

Congress of the United States
Washington, DC 20510

January 27, 2022

Jason Les
CEO
Riot Blockchain, Inc.
3855 Ambrosia Street
Suite 301
Castle Rock, CO 80109

Dear Mr. Les:

We write seeking information about Riot Blockchain, Inc.'s (Riot's) Bitcoin mining operations and the impact these operations may have on climate change, the local environment, and the cost of electricity for retail consumers. Riot is one of the largest publicly traded Bitcoin miners in North America, with operations in Massena, New York and Rockdale, Texas.¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's cryptomining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Riot's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases, solving this puzzle becomes increasingly difficult, requiring more computational power and

¹ Riot Blockchain, Inc., "About," <https://www.riotblockchain.com/about>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

Riot's self-mining operations are currently based out of private Bitcoin mining firm Coinmint LLC's facility in Massena, New York,¹² where Riot has deployed a fleet of more than 16,000 Bitcoin mining hardware units at that facility.¹³ In May 2021, Riot also acquired Whinstone U.S., the owner operator of what "is believed to be the largest single facility, as measured by developed capacity, in North America for Bitcoin mining."¹⁴ The Rockdale, Texas-

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-ered-over-impact-on-the-grid>.

¹¹ *Id.*

¹² Riot Blockchain, Inc., "Bitcoin Mining," <https://www.riotblockchain.com/bitcoin-mining>; Coinmint, "Operating the largest digital currency data center in the world," <https://www.coinmint.one/>.

¹³ *Id.*

¹⁴ Riot Blockchain, Inc., "Whinstone U.S.," <https://www.riotblockchain.com/bitcoin-mining/whinstone-u-s>.

based Whinstone “is located on an 100-acre site, hosting Bitcoin mining customers in three buildings totaling 190,000 square feet” with a “total power capacity of 750 MW, with 300 MW currently developed.”¹⁵

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment, local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities? Please include your own mining as well as mining done by customers hosted at your facilities. What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
 - a. Your website states that your self-operating mining operations are based out of Coinmint’s Massena, New York facility, which draws its energy from 88% zero-emission sources.¹⁶ Please describe the sources of this electricity.
 - b. Your Whinstone site is subject to a long-term lease agreement, with electricity provided via a long-term power supply contract.¹⁷ Please describe the sources of this electricity.
2. Please describe your plans, if any, to scale your cryptomining operations through your self-mining operations or your wholly owned subsidiary, Whinstone.
 - a. Whinstone has a total power capacity of 750 MW, but only 300 MW have been developed to date.¹⁸ Do you plan to develop the remaining 450 MW of capacity? If so, what is your timeline to do so, and what are your own projections for the increase in carbon emissions from that expansion?
 - b. What is your projected electricity consumption for cryptomining across all of your facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - c. What specific plans do you have to address the environmental impact of your increased operations?
3. Please describe in detail your purchasing agreements with electricity providers, including provisions regarding Riot’s responsibilities when demand for electricity outstrips supply on the grid.
4. Does Riot have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have local residential electricity costs increased since Riot began its cryptomining operations? What measures are you taking to ensure that local

¹⁵ *Id.*

¹⁶ Riot Blockchain, Inc., “Bitcoin Mining,” <https://www.riotblockchain.com/bitcoin-mining>.

¹⁷ Riot Blockchain, Inc., “Whinstone U.S.,” <https://www.riotblockchain.com/bitcoin-mining/whinstone-u-s>.

¹⁸ *Id.*

consumers and small businesses are not bearing the costs of Riot's energy consumption?

Thank you for your attention to this important matter. We look forward to your response.

Sincerely,



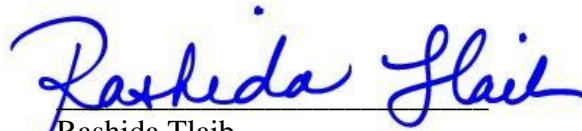
Elizabeth Warren
United States Senator



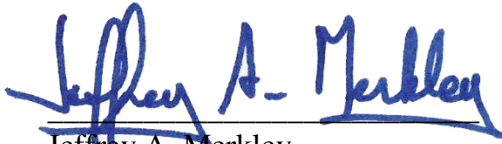
Katie Porter
Member of Congress



Sheldon Whitehouse
United States Senator



Rashida Tlaib
Member of Congress



Jeffrey A. Merkley
United States Senator



Jared Huffman
Member of Congress



Margaret Wood Hassan
United States Senator



Edward J. Markey
United States Senator

Congress of the United States
Washington, DC 20510

January 27, 2022

Fred Thiel
CEO
Marathon Digital Holdings
1180 North Town Center Drive
Suite 100
Las Vegas, NV 89144

Dear Mr. Thiel:

We write seeking information about Marathon Digital Holdings (Marathon)'s Bitcoin mining operations and the impact these operations may be having on climate change, the local environment, and the cost of electricity for retail consumers. According to your website, Marathon is "one of the largest enterprise Bitcoin self-mining companies in North America."¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's cryptomining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Marathon's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner

¹ Marathon Digital Holdings, "Marathon Digital Holdings Announces Bitcoin Production And Mining Operation Updates For November 2021," press release, December 3, 2021, <https://ir.marathondh.com/news-events/press-releases/detail/1269/marathon-digital-holdings-announces-bitcoin-production-and>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases, solving this puzzle becomes increasingly difficult, requiring more computational power and greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

Marathon has entered into an agreement with Beowulf Energy – "a private, independent infrastructure holding company that develops, builds, owns, and operates power generation and industrial infrastructure facilities worldwide" – to co-locate its Bitcoin Mining Data Center at the 20 acres-Big Horn Data Hub, which is powered by the adjacent Beowulf Hardin Generating

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-red-over-impact-on-the-grid>.

¹¹ *Id.*

Station, a 105 MW coal-fired power facility located in Hardin, Montana.¹² The plant reportedly has been struggling, as with many coal generating power plants nationwide, and in 2017 it was announced that the plant would have to close by 2018 – however, “this move was staved off by plans to sell the power for Bitcoin mining and other data center use.”¹³ Given that Bitcoin miners are incentivized to use the cheapest power available for their rapidly scaling energy consumption, such operations appear to be keeping open fossil fuel plants that otherwise were not profitable and could have been retired.¹⁴ In addition to operations in Montana, in May 2021 Marathon announced an agreement with Compute North, a data center service provider, to “host approximately 73,000 of Marathon’s previously purchased Bitcoin miners as part of a new 300-megawatt data center located in Texas.”¹⁵ At the time you stated that your company is “on a clear path to becoming one of the largest, most efficient, and most environmentally conscious Bitcoin miners in North America.”¹⁶ In December 2021, the agreement with Compute North was expanded to include over 100,000 Bitcoin miners.¹⁷

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment, local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities? What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
 - a. A Beowulf Energy coal-fired generating station is now providing 100% of its energy to Marathon Digital Holdings for Bitcoin mining at your Montana facilities under a power purchase agreement.¹⁸ Please describe this source of

¹² Beowulf Energy, “About,” <http://beowulfenergy.com/about/>; Marathon Digital Holdings, “Our Facilities,” <https://marathondh.com/our-facilities/>; Data Center Dynamics, “Bitcoin miner Marathon signs for coal-fired electricity in Montana,” Alex Alley, October 16, 2020, <https://www.datacenterdynamics.com/en/news/bitcoin-miner-marathon-signs-coal-fired-electricity-montana/>.

¹³ Data Center Dynamics, “Bitcoin miner Marathon signs for coal-fired electricity in Montana,” Alex Alley, October 16, 2020, <https://www.datacenterdynamics.com/en/news/bitcoin-miner-marathon-signs-coal-fired-electricity-montana/>.

¹⁴ *Id.*

¹⁵ Bitcoin.com, “Marathon Expands Miner Deployment Deal With Compute North, Aims to Power 100K+ Miners With Renewables,” Sergio Goschenko, December 3, 2021, <https://news.bitcoin.com/marathon-expands-miner-deployment-deal-with-compute-north-aims-to-power-100k-miners-with-renewables/>; Marathon Digital Holdings, “CORRECTION -- Marathon Digital Holdings Announces Binding Letter Of Intent With Compute North To Host 300-Megawatts Of Bitcoin Mining At New Data Center,” press release, May 24, 2021, <https://ir.marathondh.com/news-events/press-releases/detail/1243/correction---marathon-digital-holdings-announces-binding>.

¹⁶ *Id.*

¹⁷ Marathon Digital Holdings, “Marathon Digital Holdings Expands Deployments With Compute North, Powered By One Of The Largest Renewable Energy Providers In North America,” press release, December 1, 2021, <https://ir.marathondh.com/news-events/press-releases/detail/1267/marathon-digital-holdings-expands-deployments-with-compute>.

¹⁸ ABC News, “Bitcoin-mining power plant raises ire of environmentalists,” Michael Hill, October 16, 2021, <https://abcnews.go.com/US/wireStory/bitcoin-mining-power-plant-raises-ire-environmentalists-80618790>; Data

electricity.

2. Please describe your plans, if any, to scale your cryptomining operations.
 - a. Your timeline shows you plan to have 133,120 miners deployed by mid-2022, generating 13.3 EH/s with mining operations 70% carbon neutral.¹⁹ What are your own projections for the total increase in carbon emissions from that expansion?
 - b. What is your projected electricity consumption for cryptomining across all of your facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - c. What specific plans do you have to address the environmental impact of your increased operations?
 - i. You note that you plan to have your mining operations be 70% carbon neutral by the end of the first quarter of 2022, with your long-term objective being to obtain a 100% carbon neutral footprint.²⁰ Please describe your plans to achieve 70% and 100% carbon neutrality.
 - ii. If the above plans include the purchasing of carbon offsets, please provide information on the company through which you purchased these offsets, the location of the offsets, and any additional information that would support your claim that these offsets are a satisfactory counterbalance to your plant's emissions.
3. Please describe in detail your purchasing agreements with electricity providers, including provisions regarding Marathon's responsibilities when demand for electricity outstrips supply on the grid.
4. Does Marathon have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have local residential electricity costs increased since Marathon began its cryptomining operations? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of Marathon's energy consumption?


Thank you for your attention to this important matter. We look forward to your response.

Sincerely,


Center Dynamics, "Bitcoin miner Marathon signs for coal-fired electricity in Montana," Alex Alley, October 16, 2020, <https://www.datacenterdynamics.com/en/news/bitcoin-miner-marathon-signs-coal-fired-electricity-montana/>.

¹⁹ Marathon Digital Holdings, "History of Expansion and Growth," <https://marathondh.com/timeline/>.

²⁰ Marathon Digital Holdings, "CORRECTION -- Marathon Digital Holdings Announces Binding Letter Of Intent With Compute North To Host 300-Megawatts Of Bitcoin Mining At New Data Center," press release, May 24, 2021, <https://ir.marathondh.com/news-events/press-releases/detail/1243/correction---marathon-digital-holdings-announces-binding>.




Elizabeth Warren
United States Senator



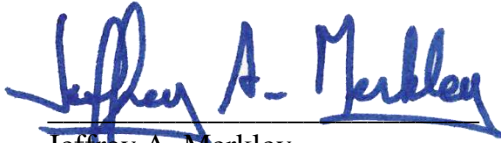
Katie Porter
Member of Congress



Sheldon Whitehouse
United States Senator




Rashida Tlaib
Member of Congress




Jeffrey A. Merkley
United States Senator



Jared Huffman
Member of Congress



Margaret Wood Hassan
United States Senator



Edward J. Markey
United States Senator

Congress of the United States
Washington, DC 20510

January 27, 2022

Gregory Beard
Co-Chairman and CEO
Stronghold Digital Mining
2151 Lisbon Road
Kennerdell, PA 16374

Dear Mr. Beard:

We write seeking information about Stronghold Digital Mining (Stronghold)'s Bitcoin mining operations and the impact these operations may be having on climate change, the local environment, and the cost of electricity for retail consumers. Stronghold is a "vertically integrated crypto asset mining company currently focused on mining Bitcoin."¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's cryptomining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Stronghold's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases, solving this puzzle becomes increasingly difficult, requiring more computational power and

¹ Stronghold Digital Mining, "Investor Relations," <https://ir.strongholddigitalmining.com/>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

Stronghold's power-generation facilities in Pennsylvania convert coal refuse, the "environmentally harmful byproduct of Pennsylvania's legacy coal-mining operations," into power that is used to mine Bitcoin.¹² The Scrubgrass Plant, located on a 650-acre site in Venango County, has a generation capacity of 85 MW, while the planned Panther Creek Plant, located on

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-aided-over-impact-on-the-grid>.

¹¹ *Id.*

¹² Stronghold Digital Mining, "Actively Improving the Environment," <https://strongholddigitalmining.com/environmental-impact/>; Stronghold Digital Mining, "Power Facilities," <https://strongholddigitalmining.com/the-facility/>.

a 33-acre site in Carbon County, has a generation capacity of 80 MW.¹³ To date, Stronghold has either installed or committed to buy over 54,000 mining rigs.¹⁴

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment, local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. How much do your power generation facilities currently emit annually in terms of metric tons of carbon dioxide equivalent? What is the current annual energy production of the plants?
2. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities? What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
3. Please describe your plans, if any, to scale your cryptomining operations.
 - a. On November 2, 2021, you closed your acquisition of the Panther Creek Energy Facility, an 80 MW coal refuse reclamation-to-energy facility in Pennsylvania, which, together with your existing Scrubgrass plant, brought your overall power generation capacity to 165 MW.¹⁵ What are the expected increases in carbon emissions from this expansion, and do you have plans to further increase your company's capacity?
 - b. What is your projected electricity consumption for cryptomining across all of your facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - c. What specific plans do you have to address the environmental impact of your increased operations?
 - i. You note that your company "employs 21st-century crypto mining techniques to remediate the impacts of 19th- and 20th-century coal mining in some of the most environmentally neglected regions of the United States."¹⁶ Lower-quality coal was discarded, often mixed with rock, clay, slurry, and other materials, and stockpiled - these still-existing piles cause water pollution, air pollution, pose fire hazards,

¹³ Stronghold Digital Mining, "Power Facilities," <https://strongholddigitalmining.com/the-facility/>.

¹⁴ CoinDesk, "Stronghold Digital Mining to Acquire 9,080 Bitcoin Rigs," Eliza Gkritsi, December 20, 2021, <https://www.coindesk.com/business/2021/12/20/stronghold-digital-mining-to-acquire-9080-bitcoin-rigs/>.

¹⁵ Stronghold Digital Mining, "Stronghold Digital Mining Closes Panther Creek Plant Acquisition, Increasing Owned Power Generation Capacity to 165 Megawatts," press release, November 8, 2021, <https://ir.strongholddigitalmining.com/news-releases/news-release-details/stronghold-digital-mining-closes-panther-creek-plant-acquisition>.


¹⁶ Stronghold Digital Mining, "Actively Improving the Environment," <https://strongholddigitalmining.com/environmental-impact/>.

and are overall detrimental to the local ecosystems.¹⁷ While coal refuse is an environmental problem, even controlled combustion does still have environmental impacts, as these plants are still coal-fired power plants that emit hazardous air pollutants.¹⁸ In fact, there are reports that coal refuse plants are in fact far more inefficient and polluting than new regular coal plants.¹⁹ Please describe your plans to account for that impact.

4. Does Stronghold have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have residential electricity costs increased since Stronghold began its cryptomining operations? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of Stronghold's energy consumption?

Thank you for your attention to this important matter. We look forward to your response.

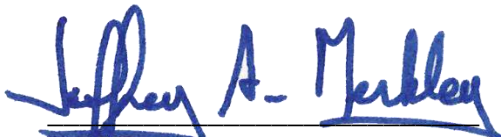
Sincerely,


Elizabeth Warren
United States Senator


Katie Porter
Member of Congress


Sheldon Whitehouse
United States Senator


Rashida Tlaib
Member of Congress


Jeffrey A. Merkley
United States Senator


Jared Huffman
Member of Congress

¹⁷ POWER Magazine, "The Coal Refuse Dilemma: Burning Coal for Environmental Benefits," Sonal Patel, July 1, 2016, <https://www.powermag.com/coal-refuse-dilemma-burning-coal-environmental-benefits/>; Stronghold Digital Mining, "Actively Improving the Environment," <https://strongholddigitalmining.com/environmental-impact/>.

¹⁸ POWER Magazine, "The Coal Refuse Dilemma: Burning Coal for Environmental Benefits," July 1, 2016, <https://www.powermag.com/coal-refuse-dilemma-burning-coal-environmental-benefits/>.

¹⁹ *Id.*; Sierra Club, "Report: Coal Refuse Energy Producers," April 25, 2017, <https://www.sierraclub.org/pennsylvania/blog/2017/04/report-coal-refuse-energy-producers>.



Margaret Wood Hassan
United States Senator



Edward J. Markey
United States Senator

Congress of the United States
Washington, DC 20510

January 27, 2022

Stephanie Xia
General Manager - North America
Bitdeer
300 Park Ave Ste 100
San Jose, CA 95110

Dear Ms. Xia:

We write seeking information about Bitdeer's Bitcoin mining operations and the impact these operations may be having on climate change. According to your website, Bitdeer is "the world's leading provider of digital asset mining services."¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's crypto mining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Bitdeer's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases, solving this puzzle becomes increasingly difficult, requiring more computational power and

¹ Bitdeer, "About Us," <https://www.bitdeer.com/contactUs>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

According to your website, Bitdeer, established in 2018, provides "comprehensive digital asset mining solutions for our customers" including handling "the complex processes involved in mining such as miner procurement, transport logistics, power management and daily operations."¹² Bitdeer has mining farms deployed across Europe and North America, with over 100,000 mining units under Bitdeer management that create a miner sharing service that operates 24/7.¹³ With headquarters in Singapore, Bitdeer "currently operates five proprietary mining

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-red-over-impact-on-the-grid>.

¹¹ *Id.*

¹² Bitdeer, "About Us," <https://www.bitdeer.com/contactUs>.

¹³ *Id.*

datacenters in the United States and Norway,” including one in Rockdale, Texas.¹⁴ In November 2021, Bitdeer and Blue Safari Group Acquisition Corp, a publicly traded special purpose acquisition company, announced that they have entered into a definitive merger agreement.¹⁵ The combined company is expected to be renamed Bitdeer Technologies Group and will be a publicly listed company on the NASDAQ Stock Market.¹⁶

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment, local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. Please describe your U.S.-based cryptomining facilities, including where they are located, the mining capacity of each facility, and the number of mining units at each facility.
2. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities in the United States? What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
3. Please describe your plans, if any, to scale your cryptomining operations in the United States.
 - a. What is your projected electricity consumption for cryptomining across all of your U.S. facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - b. What specific plans do you have to address the environmental impact of your increased operations?
4. Please describe in detail your purchasing agreements with electricity providers, including provisions regarding Bitdeer’s responsibilities when demand for electricity outstrips supply on the grid.

¹⁴ PR Newswire, “Bitdeer, a World-Leading Technology Company for the Cryptocurrency Mining Community, Announces Plans to List on the NASDAQ Through Merger with Blue Safari Group Acquisition Corp,” press release, November 18, 2021, <https://www.prnewswire.com/news-releases/bitdeer-a-world-leading-technology-company-for-the-cryptocurrency-mining-community-announces-plans-to-list-on-the-nasdaq-through-merger-with-blue-safari-group-acquisition-corp-301427759.html>; CNBC, “Two of the biggest bitcoin mining companies in the world are battling it out in a Texas town of 5,600 people,” MacKenzie Sigalos, October 31, 2021, <https://www.cnbc.com/2021/10/31/bitcoin-mining-giants-bitdeer-riot-blockchain-in-rockdale-texas.html>.


¹⁵ PR Newswire, “Bitdeer, a World-Leading Technology Company for the Cryptocurrency Mining Community, Announces Plans to List on the NASDAQ Through Merger with Blue Safari Group Acquisition Corp,” press release, November 18, 2021, <https://www.prnewswire.com/news-releases/bitdeer-a-world-leading-technology-company-for-the-cryptocurrency-mining-community-announces-plans-to-list-on-the-nasdaq-through-merger-with-blue-safari-group-acquisition-corp-301427759.html>.

¹⁶ *Id.*


5. Does Bitdeer have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have local residential electricity costs increased since Bitdeer began its cryptomining operations? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of Bitdeer's energy consumption?

Thank you for your attention to this important matter. We look forward to your response.

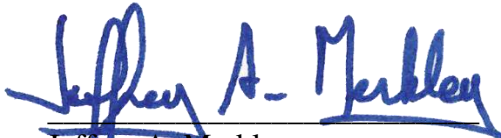
Sincerely,


Elizabeth Warren
United States Senator



Katie Porter
Member of Congress

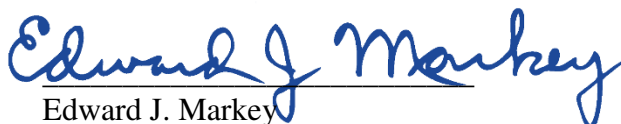

Sheldon Whitehouse
United States Senator


Rashida Tlaib
Member of Congress


Jeffrey A. Merkley
United States Senator


Jared Huffman
Member of Congress


Margaret Wood Hassan
United States Senator


Edward J. Markey
United States Senator

Congress of the United States
Washington, DC 20510

January 27, 2022

Brian Brooks
CEO
Bitfury Group
456 Montgomery Street
Suite 1350
San Francisco, CA, 94104

Dear Mr. Brooks:

We write seeking information about Bitfury USA, Inc. (Bitfury)'s Bitcoin mining operations and the impact these operations may be having on climate change, the local environment, and the cost of electricity for retail consumers. According to your website, the global Bitfury Group was founded in 2011 and is the "world's leading emerging technologies company," focused on artificial intelligence, blockchain, bitcoin and high-performance computing.¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's cryptomining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Bitfury's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases,

¹ Bitfury, "About," <https://bitfury.com/about>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

solving this puzzle becomes increasingly difficult, requiring more computational power and greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

Bitfury is reported to be a "leading full-service blockchain technology company and one of the largest private infrastructure providers in the blockchain ecosystem," as well as "the world's leading provider of large-scale digital asset infrastructure solutions."¹² Bitfury is headquartered in Amsterdam, with operations in the United Kingdom, Canada, Japan, Hong

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-red-over-impact-on-the-grid>.

¹¹ *Id.*

¹² Bitfury, "Blockchain technology leader Bitfury completes planned transfer of Hut 8 shares," press release, February 16, 2021, <https://bitfury.com/content/downloads/bitfury-hut8-february.pdf>.

Kong, Korea, Norway, Georgia, United Arab Emirates, Russia, Ukraine, and Kazakhstan.¹³ Bitfury has “deployed several data centers that utilize air and immersion cooling technology for customers and its own operations in six countries and has active cryptomining operations in four countries.”¹⁴ Since 2011, Bitfury Group has deployed more than 500+ MW of computing power.¹⁵ In March 2021, Bitfury formed a US-based subsidiary, Cipher Mining, which “is expected to be positioned as a U.S.-centric Bitcoin mining champion with potential to reach a cumulative deployed capacity of 745 MW by the end of 2025.”¹⁶

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment, local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. Please describe your U.S.-based cryptomining facilities, including where they are located, the mining capacity of each facility, and the number of mining units at each facility.
2. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities in the United States? What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
3. Please describe your plans, if any, to scale your cryptomining operations in the United States.
 - a. What is your projected electricity consumption for cryptomining across all of your U.S. facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - b. What specific plans do you have to address the environmental impact of your increased operations?
4. Please describe in detail your purchasing agreements with electricity providers, including provisions regarding Bitfury’s responsibilities when demand for electricity outstrips supply on the grid.

¹³ Bitfury, “About,” <https://bitfury.com/about>; Bitfury, “Blockchain technology leader Bitfury completes planned transfer of Hut 8 shares,” press release, February 16, 2021, <https://bitfury.com/content/downloads/bitfury-hut8-february.pdf>.

¹⁴ Bitfury, “Data centers,” <https://bitfury.com/crypto-infrastructure/datacenters>.

¹⁵ Business Wire, “Cipher Mining Inc., a Newly Formed US-based Bitcoin Mining Company, to Become a Publicly Traded Company via a Merger with Good Works Acquisition Corp.,” March 5, 2021, <https://www.businesswire.com/news/home/20210305005234/en/Cipher-Mining-Inc.-a-Newly-Formed-US-based-Bitcoin-Mining-Company-to-Become-a-Publicly-Traded-Company-via-a-Merger-with-Good-Works-Acquisition-Corp>.

¹⁶ *Id.*

5. Does Bitfury have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have local residential electricity costs increased since Bitfury began its cryptomining operations? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of Bitfury's energy consumption?

Thank you for your attention to this important matter. We look forward to your response.

Sincerely,



Elizabeth Warren
United States Senator



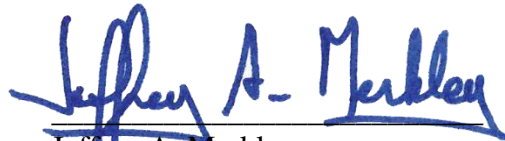
Katie Porter
Member of Congress



Sheldon Whitehouse
United States Senator



Rashida Tlaib
Member of Congress



Jeffrey A. Merkley
United States Senator



Jared Huffman
Member of Congress



Maggie Hassan
United States Senator



Edward J. Markey
United States Senator

Congress of the United States
Washington, DC 20510

January 27, 2022

Bryan Bullett
CEO
Bit Digital
33 Irving Place
New York, NY 10003

Dear Mr. Bullett:

We write seeking information about Bit Digital's Bitcoin mining operations and the impact these operations may be having on climate change, the local environment, and the cost of electricity for retail consumers. According to your website, Bit Digital is "one of the largest publicly-listed bitcoin miners on the NASDAQ."¹ Last month, Senator Warren sent a similar letter to Greenidge Generation Holdings, a Bitcoin mining plant in Dresden, New York, regarding the company's crypto mining operations. As we continue our investigation into the climate impacts of cryptomining, we are now seeking insight into Bit Digital's operations and the company's environmental footprint.

Cryptocurrency trading has grown exponentially since first introduced over a decade ago.² Mining operations for Bitcoin, the largest cryptocurrency by market cap, are increasingly moving onshore, with the United States' share of global mining increasing from 4% in August 2019 to 35% in July 2021 – meaning that over a third of the global computing power dedicated to mining Bitcoin is now drawn from miners in the U.S., in part due to a government crackdown in China.³

Bitcoin's network is secured through a "proof of work" algorithm, which involves miners using computers to verify transactions by solving a mathematical puzzle, with the winning miner being rewarded in new Bitcoin.⁴ As more miners compete and the value of Bitcoin increases, solving this puzzle becomes increasingly difficult, requiring more computational power and

¹ Bit Digital, "About," <https://bit-digital.com/about/>.

² MIT Technology Review, "The Cryptocurrency Market Is Growing Exponentially," Emerging Technology from the arXiv, May 29, 2017, <https://www.technologyreview.com/2017/05/29/151496/the-cryptocurrency-market-is-growing-exponentially/>.

³ Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map; CoinMarketCap, "Cryptocurrency Prices, Charts And Market Capitalizations," <https://coinmarketcap.com/>; The Wall Street Journal, "U.S. Takes Bitcoin Mining Crown After China Crackdown," Caitlin Ostroff, October 27, 2021, <https://www.wsj.com/articles/u-s-takes-bitcoin-mining-crown-after-china-crackdown-11635327002>.

⁴ CoinDesk, "What Is Proof-of-Work?," Alyssa Hertig, December 16, 2020, <https://www.coindesk.com/tech/2020/12/16/what-is-proof-of-work/>.

greater energy consumption.⁵ Bitcoin's estimated annual power consumption increased more than threefold between the beginning of 2019 and May 2021, rivaling the total energy usage of countries such as Denmark, Chile, and Argentina, and comparable to the entire energy consumption of Washington State.⁶

Cryptomining facilities' energy consumption is also causing significant increases in energy costs for small businesses and residents in localities across the country. Cryptomining in the city of Plattsburgh, New York reportedly resulted in residential electricity bills that were "up to \$300 higher than usual" in the winter of 2018, leading the city to introduce the nation's first 18-month moratorium on new cryptomining operations.⁷ A recent study estimates that "the power demands of cryptocurrency mining operations in upstate New York push up annual electric bills by about \$165 million for small businesses and \$79 million for individuals."⁸

Furthermore, after China's crackdown on cryptomining, around 500,000 formerly Chinese miner rigs are looking for new locations, potentially in the U.S., which could push North America well over 40% of the global collective computing power of the Bitcoin network within the next year.⁹ States like Texas with relatively cheap electricity costs are experiencing an influx of cryptomining companies,¹⁰ raising concerns about the state's unreliable electricity market and the potential for cryptomining to add to the stress on the state's power grid.¹¹

Your website states that Bit Digital is "the largest bitcoin miner listed on the NASDAQ based on the size of our currently-owned miner fleet," which includes 27,744 miners and is spread across the U.S. and Canada, with operations in Texas, Nebraska, Georgia, and New York.¹²

Given the extraordinarily high energy usage and carbon emissions associated with Bitcoin mining, mining operations raise concerns about their impacts on the global environment,

⁵ The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁶ *Id.*; The New York Times, "Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?" Jon Huang, Claire O'Neill, and Hiroko Tabuchi, September 3, 2021, <https://www.nytimes.com/interactive/2021/09/03/climate/bitcoin-carbon-footprint-electricity.html>; The Wall Street Journal, "Bitcoin Miners Are Giving New Life to Old Fossil-Fuel Power Plants," Brian Spegele and Caitlin Ostroff, May 21, 2021, <https://www.wsj.com/articles/bitcoin-miners-are-giving-new-life-to-old-fossil-fuel-power-plants-11621594803>.

⁷ Congressional Research Service, "Bitcoin, Blockchain, and the Energy Sector," Corrie E. Clark and Heather L. Greenley, August 9, 2019, <https://crsreports.congress.gov/product/pdf/R/R45863/3>.

⁸ Berkeley Haas, "Power-hungry cryptominers push up electricity costs for locals," Laura Counts, August 3, 2021, <https://newsroom.haas.berkeley.edu/research/power-hungry-cryptominers-push-up-electricity-costs-for-locals/>.

⁹ CNBC, "How the U.S. became the world's new bitcoin mining hub," MacKenzie Sigalos, July 17, 2021, <https://www.cnbc.com/2021/07/17/bitcoin-miners-moving-to-us-carbon-footprint.html>; Cambridge Centre for Alternative Finance, Cambridge Bitcoin Electricity Consumption Index, "Bitcoin Mining Map," April 2021, https://cbeci.org/mining_map.

¹⁰ Cointelegraph, "Crypto miners eye cheap power in Texas, but fears aired over impact on the grid," Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-red-over-impact-on-the-grid>.

¹¹ *Id.*

¹² Bit Digital, "About," <https://bit-digital.com/about/>; Bit Digital, "Mining," <https://bit-digital.com/mining/>.

local ecosystems, and consumer electricity costs. To help Congress better understand these impacts, we ask that you respond in writing with answers to the following questions no later than February 10, 2022.

1. Please describe your U.S.-based cryptomining facilities, including where they are located, the mining capacity of each facility, and the number of mining units at each facility.
2. What is the annual electricity consumption used for Bitcoin and other cryptocurrency mining at each of your facilities in the United States? What are the estimated emissions, in terms of metric tons of carbon dioxide equivalent, produced by generating this energy?
 - a. Your website states that “The majority of our fleet runs on carbon-free energy, making us leaders in sustainability within the bitcoin mining industry,” and that in the U.S. your operations are 47% carbon-free.¹³ Please describe the sources of this electricity.
 - b. You have a goal of 100% clean energy usage.¹⁴ What is your timeline for achieving that goal, and what measurable intermediate steps have you set in working towards that?
 - c. You also claim that “We aim to contribute to the acceleration of bitcoin’s decarbonization and act as role models in our industry, responsibly stewarding digital assets.”¹⁵ Please describe what other actions you are taking to work towards this stated goal.
3. Your website states that Bit Digital has an “aggressive growth plan focused on increasing capacity month-on-month.”¹⁶ Please describe your plans, if any, to scale your cryptomining operations.
 - a. What is your projected electricity consumption for cryptomining across all of your U.S. facilities combined over the next five years? What are your projected associated carbon emissions for that mining?
 - b. What specific plans do you have to address the environmental impact of your increased operations?
4. Bit Digital is a “participant in a voluntary energy-curtailement program.”¹⁷ Please describe in detail your purchasing agreements with electricity providers, including provisions regarding Bit Digital’s responsibilities when demand for electricity outstrips supply on the grid.
5. Does Bit Digital have any estimates or models regarding the impacts of your facilities on energy costs to local families and businesses? If so, what do these estimates or models show? Have local residential electricity costs increased since Bit Digital

¹³ Bit Digital, “Sustainability,” <https://bit-digital.com/sustainability/>.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ Bit Digital, “Mining,” <https://bit-digital.com/mining/>.

¹⁷ *Id.*


began its cryptomining operations? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of Bit Digital's energy consumption?

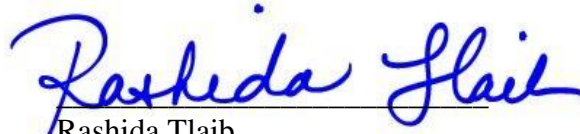
Thank you for your attention to this important matter. We look forward to your response.

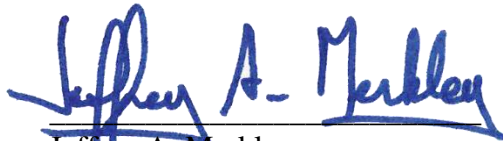
Sincerely,


Elizabeth Warren
United States Senator



Katie Porter
Member of Congress



Sheldon Whitehouse
United States Senator


Rashida Tlaib
Member of Congress


Jeffrey A. Merkley
United States Senator


Jared Huffman
Member of Congress


Margaret Wood Hassan
United States Senator


Edward J. Markey
United States Senator