New England AEE Breakfast

Managing the surge: the evolution of power costs

January 2026

ST&S
supply, trading & shipping

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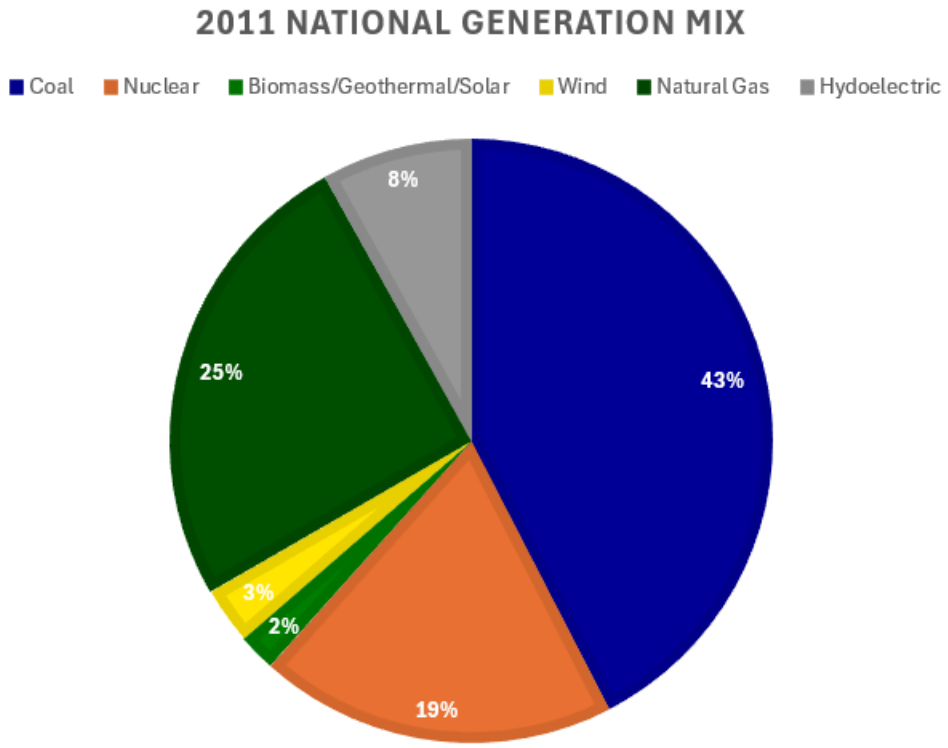
Looking back

- 2011 experienced lower electricity prices across the nation, except in ERCOT.
- Lower prices across most of the country were influenced in part by mild weather and ~$4 Henry Hub prices
- These prices decreased from 2010 and marked the second lowest annual spot natural gas price averages since 2002.



Hub	2011 ATC Prices	Notes
ERCOT North	$ 52.23	Higher than 2010
PJM West Hub	$ 44.99	Lower than 2010
Mass Hub	$ 46.68	Lower than 2010
Indiana Hub	$ 37.72	Lower than 2010
NP-15	$ 36.09	Lower than 2010

Notes:

- This was the first year for ERCOT to be nodal
- PJM BRA for 2011-2012 was the 5th PJM RPM and cleared $174.29/MW-day for RTO system-wide (it was lower than some prior years

Eia.gov {Wholesale electricity and Natural Gas Market Data / Annual Energy Review}
FERC 2011 State of the Market

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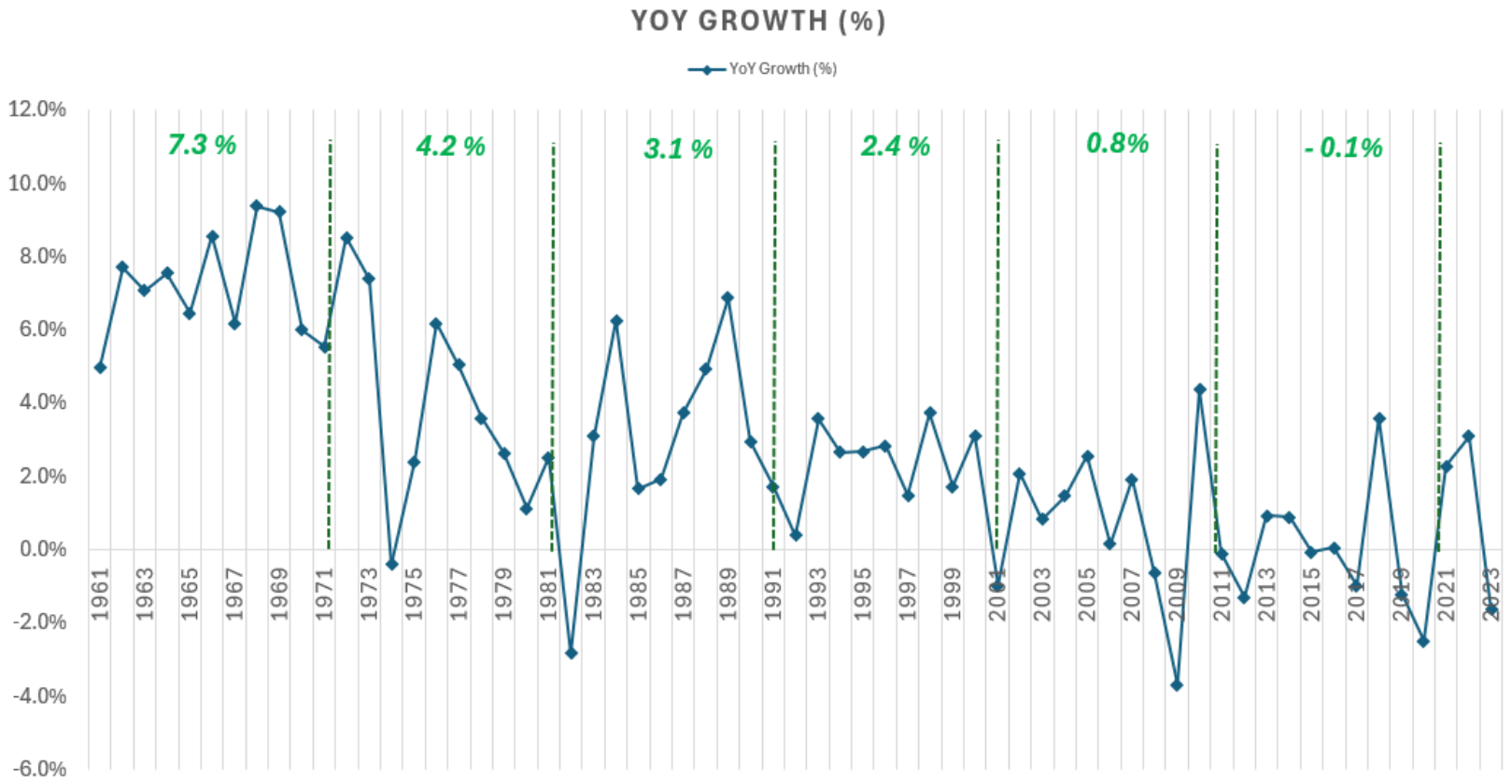
Electricity demand growth and source

- For decades, electricity demand has remained flat and showed decline even with GDP growth
- Little work has been done with generation planning and transmission expansion.
- The US is now facing a massive acceleration of demand growth which challenges utilities and ISOs



Eia.gov {Annual Energy Review}

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10 years ago – What's the Buzz

- Shale gas: fundamental shift
- US LNG exports: the great debate
- The Polar Vortex: it used to be called "winter"
- Changes in generation mix, a coal crunch
- Renewable penetration and distributed generation
- Demand response: paying for (negative) megawatts
- Our industrial renaissance: dream big
- Resource adequacy and reserve margins

Extreme Weather

Challenging ISOs

2011: ERCOT heat wave

2011: Groundhog Day ice storm (PJM, MISO, SPP)

2012: Derecho (PJM & MISO)

2014: Polar Vortex (PJM, MISO, NYISO & ISO-NE)

2014-2015: Northeast ice storms (ISO-NE & NYISO)

2017: Hurricane Harvey (ERCOT)

2018: Bomb Cyclone (PJM, ISO-NE & NYISO)

2019: New York City heat wave

2020: California heat wave

2021: Winter Storm Uri (ERCOT, SPP, & MISO)

2022-2023: Winter Storm Elliott (PJM, MISO, SERC, & TVA)

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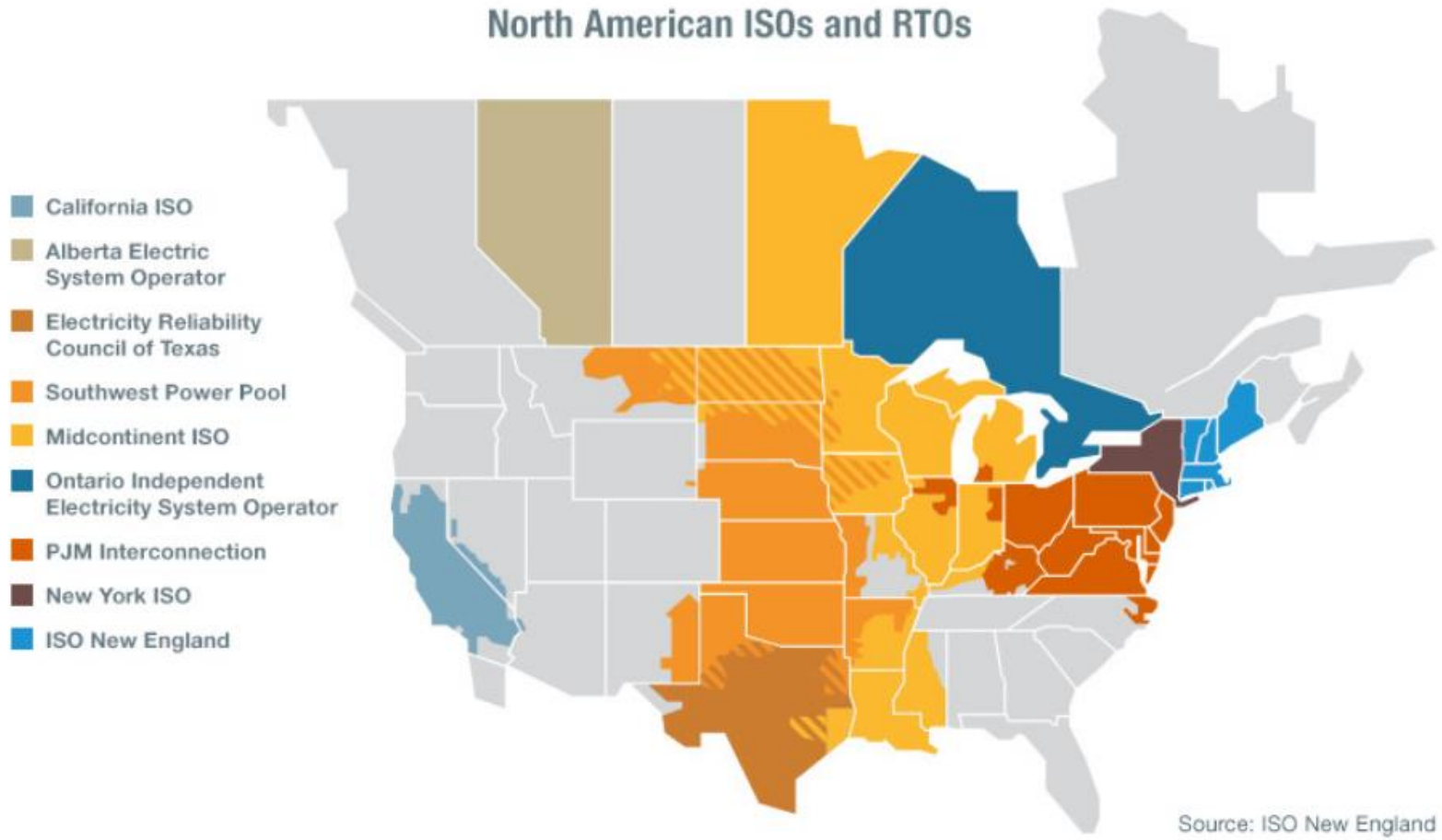
What about now?

Capacity Markets / Energy Only



- Rising capacity prices
- What about natural gas?
- Weather event resilience
- Demand response
- Electrification
- What about renewables?
- Transmission costs
- RT / DA prices
- Is this load growth real?
- Generation queue
- Turbine availability
- What about supply constraints?

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Future Key Components

Server Farms & Load Charms	Can I get a Turbine	What's the Buzz	Renewable Riddles	Policy Puzzles	Smells like Gas
ERCOT with over 140GW of demand	Ready by 2029	Is load growth real	Record solar expansion	Are there requirements	More natural gas turbines more gas
Capital expanding at over 25% annually	Did you say $2,000-$2,500kW	Just another mild summer	Does the Big Beautiful Bill not like us	Changing 4CP	How much do LNGs need
Infrastructure bottlenecks	Can we make a deal	Why is the forward curve so high	What's the deal with storage	Net metering arrangements	More NG to Mexico
Higher load factor	What about tariffs	Is the PJM capacity market ever coming down	I have to be done by when	Large Load Forecasting	Anyone else want some gas
Emergency Shutdown	Bring my own MW	Can I get more DR	What's next	Interconnection Standards	What's the problem

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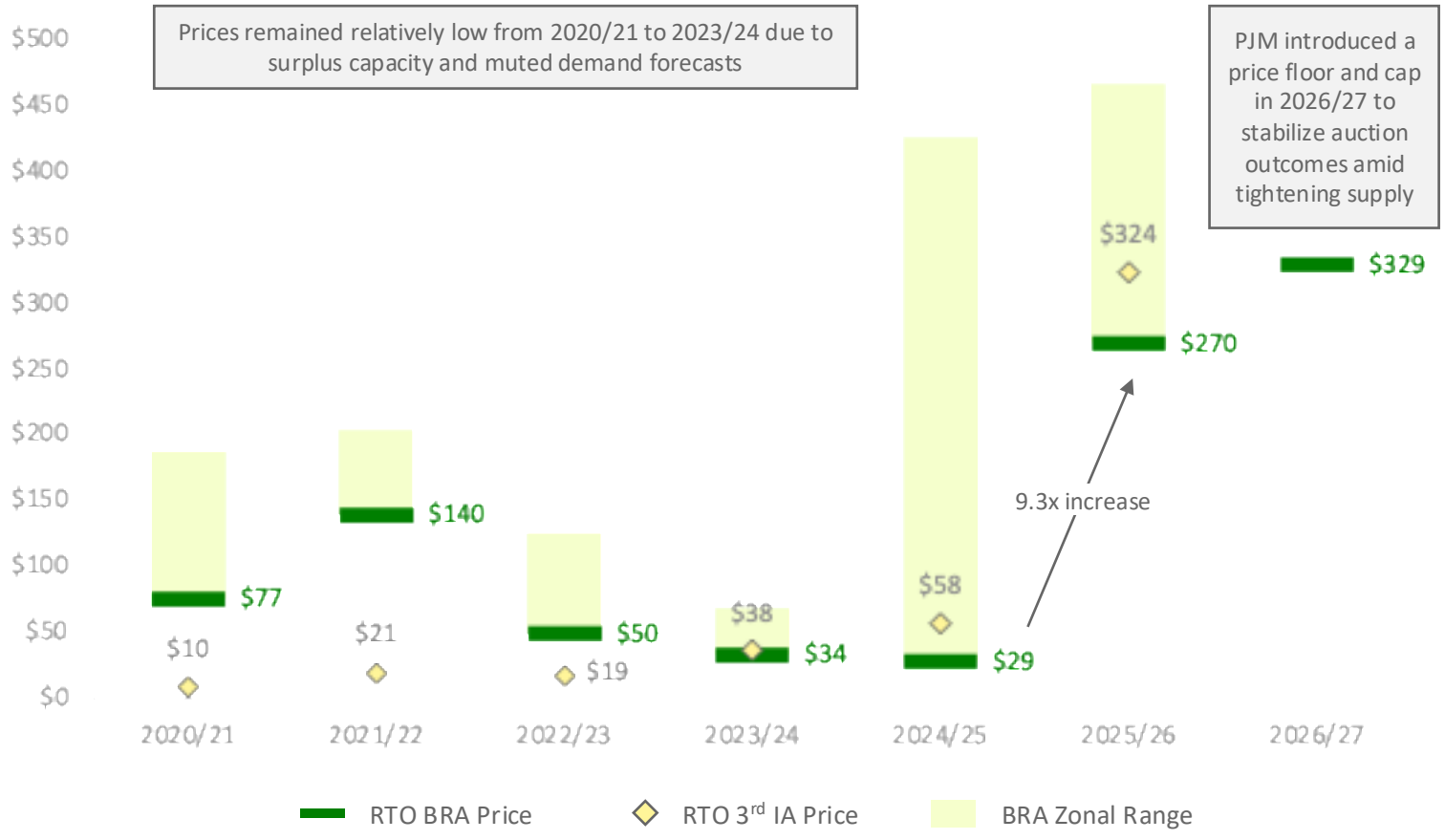
PJM Capacity Auction

Summary

- PJM's capacity auctions are the cornerstone of its capacity market, where prices directly influence capacity costs and procurement strategies for power buyers
- Base Residual Auction (BRA) prices have surged in recent years, reversing a multi-year low and reaching new highs
- Recent third incremental auctions have cleared above BRA, signaling tighter supply and shifting dynamics
- Price spikes reflect generator retirements, higher peak load forecasts, and market rule changes (e.g., accreditation, reliability modeling). PJM also introduced a price floor and cap for 2026/27
- Higher BRA prices mean increased forward capacity costs and underscore the importance of strategic procurement and risk management
- Elevated prices also enhance the value of demand response, providing a way to mitigate costs and unlock additional margin

Capacity Auction Clearing Prices ($/MW-day)



Source: PJM

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Expansion – load growth forecasts (ERCOT Example)

Large loads dominate queue across the US. Estimates continue to change as the year progresses. These estimates effect forward prices for both electricity and capacity.

Load Growth

Load growth continues to be a primary variable in ERCOT's future.

Separate Note:

The Top 5 states for data center expansion are:

1. Virginia: 23,054
2. Texas: 11,853
3. Ohio: 7,896
4. Georgia: 6,882
5. Arizona 5,652

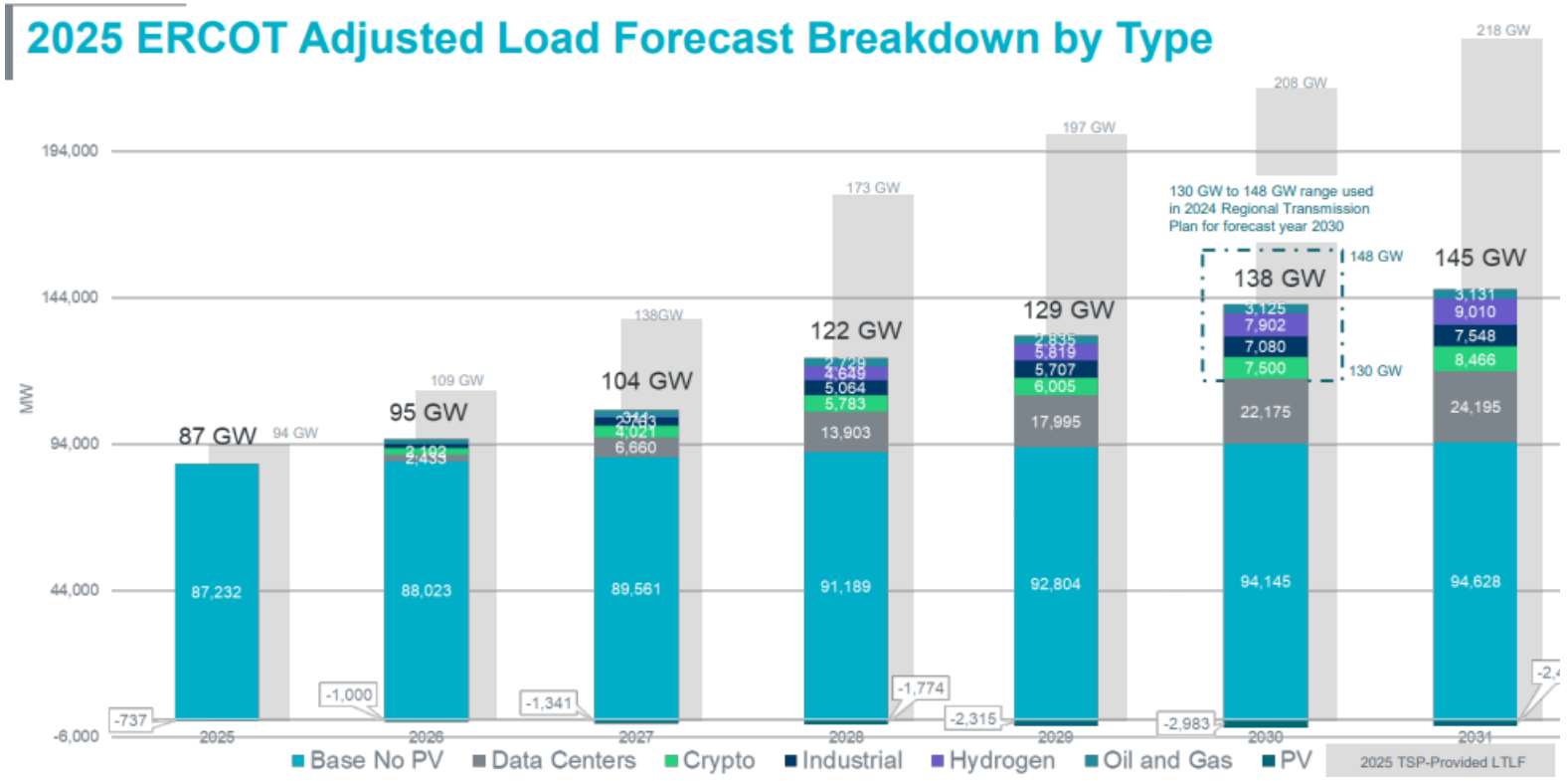
Additional growth is in semi-conductor manufacturing which will grow by ~ 3,000 - 5,000 MW.

Examples:

Intel: Arizona (360MW) / Ohio (500MW)

Samsung: Texas (200MW+)

Micron: New York (480-920MW) / Idaho (120MW)



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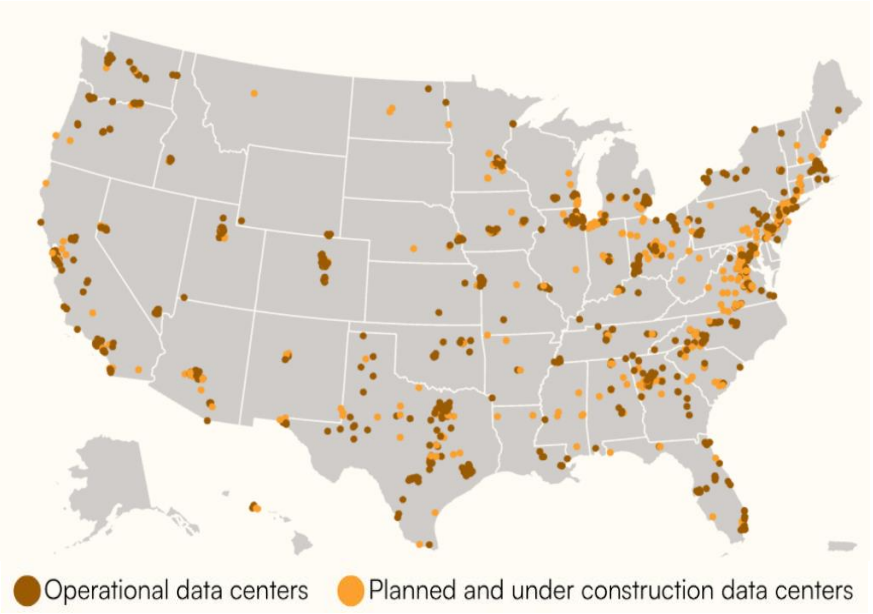
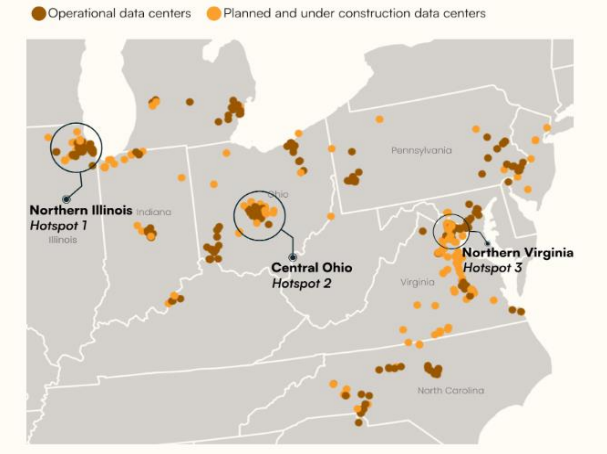
National Load Growth - Datacenters

ISO	2025 (GW) Existing	2030 (GW Est)	Key States / Notes
PJM	67	80+	VA, PA, OH, IL – all are among the fastest growing
ERCOT	20	40+	TX is estimated to double in size
CAISO	8	10+	CA & NV – shifting to Nevada
NYISO	2	3-4	NY – steady small growth
ISO-NE	1	2-3	MA & CT showing moderate growth
MISO	2	3-4	IA, NE, Midwest - emerging
SPP	1	2-3	OK, KS, NE are emerging





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Generation Growth

Solar Growth

- Texas leads the nation with **11.6 GW** of new utility-scale solar capacity expected in 2025.
- This accounts for **~36%** of the total U.S. solar additions (32.5 GW). Follows a record-setting 2024 with 30 GW added nationwide.

Battery Storage Expansion

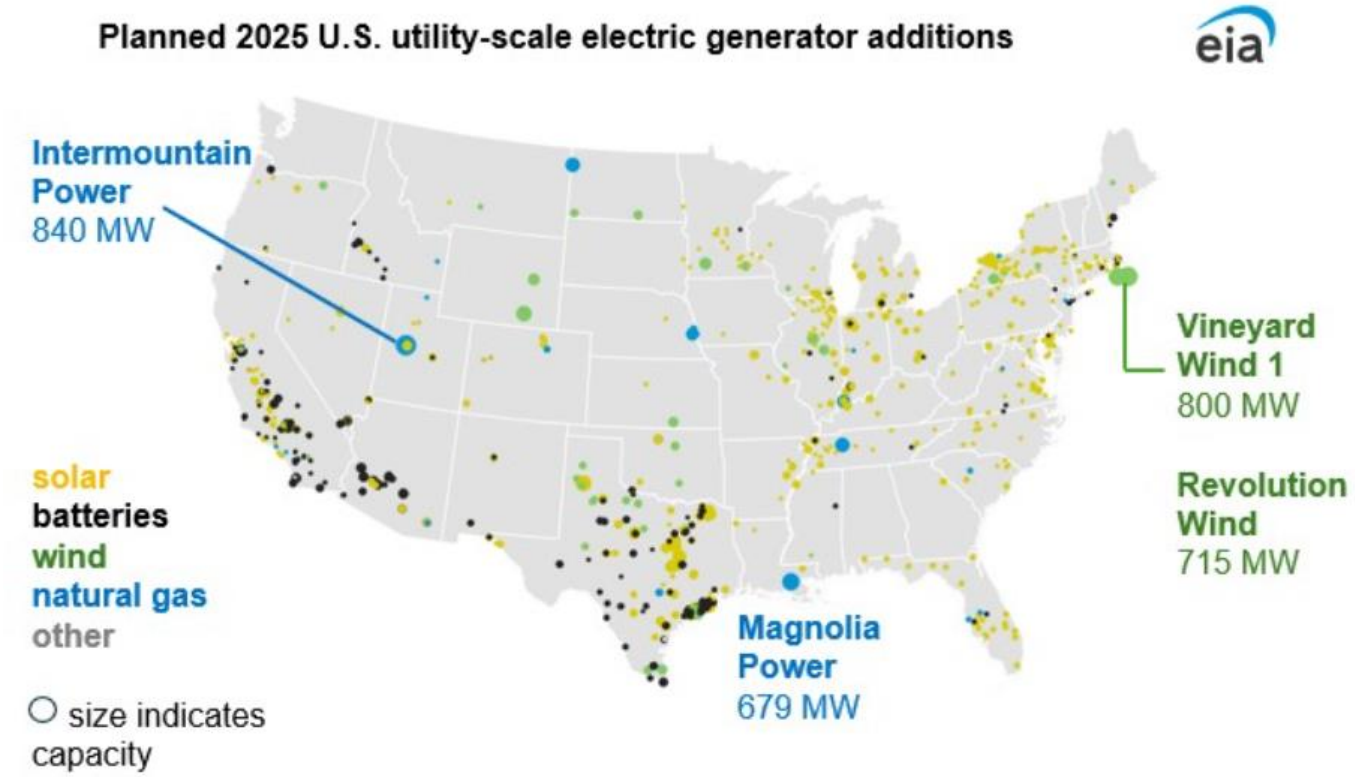
- U.S. battery storage expected to grow by 18.2 GW in 2025.
- Supports solar integration and grid reliability.
- Texas is a key contributor to this growth, though specific state-level breakdowns weren't provided.

Wind Power

- 7.7 GW of new wind capacity expected nationwide.
- Texas, along with Wyoming and Massachusetts, will contribute nearly half of this.
- Includes both onshore and offshore developments.

Natural Gas

- 4.4 GW of new natural gas-fired capacity planned across the U.S.
- Texas not listed among the top contributors for 2025 gas additions.



Nationally, there has been an uptick in the desire for more natural gas generation. There is growing investor interest in natural gas generation due to its role in grid balancing. Costs vary by region and are rising due to turbine constraints. There is no exact range but $2,000-$2,500 per kW is plausible given constraints.

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Reports and News

The news cycle and conferences are dominated by reports of load growth acceleration including new datacenter deals and new generation.

This oil company is spending $14 billion to be part of the AI data-center business

Oil-services giant muscled out Flowserve, which had a merger agreement with Chart Industries, by submitting a cash bid that Chart couldn't refuse

By Steve Gelsi Follow

Last Updated: July 29, 2025 at 7:01 p.m. ET

First Published: July 29, 2025 at 3:51 p.m. ET

Entergy Louisiana breaks ground on key substation to power data center in Richland Parish

Investment in new infrastructure will transform Louisiana economy for generations

June 27, 2025 / in News Release / by Entergy Louisiana Team

Rapid Data Center Development Challenges Grid Reliability, NERC Report Says

NATIONAL

Three Mile Island nuclear plant will reopen to power Microsoft data centers

SEPTEMBER 20, 2024 · 1:40 PM ET

By C Mandler

Bruce Mansfield plant in Beaver County to undergo $3.2 billion transformation into natural gas power plant

DAILY BLOG

Helter Skelter - Wave Of LNG FIDs And Data Center Mania Spur A Flood Of Gas Pipelines Projects

Thursday, 08/14/2025

Published by: Housley Carr

Nearly three quarters of high-confidence load is in ERCOT and PJM

Oncor dominates with 40 GW of high-confidence load, followed by Dominion, PPL, and AEP

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Case for Bull or Bear

Markets can shift due to numerous variables, both expected and unexpected. This slide outlines some key fundamental drivers that shape market discussions and influence trends.

Core Market Variables:

- Supply & Demand Dynamics
- Natural Gas Prices
- Weather Patterns

Additional Influencing Factors:

- Commodity Prices (Steel, Lithium Hydroxide, Copper)
- Tariff Threats & Trade Policies
- Political & Regulatory Moves
- Emerging Technologies & Grid Innovations

Short-Term Bull

- Transmission Issues (Basis)
- Limited dispatchable generation vs load growth.
- Dispatchable generation outages
- Natural gas issue (Ukraine like)

Long-Term Bull

- Peak vs Off-Peak disparity due to load growth
- Natural gas (LNG / pipeline / exports)
- Slow replacement of unit retirements
- Transmission expansion

Short-Term Bear

- Current generation stack can handle current market dynamics. Normal load with increasing battery and renewable
- Natural gas over-supply
- Mild weather conditions
- Demand response

Long-Term Bear

- New generation technology
- DR and DER participation efficiencies
- Load growth slow down

Future challenges – a three-headed obstacle

Consumers are facing challenges across the power markets

Rising Commodity

- Forward curve indicates higher electricity prices
- Forward gas curve characteristics point to increasing natural gas prices which drives electricity prices

Capacity and Reliability

- Reserve Margin Risks
- Some markets facing capacity price increases

Transmission and distribution

- Increasing work from transmission and distribution providers must be allocated at some point.
- Cost allocations done correctly
- Congestion risk

Challenges – transmission / capacity / prices

Transmission, distribution, and capacity charges are often tied to peak demand during various time periods.

Most well know is 5CP (Peak Load Contribution) in PJM
Is billed on a dollar per MW-day

The helps set the cost for the next flow year.

As we have seen from previous slides, we not only have growth from the demand side, but we have generation growth. This leads to a need for additional transmission.

What can we do?

- Demand response participation
- Review onsite generation or storage
- Review energy efficiency

Capacity / Transmission

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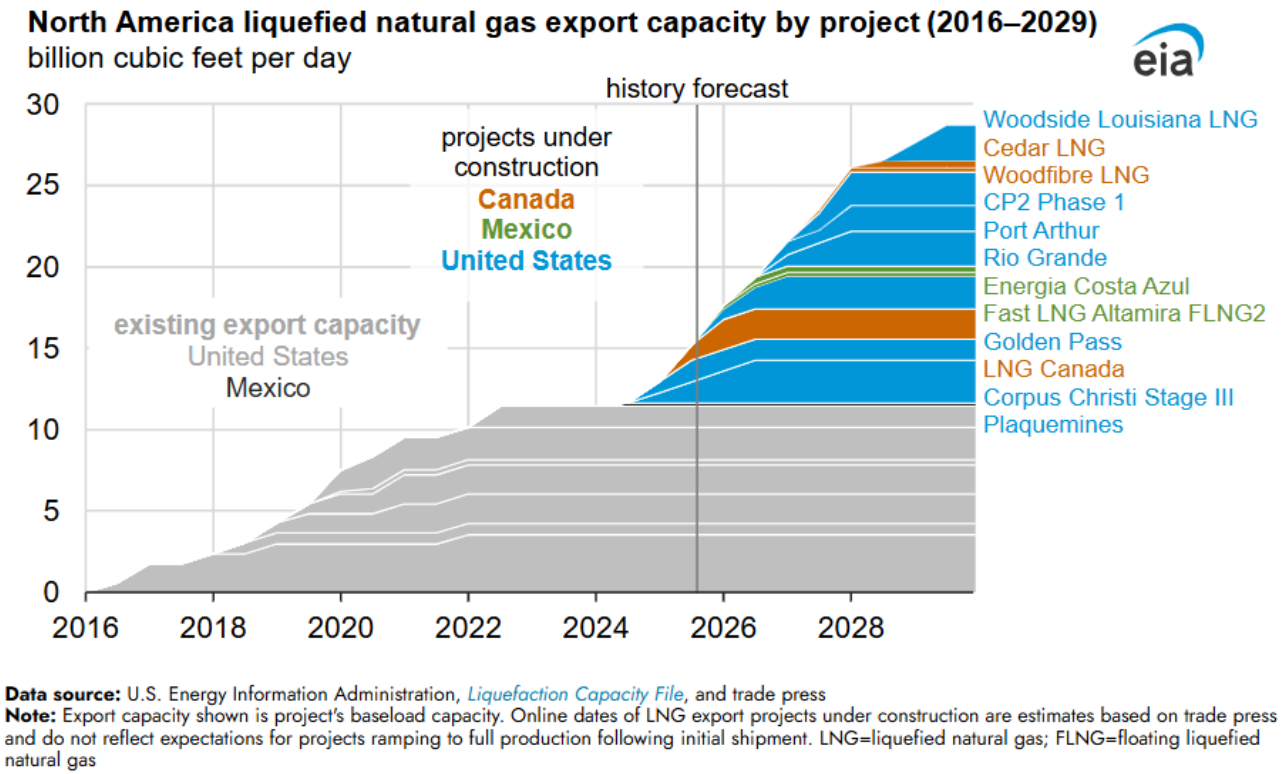
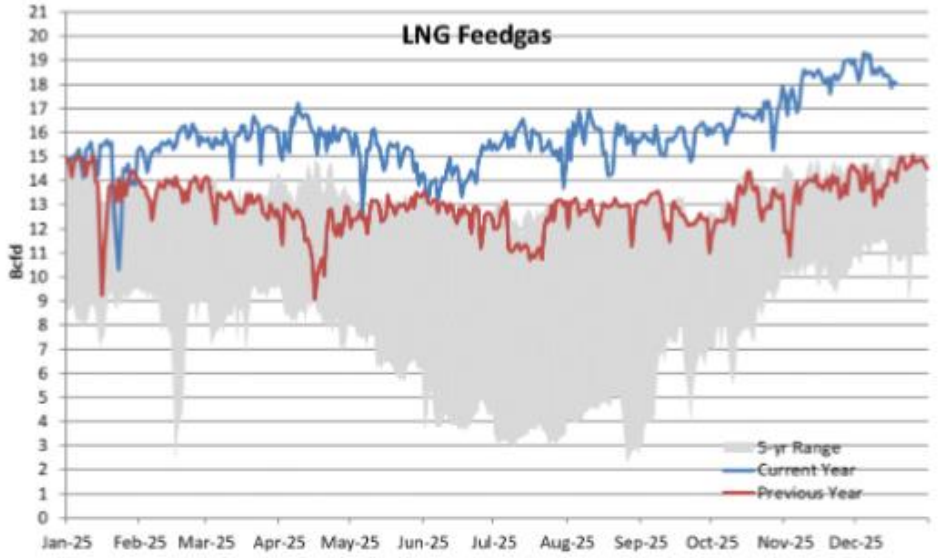
Natural Gas

The LNG Export Revolution continues…



Data source: U.S. Energy Information Administration, *Liquefaction Capacity File*, and trade press
Note: Export capacity shown is project's baseload capacity. Online dates of LNG export projects under construction are estimates based on trade press and do not reflect expectations for projects ramping to full production following initial shipment. LNG=liquefied natural gas; FLNG=floating liquefied natural gas



- US LNG facilities are currently processing ~ 19Bcf/d of feedgas
- Compared to 12.6Bcf/d in 2024
- Plaquemines and Corpus Christi Stage II are currently commissioning
- Capacity could nearly double to ~28Bcf/d by 2030…

Final investment is still needed for some.

Prices / Natural Gas

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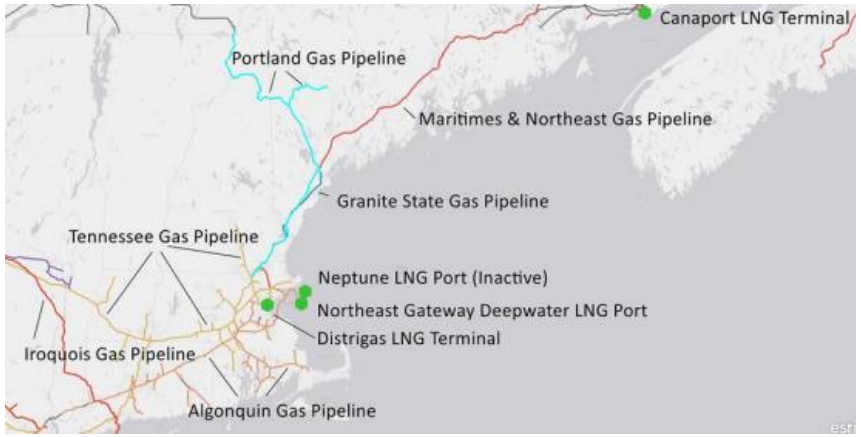
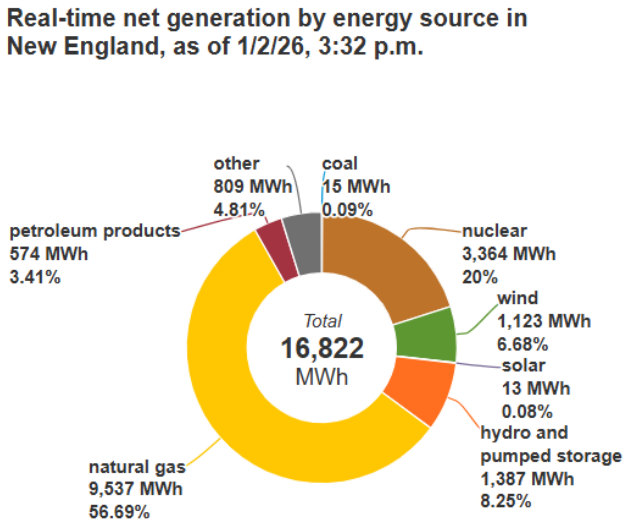
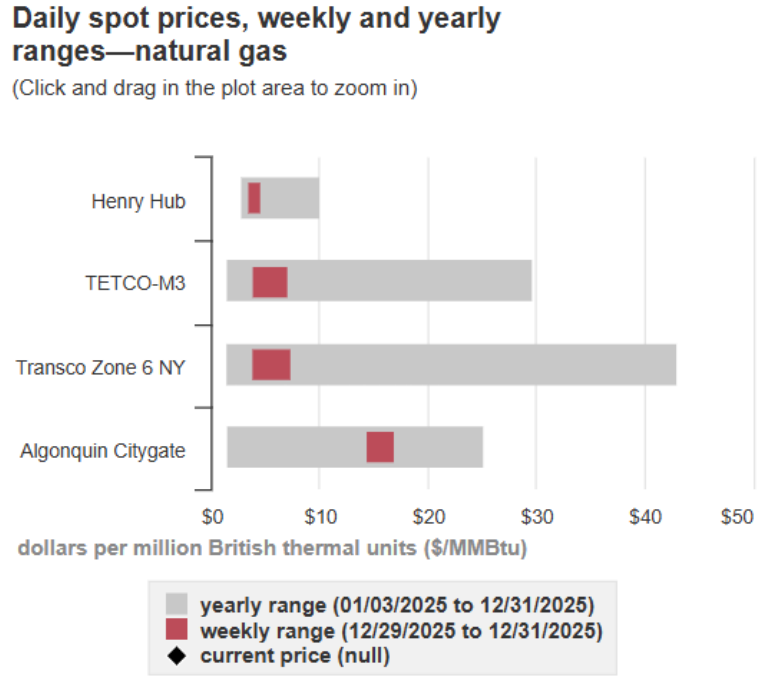
Challenges – Price / Fuel

Hedging and future commodity planning for electricity is becoming more complex and concerning especially if you rely on NG.







Price

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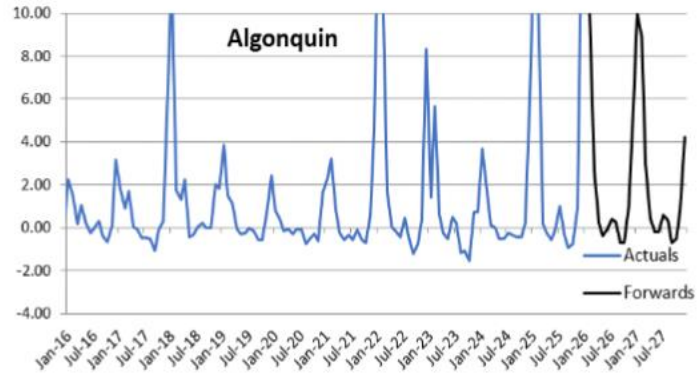
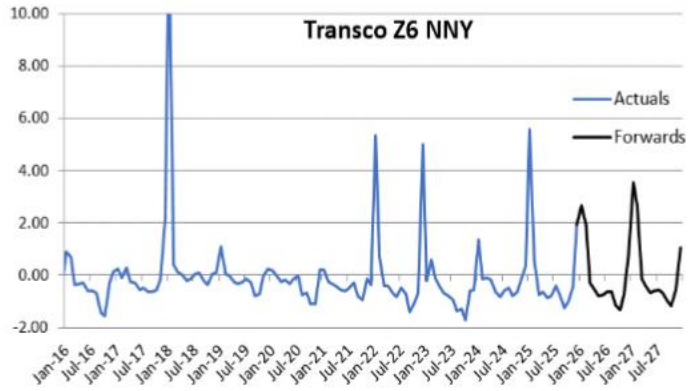
Challenges – Price

Gas is on a Crazy Train!





1-May-25

ISO	Zone		2026	2027	2028	2029	2030
ISONE	MASS_HUB	*On-Peak*	$70.27 ▲	$65.30 ▲	$59.56 ▲	$57.95 ▲	$61.26 ▲
		ATC	$63.73 ▲	$58.75 ▲	$52.93 ▲	$51.88 ▲	$54.56 ▲

3-Jun-25

ISO	Zone		2026	2027	2028	2029	2030
ISONE	MASS_HUB	*On-Peak*	$71.78 ▲	$66.81 ▲	$61.48 ▲	$59.96 ▬	$62.68 ▬
		ATC	$65.42 ▲	$60.71 ▲	$55.40 ▲	$53.83 ▬	$55.86 ▬

31-Jul-25

ISO	Zone		2026	2027	2028	2029	2030
ISONE	MASS_HUB	*On-Peak*	$73.68 ▲	$69.21 ▲	$64.43 ▲	$63.61 ▲	$63.38 ▲
		ATC	$66.41 ▲	$62.52 ▲	$57.30 ▲	$56.55 ▲	$56.46 ▲

2-Aug-25

ISO	Zone		2026	2027	2028	2029	2030
ISONE	MASS_HUB	*On-Peak*	$72.12 ▲	$69.38 ▲	$65.78 ▼	$64.40 ▲	$64.18 ▲
		ATC	$65.09 ▲	$62.40 ▲	$58.52 ▲	$57.29 ▲	$57.39 ▲

2-Dec-25

ISO	Zone		2026	2027	2028	2029	2030
ISONE	MASS_HUB	*On-Peak*	$82.79 ▲	$76.20 ▲	$70.98 ▲	$66.55 ▬	$67.18 ▲
		ATC	$74.95 ▲	$69.34 ▲	$63.80 ▲	$59.12 ▲	$59.67 ▲

Price

Curves are an example from an internal snapshot of various days

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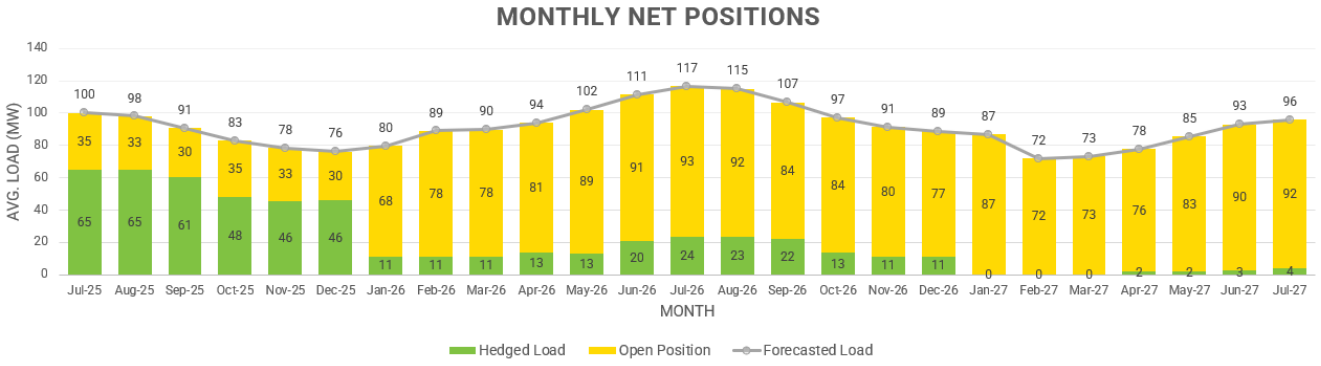
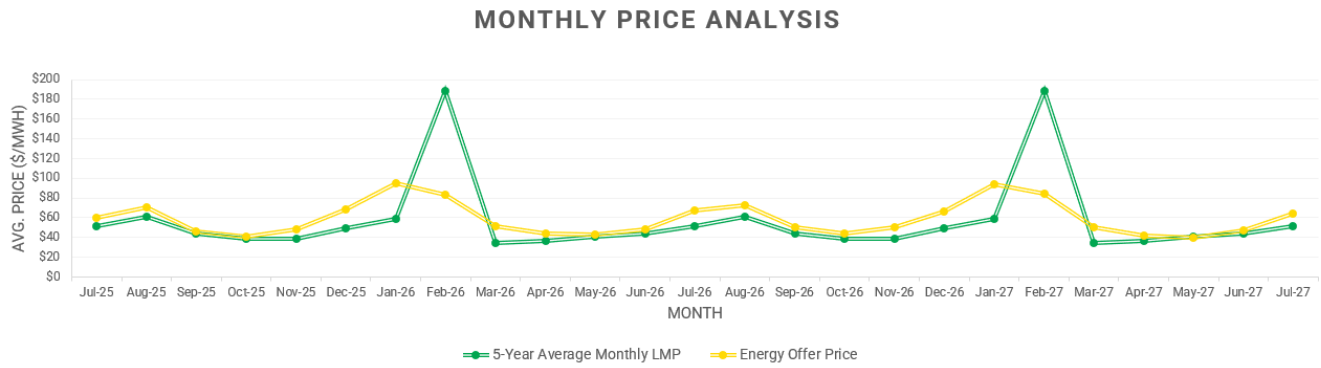
Challenges – where to begin?

Managed product and leave no rock unturned





- Make sure your supplier has managed product capabilities
- Review positions and hedging strategies
- Check with resources and review active and passive demand response
- Review onsite resources like backup generation
- Do other resources make sense for your operations? (Storage)

Conclusion

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Final thought

It is not the strongest or the most intelligent who will survive but those who can best manage change. --*Charles Darwin*

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