

New York First State to Curb Footprint of Cryptocurrencies

NEW YORK is the first state out of the gate in the race to take regulatory action to address the climate and other environmental impacts of cryptocurrency transactions. The narrowly crafted two-year moratorium applies to permits for facilities that use carbon-based fuel to generate behind-the-meter energy for certain types of crypto operations.

Specifically, the law applies to operations that use PoW, the “proof of work” protocol, to “mine” or create new cryptocurrencies and add transactions to the immutable electronic ledger known as the blockchain. The law finds that crypto mining could interfere with state efforts to achieve climate mitigation goals, protect natural resources, and control pollution.

PoW is a widely used, highly energy-intensive consensus protocol designed to protect against cybersecurity breaches in decentralized peer-to-peer cryptocurrency networks. Transactions (e.g., “A” buys a car from “B” for one bitcoin) are broadcast to the network nodes, computers that check transactions for conformity with network rules—for example, confirming that the inputs have not already been spent.

Nodes then work for the right to add new transactions to the blockchain and be able to win transaction fees and new cryptocurrency. The work performed entails using tremendous computational power to generate strings of characters known as “hashes” until, after a vast number of attempts, a node identifies the correct numbers—those that match the target hash for the block. The average number of calculations required to solve the equation increases as computing power is added to the network. As ELI’s David Rejeski explains: “Solving the puzzle requires guessing, over

and over again, so the more computer power you can throw at the puzzle, the better, and that can lead to enormous power consumption.”

This remarkably energy-intensive process has resulted in cryptocurrencies’ global energy consumption equaling that of entire countries such as Argentina or the Netherlands. And just one cryptocurrency, Bitcoin, is estimated to account for between 60 to 77 percent of global crypto-asset electricity usage.

In the United States, crypto asset operations consume an amount of energy comparable to that used by all home computers. A White House report warns that the industry’s energy usage potentially “could hinder broader efforts to achieve net-zero carbon pollution consistent with U.S. climate commitments and goals.”

Although New York’s moratorium is groundbreaking in the United States, entire countries such as China have banned crypto mining operations, citing the need to meet carbon reduction goals. And several Canadian provinces have restricted mining operations, in part to preserve electricity for other purposes such as powering electric vehicles and household heat pumps.

Crypto mining operations contribute to air pollution when powered by fossil fuels. They also produce electronic waste as machines wear out and, in some cases, similar to the handling of much other electronic waste, may be shipped for disposal to low-income communities in other countries. Operations that use water to cool their machines can contribute to thermal pollution in waterbodies. Noise pollution effects are also front and center in communities that host mining operations, where some liken the sound to a jet engine running night and day.

The law can serve as a model for other states that want to limit pollution



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In some communities, crypto mining is also affecting energy bills and service reliability. For example, costs to customers can increase significantly if a utility must buy additional, more costly energy to meet mining operations’ outsized demand—a problem that occurred in Plattsburgh, New York, which became the first U.S. city to halt mining operations.

In response to this panoply of concerns, the Blockchain Industry Association maintains that “the limited scope of the environment impact of PoW blockchains is ultimately outweighed by the enormous benefits that crypto can bring to society.” The association, however, does call on crypto miners “to push adoption of renewables forward” in the United States.

Fortunately, PoW is not the only mechanism for validating cryptocurrency transactions, and far less energy-intensive protocols may be gaining traction. For example, PoS, the Proof of Stake protocol, uses “validators” who provide collateral for the opportunity to be selected to add new transactions to the blockchain in lieu of requiring miners to perform computational work. The association points out that PoS can achieve “more than 99 percent reduction in energy use.”

Although federal, state, and local governments are engaged in a likely protracted process of determining how best to regulate the environmental and other impacts of crypto mining, the New York law is a first step and can serve as a model moving forward.