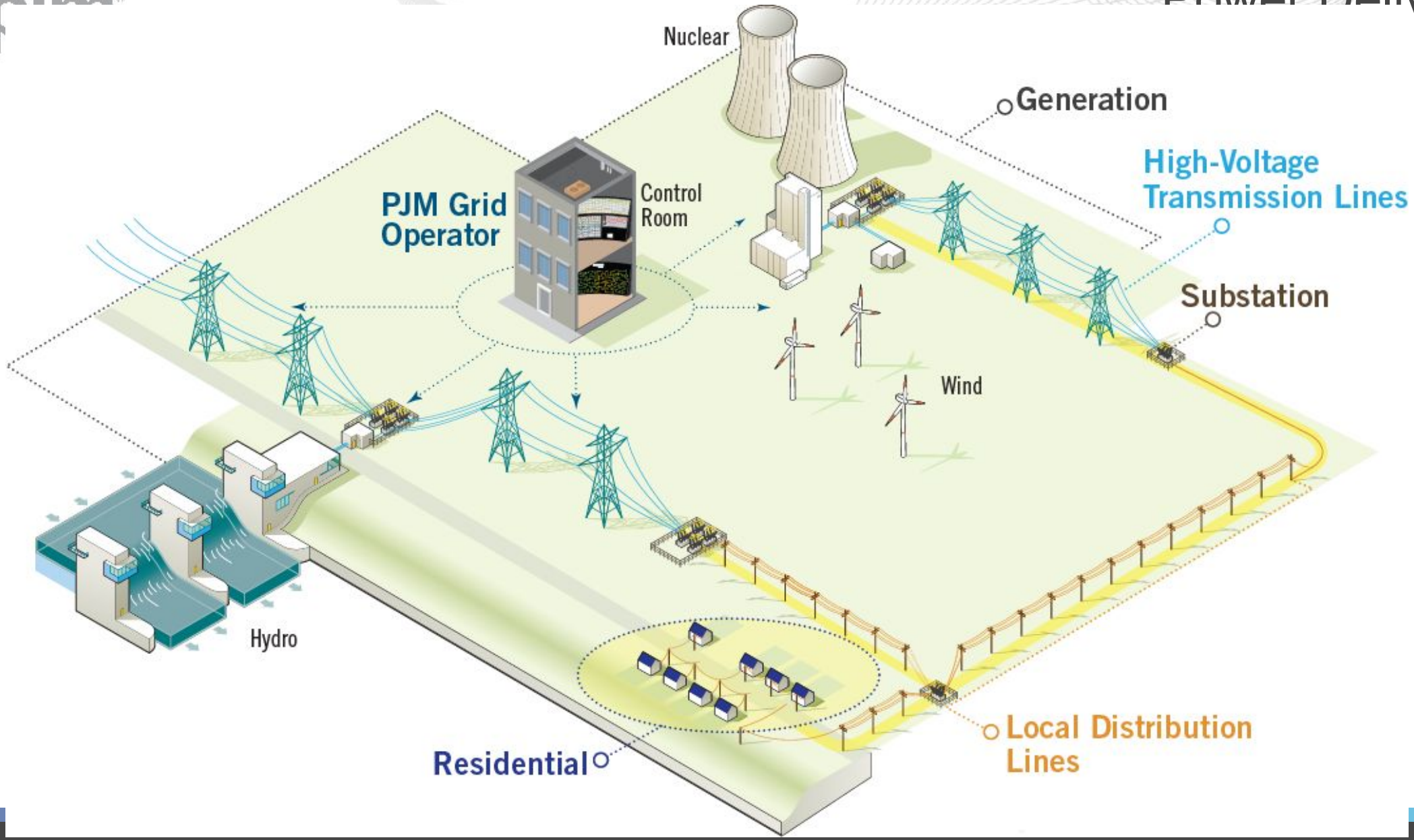
2024 Governor's Energy Summit

The Effects of Federal Energy Policy on U.S. Energy Supply

Asim Z. Haque
Sr. VP, Governmental & Member Services

October 29, 2024

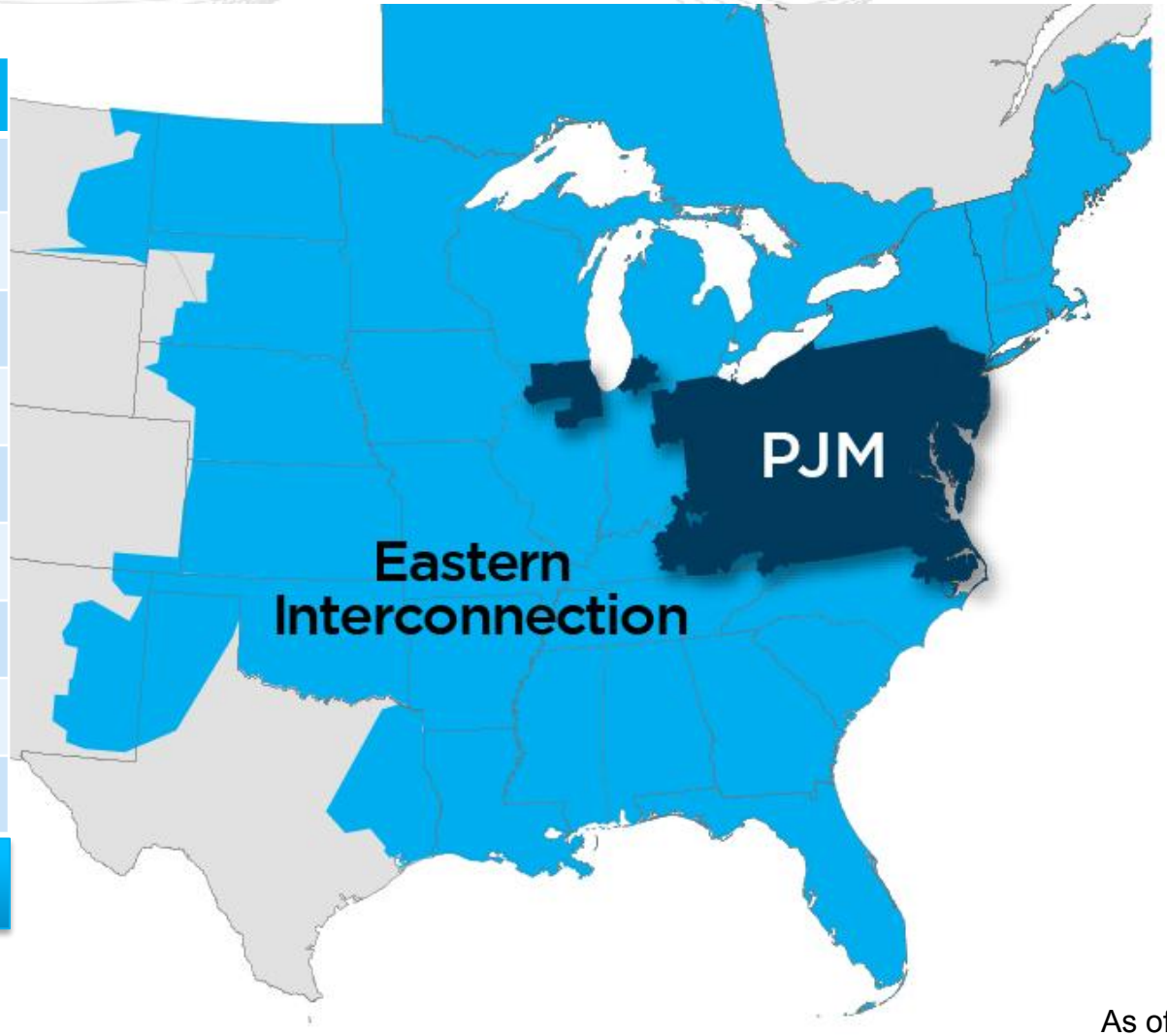
Power Delivery



PJM as Part of the Eastern Interconnection

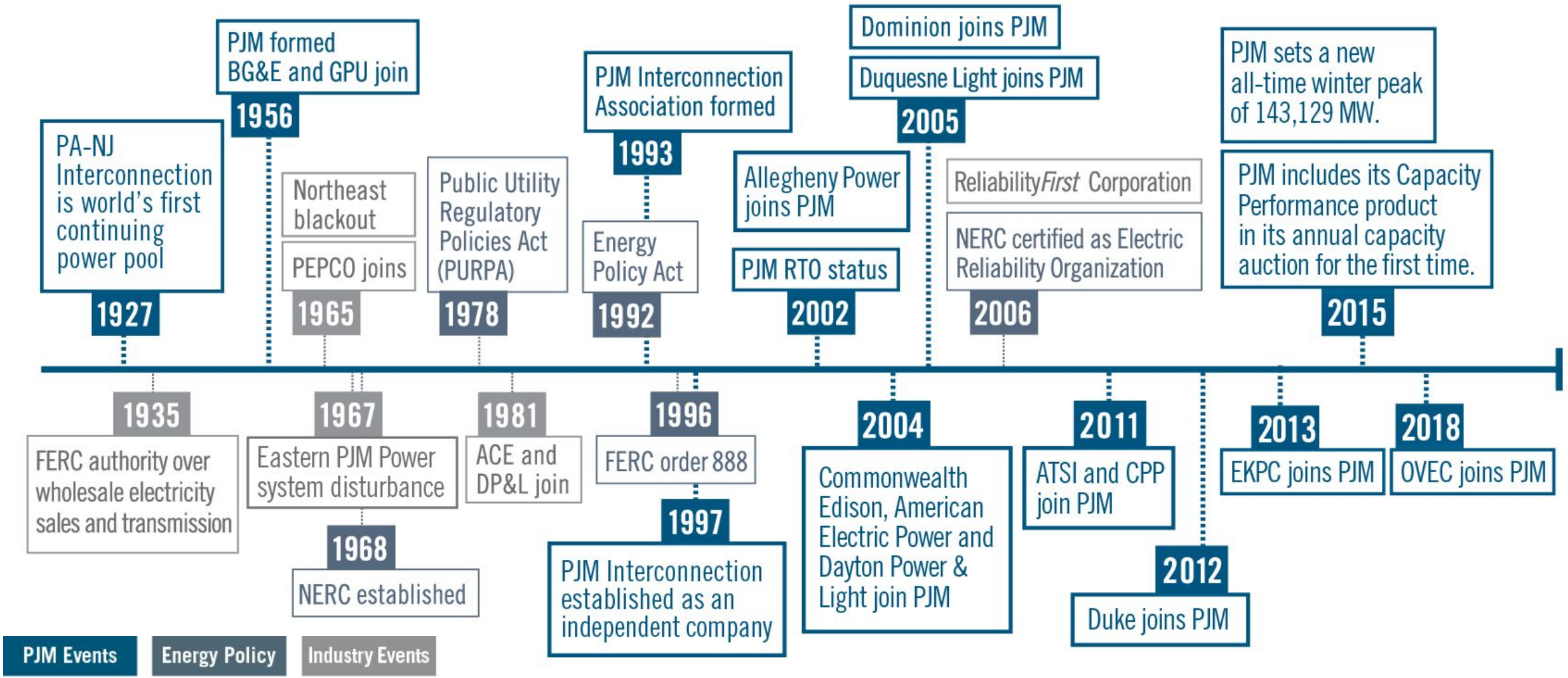
Key Statistics	
Member companies	1,090
Millions of people served	65+
Peak load in megawatts	165,563
Megawatts of generating capacity	180,785
Miles of transmission lines	88,185
Terawatt hours of annual energy	770
Generation sources	1,439
Square miles of territory	368,906
States served	13 + DC

21% of U.S. GDP produced in PJM



As of 2/2024

The History of PJM



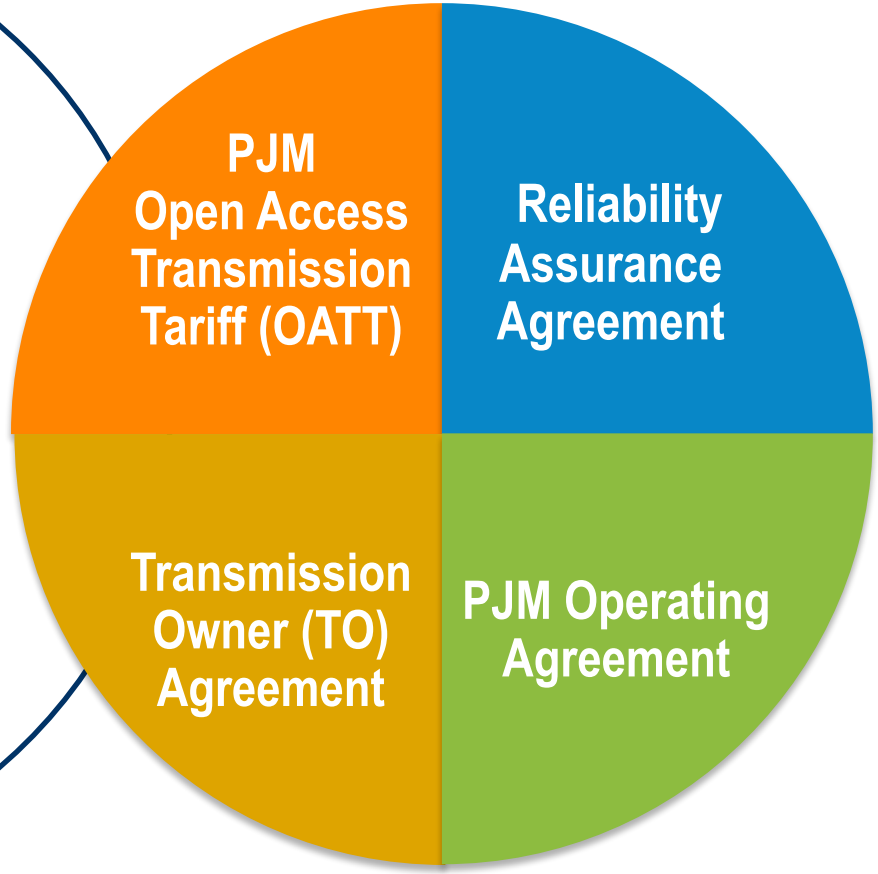
How Is PJM Different from Other Utility Companies?

PJM Does:

- Direct operation of the transmission system
- Remain profit-neutral
- Maintain independence from PJM members
- Coordinate maintenance of grid facilities

PJM Does *NOT:*

- Own any transmission or generation assets
- Function as a publicly traded company with shareholders and concerns around "earnings"
- Perform maintenance on generators or transmission systems (e.g., repair power lines)
- Serve or direct any end-use customers (retail)



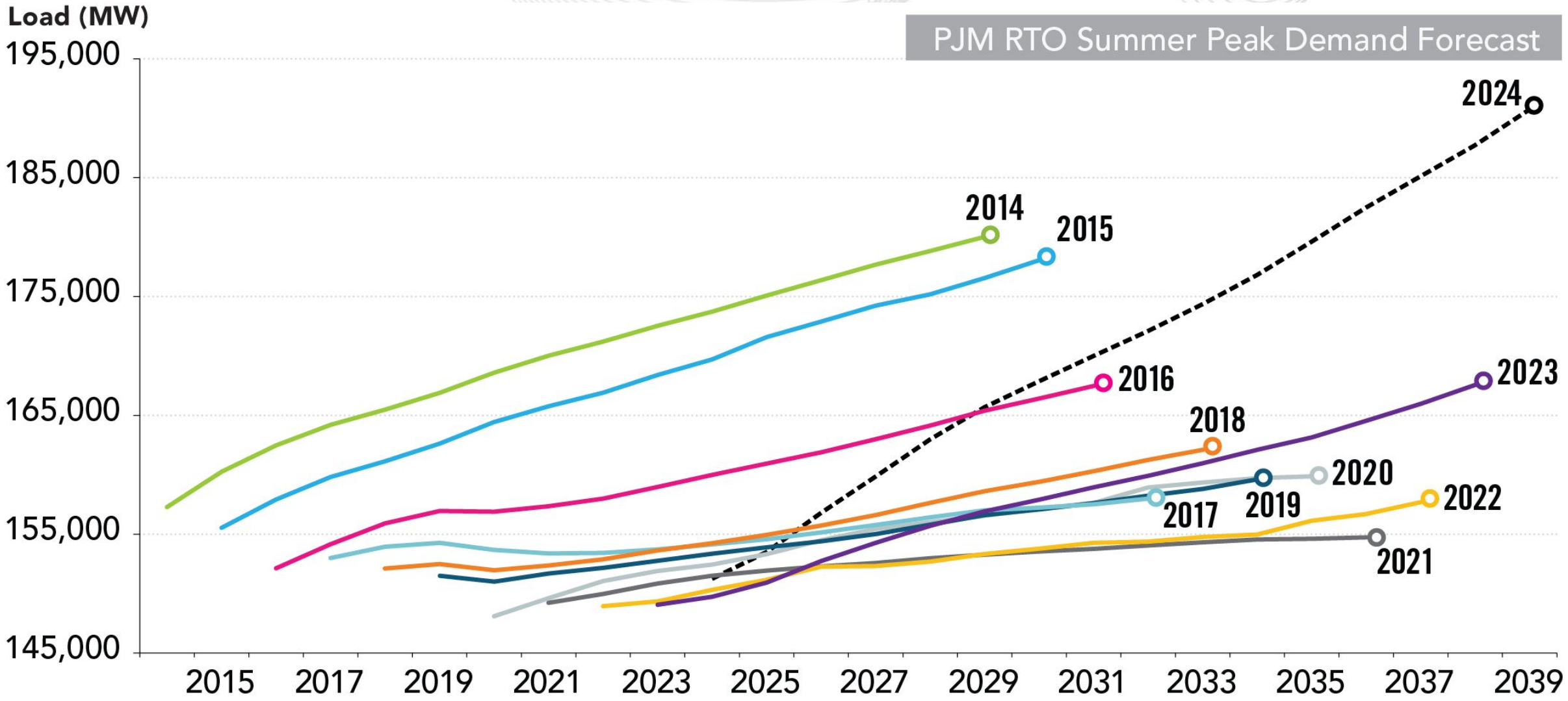
PJM – Primary Focus

RELIABILITY

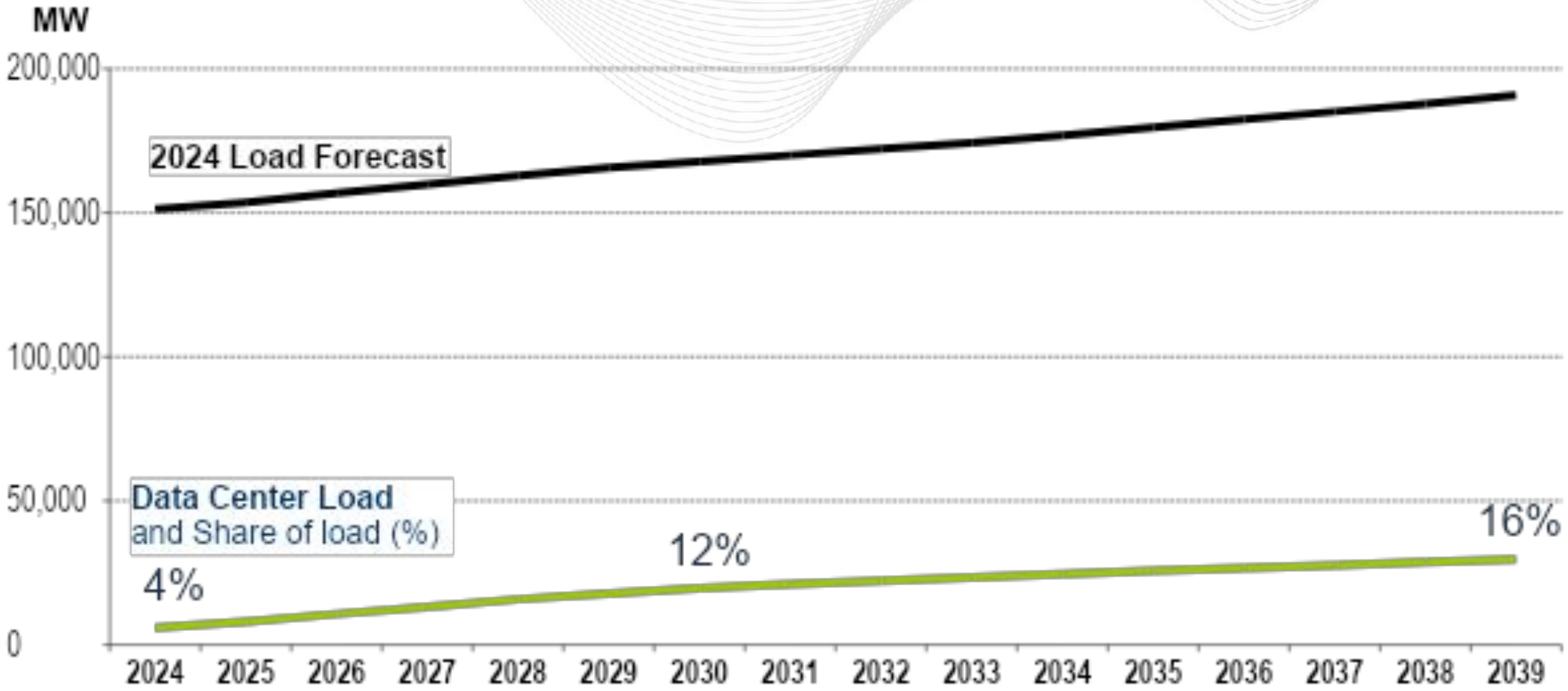
Value Proposition

All numbers are estimates.

Electricity Demand Growth



2024 Load Forecast – Summer Peak (MW)



International Energy Agency (IEA)

Electricity Mid-Year Update - July 2024

"Over the 2024-2025 forecast period of this report, global electricity consumption is expected to increase at the fastest pace in years, fueled by robust economic growth, intense heatwaves and continued electrification worldwide."

The rise of artificial intelligence (AI) has put the electricity consumption of data centers in focus, making better stocktaking more important than ever.	The 4% growth expected for 2024 is the highest since 2007, with the exceptions of the sharp rebounds in 2010 after the global financial crisis and in 2021 following the COVID-induced demand collapse. We expect this demand trend to continue in 2025, with growth also at 4%. In both 2024 and 2025, the rise in the world's electricity use is projected to be significantly higher than global GDP growth of 3.2%. In 2022 and 2023, electricity demand grew more slowly than GDP.

https://www.iea.org/reports/electricity-mid-year-update-july-2024

"We find that by 2028, U.S. electricity demand could increase by an average of 9% while peak demand for electricity could increase by an average of 5%."

A robust American economy, building and transportation electrification, manufacturing of batteries and fuel cells, data centers, artificial intelligence, and cryptocurrency mining are all contributing to new electric demand that is stressing the electric grid.	The U.S. now faces a sudden surge in electricity demand that requires new management strategies amid utilities' efforts to lead a clean energy transition. Demand growth is expected in every region across the country, but the pace of growth will vary by region. The largest increase by far is projected in the mid-Atlantic region, resulting from rapid building and vehicle electrification and demand from data centers. Demand in this region is projected to increase 68% by 2050, compared to the U.S. average of 57%.

https://www.icf.com/news/2024/09/icf-report-projects-surge-in-us-electricity-demand-by-2028

Center for Strategic & International Studies (CSIS)

Strategic Perspectives on U.S. Electric Demand Growth

"There is very strong evidence that a confluence of three trends—reshoring of industry, AI-driven database expansion, and broad-based electrification—will drive a sustained period of electric demand growth."

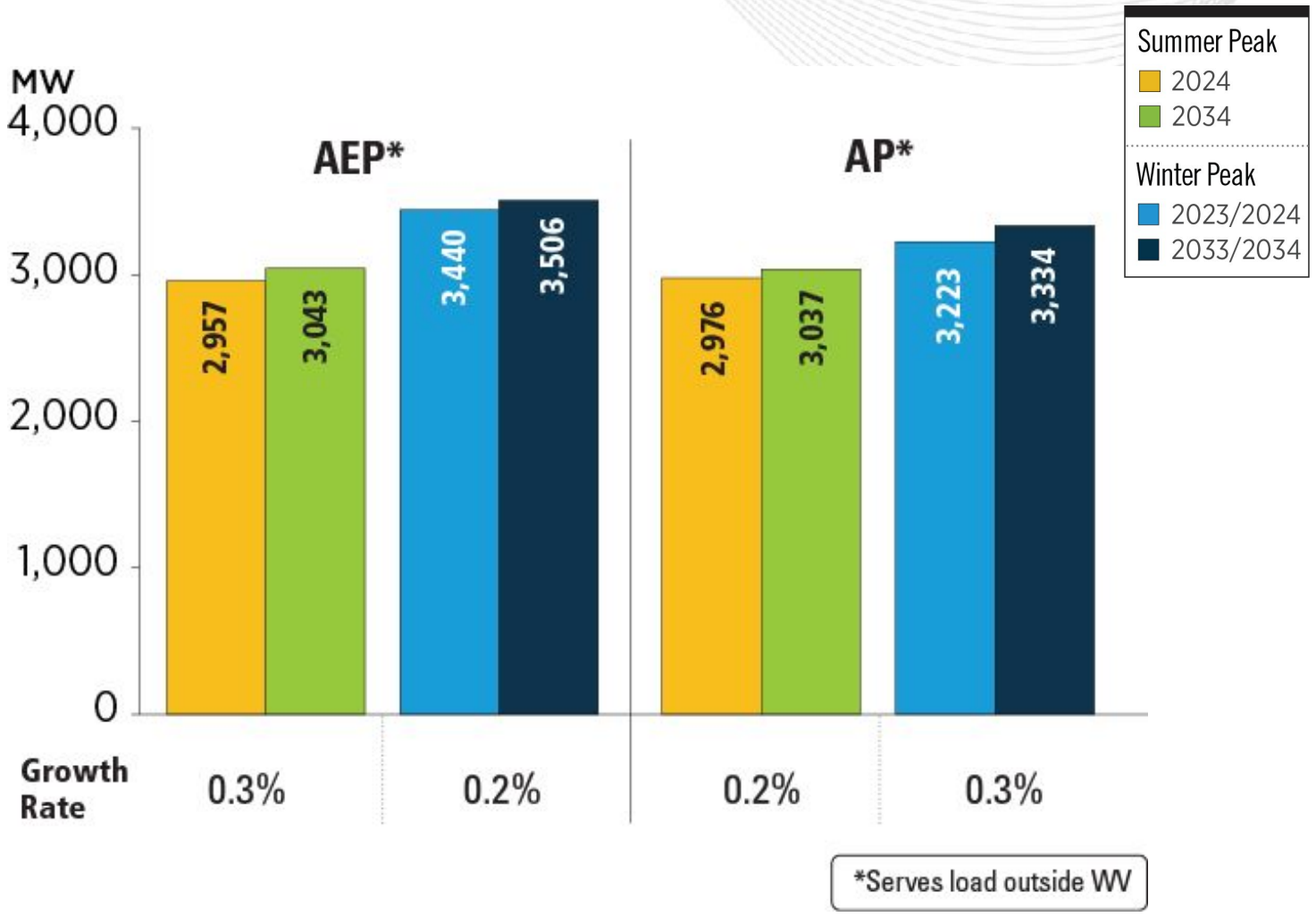
The principal challenge posed by demand growth is policy: how to invest and scale power system capacity without an equal scaling of rates for consumers. In the electric power sector, all investment eventually lands on a ratepayer bill.

The North American Electric Reliability Corporation (NERC) forecasts 78 gigawatts (GW) of winter peak demand growth over the next 10 years. Individual reporting from utilities and grid operators portends accelerating growth.

- ERCOT recently issued a long-term demand forecast showing 62 GW of peak demand growth by 2030.
- PJM forecasts 25 GW of peak summer demand growth by 2034.
- In the Pacific Northwest, 8.5 GW of summer peak demand growth is expected, representing a 30 percent increase, over 10 years.

https://www.csis.org/analysis/strategic-perspectives-us-electric-demand-growth

West Virginia – 2024 Load Forecast Report

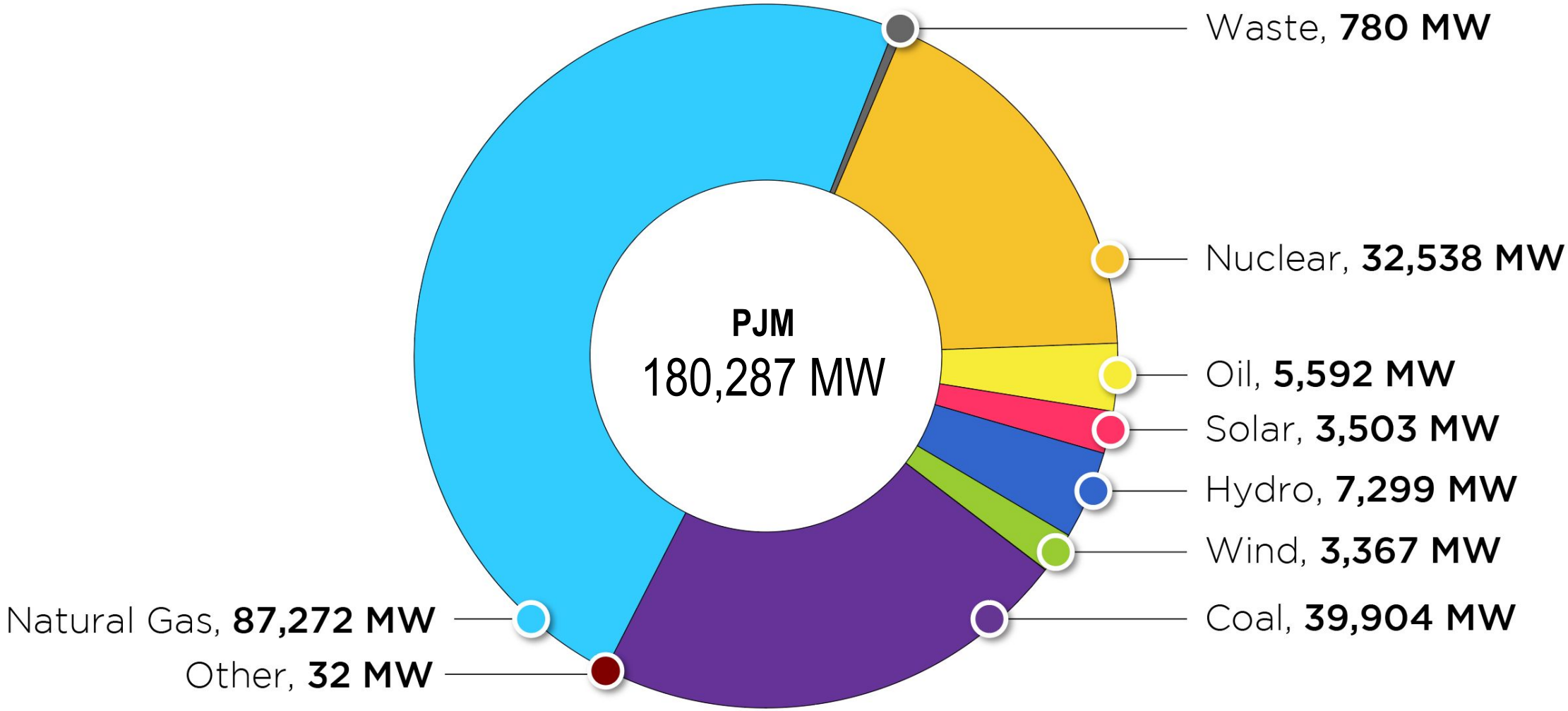


PJM RTO Summer Peak		PJM RTO Winter Peak	
2024	2034	2023/2024	2033/2034
151,247 MW	176,822 MW	134,659 MW	163,069 MW
Growth Rate 1.6%		Growth Rate 1.9%	

* PJM notes that American Electric Power Company and Allegheny Power serve load other than in West Virginia. The summer and winter peak megawatt values in this table each reflect the estimated amount of forecasted load to be served by each of those transmission owners solely in West Virginia. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load located in West Virginia over the past five years.

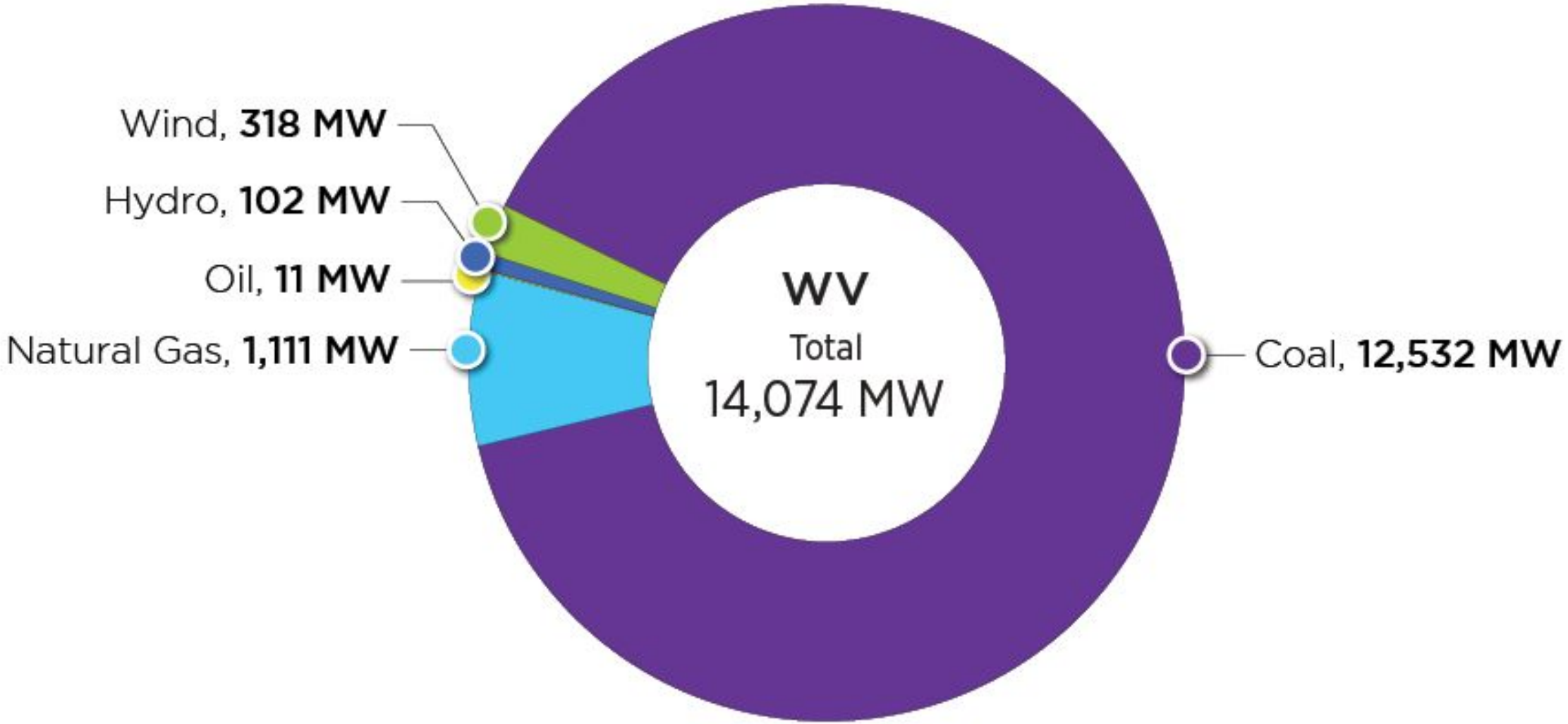
PJM Existing Installed Capacity Mix

(CIRs – as of Dec. 31, 2023)



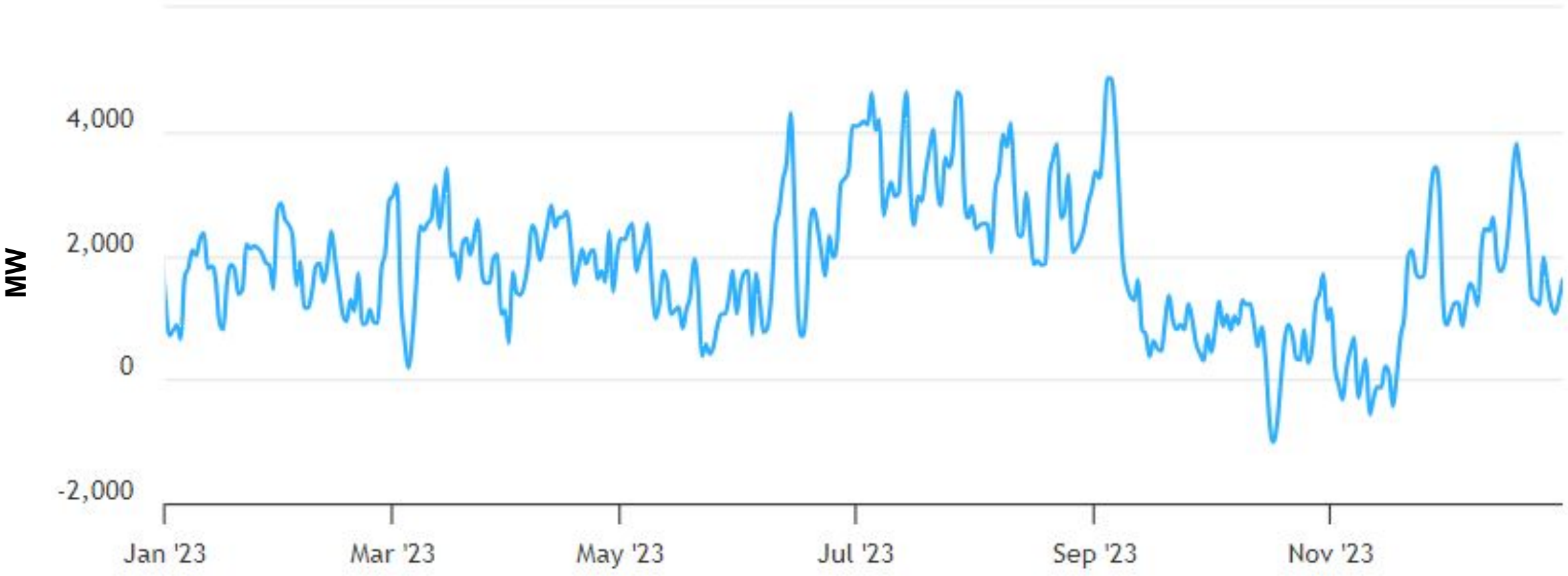
West Virginia – Existing Installed Capacity (MW) by Fuel Type

(as of Dec. 31, 2023)



West Virginia – Net Energy Import/Export Trend

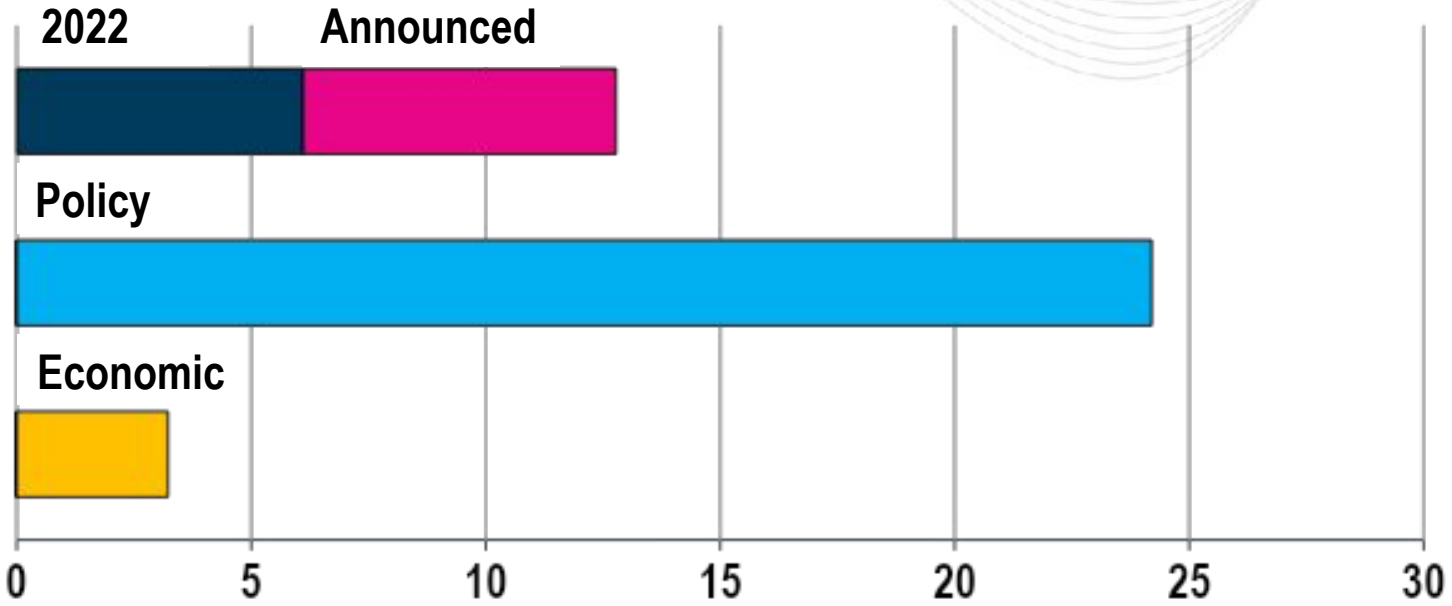
(Jan. 2023 – Dec. 2023)

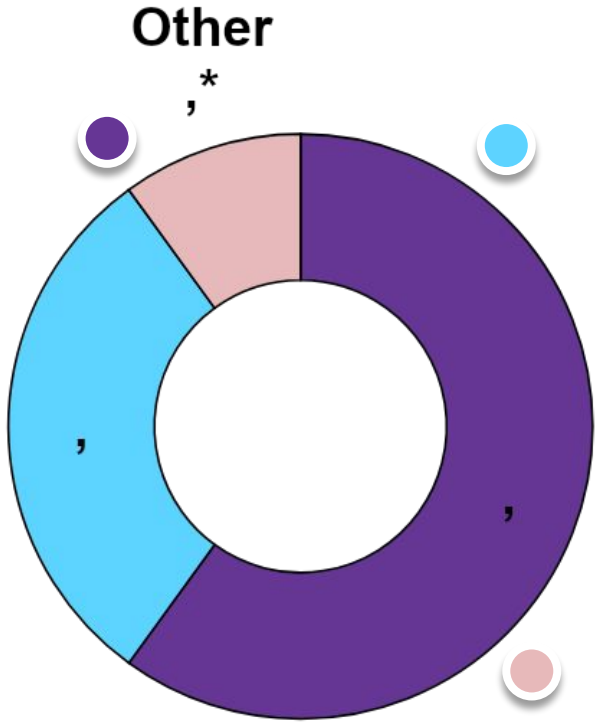


Positive values represent exports and negative values represent imports.

Forecasted Retirements (2022–2030)

Total Forecasted Retirement Capacity (GW)





This **40 GW** represents
21% of PJM's current
192 GW of installed generation

**Other includes diesel, etc.*

Federal EPA Rules Within Forecasted 4R Analysis

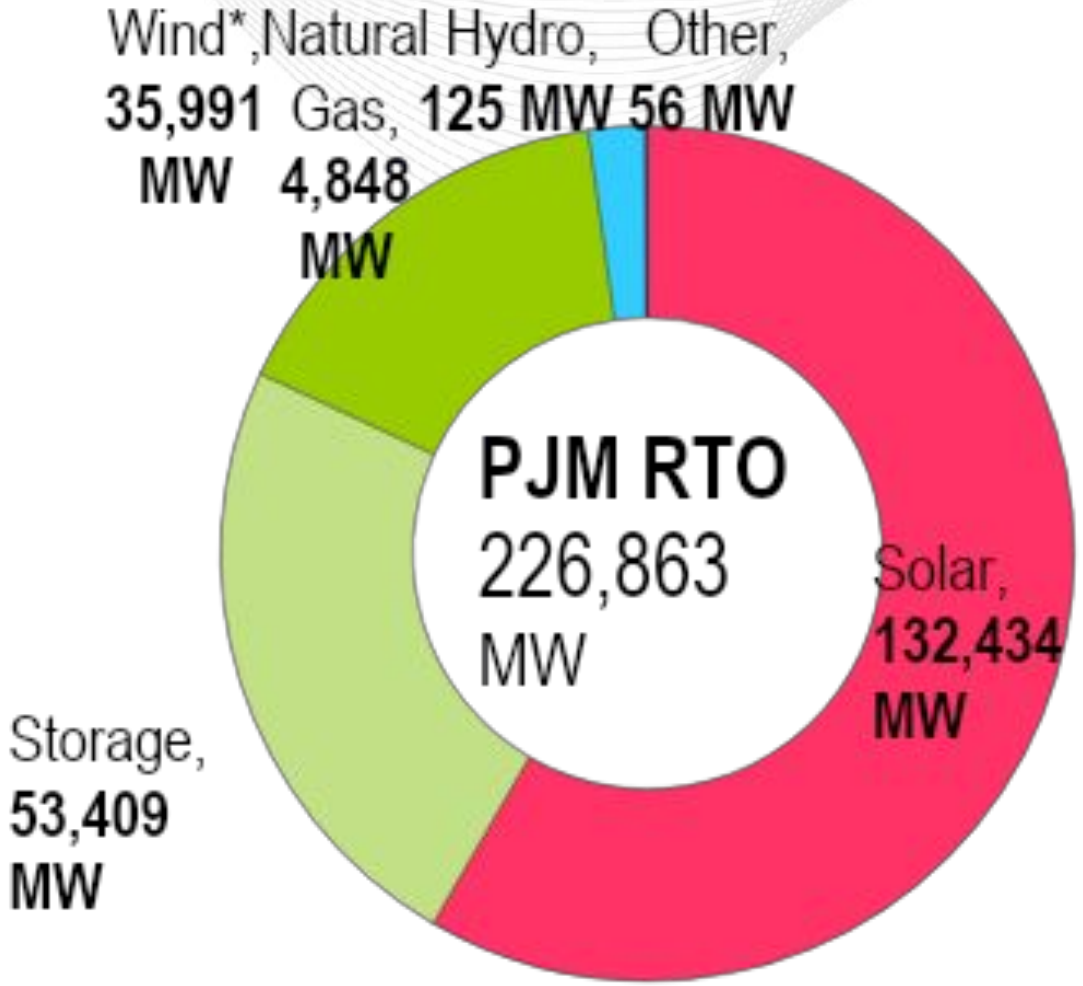
Federal EPA Rule	
Cross-State Air Pollution Rule	**~10,500 MW (active units not yet announced retirement forecasted to do so)**
Coal Combustion Residuals	
Effluent Limitation Guidelines	

Federal EPA Rule	
Clean Power Plan 2.0*	Rules will put significant economic pressure on the remaining coal fleet to accept EPA's option of retiring by January 1, 2032 rather than co-firing with 40% natural gas by 2030 or capturing 90% of their carbon by 2032. New natural gas will have capacity factor limited to 40%

*** Rule currently being litigated.**

PJM Queued Capacity (Nameplate) by Fuel Type

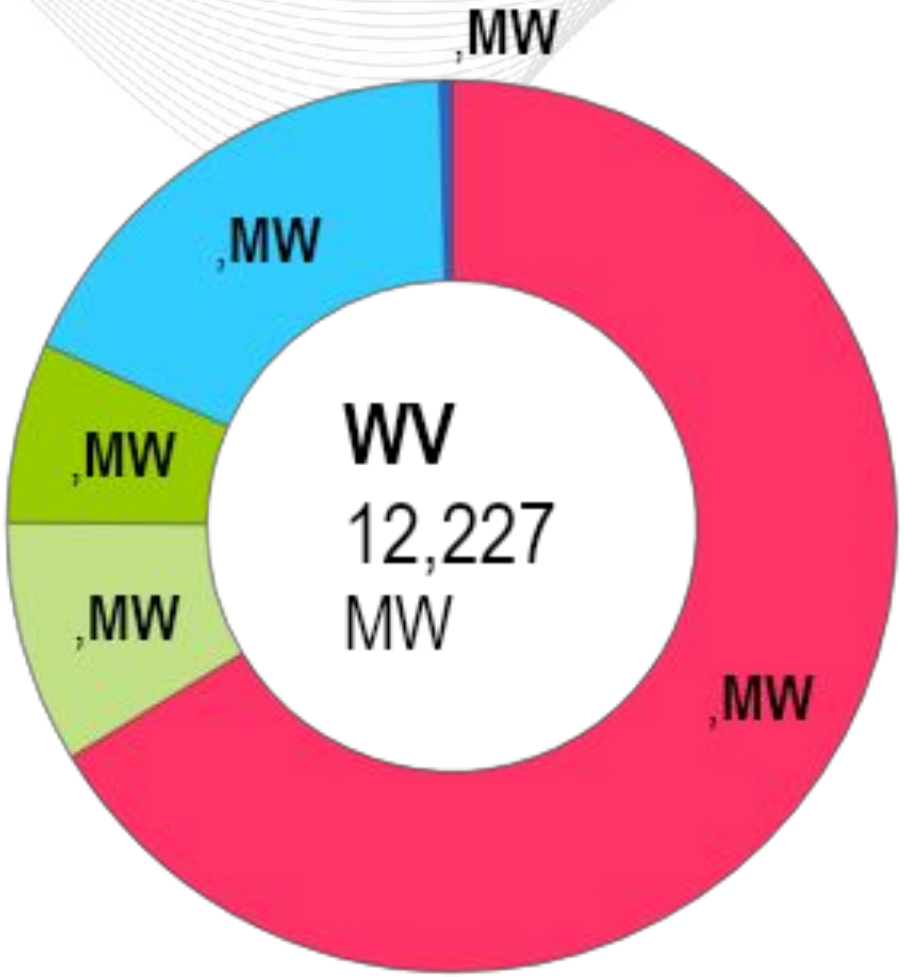
("Active" in the PJM Queue as of April 1, 2024)



*Wind includes both onshore and offshore wind

West Virginia Queued Capacity (Nameplate) by Fuel Type

("Active" in the PJM Queue as of April 1, 2024)



ELCC Ratings: *What can you do for reliability?*

The following table provides the ELCC Class Ratings applicable to the 2025/2026 Base Residual Auction (BRA) as calculated under the methodology approved by FERC on January 30th, 2024 in FERC Docket No. ER24-99

	2025/2026 BRA ELCC Class Ratings
Onshore Wind	35%
Offshore Wind	60%
Fixed-Tilt Solar	9%
Tracking Solar	14%
Landfill Intermittent	54%
Hydro Intermittent	37%
4-hr Storage	59%
6-hr Storage	67%
8-hr Storage	68%
10-hr Storage	78%
Demand Resource	76%
Nuclear	95%
Coal	84%
Gas Combined Cycle	79%
Gas Combustion Turbine	62%
Gas Combustion Turbine Dual Fuel	79%
Diesel Utility	92%
Steam	75%

Ensuring a Reliable Energy Transition

Policy Takeaways

Avoid policies meant to push generation resources off of the system until an adequate quantity of replacement generation is online and has been shown to be operating

Analyze your state/local challenges in the deployment of new generation resources and electricity infrastructure, and enact policy to facilitate greater/quicker construction

PJM is a resource to assist in your policy discussions