



The Weekly Hash, 11/15/21

Open Interest, Contango Stalls; Modest Downside Risk to Our 198EH/s YE Hashrate Est

Bitcoin rose 3.2% week-on-week (WoW), settling at \$65,032 as of midnight UTC on 11/14. Yesterday's difficulty reset increased target Hashrate by 4.7% to 162 EH/s. While Hashrate is now modestly below our expectations at this point, published 9/16, we believe our 198EH/s year end estimate is intact. We do note a modest downside risk to that estimate, though.

Contango on the CME has moderated vs a week ago, and open interest dipped 0.7% WoW to 13,565 lots. The Commitment of Traders data from 11/9 suggests that the drop in open interest is driven by a rotation from other and non-reportables to asset managers on the long side, and a contraction in leveraged investor positions. The net length on the CME is now short 421 lots for non-commercial players, from short 583 lots two weeks ago.

Total BTC earnings per PH/s are ~5.65 mBTC, down from ~5.86 mBTC / PH/s last week on increased difficulty (1mBTC or milliBTC = 1/1000 BTC). Transaction fees dropped 9 bps WoW to 0.9% of miner rewards, or 0.06 BTC per block. The "Mempool" currently shows low congestion levels with ~4,000 pending transactions. We continue to believe congestion will likely stay low for a while with the falloff of trading activity in Asia, where a higher percentage of on-exchange transactions result in on-chain transactions.

Bitcoin mining revenue fell to \$367 / PH/s per day and \$401/MWh on Sunday's reset, with both the higher difficulty and the falling

transaction fees offsetting price gains. However, miner economics appear on track to match or come in slightly better than our year end estimate so far. Actual Hashrate is within our confidence intervals, and we are leaving estimates unchanged for now.

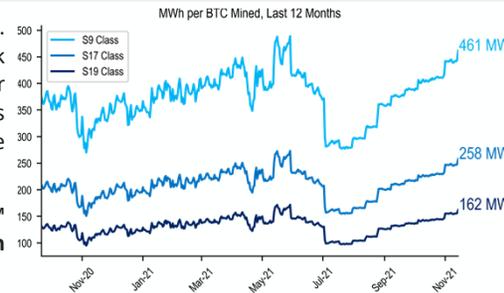
The BitOoda North American Hash Spread™ fell 3.6% from \$363 to \$350 following an increase in national average power price.

We define the BitOoda Hash Spread™ as the difference between the cost of power per MWh and the Bitcoin mining revenue per MWh. This gives miners a quick sense of the surplus generated by their business to cover personnel, overhead, depreciation, and profit. The weighted average around the clock U.S. wholesale industrial power price (5 markets) of \$50.24 / MWh leads to an aggregate spread of \$350.

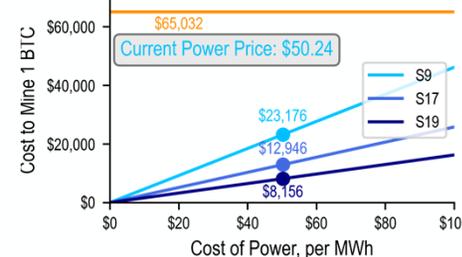
Older-gen S9-class devices saw their Hash Spread™ down ~11% to \$91/MWh. S17-class devices, the bulk of the installed base, saw a hash spread of about \$202/ MWh.

| | S9 Class | S17 Class | S19 Class |
|--------------|----------|-----------|-----------|
| Hash Spread | \$91 | \$202 | \$350 |
| Week on Week | -11.0% | -5.6% | -3.6% |

It now takes 162 MWh to mine 1 BTC using S19-class rigs, while S17-class machines would consume 258 MWh, and S9-class, 461 MWh.



The 162 MWh required to mine 1 BTC with S19-class rigs translates into \$8,156 in power expense. It costs \$23,176 using S9 rigs, a ~64% margin, excluding labor.



Takeaways

- Bitcoin price remains bound within a ~10% range between \$60-66,000
- Our 198EH/s YE Hashrate estimate is intact, supporting strong miner economics
- Traders are beginning to roll futures positions into December contracts, even as net length improved to short 421 lots
- Asset managers appear to be getting more bullish, offsetting reduced longs by other and non-reportable CME players

Research

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BTC Price (11/15 at 10am EDT) \$64,238

Obs Hashrate 182EH/s

Key Takeaways

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- Our 198EH/s YE Hashrate estimate is intact, supporting strong miner economics
- Traders are beginning to roll futures positions into December contracts, even as net length improved to short 421 lots
- Asset managers appear to be getting more bullish, offsetting reduced longs by other and non-reportable CME players
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BitOoda 2021 Hash Estimates Still ~198 EH/s by Year End

- On September 16th, we called for a target Hashrate of ~198EH/s by year end (YE) 2021
- Since then, target Hashrate continues to recover, although it is slightly lower than we had expected at this point
- It would take about 7% difficulty increases over the rest of the resets this year to achieve our estimate, so the risks seem biased to the downside
- **Thus, miner profitability may modestly exceed our expectations over the next couple of months**

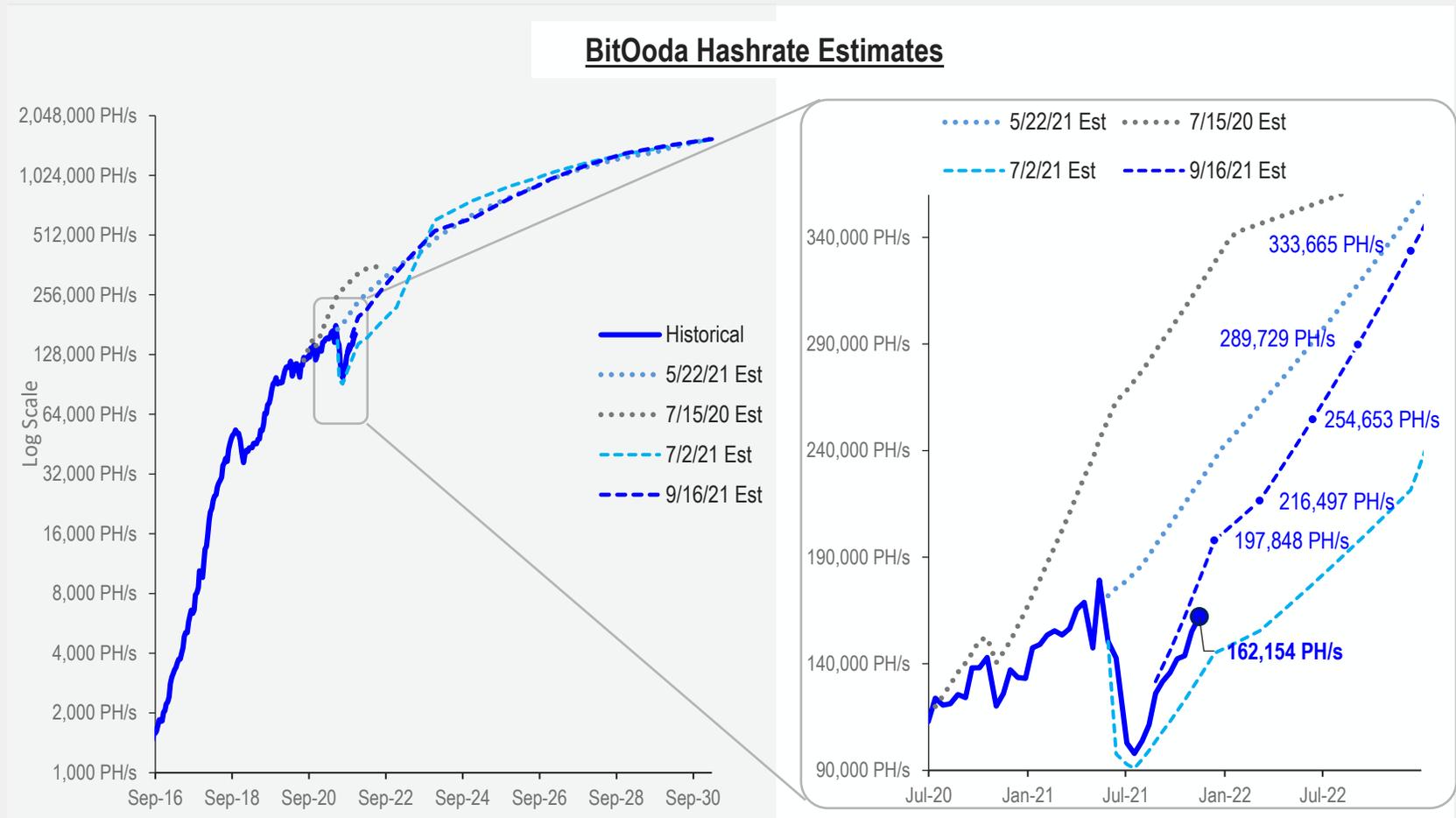


Figure: Historical and Estimated Target Hashrate 2017-2030
Historical as of 11/14/21; Estimates as of 9/16/21, 7/2/21, 5/22/21, and 7/15/20

Source: BitOoda estimates, CoinMetrics

Falling Contango Open Interest Drops

- Following October expiry, the contango continues to edge down along the curve
- CME Open Interest increased 1.8% vs. two weeks ago, but dropped 0.7% vs. last week to 13,563 lots
- Open Interest is falling in the active contract, and climbing for December as the roll picks up well ahead of expiry
- With the upcoming Thanksgiving holiday and possible impact on trading volume and liquidity, it makes sense for the funds to roll forward their positions early
- The flattish term structure (~0.8% pick up from front to November) supports executing the roll as well



Figure: Bitcoin futures metrics

Source: CME, Bloomberg



CME Commitment of Traders 11/9 Open Interest Dropped

- The CME Bitcoin Commitment of Traders report shows that open interest fell significantly last week, to 11/9/21
- About 2/3rds of the decline was in spreading positions
- Overall, non-spreading positions contracted modestly
- Under the surface, we note a rotation, with asset managers expanding their longs significantly, and non-reportables and other reportables paring back their long positions
- CoT data is released with a lag, showing positions as of the preceding Tuesday, compared with Open Interest

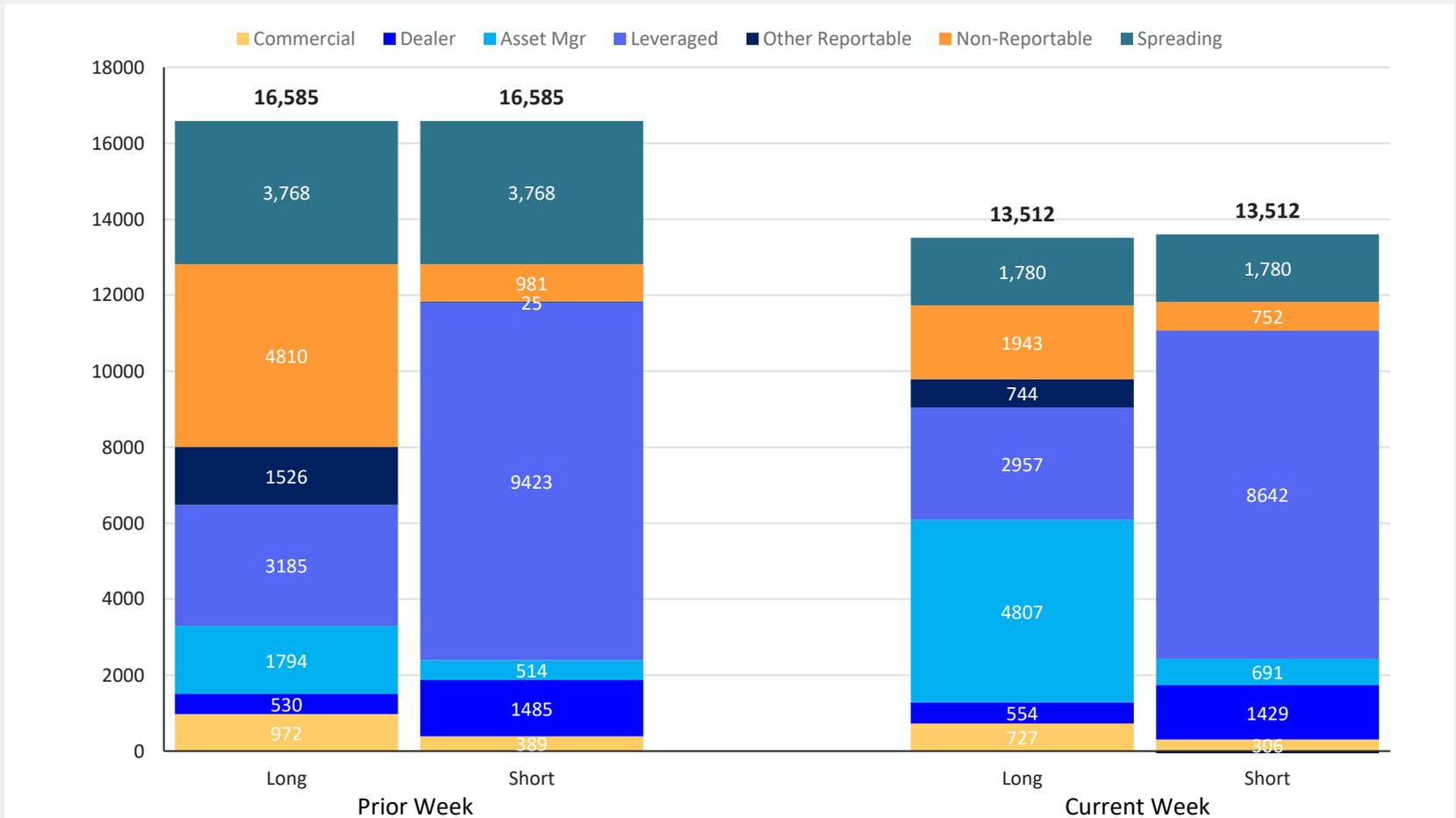


Figure: CME Bitcoin Commitment of Traders, 11/9/21 and 11/2/21

Source: Bloomberg



Non-Commercial Net Length Short 421Lots = Some Short Covering

- Commercial Bitcoin players are not very active in the options space, participating mainly in the futures arena
- Commercial positioning has been largely long futures
- As a result, the net position for non-commercial market participants has been largely short
- The net length for non-commercial participants is now short 421 lots, improving from the 583-lot short position two weeks ago

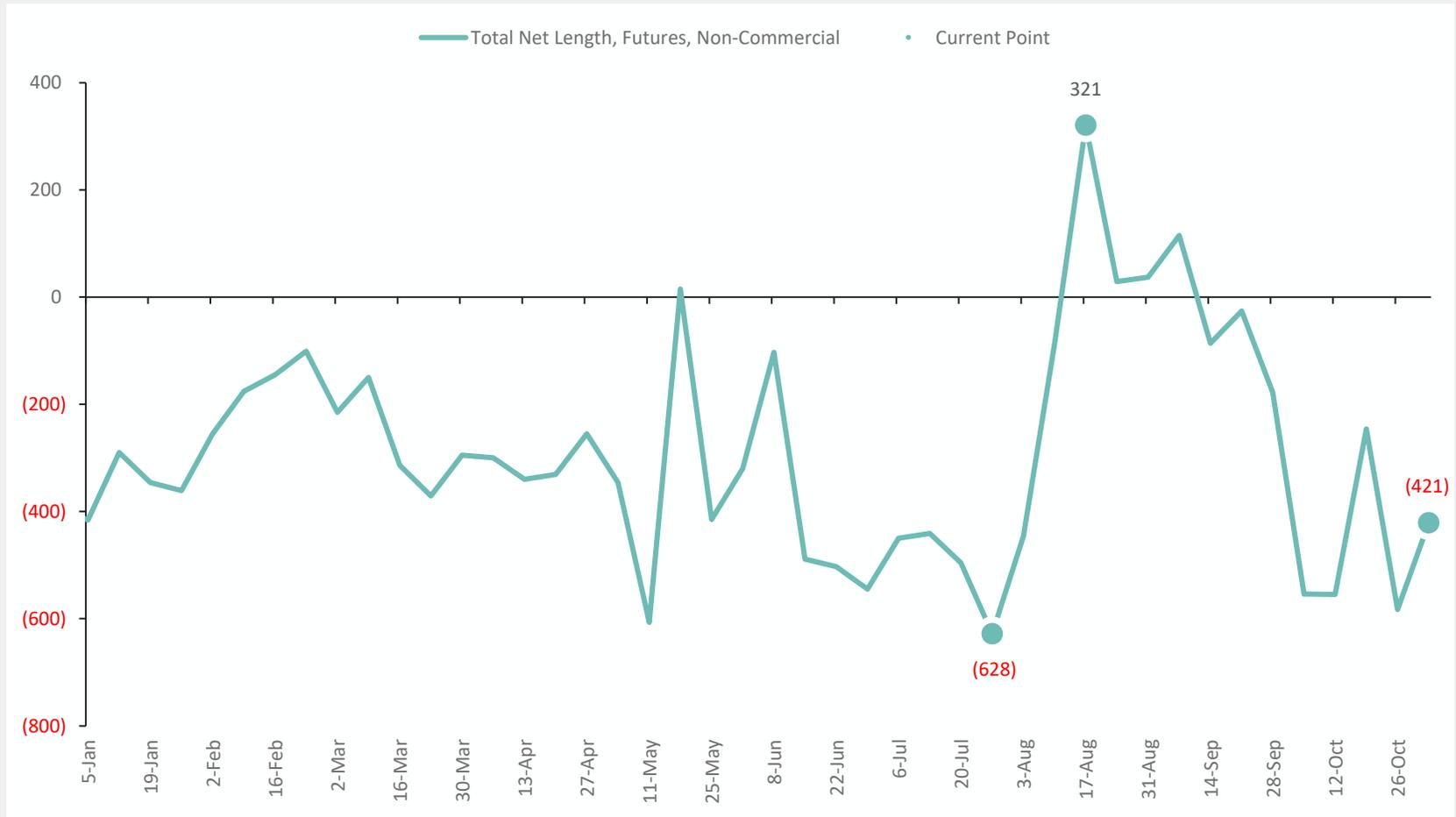


Figure: CME Bitcoin Future Non-Commercial Net Length, YTD

Source: Bloomberg



BitOoda Hash™ Dashboard

November 15, 2021

Definitions

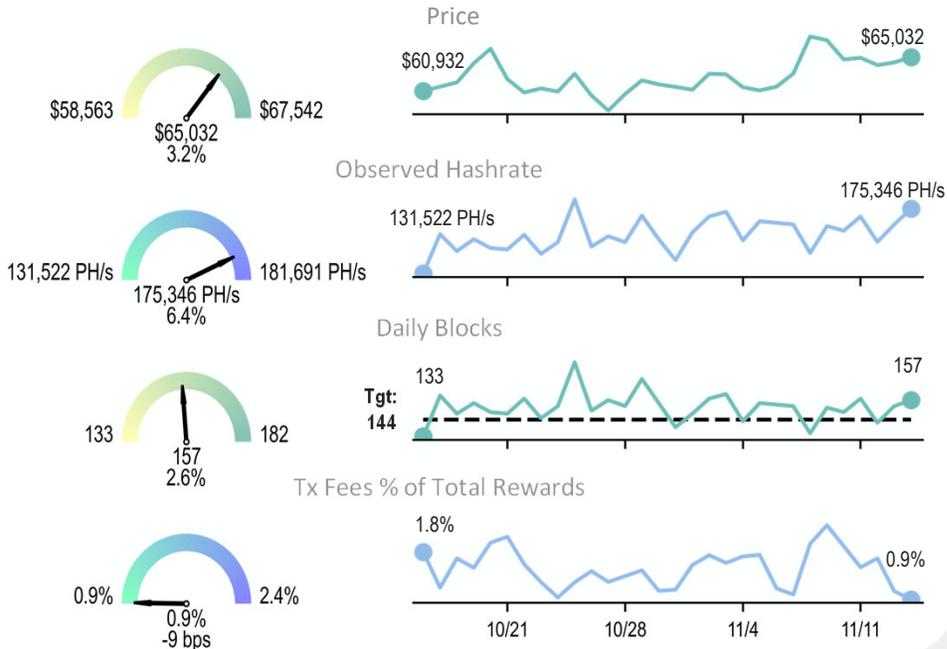
Hash Spread: the difference between the revenue per MWh from mining BTC and the weighted average cost of peak and off-peak power across 8 US zones. It is a quick measure of the profitability of US-based latest-generation mining rigs.

MWh: Megawatt hour

PH/s: Petahash per second

Tx Fees: Fees for BTC transactions

30 Day Range and 7-day % change



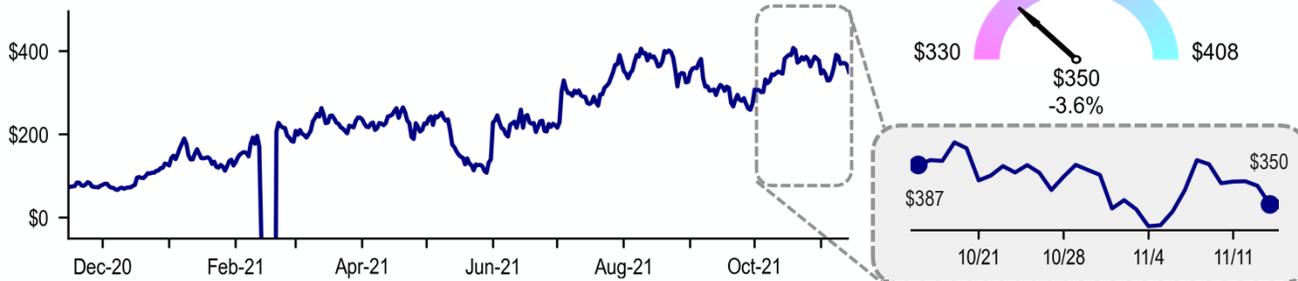
Daily Revenue per PH/s



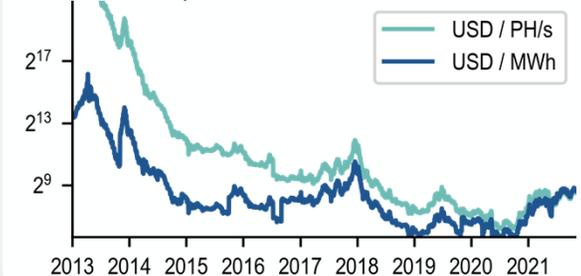
Revenue per MWh (\$19 Class)



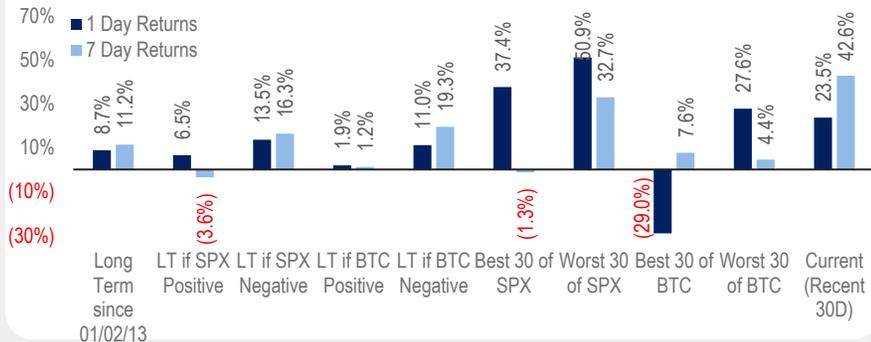
BitOoda North American Hash Spread™



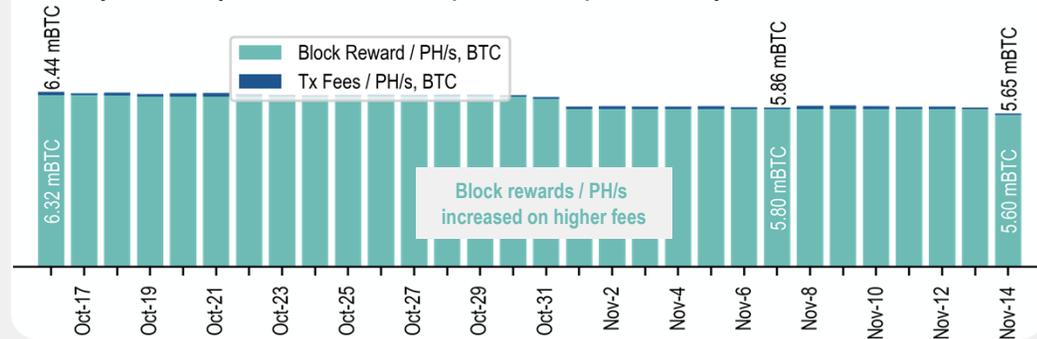
Revenue, since 2013



Historical BTC Correlation to S&P500



Daily Rewards per PH/s, in milliBTC (1/1000 BTC), last 30 days





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