STRONGHOLD
DIGITAL MINING

February 8, 2022

The Honorable Elizabeth Warren
United States Senator
United States Senate
309 Hart Senate Office Building
Washington, DC 20510

The Honorable Sheldon Whitehouse
United States Senator
United States Senate
530 Hart Senate Office Building
Washington, DC 20510

The Honorable Jeffrey A. Merkley
United States Senator
United States Senate
531 Hart Senate Office Building
Washington, DC 20510

The Honorable Margaret Wood Hassan
United States Senator
United States Senate
324 Hart Senate Office Building
Washington, DC 20510

The Honorable Edward J. Markey
United States Senator
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Katie Porter
Member of Congress
United States House of Representatives
1117 Longworth House Office Building
Washington, DC 20515

The Honorable Rashida Tlaib
Member of Congress
United States House of Representatives
1628 Longworth House Office Building
Washington, DC 20515

The Honorable Jared Huffman
Member of Congress
United States House of Representatives
1527 Longworth House Office Building
Washington, DC 20515

Dear Senators and Representatives,

Stronghold Digital Mining, Inc. ("Stronghold," "we," or "us") is in receipt of your letter dated January 27, 2022 seeking information about Stronghold's Bitcoin mining operations and impacts. We appreciate the opportunity to discuss Stronghold's business and operations with each of you and look forward to a constructive dialogue regarding Stronghold's focus on environmentally beneficial operations that positively impact the local environment and the communities in which we operate.

I. Introduction to Stronghold Digital Mining: *Actively working to remediate coal refuse piles and converting coal refuse into energy.*

Stronghold is a vertically integrated, environmentally-beneficial power generation and Bitcoin mining company providing environmental remediation and reclamation. We convert highly polluting coal refuse into power and beneficial use ash, which consists of fly ash and bottom ash that can be beneficially reused for mine reclamation efforts and as an additive in concrete production. Stronghold wholly owns and operates two coal refuse reclamation and power generation facilities in Pennsylvania: (i) the Scrubgrass Plant ("Scrubgrass"), our first reclamation facility located on a 650-acre site in Scrubgrass Township, Venango County, Pennsylvania, which we acquired fully in April 2021 and currently has the capacity to generate approximately 83.5 MW of electricity and (ii) the Panther Creek Plant ("Panther Creek" and together with Scrubgrass, the "Facilities"), a similar facility located near Nesquehoning, Pennsylvania, which we acquired in November of 2021 and which currently has the capacity to generate approximately 80 MW of electricity.

Each of the Facilities utilizes circulating fluidized-bed ("CFB") combustion boilers, representing one of the most efficient, advanced, proven, and purpose-built technologies for converting coal refuse into power. Together, these two Facilities are capable of converting over 1.25 million tons of coal refuse into energy annually. Since commissioning in the early 1990s, both Facilities have partnered with state agencies to clean up tens of millions of tons of coal refuse and have contributed to the reclamation and remediation of over 1,000 acres of previously unusable land by removing the coal refuse piles and returning beneficial use ash to the former sites of the coal refuse. This application of beneficial use ash increases the alkalinity and water holding capacity of the soils and facilitates revegetation.[1] We expect to expand upon this foundation and increase the number of acres of land fully remediated and reclaimed under Stronghold's oversight in the years to come.

The reclamation and remediation efforts are not the only beneficial aspect of Stronghold's operations. The Facilities also help stabilize prices for retail customers in the local power grid and support the local economy. While the Facilities do supply power to our Bitcoin miners, the Facilities are also able to supply power to the grid to meet local demand. **Bitcoin mining is a primary consumer of our power but does not preclude us from supplying power to the grid when dispatched or during periods of high power prices.** The Facilities also provide hundreds of permanent jobs to local communities, which is critical in an area characterized by relatively high unemployment.[2] The Facilities currently employ over 110 individuals in the land reclamation, power management, data center and related sectors, and we plan to hire or arrange to hire approximately an additional 30 employees in Venango and Carbon Counties in 2022.

II. Coal Refuse: *A Neglected Environmental Disaster.*

Although Bitcoin mining is a new industry, coal mining has a long history in the state of Pennsylvania. Coal mining began in earnest in Pennsylvania in the 19th century and continued through the 20th century to meet the nation's growing demand for steel, fueling the industrial revolution and two World

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[1] G. Nevin Strock & Richard C. Stehouwer, *Soil Additives and Soil Amendments*, *in* COAL ASH BENEFICIAL USE IN MINE RECLAMATION AND MINE DRAINAGE REMEDIATION IN PENNSYLVANIA 302, 305–07 (2004), available at https://files.dep.state.pa.us/Mining/District%20Mining/DistrictMinePortalFiles/Beneficial_Use/18_CHAPT_10/Chapter_10.pdf.
[2] *See* PA Dep't of Labor & Indus., *Labor Force, Employment and Unemployment Distribution*, PA.GOV (Jan. 2022), https://paworkstats.geosolinc.com/vosnet/analyzer/resultsNew.aspx?session=labforce&pu=1&plang=E (selecting "Area Profile," "Employment and Wages" and "Labor Force, Employment and Unemployment Distribution" for all county records) (showing that Venango County's and Carbon County's unemployment rates in December 2021 ranked 50th and 48th respectively out of 67 counties in Pennsylvania).

Wars.[3] Pennsylvania coal miners have extracted over 16.3 billion short tons of anthracite and bituminous coal from the Commonwealth's mines since commercial mining began in 1800.[4] While mines permitted under the 1977 Surface Mining Control and Reclamation Act ("SMCRA") are required to be reclaimed after coal extraction is complete, many pre-SMCRA mines were abandoned without any reclamation or removal of the coal refuse piles.[5] Because the bulk of the state's mining activities occurred prior to comprehensive environmental regulation of mining activities, mines discarded coal refuse, a byproduct of the coal mining process, in large piles across Pennsylvania. With historic site operators for pre-SMCRA mines largely no longer in existence, the responsibility and costs for the range of environmental and safety hazards associated with coal refuse often fall to the current residents of Pennsylvania.[6] The extent of the problem is enormous and difficult to quantify. **In Pennsylvania, there are more than 5,000 abandoned, unclaimed mining areas covering approximately 184,000 acres.[7] There are more than 840 coal refuse piles at these abandoned mine lands across Pennsylvania,[8] which cover an aggregated area of 8,500 acres and contain a total volume of more than 200 million cubic yards.[9] The total volume of coal refuse in Pennsylvania is unknown but estimates range from between 200 million and 8 billion cubic yards.[10]**

Coal refuse has been a significant contributor to air and water pollution for over 100 years and continues to be a growing problem. The Pennsylvania Department of Environmental Protection's ("PADEP") most recent Integrated Water Quality Monitoring Report found that the number of the Commonwealth's impaired waterways had increased between 2020 and 2022, from 25,468 miles in the 2020 report to 27,886 miles in the 2022 report.[11] The primary source of water quality impairment was abandoned coal mine runoff, which was responsible for 7,356 miles of waterway impairment, up from 5,550 miles in the 2020 report.[12] Existing coal refuse piles emit carbon dioxide ("CO_2"), particulates, and volatile organic compounds including benzene, toluene, and xylene into the atmosphere, all of which are harmful to human, animal, and aquatic life.[13] These piles are also prone to spontaneously combusting, emitting dangerous greenhouse gasses, smoke, and particulate matter,[14] posing public health and safety hazards, and creating the potential for property damage. These uncontrolled coal fires emit CO_2 and methane, as well as

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[3] Thomas Mackaman, *Coal*, ENCYCLOPEDIA GREATER PHILA., https://philadelphiaencyclopedia.org/archive/coal/ (last visited Feb. 5, 2022).

[4] ARIPPA, WHAT IS COAL REFUSE? 2 (Oct. 5, 2015), https://arippa.org/wp-content/uploads/2018/12/ARIPPA-Coal-Refuse-Whitepaper-with-Photos-10_05_15.pdf.

[5] *Id.*

[6] *See id;* PA Dep't of Envtl. Prot.*, Frequently Asked Questions (FAQ) re. The SMCRA Title IV AML Program 4* (Jan. 2019), https://files.dep.state.pa.us/Mining/Abandoned%20Mine%20Reclamation/AbandonedMinePortalFiles/SMCRA_Funded_AML_Program_FAQ.pdf (stating that "With no legally responsible party in existence to clean up pre-SMCRA (also known as "pre-law") coal mining sites, [abandoned mine land] impacts and hazards have compounded over the years into a nationwide problem that requires significant resources, time, and effort to abate").

[7] ARIPPA, WHAT IS COAL REFUSE?, *supra* note 4, at 2.

[8] ECONSULT SOLS., INC., ECONOMIC AND ENVIRONMENTAL ANALYSIS OF PENNSYLVANIA'S COAL REFUSE INDUSTRY 8 (Sept. 8, 2016), https://www.congress.gov/116/meeting/house/110202/witnesses/HHRG-116-II06-Wstate-HughesR-20191114-SD017.pdf

[9] *Id.*

[10] *Id.*

[11] PA. DEP'T OF ENVTL. PROT., DRAFT 2022 PENNSYLVANIA INTEGRATED WATER QUALITY REPORT (Jan. 15, 2022), https://storymaps.arcgis.com/stories/b9746eec807f48d99decd3a583eede12 (sources of stream and lake impairment).

[12] *Id.* (finding that "[f]ully one-third of assessed stream miles in the state now are deemed unsafe for aquatic life, recreation, fish consumption or water supply.").

[13] *See* ARIPPA, WHAT IS COAL REFUSE?, *supra* note 4, at 5; EPA, SOURCE ASSESSMENT: COAL REFUSE PILES, ABANDONED MINES AND OUTCROPS, STATE OF THE ART 2 (1978).

[14] ECONSULT SOLS., INC., ECONOMIC AND ENVIRONMENTAL ANALYSIS OF PENNSYLVANIA'S COAL REFUSE INDUSTRY 23 (Sept. 8, 2016), https://www.congress.gov/116/meeting/house/110202/witnesses/HHRG-116-II06-Wstate-HughesR-20191114-SD017.pdf.

mercury, carbon monoxide, and other toxic substances.[15] **In 2020, PADEP reported that approximately 40 coal piles were continually burning in Pennsylvania[16] and, over the past decades, hundreds of others have burned.[17] In 2016, the PADEP estimated that 6.6 million tons of coal refuse burn each year in unintended, uncontrolled fires, releasing 9 million tons of CO2 and numerous other air pollutants,[18] and those figures are likely higher today**. When fires occur, the budgets of these environmentally and often economically challenged communities are hardest hit, and they may take years to extinguish.
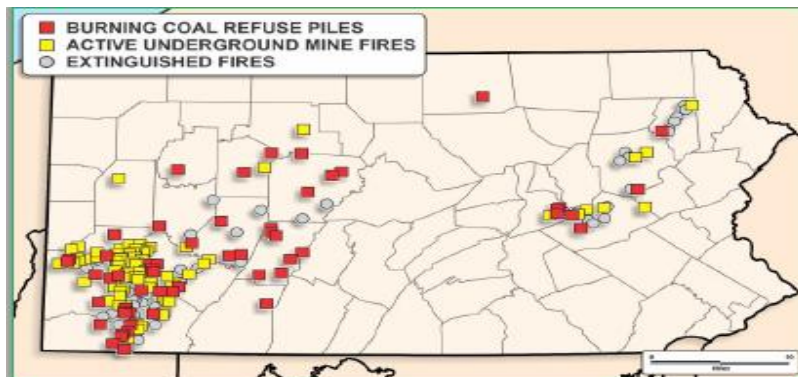
Toxic compounds from the coal refuse piles also leach into the surrounding surface, ground water, and waterways,[19] creating what is known as Acid Mine Drainage ("AMD").[20] AMD is characterized by the discharge of iron-sulfide minerals found in coal refuse piles, such as iron, manganese, aluminum, and other metals, into water flows, which increases the acid level and silt content of local waterways, causing streams to turn orange in color and harming their ability to sustain marine and plant life.[21] **This issue is not limited to Pennsylvania. AMD impacts all four of Pennsylvania's major river basins, which in turn leads to AMD contamination spreading from local waterways into the Chesapeake Bay and Delaware River Watersheds to the east, and the Ohio, Mississippi, and Gulf of Mexico Watersheds to the west – creating environmental impacts that are national in scope**.[22]

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[15] *See* ALLAN KOLKER ET AL., U.S. GEOLOGICAL SURVEY, EMISSIONS FROM COAL FIRES AND THEIR IMPACT ON THE ENVIRONMENT (2009), https://pubs.usgs.gov/fs/2009/3084/pdf/fs2009-3084.pdf.

[16] *See* Prepared Testimony of Patrick McDonnell, Secretary, Pa. Dep't of Envtl. Prot., Before the Joint Legislative Air and Water Pollution Control and Conservation Committee (Feb. 3, 2020), https://files.dep.state.pa.us/aboutdep/Testimony/2020/2020.02.03_JLCC_Waste_Coal_Hearing_DEP_Testimony.pdf. Other sources have indicated that this figure could be as high as 92. *See* Anya Litvak, Pittsburgh Post-Gazette, *A Waste Coal-Burning, Crypto-Mining Pirate Ship Sets Sail*, AP NEWS (Aug. 7, 2021), https://apnews.com/article/technology-business-23fa5bea24f87e275370399535a27269.

[17] ECONSULT SOLS., INC., THE COAL REFUSE RECLAMATION TO ENERGY INDUSTRY: A PUBLIC BENEFIT IN JEOPARDY 3 (2019), https://arippa.org/wp-content/uploads/2019/07/ARIPPA-Report-FINAL-June-2019.pdf.

[18] *See* ECONSULT SOLS., INC., ECONOMIC AND ENVIRONMENTAL ANALYSIS OF PENNSYLVANIA'S COAL REFUSE INDUSTRY, *supra* note 14, at 13.

[19] JOINT LEGISLATIVE CONSERVATION COMM., THE COAL REFUSE RECLAMATION TO ENERGY INDUSTRY AND CARBON TRADING MARKETS 9 (2020), https://arippa.org/wp-content/uploads/2021/04/JLCC-Coal-Refuse-Reclamation-Report-2020.pdf.

[20] ECONSULT SOLS., INC., THE COAL REFUSE RECLAMATION TO ENERGY INDUSTRY, *supra* note 17, at 24.

[21] *Id.*

[22] *Id.*
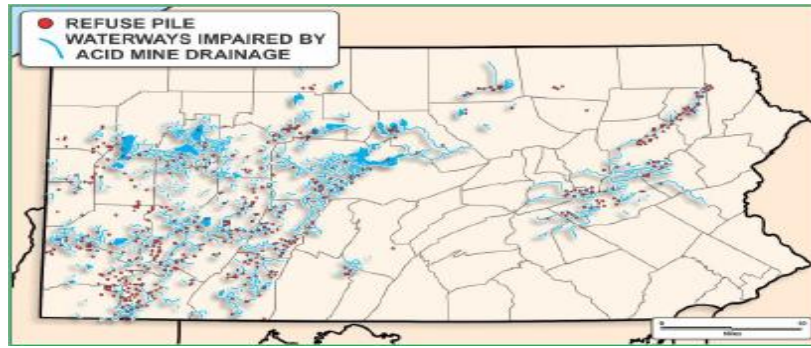
All of these factors combine to threaten local communities both environmentally and economically, with long-term health problems and low property values in neglected areas,[23] reduced recreational opportunities in local waterways, and degradation of the carbon sinks provided by the vegetation in impacted watersheds.

III. Overview of Company Operations: *The Facilities represent an efficient conversion of damaging waste product into power while helping achieve governmental priorities.*

Stronghold has found an opportunity to pursue a profitable business venture while providing economic benefits to the local community and remediating a significant portion of legacy coal mining byproduct. In 2015, Pennsylvania estimated that the cost to remediate abandoned mine lands and AMD, the largest non-point source water pollutant in Pennsylvania communities, could be as high as $20 billion,[24] and that figure is likely higher today due to the difficulty in assessing the extent of the environmental harm and ongoing realization of the impairments. Unlike water treatment systems, the elimination of coal refuse piles and reclamation of sites removes the source of AMD and its associated environmental consequences. By removing this coal refuse and repurposing it as a power source, Stronghold provides both economic and environmental benefits to its communities.

Pennsylvania has deemed the reclamation of coal refuse sites as an environmental priority,[25] and since the early 1990s, an unofficial public-private-partnership has developed between the coal refuse reclamation-to-energy industry and the Commonwealth of Pennsylvania.[26] The Commonwealth of Pennsylvania has demonstrated its support of such efficient private sector remediation efforts by adopting a performance-based tax credit targeting coal refuse removal by alternative electricity generation facilities utilizing CFB technology[27] and by classifying coal refuse under the Pennsylvania Alternative Energy Portfolio Standards Act as a Tier II Alternative Energy Source.[28]

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[23] JOINT LEGISLATIVE CONSERVATION COMM., *supra* note 19, at 2.

[24] In January of 2022, Governor Tom Wolf announced funding for environmental restoration projects focused on economic development or community revitalization at abandoned mine land locations across Pennsylvania. This year, $25 million will be made available for reclamation projects with economic development components. *Gov. Wolf Announces $25 Million Investment in Economic Recovery for Abandoned Mine Lands*, PA GOVERNOR.GOV (Jan. 24, 2022), https://www.governor.pa.gov/newsroom/gov-wolf-announces-25-million-investment-in-economic-recovery-for-abandoned-mine-lands/.

[25] *Id.*

[26] *EPA Takes Corrective Action on Standards for Coal-Refuse Power Plants*, EPA (Apr. 9, 2020), https://www.epa.gov/newsreleases/epa-takes-corrective-action-standards-coal-refuse-power-plants.

[27] David E. Hess, *ARRIPPA, EPCAMR Urge Senate to Continue Waste Coal Power Plant Tax Credits*, PA ENV'T DIGEST (Oct. 17, 2016), http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=37492&SubjectID=51.

[28] Scrubgrass' recognition as an Alternative Energy System also allows us to earn renewable energy credits. *See* JOINT LEGISLATIVE CONSERVATION COMM., *supra* note 19, at 3.

Feedstocks are plentiful as, unfortunately, coal refuse piles are pervasive and voluminous near our Facilities. For scale, one of the sites from which Stronghold transports coal refuse, the Russellton site, is estimated to contain **15,000,000 tons of coal refuse, is over 200 feet deep, covers 212 acres, and is just 12 miles from downtown Pittsburgh**. Our Facilities are capable of diligently addressing this damaging waste product and annually converting over 1.25 million tons of coal refuse into energy.

As the first step in its operations, Stronghold identifies coal refuse piles and contracts with site owners for the right to remove the product. At all of the sites from which Stronghold procures coal refuse, a portion of the existing coal refuse is currently or has been smoldering, either underground or on the surface level. Removed coal refuse is then transported from the origination site to our specialized Facilities.

After the coal refuse arrives at our Facilities, we utilize CFB combustion boilers to ultimately produce steam that is used to drive a conventional steam turbine to produce electric energy. These CFB combustion boilers are specifically designed to generate lower emissions than conventional pulverized coal boilers. Our CFB technology helps to control emissions of sulfur dioxide ("SO2"), nitrogen oxides ("NOx"), air toxins, and total particulate matter by removing ~90% of NOx emissions, ~98% of SO2 emissions, ~99.9% of particulate emissions and ~99.9% of mercury emissions. To further reduce emissions, these units are also equipped with fabric filter systems to control filterable particulate matter discharges.

We acknowledge that the only pollutant we do not eliminate is CO2. However, we are actively working to minimize our CO2 emissions from our operations. We have taken the following steps aimed at mitigating our CO2 output:

(i)   Executed a letter of intent with a third-party to test a carbon capture prototype at Scrubgrass, which we are actively working to install in the coming weeks. We are pursuing other developments and investments in technologies to capture, sequester, and utilize the CO2 emissions produced at the Facilities. We are also in dialogue with two other companies to explore carbon sequestration.

(ii) We sell a portion of our beneficial use ash, a byproduct of our CFB process, for use as a concrete additive. This ash displaces equivalent volumes of carbon-intensive cement.[29]. The remainder of our beneficial use ash is allocated for use in reclamation and restoration efforts.

The Company is responsible for complying with all state and federal requirements and regulations while loading and transporting the coal refuse from the coal refuse sites, and is also obligated to unload and properly dispose of beneficial ash at the coal refuse sites following removal.[30] A portion of the ash byproduct is also returned to the coal refuse origination site for aiding in reclamation of the former coal refuse pile sites.[31] Stronghold is actively involved in all aspects of the remediation and reclamation of former coal refuse pile sites in partnership with PADEP. Before PADEP will consider a site to be fully reclaimed, it must be properly revegetated and returned to its natural contours.

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[29] *See* Miguel Ángel Sanjuán & Cristina Argiz, *Fineness of Coal Fly Ash for Use in Cement and Concrete*, 2 FUELS 471, 472 (2021), available at https://www.mdpi.com/2673-3994/2/4/27 (explaining that coal fly ash in cements and concretes mitigate climate change by lowering the clinker to cement ratio and increasing concrete durability, which increases the service life of concrete structures).

[30] Stronghold was awarded an agriculture liming materials license by Pennsylvania's Department of Agriculture.

[31] *See also* PA DEP'T OF CMTY. & ECON. DEV., COAL REFUSE ENERGY AND RECLAMATION TAX CREDIT: PROGRAM GUIDELINES 1 (2017), *https://dced.pa.gov/download/coal-refuse-energy-reclamation-tax-credit-guidelines-2017/?wpdmdl=71612&ind=0* (to qualify for the tax credit, 75% of the fuel used by these facilities must be qualified coal refuse, plant design must include circulating fluidized bed technology, utilizing limestone injection and a fabric filter for particulate emissions control, ash produced by the facilities must be put to beneficial use as defined by PADEP, and, finally, at least 50% of that beneficial use ash must be used to reclaim coal mining affected sites).

Reclamation of former coal refuse piles not only provides aesthetic and ecological benefits, but it also provides commercial and community benefits. For example, Scrubgrass has supported the reclamation of 40 acres of land at a portion of the Russellton facility, which now hosts the "No Offseason Sports" youth sports complex.[32] In addition, the land used for Bitcoin mining operations at the Panther Creek plant is entirely reclaimed land.

Stronghold's business model outlined above results in an efficient method to comprehensively remove coal refuse from the environment and support the remediation of its polluting impacts.
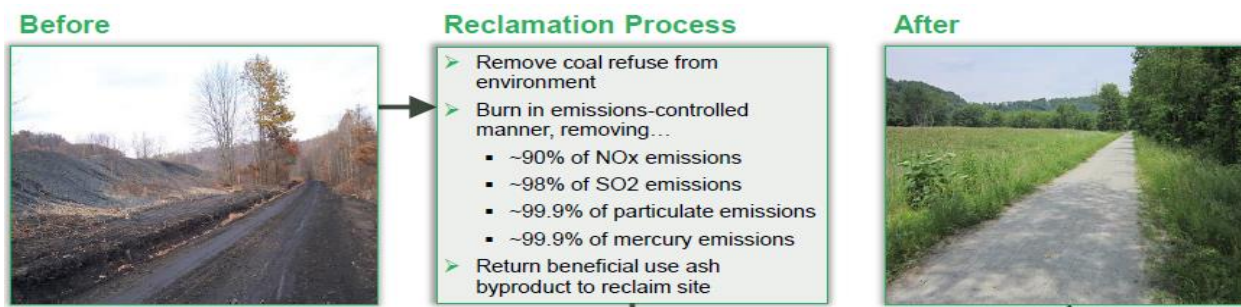
IV. Installation of the Load Bank and Stabilization of Grid Power: *We represent a dispatchable alternative energy source that serves to stabilize the grid and benefits local communities.*

The Facilities operate within the PJM Interconnection regional transmission organization ("PJM"), which coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. During its initial years of operation, Scrubgrass operated under a power purchase agreement with the Pennsylvania Electric Company that required it to perform up to 80 events per year to provide power to the grid to support PJM loads. However, in recent years, changes in power pricing and certain grid infrastructure upgrades have adversely affected the frequency with which Scrubgrass is dispatched by PJM. The abundance of low-price natural gas and the growth of the supply from the renewable energy sector have lowered prices below the break-even cost for coal refuse plants.[33] The revenue earned from power sales to PJM funded Scrubgrass' reclamation efforts and the less frequent

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[32] *See Nos Russellton*, NO OFFSEASON SPORTS, https://www.nooffseasonsports.com/locations (last visited Feb. 5, 2022).
[33] JOINT LEGISLATIVE CONSERVATION COMM., *supra* note 19, at 4.

dispatch by PJM significantly reduced Scrubgrass' reclamation rate for Pennsylvania's abandoned coal refuse piles. Although we considered retiring Scrubgrass and repurposing the site as a battery storage facility, we did not want to cease the beneficial activities of coal refuse reclamation. To allow reclamation efforts to continue economically, Scrubgrass instead opted to install a resistive computational load bank with a capacity of 21 MW (the "Load Bank") to enable Scrubgrass to run at full capacity even when market conditions do not require or allow the plant to export power to the PJM grid.

The Load Bank is effectively used as a power regulator and allows Scrubgrass to complete its primary task of waste coal reclamation and power generation and to simply "bank" any excess power it generates to the Load Bank during unfavorable market conditions instead of venting steam to the atmosphere. The Load Bank is used to supply power to Bitcoin miners stationed at Scrubgrass; however, it does not alter the circumstances under which Scrubgrass is dispatched by PJM. The cost curve that Scrubgrass supplies to PJM as required by PJM's fuel cost policy also has not changed.

Although our impact may be small, Scrubgrass remains ready and available to respond to dispatching requests from PJM, or to sell into the spot market to provide additional supply when prices are peaking. This is especially important during these cold winter months when power demands often increase. **If PJM dispatches Scrubgrass, the Load Bank and Bitcoin mining activities are shut down and power is delivered to the grid, benefitting local communities by helping to keep the cost of power down.** The Load Bank helps ensure that our response time to grid demand is nearly instantaneous (approximately 1 minute) and there is no start cost or minimum run time associated with PJM dispatch.

A similar process of installing a load bank is underway at Panther Creek, representing another reliable energy source that can be nearly instantaneously dispatched to the grid.

V.   Responses to Questions Provided in January 27, 2022 Letter.

We have included below our initial responses to the questions presented in your letter dated January 27, 2022. We welcome the opportunity to further discuss any questions you may have on these topics.

Question 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?

Through the first three quarters of 2021, Scrubgrass emitted 412,445 tons of CO_2 and produced 243,068 MWh of power. The final 2021 numbers for Scrubgrass are not yet available. Panther Creek emitted approximately 203,109 tons of CO_2 in 2021 and produced 146,783 MWh of power in 2021. As discussed above, we are actively pursuing a variety of mechanisms to mitigate our carbon emission output. Our 2021 emissions data is still preliminary but our final figures will be reported in accordance with regulatory requirements.

Question 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?

Scrubgrass estimates that the annual electricity consumption used for Bitcoin mining will be 546,000 MWh, assuming that Scrubgrass will be operating at full capacity for such year. Panther Creek estimates that the annual electricity consumption used for Bitcoin will be 524,300 MWh, assuming that Panther Creek will be operating at full capacity later this year. The cumulative estimated metric tons of CO_2 produced by the Facilities to supply this power required for Bitcoin operations is 1,284,360. We do not currently mine any other forms of cryptocurrency.

The estimates above take into account a continuation of our average dispatch to the grid, which slows or halts Bitcoin mining operations. Our priority remains providing power to the grid to respond to dispatching requests from PJM, or to sell into the spot market to provide additional supply when prices are peaking, helping provide additional supply when needed to keep electricity prices low.

Question 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. What are the expected increases in carbon emissions from this expansion, and do you have plans to further increase your company's capacity?**

Whereas previously our Facility emissions were limited to just the Scrubgrass plant, we estimate that the acquisition of the Panther Creek plant will result in an additional 898,808 tons of CO_2 emissions per year for our operations, consistent with its estimated annual CO_2 emissions.

We are consistently evaluating opportunities to expand Stronghold's operations in a way that will expand upon our current business model and benefit additional communities, for example through acquisition of additional coal refuse plants, but we do not have any definitive plans at this time beyond completing the build-out of the Panther Creek plant.

 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?**

The projected cumulative electricity consumption at the Facilities used for Bitcoin is 5,351,500 MWh, assuming both Facilities will be operating at full capacity for each such year as set forth in our response to Question 2, which would result in approximately 6,421,800 tons of CO_2 emissions.

We are hopeful that the ultimate carbon emissions figure will be less than currently forecasted due to our plans to advance emissions reduction efforts. We are also evaluating the possibility of acquiring additional coal refuse plants with an aim of broadening our remediation and grid stabilization efforts.

 c. **What specific plans do you have to address the environmental impact of your increased operations?**

We will continue to take the same steps we currently conduct to limit our environmental impact while exploring new and innovative ways to mitigate any future environmental impact. These new efforts include: (i) testing innovative carbon sequestration and capture technology at the Facilities, as described in Section III above, (ii) reclaiming and repurposing hundreds of acres of previously unusable land, and (iii) utilizing beneficial use ash to offset CO_2 emissions as an additive in concrete and cement.

  i. **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. In fact, there are reports that coal refuse plants are in fact far more inefficient and polluting than new regular coal plants. Please describe your plans to account for that impact.**

Coal plants today use many kinds of relatively "new" technologies that are increasingly efficient at generating electricity. These technologies include, for example, ultrasupercritical combustion, CFB

combustion (like that used in the Facilities), coal gasification boilers, or other technologies, making it difficult to standardize how a "regular" coal plant may operate. However, a "new" coal plant has not been brought online in the United States and in the PJM RTO since 2012.[34] Today, the average operating coal-fired unit in the United States is 45 years old.[35]

The two most recent coal-fired plants to come online in the PJM RTO emitted 913,771 and 4,793,237 tons of CO2e respectively in 2020.[36] These absolute emissions far outpace the CO2 emissions from Scrubgrass and Panther Creek from that year.

However, an important distinction between conventional coal-fired power plants and coal refuse power plants is the carbon emissions of the feedstock. Conventional coal-fired power plants generate electricity from the consumption of coal. In its unmined state, coal does not emit any CO2. However, mining involves a carbon-intensive extraction and transportation process, followed by combustion-related emissions. Without the power demands for coal-fired electricity generation, these carbon emissions would not be circulating in our atmosphere.

Unlike conventional coal-fired power plants, the feedstock for the Facilities is coal refuse. In its latent state, coal refuse produces particulate matter-dense coal dust and is prone to combustion caused by the flow of air through untreated piles, forest fires, lightning, or other causes.[37] These uncontrolled coal refuse pile burns create a range of uncontrolled negative atmospheric impacts, including smoke, carbon monoxide, CO2, hydrogen sulfide, sulfur dioxide, ammonia, sulfur trioxide, sulfuric acid, and nitrogen oxides, and no power output benefits.[38] With the unfortunate assumption that eventually all existing coal refuse piles will partially or entirely ignite, the combustion of coal refuse under close monitoring at our Facilities equipped with pollution control equipment eliminates the risk of unchecked polluting emissions and generates economically beneficial power. Although our coal refuse feedstock still requires transportation from its origination source to the Facilities, the pervasive nature of coal refuse in Pennsylvania reduces lengthy feedstock transportation requirements. Further, operation of the Facilities does not require extraction of new raw materials. Instead, as described in more detail in the Sections above, there is plentiful local feedstock available in urgent need of repurposing.

Question 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?

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[34] EPA, Clean Air Markets Division, *Facility Level Comparisons: Table of Coal Unit Characteristics 2020*, available at https://www.epa.gov/airmarkets/facility-level-comparisons (last visited Feb. 5, 2022).

[35] *Of the Operating U.S. Coal-Fired Power Plants, 28% Plan to Retire by 2015*, U.S. ENERGY INFO. ADMIN. (Dec. 15, 2021), https://www.eia.gov/todayinenergy/detail.php?id=50658.

[36] The Virginia City Hybrid Energy Center, located in St. Paul, Virginia came online in 2012 and emitted 913,771 tons of CO2e in 2020. The Longview Power Plant, located in Maidsville, West Virginia, came online in 2011 and emitted 4,793,237 tons of CO2e in 2020. EPA, Clean Air Markets Division, *Facility Level Comparisons: Table of Coal Unit Characteristics 2020*, available at https://www.epa.gov/airmarkets/facility-level-comparisons (last visited Feb. 5, 2022) (date facility came online); *eGRID2020*, EPA (Jan. 27, 2022), https://www.epa.gov/egrid/download-data (emissions data).

[37] ECONSULT SOLS., INC., ECONOMIC AND ENVIRONMENTAL ANALYSIS OF PENNSYLVANIA'S COAL REFUSE INDUSTRY, *supra* note 14, at 23.

[38] *Id.*

The Facilities Help Alleviate Peak Grid Demands

Stronghold does not currently model the impacts of the Facilities on local families and businesses. However, the Facilities represent around 0.01% of the capacity of the PJM grid and therefore do not have a noticeable impact on energy costs for local families and businesses. Instead of other Bitcoin companies who are fully reliant on the grid to power their operations, our Facilities are self-sufficient and are also capable of providing power to the local grid. As discussed above, our Load Bank can be shut down instantaneously, diverting energy generated directly to the grid.

For example, on October 19, 2021, Scrubgrass conducted a demonstration of the response of the Load Bank to dispatch instructions. The demonstration was conducted in coordination with PJM dispatch. The results, which are shown below, demonstrate how the Load Bank enables Scrubgrass to respond to a high ramp generation request nearly immediately, which is critical to help PJM maintain grid stability. The test was successfully completed without incident. Output increased nearly instantaneously by 8 MW in the first phase. Plant output was maintained for 5 minutes, then returned to normal configuration to simulate a 5-minute-high output request. Once stabilized, Scrubgrass reallocated the Load Bank and output increased 13 MW. That output was held for 6 minutes then output was reduced back to normal levels. Since the test, Scrubgrass has successfully been deployed to the PJM grid on several occasions.
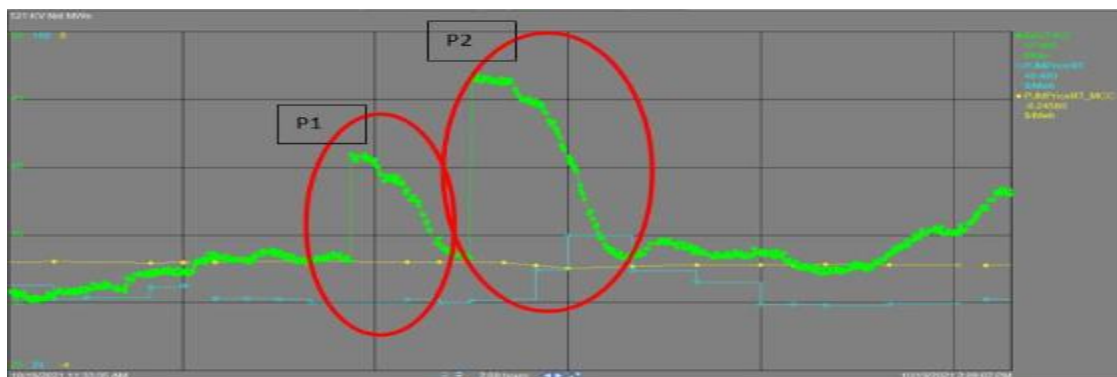
The PJM Market Delivers Electricity at a Very Competitive Level

As one of the largest wholesale electricity markets in the world, PJM delivers relatively cheap electricity compared to other wholesale markets in the United States. It generates electricity from a variety of sources, including natural gas, coal, nuclear, and renewable energy. Information collected by the EIA, through the Intercontinental Exchange ("ICE"), revealed that PJM offered the lowest weighted average price among seven regional hubs for wholesale electricity in 2021,[39] offering affordable power to its customers, including local families and businesses. The following table illustrates how PJM's wholesale electricity price compares among these seven hubs.

Region	Electricity Hub Name	Weighted Average Electricity Price (2021)
New England	Mass Hub	$51.76 MWh
PJM	**PJM West**	**$45.70 MWh**
Midwest	Indiana Hub	$58.08 MWh
Northwest	Mid-C	$58.84 MWh
Northern California	NO-15	$76.43 MWh

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[39] *See Historical Wholesale Electricity and Natural Gas Market Data,* U.S. ENERGY INFO. ADMIN., available at https://www.eia.gov/electricity/wholesale/ (last visited Feb. 5, 2022).

Southwest	Palo Verde	$61.63 MWh
Southern California	SP-15	$56.90 MWh

<u>Residential Electricity Costs & Stronghold Efforts to Maintain Affordable Power for Customers</u>

As noted above, the Facilities represent around 0.01% of the capacity of the PJM grid and therefore do not have a noticeable impact on energy costs for local families and businesses. Given the multitude of factors that impact residential electricity costs (including natural gas prices, temperature fluctuations, and other factors), and the size of the PJM grid, it would be difficult to attribute any change in local electricity costs to Stronghold's operations.
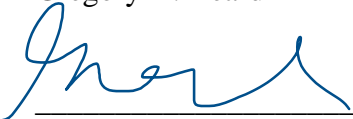
As the PJM prices listed above demonstrate, PJM delivers significant value for its large footprint. Stronghold is proud to help support this value through price stability and generation reliability. Our fuel source is not tied to any index and remains consistent, unlike other facilities that may incur fluctuations for example, based on regional changes in natural gas prices. Instead, Stronghold has provided a reliable dispatch source for the grid, and has never failed to deliver when dispatched since the installation of the Load Bank. As a result, we help PJM successfully keep energy costs some of the lowest in the country for local families and businesses.

VI.   Conclusion

We are appreciative of the opportunity to engage with each of you on this topic. We are passionate about Stronghold's operations and the benefits we bring to the environment and the communities in which we operate. We welcome the opportunity to host each of you in Pennsylvania any time that is convenient and would greatly appreciate the opportunity to give you a tour of our Facilities, the coal refuse piles, and the former coal refuse piles that are now fully remediated sites. We look forward to discussing further at your convenience.

Sincerely,

Gregory A. Beard

Stronghold Digital Mining, Inc.

**GREENIDGE GENERATION HOLDINGS INC.'S SUBMISSION
IN RESPONSE TO THE LETTER DATED DECEMBER 2, 2021**

Thank you for your December 2, 2021 letter requesting information related to our operation in New York State and plans for the future. Greenidge Generation Holdings Inc. ("Greenidge") appreciates your interest in the company and welcomes this opportunity to share its story of environmental and economic stewardship in New York with you and your staff.

Greenidge's Dresden facility (the "Dresden facility" or the "Facility") is an Upstate New York success story. The Facility, located in the Town of Torrey, NY, previously served as a coal-fired power plant commissioned by New York State Electric and Gas Corporation in 1937. For nearly 75 years, coal trains and trucks rumbled through the community. Greenidge changed that. The company converted the Facility into a clean-burning natural gas facility by working with the New York State Department of Environmental Conservation ("NYSDEC") and the U.S. Environmental Protection Agency ("EPA"). The Facility has never operated on coal under Greenidge's ownership, and it will never burn coal again.

The Facility is fully compliant with its Title V Air Permit[1] and State Pollutant Discharge Elimination System ("SPDES") Water Permit[2] (collectively, the "Permits"). These Permits have all been duly issued pursuant to New York's Uniform Procedures Act and New York's State Environmental Quality Review Act ("SEQRA") based upon formal determinations made by the NYSDEC that Greenidge satisfied any applicable criteria in the various permitting programs. NYSDEC analyzed the full range of potential adverse environmental impacts and found that the Permits would allow the Facility to operate on a full-time (24/7) basis at full capacity without causing significant adverse impacts to surface waters, air, plants or animals, historic or archaeological resources, energy demands, or solid waste management. NYSDEC further found that the limits and conditions in the permits ensure that Seneca Lake will be protected. These findings, made during the SEQRA review, are memorialized in the June 28, 2016 amended Negative Declaration for the Permits.

Despite reports to the contrary, the Facility was *not* restarted as a bitcoin mining operation; rather, following a protective layup, the Facility returned to the wholesale energy market as a merchant power provider, and it continues to send a significant amount of the power it generates to the New York Independent System Operator (the "NYISO"). The NYISO operates the State's energy grid, thereby supporting the electricity needs of thousands of homes and businesses. The Facility *does not, nor has it ever*, produced electricity solely for the purpose of bitcoin mining. Approximately two years after the Facility's coal-to-gas conversion was complete, Greenidge began a small cryptocurrency mining project of approximately 1 megawatt ("MW") drawn from the Facility's total capacity of 106 MW in 2019. A subsequent project of approximately 20 MW began in 2020. Irrespective of these projects, the Facility sends power to the NYISO energy grid every day that it operates.

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[1] *See* Title V Air Permit ID: 8-5736-00004/00017.
[2] *See* SPDES DEC Permit No. 8-5736-00004/00001 (NY-001325).

Importantly, the Facility is not generating *any* air emissions—either from electricity used for bitcoin mining or for delivery to the NYISO energy grid—that are not *already* (a) subject to the strict terms and conditions of its existing Title V Air Permit and (b) fully accounted for by New York State's federally approved Clean Air Act State Implementation Plan.

When running at full capacity, the Facility is only 106 MW out of approximately 38,000 MW of power generation capacity in the State of New York[3]—approximately 0.3 percent. And, even if operating at full capacity 24/7, the Facility's emissions would amount to approximately 0.2 percent of the total greenhouse gas ("GHG") emissions target set by New York State for 2030.[4]

While the Dresden facility's operation is comparatively small, we are extremely proud of our environmental record. We are fully committed to doing our part to help New York State achieve its statewide GHG emissions reduction goals under the Climate Leadership and Community Protection Act ("CLCPA"), which seeks to reduce economy-wide GHG emissions 40 percent by 2030 and no less than 85 percent by 2050 compared to 1990 levels. The Facility's current onsite and upstream *potential* carbon dioxide equivalent emissions are approximately 70 percent lower than the coal-fired power plant's actual emissions in 1990. The Facility's *actual* carbon dioxide equivalent ("CO2e") emissions for the last twelve months ending November 30, 2021 (the "LTM Period") were approximately 89 percent below the 1990 emissions. We have also identified several potential new projects that have the potential to reduce aggregate GHG emissions by approximately 40 percent in the coming years.

GHG emissions, naturally, fluctuate depending upon the amount of power generated in any given year and are dependent on several factors, most notably the weather, as the NYISO demand for power generally increases during periods of extreme weather. The 2020 emissions level for the Facility amounted to approximately 36 percent of the allowable level set forth under its existing Title V Air Permit (*i.e.*, 64 percent lower than the permitted level). For the LTM Period, the Facility's GHG emissions were approximately 43 percent of the permitted level (*i.e.*, 57 percent lower than the permitted level).

With respect to the concerns about the potential impact the Facility may have on water temperatures, please consider the following: to put the maximum allowable water discharge from the Facility into perspective, the equivalent discharge calculation is equal to approximately one *teaspoon* of water in a full bathtub.[5]

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[3] New York Control Area generating capability for summer 2021 was 37,789 MW. *See* 2021 Load & Capacity Data, NYISO Gold Book (Apr. 2021), available at https://www.nyiso.com/documents/20142/2226333/2021-Gold-Book-Final-Public.pdf/b08606d7-db88-c04b-b260-ab35c300ed64.

[4] Greenidge's maximum allowable CO2e emissions under its existing Title V Air Permit are 641,878 tons on a rolling 12-month basis which is approximately 0.2 percent of the total Statewide Emissions Target of approximately 265 million tons of CO2e for calendar year 2030.

[5] Seneca Lake is 38 miles long and contains approximately 4.2 trillion gallons of water. The Facility's SPDES Water Permit allows discharge of 135 million gallons of water per day. 135 million / 4.2 trillion = 0.003 percent. A standard bathtub holds approximately 42 gallons of water. Therefore, 0.003 percent of 42 gallons = 0.00126 gallons, which equals 1.03 teaspoons.

As set forth in response to Request 6 below, the average temperature differential of water intake and outflow at the Facility for the LTM Period has been approximately 9 degrees, which is well below the permissible temperature differential of water intake and outflow under the SPDES Water Permit.

We are equally proud of our positive and growing economic impact in New York State. For decades, upstate New Yorkers have been told they would see new industries and opportunities emerge. Greenidge is making that long-awaited promise a reality by partnering with the International Brotherhood of Electrical Workers ("IBEW") and several great local companies to bring a piece of the world's digital future to the Finger Lakes Region. The Facility had two full-time employees in 2014 and currently employs approximately 50 full-time employees. A recent economic impact analysis conducted by New York-based Appleseed, Inc. ("Appleseed") in 2021 outlines Greenidge's significant and positive economic impact on the Finger Lakes Region and New York State.[6] Key jobs and wages findings from that analysis included:

- From 2014 through 2020, Greenidge's economic investments directly and indirectly supported 183 jobs in New York State in construction and related industries, with nearly $13.4 million in employee earnings.

- In 2020, full-time employees' annual salaries and wages at Greenidge averaged $77,565 —more than double the average earnings of all wage-and-salary workers in Yates County in 2019.

For these and other reasons, Greenidge is pleased to enjoy broad support in Upstate New York, including from local government, civic organizations, many Seneca Lake neighbors, and the IBEW, which is working to help Greenidge enhance the Facility.[7]

As you know, bitcoin is becoming ubiquitous around the globe, leveling the financial playing field for millions by enabling more equitable access and cheaper, faster, and more efficient payments compared to traditional methods. As you also know, bitcoin mining is the processing and recording transactions on the bitcoin blockchain. The Facility represents a small fraction of the global bitcoin mining capacity today—roughly 0.8 percent[8] —and represents

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[6] Greenidge Generation LLC: Economic Impact in the Town of Torrey, Yates County and New York State, Appleseed, Inc. (May 2021), available at https://greenidge.com/wp-content/uploads/2021/09/Greenidge-Economic-Study-Appleseed.pdf.

[7] *See IBEW Local 840 to support for Greenidge Generation at hearing*, The Chronicle Express (Oct. 13, 2021), available at https://www.chronicle-express.com/story/news/2021/10/13/ibew-local-840-support-greenidge-generation-hearing/8439201002/; *see also Yates Co. Legislature unanimously supports Greenidge*, The Chronicle Express (Oct. 13, 2021), available at https://www.chronicle-express.com/story/news/2021/10/13/yates-co-legislature-unanimously-supports-greenidge/8439859002/; *Yates Co. Farm Bureau supports Greenidge*, The Chronicle Express (Dec. 10, 2021), available at https://www.chronicle-express.com/story/news/2021/12/10/yates-co-farm-bureau-supports-greenidge/6407560001/.

[8] Based on our current hashrate of approximately 1.4 EH/s and current global hashrate of approximately 178 EH/s as reported by Coin Metrics on a 14-day rolling basis as of 12/15/2021.

approximately 2 percent of U.S. mining capacity.[9] For comparison, there are single sites in the U.S. that are ramping up to fifteen or more times the Facility's approximately 50 MW of bitcoin mining capacity. We are proud that our small facility is helping make this new financial reality possible. We are making Upstate New York stronger and we are helping to ensure the security, stability, sustainability, and decentralization of the bitcoin blockchain for millions of users in the U.S. and abroad.

* * *

We are pleased to share more information below in response to your specific requests.

Request 1.   How much does Greenidge's Dresden, New York plant currently emit annually in terms of metric tons of carbon dioxide equivalent? What is the current annual energy production of the plant?

Request 2.   What is the annual electricity consumption used for Bitcoin mining at the Dresden facility?

In connection with Requests 1 and 2, the Dresden facility is permitted to emit up to 641,878 tons of CO_2e on a rolling twelve month basis. This level was reached following extensive analysis by the NYSDEC during the Title V Air permitting process, which concluded with the issuance of a new permit in 2016. Total permissible emissions are based upon the Facility running at full capacity, 100 percent of the time, twenty-four hours a day, seven days a week, 365 days a year.

For reference, the Facility's nameplate capacity is approximately 930,000 megawatt-hours ("MWh") of electricity production annually.

For the LTM Period, the Facility emitted 273,326 tons of CO_2e (approximately 57 percent below the facility's permitted level). For the LTM Period, the Facility produced 424,841 MWh of electricity, and 272,828 MWh were used for bitcoin mining.

Request 3.   Your company is planning to significantly scale both energy production and Bitcoin mining operations in the coming months and years. Please describe your scaling plans.

> **a. What is your projection for your annual emissions and energy production once the expansion is complete? What is your timeframe for completion?**

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[9] According to recent data from the Cambridge Centre for Alternative Finance, 35.4% of bitcoin's global hashrate is domiciled in the United States. Current global hashrate is estimated to be 178 EH/s as reported by Coin Metrics on a 14-day rolling basis of 12/15/2021, resulting in an estimate of 63.0 EH/s for aggregate U.S. hashrate. Greenidge's approximately 1.4 EH/s of capacity represents approximately 2% the 63.0 EH/s of estimated U.S. mining capacity.

b. What are your specific plans for increasing Bitcoin mining, and what will be the total electricity consumption for this mining once the expansion is complete?

       i. What is your projected electricity consumption for Bitcoin production at the Dresden plant for each of the next five years?

       ii. What is your projected electricity consumption for Bitcoin production at all over your plants combined over the next five years?

c. You recently announced the purchase of 10,000 S19j Pro bitcoin miners representing 1 EH of mining capacity for your anticipated Spartanburg, South Carolina facility. How many bitcoin mining units do you currently have at your Dresden location, and how many will you have in total once your expansion is complete? How many EH/s of mining capacity will that represent? What is your average annual energy consumption per mining unit?

d. What specific plans do you have to address the environmental impact of this scaling, outside of the purchasing of carbon offsets?

Contrary to media reports, Greenidge has *not* announced any plans to expand power generation capacity at the Dresden facility or anywhere else in the State of New York. Greenidge has announced plans to expand its bitcoin mining operations beyond the Dresden facility,[10] but has not announced any plans to expand energy production at the Facility.

The Dresden Facility's Application for Title V Permit Renewal (the "Renewal Application")—which governs emissions regardless of how the power is used—did not request any increase in generation capacity or any relief from any of the conditions in its existing Title V Air Permit. The NYSDEC has deemed the Renewal Application complete, stating, "*The renewal application is essentially unchanged from the existing permit. The renewal application and draft permit do not request or allow any additional emissions.*"[11] To be clear, the Dresden facility is the only location owned by Greenidge that produces electricity, and therefore, the only location that emits GHG. Greenidge's GHG emissions are directly correlated to energy production, which supports the State's energy grid and the electricity needs of thousands of homes and businesses.

Greenidge currently operates approximately 50 MW of bitcoin mining, which represents approximately 1.4 EH/s of mining capacity. Substantially all of this capacity is housed at Greenidge's Dresden facility. There are approximately 17,000 mining units at the Facility, and

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[10] *See* Press Release, *Greenidge Generation Announces Comprehensive Expansion Plans* (Oct. 21, 2021), available at https://greenidge.com/wp-content/uploads/2021/10/GREE-Expansion_10.21.2021.pdf.
[11] NYSDEC Permit Review Report (Sep. 9, 2021), available at https://www.dec.ny.gov/docs/permits_ej_operations_pdf/greenidgeprr.pdf.

the average miner at the Facility consumes approximately 2.9 kilowatts of electricity. The amount of energy produced at the Facility is dependent upon the sum of (i) the amount of mining capacity at the site, which is currently approximately 50 MW and (ii) the demand for power from the NYISO energy grid, which is dependent on a number of factors, including but not limited to the weather, as the NYISO demand for power is generally greater during periods of peak heat or cold. But in all events, the total energy produced and GHG emissions generated at the Facility are controlled by the existing Title V Air Permit. Given the uncertainties with predicting such factors, most notably the weather, Greenidge does not maintain the projections requested in connection with this request.

To achieve its planned bitcoin mining expansion, Greenidge has recently ordered a total of 26,500 units from Bitmain. With these orders, Greenidge's total mining capacity will increase to approximately 49,000 miners representing 4.7EH/s and 144 MW of capacity. Greenidge is currently evaluating a pipeline of approximately ten potential sites in North America. Greenidge will evaluate where to deploy its mining equipment based on the sites available, which is expected to change over time. Greenidge has also stated that it expects to have at least 500 MW of mining capacity across multiple locations by 2025.

Regarding its efforts to offset its carbon footprint, Greenidge plans to continue to offset 100 percent of the carbon emissions associated with its mining operations at the Dresden facility and future locations. Beyond this commitment, Greenidge intends to use the next five years allowed by the renewal of the Facility's Title V Air Permit ending in 2026 to assess its ability to further improve efficiency and reduce GHG emissions at the Facility. Specifically, Greenidge has identified several additional GHG mitigation projects that it will carefully evaluate over the next 5-year Title V Air Permit renewal period, including:

(1) installation of a variable frequency drive on the existing 2,000 horsepower booster exhaust fan;
(2) redesign of the exhaust gas duct work system;
(3) creating up to 15 MW of community solar farm capacity;
(4) the installation of a solar farm on former coal pile area at the site;
(5) replacement of the catalyst in the Selective Catalytic Reduction ("SCR") system; and
(6) co-firing hydrogen with natural gas.

In addition, Greenidge will also continue to participate in the Regional Greenhouse Gas Initiative ("RGGI"), a market-based cap-and-invest program in which participating states (such as New York) sell CO_2 allowances through auctions and invest the proceeds in energy efficiency, renewable energy, and other consumer benefit programs to spur innovation in the clean energy economy and create local green jobs. Greenidge purchases RGGI allowances each year to cover 100 percent of its CO_2 emitted from power generation and has done so since it began gas-fired operations in 2017. Through its participation in the RGGI program, 100 percent of the electricity produced by Greenidge, including the amount consumed behind-the-meter for bitcoin mining, is produced pursuant to this cap-and-invest system.

Request 4. **Your company's claim that Greenidge is the first 100% carbon-neutral bitcoin transaction processor in the United States is based on 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 and are sufficient in making your overall operations environmentally friendly.**

In May 2021, Greenidge announced a policy of voluntarily offsetting its carbon footprint from bitcoin mining. Specifically, Greenidge is voluntarily purchasing carbon offset credits generated by a portfolio of U.S. GHG reduction projects in an amount equal to offset the carbon emissions associated with Greenidge's bitcoin mining operation, both in New York and other future locations. Each underlying project has been reviewed and certified by one of three well-recognized Offset Project Registries—American Carbon Registry ("ACR"), Climate Action Reserve ("CAR"), or Verra—ensuring that any projects funded by the credits Greenidge purchases have or will reduce emissions and/or increase sequestration of GHG emissions in a manner that is real, permanent, and verifiable.

The offset credits Greenidge has purchased to date, in order to offset the Dresden facility's emissions for 2021, were purchased through Evolution Markets Inc., acting as a broker. The location of the underlying projects are: Waterloo, NY; Itasca County, MN; St. Louis County, MN; Koochiching County, MN; Atkin County, MN; Clearwater County, MN; Beltrami County, MN; Cass County, MN; Dover, OH; and Gaston County, NC.

This widely recognized process is used by companies and consumers alike to reduce or offset their carbon footprint by funding carbon-reducing projects. Sponsors of carbon-reducing projects use the proceeds of carbon offset credit sales to finance projects that otherwise may not have been economically viable.

Request 5. **In order to prevent impingement and entrainment of fish, larvae, and other wildlife through water intake, the federal Clean Water Act requires facilities withdrawing upwards of 2 million gallons a day for cooling purposes to cover intake pipes with protective screens, for which New York's Department of Environmental Conservation has given Greenidge until late 2022 to comply. I am aware you have recently installed variable speed drives on your facility's water pumps to slow the speed of water intake.**

> a. **What does your data say about fish impingement and entrainment mortality – on both a monthly and annual basis – caused by your plant? How does your impingement data compare to the Environmental Protection Agency's (EPA) proposed numeric performance standard of limiting fish impingement mortality to no more than 12% on an annual average and 31% on a monthly average, and how does your entrainment data compare to the EPA**

standard for new units of reducing entrainment mortality to the equivalent of 90% of reductions achieved by closed-cycle cooling?

    b. Have you undertaken additional studies on this matter since your 2019 Cylindrical Wedge-Wire Screen Pilot Study in 2019? What measures are you taking to reduce impingement and entrainment, and what other actions are you taking to protect wildlife in the lake?

Under prior ownership, the coal-fired plant operated for decades without a cooling water intake structure aimed at minimizing fish entrainment. Since purchasing the Dresden facility in 2014, Greenidge has been working with the NYSDEC to upgrade its cooling water intake system in order to meet modern standards for entrainment protection at existing electric generating plants. The total cost to implement this upgrade is currently estimated to be approximately $5 million.

As background, the NYSDEC has been delegated the authority to issue SPDES permits by the EPA. NYSDEC renewed the SPDES Water Permit for the Facility on October 1, 2017. The NYSDEC implemented Commissioner's Policy #52 ("CP #52") to establish Best Technology Available ("BTA") required to minimize impingement mortality and entrainment at cooling water intake structures. CP #52 requires that existing facilities achieve reductions in impingement mortality and entrainment from a calculation baseline that is 90 percent or greater of that which would be achieved by a wet closed-cycle cooling system.

Pursuant to a NYSDEC-approved plan, the Facility will meet the mandated reduction for entrainment through the combined use of the cylindrical wedgewire screens ("CWWS"), which physically exclude some organisms and allow others to escape due to the low through-slot velocity and small flow field, as well as flow reductions made possible with the use of only two of three pumps, variable frequency drives, and potential periods of non-operation. Both the EPA and the NYSDEC have found that impingement is reduced practically to zero by the low through-slot velocities, which allow healthy fish that are potentially subject to impingement to swim away from the screen. Greenidge installed the variable speed drives at the Facility in June 2019 (ahead of the timeline for implementation established by the NYSDEC) at a cost of approximately $450,000.

The NYSDEC ensures that the Facility is complying with all requirements of the Clean Water Act ("CWA") and its SPDES Water Permit associated with the installation of CWWS, including meeting established timelines for implementation. Contrary to certain inaccurate public comments, the NYSDEC has not waived any requirements of the CWA, which are included in the Facility's SPDES Water Permit.

The SPDES Water Permit required Greenidge to submit a CWWS pilot study plan and schedule by April 1, 2018. Greenidge submitted this to the NYSDEC on March 29, 2018, which the NYSDEC approved on April 18, 2018. The pilot study was necessary and required because CWWS systems are not off-the-shelf technology. CWWS technology needs to be specifically

designed and engineered for the particular cooling water intake structure to ensure the system is properly sized, located, and constructed to deliver the cooling water needed, while reducing fish entrainment and impingement and biofouling specific to the facility.

The required pilot study was completed consistent with the NYSDEC approved requirements and schedule. It included weekly sampling from April 2019 through September 2019 and bi-weekly sampling through October 2019. The final CWWS pilot study report was submitted to the NYSDEC on April 29, 2020, as required by the NYSDEC-approved schedule. The NYSDEC approved the Pilot Study Report on August 7, 2020, which cleared the way for the submission of a Technology Installation and Operation Plan ("TIOP").

On November 3, 2020, Greenidge submitted the TIOP to the NYSDEC, which included a full description of, and schedule for installation of, the CWWS system. On December 22, 2020, the NYSDEC approved the TIOP and has allowed Greenidge to move forward with final engineering, permitting, and construction of the approved screen system. Pursuant to the TIOP, Greenidge selected 0.5 mm slot width stainless steel screens to satisfy BTA requirements. The approved CWWS must be operational by September 30, 2022, the expiration date of the Facility's current SPDES Water Permit. Greenidge is on schedule to meet this requirement.

Request 6. **Please provide detailed information regarding the temperature differentials of water intake and outflow from your facility. Specifically, please report the minimum and maximum temperature of intake and outflow for each month in the past year.**

The Dresden facility's SPDES Water Permit, issued by the NYSDEC, allows for a maximum discharge temperature of up to 108 degrees in summer and 86 degrees in winter. It also allows for a maximum difference between the inlet temperature and the discharge temperature of 26 degrees in summer and 31 degrees in winter.

In connection with this request, the table below depicts the following: (i) minimum daily intake water temperature for the month; (ii) maximum daily inlet water temperature for the month; (iii) minimum daily discharge water temperature for the month; (iv) maximum daily discharge water temperature for the month; (v) average daily difference between inlet water temperature and discharge water temperature for the month; (vi) the maximum permitted discharge temperature pursuant to the Facility's SPDES Water Permit; (vii) the difference between (vi) and (iii) above; (viii) the maximum permitted difference between inlet water temperature and discharge water temperature pursuant to the Facility's SPDES Water Permit; and (ix) the difference between (viii) and (v) above.

Notably, *both* the discharge temperatures and the temperature differences in the table are well below the fully-permitted levels of the Facility's SPDES Water Permit. For the LTM Period, the discharge temperature averaged approximately 32 degrees <u>below</u> the permitted level and the difference between the inlet temperature and the discharge temperature averaged approximately 19 degrees <u>below</u> the permitted level.

Month	Inlet			Outlet			Average Temp Difference	Permitted Discharge Temp	Degrees Below Permitted	Permitted Temp Difference	Degrees Below Permitted
	Min	Max	Avg	Min	Max	Avg					
Dec-20	36.6	50.7	45.5	47.0	66.1	53.0	7.4	86.0	33.0	31.0	23.6
Jan-21	36.6	46.5	42.3	45.4	63.3	50.1	7.8	86.0	35.9	31.0	23.2
Feb-21	36.6	45.6	40.6	44.2	59.8	49.0	8.3	86.0	37.0	31.0	22.7
Mar-21	37.0	50.6	41.6	44.6	59.6	48.5	6.8	86.0	37.5	31.0	24.2
Apr-21	39.6	50.8	44.7	47.1	64.9	52.2	7.5	86.0	33.8	31.0	23.5
May-21	42.1	71.3	52.0	50.1	79.0	60.4	8.4	108.0	47.6	26.0	17.6
Jun-21	50.1	71.3	64.1	59.1	88.3	75.2	11.1	108.0	32.8	26.0	14.9
Jul-21	67.3	77.9	72.7	77.3	95.0	84.3	11.5	108.0	23.7	26.0	14.5
Aug-21	69.1	84.1	74.7	79.4	96.6	86.6	11.9	108.0	21.4	26.0	14.1
Sep-21	65.6	79.4	71.0	70.9	90.5	81.9	10.9	108.0	26.1	26.0	15.1
Oct-21	42.7	69.6	64.6	61.8	85.3	73.7	9.1	108.0	34.3	26.0	16.9
Nov-21	45.3	61.6	54.1	57.9	74.5	65.0	10.8	86.0	21.0	31.0	20.2

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

Greenidge is not aware of any estimates or models regarding energy costs to local families and businesses. The Dresden facility is different than most other mining facilities in that it does not take power for bitcoin mining from the local energy grid. Rather, the Facility is a power generation operation, and sends a significant amount of the electricity it generates *to* the NYISO energy grid.

Cryptocurrency mining at the facility in Dresden should therefore not cause local energy electricity costs to increase. To the contrary, in 2020 Greenidge was accepted into NYISO's Behind-the-Meter Generation program, which was established to "*promote distributed generation, strengthen system resiliency and improve grid reliability*." Greenidge operates an integrated bitcoin mining operation behind-the-meter while still supplying electricity, capacity, and ancillary services to the NYISO wholesale market—fully consistent with the intent of the NYISO's Behind-the-Meter Generation program. The Facility no longer receives capacity payments from the NYISO for its behind-the-meter consumption which, in turn, lowers the capacity cost of the Facility to the NYISO energy grid and customers. Despite receiving no capacity payments for its behind-the-meter electrical consumption, the Facility is still capable of idling its bitcoin mining in order to provide 100% of its electrical production to the grid in times of need. This has the effect of providing emergency backup power capacity to the grid at no cost.

Because bitcoin mining allows us to operate 24/7, the Facility is on standby for the NYISO every hour it is operating and can be ramped up to provide maximum power to the NYISO energy grid in approximately one hour, without a start-up charge. This is in contrast to the Facility's operating model prior to bitcoin mining which required 14 hours of startup time and an associated start-up charge that was ultimately paid for by electricity customers. With the Facility's new operating model, every MWh the Facility supplies to the NYISO energy grid is guaranteed to be the lowest cost MWh available to the NYISO at that time.

While Greenidge is not aware of any studies regarding the impacts (positive or negative) that the Facility operation has on local electric bills, it is confident the overall economic benefit of Greenidge to jobs and wages is profound and measurable, as previously detailed.

* * *

BIT DIGITAL

February 18, 2022

The Hon. Elizabeth Warren
United States Senator
309 Hart Senate Office Building
Washington, DC 20510

Dear Senator Warren and Colleagues:

This document is in response to the questions posed to our company in your letter received on January 27.

As a sustainability-focused bitcoin miner with operations across the U.S., we welcome this opportunity to share information regarding our evolving operation and industry. At Bit Digital, we understand that to be successful, our company's operations must drive innovation and economic progress for all members of society, while doing so in a sustainable and eco-friendly manner.

Both our executive leadership team and key investors agree that it is correct and warranted for policymakers to demand that our nation's digital mining industry take shape in a manner that contributes to the long-term economic and environmental benefit of all.

With almost 170 million viewers recently witnessing an array of digital asset related advertisements and commercials during this year's Super Bowl webcast and telecast, there is little doubt that this technological revolution is upon us all. Fortunately, the United States stands well-positioned to maintain and grow its prominent status in this new financial frontier—while doing so in a more eco-friendly manner than nearly any other participating country around the globe.

We believe that Bit Digital is, and will continue to be, a leading partner in helping achieve and shape the environmental mitigation objectives that are shared by many policymakers. Our company welcomes this inquiry and dialogue, as we have a strong commitment to environmental sustainability, and the growing track-record to prove it.

Enclosed please find additional information and data provided by our company.

Sincerely,

Bryan Bullett
Chief Executive Officer
Bit Digital, Inc.

Cc: Offices of Hon. Sheldon Whitehouse, Hon. Jeffrey A. Merkley, Hon. Margaret Wood Hassan, Hon. Edward J. Markey, Hon. Rashida Talib, Hon. Jared Huffman, and Hon. Katie Porter

Investor Notice

Investing in our securities involves a high degree of risk. Before making an investment decision, you should carefully consider the risks, uncertainties and forward-looking statements described under "Risk Factors" in Item 3.D of our most recent Annual Report on Form 20-F for the fiscal year ended December 31, 2020. If any material risk was to occur, our business, financial condition or results of operations would likely suffer. In that event, the value of our securities could decline, and you could lose part or all of your investment. The risks and uncertainties we describe are not the only ones facing us. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. In addition, our past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results in the future. Future changes in the network-wide mining difficulty rate or Bitcoin hash rate may also materially affect the future performance of Bit Digital's production of bitcoin. Additionally, all discussions of financial metrics assume mining difficulty rates as of September 2021. See "Safe Harbor Statement" below.

Safe Harbor Statement

This document may contain certain "forward-looking statements" relating to the business of Bit Digital, Inc., and its subsidiaries. All statements, other than statements of historical fact included herein are "forward-looking statements." These forward-looking statements are often identified by the use of forward-looking terminology such as "believes," "expects," or similar expressions, involving known and unknown risks and uncertainties. Although the company believes that the expectations reflected in these forward-looking statements are reasonable, they do involve assumptions, risks and uncertainties, and these expectations may prove to be incorrect. Investors should not place undue reliance on these forward-looking statements, which speak only as of the date of this press release. The Company's actual results could differ materially from those anticipated in these forward-looking statements as a result of a variety of factors, including those discussed in the Company's periodic reports that are filed with the Securities and Exchange Commission and available on its website at http://www.sec.gov. All forward-looking statements attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by these factors. Other than as required under the securities laws, the Company does not assume a duty to update these forward-looking statements.
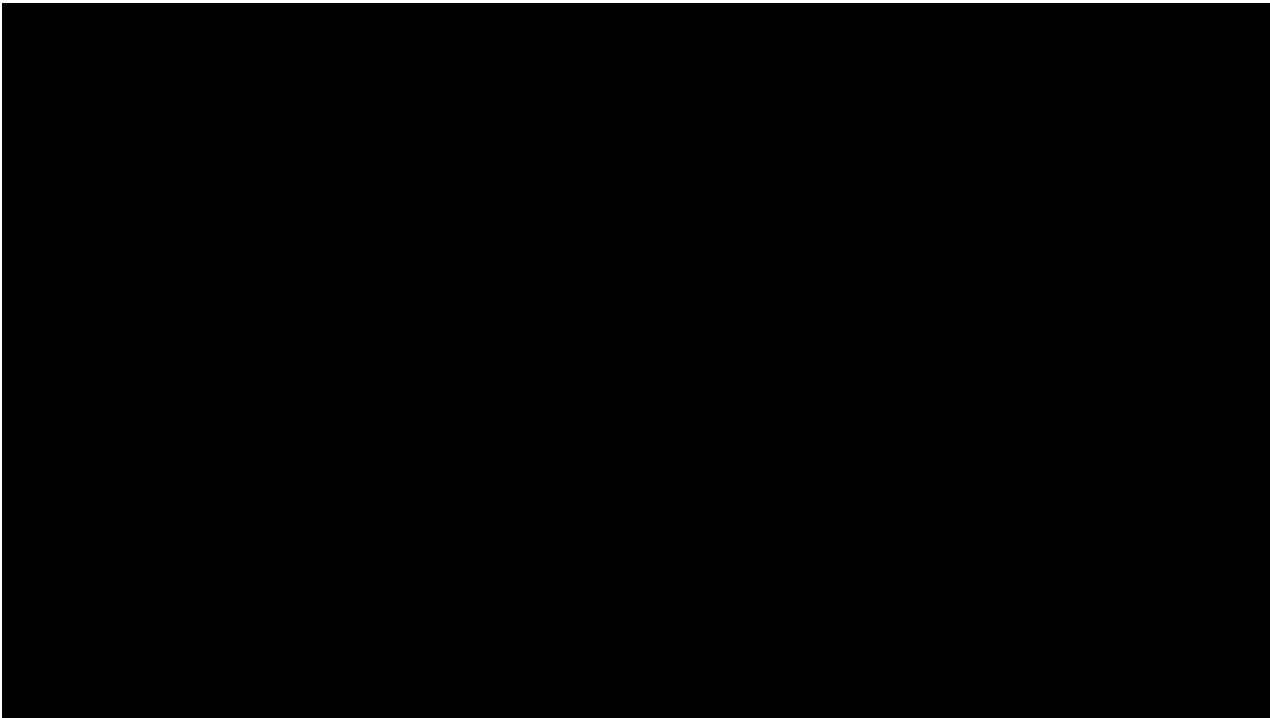
QUESTION 1:   Please describe your U.S.-based cryptomining facilities, including where they are located, the mining capacity of each facility, and the number of mining units at each facility.

Bit Digital does not currently own cryptocurrency mining facilities. The Company has signed services agreements with third party hosting partners in North America. Our partners operate specialized mining data centers, where pursuant to our agreements, they install and operate our miners and provide IT consulting, maintenance, and repair work on-site on our behalf.

As of December 31, 2021, Bit Digital's miners operated at five such third-party sites in the U.S. Our mining facilities in Nebraska and Texas are owned and operated by Compute North LLC. Our mining facilities in New York State are maintained by BlockFusion USA, Inc. and Digihost Technology Inc. Our mining facility in Georgia is owned and operated by Core Scientific, Inc.

The following information summarizes our operations as of December 31, 2021 at each third-party facility, and total power capacity contracted by Bit Digital with each partner, including unidentified future sites.[1]

Table 1: Summary of third-party hosting facilities as of December 31, 2021

Redacted for Confidentiality Purposes

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[1] Reflects Bit Digital's contracted capacity, not total site capacity. Bit Digital does not own the sites, and only has current or future access to power for which it has contracted, not the total site capacity.

The following is an overview of significant Bit Digital operating and/or identified third-party data center sites, including commentary on power generation sources: [2]

Compute North, Kearney, NE

Chosen for its ideal location in America's heartland and its direct access to a variety of energy sources, this 100MW-capacity data center utilizes a containerized model, built to optimize power and heat management in a tightly integrated framework, specifically designed for high-computing needs. Key statistics:

- MW: 100
- Provider: NPPD
- 65%+ Carbon-Free

Compute North, Big Spring, TX

Our Texas data center facility, strategically located for access to cost-effective energy sources, is a former World War II hanger. It is a large, robust building with the core infrastructure to adapt to the evolving needs of blockchain colocation. Key statistics:

- MW: 15
- Provider: MP2
- 33.7% Carbon-Free

Blockfusion USA, Niagara Falls, NY

- Blockfusion's Frontier Ave site is located in Niagara Falls, New York and pulls electricity from NYISO's Western Zone (Zone A). National Grid is the local distribution utility and Blockfusion has the ability to pull up to ~40MW's of electricity from their system.

- Upstate New York benefits from abundant hydroelectric generation as well as carbon free nuclear generation. The electricity used at Frontier Ave is supplied by the upstate New York generation mix, which is more than 90% zero emissions, and 50% renewable.

- This data was published by the NYISO in it's annual "Power Trends" report, but also highlighted in the recently issued "10 GW Distributed Solar Roadmap" (DMM CASE 21-E-0629) by the NYS Department of Public Service, which stated, *"Although Downstate development carries unique challenges, it also has crucial benefits. According to the NYISO's Power Trends 2021 report, the Upstate region, defined as NYISO load zones A – E, is supplied by 90% zero-emission resources, while the Downstate region (zones F - K) is supplied by 77% fossil fuel-fired generation."* Having abundant zero emissions generation played a significant role in site evaluation and ultimately choosing Western New York as a location for our facility.

- Blockfusion has further reduced its carbon footprint through its participation in demand side reduction programs. Due to the unique flexibility of its load, Blockfusion's Frontier Ave facility offers significant benefits to grid reliability, but can shut down load during peak times of

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[2] Information provided by hosting partners.

demand. Shutting down power during peak demand periods means that the grid operator won't need to import fossil fuel generation from a neighboring ISO, or fire up a rapid start generation unit to meet the increase in demand. Typically, the units dispatched to meet increases in demand are fueled by Natural Gas – given their quick response time.

- Blockfusion is also in the process of entering into a long-term Community Solar Agreement with its local supply partner. This deal would enable Blockfusion to remotely connect their utility account to a nearby large-scale solar project, and receive credits for the participation. Committing to a long-term contract to be the "Anchor" subscriber helps aid in the development of renewable generation projects, and also helps NYS achieve its ambitious renewable energy goals. Blockfusion will be the anchor on a 6.25MWdc project which produces approximately 9,000 MWh's of renewable electricity each year. The 9,000 MWh's of renewable electricity offsets approximately 2,780 metric tons of carbon, which would have been generated by fossil fuel generation.

Digihost Technologies, Buffalo, NY

- Digihost's East Delevan site is located in Buffalo, New York and pulls electricity from NYISO's Western Zone (Zone A). Upstate New York benefits from abundant hydroelectric generation as well as carbon free nuclear generation. East Delevan has the capability to pull roughly 19 MW's of electricity directly from National Grid.

- The electricity used at East Delevan is supplied by the upstate New York generation mix, which is more than 90% zero emissions, and 50% renewable.

- This data was published by the NYISO in it's annual "Power Trends" report, but also highlighted in the recently issued "10 GW Distributed Solar Roadmap" (DMM CASE 21-E-0629) by the NYS Department of Public Service, which stated, *"Although Downstate development carries unique challenges, it also has crucial benefits. According to the NYISO's Power Trends 2021 report, the Upstate region, defined as NYISO load zones A – E, is supplied by 90% zero-emission resources, while the Downstate region (zones F - K) is supplied by 77% fossil fuel-fired generation."* Having abundant zero emissions generation played a significant role in site evaluation and ultimately choosing Western New York as a location for our facility.

- In addition to the physical electricity being more than 90% emission free, Digihost has entered into a long-term Community Solar contract for its East Delevan facility. This enables Digihost to remotely connect to a New York State solar facility, and receive credits for its participation in the project. This long-term commitment aids in the development of current and future renewable projects, and helps NYS achieve its ambitious renewable energy goals. Digihost will be the anchor subscriber on a 6.25 MWdc project, which will generate more than 9,000 MWh's of clean electricity each year. This is enough electricity to power roughly 100 average homes each year. The 9,000 MWh's of renewable electricity offsets approximately 2,780 metric tons of carbon, which would have been generated by fossil fuel generation.

Digihost Technologies, North Tonawanda, NY

- Digihost's 1070 Erie Ave location is located in North Tonawanda, NY. This facility is also located in NYISO's Western Zone (Zone A).

- This facility will generate electricity primarily fueled by Natural Gas, and will supply on site load. It also includes a heat recapturing system which powers a steam turbine, increasing load by 50% with no additional fuel or carbon emissions.

- Digihost is working with local partners to source physical Renewable Natural Gas (RNG) produced by nearby landfill & Ag projects that generate the Natural Gas.

- The RNG will be transported via firm pipeline capacity from the RNG facility and to the end use facility in North Tonawanda.

- Digihost is planning to source approximately 5,100 Dths of this RNG daily, or roughly 50% of it's daily natural gas consumption.

- Digihost plans on purchasing the remainder of its natural gas supply in the form of "Responsibly Sourced Gas" (RSG) from nearby vertical wells in New York State. This Natural Gas is produced by companies whose operations have been verified as meeting certain environmental standards including air emissions, water stewardship and environmental impact.

QUESTION 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?**

The following table presents Bit Digital's total energy consumption and estimated CO2 emissions for the twelve months ended December 31, 2021, based on internal calculations. Please see table footnote for details on the calculation methodology used. For conservatism, this table presents what we believe to be a high estimate of CO2 emissions, as the underlying data source is national marginal CO2 emissions, and Bit Digital's facilities generally operate in locations with a significantly higher percentage of carbon-free generation sources than the national average (see also 2. a. above). As a result, Bit Digital's actual 2021 carbon emissions were likely significantly lower than the estimate below.

Table 2: Total energy consumption and estimated CO2 emissions for the twelve months ended December 31, 2021

Site Owner/Operator	Location	KWh	CO2 tons [1]
Compute North	Big Spring, TX	1,733,742	1,229
Compute North	Kearney, NE	111,909,603	79,344
Blockfusion USA	Niagara Falls, NY	12,777,375	9,059
Digihost Technologies	Buffalo, NY	1,102,090	781
Core Scientific	Dalton, GA	2,370,181	1,680
Total		**129,892,991**	**92,094**

Notes:
(1) Calculation methodology based on the Economic Input-Output Life Cycle Assessment (EIO-LCA), Scope 2, Carnegie Mellon University, http://www.eiolca.net/. Emission factor: 1,562.4 lbs CO_2/MWh × (4.536 × 10-4 metric tons/lb) × 0.001 MWh/kWh = 7.09 × 10-4 metric tons CO_2/kWh (AVERT, U.S. national weighted average CO2 marginal emission rate, year 2019 data).

QUESTION 2. 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. Please describe the sources of this electricity.

As of December 31, 20921, Bit Digital's run-rate percentage of carbon-free energy generation sources for our deployed miner operations is 67.3%.[3] The generation data supporting this calculation, based on information from publicly available sources and hosting partners, is as follows:

Table 2a-1.1: Energy generation sources
Blockfusion USA and Digihost Technology
New York Upstate (Zones A-E) [1]

Generation Source	%
Hydro	42.7%
Nuclear	41.2%
Wind	6.5%
Hydro Pumped Storage	0.6%
Other Renewables	1.2%
Gas	7.0%
Oil	0.0%
Dual Fuel (Gas/Oil)	0.7%
Coal	0.2%
Total	100.0%
Carbon-Free	**90.0%**

Table 2a-1.2: Energy generation sources
Compute North
Kearney, NE [2]

Generation Source	%
Nuclear	48.6%
Wind	8.3%
Hydro	8.0%
QLG [3]	0.1%
Purchases	9.9%
Gas/Oil	5.2%
Coal	19.9%
Total	100.0%
Carbon-Free	**65.0%**

Table 2a-1.3: Energy generation sources
Compute North
Big Spring, Texas [4]

Generation Source	%
Wind	24.8%
Nuclear	4.9%
Solar	3.8%
Other	1.9%
Storage	0.2%
Natural Gas	51.0%
Coal	13.4%
Total	100.0%
Carbon-Free	**33.7%**

Table 2a-1.4: Energy generation sources
Core Scientific
Dalton, Gerogia [5]

Generation Source	%
Nuclear	N/A
Coal	N/A
Natural Gas	N/A
Hydro	N/A
Solar	N/A
Total	N/A
Carbon-Free	**N/A**

Notes:
(1) Source: New York Independent System Operator (NYISO), https://www.nyiso.com/-/fuel-for-the-wire-power-trends-2020.
(2) Source: Nebraska Public Power District, https://www.nppd.com/powering-nebraska/energy-resources.
(3) Qualified Local Generation includes renewable energy facilities installed by wholesale customers and in NPPD retail communities.
(4) Source: Compute North LLC.
(5) Source: Dalton Utilities. Note: percentages not publicly available.

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[3] Although Core Scientific's Dalton, GA site includes carbon-free generation sources including nuclear, hydro and solar, for purposes of this analysis the site is assumed to be 0% carbon-free, as the breakout is not currently publicly available.

Based on the above generation sources and Bit Digital's deployed operations as of December 31, 2021, we calculate Bit Digital's run-rate percentage of carbon free energy as follows:

Table 2a-2: Calculation of carbon-free energy percentage as of December 31, 2021

Site Owner/Operator	Location	Run-Rate Power Consumption (MwH)	Carbon-Free Percentage
Blockfusion USA	Niagara Falls, NY	5.2	90.0%
Digihost Technologies	Buffalo, NY	0.3	90.0%
Compute North	Kearney, NE	18.9	65.0%
Compute North	Big Spring, TX	2.0	37.5%
Core Scientific [1]	Dalton, GA	0.3	0.0%
Total / Weighted Average		**26.7**	**67.3%**

Notes:
(1) Although Core Scientific's Dalton, GA site includes carbon-free generation sources including nuclear, hydro and solar, for purposes of this analysis the site is assumed to be 0% carbon-free, as the breakout is not currently publicly available.

QUESTION 2. b: You have a goal of 100% clean energy usage. What is your timeline for achieving that goal, and what measurable intermediate steps have you set in working towards that?

Bit Digital has taken a step towards decarbonization by signing the Crypto Climate Accord (CCA). Inspired by the Paris Climate Agreement, the CCA is a private sector-led initiative for the entire crypto community focused on decarbonizing the cryptocurrency and blockchain industry in record time. As a CCA signatory, Bit Digital has committed to achieve net-zero emissions from the electricity consumption associated with its respective crypto-related operations by 2030 and to report progress towards this net-zero emissions target using best industry practices.

Bit Digital has also become a member of the Bitcoin Mining Council (BMC). The BMC's mission is to promote industry transparency, share best practices and educate the public on the benefits of bitcoin and mining. Bit Digital has participated in the latest BMC survey of sustainable power and is currently refining its strategy to further prioritize the use of carbon-free energy to support Digital's goal of operating on 100% carbon-free power.

To move tangibly towards our goal of 100% clean energy usage, our Company has added more clean power through recent hosting services agreements.

One of our key new locations is in Niagara Falls, New York: a former coal-burning power plant that has been converted into an innovative, sophisticated, and nearly carbon-free operation. Through our partnership with Blockfusion USA, Inc., who actively manages the site, this operation directly and indirectly employs more than 50 area residents via well-paying, skilled jobs (with plans to rapidly increase this workforce). Our energy at the Niagara Falls facility is 90% from carbon-free sources, notably hydropower provided by the nearby Robert Moses Niagara Hydroelectric Power Station (one of the largest in hydro generation sites the nation).

Our efforts in Niagara Falls have been recently chronicled by the *Wall Street Journal* and NBC. And many municipal leaders and constituents have recognized the forward progress—practically and symbolically—in converting a former fossil fuel facility to use clean power. The coal is gone, but this renewed facility has brought back jobs to an economically depressed area.

Additionally, working with certain hosting partners, Bit Digital has evaluated opportunities to participate in the development of new renewable energy generation projects as a customer and/or a sponsor. In such scenarios, bitcoin mining is generally envisioned as a base load customer for a project with capacity in excess of the miner client that would be available to the power grid.

Finally, Bit Digital has also evaluated opportunities to utilize novel and emerging technologies with potential to deliver green power at scale, as potential alternative energy sources. We have done so in part through our relationship with a leading CleanTech-focused investment company.

QUESTION 2. 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." Please describe what other actions you are taking to work towards this stated goal.

Bit Digital has engaged Apex ESG, to monitor, set targets, provide transparency, and drive sustainability initiatives. This involves becoming one of the first publicly listed bitcoin miners to receive an independent ESG rating on its operations.

Additionally, Bit Digital recently adopted an internal Environmental Policy. This policy is designed to articulate the approach that Bit Digital takes in establishing its environmental objectives and addressing its environmental impact. This manifests through a commitment to identifying and addressing environmental risks and value creation opportunities throughout its operations. The policy also aims to disclose the key environmental goals and strategies of the organization and in subsequent years the efforts made to achieve these goals.

A further objective of this policy is to communicate the environmental approach of Bit Digital to its key stakeholders. This policy covers all employees, contractors and joint ventures. Therefore, the policy will be communicated to all stakeholders to ensure they are aware of the organization's environmental objectives and values.

In terms of actions, the organization commits to measure and report greenhouse gas emissions at least annually and implement decarbonization strategies in line with the Paris Agreement. This will be achieved through real business change and innovations, including efficiency improvements, renewable energy, materials reductions and other carbon emission elimination strategies.

Bit Digital has identified the organization's main environmental impacts and the associated management approaches to mitigate them. These environmental impacts are outlined in the Policy.

In additional to input energy sources, another significant environmental impact reviewed will be the amount of e-waste produced from operations. Bit Digital therefore aims to monitor the annual waste generated, waste reused or recycled and hazardous waste annually starting in 2022. Bit Digital has also begun monitoring the miner manufacturing environmental impact using the Economic Input-Output Life Cycle Assessment (EIO-LCA) data model. This model estimates the materials and energy resources required for, and the environmental emissions resulting from, activities in our economy. Bit Digital aims to use this data to help quantity the environmental impacts of its operations.

In terms of the organization's climate change governance, Bit Digital aims to ensure that its management and board have a high level of oversight to monitor and manage the organization's climate-related risks and opportunities. Progress on climate change targets and metrics will also be regularly reported to the board and senior management.

QUESTION 3: Your website states that Bit Digital has an "aggressive growth plan focused on increasing capacity month-on-month." Please describe your plans, if any, to scale your cryptomining operations.

As of December 31, 2021, our currently-owned mining fleet comprised 27,744 bitcoin miners and 731 Ethereum miners, representing approximately 1.6 exahash (EH/s) of computing power. We recently announced a forward purchase agreement with supplier Bitmain for an additional 10,000 bitcoin mining units representing 1.0 EH/s of computing power. We anticipate delivery of these units from March through June 2022, with 2,500 units expected each month. On a pro forma basis, including expected deliveries, our fleet is expected to represent 37,744 units and 2.6 EH/s.

Going forward, we anticipate purchasing additional miners through both the spot market and direct manufacturer purchase agreements, subject to market conditions and capital resources. Initially, newly purchased miners are expected to be deployed into excess hosting capacity for which we have contracted.

We have illustrated our potential expansion capacity as follows. As of December 31, 2021, Bit Digital had contracted for 73.6 MW of hosting in excess of the needs of our currently owned fleet and announced purchases. If current-generation 100 TH/s miners were deployed into this excess hosting capacity, this would imply an additional 24,546 miner units and an additional 2.5 EH/s of computing power. The following table illustrates this expansion capacity:

Table 3: Projected fleet expansion based on contracted hosting power

Expansion power contracted as of 12/31/2021	73.6	MW
Unit power consumption	0.003	MW
Implied fleet growth capacity	**24,546**	**Units**
Hash rate per unit	100.0	TH/s
Implied hash rate expansion	**2.5**	**EH/s**

Note: Not a guarantee of future results.

QUESTION 3. 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?

The table below presents Bit Digital's estimated run-rate energy consumption for its mining operations as of the end of each year, based on currently contracted hosting capacity and management's current estimates of deployment timing for sites currently under development or as-yet unidentified, and assuming full utilization. Please see table footnotes for details of the calculation methodology used.

Note that for conservatism, this table presents what we believe to be a high estimate of CO_2 emissions, as the underlying data source is national marginal CO_2 emissions. Bit Digital's facilities generally operate in locations with a higher percentage of carbon-free generation sources than the national average (see also 2. a. above). As a result, Bit Digital's actual future carbon emissions may be materially less than the estimate below.

Table 3a: Projected energy consumption and CO2 emissions based on contracted hosting capacity as of December 31, 2021

	Run-rate as of year-end				
	2022	2023	2024	2025	2026
MW	173	195	195	195	195
MWh	1,516,356	1,698,650	1,698,650	1,698,650	1,698,650
CO2 tons [1]	1,075,096	1,204,343	1,204,343	1,204,343	1,204,343

Notes:
(1) Calculation methodology based on the Economic Input-Output Life Cycle Assessment (EIO-LCA), Scope 2, Carnegie Mellon University, http://www.eiolca.net/. Emission factor: 1,562.4 lbs CO2/MWh × (4.536 × 10-4 metric tons/lb) × 0.001 MWh/kWh = 7.09 × 10-4 metric tons CO2/kWh (AVERT, U.S. national weighted average CO2 marginal emission rate, year 2019 data).

QUESTION 3. b: What specific plans do you have to address the environmental impact of your increased operations?

As stated elsewhere herein, Bit Digital expects to continue the following practices to address environmental impacts as our operations grow:

- Prioritize carbon-free power in our sourcing and selection of new hosting facility agreements.
- Continue to evaluate opportunities to participate in the development of new renewable energy generation projects as a customer and/or a sponsor, with objective of activating new renewable energy sources that become available more broadly than just to power our operations; and when possible, act on such opportunities.
- Continue to evaluate novel and emerging technologies with potential to deliver green power at scale, as potential alternative energy sources.
- With respect to any current or future facilities with on-site gas generation, work with hosting partners and facility operators to ensure that at least 50% of input fuels are in the form of RNG, with the remainder sourced from Responsibly Sourced Gas (RSG).
- Adhere to and evolve our Environmental Policy, and continually collect data to assess progress and guide data-driven decision making.

QUESTION 4: Bit Digital is a "participant in a voluntary energy-curtailment program." 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.

Through our hosting partners, Bit Digital participates in demand side curtailment programs, where available. Participating in such programs means we voluntarily allow the grid operator to shut us down when it needs to, generally during extreme weather events and other periods of peak demand. This redirects power to households and mission-critical users such as hospitals. By reducing overall demand, the grid operator is less likely to call on rapid generation from fossil fuels.

A unique aspect of mining is that it does not need to run 24/7, so it can be a critical load-balancing partner to the grid. Load balancing will become increasingly important as more intermittent renewables are brought online nationwide. Renewables such as solar and wind power present challenges for many areas of the grid, which often lacks the flexibility to accommodate such sources, which may result in renewable supplies going unused in favor of the more steady output produced by fossil fuels.

Mining is an ideal grid partner for intermittent renewables, like wind and solar, because it can be turned off without damage. Participating in curtailment programs is another way in which miners like Bit Digital are contributing to our energy future.

Recognizing the importance of load-balancing, we would respectfully submit that the legislature considers rewarding miners who participate in curtailment programs, where such programs are available, and encouraging them where they are not.

Following is a summary of demand response and curtailment programs at each of Bit Digitals' partner's sites (information provided by our partners):

Compute North (Kearney, NE and Big Spring, TX)
- Big Spring, TX – We're a load resource for ERCOT providing demand response services. In addition to this, we also have voluntary curtailment at points where we see cautionary or strained systems on the ERCOT grid.
- Kearney, NE – We're an operating reserves asset for SPP providing load balancing / grid balancing services. In addition to this, we have a great working relationship with the local utility in the instances where the local utility needs support they can (and have) called upon us to reduce load to support the local grid.
- In both cases (Big Spring and Kearney), we can respond in less than 10 minutes to curtail our load and reduce our usage to essentially 0. We can do this in the event that the utility calls, the grid operator calls, or in a known potential emergency situation as we see the grid being constrained we'll proactively curtail ahead of any call.
- See also: Press Release – Compute North Supports Request to Reduce Energy Use During Storm Restoration by Nebraska Public Power District

Blockfusion USA, Niagara Falls, NY

- National Grid and the wholesale system operator, the New York Independent System Operator (NYISO), offer programs to customers to reduce electricity usage when demand on the grid is highest. Known as demand response programs, they help avoid overload, reduce emissions, and avoid expensive equipment upgrades. Large energy users can participate in a demand response program and receive payments for reducing the use of electricity from the grid during periods of highest electricity demand. These periods of extreme energy use usually occur on the hottest days in the summer.

- Blockfusion participates in 3 Demand Side programs (currently testing DSASP but has telemetry installed to enter into market withing the next 30 days):
  - **NYISO Special Case Resources (SCR) Program –** This is a "Reliability" program offered by the NYISO
  - **National Grid Commercial System Relief Program (CSRP) –** This is another "Reliability" program offered from the local distribution utility
  - **NYISO Demand Side Ancillary Services Program (DSASP)** – This is an "Economic" program offered by the NYISO.

- Both the SCR & CSRP programs are geared towards Blockfusion lowering its electricity usage during peak demand periods of the grid. The DSASP program is an "Economic" program that is essentially a fast demand response program with a direct and instantaneous communication between the customer and the NYISO. There aren't many resources that can participate in this program, but due to the ability of Blockfusion to reduce load via software and remotely, they are a perfect fit.

- **National Grid CSRP Program:** Aims to reduce peak demand at the network level by calling on customers to reduce energy use during a Load Relief Period. Load Relief Periods for a Planned CSRP Event can be requested during the Capability Period, Monday-Friday, excluding federal holidays. For a Planned CSRP Event, a day-ahead advisory notice (21 hours or more prior to dispatch) is triggered when the day-ahead system peak demand forecast reaches 92% of the overall summer peak demand forecast. The forecast must remain at 92% or higher on the day of the event or the event can be cancelled. A day-of notification is sent at least two hours ahead of each respective customer's call window. Less than 21 hours of notice may be provided for an Unplanned CSRP Event.

- **NYISO SCR Program:** Similar to National Grid's reliability program, the NYISO has its own demand reduction program aimed at ensuring grid stability. Large users of electricity with an hourly interval meter can enroll in this program, and reduce load during peak demand days. Participants drop a predetermined amount of load when called upon, typically for 4 hours of the afternoon. These "events" are generally called between 2pm-7pm on Monday through Friday. Given the unique flexibility of Blockfusion's operations, we typically enter in more than 90% of our electricity load into these demand response programs. When called on, we reduce power down to nearly zero, which offers immediate relief to the grid.

- **NYISO DSASP Program:** This relatively new NYISO level program is essentially a rapid response Demand Response program, where the participant has sophisticated telemetry equipment installed at their site, and has direct communication and integration with the NYISO control center. Resources that participate in this program, when an event is called, follow commands from the NYISO and regulate load upwards or downwards in specific kW blocks. For example, when an event is called, Blockfusion will need to regulate load from 8 MWs, down to 7.3 MWs, and then back up to 8.3MWs. This program provides unique ancillary service to the NYISO grid, and provides rapid location specific load regulation when needed.
- For further information, please see:
  - Education video documenting a recent shutdown event at Blockfusion site: https://vimeo.com/678853573
  - Appendix: Sample actual recent curtailment order, Blockfusion USA
  - Appendix: Demand Response Programs Detail, Blockfusion USA

Digihost Technology, Buffalo, NY

- Digihost has further reduced its carbon footprint through its participation in demand side reduction programs. Due to the unique flexibility of its load, Digihost's East Delevan facility offers significant benefits to grid reliability, but can shut down load during peak times of demand. Shutting down power during peak demand periods means that the grid operator won't need to import fossil fuel generation from a neighboring ISO, or fire up a rapid start generation unit to meet the increase in demand. Typically, the units dispatched to meet increases in demand are fueled by Natural Gas – given their quick response time.
- Recently Digihost was featured in a press release from its partner CPower, showcasing its participation in these programs (https://www.prnewswire.com/news-releases/cpower-introduces-cpowered-performance-solutions-for-data-centers-to-optimize-distributed-energy-resources-301403910.html) "Today, the company announced that Digihost, a blockchain technology company primarily focused on bitcoin mining, avoided nearly 150 metric tons of marginal CO2, with just 29 hours of demand response participation at its facility in Buffalo, New York. This is the equivalent of mitigating more than 164 tons coal burning avoidance or sequestering 182 acres of US forests for one year. Digihost's site reduced marginal carbon emissions by 5.1 tons per hour of demand response participation – the equivalent of 5,637 tons of coal burned per hour"
- Digihost was nominated for the Data Center Dynamics (DCD) Carbon Champion award for it's Demand Response participation and performance in 2021.

QUESTION 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 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?

Bit Digital has not produced such estimates or models, in part because it is counterintuitive to believe that our operations would have any meaningful impact on energy costs to other users. Bitcoin mining is often referred to as the energy user of last resort, because it is both portable and tends to seek out the lowest-cost power available. Lower-cost power is generally the result of an oversupply or waste of power, limited demand, or a combination. Accordingly, Bit Digital's operations tend to be located in lower-density, industrial or rural areas, generally with significant supplies of power and a limited local user base.

An example of this dynamic may be seen in the Buffalo – Niagara Falls (New York) region, where Bit Digital has current and future planned operations through its partners Blockfusion USA and Digihost Technology. The area was a former manufacturing powerhouse. In the last century, industry flocked to the region in part due to the abundant, affordable hydroelectric power generated from the Niagara River. In recent decades, however, large swaths of the manufacturing base left the area due to "offshoring". Today, the region retains a significant installed base of electrical infrastructure, and thanks to its proximity to the Robert Moses Niagara Hydroelectric Power Station (one of the largest in the nation), an ample supply of clean power with fewer alternate users. This has attracted bitcoin mining companies including Bit Digital, bringing needed technology jobs to this economically depressed area. [Number of jobs in Niagara Falls].

Another factor suggesting that Bit Digital, and bitcoin mining in general, is unlikely to impact energy costs is its very small energy footprint on a relative basis. On average, during 2021, Bit Digital consumed only 0.0179% of the total energy generation in states in which it operated. The following table summarizes Bit Digital's 2021 energy consumption as a percentage of total energy in each state:

Table 5: Bit Digital's 2021 electricity consumption as a percentage of total electricity generation, by state and total

	New York [1]	Nebraska [2]	Texas [3]	Georgia [4]	Total
State total electricity generation (TWh)	135 8	37 3	429 8	122 3	725 2
Bit Digital 2021 consumption (KWh)	13,879,465	111,909,603	1,733,742	2,370,181	129,892,991
Bit Digital as a % of total generation	0 0102%	0 3000%	0 0004%	0 0019%	0 0179%

Notes:
(1) Source: U S Department of Energy, https://www energy gov/sites/prod/files/2016/09/f33/NY_Energy%20Sector%20Risk%20Profile_0 pdf
(2) Source: U S Department of Energy, https://www energy gov/sites/default/files/2021-09/Nebraska%20Energy%20Sector%20Risk%20Profile pdf
(3) Source: U S Department of Energy, https://www energy gov/sites/prod/files/2016/09/f33/TX_Energy%20Sector%20Risk%20Profile pdf
(4) Source: U S Department of Energy, https://www energy gov/sites/prod/files/2016/09/f33/GA_Energy%20Sector%20Risk%20Profile pdf

At the global level, bitcoin mining consumes only 0.14% of global energy supply. Further, considering that a third of all worldwide energy is wasted, mining represents only 0.44% of the world's wasted energy. [4]

Putting mining's energy consumption into context in this way illustrates the negligible impact mining is likely to have on energy costs, if any.

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[4] Source: Global Bitcoin Mining Data Review, Q4 2021, Slide 5, https://bitcoinminingcouncil.com/wp-content/uploads/2022/01/2022.01.18-BMC-Q4-2021.pdf

Conclusion

The world needs to decarbonize. And the prospect of driving the global economy toward a more sustainable path through the realization of digital assets is one of the great opportunities of the 21st century. We in the digital mining industry—as well as policymakers—have a real opportunity to help contribute to the most pressing issue of our time. At Bit Digital, we call this "Satoshi's second gift."

We welcome you calling on Bit Digital and for any insights, information, or operational knowledge we may share as you look to advance future studies or regulation related to digital mining in the United States.

While there are certainly less sustainability-focused actors operating within the U.S., it is critical that those who have built their business models on a sustainable platform of growth be the ones who are called on to collaborate on the future of digital mining laws and regulations at the State and Federal government levels.

Thank you once again for your time and attention to this response.

Appendix: Sample actual recent curtailment order, Blockfusion USA

From: **CPower Dispatch** <cpowerdispatch@mg.cpowerenergymanagement.com>
Date: Wed, Feb 16, 2022 at 9:29 AM
Subject: URGENT: New York State Grid Operator - SCR - Demand Response TEST today - Wednesday, February 16, 2022
To: Kant Trivedi <kant.trivedi@blockfusion.com>

URGENT: New York State Grid Operator - SCR - Demand Response TEST today - Wednesday, February 16, 2022

Hi, this is Rory from the CPower Dispatch Team, with an important **CURTAILMENT** alert for you.

New York State Grid Operator has informed CPower of a *SCR - Demand Response TEST today, Wednesday, February 16, 2022 starting at 06:00 PM (EST)*. The test start time found below is the time your load or loads need to be fully curtailed and you should remain down until the test end time.

- Dispatch Test For: **New York State Grid Operator - SCR - Demand Response**
- **This is a mandatory TEST, you must curtail your load**
- Test will Start at: **06:00 PM (EST) On 02/16/2022 - begin curtailing your load at least 10 minutes before**
- Test will End at: **07:00 PM (EST) On 02/16/2022 - do not begin to increase load until after this time**
- Impacted Zones: **A, B, C**

Below you will find the list of specific facilities impacted by this dispatch.

Facility Name	Address	Account Number	Dispatch Target
Northeast Data Niagara Falls NY	14, Niagara Falls NY 14304	1699937197	A

If you have any questions about this notification, please call the CPower Dispatch Team at (410) 346-5907 right away. You make it happen. We're here to help.

Thank you,

CPower Dispatch Team
24x7 Phone: (410) 346-5907
Email: CPowerDispatch@CPowerEnergyManagement.com

1. **What is Demand Response** – Demand Response (DR) is the practice of reducing a customer's electric demand from its normal usage pattern. Load curtailment, load shifting, use of (compliant) backup generation or other distributed energy resource (DER) technologies can all be viable methods of achieving the load reduction desired. Customers may participate in DR activities for a variety of purposes, the most common of which include for helping manage electric utility costs (commonly referred to as load management, peak shaving, etc.) or through programs administered by wholesale market operators or distribution utilities. Many utilities offer DR programs, although they come in various forms (such as interruptible rate tariffs, tariff riders) and can be focused on meeting different needs of the distribution system (such as reducing overall system peak demand, providing localized load relief to prevent disruption to specific distribution circuits, etc.). Wholesale market DR programs allow customers able to control their loads to provide wholesale market services including capacity (to meet resource adequacy requirements and primarily called upon during disturbances/emergencies on the bulk electric system), energy (DR resources competing against traditional generators on price), and ancillary services (providing operating reserves or regulation services to help wholesale market operators to maintain the supply/demand balance). It is also important to provide distinction between energy efficiency (EE) and DR, where EE involves implementing measures that provide a permanent load reduction, whereas DR is a load reduction for a discrete time interval (varying from seconds to minutes to multiple hours) that is achieved in response to the applicable program's dispatch trigger.

2. **Current DR Participation by EnergyMark's customers** –

   • **NYISO Installed Capacity (ICAP) Special Case Resources (SCR)** – NYISO's SCR program is an emergency capacity-style program that allows customers to participate in NYISO's ICAP market as a supply-side capacity resource, enrolling on a monthly basis for participation during summer (May-Oct) and winter (Nov-Dec) Capability Periods. SCR's must be able to provide a response 24/7 in each month in which it has enrolled and sold its capacity to the NYISO. The program is dispatched in response transmission system disturbances and as part of the NYISO's emergency operating procedures. The NYISO provides a day-ahead notice at least 21-hrs in advance of events and tests, as well as a confirmation/cancellation of the event/test at least two (2) hours prior of the event window. SCR participants required to demonstrate their load reduction at least once per seasonal Capability Period (during a test/audit event if no actual SCR events have been activated by the NYISO). SCR participants must be available to reduce their load down to or below a specified kW demand for at least four (4) hours (or for one hour for a test). Participants are compensated based upon the NYISO's ICAP Market clearing price for the Capacity Zone in which the participant is located for capacity committed and sold to the NYISO in each month. Participants are evaluated for performance against the amount of certified Unforced Capacity (UCAP) sold to the NYISO. The

amount of UCAP capacity available to be sold for a participant is based upon the difference between the participant's metered load during the event hour(s) and the calculated "Average Coincident Load" (ACL) (further adjustments are taken to account for transmission line losses, historic performance of the participant, and other factors). Each participant's ACL is based upon its average usage from the top 20 hours of usage taken from the top 40 peak NYISO Load Zone hours (as identified by the NYISO) from the prior like-Capability Period (ex. summer 2022 ACLs are calculated based upon hourly usage during summer 2021) . If a customer underperforms against its committed capacity obligation, or experiences a significant change in its load, the NYISO may assess penalties against the Responsible Interface Party (RIP) that represents the SCR participant as the NYISO Market Participant. Underperformance as well impacts the amount of UCAP that may be sold into future seasonal Capability Periods. In addition to the capacity payments made to SCR participants, energy payments are made for the kWh of load relief provided during events and any test/audit. A participant-specific baseline (called the Customer Baseline, or CBL) is calculated based upon the participant's highest electric usage during the event window hour(s) from the top five (5) of the previous ten (10) eligible days. A weather adjustment factor may also be applied in the case of weather-sensitive loads that may adjust the CBL up or down by +/- 20% to account for weather and temperature differences from the baseline day period and the event/test day. The kWh for performance eligible for energy payment is calculated based upon the participant's metered load during the event hour(s) subtracted from the CBL. The kWh reduced is paid at the applicable NYISO Location Based Marginal Price (LBMP) for the NYISO Load Zone in which the participant is located.

1. **Responsibilities of Participants** – SCR participants must be capable of providing four hours of DR capability when provided at least 21-hours of notice by the NYISO. Participants must also demonstrate their load reduction capability to drop to or below a specific load level at least once during each seasonal Capability Period in which it was enrolled and had capacity sold for in one month. Performance calculations performed after the fact inform payments and any penalties arising from non-performance or other potential violations of NYISO's tariff.

- **National Grid Commercial System Relieve Program (CSRP)** – National Grid's CSRP program allows customers capable of providing four (4) consecutive hours of load relief when called upon during the program season to help reduce National Grid's summer peak demands and help defer or avoid the need for traditional distribution system upgrades to meet peak demand. The CSRP program season runs from May through September each year. National Grid may call upon participants on non-holiday weekdays within the program season when the day-ahead forecasted system-wide peak demand is 92% or higher of the seasonal forecasted system-wide peak demand. National Grid provides a day-ahead notice at least 21-hrs in advance of events and tests, as well as a confirmation/cancellation

of the event/test at least two (2) hours prior of the event window. Participants enroll to participate for the entire season (either directly with the utility, or through a utility-approved DR aggregator) with a load reduction value that can be achieved when called upon to do so. While there is no defined call window that participants must be available to provide their committed load reduction, events typically are called during the late afternoon and early evening hours. If no events are called, National Grid may administer a one (1) hour test to verify participants' load relief capability. Performance during events and tests is calculated using a participant-specific baseline (called the Customer Baseline, or CBL) is calculated based upon the participant's highest electric usage during the event window hour(s) from the top five (5) of the previous ten (10) eligible days. A weather adjustment factor may also be applied in the case of weather-sensitive loads that may adjust the CBL up or down by +/- 20% to account for weather and temperature differences from the baseline day period and the event/test day. Event/test performance is determined by comparing the average hourly metered load during the event window hour(s) subtracted from the CBL and compared with the enrolled kW value. Monthly performance factors are calculated to determine Reservation payments (payments to be available to provide the service) by averaging the individual event/test performance factors from all events within a month. The monthly performance factor is carried forward for calculating payments until the next month during which performance is observed. While there are no out-of-pocket penalties for under-performance, payments are made commensurate with the most recently-calculated monthly performance factor. If a participant has a monthly performance factor of 25% or less, the participant receives Reservation payment for months during which that performance factor remains in effect. The kWh for performance eligible for Performance payments is calculated based upon the participant's metered load during the event hour(s) subtracted from the CBL. Reservation and Performance payment rates are administratively set within National Grid's tariff, and the cost-effectiveness of the program is reviewed on an annual basis by National Grid and the New York State Public Service Commission.

1. **Responsibilities of Participants** – CSRP participants must be capable of providing four hours of DR capability when provided at least 21-hours of notice by National Grid. Participants must also demonstrate their load reduction capability to drop to or below a specific load level at least once during the CSRP program season. Performance calculations performed after the fact inform payments due to the participant.

- **NYISO Demand Side Ancillary Services Program (DSASP)** – NYISO's DSASP program allows participants that meet the NYISO's qualification requirements and are represented by a registered DSASP Provider Market Participant to participate in the NYISO's ancillary services (AS) market. DSASP Resources must be capable of: 1) providing at least 1MW of response capability in every month of the year (aggregation of multiple customer facilities within a NYISO Load Zone can satisfy this requirement); 2) meet the NYISO's metering and real-time telemetry

communications requirements (bi-directional communications through a direct ICCP between the NYISO, DSASP Provider, and the Resource at 6-second intervals with no more than 10-sec latency each way, or 20-sec round-trip); and 3) satisfy all registration documentation and credit requirements. NYISO's AS market has several different services with different requirements applicable to each service. There are two non-synchronous operating reserves (for resources not synchronized to the grid – DSASP Resources that utilize backup-generation in support of their DSASP participation may only provide non-synchronous reserves) products available; one for resources capable of responding within 10-min, and one for resources capable of responding within 30-min. There is also a 10-min synchronous operating reserves product that requires participants to be synchronized to the grid and be able to achieve the response requested by the NYISO within 10-min. All operating reserve products require Resources to be capable of following 5-min dispatch basepoint signals provided via the telemetry signal from the NYISO, provided every 6-sec. There is also a Regulation product that requires participants to have automatic generation control (AGC) equipment installed, and to follow basepoint signals (either to ramp its usage up or down) telemetered to the Resource every 6-seconds. Once the registration, NYISO network modeling updates (to incorporate the Resource into NYISO's dispatch model), and communication test processes have been completed, the DSASP Resource may begin participating in the AS market providing the service(s) it is qualified to provide. Within the first two weeks of a Resource being approved to begin participating, it must conduct a load-shed test to validate its capability. In each subsequent seasonal Capability Period (see the NYISO SCR response above for additional info), the Resource must be audited by the NYISO; if the Resource has been dispatched to provide the service, operational data may be used to satisfy the audit requirement. Participation is facilitated through the DSASP Provider offering the Resource into the NYISO's day-ahead market (DAM) with a price/quantity pair for each of the 24 hours for the (following) operating day. If a Resource is awarded for any hours for which offers clear, the Resource is scheduled to provide the service. For operating reserve products, this means the resource must be available to provide the service if it were to be called (via a Reserve Pickup Event). For the Regulation product, the Resource must provide that service in all hours in which it is scheduled to do so. After the DAM schedule has been set, if any changes in the Resource's availability to provide the service(s) for which it has been scheduled arise, the DSASP Provider must notify the NYISO and update the Resource's offers in the real-time market (RTM). Resources are paid based upon the cleared MW quantity multiplied by the hourly zonal clearing price for the AS product for which the Resource has received a schedule. If adjustments must be made in the RTM, any quantities bought or sold will be charged or paid at the hourly zonal clearing price for the respective AS product. If the Resource deviates from the telemetered dispatch instructions, additional charges or credits may be applied at settlement. If a DSASP Resource fails to perform during an audit or event, it is suspended from being offered into the DAM/RTM until it successfully completes an audit administered by the NYISO. Performance when the Resource is

required to respond (as described above) is judged based upon the 6-sec telemetry data from the Resource compared to the basepoint signals from the NYISO. Depending on the lead time required for the AS operating reserve product the last 6-second load level telemetered to the NYISO prior to the basepoint response signal has being sent establishes the baseline, and then following the basepoint signals (6-sec/5-min) for the duration of the event (and returning to the load level at the event's start).

1. **Responsibilities of Participants** – Participants must be capable of meeting the NYISO AS product qualification, metering, and telemetry requirements, and be available to respond to provide the service(s) in all hours for which it has received an award and schedule in the DAM/RTM. If any changes occur following receiving a DAM schedule for an AS product to the Resource's ability to provide the service, the DSASP Provider must update its schedule to ensure it reflects its ability to provide the service. If the RTM market has closed by the time during which the DSASP Resource knows it will have a change to its availability, the DSASP provider must notify the NYISO's control room. When dispatched by the NYISO, the Resource must follow the telemetered basepoint signals.

BITFURY

The Honorable Elizabeth Warren
The Honorable Sheldon Whitehouse
The Honorable Jeffrey A. Merkley
The Honorable Margaret Wood Hassan
The Honorable Edward J. Markey
United States Senate
Washington, DC 20510

The Honorable Katie Porter
The Honorable Rashida Tlaib
The Honorable Jared Huffman
United States House of Representatives
Washington, DC 20515

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

Thank you for the opportunity to respond to your letter dated January 27, 2022, regarding the energy and environmental impacts of bitcoin mining.

Bitfury does not currently have active mining operations within the United States. (As noted below, our majority-owned Cipher Mining subsidiary will begin bitcoin mining operations at a Texas wind farm in the near future.) We nonetheless appreciate the opportunity to address the energy use of bitcoin mining and why we believe bitcoin mining is an important force for harnessing *more sustainable* energy sources such as wind and solar—including inside the United States.

In assessing environmental concerns about bitcoin mining or any other energy use, not all energy consumption is created equal. An activity that consumes 100 TWh of power derived exclusively from coal or oil adds carbon to the environment and consumes a scarce resource; an activity that consumes the same amount of power derived from a mix of solar, wind, and hydropower does neither. It is important that bitcoin not be judged solely on the basis of how much energy it uses, but rather on the basis of its energy *mix* relative to other energy users in the economy and on the basis of the *incentives* bitcoin generates for creating a more sustainable energy mix.

From a public policy perspective, the most relevant question should be energy *production* rather than energy *consumption.* If Americans' elected representatives in Congress decide that we should eliminate or reduce a particular source of energy such as coal or oil, they may of course to do that. But once the energy mix has been established, in a market economy like the United States, markets – meaning the aggregate decisions of American consumers and businesses – should decide the most productive use of the energy that is produced.

The available data suggest that bitcoin mining consumes a small but nontrivial amount of energy relative to the amount of value created, and that *energy is on average drawn more from sustainable sources than the U.S. electric grid as a whole*. There are several different sources one could examine to reach this conclusion, including the Bitcoin Mining Council (BMC) comprising the major global mining companies, the Cambridge Bitcoin Electricity Consumption

Index, and others. Using BMC data for convenience, bitcoin mining last year consumed 188 TWh out of about 155,000 TWh consumed globally for all uses. The energy mix used for bitcoin mining was about *58 percent sustainable* under the definition used by the International Energy Agency, as compared to 31 percent for the U.S. energy grid as a whole. As for Bitfury specifically, our total carbon emission impact (currently outside the U.S.) is significantly less than the carbon emission impact of the U.S. electric grid as a whole █████████████████████ ███. This figure excludes carbon offsets purchased for one of our international locations; if carbon offsets were included under the International Energy Agency's approach, the improvement would be even better.

We would like to briefly address the energy incentives associated with bitcoin mining. Like any business, a bitcoin mining company seeks the lowest price for its various cost inputs – in this case, the lowest cost of energy. It is a common, but inaccurate, belief that certain fossil fuels such as coal are the lowest-cost sources of electricity production. In fact, the lowest cost of energy comes from consuming excess capacity—from any source. Thus, bitcoin miners can add to total energy efficiency in several ways, including:

- ***Providing baseload consumption for solar and wind power generators that otherwise are unable to sell significant amounts of their production capacity.*** In 2020 in California alone, 1.5 *million* MWh of solar production (five percent of the total) was curtailed because production exceeded demand. And this figure understates the true extent of the problem—at certain peak production hours, California solar projects have as much as 15 percent excess capacity. This is one reason why solar and wind power as a category have generally been unprofitable and have required government subsidies. As Professors Eric Williams and Eric Hittinger of the Rochester Institute of Technology, among others, have explained in recent analyses, demand response programs that shift demand from periods of low supply and high demand to periods of higher supply are one key to profitable renewable energy production. The International Energy Agency recommends 500 GW of additional demand response by 2030. As a result, solar and especially wind power developers, among others, are partnering with bitcoin miners to provide baseload consumption capacity and turn a money-losing business profitable. In short, if we want *more* solar and wind to be developed, we must harness market incentives for developers. Bitcoin mining partnerships can help do that.

  The current project pipeline for our Cipher Mining subsidiary demonstrates the potential for demand-response partnerships between bitcoin miners and renewable energy *projects*. In the near future, Cipher will commence mining operations at a Texas wind farm; this partnership was key to the partner's ability to enhance the profitability of the wind power generation.

- ***Flare gas capture***. A byproduct of oil drilling is the flaring of natural gas found in oil wells. Currently, that byproduct activity produces carbon emissions with no counterbalancing economic value. Bitcoin miners are partnering with oil exploration companies to turn that dead-weight loss into economic value.
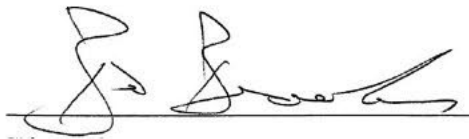
- *Reducing energy loss related to transmission and distribution*. Approximately five percent of all electricity produced in the United States is lost every year due to transmission and distribution issues. The mobility of bitcoin mining allows the industry to construct data centers close to the power generation source, thus reducing these losses and turning the associated power into economic value while also reducing the need for additional investments in transmission and distribution infrastructure.

Bitcoin has positive effects outside of the cryptocurrency ecosystem. Among these are:

- *Stabilization of electric grids*. We all remember the Texas blackout of February 2021. One of the causes of such events in the U.S. and around the world is an imbalance between production and demand on the electric grid. Bitcoin mining data centers can and do adapt their power consumption dynamically to rebalance the grid upon request from the grid operator.

- *Dramatic increases in chip efficiency*. ███████████████████████
  ████████████████████████████████ The development of new approaches to low-voltage ASIC design obviously benefits the entire computing industry, not just bitcoin mining. And at Bitfury we have developed the concept of controllable load that responds proactively to supply/demand.

- *Large-scale implementation of immersion cooling systems*. By many estimates, air-cooled mining systems account for more than 20 percent of the total energy use of bitcoin mining. This is why Bitfury developed LiquidStack, one of the world's leading immersion cooling companies. ████████████████████████████ LiquidStack DataTanks eliminate almost all cooling-related energy usage in bitcoin mining data centers, and are now being adopted outside the mining context by operators of cloud-computing data centers and other hyperscalers.

Thank you for the opportunity to respond to the important issues raised in your letter.

Sincerely,

Brian P. Brooks

Chief Executive Officer

February 10, 2022

The Honorable Elizabeth Warren
United States Senate
309 Hart Senate Office Building
Washington, D.C. 20510-2106

Dear Senator Warren:

Bitdeer Inc. ("Bitdeer") received your letter dated January 27, 2022 and is pleased to provide information about bitcoin mining. We also appreciate the opportunity to share information about Bitdeer and our operations in the United States.

Bitdeer Technologies Holding Company ("Bitdeer Group"), based in Singapore and founded in 2018, is the world's leading provider of digital asset mining services. Bitdeer Inc. is a North American subsidiary of Bitdeer Group. Since its founding, the company has been committed to providing comprehensive digital asset mining solutions for customers. Bitdeer Inc. primarily specializes in mining datacenter development, leading this arm of Bitdeer Group's business. The mining datacenter operations include miner procurement, transport logistics, miner repair and maintenance, and power management. Our mining datacenters in North America, as well as other locations globally, are all in compliance with local regulations.

Bitdeer Group first expanded to the U.S. market in 2018 when it opened one of the first North American bitcoin mining datacenters in Pangborn, Washington. Bitdeer's Pangborn facility runs entirely on clean hydroelectricity and one-third of our employees there have worked with Bitdeer since Day One.

As of September 30, 2021, we have three mining facilities in the U.S.: Pangborn, WA (13 MW); Knoxville, TN (60 MW); and Rockdale, TX (170 MW). Our mining facilities are expected to increase by 0MW, 26MW, and 572MW respectively, reaching 841 MW of total capacity by the end of 2022. We anticipate developing additional Texas-based data centers with an approximate aggregate capacity of 362MW in 2022.

We share your concerns about a sudden influx of miners flocking to the U.S. who, in concert with many other high-capacity load industries, might have the potential to destabilize the grid and negatively impact power costs for residential customers. That is why Bitdeer's existing operations and expansion in the U.S. have been designed to actively mitigate these concerns in three ways.

Repurposing Electrical Infrastructure

First, during the site development process, Bitdeer pursues locations with existing electrical infrastructure suited to receive high-capacity electrical loads. At our Rockdale, TX datacenter, we retrofitted a former Alcoa aluminum smelter. Although the plant ceased operations in 2005, the

transmission service providers in ERCOT never amended their plans to service a high-capacity load to the site. Therefore, our grid interconnection has never required that the transmission providers reroute additional electricity to our mining datacenter. As a result, we never required that ERCOT plan for additional generation capacity to service our load, demonstrating that Bitdeer, to its knowledge, neither added additional strain to the grid nor required generation from any source, fossil fuel or renewable, to be brought into production. Additionally, the opportunity to repurpose the vacant facility has redirected the financial trajectory of a community grappling with economic stagnation by creating new jobs and increasing tax revenue to the local government.

We developed our Knoxville, TN datacenter in a similar way, operating in a former Panasonic manufacturing plant. Plus, Bitdeer participates in an economic development initiative commissioned by the Tennessee Valley Authority (TVA). Through the TVA program, we have repurposed underutilized industrial infrastructure to create quality jobs in the area, demonstrating the natural synergy between job creation and utility planning related to cryptomining operations.

Software-driven Demand Response

Second, Bitdeer has developed and is deploying innovative software solutions that alleviate strain on the grid. Bitdeer utilizes real time energy market monitoring platforms to curtail our load when the grid reaches peak demand. The ability of our crypto mining facilities to respond in real time to changing conditions on the grid distinguishes Bitdeer from other sectors with high-capacity electrical consumption.

In Texas, ERCOT supports demand response programs incentivizing commercial users to curtail load during times of peak demand. Bitdeer participates in these programs, ensuring that electricity remains reliably distributed to priority customers when the grid is most strained. Bitdeer's ability to shed load also displaces the need for additional generation to come online during peak demand. This dually reduces costs and carbon emissions because most generating units used to meet the ultimate peak demand on power grids are fossil-fuel assets.

Additionally, Minerplus, Bitdeer's self-developed, integrated software platform that is used by all of our facilities, includes automated controls to hibernate miners based on user-directed criteria, such as power price thresholds. Bitdeer believes the core functionality of Minerplus will facilitate load modulation as a best practice of the mining industry, which is why we currently offer the software free of charge.

Investment in the Digital Economy

Third, to contribute to the long-term health of the grid and to the communities where we operate, Bitdeer invests in infrastructure to support the digital economy beyond the exclusive realm of cryptocurrency. For instance, Bitdeer has upgraded the electrical infrastructure that powers its data centers. These upgrades have provided immediate safeguards to the grid in the case of, among other things, extreme weather events. We have also aligned the expansion of our Rockdale datacenter with ERCOT-mandated upgrades for the electrical equipment feeding our facility. Together with other industrial

customers, we have financially contributed to these upgrades in service to both regulatory compliance and the reliability of grid infrastructure.

The United States is primed to emerge as the global epicenter for the thriving cryptomining industry. We hope that our ongoing investment in the U.S. can help the industry's value chain and that the ancillary services accompanying its growth can take place here.

We look forward to working with policymakers to continue to develop the cryptomining industry in ways that promote environmentally friendly economic development and reinforce the United States' position in the global marketplace.

Thank you for your consideration of our views.

Sincerely,

Stephanie Xia
General Manager, Bitdeer Inc.

cc: Sen. Sheldon Whitehouse
       Sen. Jeffrey A. Merkley
       Sen. Margaret Hassan
       Sen. Edward J. Markey
       Rep. Katie Porter
       Rep. Rashida Tlaib
       Rep. Jared Huffman

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 1997[1]. 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 2020[2] 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, respectively [3].

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 Texas[5]).

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.

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[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 deployed[6].

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[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 Texas[7].

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

Marathon Digital Holdings, Inc.
1180 North Town Center Drive, Suite 100, Las Vegas, NV 89144

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

The Honorable Elizabeth Warren
309 Hart Senate Office Building
Washington, DC 20515

The Honorable Sheldon Whitehouse
530 Hart Senate Office Building
Washington, DC 20510

The Honorable Jeffrey A. Merkley
313 Hart Senate Office Building,
Washington, DC 20510

The Honorable Margaret Wood Hassan
324 Hart Senate Office Building
Washington, D.C. 20510

The Honorable Edward J. Markey
255 Dirksen Senate Office Building
Washington DC 20510

The Honorable Katie Porter
1117, Longworth House Office Building,
Washington, DC 20515

The Honorable Rashida Talib
1628 Longworth House Office,
Washington, DC 20515

The Honorable Jared Huffman
1527, Longworth House Office Building,
Washington, DC 20515

February 24, 2022

RE: January 27, 2022 letter to Riot Blockchain, Inc.

Dear Senators and Representatives:

Thank you for your letter of January 27, 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 as one of the largest U.S. publicly traded companies listed on Nasdaq. We are proud to
build, grow, and support the development of this innovative industry within the United States of
America.

Overview

Our Purpose. Our mission is simple—we aim to create value and opportunities by supporting the digital economy through Bitcoin mining. We believe securing the Bitcoin blockchain for the future of all Americans through Bitcoin mining will ensure Americans have access to fast, reliable, and secure digital transactions in the coming digital century. We do this through a vertically integrated strategy of innovative engineering solutions, building infrastructure in rural communities, producing a digital asset with a true store of value, and manufacturing parts to mine Bitcoin right here in the United States.

Transparency. As a U.S. publicly traded company, Riot remains diligent in our ethical commitment and responsibility to transparently report accurate information to the public. The Company was the first U.S. publicly traded Bitcoin mining company to produce a monthly operations and production update, increasing transparency to the public and our shareholders by reporting operations updates on a monthly basis.

Economic Value. Riot is proud to be a part of the global Bitcoin mining industry, which has a market capitalization of more than $25 billion in North America[1] alone, and an economic impact far beyond that. It is nearly impossible to fully express the economic value and the social impact that Riot brings in words alone. Therefore, the Company invites Members of Congress along with their staff to visit Riot's Whinstone facility for an in-person tour and a demonstration of the Company operations.

Bitcoin's Protocol Value

With more than 100 million users worldwide, Bitcoin is an open monetary network that allows anyone with an internet connection to store wealth securely and make payments anywhere with nearly instant final settlement.

Bitcoin's electricity usage begins during the block addition process and is done so for a significant and direct purpose: to prove, based on an objective metric independent of the system

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[1] According to data collected from the Nasdaq Stock Exchange and the New York Stock Exchange as of December 31, 2021.

itself, in a way that anyone can verify for themselves, that a certain amount of time has passed between a new block and its predecessor.

This model of decentralized agreement is so revolutionary within the field of computer science that it has been named after the creator of Bitcoin. It is called *Nakamoto Consensus* and the technique used to achieve it is called *Proof-of-Work* ("PoW"). In this process, the electricity does the actual work, and the proof is the presentation of a rare hash function output which could only have been found by repetitive guesswork, *proving the input of work*.[2]

In physics, it is understood that work is a time-dependent concept, PoW enables the Bitcoin network to cooperate on a decentralized clock, which is what enables its otherwise uncoordinated participants to agree on a *shared history of transactions.*

So long as enough time has passed since the last block, as proven by the input work, a new block can be added to the chain. The consideration by all network participants of the chain with the most accumulated work as the correct and agreed-upon chain is a fundamental consensus rule of Bitcoin.

Bitcoin's Social Impact and the Environment

PoW's energy usage is purposeful to assist with the creation of an honest, and trustless system, which makes counterfeiting and record tampering prohibitively costly. For a global, freely available, politically independent monetary system, the ability to resist attackers is an incredible and necessary feature.

Social Impact

PoW enables otherwise unavailable monetary properties that cannot be replicated by physical commodity monies or politically dependent monies. Bitcoin as a digital asset and a store of value has little to no exposure to inflation and non-market influences that requires no bank account or credit to own, access, exchange, and use. This further enables the opportunity for disenfranchised

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[2] Christopher Beniksen, A Closer Look at the Environmental Impact of Bitcoin Mining (March 30, 2021), https://coinshares.com/research/closer-look-environmental-impact-of-bitcoin-mining.

and previously neglected minority communities to opt-in to an inclusive financial system that empowers people and communities around the globe.

A recent example of Bitcoin moving society to a more balanced financial system has been demonstrated by the Legislative Assembly of El Salvador's recent adoption of Bitcoin as a legal tender.[3] It is estimated that traditional money services providers like Western Union and MoneyGram will lose the opportunity to take in predatory fees of approximately $400 million a year in commissions for remittances, thanks to the country's Bitcoin adoption.[4]

Through Bitcoin mining, North America is well-positioned to continue taking the lead and to further empower economic advancement and financial inclusion worldwide. This is thanks in large part to the twenty-five publicly traded Bitcoin mining companies headquartered in the United States and Canada.

Environment

To put energy consumption it into simple context, globally, PoW accounts for roughly 0.27% of energy consumption – less than gold mining or residential air conditioners.[5]

Riot is a founding member of The Bitcoin Mining Council (BMC), a voluntary global forum of Bitcoin mining companies and other companies in the Bitcoin industry. BMC estimated that the global mining industry's sustainable electricity mix had grown to approximately 58.5%, during Q4 2021, up 1% from Q3 2021, making it one of the most sustainable industries globally. In Q4 2021, the global Bitcoin Network's estimated technological efficiency grew by 9%, an increase

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[3] Santiago Perez and Caitlin Ostroff, *El Salvador Becomes First Country to Adopt Bitcoin as National Currency,* Wall Street Journal, Sept. 7, 2021, https://www.wsj.com/articles/bitcoin-comes-to-el-salvador-first-country-to-adopt-crypto-as-national-currency-11631005200.,

[4] MacKenzie Sigalos, *El Salvador's New Bitcoin Plan Could Cost Money Providers Like Western Union and Others $400 Million a Year, says President Bukele*, CNBC, Sep. 9, 2021, https://www.cnbc.com/2021/09/09/el-salvador-bitcoin-move-could-cost-western-union-400-million-a-year.html

[5] Key Facts on Bitcoin & the Environment, Bitcoin Policy Institute, https://uploads-ssl.webflow.com/61d2416d1d63f07ecbfd010c/61e9eb242d86a2103e051913_Key%20Facts%20on%20Bitcoin%20%26%20the%20Environment-03%20(2).pdf

from Q3 2021, to 19.3 petahash per MW.[6] We believe this trend will continue because of the efficiency driven nature of Bitcoin mining.

Due to its location-agnostic nature and desire for cheap, and unused or stranded energy, Bitcoin mining drives more demand for renewable energy than the typical U.S. energy consumer.

Recent environmental projections have determined that even if Bitcoin's price rises to $490,000, Bitcoin mining would peak at 0.9% of global carbon emissions in 2027 and decline thereafter.[7]

Riot's Current Operations and Energy Consumption

Riot currently wholly owns two U.S.-based subsidiaries: Whinstone, U.S. Inc. (Whinstone), a digital infrastructure company; and ESS Metron LLC, a world-class electrical equipment component engineering and manufacturer. Riot began as a company in 2017, trading on NASDAQ with a focus on developing and supporting the emerging Bitcoin mining industry within the United States. Riot began mining at a small facility in Oklahoma City, Oklahoma, and later moved its Bitcoin mining equipment (computers) to be hosted at Coinmint LLC's (Coinmint) facility located in Messina, New York. In 2021, Riot completed the purchase of Whinstone, an infrastructure-focused data center based in Rockdale, Texas.

We believe it is important to highlight at the outset Bitcoin mining is first and foremost a people-based business. Riot's Whinstone facility is built and operated by employees in a wide array of roles. These include, but are not limited to, construction team members, construction contractors, electrical engineers, electrical contractors, information technology. engineers, miner maintenance technicians, administrative support, security teams, inventory teams, among others.

The Bitcoin mining industry creates many good-paying jobs in economically neglected rural areas. In Rockdale, TX, Whinstone employs nearly 200 full-time, benefited employees in addition to over 400 full-time contractors. This facility has become the single largest employer in Milam County, TX and has significantly contributed to an increase in sales tax revenue by

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[6] Q4 Bitcoin Mining Council Survey Confirms Improvements in Sustainable Power Mix and Technological Efficiency, Jan. 18, 2021, https://bitcoinminingcouncil.com/q4-bitcoin-mining-council-survey-confirms-sustainable-power-mix-and-technological-efficiency/
[7] *See supra* note 5.

Milam County. In 2021 alone, the County's sales tax revenue increased more than 54% over 2020 due in large part to the economic activity surrounding Whinstone and the jobs Riot created. Mining "farms" often anchor employers in small communities that were negatively affected by globalization, including our Whinstone location, which sits beside a shuttered Alcoa site.

The Bitcoin mining equipment that Riot currently deploys at Coinmint's facility utilizes nearly exclusively hydroelectricity, a zero-emission, sustainable energy source, consuming approximately 51 megawatts ("MW") in total capacity. This renewable alternative is driven by the local Moses Saunders Dam in Messina County, in upstate New York. At its Whinstone facility, Riot has approximately 350 MW of developed capacity that is in the process of being utilized by both its self-mining Bitcoin operations, and operations hosted for institutional clients. Whinstone's dedicated long-term power supply contract is for on-grid power which is generated from mixed-generation resources. The Electric Reliability Council of Texas (ERCOT) produced a generation capacity fuel report for 2021 showcasing a reduction in coal reliance of 25.14%, with a 20% increase in renewables, and with wind and solar comprising 28% of the entire grid.[8]
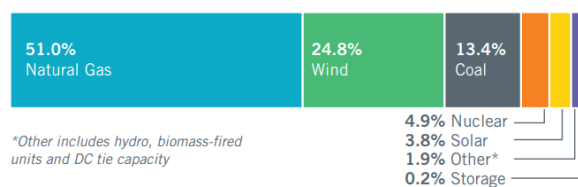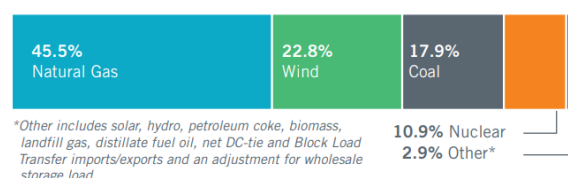
Bitcoin mining provides immense economic value and job creation, but also helps to ensure the robustness, cleanliness and long-term financial viability of the broader electric grid. With a stable baseload demand and its ability to be curtailed and turned off at a moment's notice, Bitcoin mining gives electricity generators the opportunity to increase stability in the grid. Ultimately, this gives grid operators and planners the flexibility to make more intermittent renewables a larger component of the overall grid mix. Long-term power contracts and baseload

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[8] ERCOT, Fact Sheet, February 2022, https://www.ercot.com/files/docs/2022/02/08/ERCOT_Fact_Sheet.pdf.

flexibility present an opportunity for Bitcoin miners to help defray costs for residential consumers and incentivize utilities to invest in new renewable energy sources, knowing they have a willing and ready customer for the energy produced. This allows for immediate monetization of energy that would otherwise be wasted, driving down overall electricity costs. In other words, it can act as a monetary battery.[9] (Bendiksen, 2021)

In February 2022, Riot's Whinstone facility voluntarily began to reduce power to its Bitcoin mining equipment ahead of an upcoming Texas winter storm. Riot Chief Executive Officer, Jason Les, and Whinstone U.S., CEO Chad Harris, were in communication with the Texas Governor's office along with other local elected officials, providing details about preparations to curtail power usage. During the prior year's 2021 winter storm in Texas, the Whinstone facility was entirely powered down during the eight days of high-power demand in other grid locations. These successful efforts to ensure ERCOT grid stability are the latest example of how Bitcoin mining companies are partners with our communities and utilities.[10] After recent actions taken by Whinstone to plan for the necessity of electricity conservation considering winter storms, operational transparency and communication with state officials, and execution of that plan to conserve electricity in times of great need, federal and state officials recently wrote that we "set the gold-standard for this developing industry" in Texas.

Projections and Future Plans

To continue building a more fair and equitable economic future, Riot's Whinstone facility, located in a small rural community which prior to Whinstone, did not have many technical or engineering job opportunities, has produced expansion plans for 700 MW of cutting-edge Bitcoin mining infrastructure on the 100-acre site. When this expansion is complete, the Whinstone facility will be comprised of approximately 500,000 sq ft of data center space. While the Company anticipates this expansion to be completed by June of 2022, Riot cannot make

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[9] *See supra* note 2.
[10] Michael Smith, Biggest Texas Bitcoin Miner Shuts Down Ahead of Cold Blast, Bloomberg, Feb. 2, 2022, https://www.bloomberg.com/news/articles/2022-02-02/biggest-bitcoin-miner-in-texas-will-shut-for-cold-blast-if-asked

exact predictions due to factors outside of its control, mainly, global supply chain and lasting delays from the Covid-19 pandemic.

The full power capacity of Whinstone will not be utilized until a full deployment of Bitcoin mining equipment on behalf of Riot or its institutional hosting clients is completed. It is estimated that by the completion of the fourth quarter in 2022, the Company will be utilizing approximately 570 MW of mixed-use energy across our self-mining operations at Whinstone (317 MW), our hosting customers at Whinstone (200 MW), and our hosted computers at Coinmint (51 MW).

In short, our power usage both relies on and helps promote expanded use of renewable energy.

Relationship with Electricity Providers

Riot enters long-term contracts for electricity supply from a Retail Electricity Provider (REP), purchasing a fixed quantity of electricity at a fixed price for most of the Company's energy load. Should a facility use more than the purchased quantity, Riot purchases additional energy at the market price when it is consumed.

If energy is in high demand at that time, signaled through a higher price, it incentivizes us to reduce usage during that high demand. Should a facility use less than the purchased quantity, that power is then consumed by the market, and Riot receives a credit based on the real-time price against our pre-purchase price. Should the Company anticipate that demand will outstrip supply, such as in the winter storms of February 2021 and 2022, Riot's Whinstone facility can curtail energy usage and redirect our previously purchased power to other consumers to meet that increased demand.

The power the Company uses is delivered through the regulated utility responsible for maintaining the grid. In the case of Whinstone, ERCOT operates the grid and manages the market by coordinating supply, demand, and the use of infrastructure to transmit power. Riot also participates in ERCOT's non-energy Ancillary Service Programs, designed to provide standby capacity by either putting more power into the grid or reducing power use from the grid. This is commonly known as Controllable Load Response (CLR), or Four Curtailment Periods

(4CP). As part of Riot's participation in 4CP during the 2021 calendar year, the Company shut down or curtailed power over 70 times, redirecting our power allotment back into the ERCOT grid.

Effect on Local Families and Businesses

As a participant in the Texas deregulated energy market, we represent approximately 0.3% of peak demand (250MW/75,000MW). Local residential customers also participate in the same large market, and electricity is priced to consumers in mainly 4 large load zones, so any single load is unlikely to affect the price for that pool and for local usage. In the map below, Whinstone is in the "South" zone, color coded in green.[11] So, while Whinstone contributes greatly to local economies, employment, grid stability, and innovation, it is unlikely to negatively affect local energy prices.

Conclusion

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[11] https://www.ercot.com/news/mediakit/maps
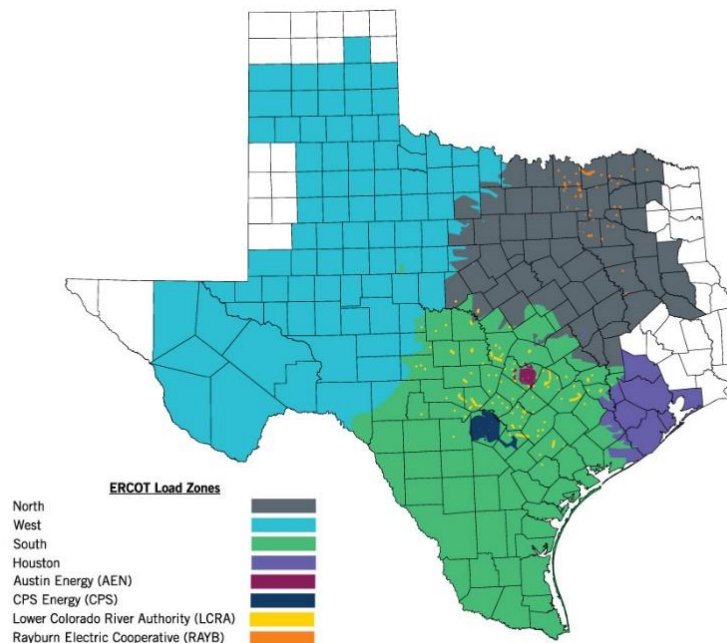
We believe that both industry and policymakers must continue to develop technologies and policies that address the dangers of climate change. Bitcoin mining, like all energy-consuming industries, relies on electricity generation. The carbon emissions of energy generation are determined largely by the source of that generation and whether it is renewable. As discussed above, Bitcoin mining is uniquely beneficial and supportive of renewable energy generation and resilient power grids. This fact, along with the technological advancement, job creation, and social and economic value that Bitcoin mining is creating – right here in the United States – means that the industry currently is, and must be, a part of the solution.

We also believe Bitcoin miners are uniquely positioned to help drive the entire Bitcoin and blockchain industries towards innovation and sustainability using the proof-of-work protocol-the only means of providing true trustless end-to-end encryption and verification for digital transactions available to us today. Our Company strongly believes industry participation and input is vital to the development and implementation of commonsense rules that help the United States continue to be the global leader in the decentralized currency and blockchain technology space.

Thank you again for this opportunity to highlight Riot Blockchain's work as an industry leader and innovator, and we look forward to being a resource to your offices on this important issue.

Sincerely,

Jason Les

Jason Les
Chief Executive Officer
Riot Blockchain, Inc.