



February 10, 2022

The Honorable Elizabeth Warren
United States Senate
Washington, DC 20510

The Honorable Sheldon Whitehouse
United States Senate
Washington, DC 20510

The Honorable Jeffrey A. Merkley
United States Senate
Washington, DC 20510

The Honorable Margaret Wood Hassan
United States Senate
Washington, DC 20510

The Honorable Edward J. Markey
United States Senate
Washington, DC 20510

The Honorable Katie Porter
United States House of Representatives
Washington, DC 20515

The Honorable Rashida Tlaib
United States House of Representatives
Washington, DC 20515

The Honorable Jared Huffman
United States House of Representatives
Washington, DC 20515

Dear Senators Warren, Whitehouse, Merkley, Hassan, Markey and Representatives Porter, Tlaib, and Huffman,

We have received your letter and thank you for your inquiries. We were encouraged to see your interest in learning more about Marathon Digital Holdings and the broader bitcoin mining industry, which is currently experiencing a pivotal transformation that will have a significant and long-term impact on the future of our global energy and financial systems.

Following the bitcoin mining migration out of China, the United States' bitcoin mining industry has taken the lead in creating opportunities to drive the demand for renewable energy, create jobs, contribute to economic development, and unleash a green energy super-cycle through technology innovation. Through bitcoin mining, there is an opportunity for the United States to retain its lead in unprecedented technology innovation, to advance economic growth, and to accelerate its transition to clean energy.

It is natural for any invention to be met with a healthy level of skepticism, especially those with disruptive potential. We appreciate your perspective, and we recognize that the evolving value proposition for Bitcoin, coupled with our industry's dynamism, may contribute to this skepticism. We therefore appreciate the opportunity to share our insights gleaned as a leading market participant in this industry. Rather than document the full history of our business and how our industry is evolving, we have endeavored to provide a synopsis of who we are, what we do, and why we do it, with the hope of engendering interest to warrant a more in-depth discussion with you, which we would welcome.

The Transformation of Bitcoin Mining

In 2021, it was estimated that there were as many users of Bitcoin as there were users of the internet in 1997¹. And just like the internet in its early days, our industry has experienced growing pains and is in the process of rapidly maturing.

Proof-of-work mining, like all industrial activity, uses energy. However, our energy consumption is minimal relative to comparable industries, and we are increasingly becoming more efficient and more sustainable. In 2017, skeptics predicted that bitcoin mining would consume all the world's energy by 2020² unless it became more efficient, which it did. In 2021 alone, the efficiency of bitcoin mining globally improved by 53%, and the percentage of our industry that is primarily powered by sustainable power improved from 37% to 59%. In 2021, it was estimated that our industry used 220 terawatts of power, which is approximately 0.14% of global energy production. In the same period, the gold mining industry and the traditional finance/insurance industry used 2.6 times and 22.5 times the amount of energy used by the bitcoin mining industry, respectively³.

At the start of last year, over 50% of our industry's computing power (hash rate) was located in China and 13% was in the United States. By July 2021, China had banned mining, and the United States' share of the network's hash rate had grown to 35%⁴. Today, bitcoin mining in the United States continues to grow, predominantly in states with regulatory friendly environments and excess renewable power (e.g., Georgia and Texas⁵).

It is not a coincidence that the geographic shift towards the United States has coincided with an improvement in efficiency and a greater mix of sustainably generated power used by bitcoin miners. We, like many of our publicly traded peers, have an immense incentive to reduce our costs by making our operations more efficient while adhering to high ESG standards that both we and our investors set for our business. We believe these trends are good for our industry, good for our business, and good for the United States.

While eliminating all proof-of-work mining would not put a meaningful dent in carbon emissions due to its small percentage of global energy production (0.14%), it could slow our progress in transitioning this country to more renewable energy. We and our peers are partnering with energy companies to build clean, green, renewable energy resources (e.g., solar and wind) that might not otherwise be built. We believe our ability to provide consistent, reliable, flexible, baseload to finance these critical investments in renewable infrastructure is in our nation's interest.

Marathon Digital Holdings

Marathon's story, similar to that of the broader bitcoin mining industry, is an ever evolving one. In the last year alone, we have rapidly progressed as a sustainably operated business.

¹ [Adoption Curves, Willy Woo, February 2021](#)

² [Bitcoin Mining on Track to Consume All of the World's Energy by 2020, Newsweek, December 2017](#)

³ [Global Bitcoin Mining Data Review Q4 2021, Bitcoin Mining Council, December 2021](#)

⁴ [Bitcoin Electricity Consumption Index Mining Map, Cambridge Centre for Alternative Finance](#)

⁵ [America's Bitcoin Miners See Georgia as the New U.S. Hotspot, Bloomberg, February 2022](#)

We are supporting the adoption, security, and evolution of Bitcoin by building one of the largest, most agile, and most sustainably operated bitcoin mining operations in the world. To achieve this, we work directly with renewable power companies to deploy our state-of-the-art bitcoin miners “behind the meter”, at the point of power generation.

With this context in mind, we have addressed your questions below.

1. Electricity Consumption & Hardin, Montana

Today, we have bitcoin miners deployed in Montana, South Dakota, Nebraska, and Texas. In September 2021, the average amount of electricity required to power our active mining fleet on a daily basis was as follows:

- Montana – 57.6 MW per day
- South Dakota – 2.2 MW per day
- Nebraska – 4.9 MW per day

Note: The amount of electricity required to power our miners fluctuates and will continue to change as we expand our operations and evaluate tools and technologies to improve our mining fleet’s efficiency, including but not limited to immersion cooling (i.e., submerging miners in liquid). These figures should not be used as a projection for our long-term electricity requirements as we continue to develop more environmentally and economically sustainable technologies.

As of February 1, 2022, the majority of our active miners (c. 30,000) were located at our bitcoin mining facility in Hardin, Montana. Our miners in Montana derive 100% of their power from an adjacent power plant, which is a 100 MW coal-fired power station that is owned and operated by Beowulf Energy. Both this power station and our mining facility reside on land owned by the Crow Nation. In August 2021, the total particulate matter from the plant’s PC boiler was measured at 0.004 lb/MMBtu, well below the permitted limit of 0.024 lb/MMBtu.

While we are proud of the social benefits that our operations in Montana provide to the local community (see 4. Impact to Consumers), it is worth emphasizing that this facility is not representative of our current broader strategy nor our future operations. Like the rest of our industry, our strategy has evolved, and our operations are beginning to reflect the positive outcomes of these changes.

2. Scaling Operations

In January 2021, we operated 2,060 bitcoin miners, generating approximately 0.2 Exahash per second (EH/s). As of February 1, 2022, we were operating 32,710 bitcoin miners, generating approximately 3.6 EH/s. By early next year, we intend to have deployed approximately 199,000 bitcoin miners, capable of generating approximately 23.3 EH/s. Depending on the growth rate of the rest of the industry, our fleet may represent approximately 7% of the total network once it is fully deployed⁶.

⁶ [The Weekly Hash, BitOoda, February 2022](#)

As disclosed in press releases and other publicly filed documents, working directly with some of the largest renewable power companies in North America to deploy the majority of our fleet behind the meter at renewable power stations is a key pillar of our strategy. We have already begun deploying miners at renewable power facilities in Texas. We expect these deployments to accelerate in the coming months and continue throughout the rest of the year.

The bitcoin miners we are in the midst of deploying are among the most energy efficient machines in our industry. To date, our major purchases are as follows:

- August 2020: 10,500 Antminer S19 Pros (110 TH/s)
- October 2020: 10,000 Antminer S19 Pros (110 TH/s)
- December 2020: 10,000 Antminer S19j Pros (100 TH/s)
- December 2020: 70,000 Antminer S19s (90-110 TH/s)
- August 2021: 30,000 Antminer S19j Pros (110 TH/s)
- December 2021: 78,000 Antminer S19 XPs (140 TH/s)

Based on the mix of our bitcoin miners, we estimate that it will require approximately 630 MW to power our fleet once fully deployed. Despite operating state of the art equipment, we continually evaluate various tools and technologies, including immersion, that may allow us to reduce our electricity consumption and improve the efficiency of our fleet.

We are currently in the midst of refining models to measure our carbon emissions as we scale our operations. However, given that our operations are “asset light” and that our miners will predominantly be powered directly by sustainable power sources, we expect the incremental increase in carbon emissions from our fleet to be minimal. Regardless, as a core part of our strategy, we have purchased renewable energy credits (RECs) from our hosting partner, Compute North, to offset our current carbon emissions and to ensure our mining operations are not only predominantly sustainably powered but ultimately, 100% carbon neutral.

3. Purchasing Agreements and Curtailment

In Montana, we pay \$0.028 per kWh for electricity. This fee does not include the cost of hosting our miners at this location, nor does it include the cost to build the facility itself. The initial term of our power purchase agreement is five years.

In the second quarter of 2021, we began employing an “asset light” business model, opting to outsource the deployment and hosting of our machines to third party hosting providers, including Compute North. In May 2021, we announced that we had entered into a binding letter of intent with Compute North to host 73,000 of our bitcoin miners at a new 300 MW data center in Texas. In December 2021, we announced that we were expanding our agreement to include up to 100,000 of our bitcoin miners.

Rather than signing a power purchase agreement (PPA) directly with the electricity provider, we pay a fixed rate for electricity and hosting to Compute North, who signs the PPA, develops and operates the

facilities, and manages the deployment of our miners. We pay \$0.044 per kWh to Compute North for these services, and the average length of our contracts is five years.

Through our agreements with Compute North, we participate in a demand response/load resource program, which provides the local grid operator with the ability to shut off the power load that serves our miners in response to certain load situations. As a result, 100% of our operations connected to the grid are able to be curtailed to serve customers in times of need. For instance, should a heat wave or snowstorm increase residential customer demand, our machines can be powered down (or “curtailed”) almost instantly so that power can be diverted where it is needed. Rather than turning off the electricity that consumers require (lighting, heating, refrigeration, etc.), we can be turned off to help ameliorate imbalances in the grid.

4. Impact to Consumers

Hardin, Montana

The power station in Hardin, Montana only supplies power to our mining facility. Therefore, our operations have no impact on the local community’s electricity pricing. They do, however, have a positive impact on the local economy.

Before we entered into our agreement with Beowulf in October 2020, the power station in Montana was dormant and had no customer. Since we began operating, the power plant has increased their number of employees by over 57%. Our bitcoin mining operations, which revitalized the plant, directly created an additional 27 jobs at the power station. These figures do not account for all the employees who have been rehired at the mine and the various vendors and transport companies that support the plant’s operations. As one member of the local community stated, “The only good jobs in the area are the jobs that revolve around the plant and its support network.”

In addition to the jobs created, our mining operations generate tax revenue for the communities in which we operate. We have not yet disclosed the amount we may pay in taxes from our operations in Montana, nor have we disclosed how much we may pay in taxes for our operations in Texas as those facilities are still under construction.

Behind the Meter

We believe deploying behind the meter ensures our power source is as sustainable as possible and mitigates any potential negative impact our operations could have on consumers. In fact, we believe this model serves to benefit the consumer.

As a bitcoin miner, we are the power consumer of last resort. We deploy our miners in rural locations where there is ample access to renewable power, but few consumers to consume that power. We do not compete with the average citizen for electricity. Rather, we increase the load without increasing the costs required to provide that load, which benefits all parties involved.

Our role is analogous to buying empty seats on an airplane. Power in this country is like a plane that can only fly small local routes and consistently has empty seats. By deploying our miners, we fill the empty

seats with a paying customer who reduces the overall cost of the flight for everyone. If and when those seats are needed, we vacate the seat (curtail) to ensure each consumer who wants a seat has one.

There is no indication that our operations increase the cost consumers pay for electricity, but there is ample evidence to support that consumers benefit from our presence.

- We provide economic stimulus in the forms of localized job creation and tax revenues by converting local waste (curtailed electricity) into global value (bitcoin).
- We employ policies to curtail our operations when there is a spike in demand.
- Unlike other energy demanding infrastructure, we have the ability to turn off our miners immediately so consumers can keep their lights on, as recently demonstrated by our colleagues in Texas⁷.

We trust this information has provided you with a clearer picture of who we are and how we, and the rest of our industry, are evolving. At Marathon, our mission is to facilitate greater economic freedom for billions of people around the world by enhancing the security of the Bitcoin blockchain and increasing Bitcoin's global adoption.

We are passionate about what we do, and we would welcome the opportunity to engage further with you and your colleagues to answer any additional questions you may have, and to continue the conversation about the many benefits that we and the rest of our industry are creating in the United States.

Sincerely,



Fred Thiel
Chairman and Chief Executive Officer

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⁷ [Bitcoin miners are helping the Texas grid brace for winter storm impact. CNBC, February 2022](#)