How can utilities support cryptocurrency miners?

By Bryan Jungers
May 27, 2021

How can utilities support cryptocurrency miners?

Of all the emergent classes of customers adding considerable new load to the grid, cryptocurrency miners are among the hardest to reach with traditional energy-saving and cost-curbing programs. That's because these customers:

- Range in size from large operations with thousands of servers to one person with one computer
- Often don't fully understand the power needs of their technology or the level of electric service required to support it
- Tend to relocate frequently
- Operate in a volatile business environment

In response to public outcry about the staggering amount of energy it takes to mine Bitcoin, we're beginning to see some movement toward carbon-neutral operations and less-intensive methods for securing the blockchain. This trend could eventually lead to more miners seeking energy-efficiency, demand-response, and renewable-energy programs and measures from their utilities.

In the meantime, we suggest utilities offer technical assistance, facility and equipment management measures, and bill-payment programs to their cryptocurrency-mining customers.

Utility programs and measures for cryptocurrency miners

Technical assistance programs

Most miners come from a computer science, programming, or finance background, and often know little about electrical power. Providing technical assistance related to sizing their service requirements, hooking up their servers, upgrading their equipment, and distributing power in their facilities may be useful services you could provide to these customers.

Energy- and demand-saving measures for data operations

Professional cryptocurrency-mining operations could benefit from the same energy-efficiency programs

and measures that data centers do. Our measure menu for small and embedded data centers (XLSX) lists low-, medium-, and high-effort upgrades for measures related to:

Download the data centers measure menu

Use this spreadsheet to help midsize and large crypto customers choose efficiency upgrades.

Download the measure menu (XLSX)

- Power management
- Server consolidation
- Power supply
- Temperature and air management
- Free cooling utilization

This information can help you talk to your midsize and large cryptocurrency customers about which measures are appropriate for them, when they should implement them, and how they should get started.

But small Bitcoin miners are a different story. Even when they install more computationally efficient computers or servers, they don't consume less energy. Instead, they use the power savings to mine more Bitcoin more rapidly—at faster "hash rates." And because small miners typically don't use cooling equipment in their server rooms, they wouldn't benefit from the efficiency measures that are common in data centers.

Bitcoin as a bill-payment method

Among the most straightforward things you could do to support your Bitcoin-mining customers would be to accept Bitcoin as a payment method. Our Ask E Source answer Should utilities accept cryptocurrency for customer bill payment? explores the question in detail.

Whether miners are in it for the money, for the pleasure of displacing fiat currency, or for some other reason, their operations will be more stable and less risky as more institutions accept Bitcoin as a payment method. This will induce more transactions on the Bitcoin network, help keep Bitcoin miners in business, and—in theory—make it less likely they'll relocate out of your territory in search of lower-cost energy.

Energy conservation via proof-of-stake and proof-of-authority validation models

A grim way for the cryptocurrency industry to save energy is to pick off its miners one by one. Small miners are continually being priced out of the network by larger players. As it becomes more difficult for small miners to participate in the market and less lucrative for them to run their mining equipment, they shut down their operations.

A brighter solution is the migration away from proof-of-work (POW) verification schemes to proof-of-stake (POS) and proof-of-authority (POA) methods. Primed to be major conservation measures, POS and POA could drastically reduce transactional energy demand. The problem is whether they can be

effectively secured as they grow and scale over time.

Verification models for validating block transactions

POW verification indicates that a miner expended a certain amount of computation effort to verify a transaction on the blockchain. The model incentivizes crypto miners to compete to solve more math problems—which uses more computing power—to win verification.

POS verification means a validated miner contributes some crypto coins (a "stake") into the system to join a network. When a new allocation of cryptocurrency is released into the system, a validator is selected to mine it. The more stake a POS validator has in a network, the more mining they can do.

POA verification is similar to POS verification, but instead of coins, a validated miner stakes their reputation to join a network.

There are ongoing projects to build POS and POA versions of the Ethereum, Dogecoin, and other crypto networks, and there are a few minor cryptocurrencies that already use non-POW mining methods. But so far, the largest coins still rely on the energy-intensive POW method.

Cautionary tales from utilities working with cryptocurrency customers

Some of the utilities we work with had attempted to attract cryptocurrency miners to their service territories in the past, but they almost immediately regretted doing it.

Quebec, Canada. Hydropower is cheap and plentiful in Quebec. Several years ago, the province granted service connection contracts to several crypto miners, but their service was never turned on. Power providers determined that the actual demand at the facilities would likely exceed the limits of the miners' service hookups.

In April 2021, E Source spoke with reporters at CNN about Bitcoin's massive power consumption. We explained that most mining operations burn fossil fuels but that some miners are seeking inexpensive renewable-energy sources. We directed the news agency to Hydro-Québec, where CNN reporters talked to Jonathan Côté, a utility spokesperson. He said:

> There was this, kind of a gold rush we had. In 2018, about 300 [cryptocurrency-mining] companies phoned us or wrote to us wanting to get power.

According to the CNN report Bitcoin has an energy problem (which uses E Source research without citation), Quebec's government paused new cryptocurrency-mining projects and set up a selection process.

In April 2021, E Source spoke with reporters at CNN about Bitcoin's massive power consumption.

US Pacific Northwest. Other utilities have expressed concern that the rate base will be negatively

impacted by miners who require service upgrades that they aren't required to pay for. Or the mining operations will place extra strain on the grid that's not adequately reflected in the rate structure.

Some small utilities operating in the Pacific Northwest told us that they witnessed such rapid growth in demand on their distribution system due to new mining facilities—even relatively small ones, in terms of square footage—that they had to create special business customer rates just for miners.

Southern California. A small cryptocurrency miner in Southern California told us about a service upgrade agreement in which the utility required the customer to pay the associated costs of upgrading its service. The miner was operating in a small warehouse with insufficient service capacity, which led to a failed transformer at the facility. The utility agreed to upgrade the transformer, panel, and other grid-side equipment to allow the miner to continue operating at the location and at the desired power capacity. But the customer was required to pay for the upgrade, at a cost of about $50,000.

© 2008 - 2026 E Source Companies LLC. All rights reserved.
Distribution outside subscribing organizations limited by license.