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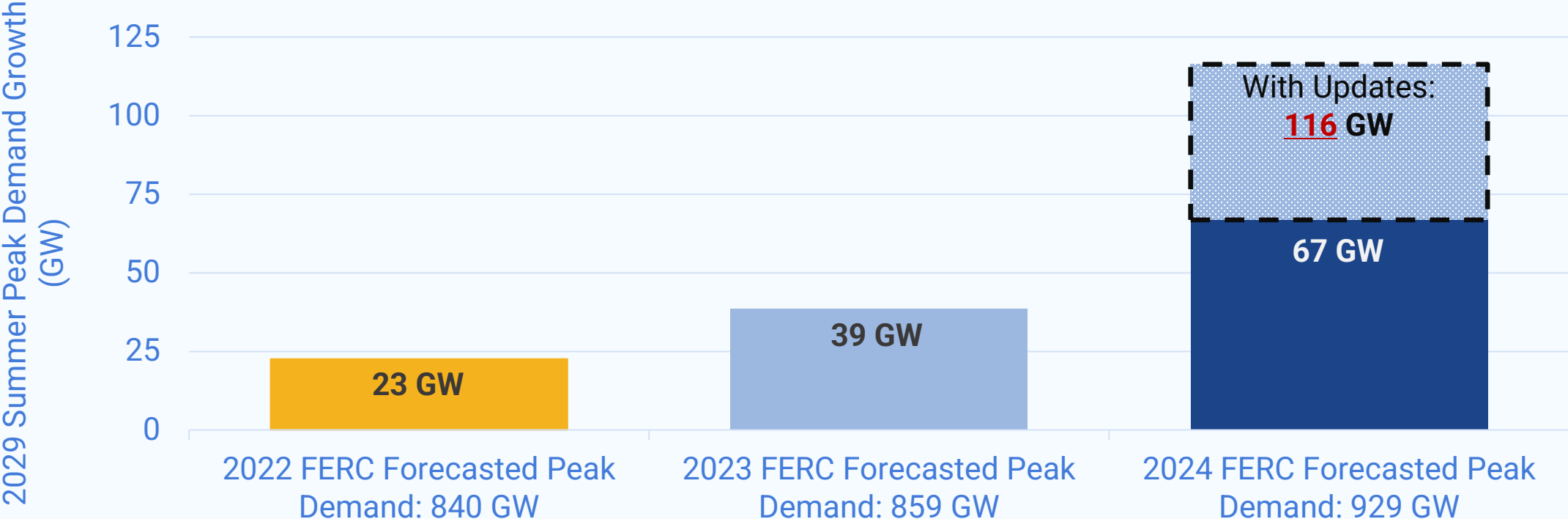
## **Strategic Industries Surging – *Midcontinent Power Sector Collaborative (February 2025)***

John D. Wilson, Zach Zimmerman, and Rob Gramlich

REPORT PUBLISHED DECEMBER 2024

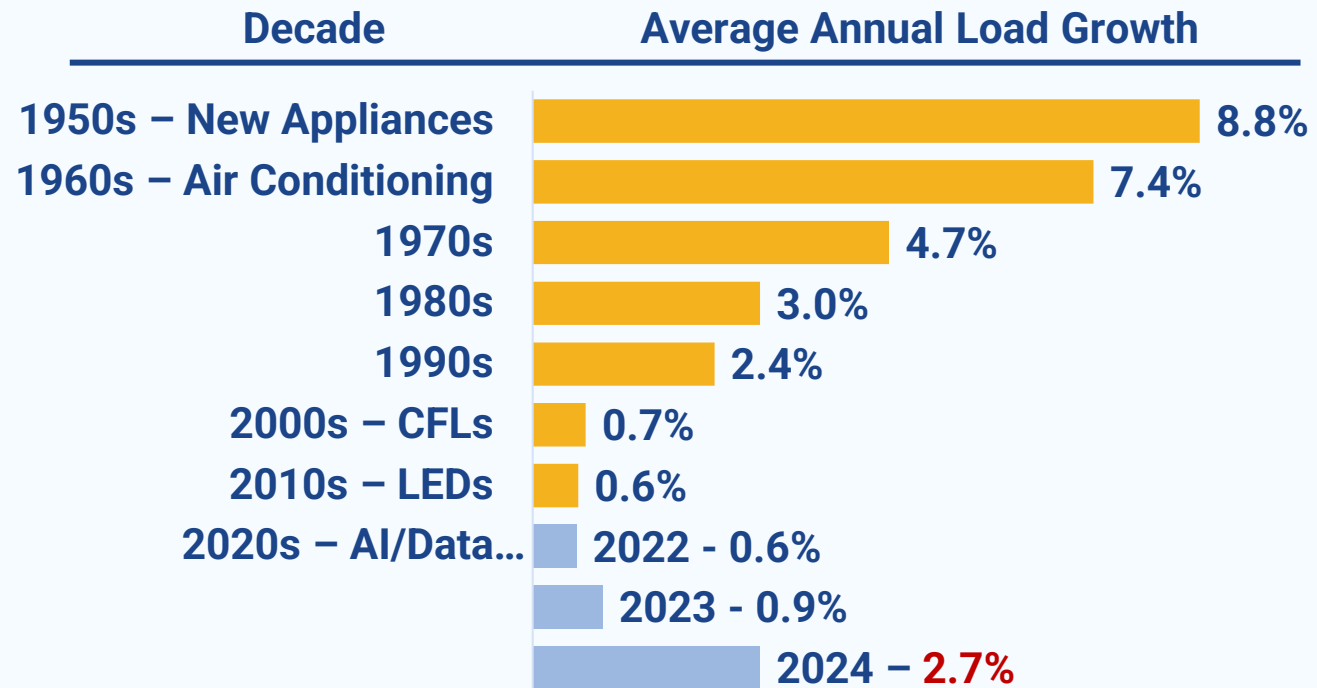
# Five-Year Load Growth Up Five-Fold to **116** Gigawatts

5-year Nationwide Growth Forecast



# A Scramble to Respond to Growing Load

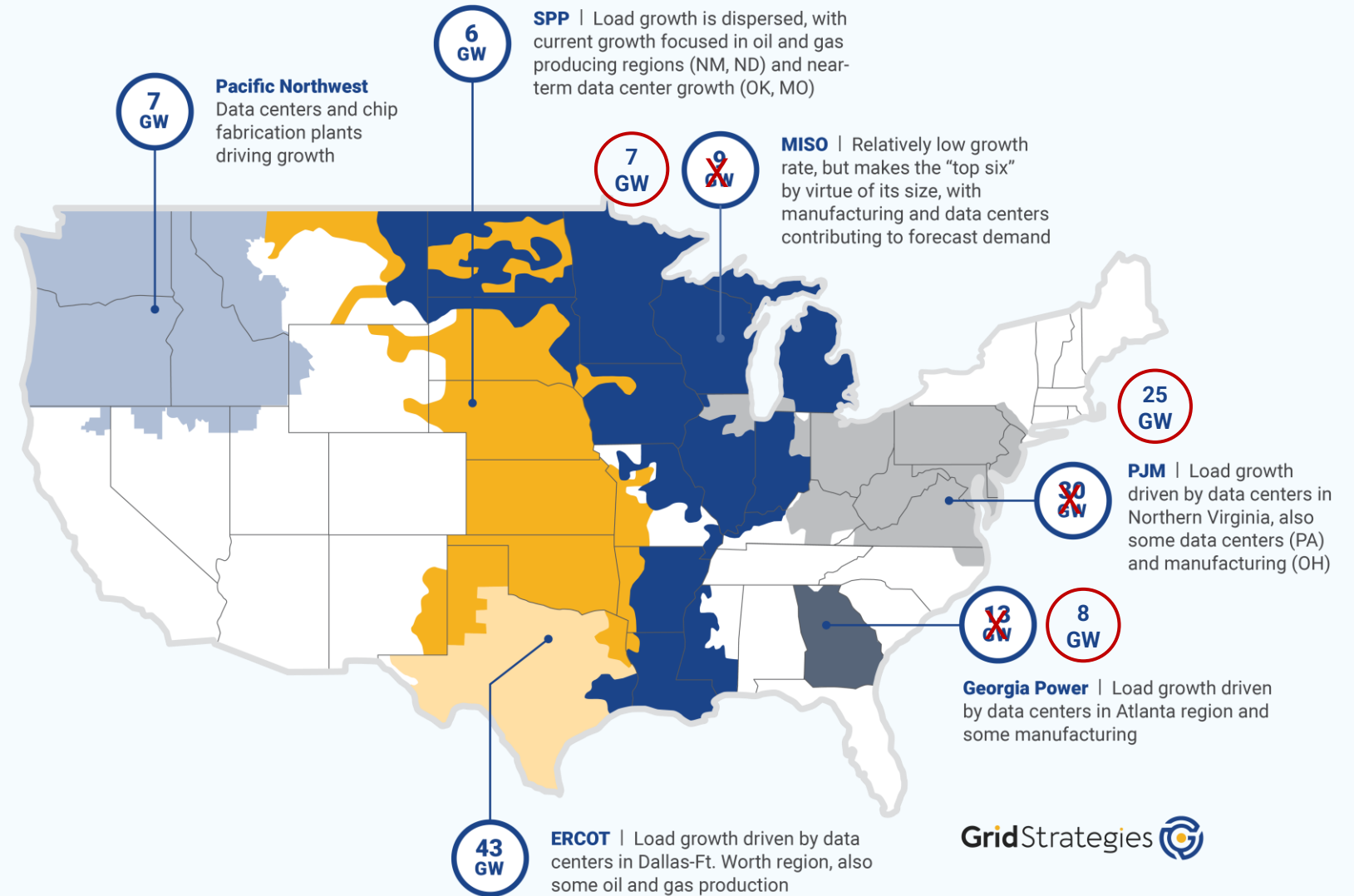
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# Strategic Industries Driving Load Growth Across Regions

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:

- 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

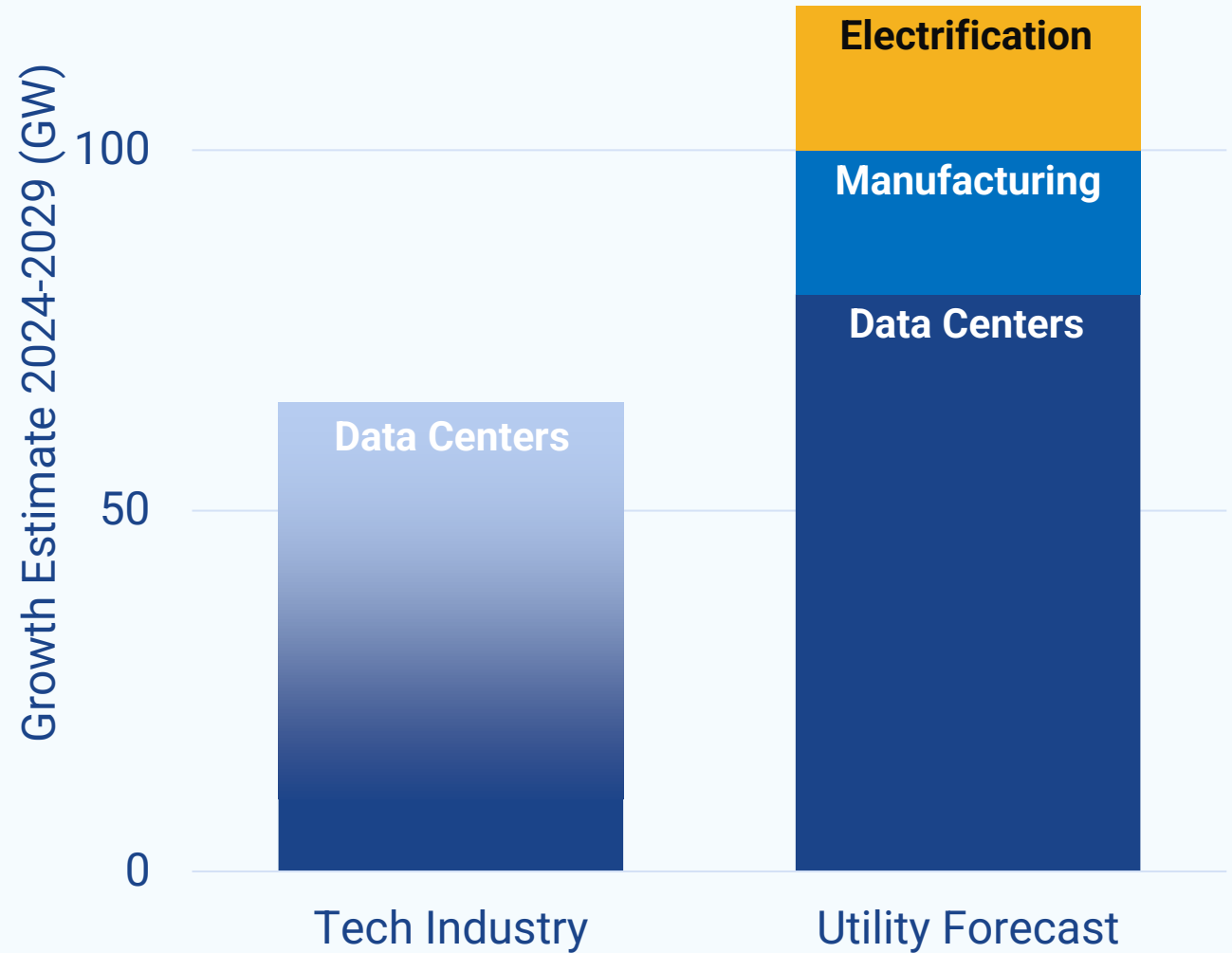
Planning Areas with Greatest Increase in Summer 2029 Peak Demand

Planning Area	2029 Peak Demand				Forecast Increase (GW)	Forecast Increase (Percent)	Total Growth Through 2029 (GW)
	2022 Forecast (GW)	2023 Forecast (GW)	2024 Forecast (GW)	Forecast Updates (GW)			
ERCOT	84.4	89.6	88.1	+ 36.9	40.6	48.1%	42.8
PJM	153.3	156.9	165.7	<b>+ 10.4</b>	<b>22.7</b>	<b>14.8%</b>	<b>24.8</b>
Georgia Power	16.3	17.3	22.4	<b>+ 2.2</b>	<b>8.4</b>	<b>51.6%</b>	<b>7.9</b>
MISO	132.4	133.0	138.4	<b>- 2.2</b>	<b>4.1</b>	<b>3.1%</b>	<b>7.1</b>
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%	4.6
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
<b>Total</b>	<b>840.5</b>	<b>858.9</b>	<b>879.8</b>	<b>+ 49.5</b>	<b>88.8</b>	<b>8.2%</b>	<b>116.3</b>

# Data Center Forecast: Bottom Up vs Top Down

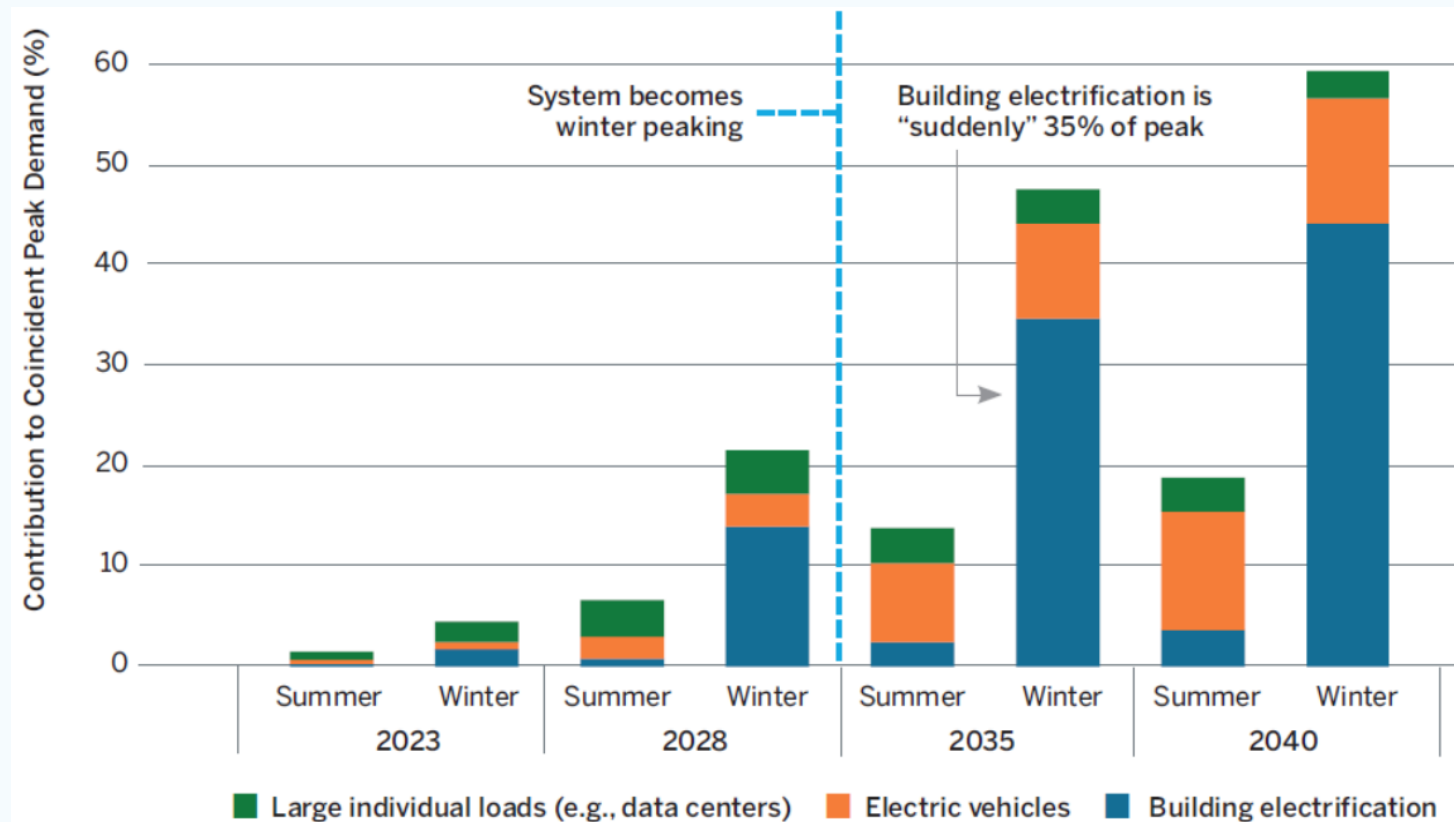
In the aggregate, the power industry does not have access to the data it needs to accurately forecast data center load.

- 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

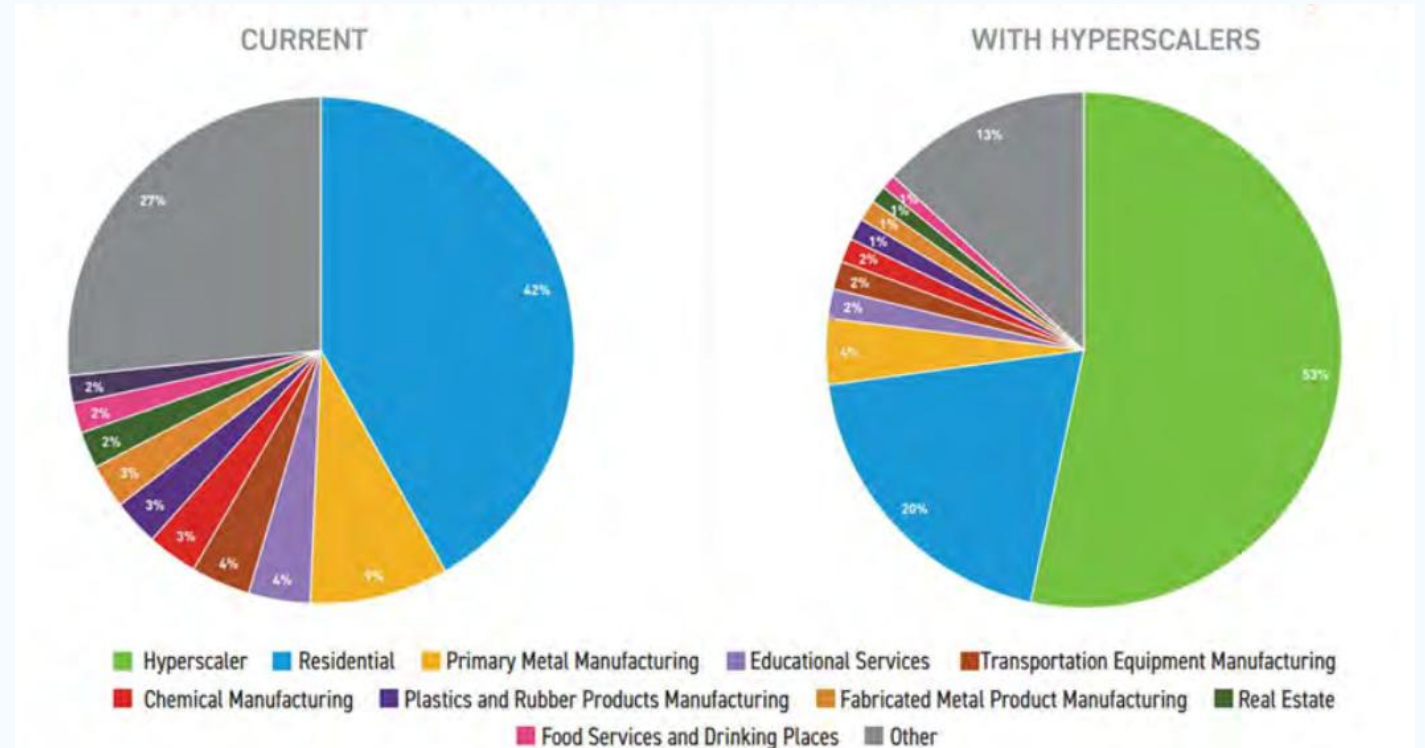




# New Large Load Tariffs to Reduce Revenue Risks and Improve Forecasts

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

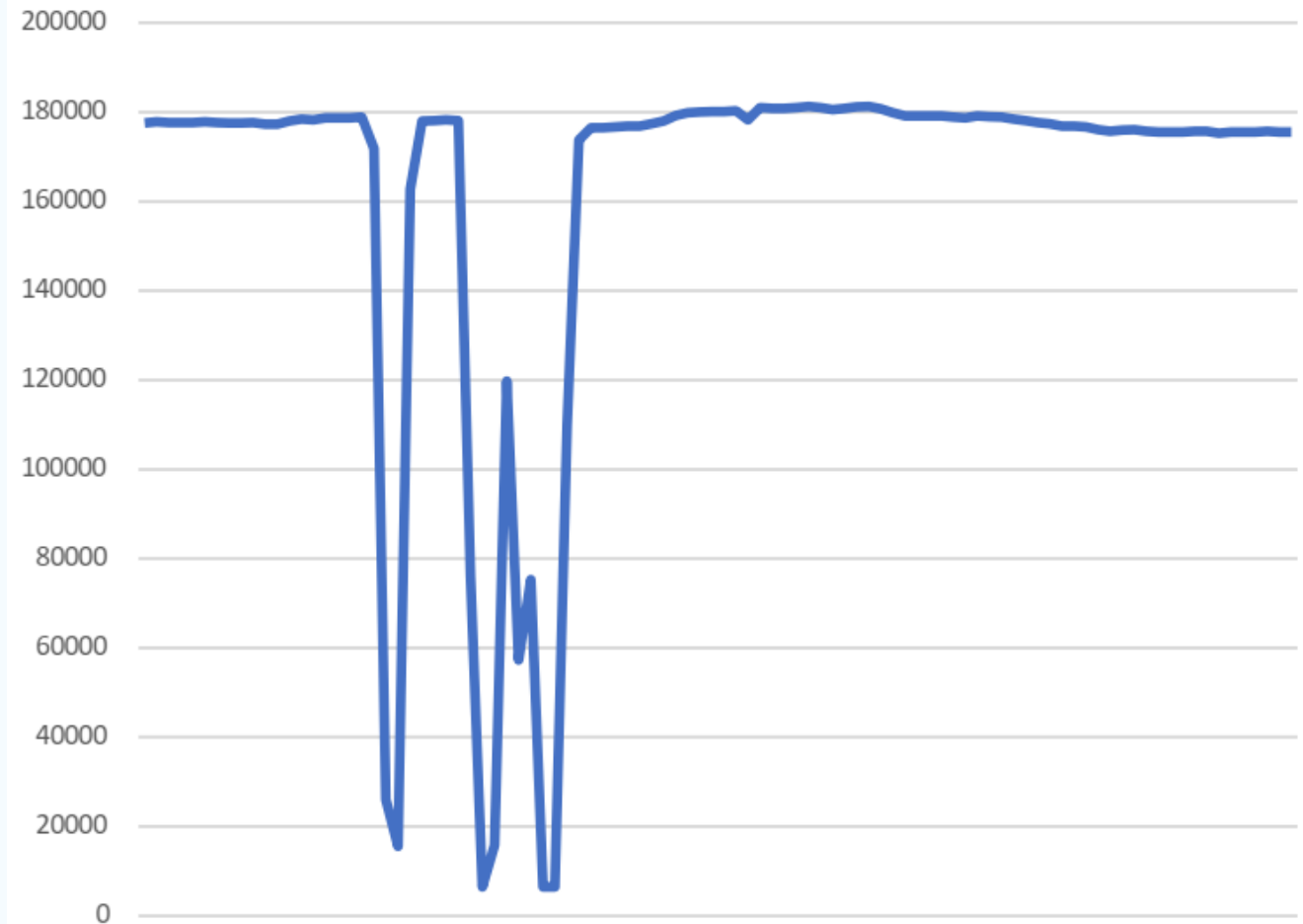


# NERC Large Load Reliability Standard

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** – AI “training models” can vary load in just seconds

Example Crypto Mining Customer  
Metered kW  
March 22, 2024



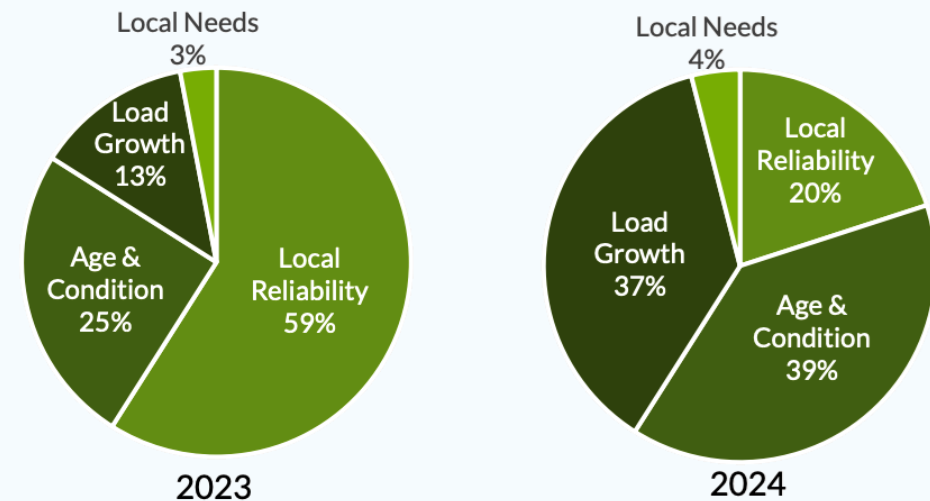
## Large Region with Relatively Low Growth

The MISO planning area's 2029 forecast increased from 132.4 GW to 138.4 GW over the past two years, a 4.6% increase. Compared to other planning areas, this increase is relatively low on a percentage basis. However, because MISO is so large, its total load growth increase is relatively large.

In its 2023 transmission planning cycle MISO approved a record setting \$9 billion transmission expansion plan citing load growth as a driver of the increase and their draft 2024 plan includes even more projects to address load growth.

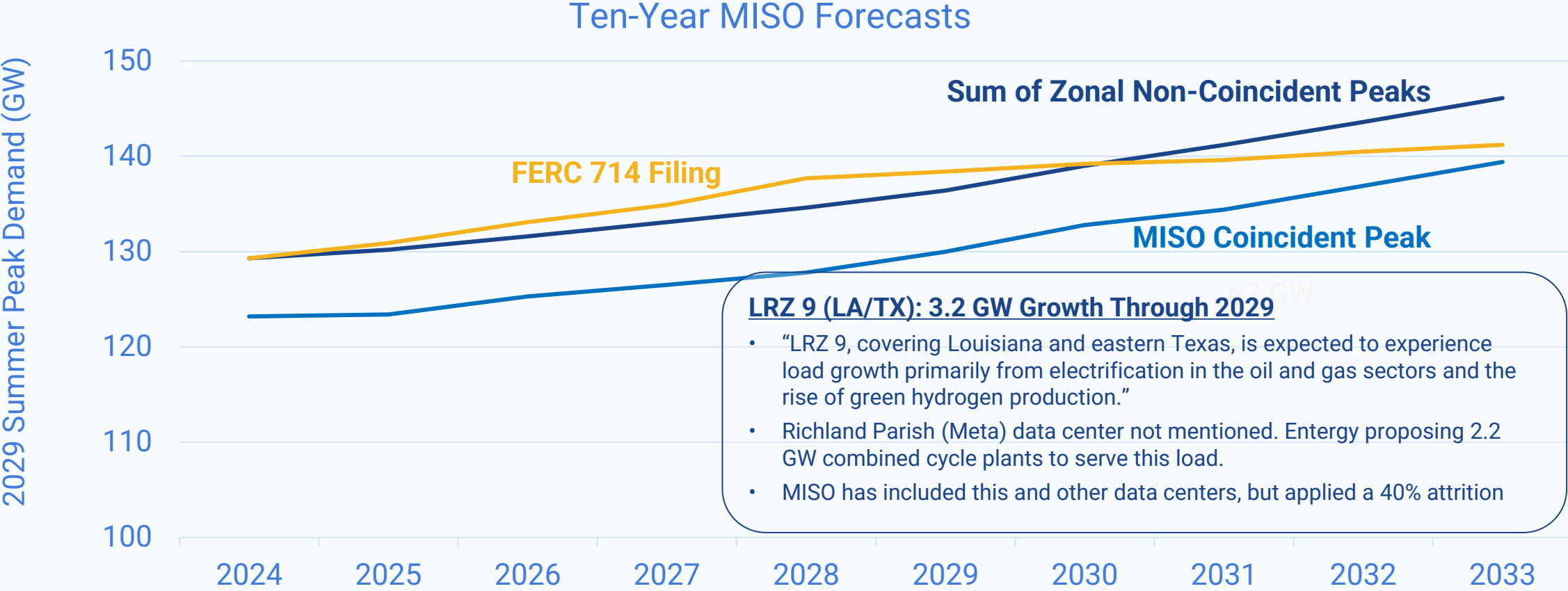
The forecast filed by MISO reflects members' self-reported load forecasts as completed in 2023. MISO is updating its load forecasting method with an anticipated release in December 2024. **Dependence on members' self-reported load forecasts may introduce a lag in the response of MISO's load forecast to the increased pace of load connections.**

### MTEP23 vs. MTEP24 Breakdown of Projects by Cost



SOURCES | MISO, [MTEP 2023](#) (September 2024).  
MISO, [MTEP24 Report Preview](#) (October 2024).

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



# Observations on MISO Long-Term Load Forecast

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## MISO's review of load forecast data from load serving entities (February 2025)

- MISO conducts an **annual load forecast assessment**, reviewing a sample of load-serving entities. Review includes methods, inputs, and forecast values. MISO reports timely and compliant responses to supply missing information and make “minor revisions.”

## MISO stakeholder comments (January 2025)

- Stakeholders **questioned policy adoption as a driver** for vehicle electrification, building electrification, and hydrogen development – these concerns could also be expressed for oil & gas operations.
- Surprising that some load-serving entities have **basic questions about MISO's forecast**. This could suggest that some of the data supplied by these utilities are not optimized for MISO's forecast applications.

## Data center forecast method explained in MISO's response to stakeholder comments on Medium and Long-Term Load Forecast (February 2025)

- MISO's data center capacity forecast relies on **publicly available data center announcements** and **third-party estimates**.
- MISO's response states that it assumes publicly announced **data centers will be completed** on schedule, but clarified to Grid Strategies that a 40% attrition rate is included to compensate for supply chain delays, ramp up, and other uncertainty.
- MISO considers there to be **minimal risk of double-counting**, and cross-references with Expedited Project Review (EPR) process data – but stakeholders questioned this approach.
- MISO is **not releasing details of its data center forecast**.

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

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## 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

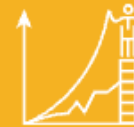
Vice President

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