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September 14, 2022

RE: Letter to Riot Blockchain, Inc., dated August 17, 2022

Dear Chairs:

Thank you for your letter of August 17, 2022, addressed to Riot Blockchain, Inc. (“Riot” or the “Company”) related to our Bitcoin mining operations. Riot is a leader in the Bitcoin mining industry and is one of the largest Bitcoin-related U.S. publicly traded companies listed on the Nasdaq Stock Market as measured by total market capitalization. We are dedicated to building and growing this innovative industry, as well as supporting the development of digital infrastructure, within the United States of America.

Our Purpose

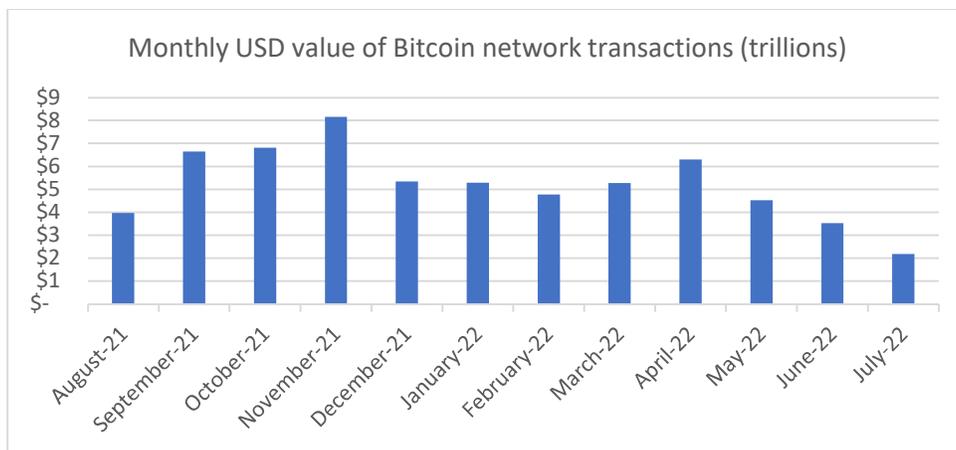
Riot is a Bitcoin-driven infrastructure platform with Bitcoin mining, data center hosting, and electrical manufacturing and engineering operations. We deliver our services through a vertically integrated strategy of innovative engineering solutions, investing in rural communities, strengthening grid resilience, producing a digital commodity of limited availability, and manufacturing advanced electrical equipment. With approximately 500 employees in the United States and facilities in Rockdale, Texas, and Denver, Colorado, we are proud of our positive impact on the sectors, networks, and communities in which we operate.

Our Commitment to Bitcoin

Bitcoin’s Economic Value

We believe in the current value and future potential of Bitcoin and are dedicated to supporting the development of the innovative Bitcoin mining industry so that individuals of all backgrounds can access the potential economic benefits that Bitcoin offers. With a total mining industry revenue of \$14 billion of

Bitcoin over the 12-month period ended July 31, 2022¹, the global Bitcoin mining industry has created immense value for a growing number of users of this digital commodity by enabling settlement finality for \$62 trillion worth of Bitcoin transactions².



Benefits of the Bitcoin Blockchain

The Bitcoin network is composed of node software, free and open-source code that implements the processes and parameters of the Bitcoin protocol. This node software connects to network peers to independently verify the validity and timing of transactions before recording them on the Bitcoin ledger, a function distinct from the proof-of-work hashing widely known as “mining.” The public availability of node software and ability to run the software on commercially available electronic devices, including smartphones and laptops, are key features supporting the decentralization of the network.

The decentralized character of the network contributes to the remarkable stability of the protocol rules of Bitcoin. Nodes define the rules for updating the ledger, and because node software is run independently without a third-party intermediary, no single person or entity can change the node software and thus compromise the state of the ledger.³ This preserves the security of the network and the integrity of the ledger. Further, node software is programmed to calibrate a clock for the temporal ordering of transactions, a breakthrough invention that prevents “double-spending,” or users spending the same balance twice, so that each transaction is only recorded once. This feature, together with the network’s stable protocol rules, ultimately protects users against fraud.

Nodes calibrate the ledger’s clock and validate the ledger using a consensus mechanism called “proof-of-work.” Proof-of-work was invented in 1994 as a cryptographic system where “workers,” or computers that generate hashes, can prove to “verifiers” that they have performed a cryptographic function a probabilistic number of times.⁴ The Bitcoin protocol requires that verifying nodes adjust the rate at which these cryptographic functions, or hashes, can be performed, so that the proof is generated in ten-minute average

¹ *Glassnode Studio - On-Chain Market Intelligence*. Studio.glassnode.com. (2022). Retrieved August 29, 2022, from <https://studio.glassnode.com/workbench/285c7e6f-eed0-41ad-638f-892b187ec1f0>.

² *Glassnode Studio - On-Chain Market Intelligence*. Studio.glassnode.com. (2022). Retrieved August 29, 2022, from <https://studio.glassnode.com/workbench/affc951-b227-449e-41de-840fe01f337e>.

³ Bier, J. (2021). *The Blocksize War: The battle over who controls Bitcoin’s protocol rules* (1st ed.).

⁴ Jakobsson, M., & Juels, A. (1999). Proofs of Work and Bread Pudding Protocols. *Secure Information Networks*, 258-272. https://doi.org/10.1007/978-0-387-35568-9_18

intervals regardless of the efficiency of hashing workers. This mechanism, called the “difficulty adjustment,” regulates the rate at which the reward for producing a hash – Bitcoin – can be released.

The central benefit of Bitcoin’s use of proof-of-work is the network’s consensus on the timing of transactions that are recorded on the ledger, which prevents errors, both intentional and unintentional, in the recording of transactions. In contrast, proof-of-stake, another consensus mechanism often suggested as a substitute for proof-of-work, relies on signatures from a set of token-holders, or “stakers.” Unlike proof-of-work hashes, proof-of-stake signatures are not probabilistically anchored in time. Blockchains that use proof-of-stake are therefore more vulnerable to ledger re-writes that compromise their transaction settlement finality, and therefore, the overall integrity of the ledger.⁵ Computer science researchers refer to this flaw in proof-of-stake as the “nothing at stake” or “costless simulation” problem⁶ and it increases the risk of fraud on the network. A potential solution to this security vulnerability would be to checkpoint proof-of-stake blockchains in Bitcoin’s proof-of-work history using Taproot, a recent upgrade to Bitcoin’s smart contract scripting language.⁷

At the cutting edge of computer science and software engineering, Bitcoin’s use of a proof-of-work system in combination with a difficulty adjustment results in an extraordinarily secure electronic cash system. As electronic cash, Bitcoin empowers its users to earn, save, and spend their money freely in a peer-to-peer process, without the use of a third-party intermediary.

The Mining Analogy

Despite widespread use of the term “mining” to describe the efforts of computers that generate hashes, the process of generating hashes might better be described as “distributed timestamping.” In his whitepaper introducing the concept of Bitcoin, the pseudonymous author Satoshi Nakamoto described two components of an incentive to contribute to distributed timestamping: the distribution of new “coin” that becomes owned by a worker who proposes a valid hash, and transaction fees that may be paid to a worker upon proposing a valid hash.⁸ Nakamoto analogized the first component of the incentive to that of gold mining, as both require workers to expend resources to add units into circulation.⁹ This analogy does not, however, describe transaction fees, nor does it describe the value that generating valid proof-of-work hashes contributes to the ledger: powering the ledger’s clock to cryptographically prove the sequence of transactions and protect against fraud. For these reasons, we are re-evaluating our use of the term “mining” to determine if greater transparency and clarity would be obtained by using “distributed timestamping” or similar terminology to describe our operations.

Riot’s Facilities

Rockdale, Texas

As of the date of this letter, our Bitcoin mining operations are conducted solely at our facility located in Rockdale, Texas. We acquired our Rockdale facility through our acquisition of Whinstone US, Inc. (“Whinstone”) on May 26, 2021. Prior to the date of the acquisition, Whinstone operated solely as a data center hosting facility with clients engaged in Bitcoin mining, and neither Whinstone nor Riot conducted

⁵ Tas, E. N., Tse, D., Yu, F., & Kannan, S. (2022). Babylon: Reusing Bitcoin Mining to Enhance Proof-of-Stake Security. doi:10.48550/ARXIV.2201.07946

⁶ Poelstra, A. (2016, May 25). A Treatise on Altcoins. WP Software. Retrieved September 9, 2022, from <https://download.wpsoftware.net/bitcoin/alts.pdf>.

⁷ Azouvi, S., & Vukolić, M. (2022, August 10). *Pikachu: Securing proof-of-stake blockchains from long-range attacks by checkpointing into Bitcoin proof-of-work using Taproot*. arXiv.org. Retrieved September 9, 2022, from <https://arxiv.org/abs/2208.05408>.

⁸ Nakamoto, Satoshi (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System* [White paper]. https://www.usssc.gov/sites/default/files/pdf/training/annual-national-training-seminar/2018/Emerging_Tech_Bitcoin_Crypto.pdf

⁹ *Id.*

any Bitcoin mining operations at the facility. Our Rockdale facility has a total capacity of 750 megawatts, with 450 megawatts currently developed and the remaining capacity under development. With over 200 employees, the facility is the single largest employer in Milam County, Texas. The facility has also added 900 to 1,200 indirect jobs to Rockdale and has contributed to record sales tax revenues for the city.¹⁰

Corsicana, Texas

We are developing a second facility in Corsicana, Texas, where we plan to conduct Bitcoin mining operations and to host institutional-scale Bitcoin mining and data center clients. As of the date of this letter, we do not presently conduct any Bitcoin mining operations at our Corsicana facility but anticipate to start mining in the summer of 2023.

Former Mining Operations in Massena, New York

Riot previously conducted Bitcoin mining operations at a facility in Massena, New York, owned by a third party. Riot ceased Bitcoin mining operations at the Massena facility on July 8, 2022.

Responses to Committee Inquiries

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.*

At present, our electricity usage for our Bitcoin mining operations is limited to our Rockdale facility, which we acquired on May 26, 2021. We do not expect to use electricity for operations at our Corsicana facility until the first phase of construction is completed and the power substation is commissioned, which we anticipate will occur in 2023. The following table presents our electricity usage for the period beginning May 26 through December 31, 2021, and for the 2022 calendar year through August 2022, as well as our projected electricity usage for the period beginning September 1, 2022, through December 31, 2022, and through the 2025 calendar year, for operations at our Rockdale and Corsicana facilities. The projections for our Rockdale facility are based on our anticipated timeline for the expansion of the facility.

ELECTRICITY USAGE (GWh)¹¹			
Period	Rockdale Facility	Corsicana Facility	Aggregate Total
May 26 – December 31, 2021 ¹²	716	0	716
January 1 – August 31, 2022	1,160	0	1,160
September 1 – December 31, 2022	1,129	0	1,129
2023	3,758	199	3,957
2024	3,758	1,727	5,485
2025	3,758	2,405	6,163

¹⁰ Green, D., & Kazi, S. (2022, August). *Cryptocurrency in Texas*. Cryptocurrency in Texas: Opportunities and Challenges in Mining Digital Coins. Retrieved September 7, 2022, from <https://comptroller.texas.gov/economy/fiscal-notes/2022/aug/crypto-tx.php>

¹¹ Electricity usage is actual GWh for May 26, 2021, through December 31, 2021, and for the 2022 calendar year through August 31, 2022. All other values are estimated forecasts subject to change.

¹² Neither Riot nor Whinstone conducted Bitcoin mining operations at the Rockdale facility prior to May 26, 2021.

Riot is a customer of the Electric Reliability Council of Texas (ERCOT), the independent system operator that manages approximately 90 percent of Texas’s electric power load. The generation sources for the electricity we purchase are determined by the ERCOT marketplace. We are not able to select the mix of fuels used by ERCOT to generate power for our Rockdale facility; however, the changing ERCOT fuel mix reflects the continued growth of renewable energy sources in Texas.¹³ Our Corsicana facility will also be served by ERCOT, and the electricity generation sources and fuel mix will similarly be determined by those available through the ERCOT marketplace.

The electricity generation sources and fuel mix reported by ERCOT for the 2021 calendar year and the 2022 calendar year through August 2022 are reproduced in the table below.¹⁴ ERCOT does not designate its load zones based on generation sources, and information about the generation sources and fuel mix used by the load zones in which our facilities are located is not publicly available. We have requested information from our retail electric provider, TXU Energy Retail Company LLC, on the electricity generation sources and fuel mix for the region in which our Rockdale facility is located, but have been informed that such location-specific information is not available.

ERCOT FUEL MIX	JANUARY 1 – DECEMBER 31, 2021		JANUARY 1 – AUGUST 31, 2022	
Source	GWh	%Total	GWh	%Total
Gas-CC	138,314	35.3%	101,953	34.7%
Wind	95,403	24.4%	76,536	26.0%
Coal	74,825	19.1%	48,535	16.5%
Nuclear	40,270	10.3%	28,277	9.6%
Gas	26,106	6.7%	20,976	7.1%
Solar	15,712	4.0%	17,047	5.8%
Hydro	504	0.1%	285	0.1%
Biomass	434	0.1%	422	0.1%
Other	10	0.0%	344	0.1%
Wholesale Storage Load	---	---	-404	-0.1%
Total	391,579	100.0%	293,970	100.0%

Our electricity usage at the Massena facility was approximately 330 GWh for the 2021 calendar year and approximately 170 GWh for the period beginning January 1, 2022, through July 8, 2022, the date we ceased our Bitcoin mining operations at the facility. The Massena facility purchases its power from the New York Independent Service Operator, Inc. (NYISO) as a wholesale customer. In 2021, the mix of energy sources producing electricity for the wholesale market administered by the NYISO across New York State consisted of 38.7% dual fuel (natural gas/oil), 24.5% nuclear, 22.6% hydroelectric, 8.2% natural gas, 3.2% wind, 2% other renewables, 0.6% hydroelectric pumped storage, and less than 1% oil.¹⁵ Massena, however, is located in NYISO load zone D, which in 2021 generated 99.3% of its energy from renewable sources, which included 84.4% from hydroelectric, 14.5% from wind, and 0.4% from internal combustion (methane).¹⁶

¹³ Minton, L. (2020, August). Texas’ Electricity Resources: *Where Power Comes From – And How it Gets to You*. Comptroller.Texas.Gov. <https://comptroller.texas.gov/economy/fiscal-notes/2020/august/ercot.php>.

¹⁴ ERCOT, *Generation: Fuel Mix Report: 2021* (March 7, 2022) (<https://www.ercot.com/gridinfo/generation>); ERCOT, *Generation: Fuel Mix Report: 2022* (August 8, 2022) (<https://www.ercot.com/gridinfo/generation>).

¹⁵ New York Independent System Operator, Inc. (2022). *Power Trends 2022: The Path to a Reliable Greener Grid for New York* 25. <https://www.nyiso.com/documents/20142/2223020/2022-Power-Trends-Report.pdf/d1f9eca5-b278-c445-2f3f-edd959611903?t=1654689893527>

¹⁶ New York Independent System Operator, Inc. (2022). *Load & Zone Capacity Data Report 102*. <https://www.nyiso.com/documents/20142/2226333/2022-Gold-Book-Final-Public.pdf/cd2fb218-fd1e-8428-7f19-df3e0cf4df3e>

Riot has not sold or purchased 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. 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.*

The facilities Riot uses for its Bitcoin mining operations can be used for other high-performance computing and traditional data center activities across a wide array of industries, and we expect to host traditional data center clients at our Corsicana facility upon its completion. The ASIC miners used in our Bitcoin mining operations, however, are specifically designed for high-performance secure cryptographic hashing with the open-source SHA-256² algorithm, which provides timekeeping services to the Bitcoin blockchain network, and therefore have limited alternative uses. As such, we have not devoted computing power from our deployed fleet to any activities other than mining Bitcoin.

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.*

Our Bitcoin mining fleet, including machines not currently in service, consists of the following ASIC models: S17 Pro, S19j Pro-A, S19 Pro, S19, and S19XP. The quantity of each model owned as of August 31, 2022, is provided in the following table. As of September 6, 2022, 46,658 ASIC miners were deployed in Riot’s facilities.

MODEL	QUANTITY OWNED
S17 Pro	4,000
S19j Pro-A	47,457
S19 Pro	14,924
S19	1,040
S19 XP	10
Total:	67,431

We have contracted for approximately 22,000 additional S19j Pro-A miners and approximately 30,000 additional S19 XP miners, which are expected to be delivered by the end of January 2023.

As explained in our response to Question 2, Riot does not use its ASIC miners for any activities other than mining Bitcoin, as they are specifically designed for this purpose. Riot does not mine any cryptocurrencies other than Bitcoin.

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 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.*

Riot has not conducted any analyses regarding its emissions or carbon footprint. We are monitoring the Securities and Exchange Commission's proposed rule changes regarding required emissions disclosures, which are likely to affect our periodic reporting. We will take all actions required to comply with a final rule when effective.

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.*

Riot does not participate in a renewable energy credit program and has never sold or purchased renewable energy credits.

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.*

Riot supports the ERCOT grid's management of its energy capacity by curtailing its Bitcoin mining operations during times of increased demand for electricity in the state of Texas, such as during extreme weather events. Curtailment of our Bitcoin mining operations, and thus our electricity usage, redirects our electricity allotment back into the ERCOT market where it can be delivered to the areas of greatest need, such as heating homes and powering hospitals, helping to reduce the frequency and impact of power failures, rolling brownouts, and price surges. Such curtailment is voluntary, either directly in response to increased demand or in response to an instruction under a demand response services program in which Riot voluntarily participates.

Riot's wholly owned subsidiary, Whinstone, which operates the Rockdale facility, is party to a Power Supply Agreement with TXU Energy Retail Company LLC. Under the agreement, Whinstone is required to pay a fixed price for delivery of a fixed amount of electricity for the Rockdale facility. During months

when we reduce or curtail our electricity usage, whether directly in response to increased demand or in response to an instruction through a demand response services program, such that our electricity consumed is below the amount purchased under the agreement, we can sell electricity that we have purchased but have not used back to ERCOT, subject to the requirements of any demand response services program as discussed below. This electricity can then be used by other customers on the ERCOT grid. The amount of compensation we receive from electricity sales to ERCOT due to curtailment varies according to several factors, primarily the market price of electricity during the month in which curtailment occurs. The price at which we sell our purchased and unused electricity to ERCOT may be higher or lower than the price at which we purchased it, meaning we may at times sell our unused electricity for a loss.

ERCOT operates a number of demand response services programs which help to preserve system reliability, enhance competition, mitigate price spikes, and encourage the demand side of the market to respond better to wholesale price signals. Customers who would like to participate in these demand response services programs voluntarily submit bids to ERCOT for participation, which is not guaranteed. Participation in these demand response services programs requires participants to curtail electricity usage and sell unused electricity back to ERCOT at ERCOT's instruction and prohibits participants from curtailing electricity usage except upon such instruction. In the past, Riot has successfully bid for participation in both controlled load response (CLR) and load response (LR) programs. Each such program in which Riot participates is specific to a certain building or certain buildings that comprise the Rockdale facility. Because Riot is frequently enrolled in a CLR or LR program, it is often prohibited from curtailing its electricity usage in certain buildings at its Rockdale facility without an instruction from ERCOT.

During times when we are not participating in a CLR or LR program with respect to a certain building, we are able to curtail our Bitcoin mining activities in that building directly in response to increased demand, without an instruction from ERCOT. Recently, we curtailed our Bitcoin mining activities at our Rockdale facility in response to strain on the grid due to record-high temperatures during the summer months.

As a result of its participation in CLR and LR programs, during the six-month period ended June 30, 2022, Riot earned a total of approximately \$8.3 million in power credits from sales of electricity back to the grid. As a result of its participation in CLR and LR programs, during the period beginning on May 26, 2021, the date of the acquisition of Whinstone, through December 31, 2021, Riot earned a total of approximately \$6.5 million in power credits from sales of electricity back to the grid.

Because our decision to curtail our Bitcoin mining activities separate from a CLR or LR instruction is responsive to fluctuations in wholesale prices and market demand, both of which have often in recent years been driven by extreme and unusual weather events, we cannot predict with reasonable accuracy the number of days we will curtail our Bitcoin mining activities separate from a CLR or LR instruction over the next 12 months. The number of days we will be required to curtail our Bitcoin mining activities pursuant to a demand response services program over the next 12 months is similarly difficult to predict, as our enrollment in any such program is not guaranteed and ERCOT's curtailment requirements are correlated to similar factors.

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

During the six-month period ended December 31, 2021, our average net power cost for our Bitcoin mining operations at the Rockdale facility was approximately \$27.00 per megawatt hour. We did not conduct any Bitcoin mining operations at the Rockdale facility prior to May 26, 2021.

As we have not publicly disclosed our per megawatt hour profit for the year 2021 at either the Rockdale facility or the Massena facility, nor have we publicly disclosed our average net power cost for the Massena facility, this information is excluded.

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.*

At December 31, 2021, Riot operated approximately 30,907 ASIC miners at the Rockdale and Massena facilities. In connection with the cessation of our mining operations in Massena in July 2022, we entered into an equipment exchange agreement with another Bitcoin mining company, whereby we transferred approximately 5,700 of the ASIC miners we had previously deployed at the Massena facility to the other mining company, in exchange for their delivery of approximately 5,000 new ASIC miners to us at our Rockdale facility. This exchange was completed in July 2022. Thereafter, we relocated the balance of the ASIC miners we had deployed at the Massena facility to our Rockdale facility. We anticipate we will have approximately 115,450 miners in operation at our Rockdale facility by the first quarter of 2023.

The quantity owned, average hashrate, average electricity demand, and average efficiency of our ASIC miners as of August 31, 2022, are shown below.

MODEL	QUANTITY OWNED	AVERAGE HASHRATE	AVERAGE DEMAND (W)	AVERAGE EFFICIENCY (J/TH)
S19j Pro-A	47,457	101	2,950	29.3
S19 Pro	14,924	110	3,245	29.5
S19	1,040	95	3,278	34.5
S19 XP	10	141	3,010	21.3
Total:	63,431	103	3,003	29.4

We removed 4,000 S17 Pro miners from service for refurbishing in May 2022. As we currently have no S17 Pro miners in service, we have excluded these from the table.

We have a strong interest in maximizing the lifespan of the hardware used in our business. Our entire fleet of ASIC miners is deployed at our Rockdale facility, where they are managed by Riot team members who perform daily, weekly, and monthly maintenance to ensure they are running efficiently. We repair or refurbish ASIC miners whenever possible. In addition, we have invested significantly in our development of immersion-cooled Bitcoin mining infrastructure, a process that has been shown to prolong machine life, reduce maintenance requirements, and reduce electricity consumption.¹⁷ To our knowledge, we were the first in our industry to apply this technology on an industrial scale when we announced our development of 200 megawatts of immersion-cooling technology at our Rockdale facility in October 2021, and we are developing our Corsicana facility for immersion cooling. We believe our investment in immersion cooling will enable us to extend the usable life of the ASIC miners on which our Bitcoin mining business depends.

We are also investing heavily in high quality ASIC miners to ensure the longevity of our equipment. Our purchasing power enables us to procure durable and efficient models at scale. We do not believe, however, that this requires constant replacement of units in our existing fleet with newer models. While early ASIC miners showed substantial improvements from model to model, resulting in a disadvantage to users of

¹⁷ Center of Expertise for Energy Efficiency in Data Centers, *Liquid Cooling* (<https://datacenters.lbl.gov/liquid-cooling>) (accessed August 25, 2022).

earlier models, newer generations of hardware developed with the latest semiconductor technology have shown diminishing improvements relative to older generations. Thus, using the most recent equipment is less critical to mining efficiently.

Because Bitcoin mining ASICs are a fairly recent development, there is limited data available regarding their average lifespan. We estimate that, on average, the lifespan of one of our ASIC miners is three to five years, with longer lifespans correlating to the use of immersion cooling. This estimate is consistent with both the lifespan suggested by their manufacturer and the standard depreciation schedule for computer equipment recommended by the Internal Revenue Service.

We decommission and replace an average of less than 3% of our deployed ASIC miners each year, with the number of ASIC miners requiring replacement declining in recent periods.

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. 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.*

Because substantially all of our Bitcoin mining fleet is the latest generation hardware, we have not decommissioned, recycled, or resold a large number of our ASIC miners. Our only sales of ASIC miners occurred in 2020, when we sold a total of approximately 8,000 S9 models to two separate third party purchasers, and in July 2022, when we completed the equipment exchange upon exiting the Massena facility.

As e-waste has not been a significant concern for our Bitcoin mining business, we do not have a developed e-waste disposal policy. This is not uncommon industry practice, as the need to dispose of ASIC miners remains rare and most of the ASIC miners operated by the largest Bitcoin mining companies have not yet reached the end of their lifecycles.

The waste produced by the shipment, storage, and use of our hardware consists of cardboard, wooden pallets, aluminum housing, hashboards, and power supply units, all of which are recyclable. As discussed in our response to Question 10, we have not disposed of any of our decommissioned ASIC miners or their component parts in recycling centers. We provide waste disposal services for decommissioned ASICs of our hosted clients to all such clients, other than one hosted client that provides for its own e-waste disposal, and we have disposed of client ASIC miners in Texas recycling centers.

10. *The May letter claimed that “Bitcoin ASICs are almost entirely recyclable” and that individual components can be resold. 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.*

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

ASIC miners and their component parts, including aluminum housing, hashboards, and power supply units, are fully recyclable unless irreparably damaged; however, the ASIC chips installed on the miner hashboards are designed only to perform secure cryptographic encryption using SHA-256² and therefore have limited alternative uses. To date, we have not determined that any of our ASIC miners are irreparably damaged such that their component parts cannot be used for repairs, and we have kept all our decommissioned ASIC miners, other than those sold in the transactions described in our response to Question 9, for repairs. We have not resold any component parts or disposed of any of our decommissioned ASIC miners or their component parts in recycling centers.

We appreciate your efforts to address the need for sustainability in the Bitcoin mining industry. We look forward to being a resource to your offices on this important issue.

Sincerely,



Jason Les
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