



Strategic Industries Surging – Presentation (April 2025)

John D. Wilson, Zach Zimmerman, and Rob Gramlich

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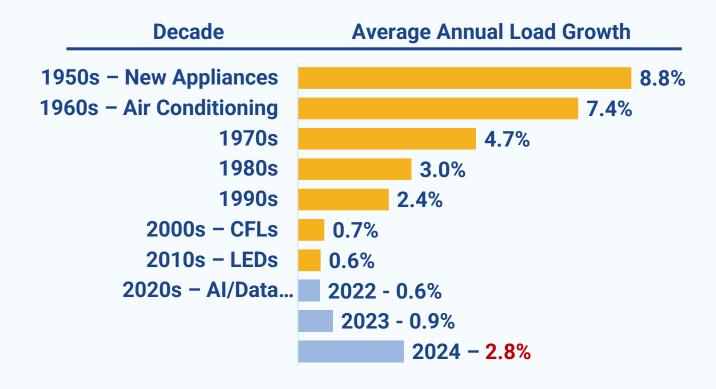
Five-Year Load Growth Up Five-Fold to 120 Gigawatts

5-year Nationwide Growth Forecast





A Scramble to Respond to Growing Load



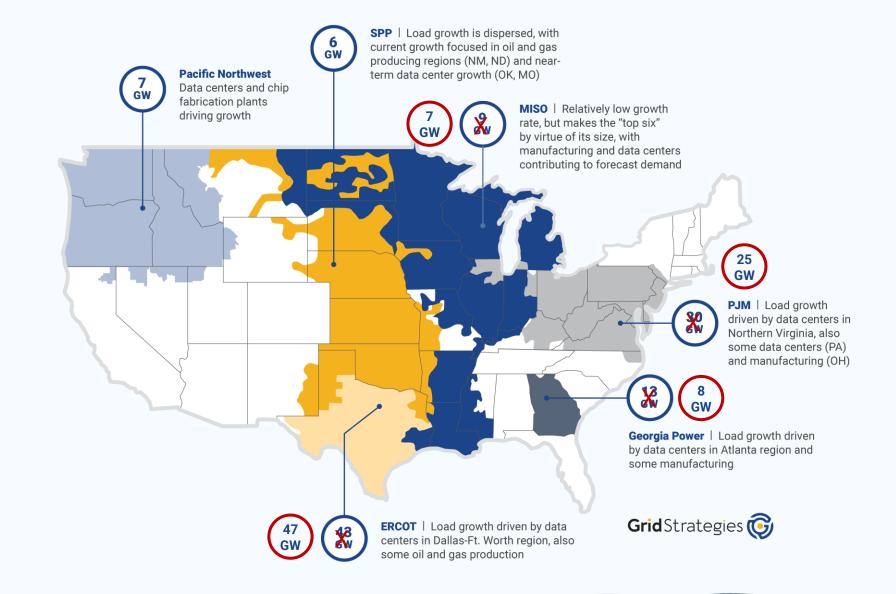


Strategic Industries Driving Load Growth Across Regions

Near-Term Load Drivers	Data Centers	Manufacturing	Electrification	
Arizona Public Service				
CAISO				
Duke				
ERCOT				
Georgia Power				
ISO-NE				
MISO				
NYISO				
Pacific Northwest				
PJM				
SPP				



Six Regions Driving Load Growth Through 2029





Planning Areas with Sharpest Increase in 2024 Load Forecast

Updates from published reports:

- ERCOT 2025 update to board increased forecast by 4.0 GW
- PJM 2025 forecast increased by 10.4 GW (not 15.2 GW)
- Georgia Power 2025 IRP forecast increased by 2.2 GW (not 7.3 GW)
- MISO 2024 white paper decreased forecast by 2.0 GW

Planning Areas with Greatest Increase in Summer 2029 Peak Demand

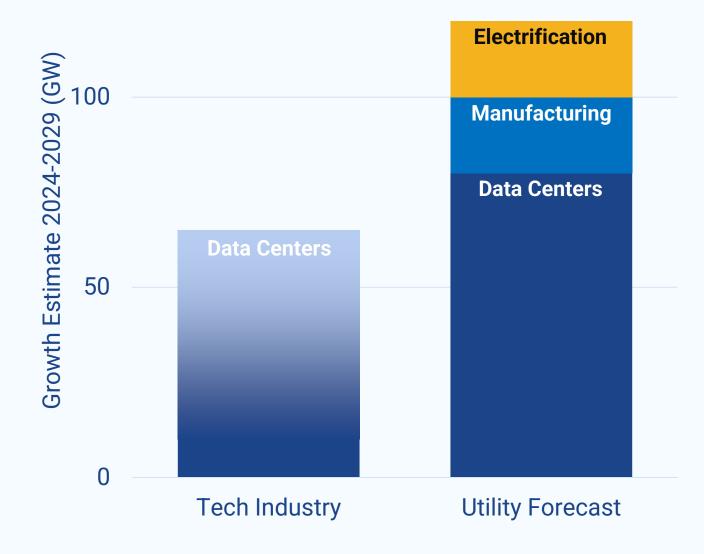
	2029 Peak Demand						Total Growth
Planning Area	2022 Forecast (GW)	2023 Forecast (GW)	2024 Forecast (GW)	Forecast Updates (GW)	Forecast Increase (GW)	Forecast Increase (Percent)	Through 2029 (GW)
ERCOT	84.4	89.6	88.1	+ 40.9	44.6	52.8%	46.8
РЈМ	153.3	156.9	165.7	+ 10.4	22.7	14.8%	24.8
Georgia Power	16.3	17.3	22.4	+ 2.2	8.4	51.6%	7.9
MISO	132.4	133.0	138.4	- 2.2	4.1	3.1%	7.1
Pacific Northwest	37.4	38.4	38.5	+ 2.0	3.1	8.2%	7.4
SPP	56.6	59.5	62.5		5.9	10.4%	6.3
Duke Energy (North & South Carolina)	33.9	36.2	36.6		2.7	7.8%	2.6
Arizona Public Service	8.7	9.8	9.9		1.2	13.6%	1.5
NYISO	31.5	32.3	32.3		0.9	2.8%	0.8
Tennessee Valley Authority	31.8	32.4	32.5		0.7	2.2%	1.4
All other planning areas	251.2	250.5	249.5		-1.7	-0.7%	10.0
Total	840.5	858.9	879.8	+ 53.5	92.8	11.0%	120.3



Data Center Forecast: Bottom Up vs Top Down

In the aggregate, the power industry does not have access to the data it needs to accurately forecast data center load.

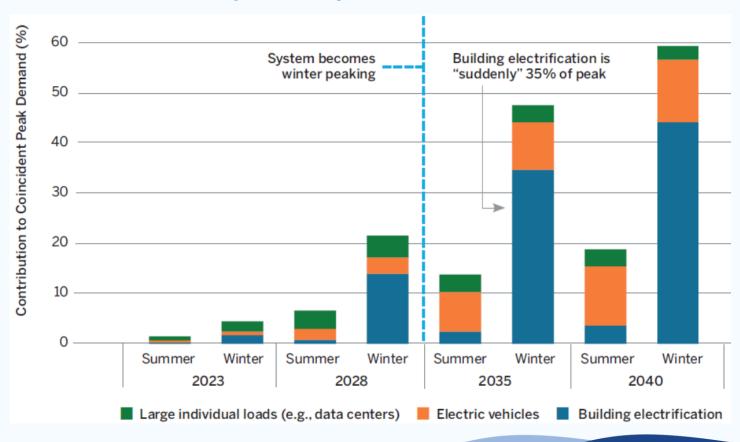
- Industry specialists estimate five-year data center demand growth from as little as 10 GW to as much as 65 GW through 2029.
- Only some utilities break out data centers from other large load drivers. Grid Strategies' rough estimate of aggregate utility data center load forecasts is about 80 GW. Note that this estimate relies on informed speculation for regions with no published breakout or inconsistent category definitions. This is almost 10% of forecast 2029 load of 929 GW.





Building and Transportation Electrification Impacts Coming

Electrification and Large Load Impacts on New York's Peak Power Demand



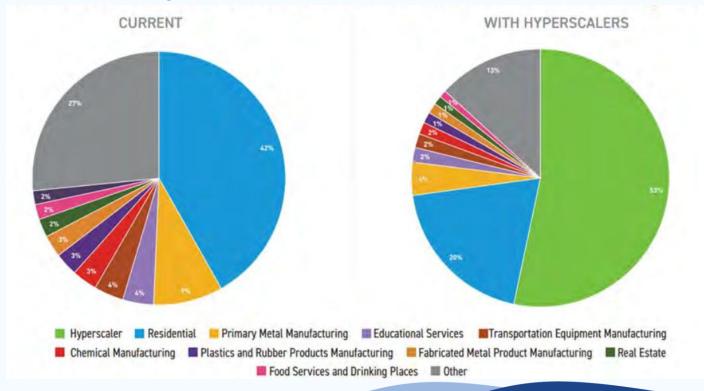


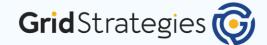
New Large Load Tariffs to Reduce Revenue Risks and Improve Forecasts

New report from Energy Futures Group:

Review of Large Load Tariffs to Identify Safeguards and Protections for Existing Ratepayers

Hyperscale Data Centers Could Represent >50% of Indiana & Michigan Power Revenues

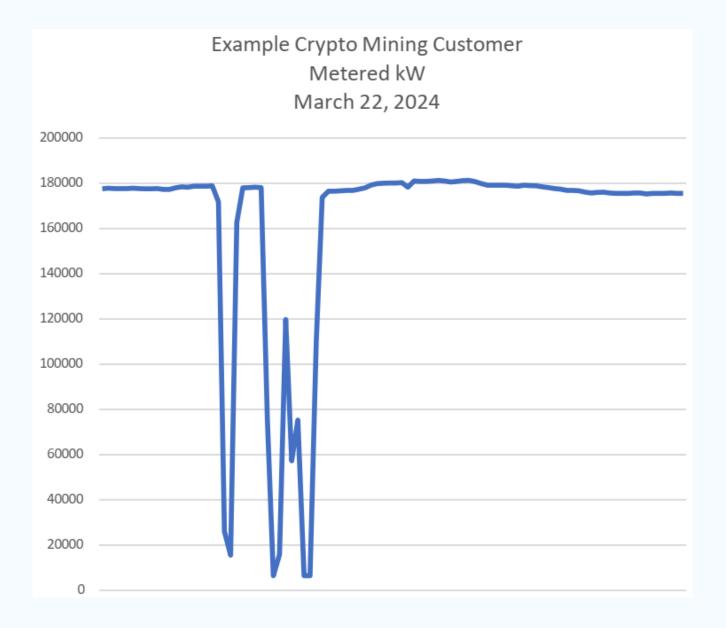




NERC Large Load Reliability Standard

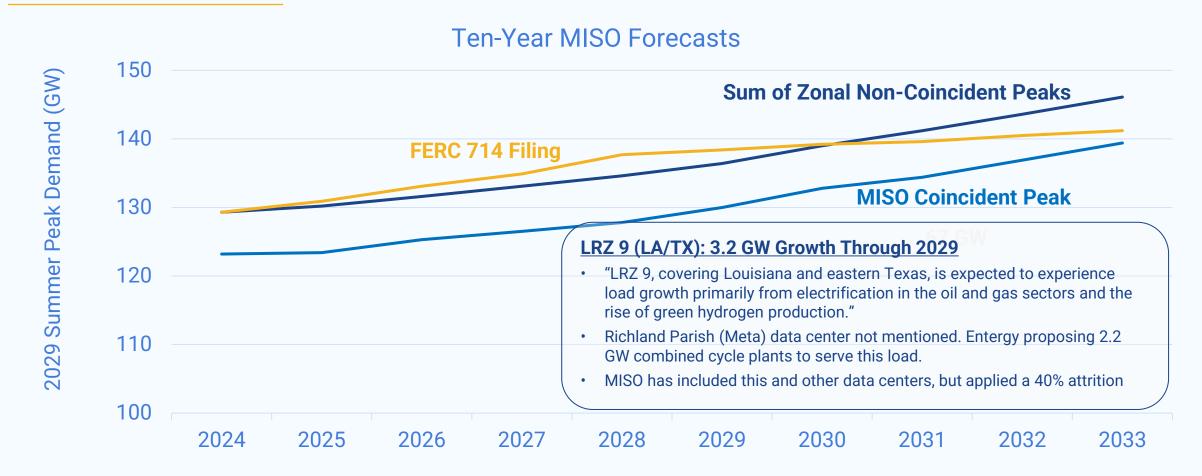
NERC: Large data centers presenting new, unique challenges to grid reliability

- Price Response especially crypto mining
- "Ride-through" backup power systems can remove large loads from the grid
- Normal operations Al "training models" can vary load in just seconds





MISO's FERC 714 Filing Compared to December 2024 White Paper (Current Trajectory)





ERCOT's New Large Load Forecast Method

ERCOT Adjusted Large Load Forecast Methodology Reduce all new Delay In-service TSP-Provided **ERCOT Adjusted** Reduce Officer **Data Center** Date by 180 Days Contract and Demand to 49.8% Letter Loads to Large Load for all new Large Officer Letter of Requested 55.4% **Forecast** Loads Large Loads **Amount** Actual experience for all new Actual experience for data Actual experience for Officer large loads that had 2022-Letter loads with 2024 incenters that had 2022-2024 service dates show 55.4% of 2024 in-service dates show in-service dates show load in-service is ~220 days was 49.8% of the requested the project's load was indelayed on average amount service by February 2025 Key Takeaway: These factors can be updated to reflect observed performance as new contract and Officer Letter Load is energized. ercot \$ PUBLIC



Energy Systems Integration Group (ESIG): Large Load Task Force

I am leading the Large Load Forecasting team for ESIG's LLTF

- Looking for participants (generally, must join ESIG) and presenters
- Collecting existing large load forecasting practices
- Evaluating methods for considering speculative requests and certainty
- Exploring potential for national aggregation of confidential data
- Studying how to address policy issues, such as impact of demand flexibility
- Develop recommended best practices

Large Load Task Force: Topical Areas / Project Teams



- Data collection on characteristics of AI and other data centers and other large loads.
- Load forecasting
- Interconnection process
- Interconnection performance requirements
- Modeling requirements for interconnection
- Wholesale market options for large loads; co-location of generation and load
- Transmission planning with high shares of large loads
- Resource adequacy with high shares of large loads
- Additionally, LBNL will be leading an effort on regulatory and contractual aspects tariffs, flexible interconnections and curtailment, contracts.

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Thank you!

John D. Wilson Vice President

jwilson@gridstrategiesllc.com

We offer research and advising on







Founded in 2017, Grid Strategies works on policy to enable decarbonization and an affordable, reliable electricity system.

