

Blockchain Law

No longer underground: emerging issues for miners

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In his Blockchain Law column, Robert Schwinger takes a closer look at the “unsung players” in the blockchain world—the miners and validators who keep the blockchain infrastructure functioning. Who are they, what do they do, and what legal issues might they face?

Many blockchain discussions tend to be transactionally focused—on the buyer, the seller, the coin issuer, the token offeror, the promotor, the trading platform and the parties to the smart contract. But what about the unsung players in the blockchain world—the miners and validators who keep the blockchain infrastructure functioning? Who are they, what do they do, and what legal issues might they face? Miners and their legal issues increasingly seem to attract more interest and attention than one might expect.

What is mining?

“Mining” is a term typically used to refer to the process by which blockchain transactions are validated, secured, and recorded on the blockchain, and by which new tokens are generated. Critically, the validation ensures that the blockchain’s distributed ledger is properly maintained upon each transaction so that, for example, there cannot be any “double spending” of a coin or token.

There are currently two main processes for validation, referred to as “proof of work” and “proof of stake.” Bitcoin is perhaps the best known example of a “proof of work” system. As one court explained:

Bitcoin ... maintains its blockchain and provides for new bitcoin to enter the economy through a consensus mechanism known as mining, or proof of work. In this type of blockchain, cryptocurrencies are mined by having sophisticated computer programs perform complex, resource-intensive automated verifications of past transactions, which are then added to the blockchain. Miners are rewarded with new bitcoin for their efforts.

Shin v. ICON Found., 2021 U.S. Dist. LEXIS 90045, at *3-4 (N.D. Cal. May 11, 2021) (quotations and internal citations omitted).

Another approach for validation is the “proof of stake” mechanism, which rewards those who are willing to “stake” or provide their own tokens as collateral to validate transactions. *Id.*

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Under the proof-of-stake consensus mechanism, individuals must stake their crypto assets to be eligible to receive newly minted tokens. Issuers of some crypto-assets impose rules on staking, such as (1) requiring minimum amounts; (2) imposing a minimum staking period; and (3) imposing requirements on when an individual can unstake their tokens.

Id. This mechanism thus “provides new currency to those who own the most of that currency instead of those who expend significant electrical resources mining.” Id.

The function performed by miners confers upon them a degree of power. As three Princeton University researchers explained with regard to Bitcoin:

Any player may choose to become a miner and mine new blocks that add new transactions to the log [The validation rules are] a form of proof-of-work puzzle, a computation that is thought to be difficult to perform but whose result is easy to verify. The solution to a proof-of-work puzzle effectively asserts that someone has expended a certain level of effort The difficulty of the proof-of-work puzzle is adjusted periodically by an adaptive algorithm based on the recent block chain history to maintain the long-term invariant that one new block be mined every ten minutes on average.

The mining mechanism has the property that if there are two branches of the tree, with a separate group of miners growing each branch, then the branch whose miners have more computational power will grow more quickly. In a sense, miners vote for a branch by devoting their mining effort to extending it, and the Bitcoin rules say that the longest branch should be treated as the only valid one.

Joshua A. Kroll, Ian C. Davey & Edward W. Felten, *The Economics of Bitcoin Mining, or Bitcoin in the Presence of Adversaries*, in Proceedings of the Twelfth Workshop on the Economics of Information Security 4-5 (June 11-12, 2013) (internal citations omitted). Miners with large resources can thus hold an advantage in the mining process.

Given how large and developed many blockchains have become, particularly in the crypto space, the electrical resources needed to perform the complex computations that support “proof of work” mining are often massive. A University of Cambridge report based on 2019 data calculated

that the yearly electricity consumption of Bitcoin activities equals or exceeds the electricity consumption of countries like Argentina and the Netherlands. [Cambridge Bitcoin Electricity Consumption Index](#) (last visited Jan. 11, 2022); see also Jon Huang, Claire O’Neill and Hiroko Tabuchi, *Bitcoin Uses More Electricity Than Many Countries. How Is That Possible?*, N.Y. Times (Sept. 3, 2021) (comparing electricity usage for Bitcoin mining to that of Sweden, Finland, and other countries, and estimating that Bitcoin mining represents “close to half-a-percent of all the electricity consumed in the world”).

Courts in today’s climate-conscious world have taken notice of the energy-intensive nature of “proof of work” mining. A federal court recently noted:

Blockchain-based cryptocurrencies have historically relied on a “proof of work” (PoW) consensus mechanism to secure the network, but PoW protocols have been criticized due to their significant consumption of computational and electrical energy. In recent years, researchers have begun developing an alternative to PoW protocols known as “proof-of-stake” (PoS) protocols, which use digital resources to protect the blockchain network and thus would eliminate the computational waste inherent to PoW protocols.

Zamfir v. Casperlabs, 528 F. Supp. 3d 1136, 1140 (S.D. Cal. 2021) (quotations and internal citations omitted).

Courts also have taken notice that because mining can be such a resource-bound process, some miners have taken to creating “mining pools,” in which they team up to pool “their resources to share processing power over a network and share the reward.” *United American Corp. v. Bitmain*, 530 F. Supp. 3d 1241, 1250 (S.D. Fla. 2021). Alternatively, some blockchain systems have responded to these pressures by seeking to transition from “proof of work” to “proof of stake” transaction validation systems. Olga Kharif, *Bye-Bye, Miners! How Ethereum’s Big Change Will Work*, Wash. Post (Nov. 30, 2021).

Availability of protections under the securities laws

In the nearly five years since the SEC’s so-called “DAO Report,” *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO*, [Exch. Act Rel. No. 81207](#) (July 25, 2017), and following a series of court decisions from *U.S. v. Zaslavskiy*, 2018 WL 4346339 (E.D.N.Y.

Sept. 11, 2018), through *SEC v. Telegram Group*, 448 F. Supp. 3d 352 (S.D.N.Y. 2020), and *SEC v. Kik Interactive*, 492 F. Supp. 3d 169 (S.D.N.Y. 2020), among others, the potential for courts and regulators to find cryptocurrencies and other blockchain products to be “securities” under the governing “Howey test” from *SEC v. W. J. Howey Co.*, 328 U.S. 293 (1946), has become well-known. Indeed, regulators continue to trumpet their intention to apply the securities laws aggressively in this area. See R. Schwinger, [Blockchain Law: The Regulators Rear Their Heads](#), N.Y.L.J. (Sept. 27, 2021)

Could this openness to applying the securities laws in the crypto space have implications for those who get involved in cryptocurrency mining? Disparate results in some recent litigations raise some interesting questions.

In two federal cases brought in Connecticut, *SEC v. Garza and Audet v. Fraser*, civil securities fraud claims were raised against defendants for selling various products relating to cryptocurrency mining, allegedly as part of a Ponzi scheme in which money from new investors were used to pay off earlier investors. The products initially consisted of physical hardware for cryptocurrency mining, but allegedly because the defendants did not actually have the necessary amounts of equipment they began offering an alternative product called “hashlets” that supposedly gave purchasers a portion of the computing power the defendants’ companies purportedly owned without the purchasers receiving any physical hardware. Defendants also sold a kind of promissory note that could be converted into the defendants’ virtual currency, and virtual wallets for storing that currency.

While one individual defendant consented to an SEC civil judgment for securities fraud in connection with this scheme in 2017 in *SEC v. Garza*, No. 3:15-cv-1760, Dkt. 141 (D. Conn. Oct. 4, 2017), another individual defendant recently went to trial on a private civil securities fraud claim based on the same claims, and obtained a different result, in *Audet v. Fraser*, No. 3:16-cv-940 (D. Conn.).

The jury in *Audet v. Fraser* rejected the plaintiffs’ securities fraud claim, concluding in its verdict that the “hashlets” and other products sold did not qualify as securities that would support claims of securities fraud. Alison Frankel, [In apparent first, Conn. class action jury finds crypto products are not securities](#), Reuters (Nov. 3, 2021). Reportedly a key factor in the jury’s determination that “hashlets” were not a security was the defendant’s evidence that purchasers’ individual decisions

could affect their daily profits in different crypto mining pools, thereby demonstrating a lack of “common enterprise” under the *Howey* test because investors’ expectations of profit were not dependent solely upon the actions of others. See *id.*

This jury verdict in *Audet v. Fraser* thus may raise the question of whether fellow participants in a cryptocurrency mining operation are situated differently than purchasers in a cryptocurrency coin offering, such that they may not qualify for protection against promoter fraud under the federal securities laws even though coin purchasers might.

Antitrust concerns from miner activity

Regulators have noted the potential for blockchain structures to be used in the service of anticompetitive ends. Such concerns were noted, for example, in August 2020 remarks by Makan Delrahim, the then-Assistant Attorney General for the Justice Department’s Antitrust Division, who cited the “potential for misuse of well-crafted blockchain solutions.” Makan Delrahim, [Never Break the Chain: Pursuing Antifragility in Antitrust Enforcement](#), remarks at the Thirteenth Annual Conference on Innovation Economics (Aug. 27, 2020). He noted possible concerns about invitation-only permissioned blockchains being used for concerted refusals to deal, to enforce price-fixing or other illicit horizontal arrangements, or to facilitate collusion by making competitively sensitive information available publicly yet anonymously or pseudonymously on a blockchain.

In the mining space, claims of improper collusion have been made against cryptocurrency miners. In *United American v. Bitmain*, 530 F. Supp. 3d 1241 (S.D. Fla. 2021), the plaintiff claimed it was injured when various defendants including miners had colluded to manipulate a vote on a software update for a proposed blockchain fork, allegedly to plaintiff’s disadvantage, in contravention of Section 1 of the Sherman Act. The plaintiff alleged a conspiracy in which the mining defendants colluded to control the outcome of the vote, with other defendants (developers and exchanges) allegedly contributing to the conspiracy in other ways to ensure the desired outcome.

The antitrust conspiracy claim failed, in large part due to the lack of evidence indicating that there was any conspiratorial agreement encompassing all of the defendant groups as alleged. However, the court did note parallel conduct amongst the miner defendants alone:

The only truly parallel behavior of any Defendants was that of the miners[, who] were competitors to one another, as well as to [plaintiff], as they all mined Bitcoin Cash at the relevant time. As alleged, these defendants engaged in the similar conduct of pooling servers to mine Bitcoin ABC shortly before the hard fork.

(Internal citations omitted.) Nevertheless, the court did not find this parallel behavior sufficient to sustain the claim alleged, explaining:

This parallel conduct is pertinent to only the first part of the alleged conspiracy: to hijack the network by dominating the hash war. There are no factual allegations that [these miner defendants] engaged in similar action to further the second part of the scheme [in which the developer and exchange defendants were alleged to have been involved].

The stated basis of the court's ruling thus leaves the obvious question of whether the result might have been different if the plaintiff had alleged injury from a more narrowly-tailored "miners only" conspiracy. Academics, for example, have noted concerns about potential impacts that might arise from collusion among miners.

Bitcoin miners [could] collude to change the rules, presumably to give themselves more Bitcoin—e.g., by increasing transaction fees or changing the schedule at which new Bitcoins would be created. Miners already join together in mining pools, and commentators have noted the possibility that this collusion could facilitate agreements to change the Bitcoin protocol. This seems especially plausible because the rate at which new Bitcoins are issued is planned to reduce exponentially, and there is no current plan for mandating minimum transaction fees. Miners have large fixed investments in computers custom-built for mining and might have an incentive to accept the risks associated with a hard fork, especially if individual enterprises faced bankruptcy as a result of decreased revenue.

Michael Abramowicz, *Cryptocurrency-Based Law*, 58 *Ariz. L. Rev.* 359, 382-83 (2016) (internal citations omitted). While "proof of stake" systems may have similar vulnerabilities, collusion concerns may be less likely in that context because "to mount a 51% attack, one would need to own more than 50% of the total currency value. Someone in that position would have no incentive to double-spend." *Id.* at 380.

The potential for concentration and centralization of power by mining pools may also be an area of interest for regulators. Although decentralization is often cited as one of the claimed benefits of using blockchain systems, mining pools may lead to a certain amount of recentralization. In a "proof of work" system, is it possible that a single mining pool could dominate the mining? Some privacy and engineering scholars have noted that a blockchain's security could be compromised if a mining pool held 51% or more of that blockchain's mining power. See Rainer Böhme, Nicolas Christin, Benjamin Edelman and Tyler Moore, *Bitcoin: Economics, Technology, and Governance*, 29(2) *J. Econ. Perspectives* 213, 228 (Spring 2015). "[T]he conflict and transition [of such a situation] would be chaotic and would probably undermine trust in Bitcoin." *Id.* Plaintiffs who claim to have been injured by such activities may seek to frame claims under the antitrust laws.

Should miners be regulated as financial intermediaries?

President Joe Biden's 1,039-page Infrastructure Investment and Jobs Act, [H.R. 3684](#) (signed Nov. 15, 2021), includes tax information reporting provisions that apply to "digital assets." Section 80603 of the Act modifies I.R.C. §6045(c)(1) to expand the definition of a "broker" who must report transactions in digital assets on an IRS Form 1099-B, starting with the 2023 tax year. As revised, the definition of a "broker" now includes "any person who (for consideration) is responsible for regularly providing any service effectuating transfers of digital assets on behalf of another person."

Concern has been expressed that this provision is so broadly worded that it could sweep within its scope the miners and validators who keep the infrastructure functioning that supports blockchain transactions. The reason for this concern is not simply a policy preference about tax reporting, but the very real fact that miners and validators typically are not in possession of the kinds of information necessary to fulfill Form 1099-B reporting requirements, such as names, addresses and social security numbers of persons involved in the transactions they may be validating.

Various senators, including Senators Ron Wyden (D-OR) and Cynthia Lummis (R-WY), have indicated that they may seek to introduce amending legislation that would exempt miners and sellers of mining hardware or software from these

new reporting provisions. Aislinn Keely, [*Senators Wyden and Lummis to introduce crypto amendment to Biden's infrastructure bill*](#), The Block (Nov 15, 2021). Their concerns may be mitigated, however, by the fact that the Treasury Department had stated prior to the Act's passage that it would not target miners and hardware developers under the new crypto tax reporting rules. Taylor Locke, [*Treasury Will Not Target Non-Brokers Like Miners Even if the Crypto Tax Provision Isn't Amended*](#), CNBC (Aug. 24, 2021). But pro-cryptocurrency legislators still may seek to have such protection rest upon something more concrete and durable than just regulatory grace.

Opinions also vary on how miners should be viewed even outside the tax reporting context. This was shown by a July 27, 2021 hearing of the Senate Committee on Banking, Housing, and Urban Affairs on [*Cryptocurrencies: What Are They Good For?*](#)

One witness at the hearing, Professor Angela Walch of St. Mary's University School of Law, essentially advocated for increased scrutiny of miners. *Cryptocurrencies: What Are They Good For?* at 43:45-44:35; 54:50-55:50. She contended that miners can have a concentration of power based on their function to "choose, order, and potentially delay transactions to be added to the blockchain," *Id.* at 54:50-55:20, and she in fact pointed to Bitcoin and Ethereum as examples of blockchains in which miners can gain excessive power. *Id.* at 43:45-44:35. Noting that miners gain profits based on the transactions they choose to mine, Prof. Walch argued that miners are incentivized to act in their self-interest for these profits or "bribes." *Id.* She noted, though, that "there has not been very good research into the mining or validating community" and explained that there is little understanding as to how much power miners truly hold. *Id.* at 54:50-55:50.

Another witness at the hearing, Jerry Brito, the executive director of the Coin Center think tank, offered a contrary perspective. In his view, miners were not financial intermediaries in the way that an entity like PayPal is. *Id.* at 1:03:30-1:04:40. He described miners as being more akin to internet service providers and noted that they are treated similarly in other regulatory contexts, like New York's Bitlicense, where the regulators did not include miners within the defined scope of covered activities because they did not consider miners to be financial intermediaries. *Id.*, citing 23 N.Y.C.R.R. §200.2(q).

Environmental concerns

The enormous amounts of energy required for cryptocurrency mining poses challenges in a climate-focused world where sustainability is a concern. Some countries have banned cryptocurrency mining altogether for this reason, including China, Slovenia and Kosovo.

Last spring, the New York Senate passed [*S. 6486*](#), which sought to amend New York's Environmental Conservation Law to establish a three-year "moratorium on consolidated operations that use proof-of-work authentication methods to validate blockchain transactions." The bill included proposed legislative findings that a "single cryptocurrency transaction uses the same amount of energy that an average American household uses in one month, with an estimated level of global energy usage equivalent to that of the country of Sweden," and that "it is reasonable to believe the associated greenhouse gas emissions will irreparably harm compliance with the Climate Leadership and Community Protection Act in contravention of state law." While the bill did not pass in the New York Assembly last year, attempts at passage remain ongoing.

An alternative approach toward mitigating the energy burdens posed by "proof of work" mining is shown by *Blocktree Props. v. Public Utility No. 2 of Grant Cty. Wash.*, 447 F. Supp. 3d 1030 (E.D. Wash. 2020). In 2017, Grant County in the state of Washington found itself with an influx of cryptocurrency mining companies looking to take advantage of the county's low electricity rates. The result was that electricity requests from miners more than doubled the average electricity load. In response, a new electricity rate schedule was promulgated for customers in "evolving industries," containing rates, terms, and conditions for miners distinct from and more expensive than those for the other residential, commercial, and industrial classes of utility customers.

An attempt by miners to challenge this special rate schedule on various legal grounds failed. The court held that the miners had no property interest in an electrical rate to support a due process claim. "It is not clear that a 'fair' or 'nondiscriminatory' rate can be considered property, or a property interest," said the court, and it emphasized that Washington law does not provide utility users such as miners with any such interest or right. Moreover, "[b]ecause rate setting is a legislative act, procedural due process rights do not attach."

The court also rejected a challenge to the rates under the Dormant Commerce Clause, noting that the new rate schedule “is not facially discriminatory, as it treats in-state and out-of-state cryptocurrency mining companies the same; all are classified as Evolving Industries, and all are subject to heightened electricity rates due to the nature of their industry.”

The court further rejected the miners’ assertion that the rates imposed an excessive burden on interstate commerce, noting that the miners’ ultimate concern was having to pay higher electrical rates and “the Dormant Commerce Clause does not protect an industry’s profit margin, structure, or even its existence.” Additional claims about nondiscriminatory rates under Section 20 of the Federal Power Act and 42 U.S.C. §1983 were dismissed on legal or procedural grounds.

Nevertheless, it would be an exaggeration to say that the law sees cryptocurrency mining only as a source of unwelcome environmental burdens. While courts, legislators and regulators have viewed cryptocurrency mining as an expensive and environmentally draining activity, it is also recognized that mining can be a source, and in certain instances perhaps even the best source, of income-generating potential of real property that has substantial electrical capacity. This was shown recently in *Thomas Switch Holding v. Bay Point Capital Partners II, LP* [*In re Virtual Citadel*], 2021 WL 6068436 (Bankr. N.D. Ga. Dec. 22, 2021), where a bankruptcy court charged with establishing the valuation of certain real property concluded:

The court accepts [the expert’s] conclusion that the highest and best use of the Mining Property is a cryptocurrency mining operation because the proof is in the pudding To conclude the highest and best use is something other than cryptocurrency mining (or some other use capable of utilizing the available electrical capacity) simply ignores reality and disregards significant capital invested in, and still used at, the Mining Property.

Conclusion

Despite being unsung and often invisible players in the blockchain ecosystem, miners have begun to attract interest and attention on a variety of fronts. Yet there still can be a lack of information and understanding regarding the role miners play in the blockchain world, the manner in which they operate, and the value they thereby contribute. To have sensible blockchain policy choices and legal analysis as the technology moves forward, courts, lawmakers and regulators must be equipped with a full understanding of where miners fit in the larger picture for the blockchain applications of today and also those of the future.



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