LOWER TEXAS ELECTRICITY COSTS

ATTRACTING SOME U.S. BITCOIN MINERS

By Alan Lammey

The phenomena of Bitcoin and its ongoing price increase and volatility have received a bulk of recent media attention with much rhetoric centered on whether or not it will continue to be a bubble that will have multiple bursts from a near-term and longer-term perspective. However, most of the news coverage has missed out on one of the more interesting and unintended consequences of the Bitcoin craze, which is the astounding amount of electricity consumption used to 'mine' Bitcoins. And with Texas generating comparatively lower cost wind power in some areas of the State, some smaller-scale Bitcoin miners are quietly setting up shop in the Lone Star State.

Because Bitcoin mining can provide a solid stream of revenue, entrepreneurs are very willing to run intensely power-consuming computers to get a piece of it. Over the years, this has caused the total energy consumption of the Bitcoin network to grow massively as the price of the currency reached new heights.

The entire Bitcoin network now consumes more energy than a number of countries, based on recent data published by the U.S. Energy Information Administration (EIA) as well as the International Energy Agency (IEA). Bitcoin mining is now using more electricity than 159 individual countries around the globe.

Because the average U.S. electricity consumer pays about 12¢ per kilowatt-hour for electricity, according to early 2018 stats, Bitcoin miners are always on the lookout to relocate to areas that have cheaper power costs in order to improve their bottom line.

TEXAS OFFERS CHEAPER WHOLESALE COMMERCIAL ELECTRICITY

It's no secret that Texas has been at the forefront of commercial wind electricity farm production for a number of years, ahead of all other states in the union. As the exceptionally low price of wind energy drives further wind farm installations in the Lone Star State, it's not uncommon that wind energy can be procured at, or below, a price of 20 dollars per megawatt-hour, or just 2¢ per kilowatt-hour, particularly at night when energy demand in Texas falls to a minimum. That represents competitive, typical wholesale electricity market prices by any measure. And in fact, wind energy in Texas is so plentiful, that there have been occasions when the so-called spot price of commercial electricity in Texas has fallen to zero and then went negative for several hours. As the Lone Star State slumbered, power producers were actually paying the state's electricity system to take electricity off their hands. This sort of situation is hugely attractive to Bitcoin miners who negotiate 'market clearing' commercial electricity rates in order to get a rate that is as close to wholesale as it can be. With that said, because mining hardware requires enormous power and creates tons of heat, a cooler regional natural temperature is important to a lot of miners. Therefore, about the only downside

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for Texas when it comes to Bitcoin mining is the hot Texas climate over the course of the summer time. But some miners are actually constructing underground structures that mitigate some of the summer heat in Texas.

Electricity demand to mine Bitcoin on a global basis is nothing short of astounding. Some recent data contends that Bitcoin mining consumes an estimated 55.5 terawatt hours (TWh) of energy annually, which amounts to over 27 million barrels of oil equivalent. With roughly 12.5 Bitcoins mined every 10 minutes, that means the average energy cost of one Bitcoin would equate to more than 45 barrels of oil equivalent.

The mega computing required is a very energy-intensive process, and cheap electricity is exactly why China has been a key location for as much as 85 percent of all Bitcoin mining worldwide.

The cost of energy (i.e., the cost of computing) determines the profitability of the operation. Successful Bitcoin mining requires cheap energy. The low cost of (state-subsidized) power generation in China has been why so many Bitcoin miners have flocked there.

ENVIRONMENTALISTS' BIG PROBLEM WITH BITCOIN'S CARBON FOOTPRINT

For environmentalists, however, Bitcoin's biggest problem is not its massive energy consumption, but the fact that a majority of the mining network is fueled by Chinese coal-fired power plants. As such, even with a conservative emission factor, this results in an extreme carbon footprint for each unique Bitcoin transaction.

To put some of this massive power consumption in perspective, the number of U.S. households that could be powered by Bitcoin mining is in excess of 5 million homes. The average amount of electricity consumed 'per transaction' is around 791 kilowatt hours. Estimated annualized global mining revenues as of March 2018 were around $7.5 billion, while the annualized estimated global mining costs are around $2.7 billion.

For now, it appears that a majority of Bitcoin miner interest in Texas is focused on locations in the West Texas and Central Texas areas where the largest amount of wind generation is being produced and is the cheapest. Only time will tell if the Lone Star State will become a more centralized hub for Bitcoin mining in the U.S., but for now, with vast amounts of computing and programming expertise located in Texas, coupled with commercial power rates that look to remain comparatively lower than other areas of the nation, interest in Texas for Bitcoin mining seems to have some traction. **N**

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