

Crypto conundrum:

Why cryptocurrency mining could challenge B.C.'s clean transition



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In recent years, cryptocurrency mining operations have become increasingly interested in setting up shop in British Columbia, in part because of its clean, renewable electricity and the fact that it has some of the lowest electricity rates in North America. However, cryptocurrency mining has several drawbacks, including the potential to use exponential amounts of electricity currently targeted for EVs, heat pumps, clean technology and industry that will help meet electrification goals in support of Clean BC. The process of creating Bitcoin, for example, takes as much energy annually as powering a small country.

- In recent years, the popularity of cryptocurrencies such as Bitcoin along with cryptocurrency mining moratoriums in several countries including China and Algeria, as well as some US states and Canadian provinces has created a significant increase in demand for power in B.C. by cryptocurrency mining operations.
- However, a new survey¹ conducted on behalf of BC Hydro finds 41 per cent of British Columbians are not aware of the consequences that cryptocurrency mining could have on energy demand in B.C.
- While BC Hydro welcomes new load, and has available energy to use strategically for EVs, heat pumps, clean technology and industry, unchecked growth of cryptocurrency mining operations in B.C. could make it more difficult to meet electrification targets and keep rates low for customers.
 - Cryptocurrency mining creates sustainability issues primarily because of the huge amount of energy used to get new 'coins' into circulation.
 - Take Bitcoin—miners verify transactions on Bitcoin's blockchain to help avoid fraud and, as repayment are given new Bitcoin—to verify transactions miners must solve complex math problems, which requires computer systems that use massive amounts of electricity.
- Despite recent pressures on the cryptocurrency mining sector, such as crashing prices and the obliteration of some currencies, as well as the collapse of the cryptocurrency exchange FTX, cryptocurrency mining can still be very lucrative for miners, but can take massive amounts of electricity from communities.
- However, 13 per cent of British Columbians are in favour of welcoming cryptocurrency mining operations into their community, not realizing the energy drawbacks.
- This is even though 69 per cent said they would rather support clean industries such as hydrogen that produce greater climate and economic benefits.
- While cryptocurrency mining operations are still reeling from the FTX crash, earlier this year when cryptocurrency prices were flourishing, BC Hydro was faced with close to 2,000 megawatts of interconnection requests—enough to power about 900,000 B.C. homes.
- Without a solution, BC Hydro's strategic plan for electrification could be challenged by cryptocurrency mining operations, which could mean less energy for greener pursuits such as electrification of homes, businesses, and industry.
- It could also mean higher hydro rates for British Columbians and industry because of supply and demand—the more energy that is consumed by these operations, the more will need to be generated to compensate.

Solutions

- BC Hydro has an obligation to serve its residential, business and industrial customers, and it does so on a first-come first-served basis. BC Hydro currently has enough energy and expects it will not need new sources of power until about 2030. However, as cryptocurrency mining grows, many other jurisdictions have taken steps to address energy and environmental challenges that cryptocurrency mining could pose. For instance, since 2018, the number of jurisdictions and countries that have banned cryptocurrency mining has doubled.

¹ Online survey conducted by Majid Khoury of 800 British Columbians (gen pop) margin of error 3.75%.

- Currently, China, Egypt, Iraq, Qatar, Oman, Morocco, Algeria, Tunisia, and Bangladesh have all banned cryptocurrency mining because of concerns related to the environment, energy demands and the economy. Forty-two other countries, including but not limited to Algeria, Bahrain, Bangladesh, and Bolivia, have implicitly banned cryptocurrencies by putting restrictions on the ability for banks to deal with cryptocurrencies, or prohibiting cryptocurrency exchanges.²
- Closer to home, some Canadian provinces and US states including Québec, Manitoba, New York and Idaho have placed restrictions on cryptocurrency mining. Manitoba has placed an 18-month moratorium on new cryptocurrency mining projects to meet rising energy demand, while Quebec has developed conditions for the cryptocurrency mining industry that include higher rates and require operations to be curtailed during seasonal peak demand periods.
- Québec also limited future cryptocurrency demand to 300 megawatts beyond those projects already connected, but has recently applied to its utility commission to put a stop to this and reallocate the 270 megawatts currently set aside for cryptocurrency mining in the province.
- Here in B.C., the Province is taking steps to protect BC Hydro's clean, inexpensive power that is seeing unprecedented demand from cryptocurrency mining companies to make sure it can meet carbon reduction goals set out in the Clean BC plan. It has put forth an order for an 18-month pause on certain cryptocurrency mining projects connecting to BC Hydro's grid while it develops a longer-term strategy.

Clean energy gold

British Columbia is an attractive place for cryptocurrency mining. B.C. has some of the lowest electricity rates in North America and generates 98 per cent of its electricity from clean, renewable resources that are mostly hydroelectric. This makes B.C. somewhat of a gold mine for cryptocurrency miners who need incredibly large amounts of—preferably inexpensive—electricity to run their operations.

Here in B.C., many do not realize that cryptocurrency mining has several drawbacks, including the potential to use exponential amounts of electricity currently targeted for electrification of homes, businesses, and industry. In fact, a new survey conducted on behalf of BC Hydro finds 41 per cent of British Columbians are not aware of the consequences that cryptocurrency mining could have on energy demand in B.C.

This report will explore attitudes towards the cryptocurrency mining industry across the province, and point out some downsides to having cryptocurrency miners set up shop in B.C.

Getting the coin

The increase in popularity of cryptocurrencies such as Bitcoin along with cryptocurrency mining moratoriums in China (which once had the largest share of cryptocurrency miners globally), some US states and Canadian provinces such as Manitoba (with Quebec on the way) has created a significant increase in demand for power in B.C. by cryptocurrency mining companies.

Cryptocurrency mining creates sustainability issues primarily because of the huge amount of energy used to get new 'coins' into circulation. Take Bitcoin—miners verify transactions on Bitcoin's blockchain to help avoid fraud and, as repayment are given new Bitcoin—to verify transactions miners must solve complex math problems, which requires specialized computer systems that use massive amounts of electricity. These computers are housed in data centres that require enormous amounts of cooling to keep the computers from overheating, which only adds to the energy demand.

To put things into perspective, an analysis by The New York Times found that Bitcoin mining consumes more energy per year than the country of Finland, which is home to 5.5 million people.³

² Law Library of Congress—Regulation of cryptocurrency around the world 2021 update

³ New York Times

Eroding energy supply

While BC Hydro welcomes new load, and has available energy to use strategically for EVs, heat pumps, clean technology and industry, unchecked growth of cryptocurrency mining operations in B.C. could make it more difficult to meet electrification targets and keep rates low for customers. In fact, in the past year alone there has been an unprecedented rise in interest from cryptocurrency mining operators to set up shop in B.C.

For example, earlier this year when cryptocurrency prices (e.g., Bitcoin) were flourishing, BC Hydro was faced with close to 2,000 megawatts of interconnection requests. Those requests alone add up to enough electricity to power about 900,000 homes in B.C. At the same time, it had about 35 megawatts of operational cryptocurrency mining at four sites. Currently, BC Hydro has 166 megawatts of operational projects at seven sites with a further six projects totaling 107 megawatts in advanced stages of connecting which would bring the total connected load for this industry to 273 megawatts. There is a further 1,403 megawatts of requests bringing the total interest in cryptocurrency mining to 1,676 megawatts. If demand keeps this pace, connecting all cryptocurrency mining customers in the interconnection process over the next decade could erode much of BC Hydro's planned energy strategy as outlined in its Integrated Resource Plan.

Cryptocurrency mining operations can set up shop anywhere and have expressed interest in all parts of the province from northern B.C. to the Lower Mainland and Vancouver Island. A small to medium operation (e.g. 12 megawatts) can yield just under two Bitcoin a day and runs 24/7, 365 days a year. If operations grow, there will also eventually be a need to create expensive transmission reinforcements that will put upward pressure on rates for all customers.

Looking ahead

BC Hydro has an obligation to serve its residential, business and industrial customers, and it does so on a first-come first-served basis. BC Hydro currently has enough energy and expects it will not need new sources of power until about 2030. However, as cryptocurrency mining grows, many other jurisdictions have taken steps to address energy and environmental challenges that mining could pose. For example, since 2018, the number of jurisdictions and countries that have banned cryptocurrency mining has doubled. Currently, China, Egypt, Iraq, Qatar, Oman, Morocco, Algeria, Tunisia, and Bangladesh have all banned cryptocurrency mining because of concerns related to the environment, energy demands and the economy. Forty-two other countries, including, but not limited to, Algeria, Bahrain, Bangladesh, and Bolivia, have implicitly banned cryptocurrencies by putting restrictions on the ability for banks to deal with crypto, or prohibiting cryptocurrency exchanges.⁴

Closer to home, some Canadian provinces and US states including Québec, Manitoba, New York and Idaho have placed restrictions on cryptocurrency mining. Manitoba has placed an 18-month moratorium on new cryptocurrency mining projects to meet rising energy demand, and New York state has also placed a moratorium on any new cryptocurrency mining operations that are not based on 100 per cent renewable energy. Places like Québec and Idaho have developed conditions for the cryptocurrency mining industry that include higher rates and require operations to be curtailed during seasonal peak demand periods. Québec also limited future cryptocurrency mining demand to 300 megawatts beyond those projects already connected but has recently backtracked on its cryptocurrency mining policies, applying to its utility commission to put a stop to this and to reallocate the 270 megawatts currently set aside for cryptocurrency mining in the province.

BC Hydro has experienced an unprecedented level of requests to connect to its system from cryptocurrency mining operations. Without a solution or plan for handling the emerging cryptocurrency mining sector in B.C., BC Hydro's available energy could be challenged by cryptocurrency mining operations, which could mean less energy for greener pursuits such as electrification or hydrogen production, and higher electricity rates for British Columbians. This is why the Province of B.C. is looking into long term options for how to deal with the demand for energy coming from the the cryptocurrency mining sector. While it investigates the best options, it is placing an 18-month moratorium on most new cryptocurrency mining projects looking to set up shop in B.C.

⁴ Law Library of Congress—Regulation of cryptocurrency around the world 2021 update

