powered Marathon Digital Promises Greener Bitcoin Data Center; Elon Musk Talks to US Miners About Renewable Usage*, Datacenter Dynamics (May 25, 2021).

[4] Stronghold Digital Mining, *Stronghold Digital Mining: SEC Form S-1* (July 30, 2021) (https://ir.strongholddigitalmining.com/static-files/450bd13b-ff02-4f7e-b8d2-279af9cfebc6); Stronghold Digital Mining, *Stronghold Digital Mining Closes Panther Creek Plant Acquisition, Increasing Owned Power Generation Capacity to 165 Megawatts* (Nov. 8, 2021) (press release).

[5] Environmental Protection Agency, *Sources of Greenhouse Gas Emissions* (July 27, 2021) (https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#t1fn3).

[6] *Stronghold Raises $105m to Mine Bitcoin With Super-Dirty Coal Waste Energy at Scrubgrass, Pennsylvania*, Datacenter Dynamics (July 13, 2021); Pennsylvania Public Utility Commission, *Alternative Energy and Economic Development in Pennsylvania* (https://www.puc.pa.gov/general/consumer_ed/pdf/AEPS_Fact_Sheet.pdf) (accessed Apr. 14, 2022).

[7] *A "Sustainable" Bitcoin Firm Has Raised Money to Mine Crypto By Burning Waste Coal*, Quartz (June 24, 2021).

[8] *Stronghold Raises $105m to Mine Bitcoin With Super-Dirty Coal Waste Energy at Scrubgrass, Pennsylvania*, Datacenter Dynamics (July 13, 2021); Environmental Protection Agency, *2020 and 2021 Annual Power plant Emissions: EPA's Clean Air Markets Division* (Feb. 4, 2022) (https://www.epa.gov/system/files/documents/2022-02/annual-emission-comparison-2020-vs-2021.xlsx).

three years prior.[9] Given the plant's expanded operations since Stronghold's acquisition, these figures have likely continued to increase.[10]

In addition to the increased harmful emissions discussed above, we would also like to better understand certain concerns expressed around e-waste. As the Committee heard at its January 20, 2022, hearing, many PoW mining operations largely rely on application specific integrated circuits (ASICs) that quickly become obsolete and cannot be repurposed once they reach end of life.[11] There are numerous factors that can influence the longevity of ASICs, including local weather, ambient particulates, and cooling and air filtration.[12] According to some industry estimates, ASICs are economically viable for three to five years under the best of conditions, after which they may be disposed of or resold on the secondary market.[13] While advancements in the efficiency of ASICs have reduced the energy demand per ASIC, the competitive nature of PoW cryptomining incentivizes the deployment of additional ASICs as they become more efficient to maintain or improve cryptominers' relative computing power—a cycle that further increases the amount of future e-waste without reducing energy consumption.[14]

Consistent with Stronghold's plan to build out its generation capacity, the company also plans to expand its cryptomining facilities at each of its waste coal power plants to operate "approximately 57,000 total miners…by the end of 2022," as indicated in its July 2021 Securities and Exchange Commission (SEC) filing.[15] This would represent a significant increase from the 1,800 miners the company operated as of the July 2021 SEC filing and greatly increase the number of ASICs—and future e-waste—under Stronghold's management.

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[9] Environmental Protection Agency, *2020 and 2021 Annual Power plant Emissions: EPA's Clean Air Markets Division* (Feb. 4, 2022) (https://www.epa.gov/system/files/documents/2022-02/annual-emission-comparison-2020-vs-2021.xlsx); Environmental Protection Agency, *Air Markets Program Data* (Feb. 14, 2022) (https://ampd.epa.gov/ampd/#?bookmark=30383)

[10] *Stronghold Raises $105m to Mine Bitcoin With Super-Dirty Coal Waste Energy at Scrubgrass, Pennsylvania*, Datacenter Dynamics (July 13, 2021)

[11] *See* note 1; House Committee on Energy and Commerce, Responses of Ari Juels to Questions for the Record, *Hearing on Cleaning Up Cryptocurrency: The Energy Impacts of Blockchains*, 117th Cong. (Jan. 20, 2022).

[12] *See* note 1; House Committee on Energy and Commerce, Responses of John Belizaire to Questions for the Record, *Hearing on Cleaning Up Cryptocurrency: The Energy Impacts of Blockchains*, 117th Cong. (Jan. 20, 2022).

[13] *How to prolong your ASIC miner's lifespan*, Medium (Nov. 23, 2021); Compass Mining, *How long do ASICs last?* (Apr. 29, 2021) (compassmining.io/education/how-long-do-asics-last/#:~:text=A%20well%20maintained%20ASIC%20typically,longer%20is%20not%20unheard%20of.); Letter from Michael Saylor, Chairman and Chief Executive Officer, MicroStrategy, et al., to Administrator Michael S. Regan, Environmental Protection Agency (May 2, 2022).

[14] *See* note 12.

[15] Stronghold Digital Mining, *Stronghold Digital Mining: SEC Form S-1* (July 30, 2021) (https://ir.strongholddigitalmining.com/static-files/450bd13b-ff02-4f7e-b8d2-279af9cfebc6)/static-files/450bd13b-ff02-4f7e-b8d2-279af9cfebc6).

Given the existential threat posed by the climate crisis, we are deeply concerned about efforts that extend the operational life of aging coal power plants and leads to increased GHG pollution. According to the U.N. Intergovernmental Panel on Climate Change, the world must significantly reduce GHG pollution over this decade to avoid the most catastrophic impacts of the climate crisis.[16] That is why this Committee has prioritized efforts that will help the United States reduce GHG pollution by 50 percent from 2005 levels by 2030, and reach net zero GHG pollution no later than 2050.[17] While blockchain technology is emerging as a potentially important tool in fighting climate change, burning more coal to power PoW cryptomining facilities only serves to undermine the potential climate benefits of blockchain technology and hold us back from achieving our climate pollution reduction goals.

To address the concerns outlined above and support the Committee's ongoing oversight of the environmental and energy impacts of blockchain technologies, please provide the following requested information by August 31, 2022.

1. How much energy did Stronghold's cryptomining facilities use during 2021?

    a. Given Stronghold's growth plans, how much is expected to be used by the end of 2022 and annually thereafter, including newly built and expanded facilities?

    b. In your responses, please specify the proportion of energy supplied by Stronghold's owned power plants and, if not 100 percent, the other sources of energy used.

2. Please describe the extent to which Stronghold offsets its emissions using renewable energy credits (RECs). In your response, please include the following:

    a. The proportion of Stronghold's emissions that are offset with RECs;

    b. The number of RECs purchased and retired each year;

    c. The percentage of RECs originating in the same state as Stronghold's facilities; and

    d. A brief description of the renewable energy generators Stronghold's RECs originated from, including the percentage of Stronghold's RECs originating from each renewable energy generator.

3. How much energy did Stronghold generate annually as of the end of December 2021? How much is expected to be generated as of the end of December 2022?

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[16] Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Feb. 27, 2022).

[17] *See*, e.g., H.R. 1512; H.R. 5376.

a. How many days each year does Stronghold operate each of its generation facilities at full capacity and below full capacity?

b. For days where Stronghold's generation facilities operated below full capacity, please provide the daily average operating capacity for each facility.

4. How much energy did Stronghold provide to the grid during calendar year 2021? How often did Stronghold provide energy to the grid? In your response, please specify for each facility the number of days in each month that Stronghold provided energy to the grid and the amount of energy provided.

    a. For calendar years 2022 and annually thereafter, how much energy is Stronghold planning to provide to the grid on an annual basis and over how many days?

5. What is the average per Megawatt hour profit at each of Stronghold's generation facilities?

    a. Would these levels of profit be attainable using similar energy sources in other states?

    b. Would these levels of profit be attainable using less polluting energy sources in Pennsylvania or other states?

6. Does Stronghold currently participate, or plan to participate, in PJM Interconnection's Reliability Pricing Model (RPM)? If yes, please specify what capacity is or how much capacity will be committed from each facility.

7. Please describe the emission control and monitoring technology currently installed at each of the Stronghold owned generating facilities. Please specify the following in your response:

    a. For each Stronghold facility, total monthly emissions of mercury, sulfur dioxide, nitrogen oxides, carbon dioxide, and $PM_{2.5}$; and

    b. Whether these emission control technologies were installed by Stronghold or the previous facility owners.

8. What proportion of ash produced at each facility is classified as beneficial use ash? What proportion of ash produced at each facility is not classified as beneficial use ash? If any ash produced at Stronghold's facilities is not classified as beneficial use ash, how does Stronghold dispose of the ash?

9. Does Stronghold currently monitor the air and water quality in the areas surrounding each of its facilities? If so, please specify monitoring systems in place and the results of the monitoring efforts.

10. By the end of December 2021, how many ASICs was Stronghold operating at its facilities? How many ASICs does Stronghold expect to deploy at each of its facilities by the end of December 2022? Please also specify the following:

    a. Average lifespans of deployed ASICs for each facility;

    b. Number of deployed ASICs replaced each year;

    c. If the lifespan of ASICs at different facilities differs greatly, whether Stronghold has determined an underlying cause; and

    d. Average energy demand and hashrate per ASIC.

11. When Stronghold replaces or decommissions deployed ASICs, what does it do with the replaced or decommissioned ASICs?

    a. How much of Stronghold's e-waste is resold on the secondary market, recycled, sent to landfills, or disposed of in other ways?

    b. How does Stronghold ensure any e-waste it generates is disposed of safely, both from an environmental and human health perspective?

In addition to answering the questions above, we request that Stronghold provide a briefing to Committee staff no later than September 17, 2022.

An attachment to this letter provides additional information about responding to the Committee's request. Thank you for your prompt attention to this matter. If you have any questions, please contact Rebekah Jones and Austin Flack of the Committee staff at (202) 225-2927.

Sincerely,

Frank Pallone, Jr.
Chairman

Bobby L. Rush
Chairman
Subcommittee on Energy

Diana DeGette
Chair
Subcommittee on Oversight
and Investigations

Paul D. Tonko
Chairman
Subcommittee on Environment
and Climate Change

Attachment

cc: The Honorable Cathy McMorris Rodgers
Ranking Member
Committee on Energy and Commerce

The Honorable Fred Upton
Ranking Member
Subcommittee on Energy

The Honorable H. Morgan Griffith
Ranking Member
Subcommittee on Oversight and Investigations

The Honorable David B. McKinley
Ranking Member
Subcommittee on Environment and Climate Change