



# 2023 West Virginia State Infrastructure Report (January 1, 2023 – December 31, 2023)

June 2024

## Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

## Markets

- Market Analysis
- Net Energy Import/Export Trend

## Operations

- Generator Production
- Emissions Data

## In the West Virginia service territory:



### Existing Capacity:

- In West Virginia, coal represents approximately 89% of the total installed capacity while gas represents approximately 8%.
- In PJM, natural gas and coal are 48% and 22% of total installed capacity, while nuclear represents 18%.



### Interconnection Requests:

- Solar represents 66% of new interconnection requests while natural gas represents 18% of new requests.



### Deactivations:

No generation in West Virginia deactivated or gave notice of deactivation in 2023.



### RTEP 2023:

West Virginia's 2023 RTEP project total represents ~\$289 million in investment.

## In the West Virginia service territory:



### Load Forecast:

West Virginia's summer peak load is projected to increase by 0.2% to 0.3% annually over the next ten years, while the winter peak is projected to increase by 0.2% to 0.3%, depending on the transmission zone.



### Capacity Market:

No Base Residual Auction was conducted in 2023. For the most recent auction results please see the 2022 West Virginia State Infrastructure Report.



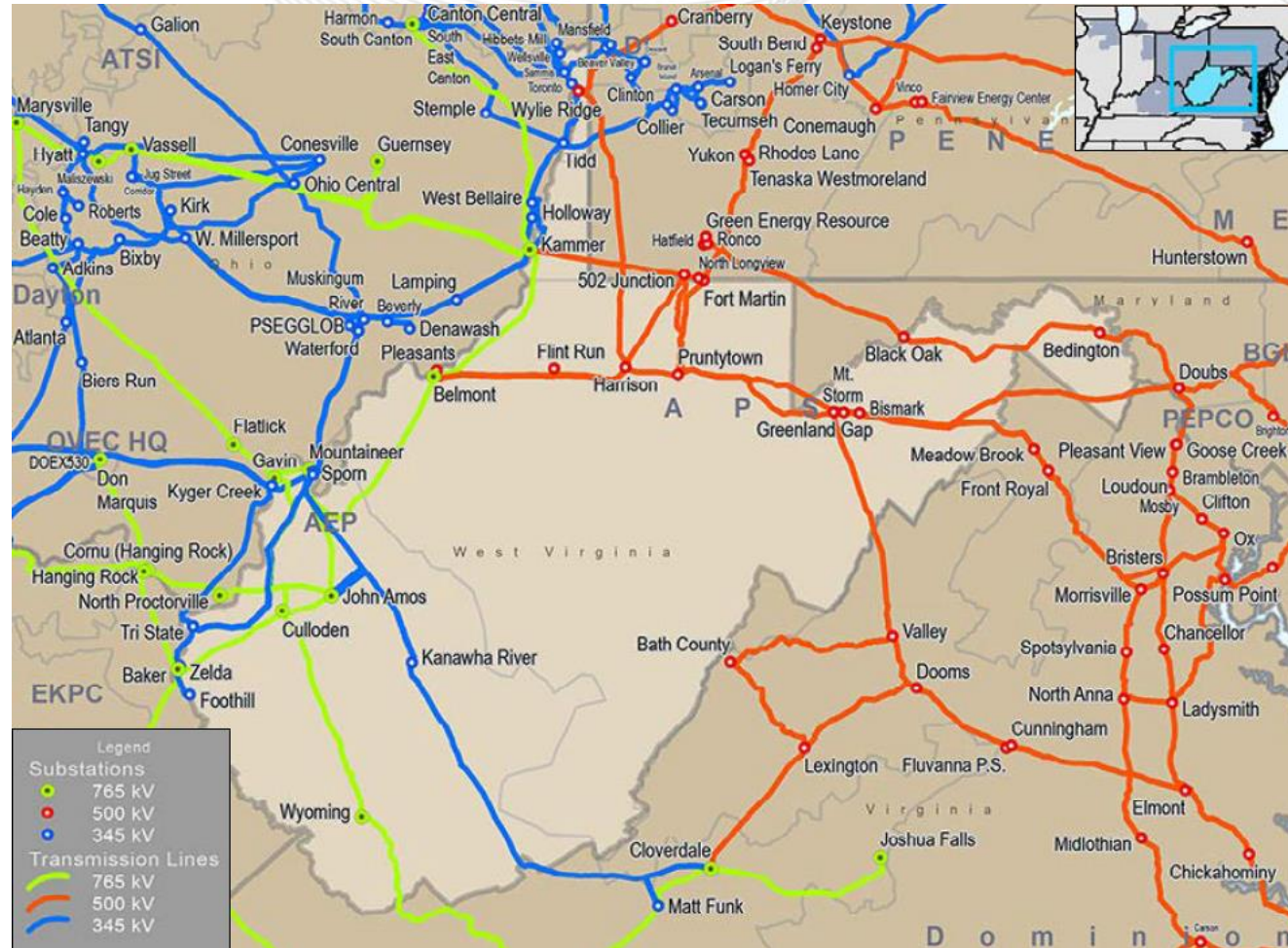
### Market Performance:

West Virginia's average hourly LMPs aligned with the PJM average hourly LMP.



### Emissions:

West Virginia's average CO<sub>2</sub> emissions decreased in 2023 compared to 2022 levels.

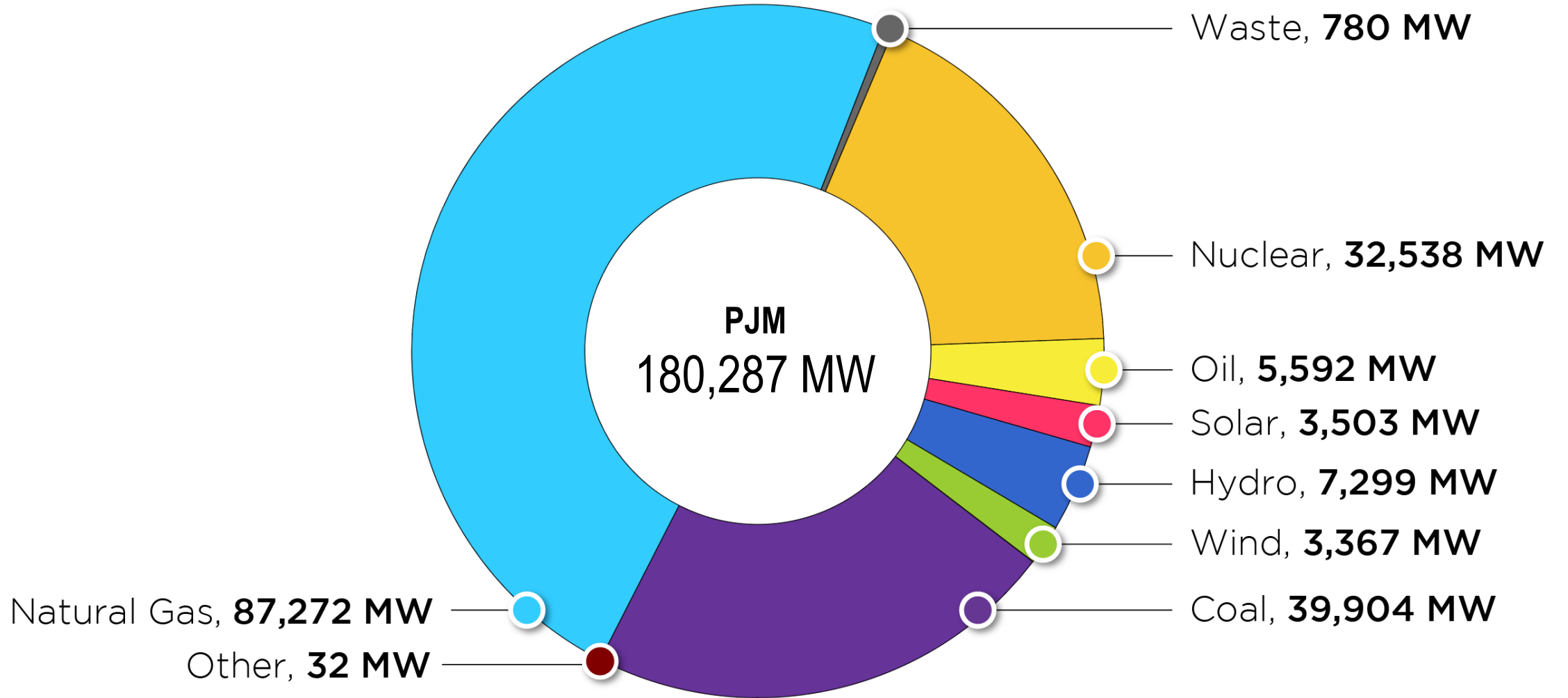


# Planning

## Generation Portfolio Analysis

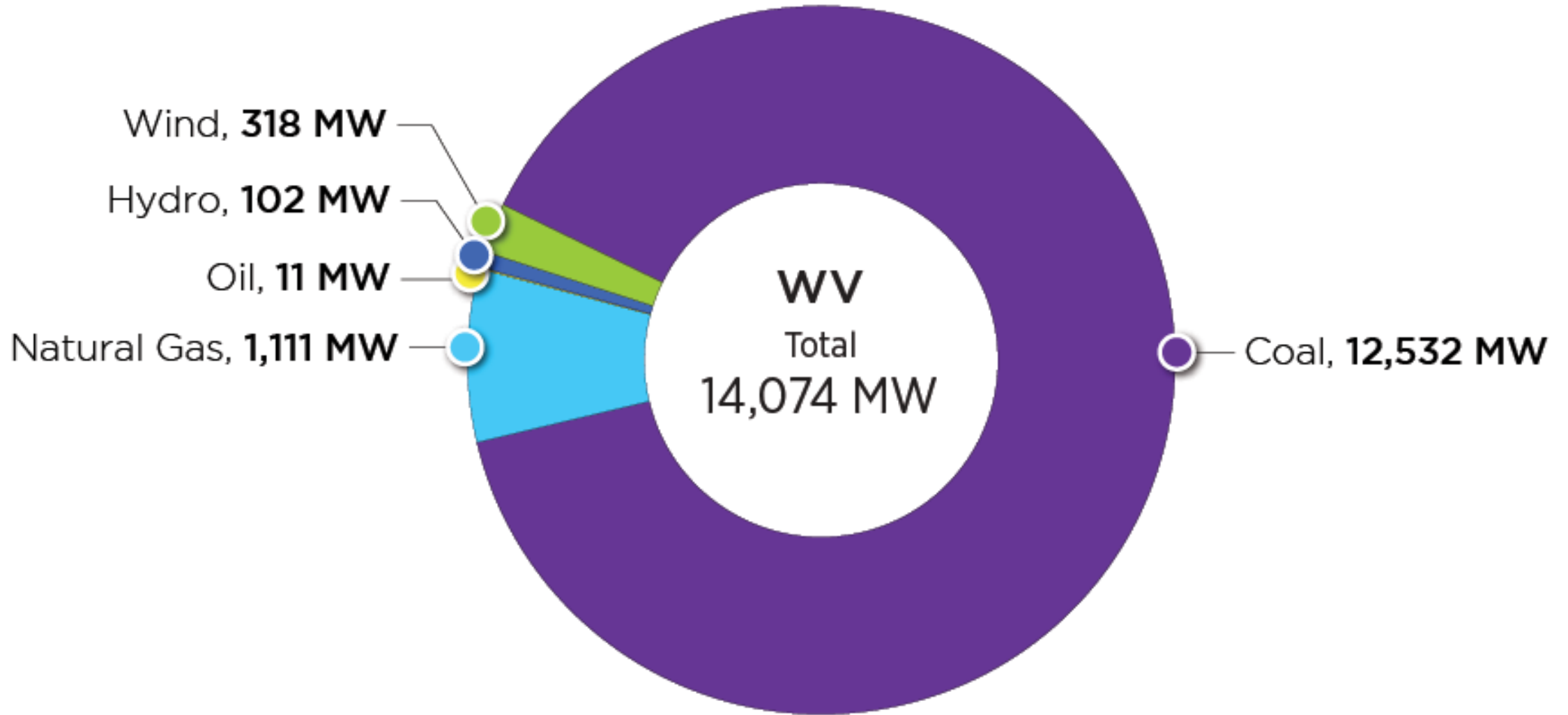
# PJM Existing Installed Capacity Mix

(CIRs – as of Dec. 31, 2023)



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

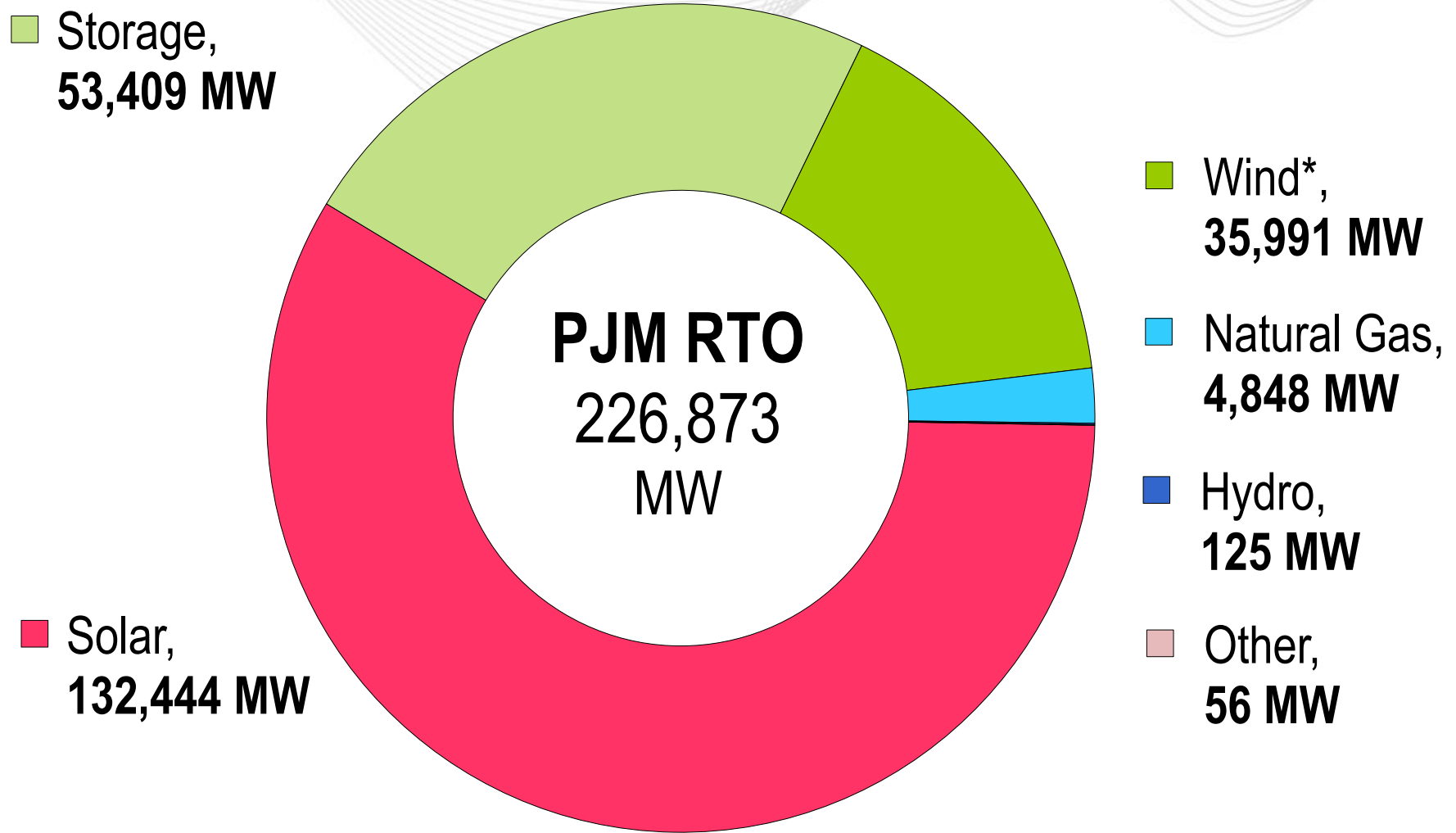
(as of Dec. 31, 2023)





# PJM Queued Capacity (Nameplate) by Fuel Type

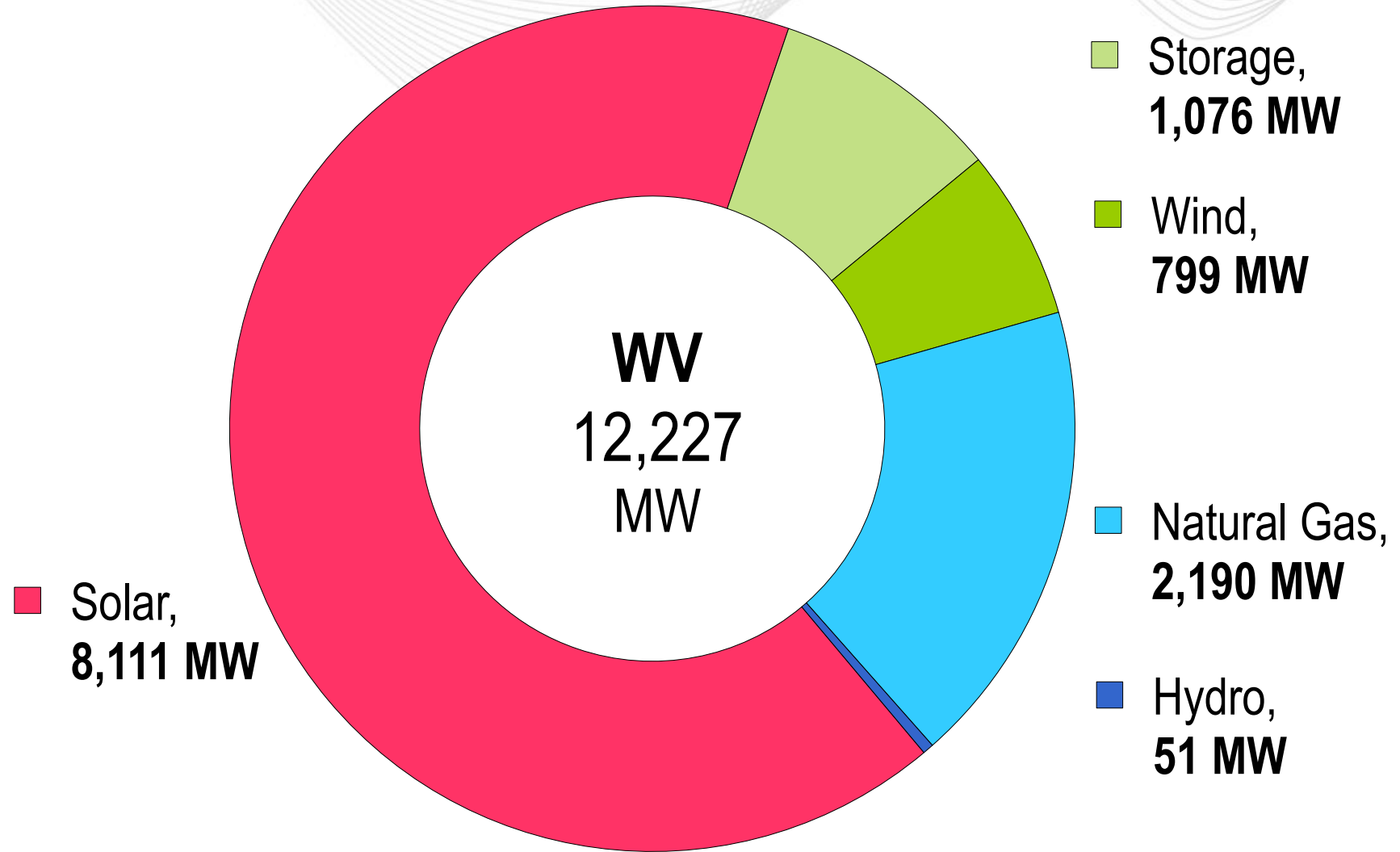
("Active" in the PJM Queue as of April 1, 2024)



\*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)





# West Virginia – 2023 Generator Deactivations

West Virginia had no generators deactivate or give a notice of deactivation in 2023.

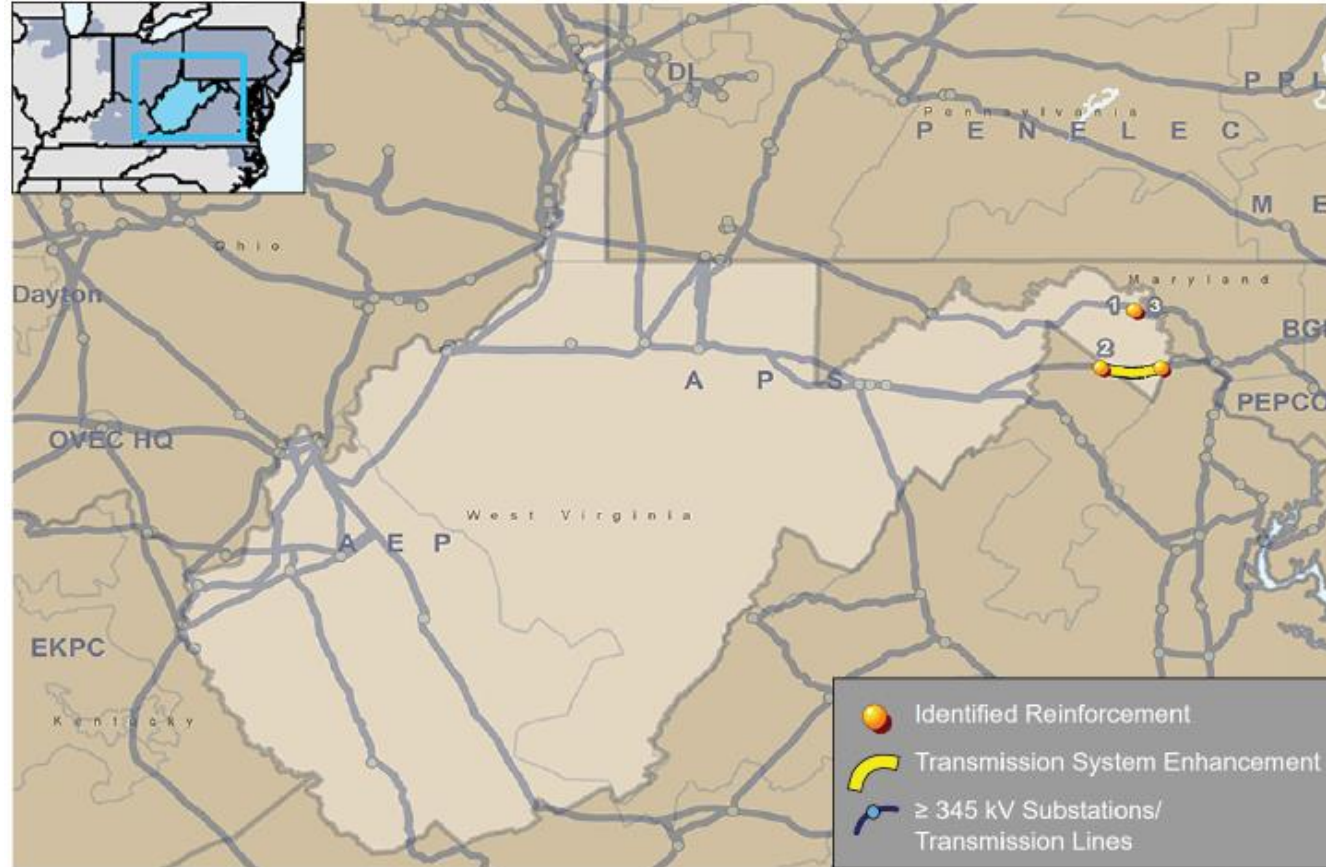
# Planning

## Transmission Infrastructure Analysis

For reporting purposes, the 2023 state infrastructure reports provide maps displaying all baseline, network, and supplemental projects for the respective state. The reports also include aggregated project costs for each type of project within each state. The costs listed in the state infrastructure reports and 2023 Annual RTEP Report are not indicative of each project's cost allocation.

For a detailed list of each project shown on a state's project map, please see that state's section in the **2023 Annual RTEP Report** on PJM.com: <https://pjm.com/-/media/library/reports-notice/2023-rtep/2023-rtep-report.ashx>.

The complete list of all RTEP projects in PJM, including those from prior years, can be found at the **RTEP Upgrades & Status – Transmission Construction Status** page on PJM.com: <https://www.pjm.com/planning/m/project-construction>.

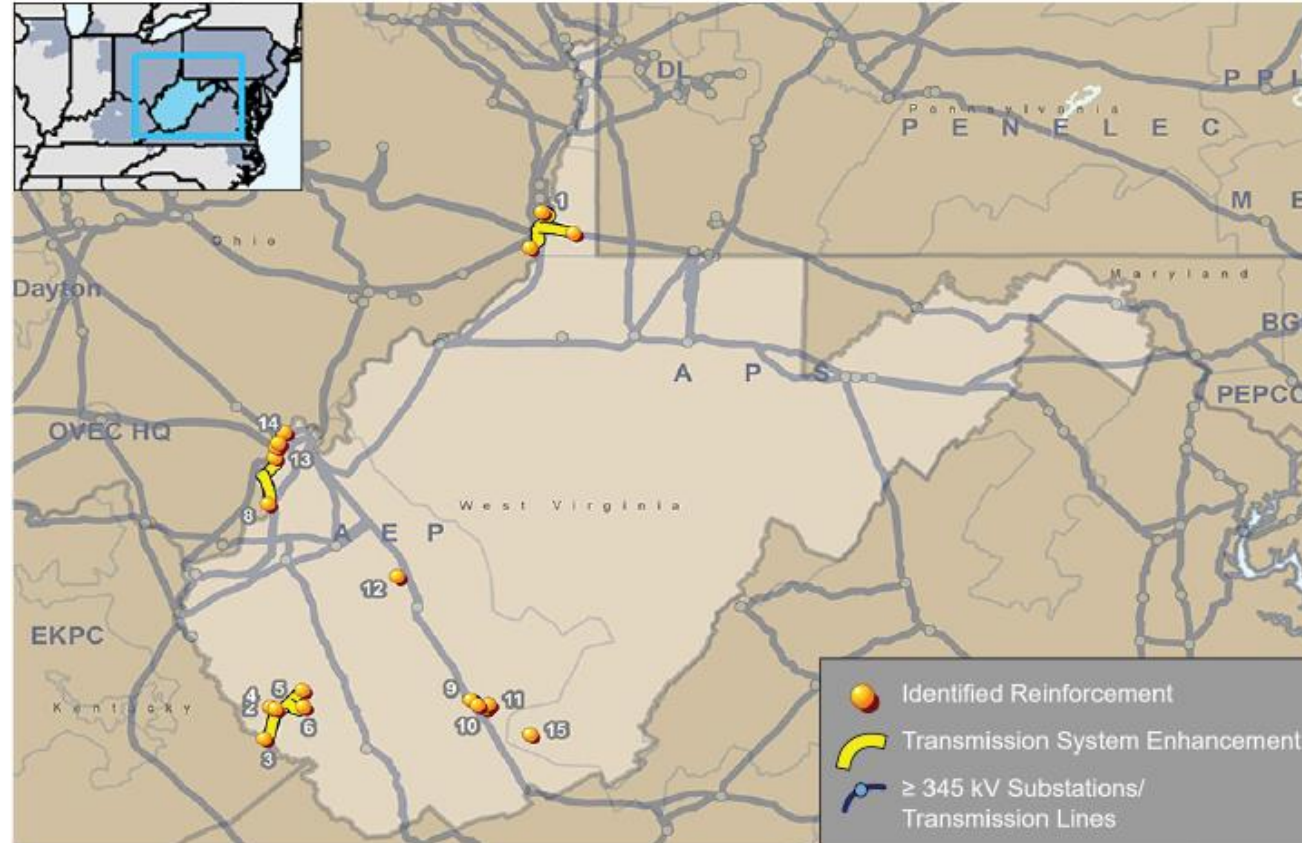


The 2023 RTEP has \$143.69 million in baseline projects located in West Virginia.

Note: Baseline upgrades are those that resolve a system reliability criteria violation. Baseline projects listed in the annual RTEP report reflect project costs within a specific location and are not indicative of the project's cost allocation.

West Virginia had no network projects in 2023.

Note: Network projects are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission or long-term firm transmission service requests, as well as certain direct connection facilities required to interconnect proposed generation projects. The costs of network projects are borne by the interconnection customer.



The 2023 RTEP has \$145.34 million in supplemental projects located in West Virginia.

Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic efficiency or operational performance criteria, as determined by PJM.



# Planning

## Load Forecast



# PJM Electricity Demand Growth

Load (MW)

195,000

185,000

175,000

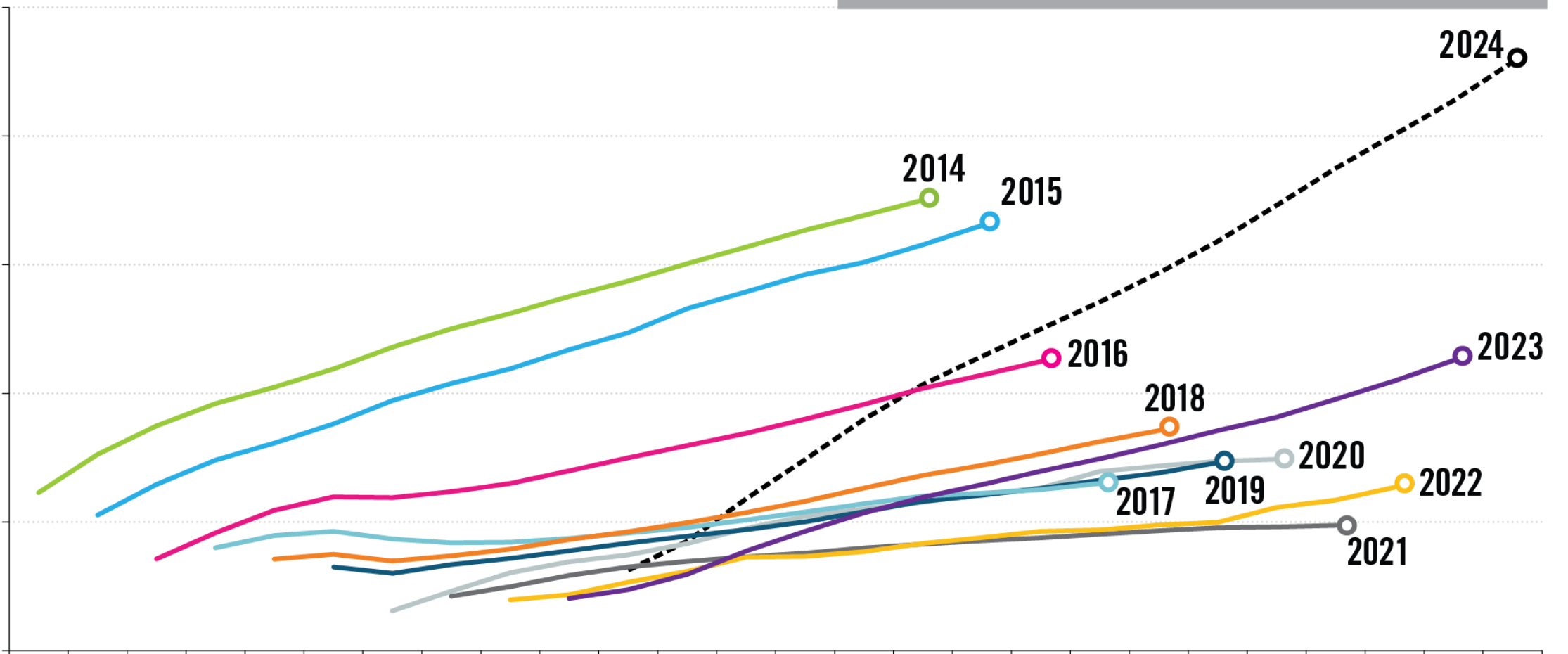
165,000

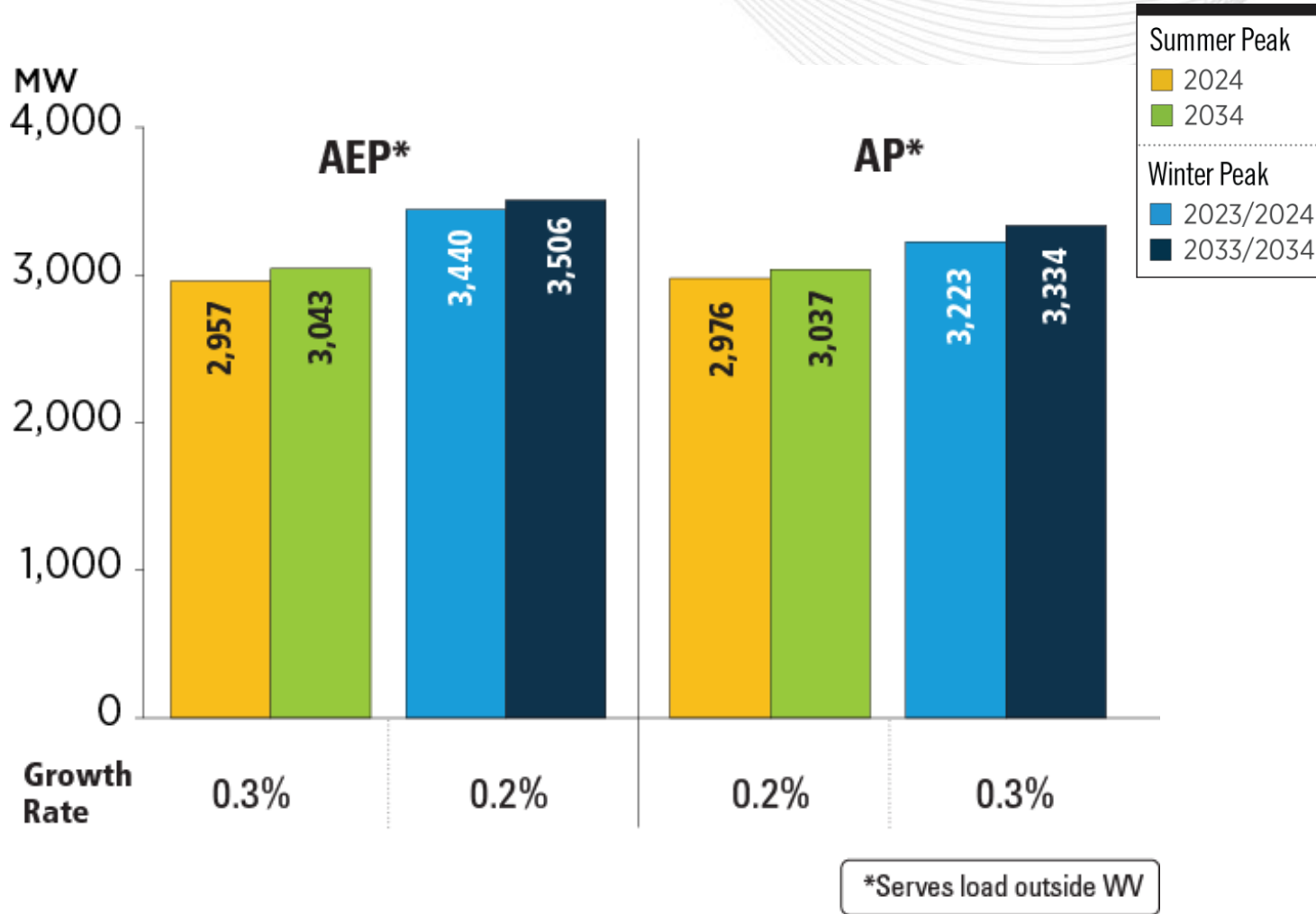
155,000

145,000

PJM RTO Summer Peak Demand Forecast

2015 2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039





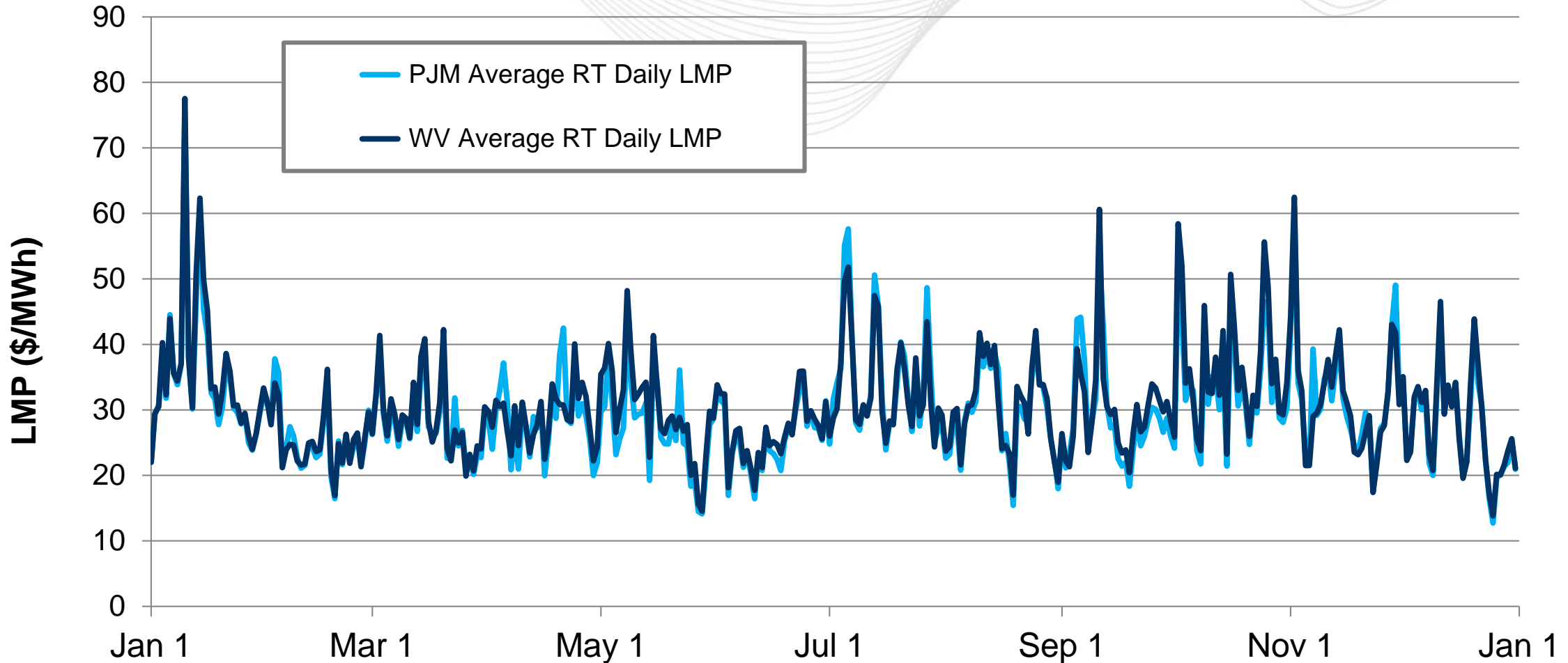
PJM RTO Summer Peak		PJM RTO Winter Peak	
2024	2034	2023/2024	2033/2034
151,247	176,822	134,659	163,069
MW	MW	MW	MW
Growth Rate 1.6%		Growth Rate 1.9%	

\* 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.

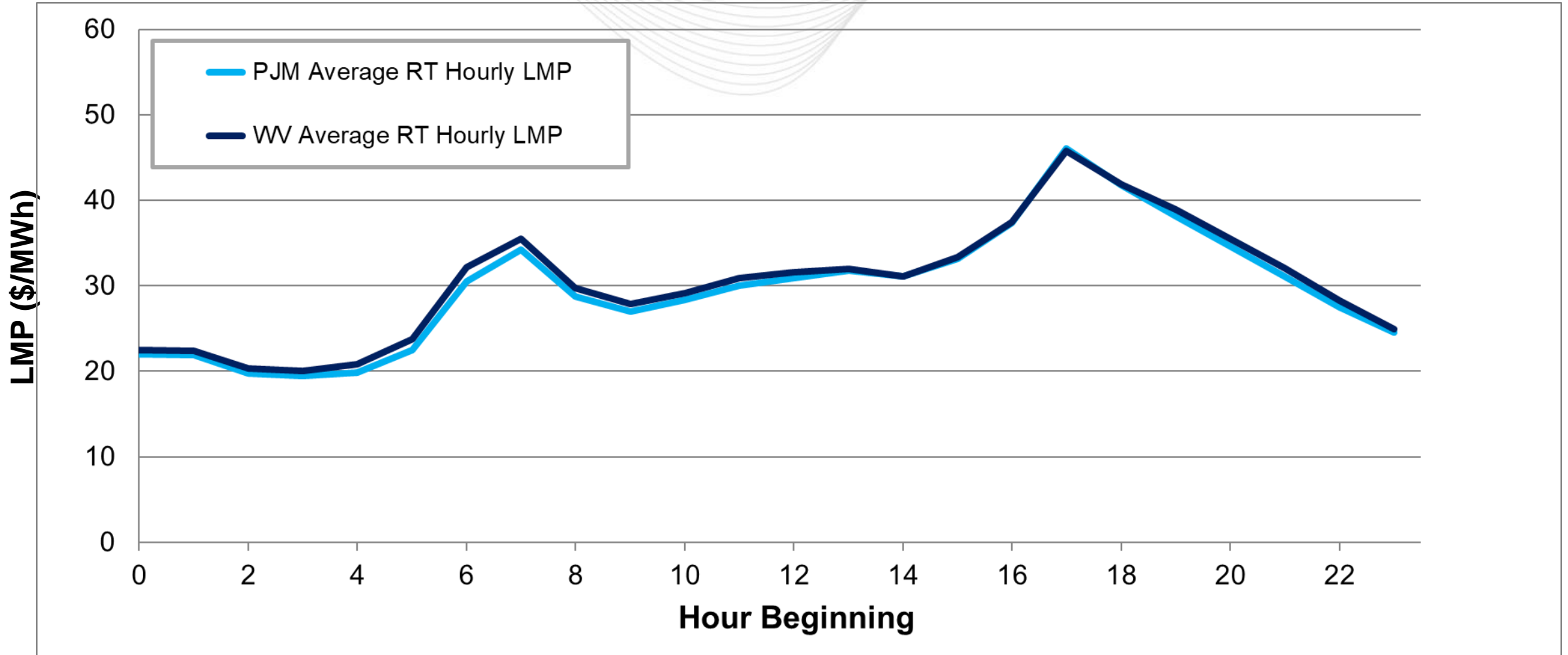


# Markets

## Market Analysis

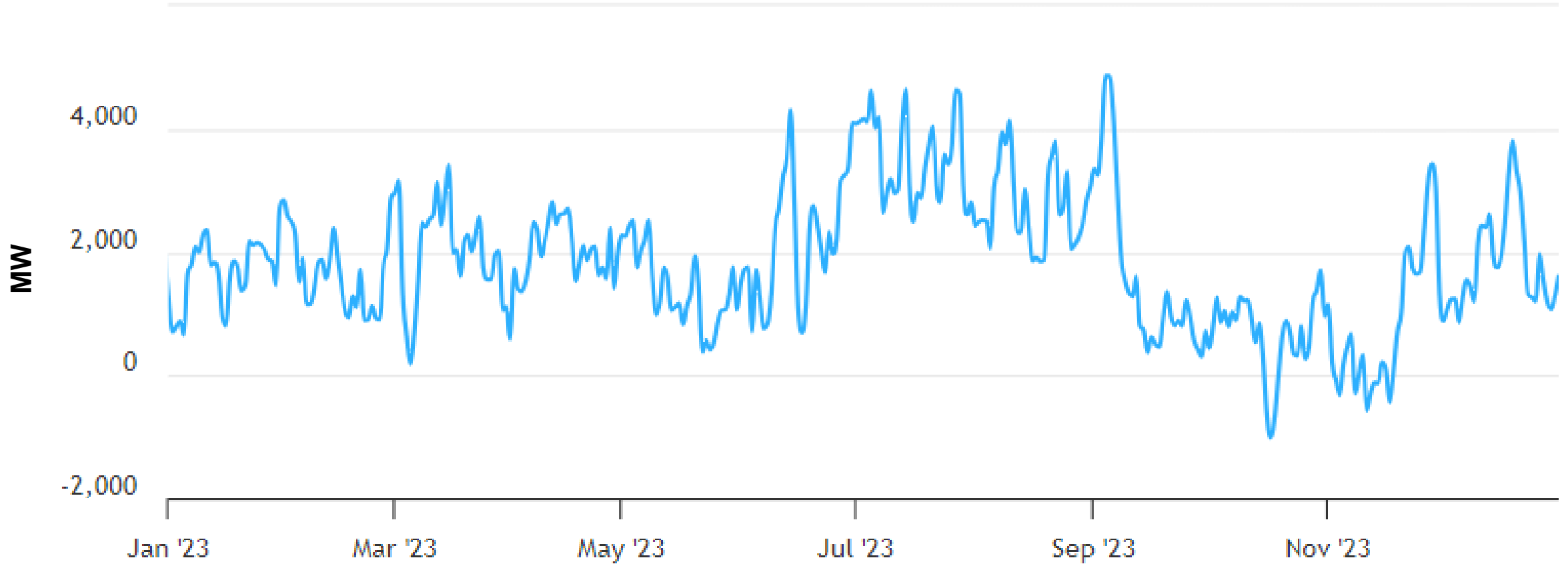


West Virginia's average hourly LMPs were consistent with the PJM average hourly LMP.



# West Virginia – Net Energy Import/Export Trend

(Jan. 2023 – Dec. 2023)

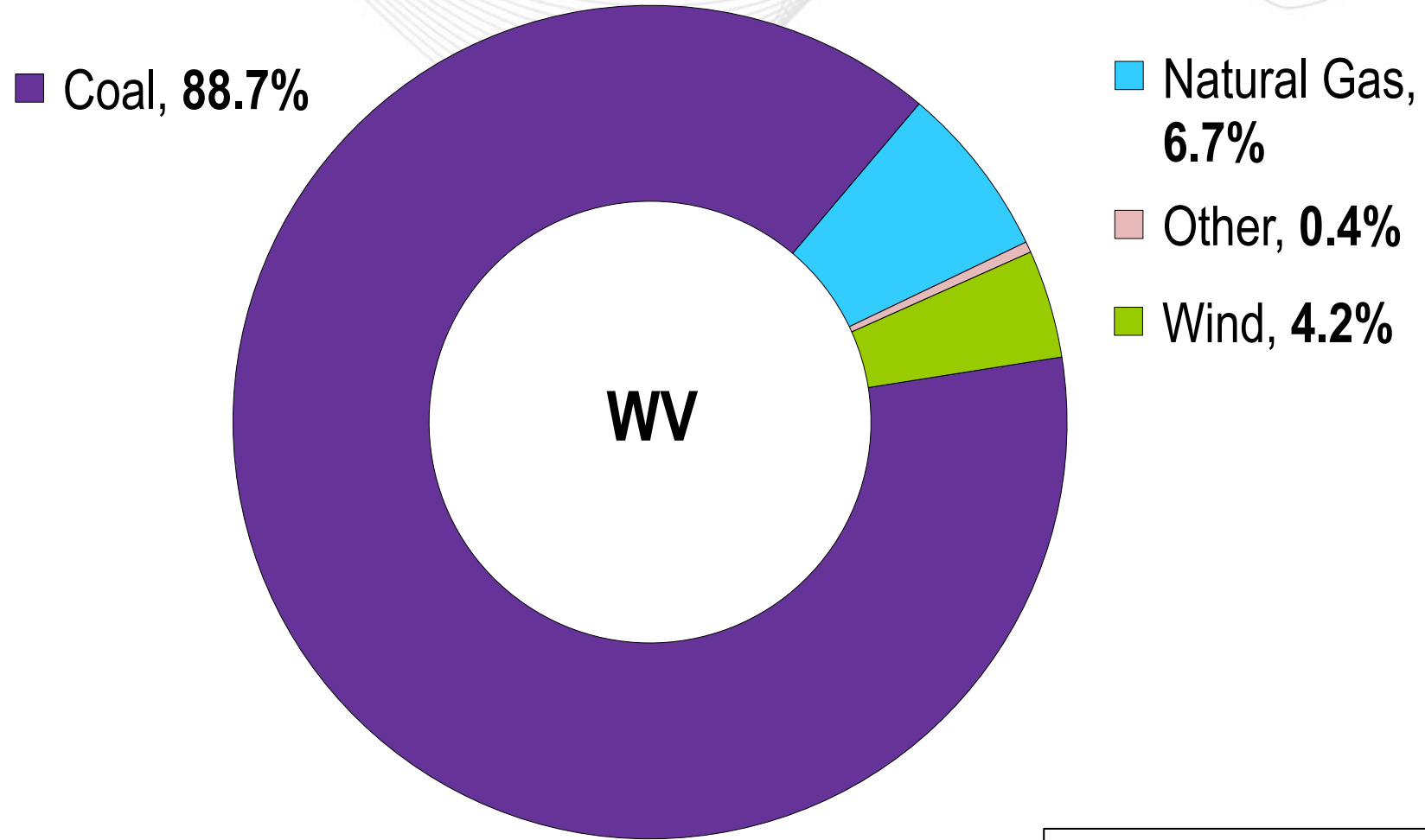


Positive values represent exports and negative values represent imports.

# Operations



# West Virginia – 2023 Generator Production



The data in this chart comes from EIA Form 923 (2023).

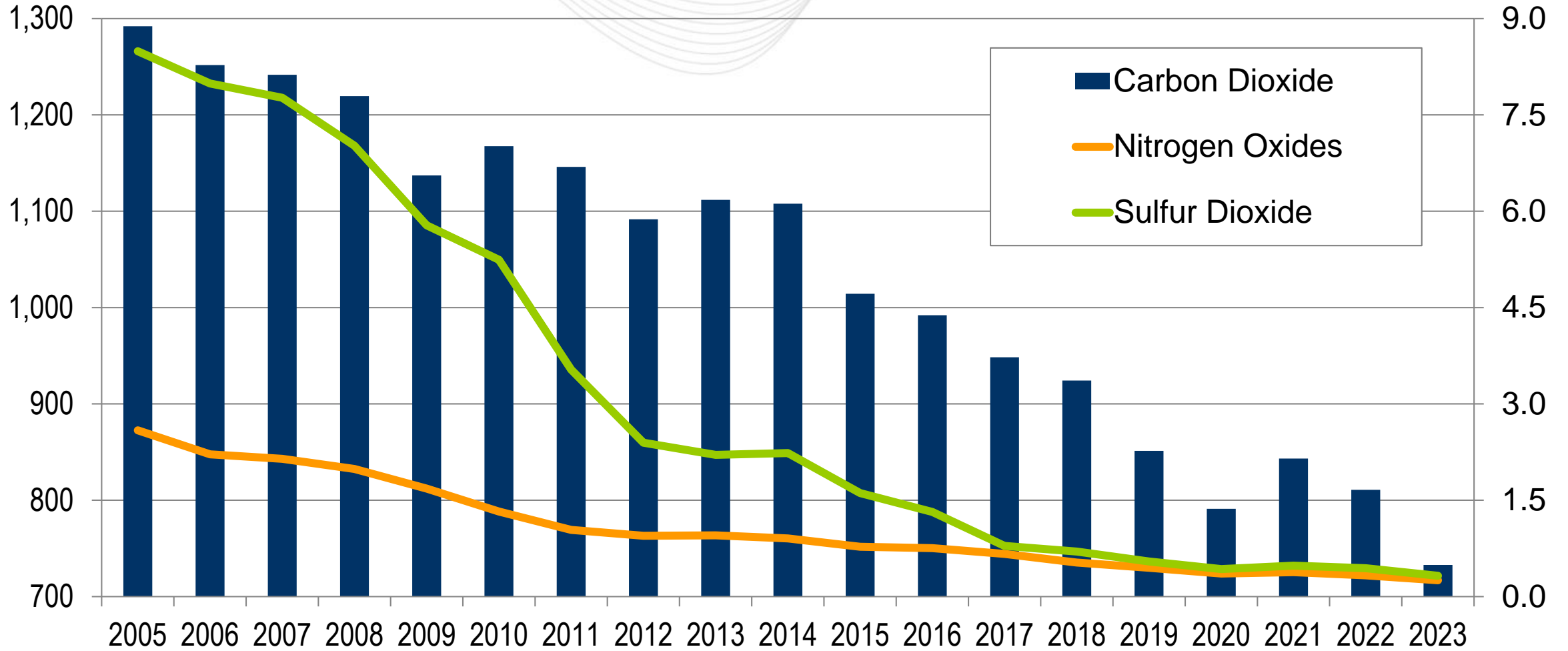


# 2005–2023 PJM Average Emissions

(March 2024)

**CO<sub>2</sub>**  
(lbs/MWh)

**SO<sub>2</sub> and NO<sub>x</sub>**  
(lbs/MWh)





# West Virginia – Average Emissions (lbs/MWh)

(March 2024)

CO<sub>2</sub>  
(lbs/MWh)

SO<sub>2</sub> and NO<sub>x</sub>  
(lbs/MWh)

