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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

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August 17, 2022

Mr. Jason Les
Chief Executive Officer
Riot Blockchain, Inc.
3855 Ambrosia Street, Suite 301
Castle Rock, CO 80109

Dear Mr. Les:

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. Blockchain technology holds immense promise that may make our personal information more secure and economy more efficient. However, 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 one of the largest PoW cryptomining companies operating in North America, we are writing to learn more about the environmental and energy impacts of Riot Blockchain's operations and the operations of its wholly owned subsidiary, Whinstone U.S. (collectively, Riot).

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 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 some PoW cryptominers mitigate their energy consumption needs by investing in renewable energy projects that can offset a portion of the energy requirements and

[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).

better balance the load on the power grid, some of the largest cryptomining companies in the country continue to rely primarily on the electrical grid for their power source. This can drive up peak demand and may even breathe new life into fossil fuel generators. [3]

Your company is a cryptomining company engaged in self-mining for bitcoin and owns what is believed to be the largest bitcoin mining facility in North America, located in Rockdale, Texas. [4] According to Riot's filings with the Securities and Exchange Commission (SEC), some of the company's facilities use large amounts of zero-emission energy, while the Rockdale facility appears to use energy from the grid. [5] Facilities consuming electricity from the grid are subject to the energy mix serving the grid. While there is a large amount of renewable energy deployed in Texas, a majority of the state's energy comes from fossil fuels. [6] Unlike other energy grids, the bulk of the electricity market in Texas, which is administered by the Electric Reliability Council of Texas (ERCOT), is not in interstate commerce—making it less resilient and more vulnerable to demand shocks during extreme weather or natural disasters. [7] Facilities like Riot's in Texas can create challenging situations for grid operators generally, but they can have dire consequences in Texas where summer and winter temperatures can reach dangerous extremes. Riot's Rockdale facility plans to nearly double its mining capacity to more than 700 MW, which has the potential to place significant strain on the grid if not managed appropriately. [8]

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 may quickly become obsolete and are difficult to repurpose once they reach end of life. [9] There are numerous factors that can influence the longevity of ASICs, including local weather, ambient particulates, and cooling and air

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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] Riot Blockchain, *About* (https://www.riotblockchain.com/about) (accessed May 18, 2022); Riot Blockchain, *Bitcoin Mining: Whinstone U.S.* (https://www.riotblockchain.com/bitcoin-mining/whinstone-u-s) (accessed May 18, 2022).

[5] Riot Blockchain, *Form 8-K* (April 27, 2021) (https://www.riotblockchain.com/investors/sec-filings/all-sec-filings/content/0001079973-21-000310/0001079973-21-000310.pdf); Securities and Exchanges Commission, *Amendment to Annual Report on Form 10-K* (April 30, 2021) (https://www.sec.gov/Archives/edgar/data/1167419/000107997321000426/ex99x3.htm).

[6] ERCOT, *Generation: Fuel Mix Report 2022* (May 9, 2022) (https://www.ercot.com/files/docs/2022/02/08/IntGenbyFuel2022.xlsx).

[7] *Why Texas's Power Grid Still Hasn't Been Fixed*, The New Yorker (Feb. 9, 2022); *Texas Heat Wave Points to Problems With Congestion on Power Grid*, Reuters (May 17, 2022).

[8] Bitcoin Miner Riot Announces Massive 1 Gigawatt Expansion Plan in Texas, The Block Crypto (Apr. 27, 2022).

[9] *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).

filtration.[10] According to a May 2, 2022, letter addressed to Environmental Protection Agency (EPA) Administrator Michael Regan and co-signed by Riot, ASICs are economically viable for approximately three to five years, after which they may be disposed of or resold on the secondary market.[11] 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 may further increase the amount of future e-waste without reducing energy consumption.[12]

Riot is one of the fastest growing cryptominers in North America, potentially making it a rapidly growing source of e-waste. As of March 2022, Riot has more than 42,000 deployed ASICs, and plans to deploy an additional 10,000 new ASICs in 2022.[13] In April 2022, Riot announced plans to expand its facilities by 1 Gigawatt, estimating its energy consumption will grow to approximately 1.7 gigawatts by the end of 2024—a substantial increase over its current consumption.[14] To achieve that growth, Riot will need to add thousands of ASICs to its currently deployed fleet.

Given the existential threat posed by the climate crisis, we are deeply concerned about efforts like this that increase demand for fossil fuels, with the potential to put new strain on our energy grid. According to the U.N. Intergovernmental Panel on Climate Change, the world must significantly reduce greenhouse gas (GHG) pollution over this decade to avoid the most catastrophic impacts of the climate crisis.[15] 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.[16] While blockchain technology is emerging as a potentially important tool in fighting climate change, increasing demand on the grid and burning more fossil fuels 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.

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[10] *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).

[11] *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).

[12] *See* note 9.

[13] Riot Blockchain, *Riot Blockchain Announces March 2022 Production and Operations Update* (Apr. 5, 2022) (press release).

[14] Riot Blockchain, *Riot Blockchain Announces 1 GW Development in Navarro County, Texas* (Apr. 27, 2022) (press release).

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

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

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 each of Riot's cryptomining facilities use during 2021?

    a. Given Riot's growth plans, how much is expected to be used by each facility during 2022 and annually thereafter, including newly built and expanded facilities?

    b. In your response, please specify the energy sources used by utilities serving each of your facilities, and the energy mix of each.

    c. Please also specify the proportion of energy used that is offset with renewable energy credits.

2. The May letter to EPA, co-signed by Riot described additional computing activities, such as high-performance compute (HPC), that can be undertaken at idle mining facilities.[17] Describe the extent to which Riot devotes computing power from its deployed fleet to activities other than cryptomining. In your response, please include:

    a. The maximum, minimum, and average daily percentage of Riot's deployed fleet devoted to activities other than cryptomining; and

    b. The maximum, minimum, and average amount of time daily that Riot's cryptominers are devoted to non-cryptomining computing.

3. For each type of miner within Riot's fleet, please provide a description of such miner including:

    a. Whether Riot primarily or intermittently devotes such miners to non-cryptomining activities and, if so, the proportion of time spent on non-cryptomining activities;

    b. A list of all the cryptocurrencies that Riot mines using such miners; and

    c. The quantity of each type of miner within Riot's fleet.

4. Please describe what analysis, if any, Riot has conducted regarding the company's scope 1 and scope 2 emissions. If the company estimated its scope 1 and scope 2 emissions, please provide those estimated emissions and a detailed analysis of the methodology used

[17] Letter from Michael Saylor, Chairman and Chief Executive Officer, MicroStrategy, et al., to Administrator Michael S. Regan, Environmental Protection Agency (May 2, 2022).

to estimate those emissions. If the company has not conducted any analysis of its scope 1 and scope 2 emissions, explain why not, including responses to the following:

a. Why has the company chosen not to evaluate its scope 1 and scope 2 emissions?

b. How does the company plan to achieve or has the company achieved net-zero emissions without evaluating its scope 1 and scope 2 emissions?

c. Has the company conducted any analysis to ascertain the carbon footprint of its operations and facilities? If so, please provide this analysis.

5. Please describe Riot's RECs program. In your response, include the following:

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

b. The percentage of RECs originating in the same state as Riot's facilities;

c. A brief description of the renewable energy generators Riot's RECs originated from, including the percentage of Riot's RECs originating from each renewable energy generator; and

d. A description of the methodology Riot uses to determine the estimated emissions derived from its energy consumption and the number of RECs needed to offset those emissions.

6. In the last 12 months, how many days has Riot curtailed cryptomining to support grid stability? Over the next 12 months, how many days does Riot expect it will need to curtail cryptomining at its facilities? In your response, please include:

a. The observed or anticipated duration of curtailments by facility;

b. The amount of energy consumption reduced by each past curtailment or the anticipated reduction of energy consumption for future curtailments; and

c. The extent to which each curtailment was done voluntarily or required by mandatory agreements with Riot's utilities. In your response, please summarize the terms of any such agreement, including any compensation arrangements and any payments, credits, or other compensation received from curtailing cryptomining.

7. In 2021, what was the average cost per megawatt hour and per megawatt hour profit at each of Riot's cryptomining facilities?

8. By the end of December 2021, how many ASICs was Riot operating at its facilities? How many ASICs does Riot 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 Riot has determined an underlying cause; and

    d. Average energy demand and hashrate per ASIC model.

9. While the May letter to EPA contends that there is currently no "evidence of huge quantities of miners in junkyards," this concern remains valid given the rapid expansion of the industry and the aging ASICs fleet.[18] We would like to better understand how Riot addresses its decommissioned ASICs.

    a. How many of Riot's replaced or decommissioned ASICs are resold? How many become e-waste that is recycled, sent to landfills, or disposed of in other ways?

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

    c. Does Riot provide disposal services for decommissioned or replaced ASICs it hosts for third parties? Please describe these services if they differ from how Riot manages its own e-waste.

10. The May letter claimed that "Bitcoin ASICs are almost entirely recyclable" and that individual components can be resold.[19] Please specify which individual ASIC components Riot currently recycles and which individual components Riot resells. In your response, include the following:

    a. A list of all individual ASIC components that Riot recycles.

    b. A list of all individual ASIC components that Riot resells.

    c. For components that are both recycled and resold, a breakdown of the proportion that are recycled and resold.

[18] *Id.*

[19] *Id.*

d. What channels Riot currently uses to recycle or resell its discarded ASICs and ASIC components.

In addition to answering the questions above, we request that Riot 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