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Bitcoin's Protection under the First Amendment

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"The security of property, and the freedom of speech always go together; and in those countries where a man cannot call his tongue his own, he can scarce call anything else his own."

– **BENJAMIN FRANKLIN**

I. INTRODUCTION

Bitcoin—a decentralized, free and open-source, digital ledger—has been used by millions of people around the world since its invention more than a decade ago. Launched by the pseudonymous Satoshi Nakamoto, bitcoin empowers anyone with an internet connection to transfer value and other information without the need for a centralized intermediary. This paper argues through extensive legal precedent that bitcoin is speech and therefore protected by the First Amendment. Any regulations attempting to curtail bitcoin therefore have clear constitutional implications.

Reliant entirely on constant communication among its participants to operate effectively, **bitcoin is speech, harnessed to transfer value**, among other purposes. Bitcoin users broadcast transactions to all members of the network. Other bitcoin participants known as "miners" compile and propagate those transactions, help reach consensus about bitcoin's ledger, and add their own expressive content. Bitcoin participants also actively debate and signal support for changes to the open-source protocol. Recent changes have fostered a flourishing of artwork and other expressive content on the ledger, which now serves as a repository for tens of millions of such "inscriptions."

Bitcoin is also a political movement. Launched amidst the Great Recession, bitcoin was designed to free individuals from the government monopoly over money. Indeed, the very first message recorded on bitcoin contained a commentary on the failings of government-administered political and financial systems: "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks." **Many bitcoin devotees, including the author of this paper, regard their continued use of bitcoin as an endorsement of its founding ideological principles.** To further those principles, bitcoin adherents collectively maintain and enhance the bitcoin protocol, plan conferences, and engage in political advocacy.

In recent years, bitcoin has faced growing resistance from the very governmental authorities that bitcoin advocates seek to deprive of their monetary monopolies. Some governments, including China and Venezuela, have banned bitcoin or bitcoin mining. In the United States, federal financial regulators have sought to stymie bitcoin in a variety of ways, while various state and local governments have focused on restricting bitcoin-mining. In 2022, for example, New York enacted a two-year moratorium on new or expanded bitcoin-mining facilities tied to certain carbon-based energy.

In taking such steps, regulators do not appear to have considered the First Amendment implications of targeting bitcoin. They should. Bitcoin is a platform for communicating value and other information, including vast amounts of highly expressive content. Engaging with bitcoin therefore involves speech protected by the First Amendment. For many, moreover, using and mining bitcoin also constitutes protected expressive conduct because those activities are intended and widely understood to be a protest against government control and debasement of fiat currencies. Participating in the bitcoin network is also expressive associational activity, which likewise triggers First Amendment interests.

This paper lays out the First Amendment case for proceeding with care when regulating bitcoin. **Bitcoin constitutes a highly communicative and at times boisterous community dedicated to**

winning greater freedom from government fiat. It offers the sort of promise and opportunities that have prompted government jealousy from time immemorial. For these very reasons, the First Amendment implications of bitcoin cannot be ignored.

II. THE FUNDAMENTALS OF BITCOIN

A. How Bitcoin Works

Bitcoin is a free and open-source communications protocol that operates as a decentralized ledger for the transfer of money and other information. First theorized in a 2008 white paper by its pseudonymous inventor, Satoshi Nakamoto, bitcoin enables anyone, anywhere to exchange and store value and information through the internet without a centralized intermediary. *See* Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System*, https://bitcoin.org/bitcoin.pdf ("Bitcoin White Paper").[1]

Unlike prior attempts at creating digital money, bitcoin is not controlled by any single entity or consortium. It has no governing board, no CEO, no employees, no offices, and no headquarters. Instead, distributed users independently operate their own bitcoin "nodes"—software that maintains a copy of bitcoin's ledger and verifies and shares proposed transactions across the network—and elect, on an ongoing basis, whether to adopt changes to the bitcoin protocol. The integrity of the network is a function of technology and economic incentives.

Key to the design of bitcoin is "proof of work," a mechanism for achieving consensus about the validity and sequence of transactions on the ledger generated by bitcoin's distributed members. As Satoshi explained, trying to achieve consensus "based on one-IP-address-one-vote" cannot work for a decentralized system because "it could be subverted by anyone able to allocate many IPs."[2] So instead, bitcoin's proof-of-work mechanism utilizes the "unforgeable costliness" of computing power to achieve distributed consensus.[3]

At a high level, bitcoin's proof-of-work mechanism operates as follows. Bitcoin users propose peer-to-peer transactions sending units of bitcoin—which in many cases bear words or images—by broadcasting the proposed transactions to all members of the bitcoin network. A subset of bitcoin users (often referred to as "miners") participates in a contest for the right to append the transactions by packaging the information into "blocks." These blocks contain cryptographic proof of the temporal order in which they were added, giving rise to the image of a "chain of blocks" and the name "blockchain."

Miners participate in a computationally intensive number-guessing game, calibrated such that the winning guess arrives on average every 10 minutes. The first miner to guess correctly wins the right to finalize a limited number of peer-to-peer transactions and propose them as the next block on the bitcoin blockchain. Network nodes confirm that the winning miner has guessed correctly and proposed valid transactions. Miners then "vote" their approval "with their [computing] power, expressing their acceptance of valid blocks by working on extending them and rejecting invalid blocks

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1. Recent innovations have made it possible to access bitcoin even without an internet connection, expanding Bitcoin's reach to thousands of new users. See Frank Corva, *Machankura 2.0: Turning Feature Phones Into Bitcoin Hardware Wallets,* CoinDesk (Mar. 18, 2024), https://tinyurl.com/2m2nx96u.

2. Bitcoin White Paper, *supra*, at 3. Note that Internet Protocol addresses ("IPs") identify each computer on the Internet.

3. Nick Szabo, *Antiques, Time, Gold, and Bit Gold, Unenumerated Blog* (Aug. 28, 2008), https://tinyurl.com/m84ew96p.

by refusing to work on them."[4] If a miner's block receives support of the majority of computing power being utilized by all miners, the block becomes a part of the blockchain, and the miner receives new units of bitcoin and user-provided transaction fees as a reward.

Bitcoin's proof-of-work system is the most time- and battle-tested consensus mechanism that exists for recording information in a decentralized manner. It incentivizes honest behavior by miners, who are rewarded for keeping accurate records, and prevents any single person or entity from controlling or manipulating the network. To date, the bitcoin protocol has never been successfully hacked or otherwise attacked.

B. Bitcoin Is Communicative

At its core, bitcoin is a communications protocol, relying entirely on the communication of information among network participants to operate. Bitcoin users communicate intended transactions to be relayed to all members of the bitcoin network. Bitcoin miners, after reviewing those intended transactions and choosing a subset to finalize and assemble into a block, must propagate the proposed block in the same manner. Bitcoin miners then review, order, and verify the proposed block and communicate their acceptance of it by deeming that block a part of the blockchain and continuing to add new blocks on top of it. This process requires public disclosure of the entire blockchain, so that users can check the integrity of prior transactions to which they were not parties. Changes to the protocol are also adopted by bitcoin users coming to consensus about which version of the protocol to run, often after vigorous debates.[5] Bitcoin, in short, is comprised of—and cannot function without— constant communication among its participants. **Bitcoin is speech in, speech out.**

Bitcoin is also a medium for communicating expressive content. From its inception, bitcoin has been used to permanently inscribe a wide range of messages on the blockchain, including political, religious, and artistic content. As noted, the first block recorded on bitcoin (often called the "genesis block") inscribed a British newspaper headline: "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks"—a commentary on fiscal policy during the Great Recession. Other early blocks contain a six-verse prayer and an image of former Fed Chair Ben Bernanke:[6]

Numerous bitcoin users also have indelibly recorded articles, poems, images, and songs on the blockchain, including the Bitcoin White Paper, a tribute to Nelson Mandela, and the lyrics of Rick

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4. Bitcoin White Paper, *supra*, at 8.

5. *See, e.g.,* Jonathan Bier, *The Blocksize War: The Battle Over Who Controls Bitcoin's Protocol Rules* (2021); Daniel Kuhn, *The Blocksize Wars Revisited: How Bitcoin's Civil War Still Resonates Today, CoinDesk* (May 17, 2023), https://tinyurl.com/3tvvcxvx.

6. Letter from Marcia Hofmann, Couns., Electronic Frontier Found., Internet Archive, and Reddit to Benjamin M. Lawsky, Superintendent, N.Y. Dep't of Fin. Servs. 15 (Oct. 21, 2014), https://tinyurl.com/mrrnedv6.

Astley's *Never Gonna Give You Up!*[7] All of these messages are publicly viewable on the blockchain and will remain so as long as bitcoin continues to operate.

The variety of expressive messages communicated on bitcoin has increased over time. From the beginning, bitcoin users have created "vanity addresses," allowing users to send and receive bitcoin from wallet addresses containing various words and phrases.[8] "OpenTimestamps," introduced in September 2016, enabled bitcoin users to register and authenticate documents and records on the blockchain.[9] "Ordinals," a protocol for associating expressive content with specified units of bitcoin, has rapidly proliferated since its introduction in January 2023. Through Ordinals-facilitated inscriptions, bitcoin users have inscribed more than 30 million expressive works, now worth hundreds of millions of dollars, directly on the blockchain.[10] Below are just a few examples:[11]

"Runes," launched in April 2024, helps bitcoin users to, among other things, efficiently create fungible tokens, most of which are "meme" coins that employ humor on the blockchain.[12] And bitcoin "Layer 2" networks are beginning to permit bitcoin users to create ever more advanced and communicative applications, including social media applications and tools for permanently recording the news.[13]

C. Bitcoin Is Political

Since its inception, bitcoin has also been political. **Bitcoin was designed to serve as an alternative to government-controlled fiat currencies, such as the U.S. dollar. It was created in reaction to government-led bank bailouts during the Great Recession, as evidenced by Satoshi**

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7. *See*, e.g., id.; see also Ken Sherriff, *Hidden Surprises in the Bitcoin Blockchain and How They Are Stored, Ken Sherriff's Blog* (Feb. 2014), https://tinyurl.com/4a7vys7e. ; How Is the Whitepaper Decoded From the Blockchain (Tx With ~1000x m of n Multisig Outputs), Stack Exchange (Bitcoin), https://tinyurl.com/5y7ewzrc.

8. Helen Partz, *How to Put Words into a Bitcoin Address: Understanding Vanity Addresses, CoinTelegraph* (Aug. 23, 2023), https://bit.ly/4epU3Gb.

9. Peter Todd, *OpenTimestamps: Scalable, Trust-Minimized, Distributed Timestamping with Bitcoin* (Sept. 15, 2016), https://tinyurl.com/4k9sb5zy.

10. Ordinals, https://ordinals.com/; Jack Kubinec, *Ordinals are Driving Up Bitcoin Fees—But that May Be Good for the Network, Blockworks* (Dec. 19, 2023), https://tinyurl.com/3nrwmpbe; James Morales, *Bitcoin Ordinals a Success? BTC Set to Gain More Ethereum Capabilities, CCN* (Oct. 10, 2023), https://tinyurl.com/4menh453.

11. TwelveFold, https://twelvefold.io/; Ordinals Inscription 73844506, https://tinyurl.com/58xp4xf5; Ordinals Inscription 74378587, https://tinyurl.com/24uz5rpk; Ordinals Inscription 74378640, https://tinyurl.com/tz978wcc.

12. *The Race Is On to Mint One of the First Bitcoin Runes*, Crypto News (Apr. 19, 2024), https://tinyurl.com/566bvj4m.

13. *See*, e.g., Roger Huang, *Your Guide To Nostr: The Decentralized Network For Everything, Forbes* (July 17, 2024), https://tinyurl.com/yc87ahjp.

Nakamoto's inaugural message criticizing the bailouts.[14] Satoshi envisioned that bitcoin would be "a system for electronic transactions without relying on trust" in banks or governments.[15]

To achieve that vision, Satoshi hard-coded certain political and moral values into the bitcoin protocol. First, **bitcoin is anti-debasement.** To prevent the devaluation that has accompanied *all* government-controlled money for millennia, Satoshi designed the bitcoin protocol to cap the total supply of bitcoin at 21 million units (divisible into hundred millionths known as "satoshis").[16] (contemplating a "predetermined number of coins"). Second, **bitcoin is pro-individual liberty and anti-censorship.** Unlike the traditional financial system, which individuals cannot use without the permission of banks and governments, bitcoin is open to everyone with an internet connection (and even those without).[17] And bitcoin's decentralized nature prevents governments and banks from censoring transactions. *See id*. at 1 ("What is needed is an electronic payment system … allowing any two willing parties to transact directly with each other without the need for a trusted third party."). Third, **bitcoin encodes strong private property rights**. No governmental assistance is needed to enforce an individual's right to own and transfer bitcoin; instead, the protocol guarantees those rights to whoever knows the private key associated with the bitcoin, which can be represented by twelve English-language words. And once a bitcoin transaction is added to a block and incorporated into the blockchain, it cannot be undone. *See id*. (envisioning "[t]ransactions that are computationally impractical to reverse").

As Satoshi saw it, bitcoin addresses the "root problem with conventional currency," which is "all the trust that's required to make it work."[18] By eliminating the "central bank," bitcoin rid itself of the risk that it would be "debase[d]" and "len[t] … out in waves of credit bubbles."[19] Bitcoin also ensured that users would not need to "trust [intermediaries] with our privacy," "trust them not to let identity thieves drain our accounts," or fund their "massive overhead costs" that "make micropayments impossible."[20]

Many bitcoin users share bitcoin's values and participate in the network as way of demonstrating disapproval of—and effecting change to—government monetary policies.[21] Coinbase co-founder and CEO Brian Armstrong, for example, has explained that without bitcoin serving as "a check and balance on the dollar … the incentive is for the supply [of dollars] to just be inflated away."[22] Erik Vorhees, a bitcoin advocate and entrepreneur, has championed bitcoin as a way to "sidestep the government

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14. *See supra* at 2; see also Satoshi Nakamoto, *Bitcoin Open Source Implementation of P2P Currency, P2P Foundation* (Feb. 11, 2009), https://tinyurl.com/56mvaa58 ("The root problem with conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust.").

15.   Bitcoin White Paper, *supra*, at 8.

16.   *Id*. at 4.

17. *See* Corva, *supra* note 1.

18. Satoshi Nakamoto, *Bitcoin Open Source Implementation of P2P Currency* (Feb. 11, 2009), https://tinyurl.com/mt9ct-tcr.

19. *Id*.

20. *Id*.

21. *See, e.g.*, Fred Steinmetz et al., *Ownership, Uses and Perceptions of Cryptocurrency: Results From a Population Survey*, 173 Tech. Forecasting & Soc. Change 121073 (2021) (62% of survey respondents state that their crypto ownership is ideologically motivated).

22. *Why Bitcoin Will Take Over The World: Coinbase CEO Brian Armstrong*, Hoover Institution (Mar. 19, 2024), https://tinyurl.com/4jnsenk4.

entirely" when it comes to "money creation and management."[23] Jack Dorsey, co-founder of Twitter and Block, promotes bitcoin in part because it can "remove [money's] dependency on governments and corporations" and give "individuals a lot more control and a lot more free agency."[24] Many other leading proponents of bitcoin have expressed similar views.[25]

In sharing these values, bitcoin adherents form a distinct and identifiable political group. They regularly gather to support the protocol and advance its mission. Recently, more than 20,000 people participated in the "Bitcoin 2024" conference in Nashville, Tennessee, with speakers ranging from technologists to leading policymakers and presidential candidates.[26] At least 31 bitcoin-related events and conferences are scheduled for the second half of 2024.[27] Many bitcoin proponents— including the President of El Salvador and U.S. Senator Cynthia Lummis—have changed their profile pictures on social media to feature identifiable markers, such as "laser eyes," that demonstrate their endorsement of bitcoin's principles.[28] And bitcoin users have shared protest art on the platform itself, expressing support for the technology's potential to "free the world"[29]—a reference to bitcoin's role as a monetary lifeline to "[d]issidents, human rights defenders, journalists, and nonprofit organizations in authoritarian countries."[30]

The political nature of bitcoin should come as no surprise. The design and governance of money have been core political issues since the most ancient of civilizations. In the United States, the Constitution expressly addresses monetary issues, assigning Congress the power "[t]o Coin Money" and "regulate the Value thereof," U.S. Const. art. I, § 8, while barring the States from "coin[ing] Money." *Id*. § 10. Founding-era debates about a national bank—including its ability to create a national currency—sharply divided the Framers.[31] And the United States' adoption, modification, and ultimate abandonment of the gold standard sparked vigorous debate.[32] Bitcoin, by purposely challenging the government's monopoly over money, is inextricably bound up in politics.

III. GOVERNMENT HOSTILITY TO BITCOIN

As bitcoin has grown, it has come under attack from governments worldwide—the very entities bitcoin seeks to divest of their monopolies over money.

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23. *Erik Voorhees on Understanding Libertarianism*, WBD150, What Bitcoin Did Podcast (Sept. 24, 2019), https://tinyurl.com/2kju2y8v.

24. Festival of the Sun, *Jack Dorsey: Tech and Freedom* at 14:44, 20:15, YouTube (June 22, 2024), https://tinyurl.com/mm43pnsy.

25. *See, e.g.*, Saifedean Ammous, *The Bitcoin Standard* 136 (2018) ("The fundamental scam of modernity is the idea that government needs to manage the money supply."); Balaji Srinivasan, *The Network State* (2022), https://tinyurl.com/55d2x-yjm (Bitcoin is "stateless capitalism, capitalism without corporations, decentralized censorship-resistance, and neutral international law").

26. Bitcoin 2024 Headliners, https://tinyurl.com/mrxk8abj; Sen. Tim Scott, Press Release, *Scott Highlights Bitcoin's Potential At 'Bitcoin 2024' Conference* (July 26, 2024), https://tinyurl.com/5cvrnu92.

27. *See, e.g., Bitcoin Events & Conferences 2024*, Bitcoin Magazine (last viewed Aug. 2, 2024), https://tinyurl.com/4hd7ssns.

28. See Chairforce, *A Look at the Origin of Bitcoin Laser Eyes, as El Salvador's President Dons Them*, Bitcoin Magazine (June 7, 2021), https://tinyurl.com/5frxd69v.

29. See *supra* note 11.

30. *Financial Freedom: Money That Dictators Can't Stop*, Human Rights Foundation (2024), https://tinyurl.com/y2jmr698.

31. *See, e.g.*, U.S. Treasury Dep't, *Final Version of the Second Report on the Further Provision Necessary for Establishing Public Credit* (Dec. 13, 1790), https://tinyurl.com/3bpr2c67 (discussing advantages of money issued by a national bank).

32. *See, e.g.*, Richard N. Cooper, *The Gold Standard: Historical Facts and Future Prospects*, Brookings Papers on Economic Activity (1982), https://tinyurl.com/3e5vkbff.

Several countries have severely limited bitcoin activity, with some of the most onerous restrictions imposed in countries with the least robust civil liberties. China, for example, has restricted access to bitcoin and banned bitcoin mining in an effort to enforce its restrictive capital controls.[33] Afghanistan banned bitcoin trading soon after the Taliban's return to power in 2022.[34] Venezuela banned bitcoin mining in 2024.[35] In Africa, countries ranging from Algeria to Zimbabwe have banned bitcoin activity in recent years.[36]

In the United States, government hostility to bitcoin has dramatically increased in the last few years, coinciding with increasing bitcoin adoption. At the state and local level, governments have targeted bitcoin mining. In November 2022, for example, New York enacted a two-year moratorium on new permits for bitcoin miners using behind-the-meter, carbon-based power (that is, bitcoin miners generating their own electricity from carbon-based sources rather than drawing it from the power grid).[37] Other States have contemplated similar restrictions.[38] Several counties and municipalities also have enacted bans, moratoriums, or zoning laws to restrict bitcoin mining. Clay County, North Carolina, for instance, banned bitcoin-mining facilities.[39] And Missoula County, Montana issued zoning rules requiring bitcoin-mining facilities to be located in industrial areas and use only renewable energy.[40]

In targeting bitcoin mining, state and local legislatures generally have cited purported environmental concerns associated with the computationally intensive mining process.[41] Bitcoin mining, like other forms of computing, can require significant amounts of energy. Yet most of these state and local laws have targeted bitcoin mining alone, even though other forms of computation, such as artificial intelligence, are extremely energy-intensive.[42]

Federal policymakers likewise have targeted bitcoin. In 2024, the Biden Administration proposed an excise tax on bitcoin-mining facilities equal to 30% of the cost of electricity used, which would, by eroding far more than 100% of mining profit margins, effectively eliminate bitcoin mining in the United States.[43] Meanwhile, federal agencies have taken coordinated actions designed to

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33. Vidya Ranganathan & Summer Zhen, *Bruised by Stock Market, Chinese Rush into Banned Bitcoin, Reuters* (Jan. 25, 2024), https://tinyurl.com/vrfvcf9m.

34. Eltaf Najafizada, *Taliban Ban Crypto in Afghanistan, Arrest Dealers of Tokens*, Bloomberg (Aug. 26, 2022), https://tinyurl.com/5a9cch27.

35. Amaka Nwaokocha, *Venezuela Bans Crypto Mining to Protect Power Grid*, Cointelegraph (May 19, 2024), https://bit.ly/4cQswww.

36. Habtamu Fuje, et al., *Africa's Growing Crypto Market Needs Better Regulations*, IMF Blog (Nov. 22, 2022), https://tinyurl.com/stdr37s6

37. N.Y. Env't Conserv. Law § 19-0331; Luis Ferré-Sadurní and Grace Ashford, *New York Enacts 2-Year Ban on Some Crypto-Mining Operations*, New York Times (Nov. 22, 2022), https://tinyurl.com/yc5p3k97.

38. *See, e.g.*, Sebastian Sinclair, *Oregon Weighing Crypto Miner Carbon Crackdown*, Blockworks (Jan. 11, 2023), https://tinyurl.com/5n6nhea9.

39. Becky Long, *No Commercial Crypto Mining Allowed*, Clay County Progress (Aug. 4, 2022), https://tinyurl.com/59z4c-j8s.

40. Martin Kidston, *Missoula County Clamps Down on Crypto Mining; Requires 100% New Renewable Power*, Missoula Current (Feb. 12, 2021), https://tinyurl.com/fb52dcpe.

41. Jimmy Vielkind, *New York Gov. Kathy Hochul Signs Bill Limiting Cryptocurrency Mining*, Wall Street Journal (Nov. 22, 2022), https://tinyurl.com/49cd7up2 (Governor Hochul characterizing the moratorium as an "important step[] to prioritize the protection of our environment").

42. *See, e.g.*, International Energy Agency, Electricity 2024: *Analysis and Forecast to 2026*, at 8 (2024), https://tinyurl.com/2mr9whjm (forecasting that demand for the kinds of data centers used for AI will double in electricity consumption between 2022 and 2026, reaching 1,000 Terawatt hours, or a usage-level equivalent to that of Japan).

43. U.S. Dep't of the Treasury, *General Explanations of the Administration's Fiscal Year 2025 Revenue Proposals* 72 (Mar. 11, 2024), https://tinyurl.com/vpzzw2vt.

shut down the bitcoin sector. The SEC and federal banking regulators, for example, have issued informal guidance designed to deprive bitcoin firms of the banking services they need to operate their businesses. The Federal Reserve issued guidance in 2023 that in effect prohibits state member banks from holding bitcoin in their own accounts. Federal Reserve, *Policy Statement on Section 9(13) of the Federal Reserve Act,* 88 Fed. Reg. 7848 (Feb. 7, 2023). And in 2022, the SEC issued *Staff Accounting Bulletin No. 121*, which by its terms makes it prohibitively expensive, to the point of commercial non-viability, for financial institutions to hold bitcoin on their balance sheets. 87 Fed. Reg. 21015 (Apr. 11, 2022).

IV. BITCOIN IS PROTECTED BY THE FIRST AMENDMENT

Most (if not all) governmental restrictions targeting bitcoin have failed to account for the fact that, under bedrock First Amendment principles, **bitcoin activity is entitled to First Amendment protection.**[44] First, bitcoin consists entirely of the creation and transmission of information, which is speech protected by the First Amendment. Second, bitcoin activity is at minimum protected expressive conduct. And third, participation in the bitcoin network is expressive association separately safeguarded by the First Amendment.

A. Bitcoin Is Speech

The First Amendment's Free Speech Clause provides that the government "shall make no law … abridging the freedom of speech." U.S. Const. amend. I. State constitutions contain similar provisions. *E.g.,* N.Y. Const. art. I, § 8 ("no law shall be passed to restrain or abridge the liberty of speech"). The Supreme Court has repeatedly recognized that "the creation and dissemination of information are speech within the meaning of the First Amendment." *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 570 (2011). "If the acts of 'disclosing' and 'publishing' information do not constitute speech, it is hard to imagine what does fall within that category." *Bartnicki v. Vopper*, 532 U.S. 514, 527 (2001).

That principle applies even in highly technical or apolitical contexts. In *Sorrell*, for example, the Supreme Court held that the communication of information about physicians' prescription practices used for marketing qualified as protected speech. 564 U.S. at 558, 564. The Court also has recognized that the communication of financial data such as "price and quantity information" is protected speech. *City of Cincinnati v. Discovery Network, Inc.*, 507 U.S. 410, 422 (1993). Relatedly, courts have held that "computer code conveying information" constitutes speech. *E.g., Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 449-50 (2d Cir. 2001); *Junger v. Daley*, 209 F.3d 481, 485 (6th Cir. 2000). As those courts have explained, a book consisting entirely of "1's and 0's" "would be no different for constitutional purposes than if it had been written in English." *Corley*, 273 F.3d at 446.

Using the bitcoin protocol qualifies as protected speech because it consists entirely of the "creation and dissemination of information." *Sorrell*, 564 U.S. at 570. As discussed, one of bitcoin's most important innovations was to harness speech to transfer value and other information. An individual who transmits units of bitcoin is simply broadcasting information publicly to all participants in the bitcoin network. That is protected speech even if the individual's transmission contains only the kinds of "price and quantity" data necessary to complete a bitcoin transaction, including the amount

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44. Courts and commentators have only begun to consider Bitcoin's First Amendment implications in recent years. *See, e.g.*, Justin S. Wales & Richard J. Ovelmen, *Bitcoin is Speech: Notes Toward Developing the Conceptual Contours of Its Protection Under the First Amendment*, 74 U. Miami L. Rev. 204 (2019); Hannibal Tavis, *Crypto Coin Offerings and the Freedom of Expression*, 24 Chap. L. Rev. 401 (2021); *Van Loon v. Dep't of Treasury*, 688 F. Supp. 3d 454, 471 (W.D. Tex. 2023).

of bitcoin transferred, the individual's public address, and the recipient's address. *Cincinnati*, 507 U.S. at 422. And it is certainly protected when the individual's message also contains more expressive content, such as an Ordinal "inscription" creating or memorializing a photograph, song, or the like—as has occurred more than 35 million times since November 2021.[45]

Bitcoin mining is also protected speech because it involves at least three forms of communication and expression. First, miners publish and help verify third-party speech. In retransmitting and devoting computing power to a proposed block, miners communicate to the bitcoin network a "substantive statement" of their "approval" of the messages within that block, much like a LinkedIn user who "endorses" another user's skills. *Cf., e.g., Bland v. Roberts*, 730 F.3d 368, 386 (4th Cir. 2013) ("That a user … likes the page instead of typing the same message with several individual key strokes is of no constitutional significance.").

Second, bitcoin miners are akin to "[t]raditional publishers and editors [that] select and shape other parties' expression into their own curated speech products." *Moody v. NetChoice, LLC*, 144 S. Ct. 2383, 2394 (2024); see also *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 636 (1994) (cable companies selecting which television channels to include in their bundle is speech). Before transmitting a block, miners must choose which messages to include—and which *not* to include—in it. That exercise "in the selection and presentation of content" is prototypical "editorial discretion," which is protected speech. *Moody*, 144 S. Ct. at 2402 (quotation marks omitted). Though most miners, in keeping with bitcoin's anti-censorship ethos, choose not to select messages based on political views, that choice is itself expressive: "It is as much an editorial choice to convey all speech except in select categories as to convey only speech within them." *Id.* at 2406; *see also Pac. Gas & Elec. Co. v. Pub. Utilities Comm'n of California*, 475 U.S. 1, 16 (1986) (plurality op.) ("[T]he choice to speak includes within it the choice of what not to say.").

Third, as with ordinary bitcoin users, miners generate their own speech. Each new block offers a field for miners to inscribe a message, which many miners have used for expressive purposes. Satoshi Nakamoto criticized bank bailouts in bitcoin's genesis block. More recently, Marathon Digital, one of the world's largest bitcoin miners, has stamped "Made in USA" on every block it mines in the United States.[46] Miners also publicly communicate their agreement (or disagreement) to proposed changes to the bitcoin protocol, thereby influencing the direction of the protocol.[47] And they communicate their views on the validity of each new block, publicly taking a position on the true state of the blockchain by "vot[ing] with their CPU power, expressing their acceptance of valid blocks by working on extending them and rejecting invalid blocks by refusing to work on them."[48]

Governments are likely to argue that using and mining bitcoin is "economic activity" unprotected by the First Amendment. Sorrell, 564 U.S at 567. They might claim that it is akin to banking or money transfers, which today likewise occur through the transmission of information over the internet. But physically handing dollar bills to a bank teller has never been understood to be protected speech, and the computerization of that conduct does not alter its constitutional status. **Bitcoin is different in kind. Its decentralized, open-source, and fully virtual nature means that it both consists entirely of—and cannot exist without—the constant communication of information between its millions of participants.** In a bitcoin transaction, no greenbacks or bullion change hands, even

45. Morales, *supra* note 6.

46. Nik Hoffman, *Marathon Digital Now Stamps All Bitcoin Mined in America as "Made in USA*," Bitcoin Magazine (Aug. 12, 2024), https://tinyurl.com/zdyje6dv.

47. *See Bitcoin's Elegant Upgrade Mechanism: Miner Voting*, Coinbase Blog (Jan. 2, 2016), https://tinyurl.com/rf8vw7bs.

48. Bitcoin White Paper, *supra*, at 8.

indirectly. Rather, **the value being transferred is simply speech**. Bitcoin is also far more expressive than banking or money transferring. Transfers of bitcoin are effected solely through communication, including by whispering a 12-word private key to another person.[49] As discussed, moreover, bitcoin's blockchain publicizes tens of millions of expressive and political messages, including artwork and poetry, and a community of miners editorializes and publishes the contents of blocks, in addition to generating their own speech. Essential to bitcoin's function is the public, transparent disclosure of the entire ledger so that users can verify all transactions. Unlike banking or money transferring, therefore, bitcoin involves speech through and through.

B. Using and Mining Bitcoin Is Expressive Conduct

Even if using and mining bitcoin were understood as economic activity, they would still be entitled to First Amendment protection. The First Amendment "does not end at the spoken or written word." *Texas v. Johnson*, 491 U.S. 397, 404 (1989). Activities construed as conduct, rather than speech, are still protected to the extent they are "'sufficiently imbued with elements of communication.'" *Id*. Under the Supreme Court's test for whether conduct qualifies for First Amendment protection, courts ask whether the conduct is intended to convey a particularized message and whether the message likely would be understood by those who viewed it. *Id*.; *see also Clark v. Cmty. for Creative Non-Violence*, 468 U.S. 288, 294 (1984).

The Supreme Court "has recognized a wide array of conduct that can qualify as expressive, including nude dancing, burning the American flag, flying an upside-down American flag with a taped-on peace sign, wearing a military uniform, wearing a black armband, conducting a silent sit-in, refusing to salute the American flag, and flying a plain red flag." *Masterpiece Cakeshop v. Colorado C.R. Comm'n*, 584 U.S. 617, 657 & n.1 (2018) (Thomas, J., concurring) (collecting cases). More recently, courts have held that remaining in a public park "to simulate an 'occupation'" is protected expressive conduct. *Occupy Fort Myers v. City of Fort Myers*, 882 F. Supp. 2d 1320, 1327-28 (M.D. Fla. 2011). Likewise, "giving food and drinks to voters" has been deemed protected when intended to "'convey the importance of voters staying in line, the importance of voting, and to emphasize that everyone's vote counts.'" *Brooklyn Branch of NAACP v. Kosinski*, 657 F. Supp. 3d 504, 523 (S.D.N.Y. 2023) (brackets omitted).

Under that framework, using and mining bitcoin are expressive conduct. Many of bitcoin's developers, users, and proponents understand and promote their involvement in bitcoin as serving as "a check and balance on the dollar," for example, and eliminating money's "dependency on governments and corporations."[50] **In transferring and mining bitcoin, many individuals, including the author of this paper, aim to send a political message of protest against the status quo of governmental monopolies over money and to signal support for an alternative, decentralized currency.**[51] Bitcoin has been characterized "as perhaps the largest peaceful protest in the history of mankind."[52] Indeed, **the usage is the expression**: transacting in bitcoin publicly shows that an alternative form of money is available, functional, and secure.

That some people may acquire or mine bitcoin for purely financial reasons does not undermine

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49. *See, e.g., What is a Seed Phrase (Secret Recovery Phrase)?*, Ledger Academy (Feb. 22, 2024), https://tinyurl.com/8km-8ma6a.

50. *Why Bitcoin Will Take Over The World, Coinbase CEO Brian Armstrong, supra* note 13; *Jack Dorsey: Tech and Freedom, supra* note 15.

51. *See, e.g.,* Mickey Koss, *Bitcoin Is Freedom's First Line of Defense*, Bitcoin Magazine (May 30, 2022), https://tinyurl.com/ypjcatjw.

52. *Id*.

the expressive intent of the many who transfer and mine bitcoin as a political statement. Rather, through more than a decade of advocacy on social media, at conferences, and in the political arena, bitcoin participants have conveyed to the public that "bitcoin is—and always has been—a mostly ideological undertaking, more philosophy than finance."[53] People therefore recognize owning and mining bitcoin as "a libertarian project to free mankind from the shackles of government—most of all its power to debase a 'fiat' currency by printing more of it."[54] These widely understood facets of the bitcoin network imbue transferring and mining bitcoin with communicative significance.

Thus, although expenditures and transfers of fiat money may not be expressive, using and mining bitcoin goes well beyond the mere conveyance of funds. **The difference between transacting in U.S. dollars (unprotected) and transacting with bitcoin (protected) is akin to that between sleeping in a public park (unprotected) and temporarily occupying it in protest (protected)**. *See Occupy Fort Myers*, 882 F. Supp. 2d at 1327-28. Because bitcoin activity, like picketing or public protests, communicates for many a specific and widely understood ideology, it is expressive conduct covered by the First Amendment.

C. The Bitcoin Network Is An Expressive Association

In addition to protecting speech, the First Amendment also guarantees "the right of the people to peaceably assemble, and to petition the Government for a redress of grievances." *Americans for Prosperity Found. v. Bonta*, 594 U.S. 595, 605-06 (2021). From these rights, the Supreme Court has "'long understood as implicit … a corresponding right to associate with others.'" *Id*. Protected association "'is especially important in preserving political and cultural diversity and in shielding dissident expression from suppression by the majority.'" *Id*. (quoting *Roberts v. United States Jaycees*, 468 U.S. 609, 622 (1984)).

Associations protected by the First Amendment need not be "advocacy groups" but "must engage in some form of expression, whether it be public or private." *Boy Scouts of Am. v. Dale*, 530 U.S. 640, 648 (2000). In determining what constitutes "expressive activity," the "Supreme Court has cast a fairly wide net." *Pi Lambda Phi Fraternity, Inc. v. Univ. of Pittsburgh*, 229 F.3d 435, 443 (3d Cir. 2000). The expression may serve "'a wide variety of political, social, economic, educational, religious, and cultural ends.'" *Bonta*, 594 U.S. at 606. Among other things, courts look to whether the association has a "strong social component" or furthers a "general mission." *Id*. (discussing *Roberts*, 468 U.S. at 622, and *Dale*, 530 U.S. at 649).

Under that rubric, courts have deemed a wide range of groups protected by the First Amendment. Protected associations include not only political parties and advocacy groups, but also donors to a charity, *Bonta*, 594 U.S. at 618, parade organizers, *Hurley v. Irish-American Gay, Lesbian and Bisexual Group of Boston*, 515 U.S. 557 (1995), law school faculty, *Burt v. Rumsfeld*, 322 F. Supp. 2d 189, 198 (D. Conn. 2004), a motorcycle club, *Coles v. Carlini*, 162 F. Supp. 3d 380, 395 (D.N.J. 2015), and beauty-pageant organizers and participants, *Green v. Miss United States of Am., LLC*, 533 F. Supp. 3d 978, 994 (D. Or. 2021).

The bitcoin network qualifies as an expressive association. Although bitcoin does not have a governing body to take "public stance[s]," *Pi Lambda*, 229 F.3d at 443–44, **the bitcoin protocol is encoded with political and moral values—it is anti-debasement, anti-censorship, and pro-individual liberty by design.** *See supra* at 6–7. As discussed above, many of bitcoin's developers,

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53. Alan Feuer, *The Bitcoin Ideology*, N.Y. Times (Dec. 14, 2013), https://tinyurl.com/mun9d8bn.

54. Greg Ip, *Crypto Meltdown Exposes Hollowness of Its Libertarian Promise*, Wall St. J. (May 18, 2022), https://tinyurl.com/ye22b3dx.

users, and proponents participate in the network to support its "general mission" of protesting against centralized monetary policy. *Pi Lambda*, 229 F.3d at 443; *see also Five Borough Bicycle Club v. City of New York*, 483 F. Supp. 2d 351, 365 (S.D.N.Y. 2007) (participating in a "group whose 'general mission' is to educate and instill values" qualifies as "expressive association").[55] Indeed, merely by joining the bitcoin network—perhaps the most open and inclusive network in the word—users express support for the principle of free association. The bitcoin network also has a "strong social component." *Pi Lambda*, 229 F.3d at 443. Bitcoin participants host conferences and talks, propose and debate improvements to the bitcoin protocol, and display their bitcoin affiliation on social media.[56] The network therefore bears all the hallmarks of an expressive association—it is part political party, part advocacy group, and part social club.

Governments might argue that bitcoin participants are too dispersed and ideologically diverse to constitute an expressive association. One court, for instance, has expressed skepticism that users of a website where employees review their employers are part of an expressive association, reasoning that they appear to lack a "common endeavor" or "unifying mission." *See In re Grand Jury Subpoena*, No. 16-03-217, 875 F.3d 1179, 1184 (9th Cir. 2017) (quotation marks omitted). But bitcoin's participants *do* have a "unifying mission"—to create a censorship-resistant, community-governed platform for transferring value and other information. Although decentralized and dispersed, many of bitcoin users are united in the "political" and "social" virtues that bitcoin encapsulates. *Bonta*, 594 U.S. at 606.

Nor does it undermine the expressive nature of the bitcoin network that some—perhaps most—bitcoin participants have economic as well as expressive motives. The Supreme Court has rejected the argument that films, for example, do not "fall within the First Amendment's aegis because their production, distribution, and exhibition is a large-scale business conducted for private profit." *Joseph Burstyn, Inc. v. Wilson*, 343 U.S. 495, 501 (1952); *see also New York Times Co. v. Sullivan*, 376 U.S. 254, 263 (1964) (same for newspaper publishers). Similarly, for-profit companies may have associative rights. *Green*, 533 F. Supp. 3d at 994 (beauty pageant organizer); *Bear Creek Bible Church v. EEOC*, 571 F. Supp. 3d 571, 615 (N.D. Tex. 2021) ("[F]or-profit businesses … may pursue a right of association claim."). What matters is that the bitcoin network is widely understood to "engage in some form of expression," *Dale*, 530 U.S. at 648, not whether members also hope to make a profit.

V. CASE STUDY: BITCOIN MINING RESTRICTIONS

Because bitcoin is protected speech and association, laws targeting bitcoin must satisfy the appropriate level of First Amendment scrutiny. That does not mean every law impairing bitcoin is unconstitutional—only that such laws must adequately account for the weighty expressive interests at stake. **In enacting laws hostile to bitcoin to date, however, legislatures have been heedless of First Amendment interests. It therefore is no surprise that some of those laws would not survive First Amendment scrutiny.**

Consider the bitcoin-mining moratoriums enacted in New York and in certain municipalities. As discussed, New York's moratorium prohibits the issuance of new permits for bitcoin miners using

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55. Justin Wales, *The Supreme Court, Crypto, and the First Amendment (Collecting Cases): Americans For Prosperity Foundation v. Bonta*, Medium (July 1, 2021), https://tinyurl.com/mrbu9p32 (Bitcoin "is a collective worldwide association of individuals coming together to support a philosophical and political network that advocates against centralized monetary policy.").

56. *See, e.g.*, Bier, *supra* note 3; Kuhn, *supra* note 3.

behind-the-meter, carbon-based power—that is, bitcoin miners generating their own electricity from carbon-based sources (e.g., natural gas) rather than drawing it from the power grid. Other laws go even further, prohibiting *any* new bitcoin-mining facilities regardless of energy source. *See supra* at 9–10. Most of those laws do not restrict other energy-intensive forms of computing, such as data centers used for artificial-intelligence systems. Under a straightforward application of First Amendment principles, those bitcoin-mining restrictions violate the First Amendment.

First, the bitcoin-mining restrictions regulate activity that is protected by the First Amendment. As discussed above, bitcoin mining is protected speech because it involves the communication of a wide array of information, including highly expressive content. **Bitcoin mining is also protected expressive conduct because it is intended and perceived as an embrace of bitcoin's principles and as a protest of the fiat status quo. And participating in the bitcoin network through mining is a form of expressive association—joining a collective effort to advance bitcoin's ideological mission of dislodging government monopolies over money and enhancing individual liberty.**

Second, bitcoin-mining moratoriums "abridg[e]" First Amendment rights. U.S. Const. amend. I. That is obviously true of a flat ban on bitcoin mining, but it is also true of laws like New York's that limit, condition, or selectively tax energy usage for bitcoin mining. Governments likely would argue that such laws permissibly restrict bitcoin miners' energy usage, not their speech. But the First Amendment does not confine itself to direct assaults on expression. In *Minneapolis Star & Tribune v. Minnesota Commissioner of Revenue*, for instance, the Supreme Court invalidated a tax on ink for newspapers earning more than $100,000 in revenue as an abridgement of First Amendment rights. 460 U.S. 575, 592-93 (1983). Even though the tax was on *ink*, not *words*, the Court understood it to "present[] such a potential for abuse that no interest suggested by [the State] can justify the scheme." *Id.* at 592; see also *Citizens United v. FEC*, 558 U.S. 310, 372 (2010) (invalidating restriction on corporate expenditures under the First Amendment). In *Sorrell*, the law at issue likewise targeted manufacturers' speech indirectly, by limiting their access to a component-good (prescription data) that was critical to their ability to engage in effective marketing communications and was available to other speakers. 564 U.S. at 562-65.

So too here, laws like New York's moratorium limit bitcoin miners' access to an ingredient (carbon-based energy) that is critical to their ability to communicate and is available to all other speakers. Just as the government could not prohibit Netflix servers alone from using carbon-based power without implicating the First Amendment, nor prohibit only fashion magazines from using cheap lumber, so it cannot prohibit bitcoin miners alone from using a particular form of energy without triggering First Amendment scrutiny. *See Minneapolis Star*, 460 U.S. at 592.[57]

For these reasons, many (and perhaps all) existing bitcoin-mining restrictions, if challenged in court, must be subject to First Amendment scrutiny. Laws that single out bitcoin mining should be subject to heightened scrutiny because such laws are content- and speaker-based restrictions. They "target[] speech based on its communicative content" and "favo[r] some speakers over others." *City of Austin, Texas v. Reagan Nat'l Advert. of Austin, LLC*, 596 U.S. 61, 69 (2022); *Barr v. Am. Ass'n of Pol. Consultants, Inc.*, 140 S. Ct. 2335, 2347 (2020) (plurality op.). Miners could avoid the moratoriums simply by choosing to generate equally energy-intensive speech with different content, such as videos or chatbots. Thus, whether bitcoin mining is characterized as pure speech or expressive conduct, the restrictions on bitcoin mining should be subject to strict or "the most exacting" scrutiny. *See Reed v.*

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57. Recognizing the First Amendment implications of indirect burdens on bitcoin would not call into question the many longstanding laws—from antitrust laws to speed limits—that may indirectly burden speech in certain applications. A person, for example, obviously can be punished for dangerously speeding as a form of protest. But that is because generally applicable, longstanding laws like these, even when they implicate speech rights, would satisfy means-end scrutiny.

Town of Gilbert, Ariz., 576 U.S. 155, 171 (2015) (applying strict scrutiny to content-based restriction); *Johnson*, 491 U.S. at 412 (applying "most exacting scrutiny" to restriction on expressive conduct when conduct "was restricted because of the content of the message").

Nor is bitcoin mining limited to commercial speech, which generally is subject to less exacting "intermediate" scrutiny. *See Vugo, Inc. v. City of New York*, 931 F.3d 42, 44, 50 (2d Cir. 2019) (intermediate scrutiny applies to content-based restrictions and speaker-based restrictions on commercial speech). Commercial speech "does no more than propose a commercial transaction." *Virginia State Bd. of Pharmacy v. Virginia Citizens Consumer Council, Inc.*, 425 U.S. 748, 776 (1976); *Cincinnati*, 507 U.S. at 423 (characterizing this as "*the test* for identifying commercial speech"). Although many bitcoin transactions are commercial in nature, miners engage in various kinds of speech beyond reporting transfers of bitcoin, such as validating transactions, communicating consensus, curating a block's contents, composing their own messages within blocks, and protesting government monopolies over currency in line with bitcoin's founding principles. *See supra* at 4–9.

Bitcoin-mining restrictions also infringe the right to free association, which separately triggers strict scrutiny—or the very least "exacting scrutiny." *See Roberts*, 468 U.S. at 623 (applying strict scrutiny); *Slattery v. Hochul*, 61 F.4th 278, 289 (2d Cir. 2023) (same); *Bonta*, 594 U.S. at 608 (applying exacting scrutiny to compelled-disclosure requirements that abridge free-association rights).

The existing bitcoin-mining restrictions could not survive this heightened scrutiny. Indeed, they could not withstand even the intermediate scrutiny applicable to commercial-speech restrictions. To justify an abridgment of commercial speech, the government must show that its "restriction … directly advance[s]" a "substantial" governmental interest, and that the "governmental interest could [not] be served as well by a more limited restriction." *Central Hudson Gas & Elec. Corp. v. Public Serv. Comm'n of N. Y.*, 447 U.S. 557, 564 (1980); *see also Hines v. Pardue*, 688 F. Supp. 3d 522, 554 (S.D. Tex. 2023) ("standards are similar" for expressive conduct and content-neutral restrictions). Most (if not all) existing bitcoin-mining restrictions likely would fail this test.

New York's two-year bitcoin-mining moratorium is illustrative. New York ostensibly was concerned about the purported impact of bitcoin mining in New York on the climate. Physics, not politics, determines the purported transmission mechanism: (a) New York-based, bitcoin-mining carbon emissions would impact the global climate, (b) changes in the global climate due specifically to bitcoin mining in New York would subsequently impact conditions in New York, and (c) those changes would harm New Yorkers. The moratorium targeted "behind-the-meter" bitcoin-mining facilities—that is, facilities generating their own power with carbon-based fuels rather than using power from the grid. N.Y. Env't Conserv. Law § 19-0331. Yet only two such facilities operate in New York, together accounting for a trivial amount of the carbon-based energy consumed in New York and globally each year.[58]

It is unreasonable to believe, therefore, that New York's moratorium could possibly "advance" its stated interests in materially affecting the global climate, or measurably change the impact on New York. *Central Hudson*, 447 U.S. at 564. A State "seeking to sustain a restriction on commercial speech must demonstrate that the harms it recites are real and that its restriction will in fact alleviate them *to a material degree*." *Edenfield v. Fane*, 507 U.S. 761, 770-71 (1993) (emphasis added). But in New York, even if the two carbon-based bitcoin-mining firms shut down their operations entirely,

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58. See Marie J. French, *Upstate New York Becomes Hotbed for Cryptocurrency Mining. It Might Not Last.*, Politico (May 19, 2022), https://tinyurl.com/bdctad7u; U.S. Energy Information Administration, New York State Profile (last updated Dec. 21, 2023), https://tinyurl.com/3skaej8b; Hannah Ritchie & Pablo Rosado, *Electricity Mix* (last updated Jan. 2024), https://tinyurl.com/2s3cec4h.

New York's and the planet's carbon emissions would remain virtually unchanged.[59] Shutting off an infinitesimal portion of carbon-based energy consumption does not materially conserve the State's resources nor affect the climate in even the most remotely perceptible or impactful way. Singling out a trivially small, politically disfavored sector of the New York economy will not have any impact on global conditions. New York therefore could not show that its moratorium provides more than "ineffective or remote" support for its stated goals. *Central Hudson*, 447 U.S. at 564.

Even if New York could make such a showing, moreover, it could not establish that a "more limited speech regulation would be ineffective" to further its interests. *Central Hudson*, 447 U.S. at 571 ("In the absence of a showing that more limited speech regulation would be ineffective, we cannot approve the [broader restriction]."); *Turner*, 512 U.S. at 662. New York acknowledged, at the time it enacted the moratorium, that it did not even know the level of carbon emissions attributable to bitcoin mining. *See* 2022 N.Y. Sess. Law ch. 628 (A. 7389 C) (calling for an "environmental impact statement"). This "shoot first, ask questions later" approach is exactly the sort of "highly speculative" legislative practice that the Supreme Court rejected in *Central Hudson*. 447 U.S. at 569. And the approach is altogether inconsistent with the care that States must take before abridging speech protected by the First Amendment.

Beyond those problems, the line that the New York legislature drew—targeting bitcoin mining alone—is grossly underinclusive. *See Sorrell*, 564 U.S. at 572 (invalidating law because prohibiting a single application of prescription data was not tailored to the State's asserted privacy interest). Server farms and data centers, and other venues employing similar computational resources to bitcoin mining are not burdened by New York's moratorium, even though they convert just as much (if not far more) more fossil fuel into computing power.

For example, computing used to build and support artificial-intelligence systems is extremely energy-intensive; data centers engaged in it are expected to at least double in electricity consumption between 2022 and 2026, reaching at least 1,000 Terawatt hours per year, a usage level equivalent to the country of Japan.[60] Yet New York's bitcoin-mining moratorium leaves them untouched. Indeed, New York actively solicits data centers—particularly those supporting artificial intelligence ("AI") systems—to move into the State. In January 2024, New York's governor announced that $275 million in public funds would be committed to "a state-of-the-art artificial intelligence computing center in Upstate New York."[61] Governor Hochul explained that this endeavor "will ensure that New York State is the place we can put this kind of computing power in the hands of students and professors and the geniuses who are ready to win this AI race."[62] The governor likewise lauded the installation of a $500-million supercomputer in the Buffalo region—at a time when the State's bitcoin-mining moratorium would have barred setting up a neighboring bitcoin-mining facility.[63]

A law "so pierced by exemptions and inconsistencies" cannot coherently advance the State's asserted interests in regulating speech. Greater New Orleans Broad. Ass'n, Inc. v. United States, 527

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59. *See id.*

60. International Energy Agency, *Electricity 2024: Analysis and Forecast to 2026, at 8* (2024). https://tinyurl.com/2mr-9whjm.

61. Press Release, Kathy Hochul, Governor, New York, *Governor Hochul Unveils Fifth Proposal of 2024 State of the State: Empire AI Consortium to Make New York the National Leader in AI Research and Innovation* (Jan. 8, 2024), https://tinyurl.com/fh2e5aws.

62. Tom Dinki, *Hochul Names UB Home for Empire AI Consortium*, UBNow (Jan. 26, 2024), https://tinyurl.com/4wm-wxx9p.

63. *Press Release, Kathy Hochul, Governor, New York, Governor Hochul Highlights Budget Investments in Western New York (Jan. 26, 2024), https://tinyurl.com/yktd2axf.*

U.S. 173, 190 (1999). **The fact that miners could reprogram their computers or repurpose their facilities to run equally (if not far more) energy-intensive artificial-intelligence code, or any other code, without running afoul of the moratorium only underscores its arbitrariness. By singling out one relatively insignificant user of carbon-based energy, New York's moratorium—like other similar laws—reflects an irrational aversion to bitcoin clothed in environmentalist garb. It could not withstand First Amendment scrutiny.**

VI. CONCLUSION

Bitcoin implicates the First Amendment. As a system for collecting and communicating information ranging from payment data to art, bitcoin is speech. As a statement of protest against the government's monopoly over money, bitcoin is expressive conduct. And as a collection of individuals that share bitcoin's hard-coded principles of individual liberty, anti-censorship, and anti-debasement, bitcoin is an expressive association.

Bitcoin is free speech protected by the First Amendment and therefore regulating bitcoin has clear constitutional implications.