



The Weekly Hash, 11/22/21

Modest Downside Risk to Our 198EH/s YE Hashrate Est, Open Interest Rises Despite Price Drop

Bitcoin fell 9.2% week-on-week (WoW), settling at \$59,032 as of midnight UTC on 11/21, and is down further to \$57,500 intraday. Bitcoin modestly outperformed the \$1.4B ProShares BITO ETF since fund inception; the fund launch correlates strongly with increased CME open interest as AUM increased rapidly in the first week from launch.

Contango on the CME has moderated vs. a week ago, and open interest increased 4.3% WoW to 14,360 lots. The Commitment of Traders data from 11/16 shows an overall increase in spreading positions, while leveraged managers reduced their long and short positions. The net length on the CME is now short 357 lots for non-commercial players as of 11/16, from short 421 lots on 11/9.

Total BTC earnings per PH/s are ~5.61 mBTC, down from ~5.65 mBTC / PH/s last week on yesterday's block count of 132, falling behind the expected count of 144 (1mBTC or milliBTC = 1/1000 BTC). Transaction fees gained 20 bps WoW to 1.1% of miner rewards, or 0.07 BTC per block. The "Mempool" currently shows low congestion, with ~5,000 pending transactions. We continue to assess 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 dropped to \$331 / PH/s per day and \$361/MWh on spot losses. However, miner economics remain on track to match or come in slightly better than our

year-end estimate. Actual Hashrate is within our confidence intervals, and we are leaving our estimates unchanged for now. We continue to model 198EH/s as our year-end target Hashrate, although the current block rate suggests some downside is likely.

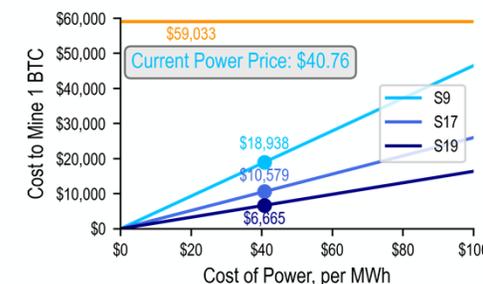
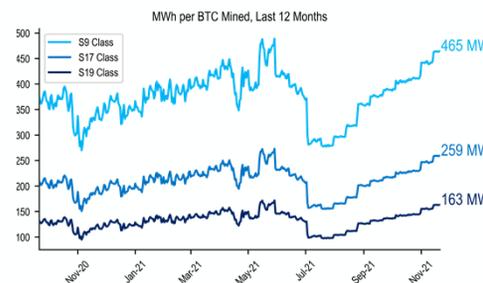
The BitOoda North American Hash Spread™ fell 8.6% from \$350 to \$320, as the impact of bitcoin price falling was dampened by a \$10 / MWh decrease in power price.

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 \$40.76 / MWh leads to an aggregate spread of \$320.

Older-gen S9-class devices saw their Hash Spread™ down ~5% to \$86/MWh. S17-class devices, the bulk of the installed base, saw a hash spread of about \$187/MWh.

	S9 Class	S17 Class	S19 Class
Hash Spread	\$86	\$187	\$320
Week on Week	-4.9%	-7.6%	-8.6%

It now takes 163 MWh to mine 1 BTC using S19-class rigs, while S17-class machines consume 259 MWh, and S9-class, 465 MWh. This translates to \$6,665 in power expense to mine 1 BTC with S19 class rigs, and ~\$19,000 with S9 class rigs, a 68% contribution margin excluding labor.



Takeaways

- Despite a 9% WoW drop in Bitcoin price, mining presents very attractive margins with likely downside to our 198EH/s YE Hashrate estimate
- The financial ecosystem connecting Bitcoin to traditional markets continues to evolve, with the Bitcoin Futures ETF driving CME volumes and open interest
- We expect significant CME volumes in the next two days as traders roll off November contracts ahead of the Thanksgiving holiday and Friday's expiry
- Net length improved to short 357 lots, while leveraged traders appear to be shifting slightly to the sidelines

Research

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BTC Price (11/22 at 10am EDT) \$58,378

Obs Hashrate 160EH/s

Key Takeaways

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BitOoda 2021 Hash Estimates Still ~198 EH/s by Year End

- On September 16, we estimated a ~198EH/s year end (YE) 2021 target Hashrate
- 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 match our estimate
- Midway through the current difficulty epoch, we appear to be tracking flat to slightly up, so the risks seem biased to the downside
- **Thus, miner profitability may modestly exceed our expectations over the next few months**

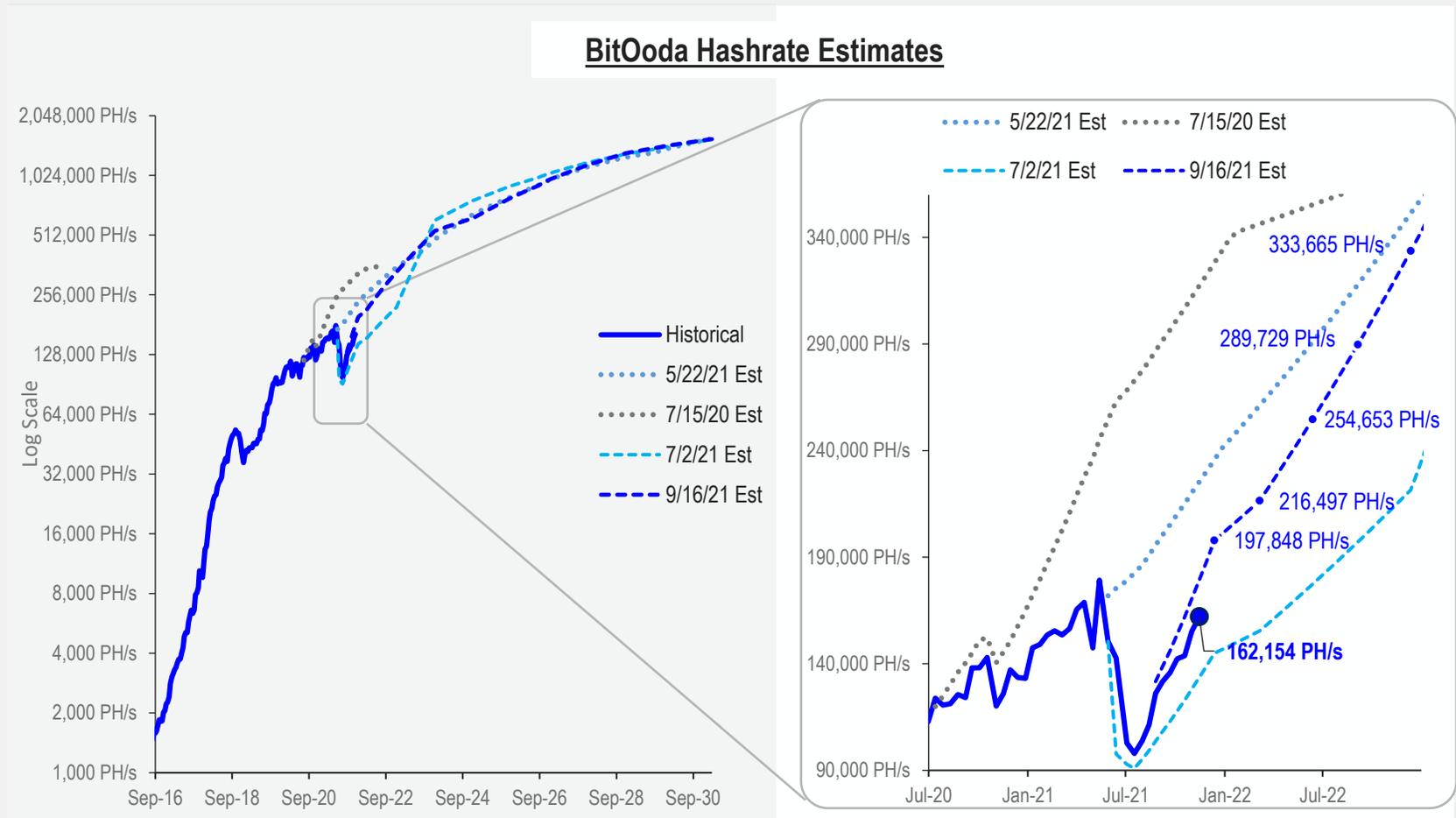


Figure: Historical and Estimated Target Hashrate 2017-2030
Historical as of 11/14/21; Estimates as of 9/16/21, 7/2/21, 5/22/21, and 7/15/20

Source: BitOoda estimates, CoinMetrics

Contango Flat Open Interest Picks Up

- The contango remains mostly flat vs. a week ago, though February contango dropped
- It is still up from two weeks ago across the term structure
- CME open interest increased 7.8% vs. two weeks ago and 4.3% vs. last week to 14,360 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 (~1% pick up from front month to December) supports executing the roll as well

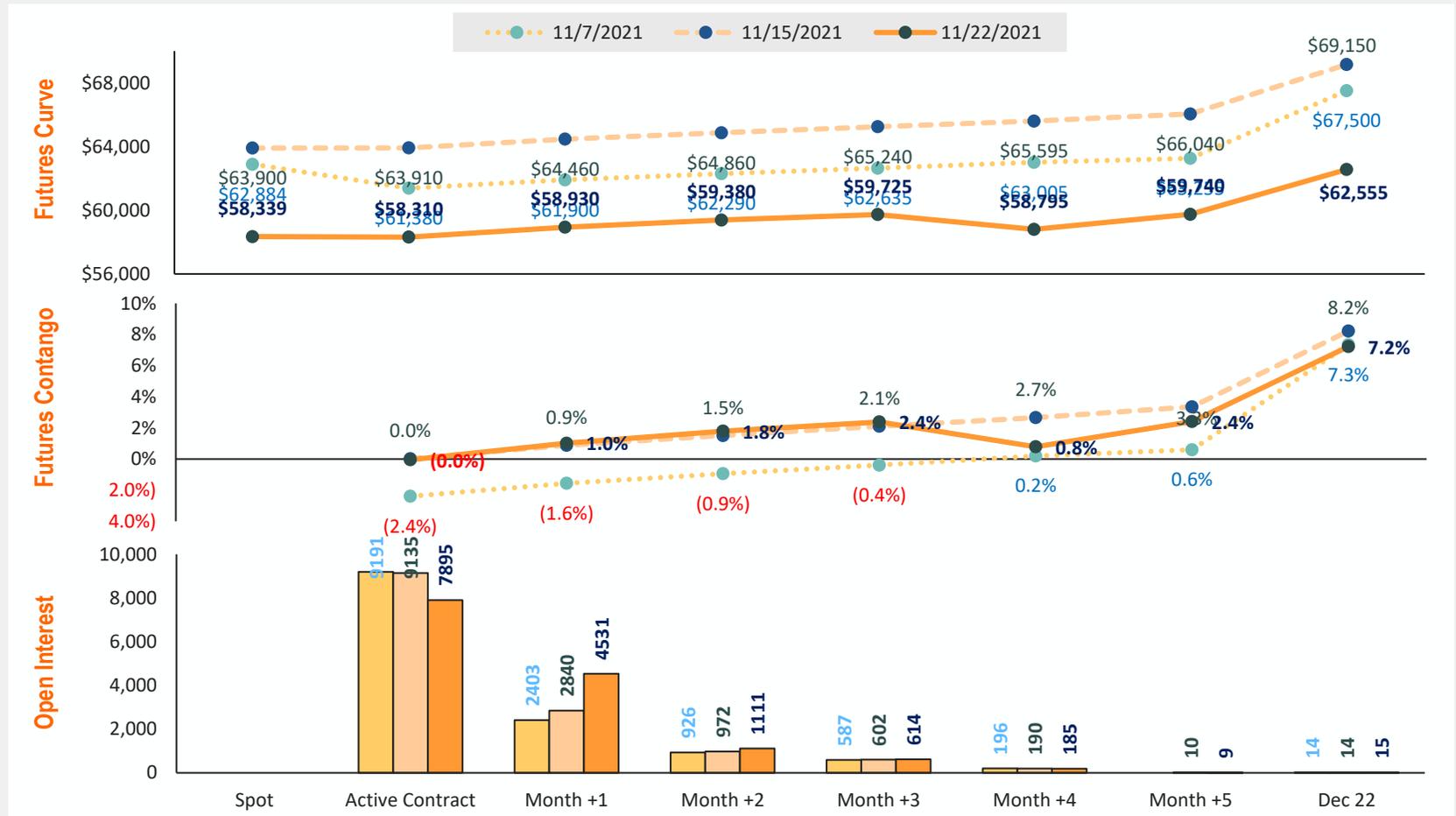


Figure: Bitcoin futures metrics

Source: CME, Bloomberg



CME YTD Open Interest Picking Back Up After ETF Peak

- CME Bitcoin Futures open interest increased significantly ahead of the launch of the Bitcoin Futures ETFs
- While it dropped after the October futures expiry, OI is climbing once again
- November OI is dropping ahead of the futures expiry on 11/28
- We expect most of the roll to be completed in the next two days, in view of the light trading volumes anticipated for the 11/28 expiry (the day after Thanksgiving)

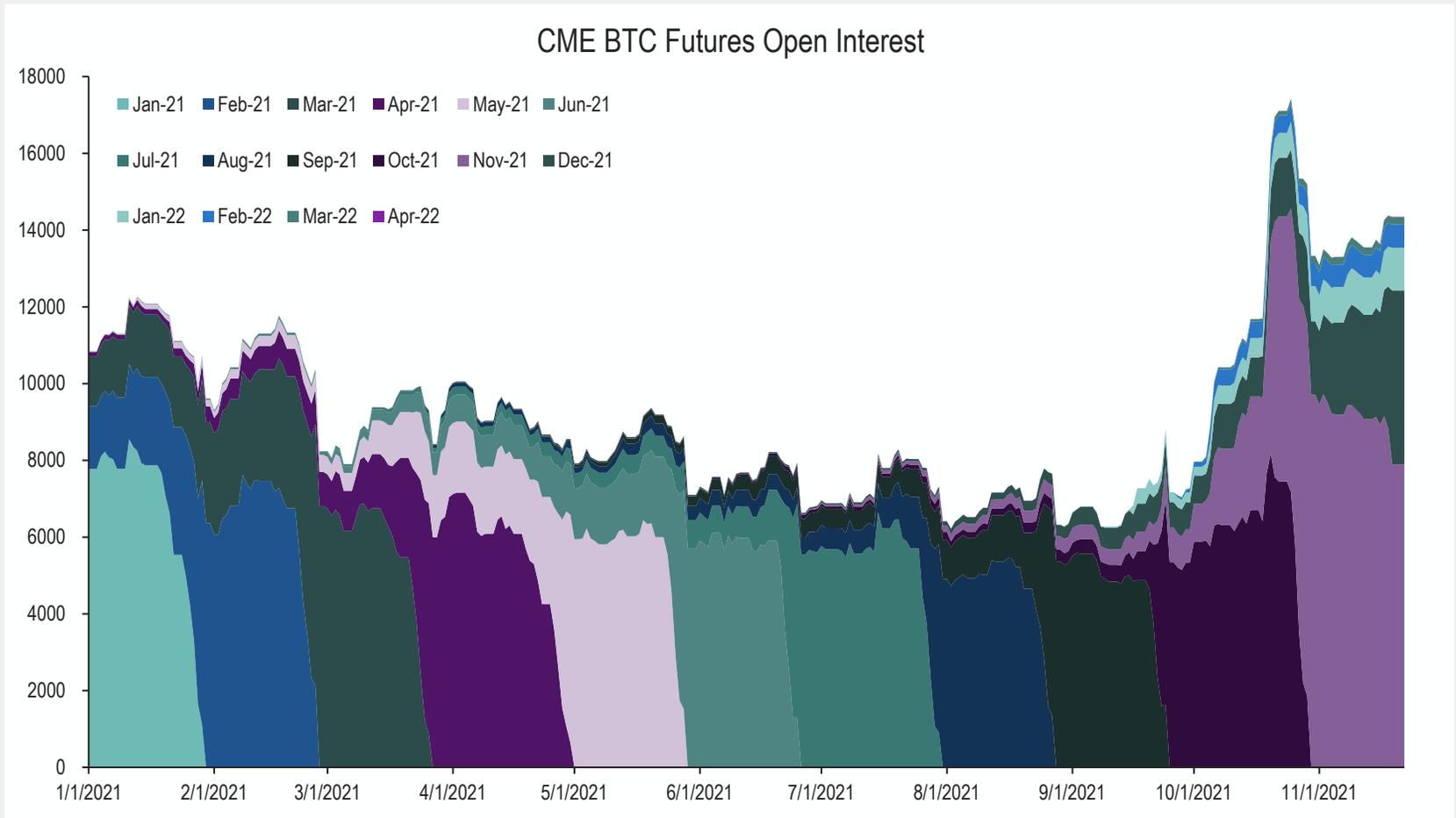


Figure: CME Bitcoin Commitment of Traders, 11/9/21 and 11/2/21

Source: Bloomberg





ProShares Futures ETF BITO Slightly Below BTC, Tracking NAV

- The ProShares ETF BITO currently has a market cap of \$1.4 billion
- The ETF has modestly underperformed Bitcoin, resulting in a 11.4% decline since launch vs. a 9.6% decline in the price of BTC in the same timeframe
- Price very closely tracks the underlying NAV; the two series are almost indistinguishable from each other

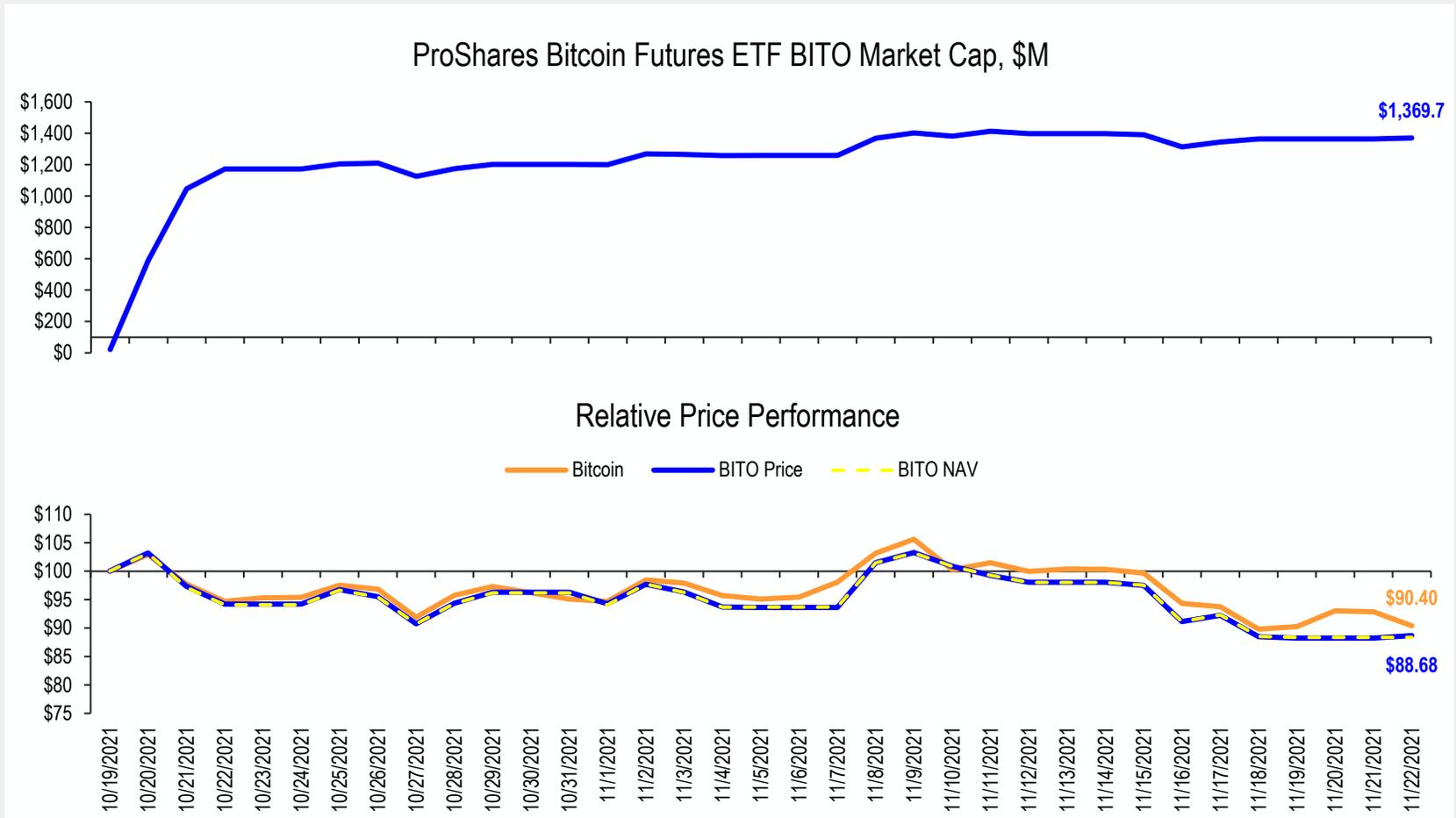


Figure: CME Bitcoin Commitment of Traders, 11/9/21 and 11/2/21

Source: Bloomberg



CME Commitment of Traders 11/16 Open Interest Flattish

- The CME Bitcoin Commitment of Traders report shows that open interest dipped fractionally last week, to 11/16/21
- Spreading positions increased, while leveraged players reduced both long and short positions
- Other positioning changes were more modest
- The reduction of leveraged interest is noteworthy
- CoT data is released with a lag, showing positions as of the preceding Tuesday, compared with open interest which is a more real-time indicator

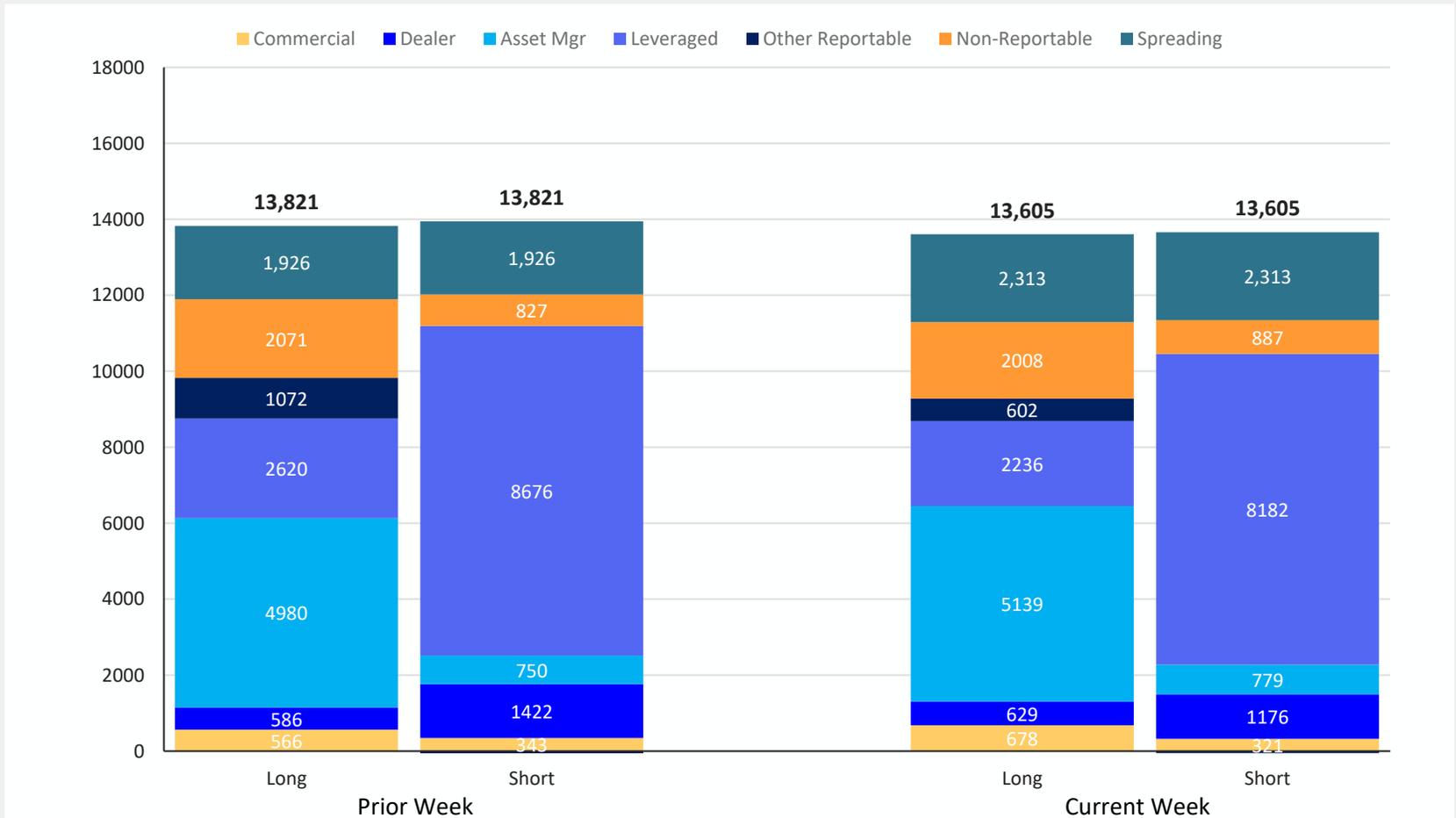


Figure: CME Bitcoin Commitment of Traders, 11/16/21 and 11/9/21

Source: Bloomberg



Non-Commercial Net Length Short 357421 Lots = 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 357 lots, with some short covering driving the reduction from the 421 lot short position a week ago and a 628 lot short position on July 27th

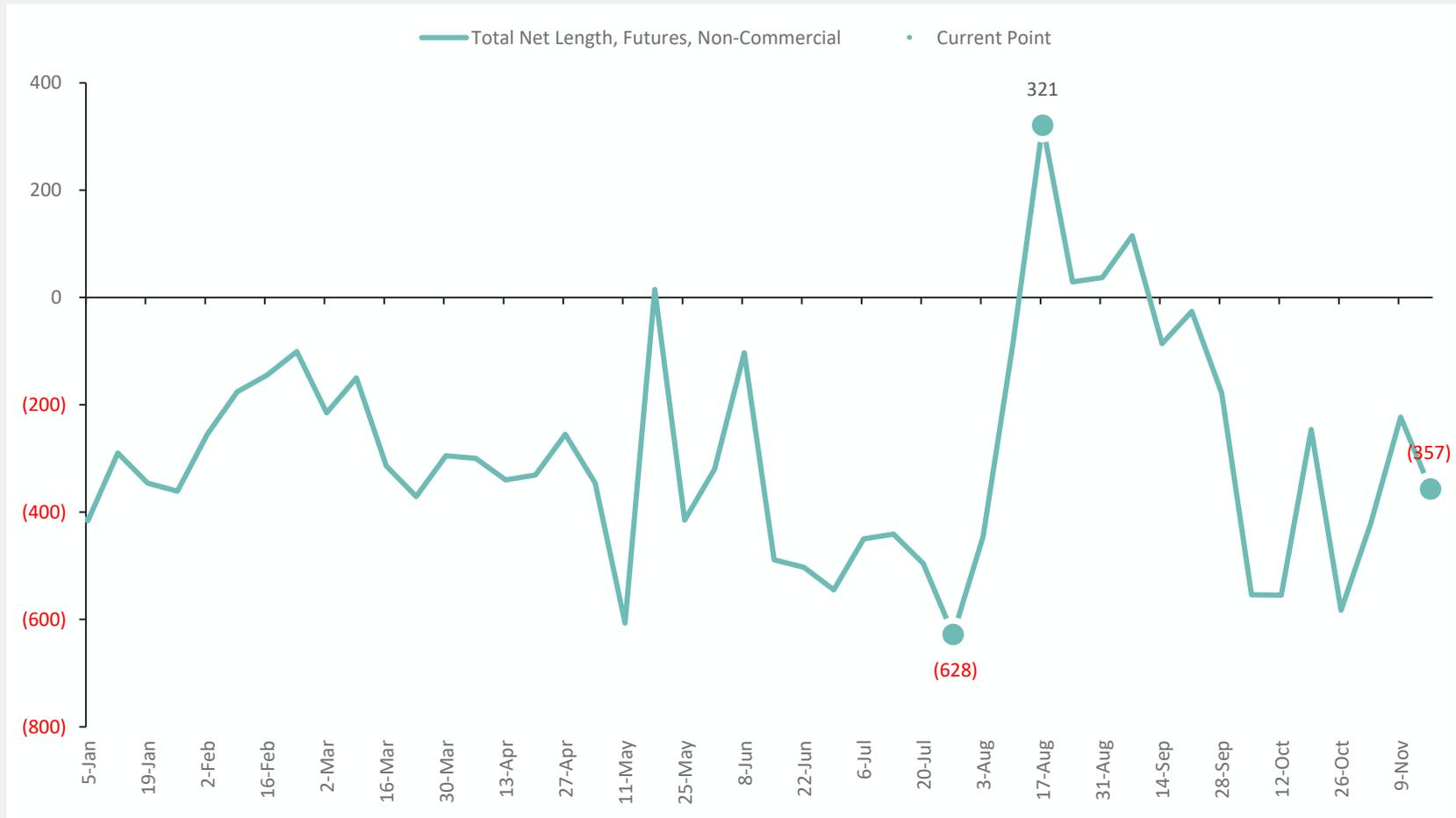


Figure: CME Bitcoin Future Non-Commercial Net Length, YTD

Source: Bloomberg

BitOoda Hash™ Dashboard

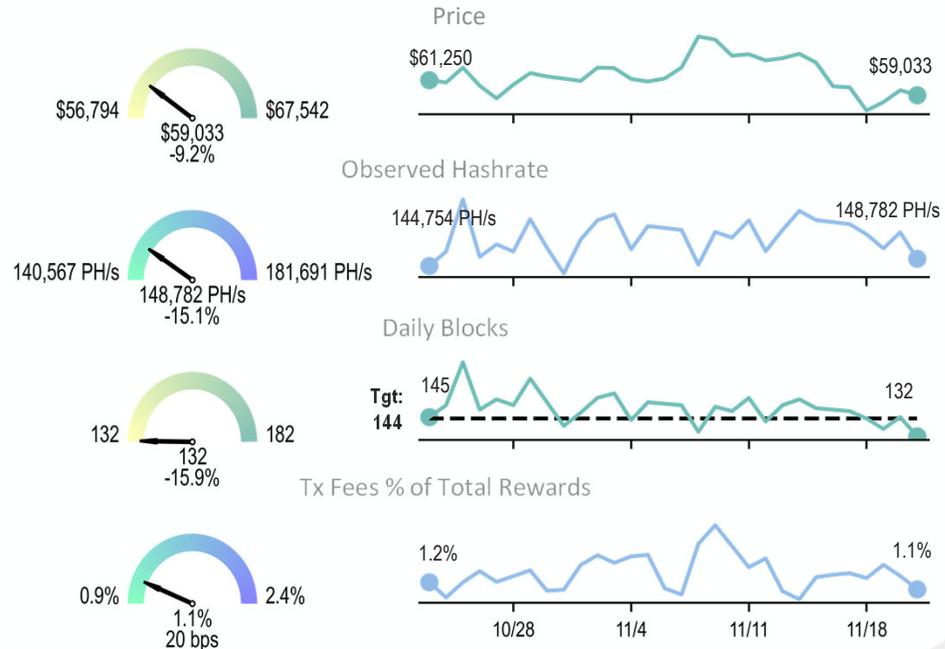
November 22, 2021

Definitions

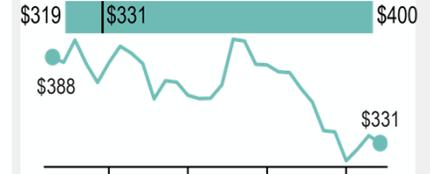
Hash Spread: the difference between the revenue per MWh from mining BTC and the weighted average cost of peak and off-peak power across 8 US zones. It is a quick measure of the profitability of US-based latest-generation mining rigs.

MWh: Megawatt hour
PH/s: Petahash per second
Tx Fees: Fees for BTC transactions

30 Day Range and 7-day % change



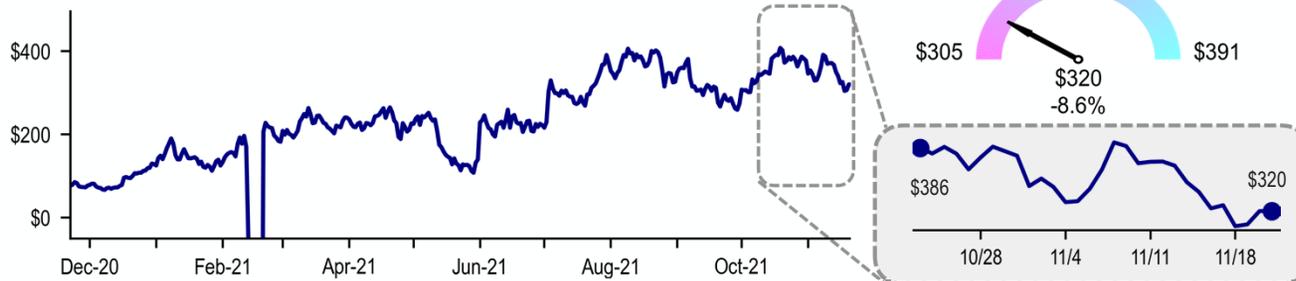
Daily Revenue per PH/s



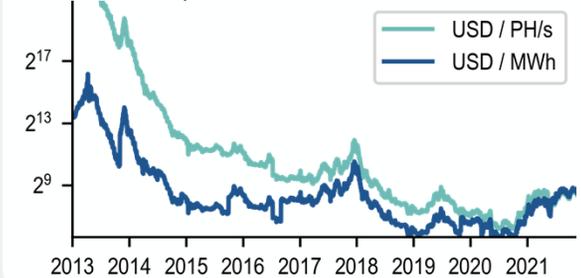
Revenue per MWh (\$19 Class)



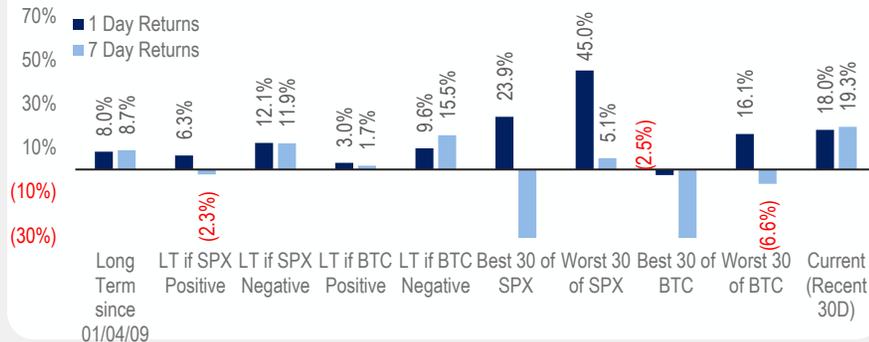
BitOoda North American Hash Spread™



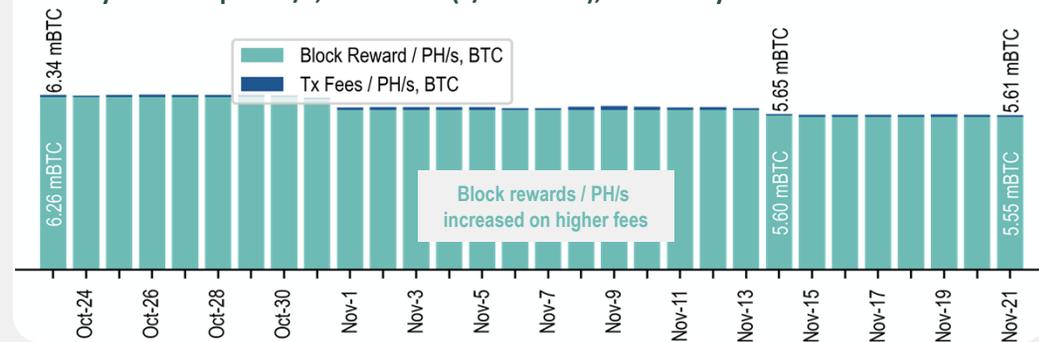
Revenue, since 2013



Historical BTC Correlation to S&P500



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





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