

# Congress of the United States

Washington, DC 20515

October 12, 2022

Pablo Vegas  
Chief Executive Officer  
Electric Reliability Council of Texas  
8000 Metropolis Drive (Building E), Suite 100  
Austin, TX 78744

Dear Mr. Vegas,

We write seeking information about cryptomining operations in Texas and the impact these operations may be having on climate change, the stability of the energy grid, and subsidies – ultimately paid for by retail consumers – that the Electric Reliability Council of Texas (ERCOT) is providing to cryptomining companies to curtail their operations during times of peak demand.

An investigation that several of us released earlier this year revealed that cryptominers are using substantial amounts of electricity.<sup>1</sup> Data from just seven large cryptominers indicated that they presently operate over 1,045 megawatts (MW) of electric production capacity – enough capacity to power a city of 830,000 residences.<sup>2</sup> The investigation also revealed that cryptominers are significantly increasing production: just the seven cryptominers that were part of our investigation will increase their total capacity by at least 2,399 MW in the next few years, an increase of nearly 230 percent, and enough new capacity to power a city of over 1.9 million residences.<sup>3</sup> And all of this energy use is resulting in substantial amounts of carbon emissions and other adverse air quality impacts.<sup>4</sup>

Cryptomining companies are flooding into states like Texas, a “deregulated safe harbor”<sup>5</sup> that has been “aggressively courting crypto miners, who are drawn to the state’s cheap power and laissez-faire regulation,”<sup>6</sup> raising concerns about the state’s unreliable electricity market and

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<sup>1</sup> Letter from Senator Elizabeth Warren and colleagues to EPA Administrator Michael Regan and Department of Energy Secretary Jennifer Granholm, July 15, 2022, <https://www.warren.senate.gov/imo/media/doc/2022.07.15%20Letter%20to%20EPA%20and%20DOE%20Re%20Cryptomining%20Environmental%20Impacts.pdf>.

<sup>2</sup> *Id.*; Based on estimates that, “Nationally, based on the EIA’s average monthly residential consumption, 1 MW generated consistently would serve the monthly energy needs of roughly 800 residences.” Congressional Research Services, information provided via e-mail to the Office of Sen. Elizabeth Warren, May 23, 2022.

<sup>3</sup> Letter from Senator Elizabeth Warren and colleagues to EPA Administrator Michael Regan and Department of Energy Secretary Jennifer Granholm, July 15, 2022, <https://www.warren.senate.gov/imo/media/doc/2022.07.15%20Letter%20to%20EPA%20and%20DOE%20Re%20Cryptomining%20Environmental%20Impacts.pdf>.

<sup>4</sup> *Id.*

<sup>5</sup> Chron, “Crypto miners in Texas will be using as much energy as the city of Houston by mid-2023, ERCOT says,” Dan Carson, April 29, 2022, <https://www.chron.com/business/energy/article/Bitcoin-crypto-mining-Texas-low-wattage-rig-web3-17134290.php>.

the potential for cryptomining to add to the stress on the state's power grid.<sup>7</sup> Texas has “become one of the go-to locations for crypto entrepreneurs,”<sup>8</sup> with active lobbying of the government by the Texas Blockchain Council,<sup>9</sup> and crypto CEOs and state politicians alike vowing to make the state the “bitcoin capital of the world,” “the Citadel for Bitcoin,” and “the center of the universe for bitcoin and crypto.”<sup>10</sup> ERCOT is intimately connected with this growth in cryptomining,<sup>11</sup> with one cryptomining company vice president expressing that “Ercot’s really setting the stage for Bitcoin mining in Texas at this point... The message that Ercot [is] sending is that Texas is open for Bitcoin miners.”<sup>12</sup> And when asked if Texas aims to be the world’s largest mining center, ERCOT interim chief executive officer Brad Jones replied: “Yeah, that’s what we are planning.”<sup>13</sup>

By some estimates, Texas is now home to about a quarter of all U.S. Bitcoin mining,<sup>14</sup> and 9 percent of the cryptomining computing power worldwide, a share that is expected to reach 20 percent by the end of next year.<sup>15</sup> One cryptomining pool executive stated that “The sheer number of land deals and power purchase agreements that are in various stages of negotiation [in Texas] is enormous.”<sup>16</sup> Industrial-scale miners in Texas, of which there are approximately 10 large-scale facilities that have already connected to the grid, are regularly using over 2 gigawatts (GW) of energy, enough to power all the residences in the city of Houston twice over.<sup>17</sup> By mid-

<sup>6</sup> Bloomberg, “Crypto Miners’ Electricity Use in Texas Would Equal Another Houston,” Naureen S. Malik, April 27, 2022, <https://www.bloomberg.com/news/articles/2022-04-27/crypto-miners-in-texas-will-need-more-power-than-houston>.

<sup>7</sup> Cointelegraph, “Crypto miners eye cheap power in Texas, but fears aired over impact on the grid,” Samuel Haig, June 16, 2021, <https://cointelegraph.com/news/crypto-miners-eye-cheap-power-in-texas-but-fears-ai-red-over-impact-on-the-grid>.

<sup>8</sup> *Id.*

<sup>9</sup> Texas Monthly, “Amid a Bitcoin Boom, Texas Leaders Get Cozier With Cryptocurrency,” Omar L. Gallaga, April 29, 2021, <https://www.texasmonthly.com/news-politics/bitcoin-cryptocurrency-texas-blockchain-leader/>.

<sup>10</sup> TechCrunch, “How Texas is becoming a bitcoin mining hub,” Leigh Cuen, February 11, 2022, <https://techcrunch.com/2022/02/11/how-texas-is-becoming-a-bitcoin-mining-hub/>; The Texas Tribune, “Texas Republicans want to make the state the center of the cryptocurrency universe,” James Pollard, October 28, 2021, <https://www.texastribune.org/2021/10/28/texas-republicans-blockchain-bitcoin/>.

<sup>11</sup> The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022, <https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>12</sup> Bloomberg, “Crypto Miners’ Electricity Use in Texas Would Equal Another Houston,” Naureen S Malik, April 27, 2022, <https://www.bloomberg.com/news/articles/2022-04-27/crypto-miners-in-texas-will-need-more-power-than-houston>.

<sup>13</sup> *Id.*

<sup>14</sup> The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022, <https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>; Bloomberg, “Texas Bitcoin Miners Seek Cheap Power, Land and a Place to Stay,” Shelly Hagan, May 4, 2022, <https://www.bloomberg.com/news/articles/2022-05-04/texas-bitcoin-miners-seek-cheap-power-land-and-a-place-to-stay>.

<sup>15</sup> Texas Monthly, “Bitcoin Miners Could Save the Texas Grid—or Sink It,” Russell Gold, August 2022, <https://www.texasmonthly.com/news-politics/texas-bitcoin-mining-solar-power-grid/>.

<sup>16</sup> CNBC, “New York and Texas are winning the war to attract bitcoin miners,” MacKenzie Sigalos, October 9, 2021, <https://www.cnbc.com/2021/10/09/war-to-attract-bitcoin-miners-pits-texas-against-new-york-kentucky.html>.

<sup>17</sup> White House Office of Science and Technology Policy, Climate and Energy Implications of Crypto-Assets in the United States, September 2022, <https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-Crypto-Assets-and-Climate-Report.pdf>; The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022, <https://www.washingtonpost.com/climate-solutions/2022/07/15/bitcoin-crypto-texas->

2023, they will be using enough energy to power the entire city.<sup>18</sup> Over the next 12 to 15 months, 5 to 6 gigawatts (GW) of new demand is expected, enough electricity to power about 1.2 million homes.<sup>19</sup> And ERCOT's longer-term projections keep increasing: in April 2022, ERCOT said that miners representing about 17 GW worth of electricity use – equivalent to about two and a half New York Cities – had contacted the state about prospective operations.<sup>20</sup> In July 2022, ERCOT stated that over 27 GW of crypto load is projected to be interconnected over the next four years,<sup>21</sup> an amount that represents nearly a third of the grid's current maximum capacity,<sup>22</sup> and which energy researchers have called an “astronomically impossible” load to add to the grid in such a short timeframe.<sup>23</sup> Yet in August 2022, ERCOT once again updated that number and stated that enough miners have applied to use up to 33 GW of electricity, enough to power New York or Florida.<sup>24</sup> Ed Hirs, an energy fellow at the University of Houston, has said that cryptomining companies “will prove to be the tapeworm of ERCOT,” and that given the current influx of companies, they “will eventually be such a big component of demand on the ERCOT grid that the grid's going to have to pivot to service them as a priority,”<sup>25</sup> resulting in increased prices for retail consumers.

As Eric Hittinger, an associate professor at Rochester Institute of Technology, explains, “Large amounts of new demand are never helpful for your electricity bill... The more crypto mining that comes into the state, the higher the residents should expect the electricity prices to become.”<sup>26</sup> Environment Texas Executive Director Luke Metzger stated that his organization is “very concerned about the environmental impacts of just adding such an energy intensive

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heat-wave/; Bloomberg, “Bitcoin Miners Shut as Texas Power Grid Nears Brink,” David Pan, July 11, 2022, <https://www.bloomberg.com/news/articles/2022-07-11/bitcoin-miners-shut-off-rigs-as-texas-power-grid-nears-brink>; Based on estimates that, “Nationally, based on the EIA's average monthly residential consumption, 1 MW generated consistently would serve the monthly energy needs of roughly 800 residences.” Congressional Research Services, information provided via e-mail to the Office of Sen. Elizabeth Warren, May 23, 2022; United States Census Bureau, “QuickFacts: Houston city, Texas,” <https://www.census.gov/quickfacts/houstoncitytexas>.

<sup>18</sup> Chron, Crypto miners in Texas will be using as much energy as the city of Houston by mid-2023, ERCOT says,” Dan Carson, April 29, 2022, <https://www.chron.com/business/energy/article/Bitcoin-crypto-mining-Texas-low-wattage-rig-web3-17134290.php>.

<sup>19</sup> Bloomberg, “Crypto Miners' Electricity Use in Texas Would Equal Another Houston,” Naureen S. Malik, April 27, 2022, <https://www.bloomberg.com/news/articles/2022-04-27/crypto-miners-in-texas-will-need-more-power-than-houston>.

<sup>20</sup> Chron, Crypto miners in Texas will be using as much energy as the city of Houston by mid-2023, ERCOT says,” Dan Carson, April 29, 2022, <https://www.chron.com/business/energy/article/Bitcoin-crypto-mining-Texas-low-wattage-rig-web3-17134290.php>.

<sup>21</sup> The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022, <https://www.washingtonpost.com/climate-solutions/2022/07/15/bitcoin-crypto-texas-heat-wave/>; Texas Monthly, “Bitcoin Miners Could Save the Texas Grid—or Sink It,” Russell Gold, August 2022, <https://www.texasmonthly.com/news-politics/texas-bitcoin-mining-solar-power-grid/>.

<sup>22</sup> The Verge, “Texas' fragile grid isn't ready for crypto mining's explosive growth,” Justine Calma, July 14, 2022, <https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>23</sup> *Id.*

<sup>24</sup> Bloomberg, “Texas Crypto-Mining Rush May Need as Much Power as Entire State of New York,” Naureen S. Malik, <https://www.bloomberg.com/news/articles/2022-08-26/texas-crypto-rush-may-need-as-much-power-as-entire-state-of-n-y>; Sierra Club and Earthjustice, “The Energy Bomb: How Proof-of-Work Cryptocurrency Mining Worsens the Climate Crisis and Harms Communities Now,” September 23, 2022, [https://earthjustice.org/sites/default/files/files/2570\\_bitcoin\\_white\\_paper\\_04\\_nt.pdf](https://earthjustice.org/sites/default/files/files/2570_bitcoin_white_paper_04_nt.pdf).

<sup>25</sup> E&E News, “3 issues to watch as heat strains the grid,” E&E News staff, August 1, 2022, <https://www.eenews.net/articles/3-issues-to-watch-as-heat-strains-the-grid/>.

industry.”<sup>27</sup> And even a former ERCOT board member said, “the problem is [cryptomining is] consuming real resources, doing a function that has no value.”<sup>28</sup> Given the impacts of cryptomining on the climate, the grid, and to ratepayers, ERCOT’s support for this industry is irresponsible and highly concerning.

This is particularly concerning given that extreme weather events exacerbated by climate change have already been driving up electricity use and straining Texas’s power system – from the recent heat wave in July 2022 to the February 2021 winter storm during which the grid collapsed, causing blackouts that left 246 people dead.<sup>29</sup> With extreme temperatures, energy-consuming heating and cooling systems are cranked up, while energy production facilities can generate less due to system failures and other causes – resulting in decreased supply at a time of increased demand, placing more pressure on electricity grids.<sup>30</sup> This summer’s heat waves, with triple-digit degrees, have caused the Texas grid to repeatedly shatter demand records: July 8, 2022 set the all-time peak record for energy usage in Texas at 78,206 MW, surpassing the previous peak of 77,460 MW from just three days prior,<sup>31</sup> prompting ERCOT to issue public appeals to conserve power in order to avoid overwhelming the grid and to prevent outages and blackouts.<sup>32</sup> The Texas grid is particularly vulnerable given that it is the only independent state grid in the country, and does not interconnect to other states – meaning it has no buffer if there is a shortfall in supply.<sup>33</sup>

While many businesses and retail consumers are asked to voluntarily conserve power during these times, “there is no requirement for them to conserve”<sup>34</sup> – though some companies

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<sup>26</sup> The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022, <https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>27</sup> The Texas Tribune, “Texas Republicans want to make the state the center of the cryptocurrency universe,” James Pollard, October 28, 2021, <https://www.texastribune.org/2021/10/28/texas-republicans-blockchain-bitcoin/>.

<sup>28</sup> The Washington Post, “Bitcoin miners break new ground in Texas, a state hailed as the new cryptocurrency capital,” Dalvin Brown, July 8, 2021, <https://www.washingtonpost.com/technology/2021/07/08/bitcoin-mining-texas-electricity/>.

<sup>29</sup> Bloomberg, “‘Things Are Going to Break’: Texas Power Plants Are Running Nonstop,” Will Wade, Mark Chediak, and Naureen S Malik, July 15, 2022, <https://www.bloomberg.com/news/articles/2022-07-15/texas-power-plants-are-skipping-maintenance-to-run-nonstop>; The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022,

<https://www.washingtonpost.com/climate-solutions/2022/07/15/bitcoin-crypto-texas-heat-wave/>; Bloomberg, “Crypto Miners’ Electricity Use in Texas Would Equal Another Houston,” Naureen S Malik, April 27, 2022,

<https://www.bloomberg.com/news/articles/2022-04-27/crypto-miners-in-texas-will-need-more-power-than-houston>.

<sup>30</sup> The Verge, “Texas heatwave and energy crunch curtails Bitcoin mining,” Justine Calma, July 12, 2022,

<https://www.theverge.com/2022/7/12/23205066/texas-heat-curtails-bitcoin-mining-energy-demand-electricity-grid>.

<sup>31</sup> Bloomberg, “Bitcoin Miners Shut as Texas Power Grid Nears Brink,” David Pan, July 11, 2022,

<https://www.bloomberg.com/news/articles/2022-07-11/bitcoin-miners-shut-off-rigs-as-texas-power-grid-nears-brink>.

<sup>32</sup> The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022,

<https://www.washingtonpost.com/climate-solutions/2022/07/15/bitcoin-crypto-texas-heat-wave/>; The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022,

<https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>33</sup> The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022,

<https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>34</sup> The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022,

have enrolled in ERCOT programs under “demand response” agreements that pay them for curtailing their operations during periods of high demand.<sup>35</sup> Lee Bratcher, the president of the Texas Blockchain Council, has said of the July heat wave that “Over 95% of industrial-scale bitcoin mines curtailed their power consumption during peak demand times over the past week... The bitcoin miners were able to push over 1,000 [megawatts] back into the grid for ten-hour plus periods multiple times during the week.”<sup>36</sup> He has indicated that this represents nearly all industrial-scale mining load in Texas.<sup>37</sup> But the miners “aren’t switching off their rigs just to be altruistic; economic incentives are driving that decision.”<sup>38</sup> Given that high demand caused by extreme weather increases the spot price of electricity and therefore reduces the miners’ profitability,<sup>39</sup> “taking ERCOT’s payout rather than continuing to mine Bitcoin during times of tight power supply makes a lot of sense.”<sup>40</sup> In July, it was once the local price of power on ERCOT’s grid hit \$180 or higher per megawatt hour, making mining a net-negative cost, that most Texas mining operations chose to shut down.<sup>41</sup> In simple terms, the Bitcoin miners make money from mining that produces major strains on the electric grid: and during peak demand when the profitability of continuing to mine decreases, they then collect subsidies in the form of demand response payments when they shut off their mining operations and do nothing.

These payments can be significant. According to one estimate, a miner can generate up to 10 percent of its annual revenue through engaging in these shutdown services during peak demand.<sup>42</sup> During this summer’s heat waves, Riot Blockchain, the largest miner in Texas with a massive 750 MW facility in Rockdale, and a participant in ERCOT’s voluntary Four Coincident Peak demand response curtailment program,<sup>43</sup> announced that in July it made around \$9.5

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<sup>35</sup> Fortune, “Texas Bitcoin miners are getting paid to shut down and give electricity back to the power grid,” Eamon Barrett, July 12, 2022, <https://fortune.com/2022/07/12/texas-bitcoin-miners-paid-shut-down-power-grid-electricity-blackout-heat/>.

<sup>36</sup> The Washington Post, “Limiting crypto helped the Texas power grid weather a heat wave,” Allyson Chiu, July 15, 2022, <https://www.washingtonpost.com/climate-solutions/2022/07/15/bitcoin-crypto-texas-heat-wave/>.

<sup>37</sup> Bloomberg, “Bitcoin Miners Shut as Texas Power Grid Nears Brink,” David Pan, July 11, 2022, <https://www.bloomberg.com/news/articles/2022-07-11/bitcoin-miners-shut-off-rigs-as-texas-power-grid-nears-brink>.

<sup>38</sup> Fortune, “Texas Bitcoin miners are getting paid to shut down and give electricity back to the power grid,” Eamon Barrett, July 12, 2022, <https://fortune.com/2022/07/12/texas-bitcoin-miners-paid-shut-down-power-grid-electricity-blackout-heat/>.

<sup>39</sup> The Verge, “Texas’ fragile grid isn’t ready for crypto mining’s explosive growth,” Justine Calma, July 14, 2022, <https://www.theverge.com/2022/7/14/23206795/bitcoin-crypto-mining-electricity-texas-grid-energy-bills-emissions>.

<sup>40</sup> Fortune, “Texas Bitcoin miners are getting paid to shut down and give electricity back to the power grid,” Eamon Barrett, July 12, 2022, <https://fortune.com/2022/07/12/texas-bitcoin-miners-paid-shut-down-power-grid-electricity-blackout-heat/>.

<sup>41</sup> Gizmodo, “Texas Bitcoin Miner Made Millions More in Power Credits Than Actually Selling Bitcoin,” Kyle Barr, August 3, 2022, <https://gizmodo.com/texas-bitcoin-bitcoin-mining-ercot-riot-blockchain-1849367067>.

<sup>42</sup> Fortune, “Texas Bitcoin miners are getting paid to shut down and give electricity back to the power grid,” Eamon Barrett, July 12, 2022, <https://fortune.com/2022/07/12/texas-bitcoin-miners-paid-shut-down-power-grid-electricity-blackout-heat/>; Utility Dive, “Bitcoin mining as a grid resource? ‘It’s complicated.’,” Robert Walton, February 17, 2022, <https://www.utilitydive.com/news/bitcoin-mining-as-a-grid-resource-its-complicated/617896/>.

<sup>43</sup> Bloomberg, “Bitcoin Miners Shut as Texas Power Grid Nears Brink,” David Pan, July 11, 2022, <https://www.bloomberg.com/news/articles/2022-07-11/bitcoin-miners-shut-off-rigs-as-texas-power-grid-nears-brink>; Bloomberg, “Bitcoin Miner Made Millions in Credits by Shutting Rigs During Texas Heat,” David Pan, August 3, 2022, <https://www.bloomberg.com/news/articles/2022-08-03/bitcoin-miner-made-millions-by-shutting-rigs-during-texas-heat>.

million by curtailing operations and selling electricity back to the grid<sup>44</sup> – more than the \$5.6 million the company made from actually selling Bitcoin that month.<sup>45</sup> Other miners, such as Core Scientific, also powered down operations to address peak demand concerns, though that company has not released its compensation levels.<sup>46</sup> One report found that in the coming years, Texas may pay miners up to \$170 million annually.<sup>47</sup> These peak demand curtailment payouts are “ultimately borne by all Texans”<sup>48</sup> – including the millions of households that are stuck with sky-high electricity bills even while trying, in up to 110 °F degree weather, to comply with ERCOT’s requests to “cut power use during the hottest hours of the day” to avoid “a risk for rolling blackouts.”<sup>49</sup> As one watchdog group expressed, “it is patently unfair for miners to add enormous new loads on the grid and then seek to be paid, handsomely, to take that load off the grid during emergencies or peak times, at the expense of ratepayers.”<sup>50</sup> Or as another group put

<sup>44</sup> Gizmodo, “Texas Bitcoin Miner Made Millions More in Power Credits Than Actually Selling Bitcoin,” Kyle Barr, August 3, 2022, <https://gizmodo.com/texas-bitcoin-bitcoin-mining-ercot-riot-blockchain-1849367067>; Decrypt, “Bitcoin Miner Riot Earned \$9.5M for Shutting Down During Texas Heatwave,” Andrew Throuvalas, August 3, 2022, <https://decrypt.co/106841/core-scientific-sold-more-bitcoin-than-it-mined-for-second-consecutive-month>.

<sup>45</sup> Gizmodo, “Texas Bitcoin Miner Made Millions More in Power Credits Than Actually Selling Bitcoin,” Kyle Barr, August 3, 2022, <https://gizmodo.com/texas-bitcoin-bitcoin-mining-ercot-riot-blockchain-1849367067>; Decrypt, “Bitcoin Miner Riot Earned \$9.5M for Shutting Down During Texas Heatwave,” Andrew Throuvalas, August 3, 2022, <https://decrypt.co/106841/core-scientific-sold-more-bitcoin-than-it-mined-for-second-consecutive-month>.

<sup>46</sup> Bloomberg, “Bitcoin Miners Shut as Texas Power Grid Nears Brink,” David Pan, July 11, 2022, <https://www.bloomberg.com/news/articles/2022-07-11/bitcoin-miners-shut-off-rigs-as-texas-power-grid-nears-brink>; Decrypt, “Core Scientific Sold More Bitcoin Than It Mined for Second Consecutive Month,” Andrew Throuvalas, August 5, 2022, <https://decrypt.co/106841/core-scientific-sold-more-bitcoin-than-it-mined-for-second-consecutive-month>.

<sup>47</sup> Reuters, “Low-carbon bitcoin? Crypto miners' green power talk angers Texas locals,” Avi Asher -Schapiro, September 6, 2022, <https://www.reuters.com/article/usa-bitcoin-energy/insight-low-carbon-bitcoin-crypto-miners-green-power-talk-angers-texas-locals-idUSL8N2ZO08Z>.

<sup>48</sup> Texas Monthly, “Bitcoin Miners Could Save the Texas Grid—or Sink It,” Russell Gold, August 2022, <https://www.texasmonthly.com/news-politics/texas-bitcoin-mining-solar-power-grid/>.

<sup>49</sup> Reuters, “Texas grid takes emergency actions to avoid blackouts amid heatwave,” Arpan Varghese and Scott Disavino, July 13, 2022, <https://www.reuters.com/world/us/texas-power-use-breaks-record-heat-wave-again-with-no-blackouts-2022-07-13/>; The Guardian, “Texans urged to save energy as extreme heatwave strains power grid,” Nina Lakhani, July 11, 2022, <https://www.theguardian.com/us-news/2022/jul/11/texas-heatwave-power-grid-ercot>; AARP, “Texas Utility Help Runs Dry In Summer Heat,” Mark Hollis, July 21, 2022, <https://states.aarp.org/texas/texas-utility-help-runs-dry-in-summer-heat>; The New York Times, “His Lights Stayed on During Texas’ Storm. Now He Owes \$16,752.” Giulia McDonnell Nieto del Rio, Nicholas Bogel-Burroughs and Ivan Penn, March 1, 2021, <https://www.nytimes.com/2021/02/20/us/texas-storm-electric-bills.html>; NPR, “After Days Of Mass Outages, Some Texas Residents Now Face Huge Electricity Bills,” Rebecca Hersher, February 21, 2021, <https://www.npr.org/sections/live-updates-winter-storms-2021/2021/02/21/969912613/after-days-of-mass-outages-some-texas-residents-now-face-huge-electric-bills>; Vox, “Why some Texans are facing catastrophic electric bills after a winter storm,” Cameron Peters, February 20, 2021, <https://www.vox.com/2021/2/20/22292926/texas-high-electric-bills-winter-storm-grid>; The Texas Tribune, “Everyday Texans overlooked in state lawmakers' response to power outages during winter storm,” Erin Douglas and Michelle Ferman, June 3, 2021, <https://www.texastribune.org/2021/06/03/texas-electricity-bills-winter-storm-legislature/>; Bloomberg, “‘Things Are Going to Break’: Texas Power Plants Are Running Nonstop,” Will Wade, Mark Chediak, and Naureen S Malik, July 15, 2022, <https://www.bloomberg.com/news/articles/2022-07-15/texas-power-plants-are-skipping-maintenance-to-run-nonstop>.

<sup>50</sup> Earthjustice, “The Energy and Climate Implications of Digital Assets in Texas,” Comments to the Office of Science and Technology Policy, May 9, 2022, [https://static.ewg.org/upload/pdf/2022.05.09\\_Response\\_to\\_OSTP\\_RFI\\_Texas1.pdf](https://static.ewg.org/upload/pdf/2022.05.09_Response_to_OSTP_RFI_Texas1.pdf).

it, the system is “asking society to double pay” – both to produce the energy for mining and then for miners to ease the grid strain to which they contributed.<sup>51</sup> These payments contribute to a larger issue of having consumers, rather than industries with outsized electricity demand like cryptominers, bear the costs of maintaining the electricity grid.<sup>52</sup>

These subsidies to cryptominers also feed back into the worsening climate crisis. The energy used to mine Bitcoin and Ethereum in 2021 resulted in almost 80 million tons of carbon dioxide emissions.<sup>53</sup> Just three cryptomining companies in the U.S. that provided us with clear emissions data alone are responsible for approximately 1.6 million tons emitted annually, the equivalent of almost 360,000 cars – and these figures are only set to go upwards in the coming years.<sup>54</sup> Meanwhile, the climate change that cryptomining is contributing to will further exacerbate extreme weather, creating a feedback loop in which energy demand more frequently exceeds supply, causing further strain on electrical grids and potentially resulting in more payouts to those same cryptomining companies.

Cryptomining is adding significant demand to an already unreliable grid, “pos[ing] enormous challenges to the transmission and distribution system and to prices”<sup>55</sup> and contributing to the global climate crisis. Yet at the same time, cryptominers benefit from huge ERCOT subsidies in the form of demand response agreements that come at the expense of ratepayers and establish “misaligned incentives between crypto-asset miners and grid operators.”<sup>56</sup> As a recent report from the White House Office of Science and Technology Policy found, “Full transparency of demand response participation and payments by crypto-asset miners and other demand response participants are essential” to protect local electricity consumers and the grid.<sup>57</sup> In that vein and to address these concerns, I ask that you respond in writing with answers to the following questions no later than October 31.

1. For the year 2022 to date, and for each of the previous five full calendar years, what has been the annual electricity consumption used for cryptomining in Texas, and how many tons of carbon dioxide emissions have resulted from this energy use?

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<sup>51</sup> Reuters, “Low-carbon bitcoin? Crypto miners' green power talk angers Texas locals,” Avi Asher -Schapiro, September 6, 2022, <https://www.reuters.com/article/usa-bitcoin-energy/insight-low-carbon-bitcoin-crypto-miners-green-power-talk-angers-texas-locals-idUSL8N2ZO08Z>.

<sup>52</sup> EWG, “In bid to protect state’s power grid from collapse, energy-sapping Texas bitcoin miners paid to shut down,” July 13, 2022, <https://www.ewg.org/news-insights/news-release/2022/07/bid-protect-states-power-grid-collapse-energy-sapping-texas>.

<sup>53</sup> Forex Suggest.com, “Global Impact of Crypto Trading,” <https://forexsuggest.com/global-impact-of-crypto-trading/>.

<sup>54</sup> Letter from Senator Elizabeth Warren and colleagues to EPA Administrator Michael Regan and Department of Energy Secretary Jennifer Granholm, July 15, 2022, <https://www.warren.senate.gov/imo/media/doc/2022.07.15%20Letter%20to%20EPA%20and%20DOE%20Re%20Cryptomining%20Environmental%20Impacts.pdf>.

<sup>55</sup> Bloomberg, “Crypto Miners’ Electricity Use in Texas Would Equal Another Houston,” Naureen S. Malik, April 27, 2022, <https://www.bloomberg.com/news/articles/2022-04-27/crypto-miners-in-texas-will-need-more-power-than-houston>.

<sup>56</sup> White House Office of Science and Technology Policy, Climate and Energy Implications of Crypto-Assets in the United States, September 2022, <https://www.whitehouse.gov/wp-content/uploads/2022/09/09-2022-Crypto-Assets-and-Climate-Report.pdf>.

<sup>57</sup> *Id.*

2. How do cryptomining companies plan to scale their operations in Texas?
  - a. How much load will this add to the grid in 2023, and in each of the five following years?
  - b. What plans does ERCOT have in place to handle this increased demand, given existing reliability issues with the grid?
  - c. Has ERCOT conducted or obtained any analyses or estimates that indicate whether any costs from this expansion, and related infrastructure, will be passed on to consumers? If so, what do these analyses or estimates show?
  - d. What plans does ERCOT have to mitigate any such costs to consumers?
3. With what cryptomining companies do you have power purchasing and/or curtailment agreements? Please list all such agreements, including:
  - a. The company, the specific nature of the agreement, and the dates of the agreement.
  - b. How much you have paid each of these companies to curtail their energy use during each period of curtailment, and total annually, in 2022 to date and in each of the five previous years.
  - c. How many times, and for how many hours per occurrence, each company curtailed their operations in 2022 to date and in each of the five previous years.
  - d. The effective hourly rate of payment for curtailment for each of those instances.
  - e. The average cost of electricity to consumers at the times of those periods of paid curtailment by cryptomining companies.
4. Does ERCOT have any estimates or models regarding the impacts of cryptomining on energy costs to local families and businesses? If so, what do these estimates or models show? Have residential electricity costs increased since cryptomining operations began in Texas? What measures are you taking to ensure that local consumers and small businesses are not bearing the costs of competing with cryptomining's energy consumption?

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

Sincerely,



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Elizabeth Warren  
United States Senator



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Al Green  
Member of Congress



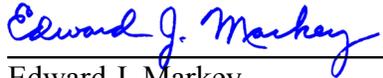
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Sheldon Whitehouse  
United States Senator



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Katie Porter  
Member of Congress



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Edward J. Markey  
United States Senator



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Jared Huffman  
Member of Congress



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Richard J. Durbin  
United States Senator

/s/

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Rashida Tlaib  
Member of Congress