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Patrick Cavan Brown for Politico Magazine

THE FRIDAY COVER

This Is What Happens When Bitcoin Miners Take Over Your Town

Eastern Washington had cheap power and tons of space. Then the suitcases of cash started arriving.

By PAUL ROBERTS | **March/April 2018**

EAST WENATCHEE, WASHINGTON—HANDS ON THE wheel, eyes squinting against the winter sun, Lauren Miehe eases his Land Rover down the main drag and tells me how he used to spot promising sites to build a bitcoin mine, back in 2013, when he was a freshly arrived techie from Seattle and had just discovered this sleepy rural community.

The attraction then, as now, was the Columbia River, which we can glimpse a few blocks to our left. Bitcoin mining—the complex process in which computers solve a complicated math

puzzle to win a stack of virtual currency—uses an inordinate amount of electricity, and thanks to five hydroelectric dams that straddle this stretch of the river, about three hours east of Seattle, miners could buy that power more cheaply here than anywhere else in the nation. Long before locals had even heard the words “cryptocurrency” or “blockchain,” Miehe and his peers realized that this semi-arid agricultural region known as the Mid-Columbia Basin was the best place to mine bitcoin in America—and maybe the world.

The trick, though, was finding a location where you could put all that cheap power to work. You needed an existing building, because in those days, when bitcoin was trading for just a few dollars, no one could afford to build something new. You needed space for a few hundred high-speed computer servers, and also for the heavy-duty cooling system to keep them from melting down as they churned out the trillions of calculations necessary to mine bitcoin. Above all, you needed a location that could handle a lot of electricity—a quarter of a megawatt, maybe, or even a half a megawatt, enough to light up a couple hundred homes.

The best mining sites were the old fruit warehouses—the basin is as famous for its apples as for its megawatts—but those got snapped up early. So Miehe, a tall, gregarious 38-year-old who would go on to set up a string of mines here, learned to look for less obvious solutions. He would roam the side streets and back roads, scanning for defunct businesses that might have once used a lot of power. An old machine shop, say. A closed-down convenience store. Or this: Miehe slows the Land Rover and points to a shuttered carwash sitting forlornly next to a Taco Bell. It has the space, he says. And with the water pumps and heaters, “there’s probably a ton of power distributed not very far from here,” Miehe tells me. “That could be a bitcoin mine.”

These days, Miehe says, a serious miner wouldn’t even look at a site like that. As bitcoin’s soaring price has drawn in thousands of new players worldwide, the strange math at the heart of this cryptocurrency has grown steadily more complicated. Generating a single bitcoin takes a lot more servers than it used to—and a lot more power. Today, a half-megawatt mine, Miehe says, “is nothing.” The commercial miners now pouring into the valley are building sites with tens of thousands of servers and electrical loads of as much as 30 megawatts, or enough to power a neighborhood of 13,000 homes. And in the arms race that cryptocurrency mining has become, even these operations will soon be considered small-scale. Miehe knows of substantially larger mining projects in the basin backed by out-of-state investors from Wall Street, Europe and Asia whose prospecting strategy, as he puts it, amounts to “running around with a checkbook just trying to get in there and establish scale.”

Faces of the Bitcoin Boom

By PATRICK CAVAN BROWN

For years, few residents really grasped how appealing their region was to miners, who mainly did their esoteric calculations quietly tucked away in warehouses and basements. But those days are gone. Over the past two years, and especially during 2017, when the price of a single bitcoin jumped from $1,000 to more than $19,000, the region has taken on the vibe of a boomtown. Across the three rural counties of the Mid-Columbia Basin—Chelan, Douglas and Grant—orchards and farm fields now share the rolling landscape with mines of every size, from industrial-scale facilities to repurposed warehouses to cargo containers and even backyard sheds. Outsiders are so eager to turn the basin's power into cryptocurrency that this winter, several would-be miners from Asia flew their private jet into the local airport, took a rental car to one of the local dams, and, according to a utility official, politely informed staff at the dam visitors center, "We want to see the dam master because we want to buy some electricity."

The Mid-Columbia Basin isn't the only location where the virtual realm of cryptocurrency is colliding with the real world of megawatts and real estate. In places like China, Venezuela and Iceland, cheap land and even cheaper electricity have resulted in bustling mining hubs. But the basin, by dint of its early start, has emerged as one of the biggest boomtowns. By the end of 2018, according to some estimates, miners here could account for anywhere from 15 to 30 percent of all bitcoin mining in the world, and impressive shares of other cryptocurrencies, such as Ethereum and Litecoin. And as with any boomtown, that success has created tensions. There have been disputes between miners and locals, bankruptcies and bribery attempts, lawsuits, even a kind of intensifying guerrilla warfare between local utility crews and a shadowy army of bootleg miners who set up their servers in basements and garages and max out the local electrical grids.

More broadly, the region is watching uneasily as one of its biggest natural resources—a gigantic surplus of hydroelectric power—is inhaled by a sector that barely existed five years ago and which is routinely derided as the next dot-com bust, or this century's version of the Dutch tulip craze, or, as *New York Times* columnist Paul Krugman put it in January, a Ponzi scheme. Indeed, even as Miehe was demonstrating his prospecting chops, bitcoin's price was already in a swoon that would touch $5,900 and rekindle widespread doubts about the future of virtual currencies.

For local cryptocurrency enthusiasts, these slings and arrows are all very much worth enduring. They believe not only that cryptocurrency will make them personally very

wealthy, but also that this formerly out-of-the-way region has a real shot at becoming a center—and maybe *the* center—of a coming technology revolution, with the well-paid jobs and tech-fueled prosperity that usually flow only to gilded "knowledge" hubs like Seattle and San Francisco. Malachi Salcido, a Wenatchee building contractor who jumped into bitcoin in 2014 and is now one of the basin's biggest players, puts it in sweeping terms. The basin, he tells me, is "building a platform that the entire world is going to use."

And squarely between these two competing narratives are the communities of the Mid-Columbia Basin, which find themselves anxiously trying to answer a question that for most of the rest of us is merely an amusing abstraction: Is bitcoin for real?

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A few miles from the shuttered carwash, David Carlson stands at the edge of a sprawling construction site and watches workers set the roof on a Giga Pod, a self-contained crypto mine that Carlson designed to be assembled in a matter of weeks. When finished, the prefabricated wood-frame structure, roughly 12 by 48 feet, will be equipped with hundreds of high-speed servers that collectively draw a little over a megawatt of power and, in theory, will be capable of producing around 80 bitcoins a month. Carlson himself won't be the miner; his company, Giga-Watt, will run the pod as a hosting site for other miners. By summer, Giga-Watt expects to have 24 pods here churning out bitcoins and other cryptocurrencies, most of which use the same computing-intensive, cryptographically secured protocol called the blockchain. "We're right where the rubber hits the road with blockchain," Carlson shouts as we step inside the project's first completed pod and stand between the tall rack of toaster-size servers and a bank of roaring cooling fans. The main use of blockchain technology now is to keep a growing electronic ledger of every single bitcoin transaction ever made. But many miners see it as the record-keeping mechanism of the future. "We're where the blockchain goes from that virtual concept to something that's real in the world," says Carlson, "something that somebody had to build and is actually running."

Granted, all that real-worlding and road-hitting is a little hard to visualize just now. The winter storms that have turned the Cascade Mountains a dazzling white have also turned the construction site into a reddish quagmire that drags at workers and equipment. There have also been permitting snafus, delayed utility hookups, and a lawsuit, recently settled, by impatient investors. But Carlson seems unperturbed. "They are actually making it work," he told me earlier, referring to the mud-caked workers. "In a normal project, they might just say, 'Let's just wait till spring,'" Carlson adds. "But in bitcoin and blockchain, there is no stopping." Indeed, demand for hosting services in the basin is so high that a desperate miner

offered Carlson a Lamborghini if Carlson would bump him to the head of the pod waiting list. “I didn’t take the offer,” Carlson assures me. “And I like Lamborghinis!”

Carlson has become the face of the Mid-Columbia Basin crypto boom. Articulate, infectiously optimistic, with graying hair and a trim beard, the Microsoft software developer-turned-serial entrepreneur has built a series of mines, made (and lost) several bitcoin fortunes and endured countless setbacks to become one of the region’s largest players. Other local miners credit Carlson for launching the basin’s boom, back in 2012, when he showed up in a battered Honda in the middle of a snowstorm and set up his servers in an old furniture store. Carlson wouldn’t go that far, but the 47-year-old was one of the first people to understand, back when bitcoin was still mainly something video gamers mined in their basements, that you might make serious money mining bitcoin at scale—but only if you could find a place with cheap electricity.

When you pay someone in bitcoin, you set in motion a process of escalating, energy-intensive complexity. Your payment is basically an electronic message, which contains the complete lineage of your bitcoin, along with data about who you’re sending it to (and, if you choose, a small processing fee). That message gets converted by encryption software into a long string of letters and numbers, which is then broadcast to every miner on the bitcoin network (there are tens of thousands of them, all over the world). Each miner then gathers your encrypted payment message, along with any other payment messages on the network at the time (usually in batches of around 2,000), into what’s called a block. The miner then uses special software to authenticate each payment in the block—verifying, for example, that you owned the bitcoin you’re sending, and that you haven’t already sent that same bitcoin to someone else.

At this point, the actual mining begins. In essence, each miner now tries to demonstrate to the rest of the network that his or her block of verified payments is the one true block, which will serve as the permanent record of those 2,000 or so transactions. Miners do this by, essentially, trying to be the first to guess their block’s numerical password. It’s analogous to trying to randomly guess someone’s computer password, except on a vastly larger scale.

Carlson's first mining computer, or "rig," which he ran out of his basement north of Seattle, could make 12 billion "guesses" every second; today's servers are more than a thousand times faster.

As soon as a miner finds a solution and a majority of other miners confirm it, this winning block is accepted by the network as the "official" block for those particular transactions. The official block is then added to previous blocks, creating an ever-lengthening chain of blocks, called the "blockchain," that serves as a master ledger for all bitcoin transactions. (Most cryptocurrencies have their own blockchain.) And, importantly, the winning miner is rewarded with brand-new bitcoins (when Carlson got started, in mid-2012, the reward was 50 bitcoins) and all the processing fees. The network then moves on to the next batch of payments and the process repeats—and, in theory, will keep repeating, once every 10 minutes or so, until miners mine all 21 million of the bitcoins programmed into the system.

This bizarre process might not seem like it would need that much electricity—and in the early years, it didn't. When he first started in 2012, Carlson was mining bitcoin on his gaming computer, and even when he built his first real dedicated mining rig, that machine used maybe 1,200 watts—about as much as a hairdryer or a microwave oven. Even with Seattle's electricity prices, Carlson was spending around $2 per bitcoin, which was then selling for around $12. In fact, Carlson was making such a nice profit that he began to dream about running a bunch of servers and making some serious money. He wasn't alone. Across the expanding bitcoin universe, lots of miners were thinking about scaling up, turning their basements and spare bedrooms into jury-rigged data centers. But most of these people were thinking small, like maybe 10 kilowatts, about what four normal households might use. Carlson's idea was to leapfrog the basement phase and go right to a commercial-scale bitcoin mine that was huge: 1,000 kilowatts. "I started to have this dream, that I was posting on online forums, 'I think I could build the first megawatt-scale mine.'"

But here, Carlson and his fellow would-be crypto tycoons confronted the bizarre, engineered obstinacy of bitcoin, which is designed to make life harder for miners as time goes by. For one, the currency's mysterious creator (or creators), known as "Satoshi Nakamoto," programmed the network to periodically—every 210,000 blocks, or once every four years or so—halve the number of bitcoins rewarded for each mined block. The first drop, from 50 coins to 25, came on November 28, 2012, which the faithful call "Halving Day." (It has since halved again, to 12.5, and is expected to drop to 6.25 in June 2020.)

More important, Nakamoto built the system to make the blocks themselves more difficult to mine as more computer power flows into the network. That is, as more miners join, or as existing miners buy more servers, or as the servers themselves get faster, the bitcoin

network automatically adjusts the solution criteria so that finding those passwords requires proportionately more random guesses, and thus more computing power. These adjustments occur every 10 to 14 days, and are programmed to ensure that bitcoin blocks are mined no faster than one roughly every 10 minutes. The presumed rationale is that by forcing miners to commit more computing power, Nakamoto was making miners more invested in the long-term survival of the network.

Barely perceptible in the early years after bitcoin was launched in 2009, these adjustments quickly ramped up. By the time Carlson started mining in 2012, difficulty was tripling every year. Carlson's fat profit margin quickly vanished. He briefly quit, but the possibility of a large-scale mine was simply too tantalizing. Around the world, some people were still mining bitcoin. And while Carlson suspected that many of these stalwarts were probably doing so irrationally—like gamblers doubling down after a loss—others had found a way to making mining pay.

What separated these survivors from the quitters and the double-downers, Carlson concluded, was simply the price of electricity. Survivors either lived in or had moved to places like China or Iceland or Venezuela, where electricity was cheap enough for bitcoin to be profitable. Carlson knew that if he could find a place where the power wasn't just cheap, but really cheap, he'd be able to mine bitcoin both profitably and on an industrial scale.

The place was relatively easy to find. Less than three hours east of Seattle, on the other side of the Cascade Mountains, you could buy electricity for around 2.5 cents per kilowatt, which was a quarter of Seattle's rate and around a fifth of the national average. Carlson's dream began to fall into place. He found an engineer in Poland who had just developed a much faster, more energy-efficient server, and whom he persuaded to back Carlson's new venture, then called Mega-BigPower. In late 2012, Carlson found some empty retail space in the city of Wenatchee, just a few blocks from the Columbia River, and began to experiment with configurations of servers and cooling systems until he found something he could scale up into the biggest bitcoin mine in the world. The boom here had officially begun.

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On paper, the Mid-Columbia Basin really did look like El Dorado for Carlson and the other miners who began to trickle in during the first years of the boom. The region's five huge hydroelectric dams, all owned by public utility districts, generate nearly six times as much power as the region's residents and businesses can use. Most of the surplus is exported, at high prices, to markets like Seattle or Los Angeles, which allows the utilities to sell power locally at well below its cost of production. Power is so cheap here that people

heat their homes with electricity, despite bitterly cold winters, and farmers have been able to irrigate the semi-arid region into one of the world's most productive agricultural areas. (The local newspaper proudly claims to be published in "the Apple Capital of the World and the Buckle on the Power Belt of the Great Northwest.") And, importantly, it had already attracted several power-hungry industries, notably aluminum smelting and, starting in the mid-2000s, data centers for tech giants like Microsoft and Intuit.

Miners found other advantages. The cool winters and dry air helped reduce the need for costly air conditioning to prevent their churning servers from overheating. As a bonus, the region was already equipped with some of the nation's fastest high-speed internet, thanks to the massive fiber backbone the data centers had installed. All in all, recalls Miehe, the basin was bitcoin's "killer app."

Indeed, for a time, everything seemed to come together for the miners. By mid-2013, Carlson's first mine, though only 250 kilowatts in size, was mining hundreds of bitcoins a day—enough for him to pay all his power bills and other expenses while "stacking" the rest as a speculative asset that had started to appreciate. By then, bitcoin was shedding its reputation as the currency of drug dealers and data-breach blackmailers. A few legitimate companies, like Microsoft, and even some banks were accepting it. Competing cryptocurrencies were proliferating, and trading sites were emerging. Bitcoin was the hot new thing, and its price surged past $1,100 before settling in the mid-hundreds.

For all that potential, however, the basin's nascent mining community was beset by the sort of troubles that you would have found in any other boomtown. Mining technology was still so new that the early operations were constantly crashing. There was a growing, often bitter competition for mining sites that had adequate power, and whose landlords didn't flip out when the walls got "Swiss-cheesed" with ventilation holes. There was the constant fear of electrical overloads, as coin-crazed miners pushed power systems to the limit—as, for example, when one miner nearly torched an old laundromat in downtown Wenatchee.

And, inevitably, there was a growing tension with the utilities, which were finally grasping the scale of the miners' ambitions. In 2014, the public utility district in Chelan County received requests from would-be miners for a total of 220 megawatts—a startling development in a county whose 70,000 residents were then using barely 200 megawatts. Similar patterns were emerging across the river in neighboring Douglas and Grant counties, where power is also cheap.

But, as always, the miners' biggest challenge came from bitcoin itself. The mere presence of so much new mining in the Mid-Columbia Basin substantially expanded the network's total

mining power; for a time, Carlson's mine alone accounted for a quarter of the global bitcoin mining capacity. But this rising calculating power also caused mining difficulty to skyrocket—from January 2013 to January 2014, it increased one thousandfold—which forced miners to expand even faster. And bitcoin's rising price was now drawing in new miners, especially in China, where power is cheap. By the middle of 2014, Carlson says, he'd quadrupled the number of servers in his mine, yet had seen his once-massive share of the market fall below 1 percent.

Bitcoin miners were now caught in the same vicious cycle that real miners confront—except on a much more accelerated timeframe. To maintain their output, miners had to buy more servers, or upgrade to the more powerful servers, but the new calculating power simply boosted the solution difficulty even more quickly. In effect, your mine was becoming outdated as soon as you launched it, and the only hope of moving forward profitably was to adopt a kind of perpetual scale-up: Your existing mine had to be large enough to pay for your next, larger mine. Many miners responded by gathering into vast collectives, pooling their calculating resources and sharing the bitcoin rewards. Others shifted away from mining to hosting facilities for other miners. But whether you were mining or hosting, mining entered "a scaling race," says Carlson, whose own operations marched steadily from 250 kilowatts to 1.5 megawatts to 5 megawatts. And it was a race: Any delay in getting your machines installed and mining simply meant you'd be coming on line when the coins were even harder to mine.

Just when it seemed that things couldn't get any worse, they did. As mining costs were rising, bitcoin prices began to dive. The cryptocurrency was getting hammered by a string of scams, thefts and regulatory bans, along with a lot of infighting among the mining community over things like optimal block size. Through 2015, bitcoin prices hovered in the low hundreds. Margins grew so thin—and, in fact, occasionally went negative—that miners had to spend their coins as soon as they mined them to pay their power bills. Things eventually got so grim that Carlson had to dig into his precious reserves and liquidate "all my little stacks of bitcoin," he recalls, ruefully. "To save the business, we sold it all."

Across the Mid-Columbia Basin, miners faced an excruciating dilemma: cut their losses and walk, or keep mining for basically nothing in the hopes that the cryptocurrency market would somehow turn around. Many smaller operators simply folded and left town—often leaving behind trashed sites and angry landlords. Even larger players began to draw lines in the sand. Carlson started moving out of mining and into hosting and running sites for other miners. Others held on. Among the latter was Salcido, the Wenatchee contractor-turned-bitcoin miner who grew up in the valley. "What I had to decide was, do I think this recovers, or does the chart keep going like this and become nothing?" Salcido told me recently. We

were in his office in downtown Wenatchee, and Salcido, a clean-cut 43-year-old who is married with four young kids, was showing me a computer chart of the bitcoin price during what was one of the most agonizing periods of his life. “Month over month, you had to make this decision: Am I going to keep doing this, or am I going to call it?”

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In the spring of 2016, everything turned around. Bitcoin regained traction. A few more vendors announced they’d accept the cryptocurrency. Bitcoin prices stabilized and then, slowly but surely, began to climb, even after a second halving day cut the reward to 12.5 coins. In January 2017, the price crossed $1,000.

Starting in April, the price of bitcoin kicked up like a jet whose pilot has finally remembered where the afterburner switch is. By July, bitcoin was at $2,500. By September, $4,600. Then $7,200 in November. A week before Christmas, bitcoin went over $19,000. The surge touched off a media frenzy over the newest generation of tech millionaires.

No one was more surprised than the miners themselves. By the end of 2017, even with the rapidly rising difficulty, the per-bitcoin cost for basin miners was around $2,000, producing profit margins similar to those of the early years, only on a vastly larger scale. Marc Bevand, a French-born computer scientist who briefly mined in the basin and is now a tech investor, estimates that, by December, a hypothetical investor who had built a 5-megawatt mine in the basin just four months earlier would’ve recovered the $7 million investment and would now be clearing $140,000 in profit every 24 hours. “Nowadays,” he told me back in December, miners “are literally swimming in cash.”

Of course, by the end of 2017, the players who were pouring into the basin weren’t interested in building 5-megawatt mines. According to Carlson, mining has now reached the stage where the minimum size for a new commercial mine, given the high levels of difficulty, will soon be 50 megawatts, enough for around 22,000 homes and bigger than one of Amazon Web Services’ immense data centers. Miehe, who has become a kind of broker for out-of-town miners and investors, was fielding calls and emails from much larger players. There were calls from China, where a recent government crackdown on cryptocurrency has miners trying to move operations as large as 200 megawatts to safer ground. And there was a flood of interest from players outside the sector, including big institutional investors from Wall Street, Miami, the Middle East, Europe and Japan, all eager to get in on a commodity that some believe could touch $100,000 by the end of the year. And not all the interest has been so civil. Stories abound of bitcoin miners using hardball tactics to get their mines up and running. Carlson, for example, says some foreign miners tried to bribe building and

safety inspectors to let them cut corners on construction. “They are bringing suitcases full of cash,” Carlson says, adding that such ploys invariably backfire. Adds Miehe, “I mean, you know how they talk about the animal spirits—greed and fear? Well, right now, everyone is in full-greed mode.”

Nor was it simply the deep pockets. At these prices, even smaller operators have been able to make real money running a few machines in home-based, under-the-radar mines. Take the 20-something Wenatchee man we’ll call “Benny”—he didn’t want to be identified—who last July bought three mining servers, set them up in his house (one in the master bedroom and two in the living room)—and began mining Ethereum, bitcoin’s closest cryptocurrency rival. As Ethereum climbed from $165 in July to nearly $1,200 in January, Benny had not only repaid his $7,000 investment but was making enough to pay his mortgage. As a side benefit, this winter, Benny’s power bill went down: The waste heat from the three churning servers kept the house at a toasty 78 degrees. “We actually have to open the windows,” he told me in January. His servers, meanwhile, pretty much run themselves—although, when he’s at work, clerking at a grocery, he monitors the machines, and the Ethereum price, on his phone. “It’s just basically free money,” Benny says. “All I have to do is wake up in the morning and make sure nothing crashed during the night.”

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In the zero-sum game that cryptocurrency has become, one man’s free money is another man’s headache. In the Mid-Columbia Basin, the latter category includes John Stoll, who oversees Chelan County Public Utility District’s maintenance crews. Stoll regards people like Benny as “rogue operators,” the utility’s term for small players who mine without getting proper permits and equipment upgrades, and whose numbers have soared in the past 12 months. Though only a fraction of the size of their commercial peers, these operators can still overwhelm residential electric grids. In extreme cases, insulation can melt off wires. Transformers will overheat. In one instance last year, the utility says, a miner overloaded a transformer and caused a brush fire.

In parts of the basin, utility crews now actively hunt unpermitted miners, in a manner not unlike the way police look for indoor cannabis farms. The biggest giveaway, Stoll says, is a sustained jump in power use. But crews have learned to look, and listen, for other telltales, such as “fans that are exhausting out of the garage or a bedroom.” In any given week, the utility flushes out two to five suspected miners, Stoll says. Some come clean. They pay for permits and the often-substantial wiring upgrades, or they quit. But others quietly move their servers to another residential location and plug back in. “It’s a bit of a cat-and-mouse game,” Stoll admits.

The utilities' larger challenge comes from the legitimate commercial operators, whose appetite for megawatts has upended a decades-old model of publicly owned power. The combined output of the basin's five dams averages around 3,000 megawatts, or enough for the population of Los Angeles. Until fairly recently, perhaps 80 percent of this massive output was exported via contracts that were hugely advantageous for locals. Cryptocurrency mining has been changing all that, to a degree that is only now becoming clear. By the end of 2018, Carlson reckons the basin will have a total of 300 megawatts of mining capacity. But that is nothing compared to what some hope to see in the basin. Over the past 12 months or so, the three public utilities reportedly have received applications and inquiries for future power contracts that, were they all to be approved, could approach 2,000 megawatts—enough to consume two-thirds of the basin's power output.

Just because miners want power doesn't mean they get it. Some inquiries are withdrawn. And all three county public utilities have considerable discretion when it comes to granting power requests. But by law, they must consider any legitimate request for power, which has meant doing costly studies and holding hearings—sparking a prolonged, public debate over this new industry's impact on the basin's power economy. There are concerns about the huge costs of new substations, transmission wires and other infrastructure necessary to accommodate these massive loads. In Douglas County, where the bulk of the new mining projects are going in, a brand new 84-megawatt substation that should have been adequate for the next 30 to 50 years of normal population growth was fully subscribed in less than a year.

Many also fear that the new mines will suck up so much of the power surplus that is currently exported that local rates will have to rise. In fact, miners' appetite for power is growing so rapidly that the three counties have instituted surcharges for extra infrastructure, and there is talk of moratoriums on new mines. There is also talk of something that would have been inconceivable just a few years ago: buying power from outside suppliers. That could mean the end of decades of ultracheap power—all for a new, highly volatile sector that some worry may not be around long anyway. Indeed, one big fear, says Dennis Bolz, a Chelan County Public Utility commissioner, is that a prolonged price collapse will cause miners to abandon the basin—and leave ratepayers with "an infrastructure that may or may not have a use."

But Bolz, a longtime critic of cryptocurrency, says local concerns go beyond economics: Many residents he hears from aren't keen to see so much public power sold to an industry whose chief product is, in their minds, of value only to speculators and criminals. "I mean, this is a conservative community, and they're like, 'What the hell's wrong with dollars?'" says

Bolz. “If you just went out and did a poll of Chelan County, and asked people, ‘Do you want us to be involved in the bitcoin industry, they would say not only ‘No,’ but ‘Hell no.’”

The basin has become a proving ground for the broader debate about the future of blockchain technology. Critics insist that bitcoin will never work as a mainstream currency—it’s slow and far too volatile. Its real function, they say, is as a “store of value”—that is, an investment asset, like gold or company shares—except that, unlike these traditional assets, bitcoin has no real underlying economic value. Rather, critics say, it has become merely another highly speculative bet—much like mortgage-backed derivatives were in the prelude to the financial crisis—and like them, it is just as assured of an implosion.

The counterargument is that the blockchain economy is still in its infancy. The “monetized code” that underlies the blockchain concept can be written to carry any sort of information securely, and to administer virtually any kind of transaction, contractual arrangement or other data-driven relationship between humans and their proliferating machines. In the future, supporters say, banks and other large institutions and even governments will run internal blockchains. Consumer product companies and tech companies will use blockchain to manage the “internet of things.” Within this ecosystem, we’ll see a range of cryptos playing different roles, with bitcoin perhaps serving as an investment, while more nimble cryptos can carry out everyday transactions. And the reality is, whatever its flaws, bitcoin’s success and fame thus far makes the whole crypto phenomenon harder to dislodge with every trading cycle.

Still, even supporters acknowledge that that glorious future is going to use a lot of electricity. It’s true that many of the more alarming claims—for example, that by 2020, bitcoin mining will consume “as much electricity as the entire world does today,” as the environmental website Grist recently suggested—are ridiculous: Even if the current bitcoin load grew a hundredfold, it would still represent less than 2 percent of total global power consumption. (And for comparison, even the high-end estimates of bitcoin’s total current power consumption are still less than 6 percent of the power consumed by the world’s banking sector.) But the fact remains that bitcoin takes an astonishing amount of power. By one estimate, the power now needed to mine a single coin would run the average household for 10 days.

All of which leaves the basin’s utilities caught between a skeptical public and a voracious, energy-intense new sector that, as Bolz puts it, is “looking at us in a predatory sense.” Indeed, every utility executive knows that to reject an application for a load, even one load so large as to require new transmission lines or out-of-area imports, is to invite a major legal fight. “If you can afford 100 megawatts,” Bolz says, “you can afford a lot of attorneys.”

For all the peril, others here see the bitcoin boom as a kind of necessary opportunity. They argue that the era of cheap local power was coming to an end even before bitcoin arrived. One big reason: The region's hydropower is no longer as prized by outside markets. In California, which has historically paid handsomely for the basin's "green" hydropower, demand has fallen especially dramatically thanks to rapid growth in the Golden State's wind and solar sectors. Simply put, the basin may soon struggle to find another large customer so eager to take those surplus megawatts—particularly one, like blockchain mining, that might bring other economic benefits. Early data from Douglas County, for example, suggest that the sector's economic value, especially the sales tax from nonstop server upgrades, may offset any loss in surplus power sales, according to Jim Huffman, a Douglas County port commissioner.

That opportunity may not last. Huffman, who is also a former utility executive, argues that ever-cheaper power rates in other states, like California, could undercut the basin's appeal to blockchain miners, who may begin to look for other places to mine. For that reason, Huffman argues that the basin should be actively recruiting more miners, even if it means importing power. "I think there's a window here," Huffman says, "and it's unknown how long that window will be open." Yet he, too, knows that any such talk will lead to criticism that the basin is yoking its future to a volatile sector that, for many, remains a chimera. "Some folks think that bitcoin is just a scam," Huffman concedes. "And in the conversation, you usually don't get past that."

Meanwhile, the miners in the basin have embarked on some image polishing. Carlson and Salcido, in particular, have worked hard to placate utility officialdom. Miners have agreed to pay heavy hook-up fees and to finance some of the needed infrastructure upgrades. They've also labored to build a case for the sector's broader economic benefits—like sales tax revenues. They say mining could help offset some of the hundreds of jobs lost when the region's other big power user—the huge Alcoa aluminum smelter just south of Wenatchee—was idled a few years ago.

More fundamentally, miners argue that the current boom is simply the first rough step to a much larger technological shift that the basin would do well to get into early on. "What you can actually do with the technology, we're only beginning to discover," Salcido says. "But the technology requires a platform." And, he says, as the world discovers what the blockchain can do, the global economy will increasingly depend on regions, like the basin, with the natural resources to run that platform as cheaply as possible.

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Even in the recent price crash, the miners have maintained their upbeat attitude, in part because they've died this death a few times before. In February, a day after bitcoin's price dipped below $6,000, I checked in with Carlson to see how he was dealing with the huge sell-off. In a series of long texts, he expressed only optimism. The market correction, he argued, had been inevitable, given the rapid price increase. He noted that mining costs in the basin remain so low—still just a little above $2,000 per coin—that prices have a way to fall before bitcoin stops being worth mining there. Carlson is, he told me, "100 percent confident" the price will surpass the $20,000 level we saw before Christmas. "The question, as always, is how long will it take."

In the meantime, the basin's miners are at full steam ahead. Salcido says he'll have 42 megawatts running by the end of the year and 150 megawatts by 2020. Carlson says his next step after his current build-out of 60 megawatts will be "in the hundreds" of megawatts. Over the next five years, his company plans to raise $5 billion in capital to build 2,000 megawatts—two gigawatts—of additional mining capacity. But that won't all be in the basin, he says. Carlson says he and others will soon be scaling up so rapidly that, for farsighted miners, the Mid-Columbia Basin effectively is already maxed out, in part because the counties simply can't build out power lines and infrastructure fast enough. "So we have to go site hunting across the US & Canada," Carlson told me in a text. "I'm on my way to Quebec on Monday." As in oil or gold, prospectors never stop—they just move on.

But not everyone is going along for the ride. Back in East Wenatchee, Miehe is giving me an impromptu tour of the epicenter of the basin's boom. We drive out to the industrial park by the regional airport, where the Douglas County Port Authority has created a kind of mining zone. We roll past Carlson's construction site, which is swarming with equipment and men. Not far away, we can see a cluster of maybe two dozen cargo containers that Salcido has converted into mines, with transformers and cooling systems. Across the highway, near the new, already-tapped out substation, Salcido has another crew working a much larger mine. "A year ago, none of this was here," Miehe says. "This road wasn't here."

Miehe still runs his original mine, a half-megawatt operation not far from the carwash. But his main job these days is managing hosting sites for other miners and connecting outsiders with insiders—and he's OK with that. He sold off some of his bitcoin stack, just after Christmas. He's still bullish on crypto, and on the basin's long-term prospects. But he no longer has any appetite for the race for scale. Gone are the glory days when commercial miners could self-finance with their own stacks. Today, you need outside financing—debt—which, for Miehe, who now has two young children, would mean an unacceptable level of stress. "I've already done it," he says. "My entire data center was built with bitcoin, from nothing. I've already won enough for what I was looking for out of

mining." He pauses. "The risk and reward is getting pretty great," he says. "And I'm not sure I want to be on the front line of that battle."