Power Markets for Bitcoin Miners, 8/28/23

Demand Charges Are More than Skin Deep

As we have previously noted, power markets are hard to generalize, as power contracts can vary substantially. We also previously discussed the concept of energy and demand charge. The energy charge is easy to understand as it is similar to filling up your car with gas – you pay for what you consume. The demand charge is subjective, more complex, and not carried out consistently throughout the industry. The cost that the utility is trying to recover is real. Because load is not uniform, and supply/demand must match in the power world, the peak demand of power in a year can be very expensive. A whole power plant may be needed to cover the peak loads, and then for the rest of the year that plant does nothing. Plus, the transmission and distribution of that incremental MW are also real. The entire cost of that plant needs to be recovered, which would be difficult if the recovery mechanism consisted only of energy prices.

As an example, if the plant was needed for 1% of the hours, this would represent 87.6 hours in a year. A combustion turbine of 100 MW could cost $800/kW = $80 Million dollars. Assuming a simple 5 yr breakeven for that facility, you would need power prices to be around $2000/MWh, not including variable (e.g., fuel) or fixed (e.g., labor) costs. In addition, this marginal unit must also have transmission built to deliver the incremental power. This year, even with the best conditions for high prices due to weather and regulatory changes, the amount of hours greater than $2000/MWh has only been 22 with an average price of $3220/MWh. Even if we double this the total revenue is under $15 million dollars for 1 year. It would take over 5 years to just do a simple breakeven.

To make up for this gap, many markets offer capacity payments for generators or other programs (such as ancillary service payments, large energy payments, transmission/distribution charges, or even capacity payments). Regardless of the payment type, someone must pay for it – and that someone will eventually be the consumer of power. This is why power bills are more complex than just energy.

Key Takeaways

- *There are two major charges typically observed on a power contract – energy and demand.*
- *Demand charges are based on contribution to peak load that caused the most cost on both generation and transmission.*
- *Demand charges are not the same across the country, or even across states.*
- *ERCOT 4CP is an allocation method for transmission cost, which the TDSP recovers through its power contracts with customers. It represents a charge for the overall transmission cost of the grid.*
- *Loads that can help reduce the TDSP's contribution to 4CP should benefit – this is done in contract negotiations.*
- *Mining economics took a hit this week with lower BTC price. Miners potentially should turn off their rigs, with breakeven power between 6-7 cents/kWh.*

Research

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BTC Price 7 day Avg	$29,930
Hashrate 7 day Avg	366 EH/s
PJM Cal 24	45 $/MWh
NYISO Cal 24	57 $/MWh
ERCOT Cal 24	45 $/MWh
CAISO Cal 24	69 $/MWh

Weekly Variable Economics $/TH

c/kWh	S9	S19j
$0.02	$0.05	$0.30
$0.03	($0.14)	$0.23
$0.04	($0.33)	$0.17
$0.05	($0.52)	$0.10
$0.06	($0.71)	$0.04
$0.07	($0.89)	($0.03)
$0.08	($1.08)	($0.09)
$0.09	($1.27)	($0.16)
$0.10	($1.46)	($0.22)
$0.11	($1.65)	($0.29)
$0.12	($1.84)	($0.35)
$0.13	($2.03)	($0.42)
$0.14	($2.22)	($0.48)
$0.15	($2.40)	($0.55)

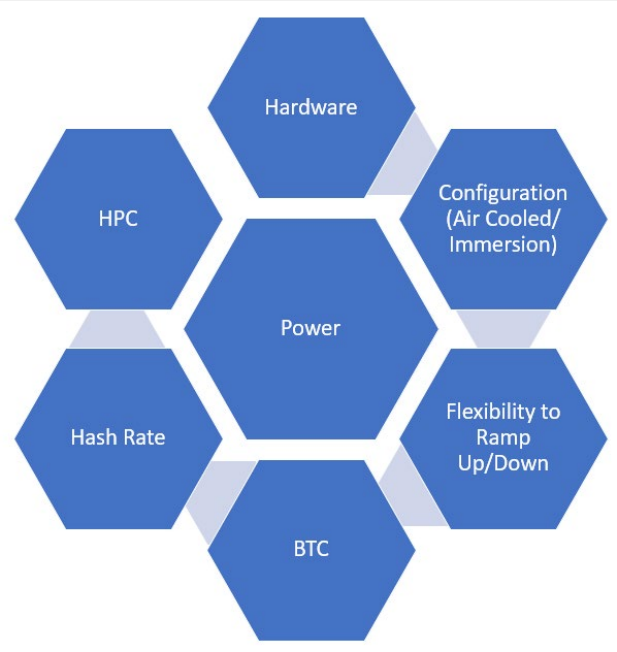
Demand Charges Are More than Skin Deep

There has been much discussion recently about ERCOT's Four Coincident Peak (4CP) program. The 4CP is an ERCOT tariff charge to transmission and distribution service providers (TDSPs) — including American Electric Power (AEP), Oncor, Centerpoint, and Texas-New Mexico Power (TNMP) — based on their share of the total ERCOT peak load. This is not a direct charge to the consumer; the TDSP writes contracts to its customers to recover this fee, which is focused on the transmission cost of the system, not necessarily the generation increment.

The TDSPs COULD pass through the same costs that ERCOT is applying to them, or they could modify it as they see fit. ERCOT's method is to look for a synthetic hour for the summer months (Jun-Sept) by finding the top four 15-min peaks for each of the summer months.

This is why customers need to have open discussions with the utilities in order to be able to reduce the 4CP charges. It is essentially a competition between the TDSPs – the total cost is fixed. It is a matter of how the charges get distributed. IF customers can help the TDSP reduce its contribution to the 4CP, they should give the customer credit for that.

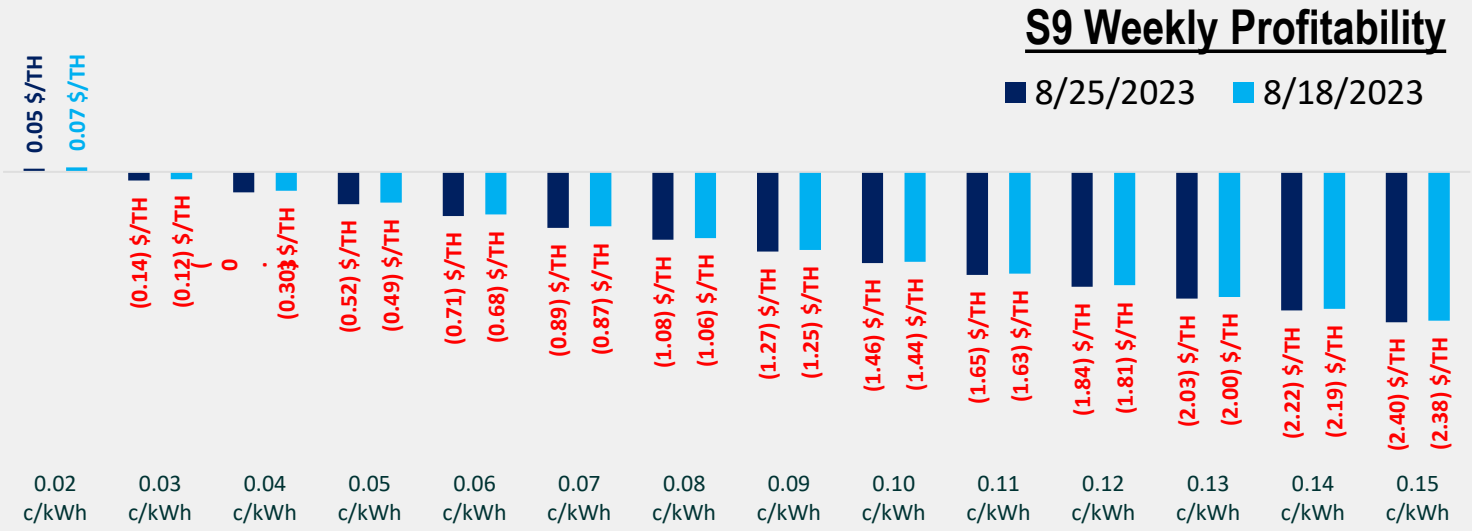
As we have stated previously, the devil is in the details with power. However you navigate these complexities it is important to partner with someone who understands the entire situation, not just a piece of the puzzle. BitOoda is the only company built to cover all aspects of the mining process and every element of its nexus with the power/energy world.



Note: Ooda Commodities LLC is an Introducing Broker registered with the National Futures Association.

Miner WoW View

- Mining economics dropped week on week.
- The S19JPro breakeven price is between $60-$70/MWh. This should cause some rigs to turn off.



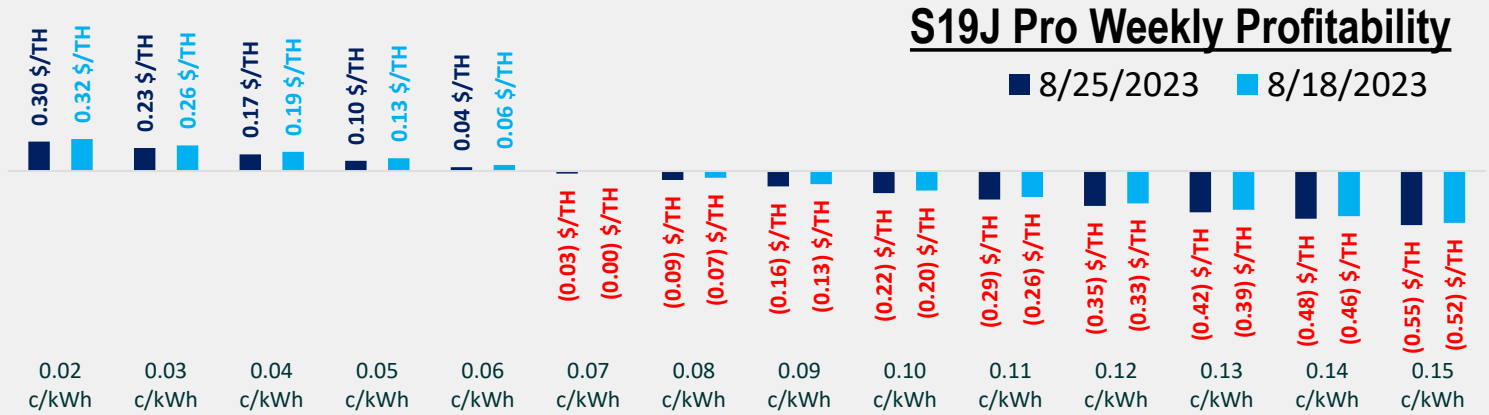
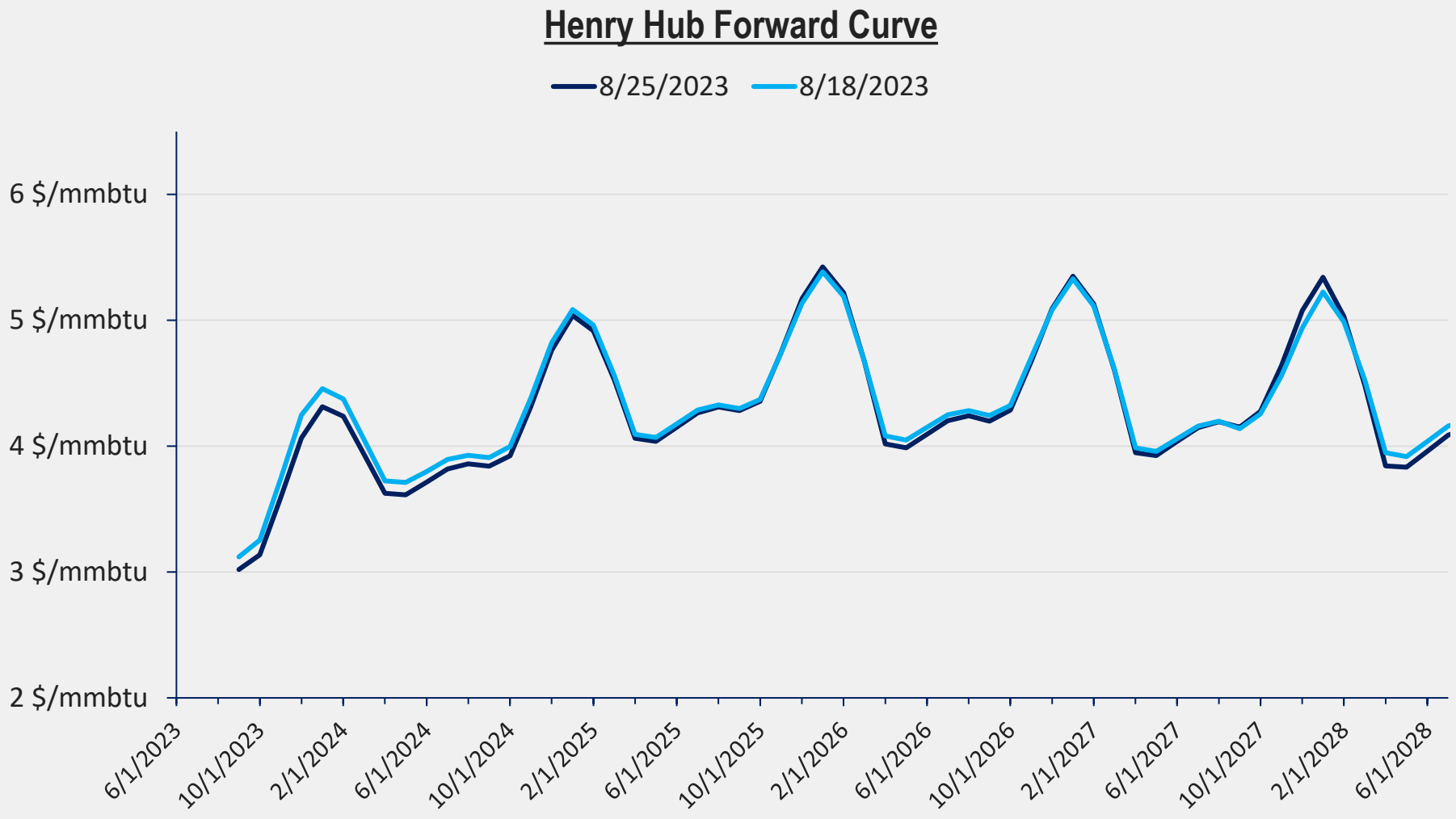


Figure: Weekly Average Cash Contribution After Power Expense
Note: Assumes a PUE of 1.12

Source: BitOoda, Bloomberg, Coinmetrics

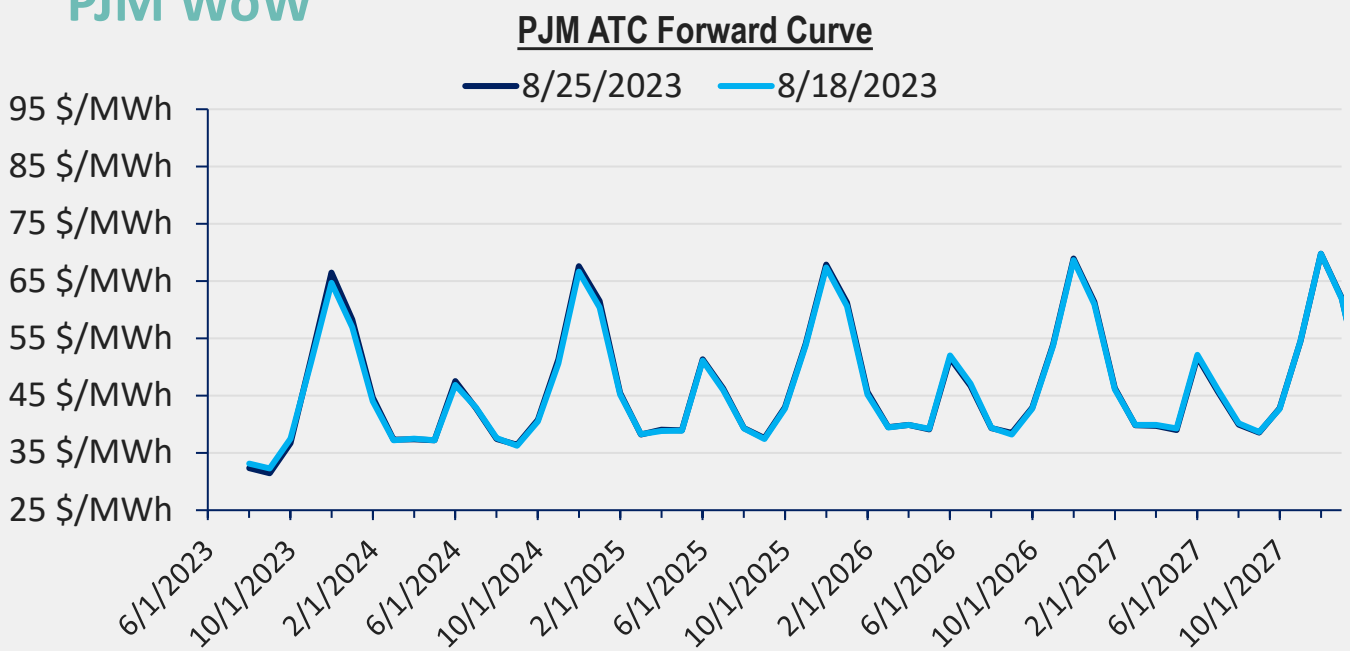
Henry Hub WoW

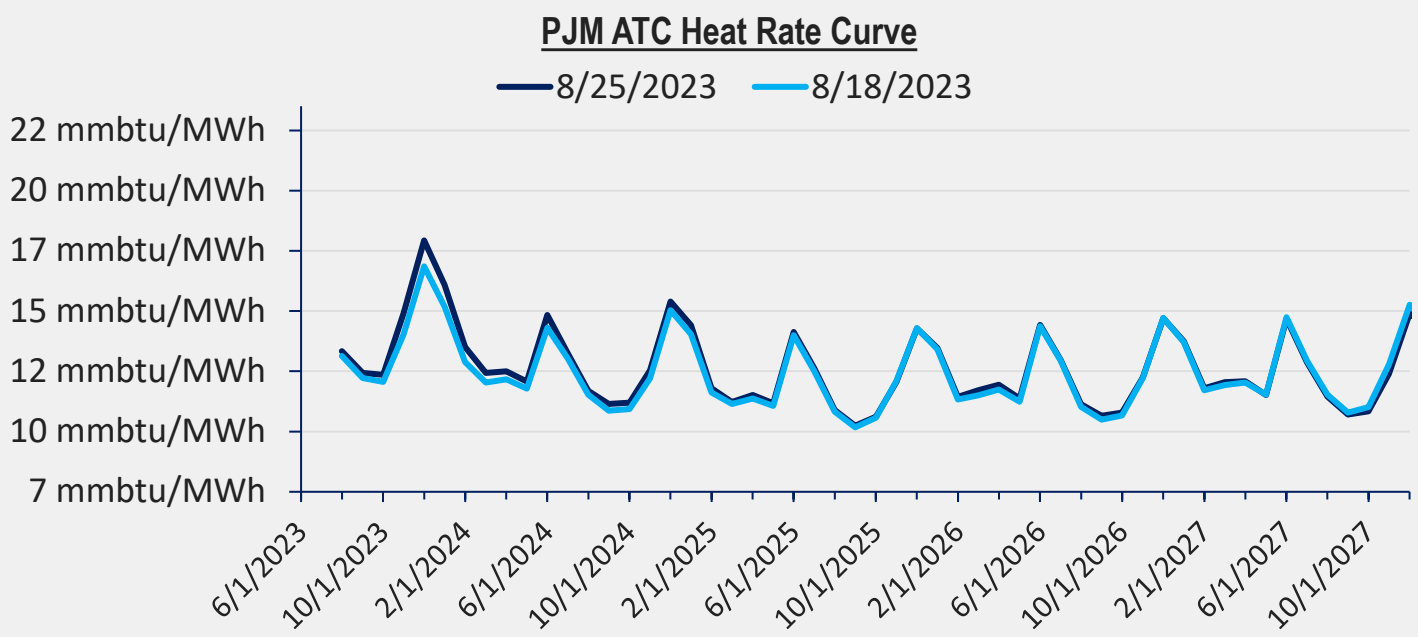
- Henry Hub is looking forward as the heat dies down – strip is weakening.



Source: BitOoda, CME Group

PJM WoW

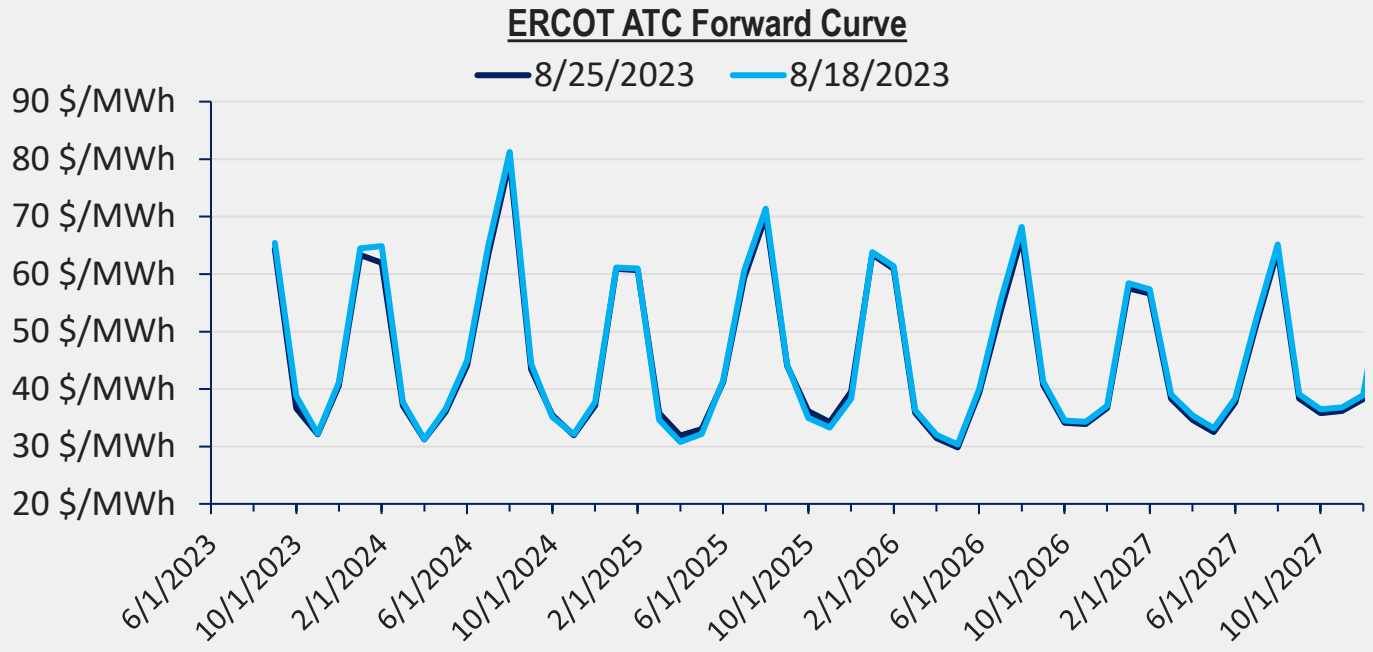


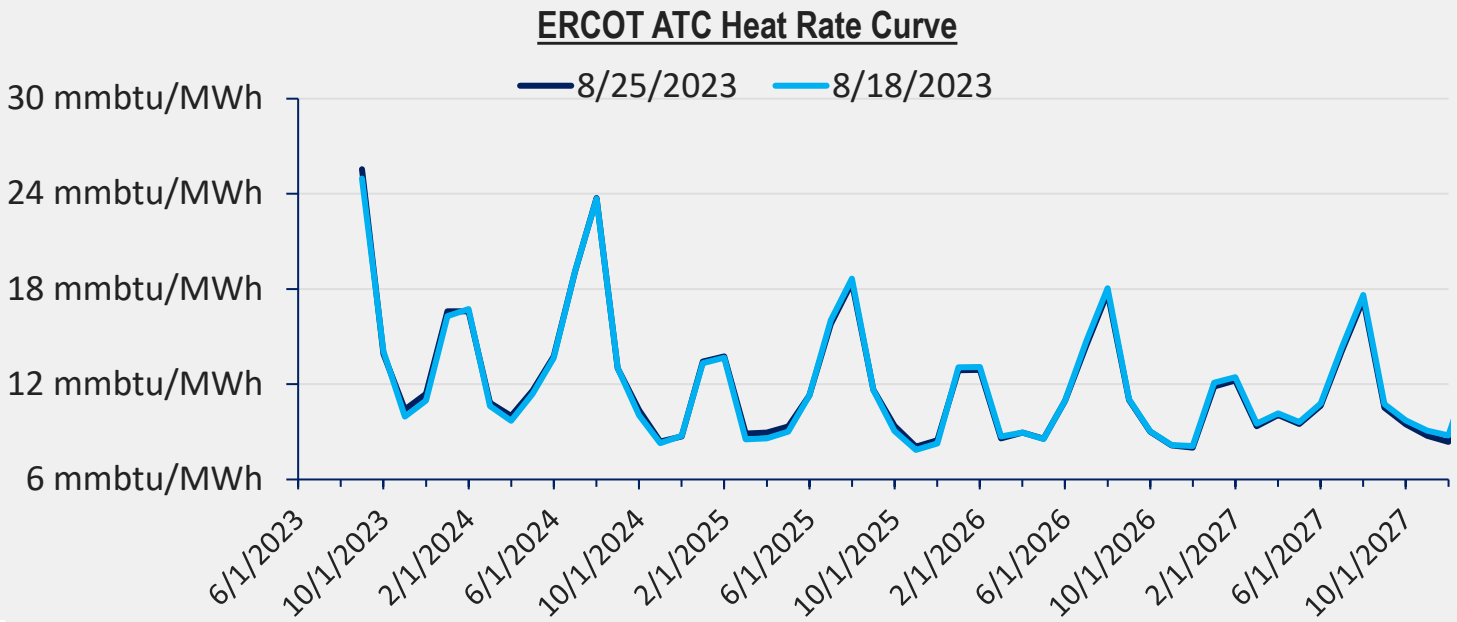


- For the PJM region, we use PJM-W hub as the benchmark. PJM-W is the most traded power hub in the US.
- Minor changes WoW.

Source: BitOoda, CME Group

ERCOT WoW

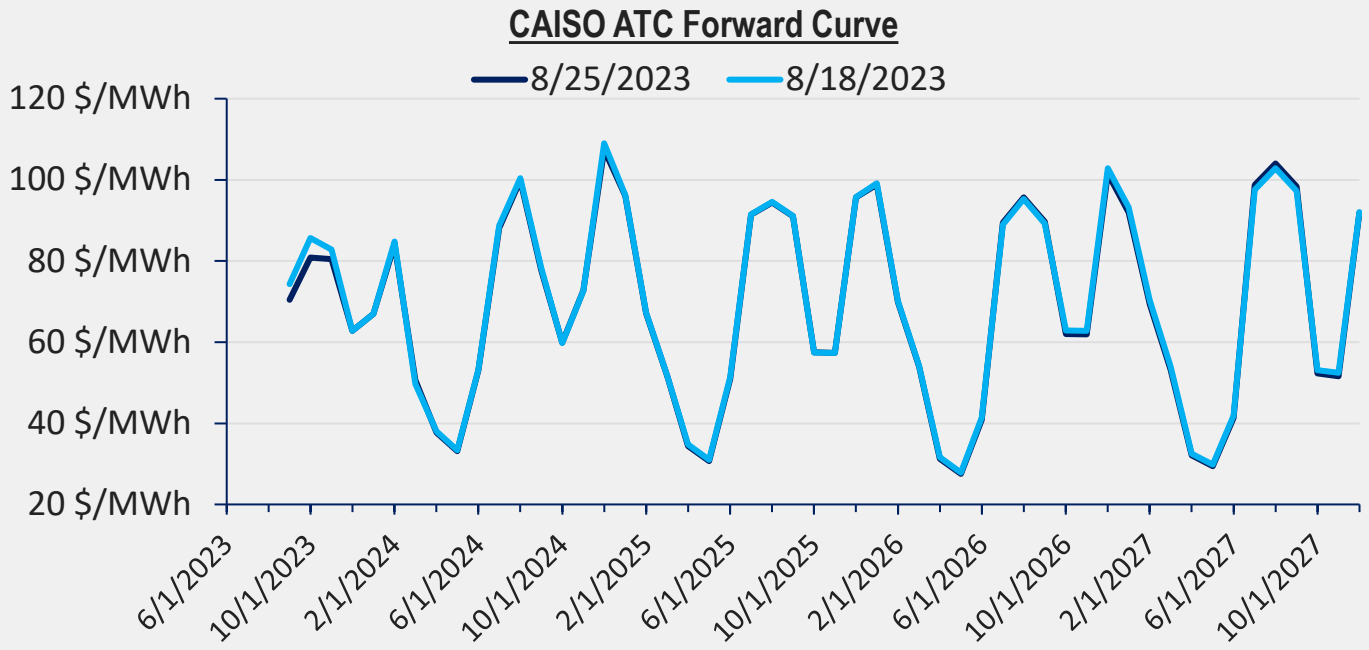


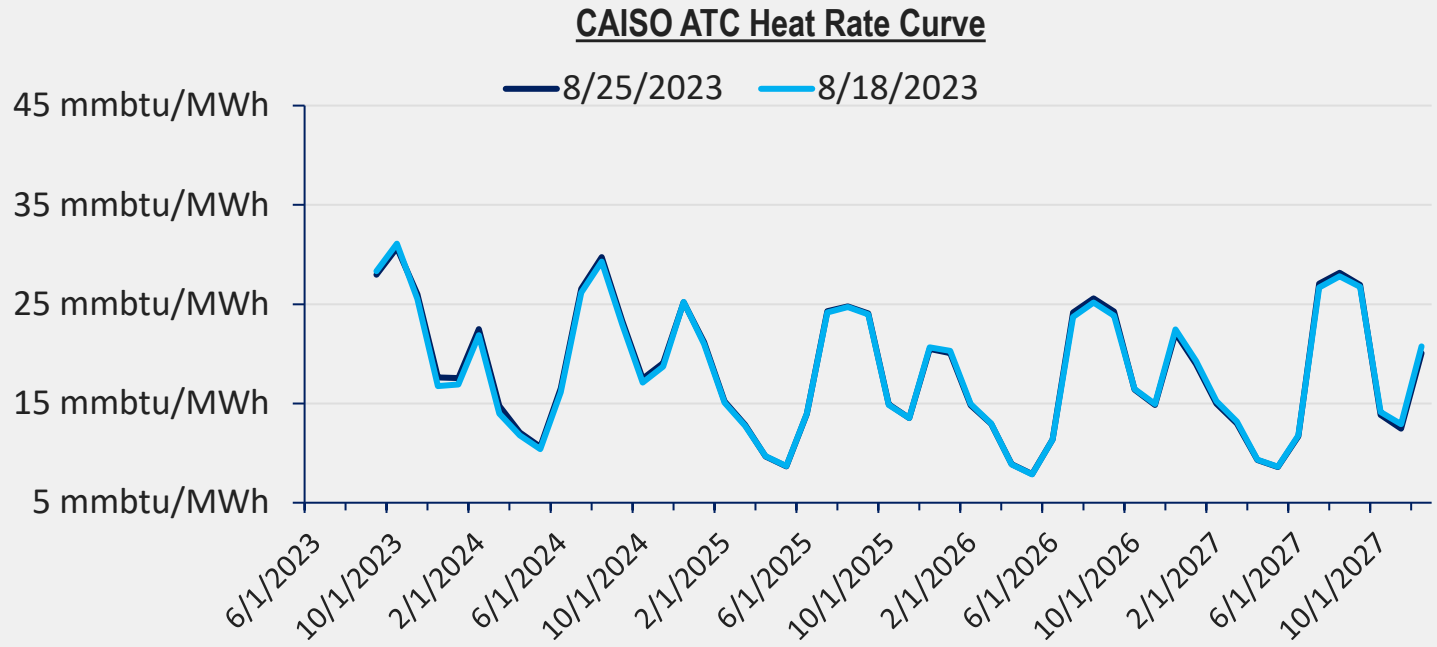


- For the ERCOT region, we use ERCOT-North hub as the benchmark. ERCOT-North is the most traded power hub for ERCOT.
- Minor changes WoW.

Source: BitOoda, CME Group

CAISO WoW

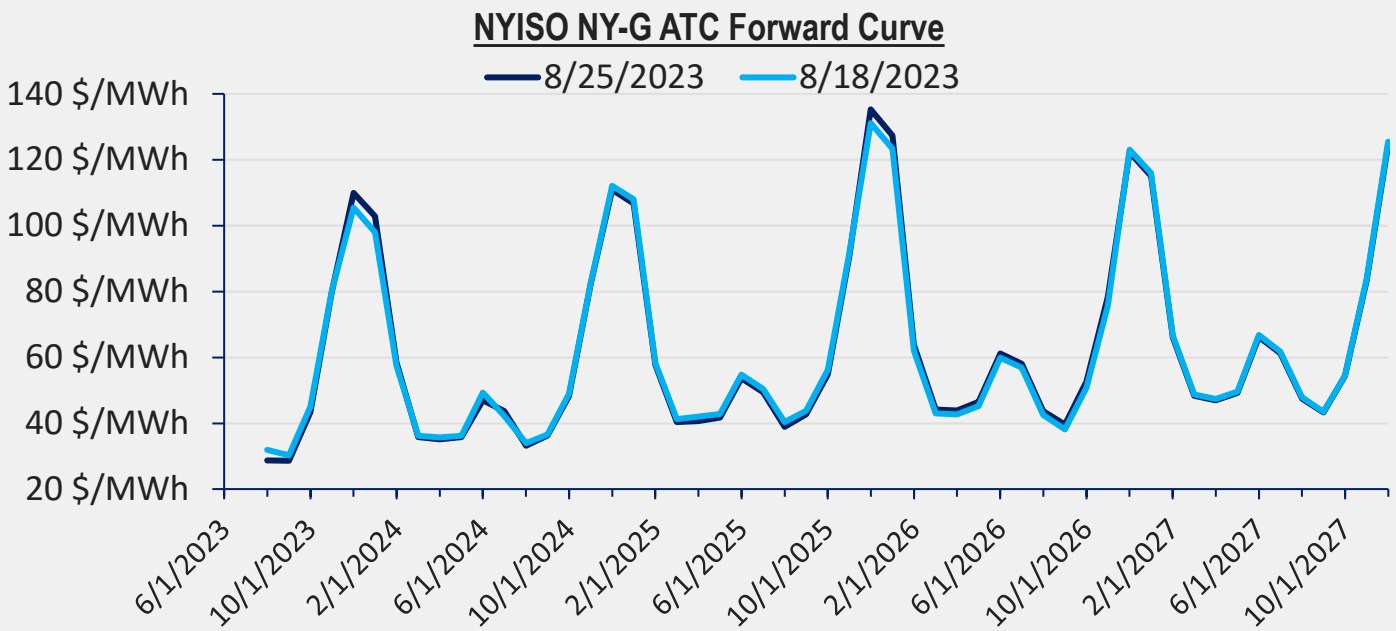


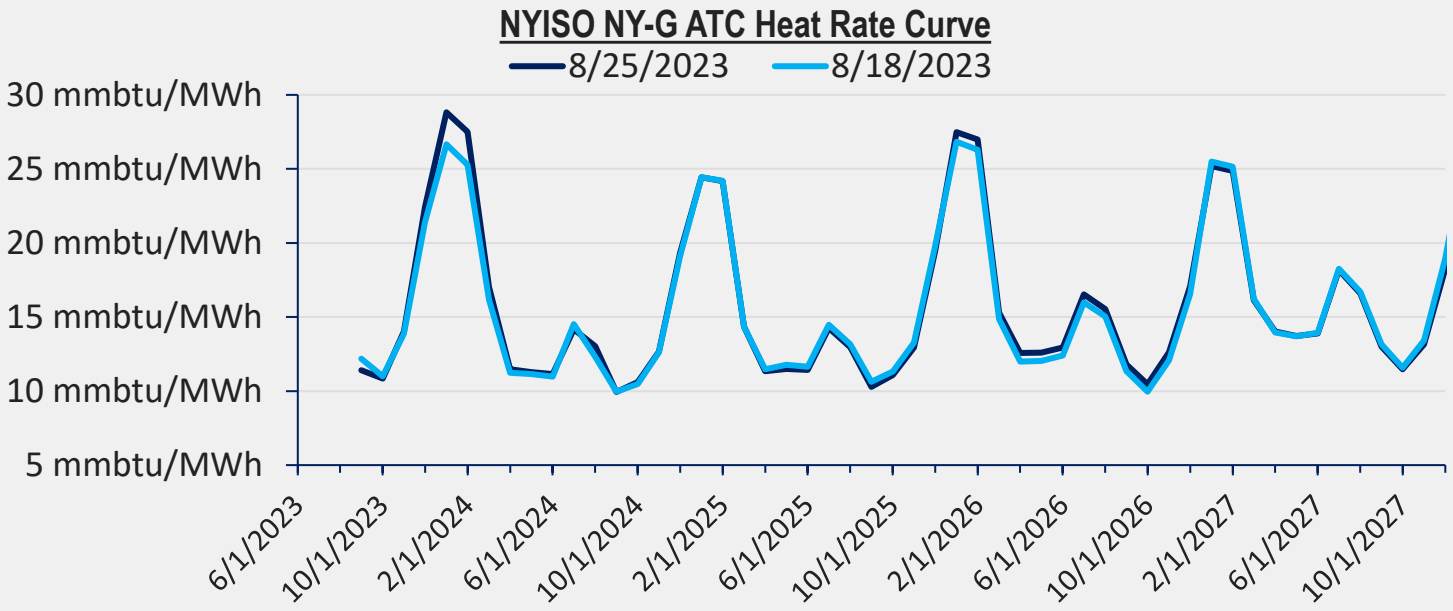


- For the CAISO region, we use SP-15 hub as the benchmark. SP-15 is located in Southern California.
- CAISO is slightly down in the near term.

Source: BitOoda, CME Group

NYISO WoW: NY-G

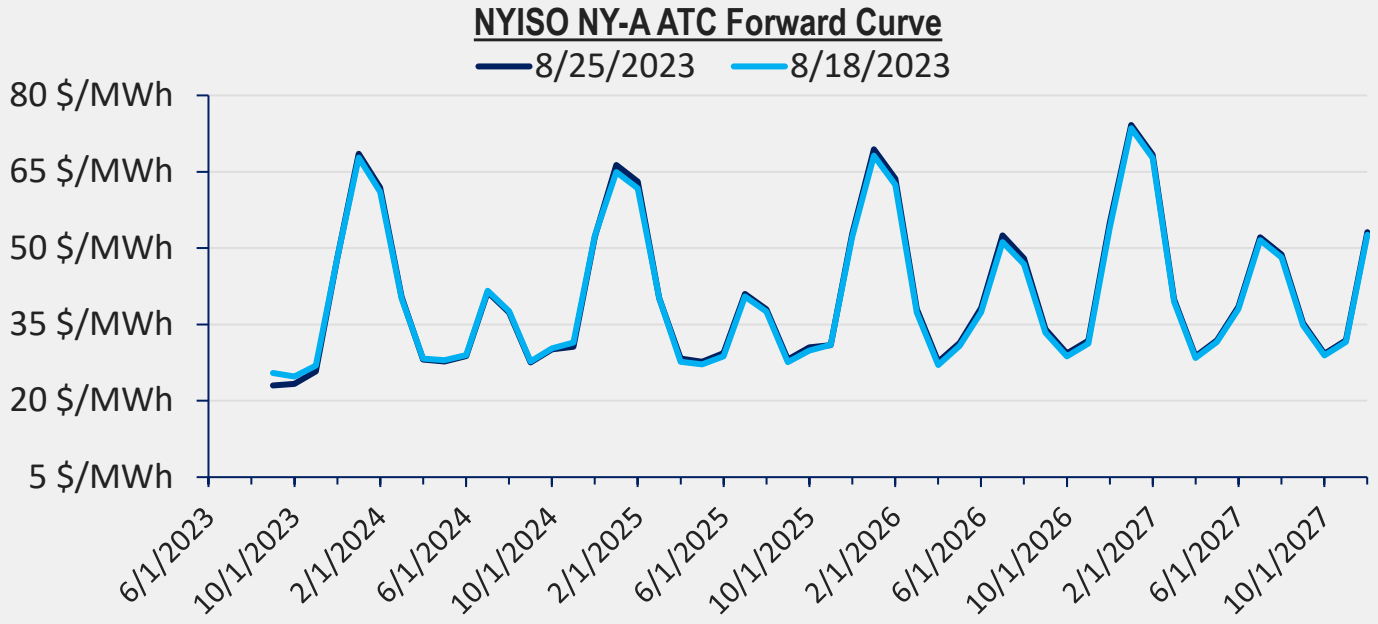


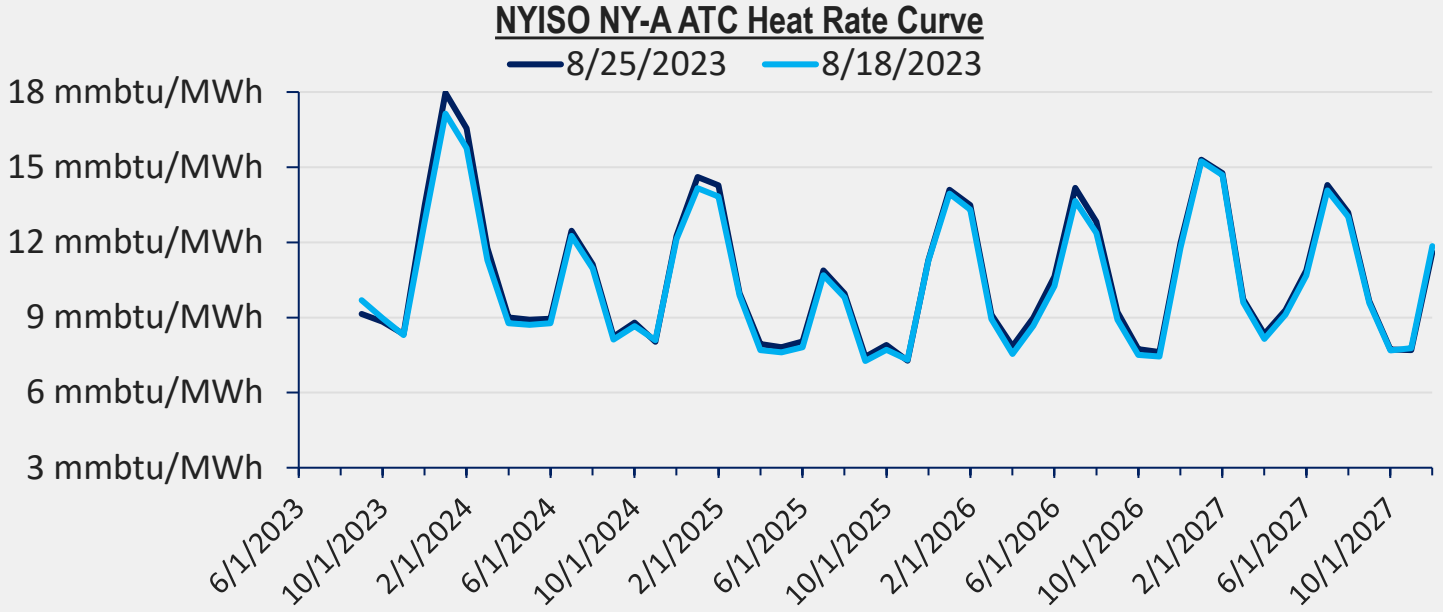


- This slide uses the NY-G hub as the benchmark for the NYISO region. NY-G is the most traded power hub in NYISO.
- NY-G saw only minor changes other than this winter, which is up.

Source: BitOoda, CME Group

NYISO WoW: NY-A





- This slide adds NY-A for the NYISO region.
- NY-A prices saw minor changes WoW.

Source: BitOoda, CME Group

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