



2022 West Virginia Infrastructure Report

(January 1, 2022 – December 31, 2022)

May 2023

1. Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

2. Markets

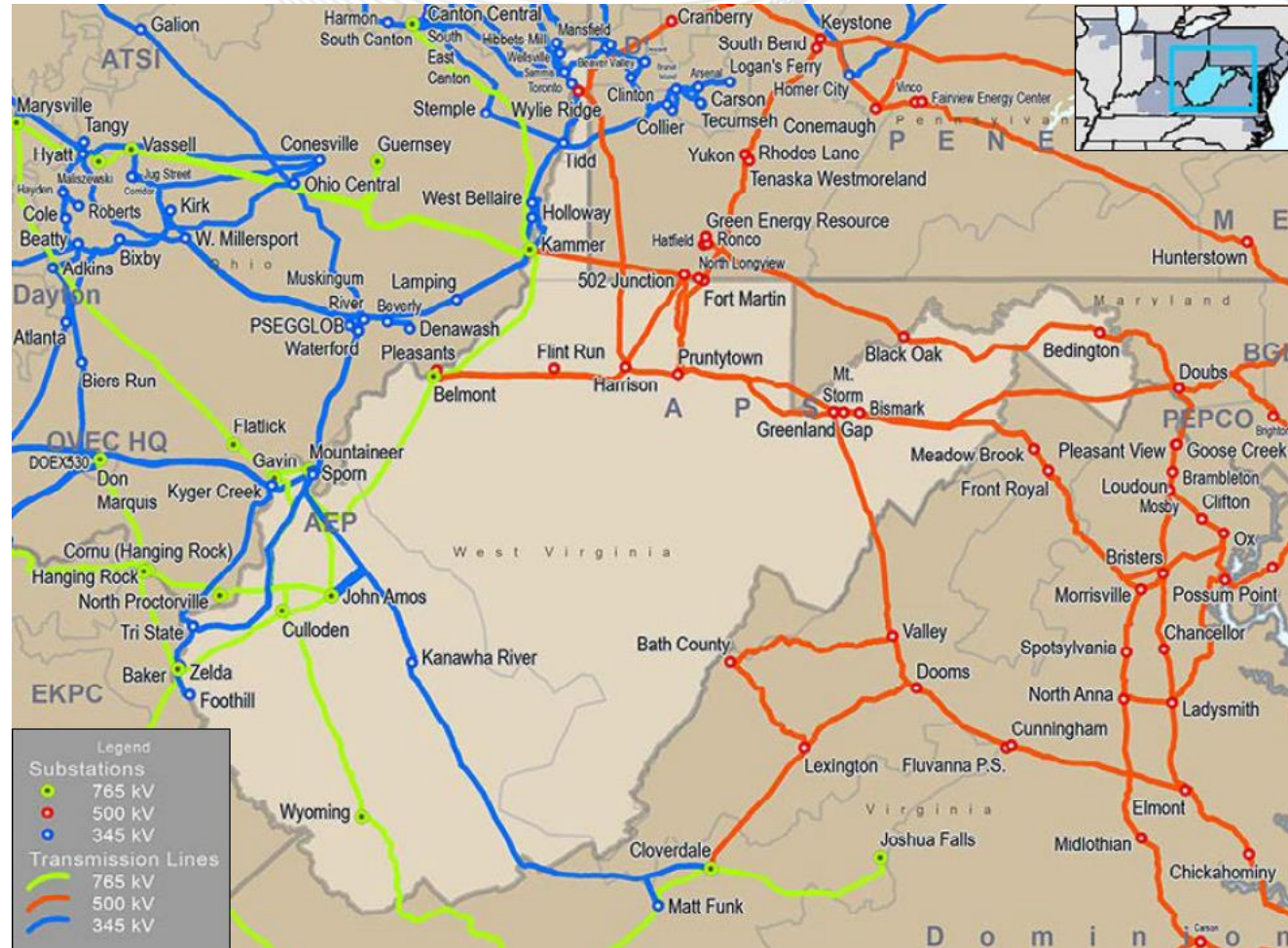
- Capacity Market Results
- Market Analysis
- Net Energy Import/Export Trend

3. Operations

- Generator Production
- Emissions Data

- **Existing Capacity:** Coal represents approximately 88.4 percent of the total installed capacity in the West Virginia service territory while natural gas represents approximately 7.8 percent. Across PJM, natural gas and coal account respectively for 46.6 and 24.0 percent of total installed capacity, respectively.
- **Interconnection Requests:** Solar represents 66.2 percent of new interconnection requests in West Virginia, while natural gas represents approximately 18.0 percent of new requests.
- **Deactivations:** 1,278 MW of generation in West Virginia gave a notice of deactivation in 2022.
- **RTEP 2022:** West Virginia's 2022 RTEP project total represents approximately \$358.83 million in investment.

- **Load Forecast:** West Virginia's summer peak load is projected to increase by 0.1 to 0.8 percent annually over the next ten years, while the winter peak is projected to increase by 0.2 to 1.1 percent, depending on the transmission zone.
- **2023/24 Capacity Market:** West Virginia's service territory cleared at the RTO price of \$34.13/MW-day in the 2023/2024 Base Residual Auction.
- **2024/25 Capacity Market:** West Virginia's service territory cleared at the RTO price of \$28.92/MW-day in the 2024/2025 Base Residual Auction.
- **1/1/22 – 12/31/22 Market Performance:** West Virginia's average hourly LMPs aligned with the PJM average hourly LMP.
- **Emissions:** West Virginia's average CO₂ emissions decreased in 2022 compared to 2021 levels.

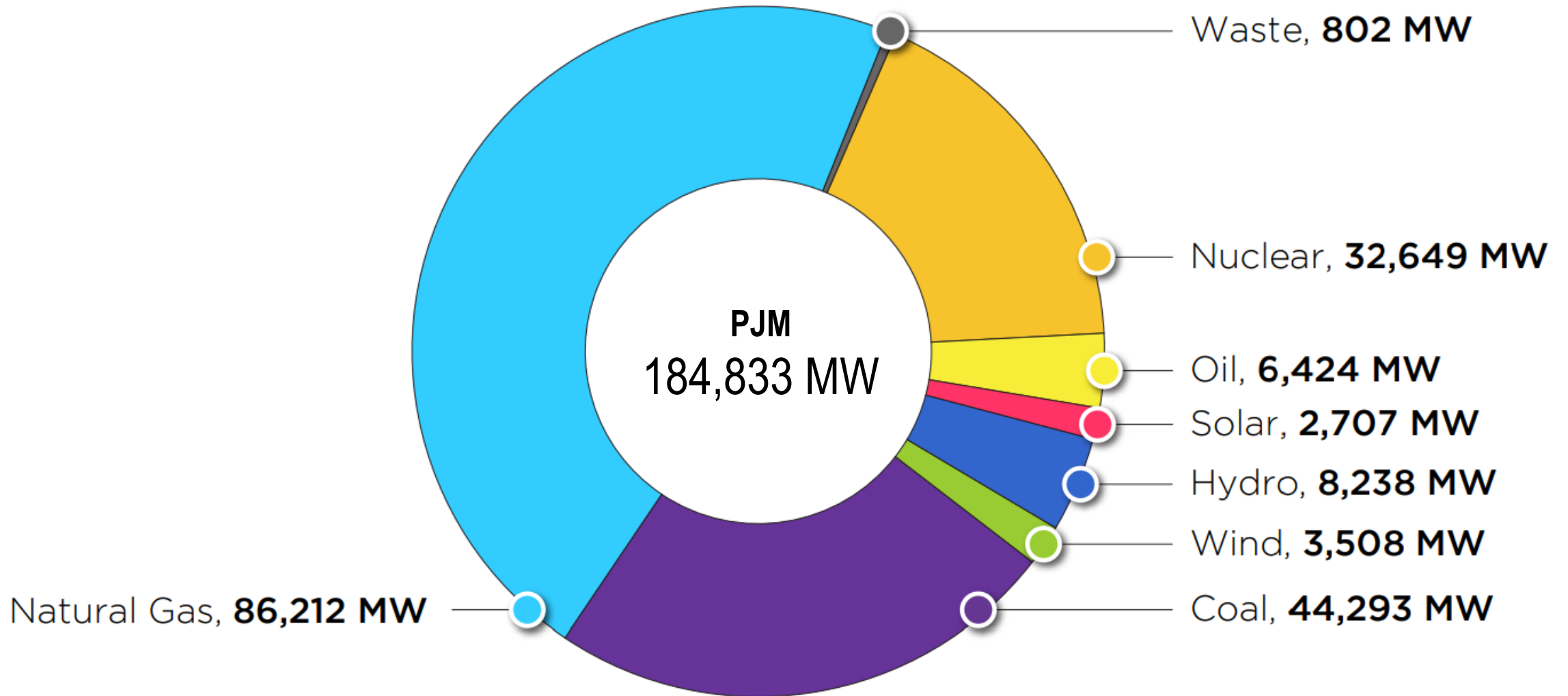


Planning

Generation Portfolio Analysis

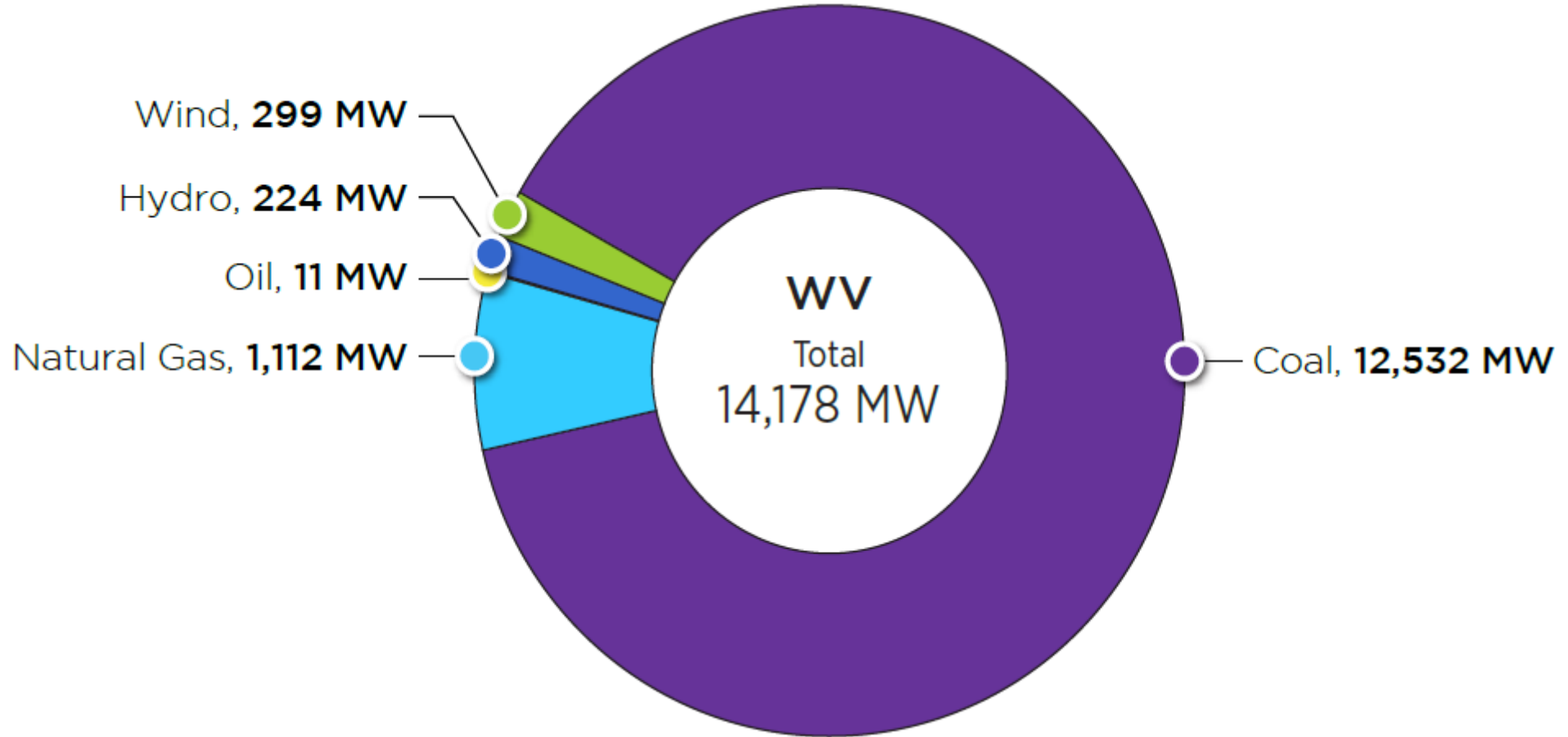
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



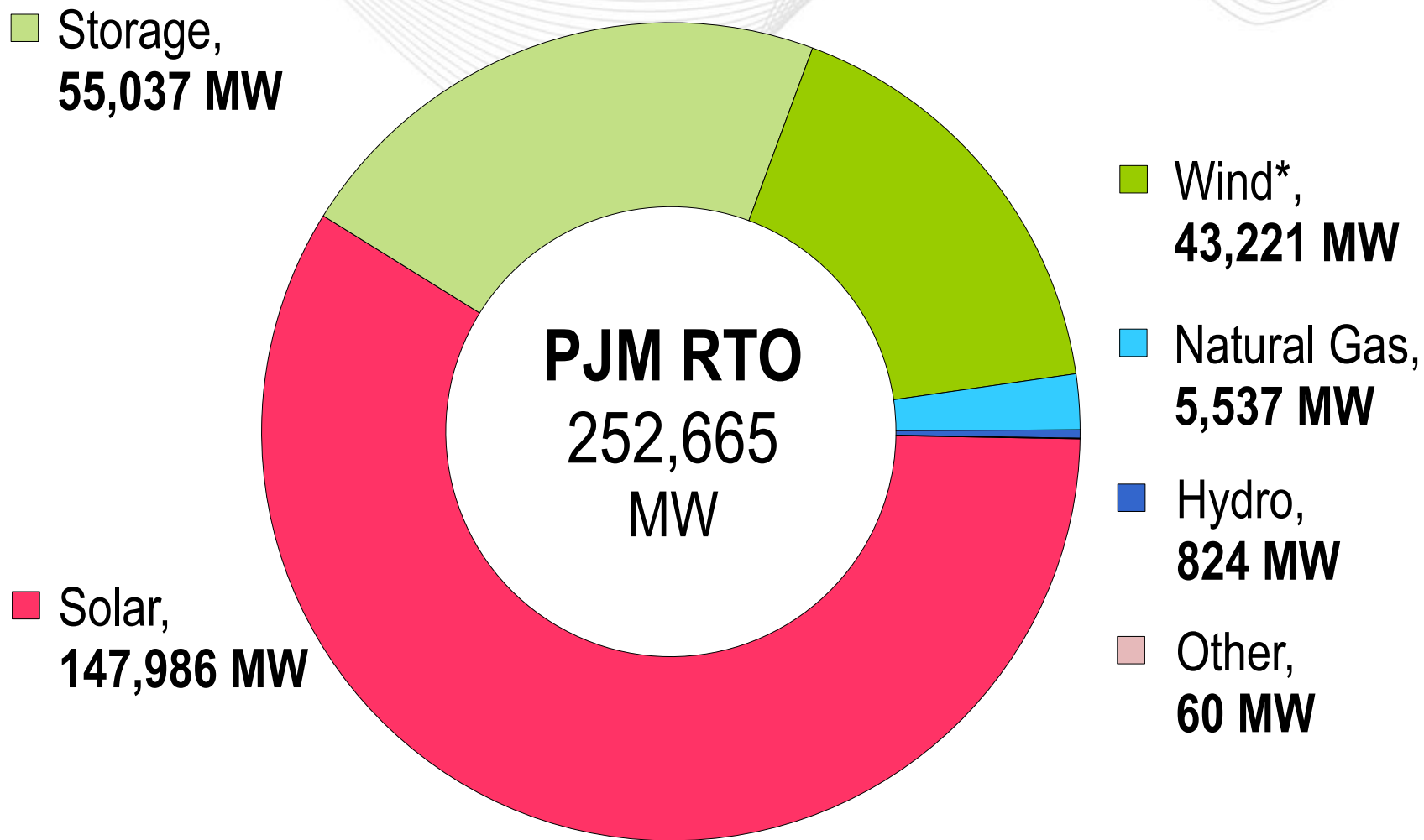
West Virginia – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



PJM Queued Capacity (Nameplate) by Fuel Type

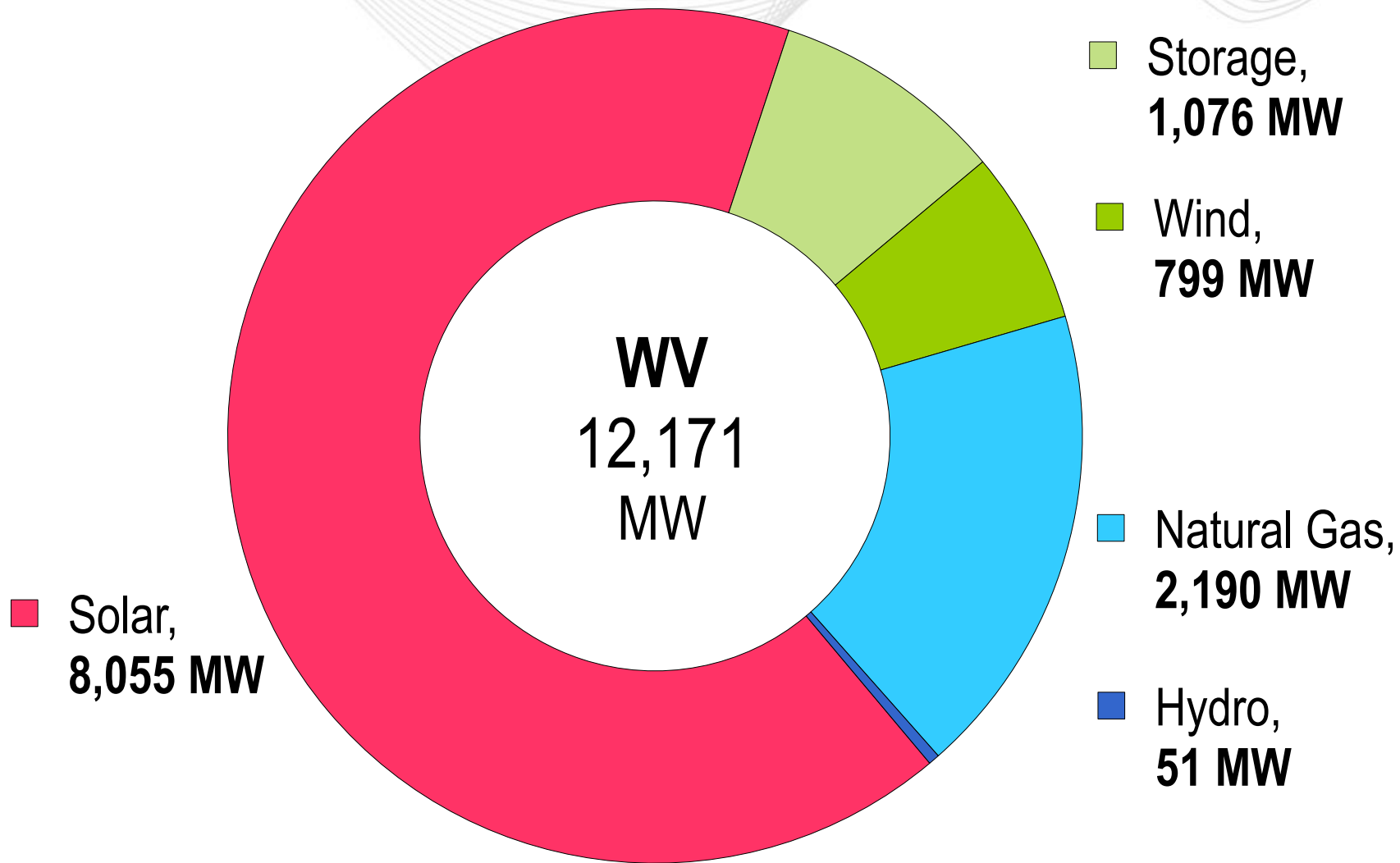
("Active" in the PJM Queue as of April 1, 2023)



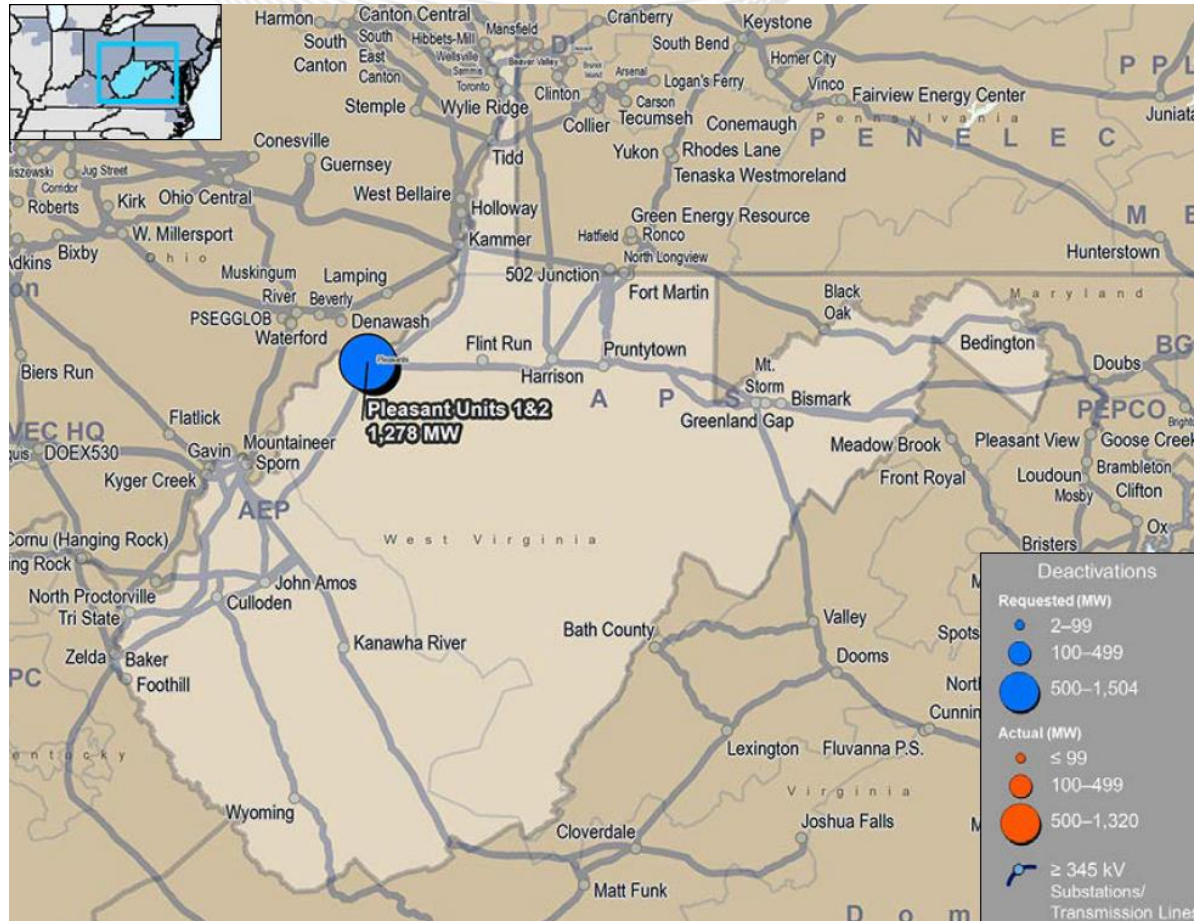
*Wind includes both onshore and offshore wind

West Virginia Queued Capacity (Nameplate) by Fuel Type

("Active" in the PJM Queue as of April 1, 2023)



West Virginia – 2022 Generator Deactivations



Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Pleasant Unit2	AP	Coal	3/14/2022	6/1/2023	42	639.0
Pleasant Unit 1						639.0

Planning

Transmission Infrastructure Analysis

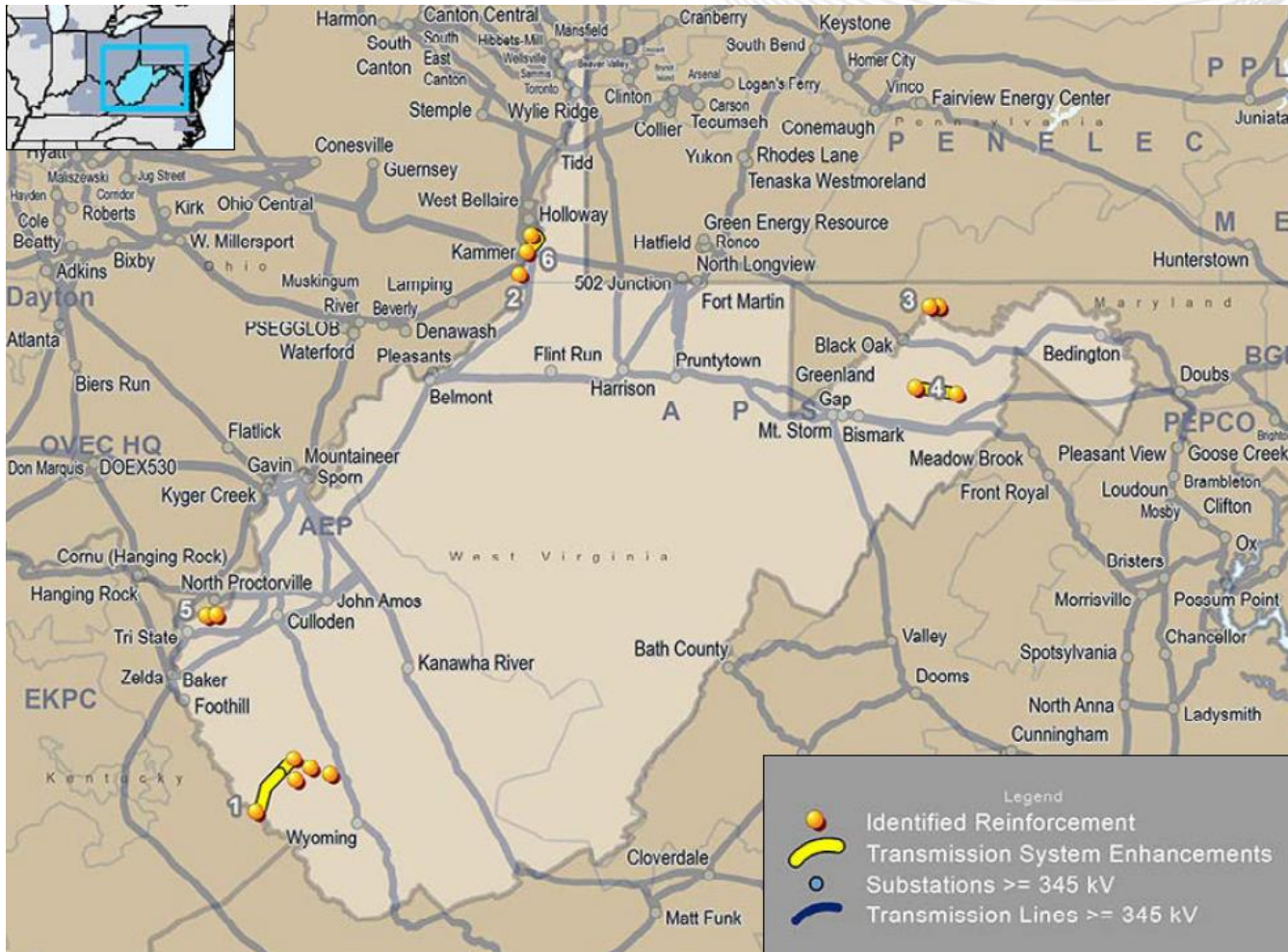


For reporting purposes, the 2022 state infrastructure reports provide maps displaying all baseline, network, and supplemental projects for the respective state. The reports also include aggregated project cost tables of these projects by Transmission Owner zone. For a detailed list of each project shown on a state's project map, please see that state's section in the **2022 Annual RTEP Report** on pjm.com:

<https://www.pjm.com/-/media/library/reports-notices/2022-rtep/2022-rtep-report.ashx>

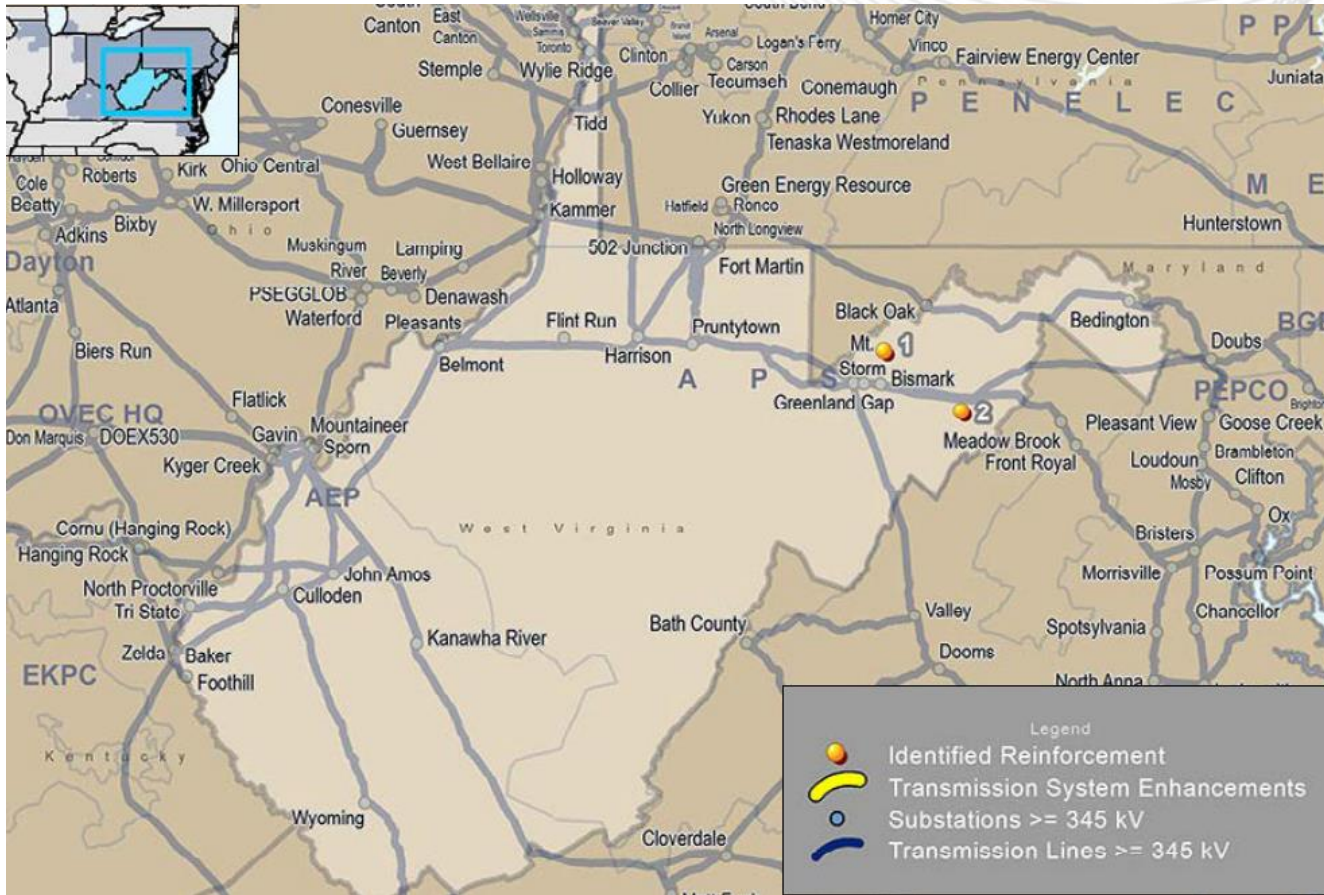
The complete list of all RTEP projects in PJM, including those from prior years, can be found at the **RTEP Upgrades & Status – Transmission Construction Status** page on pjm.com:

<https://www.pjm.com/planning/project-construction>



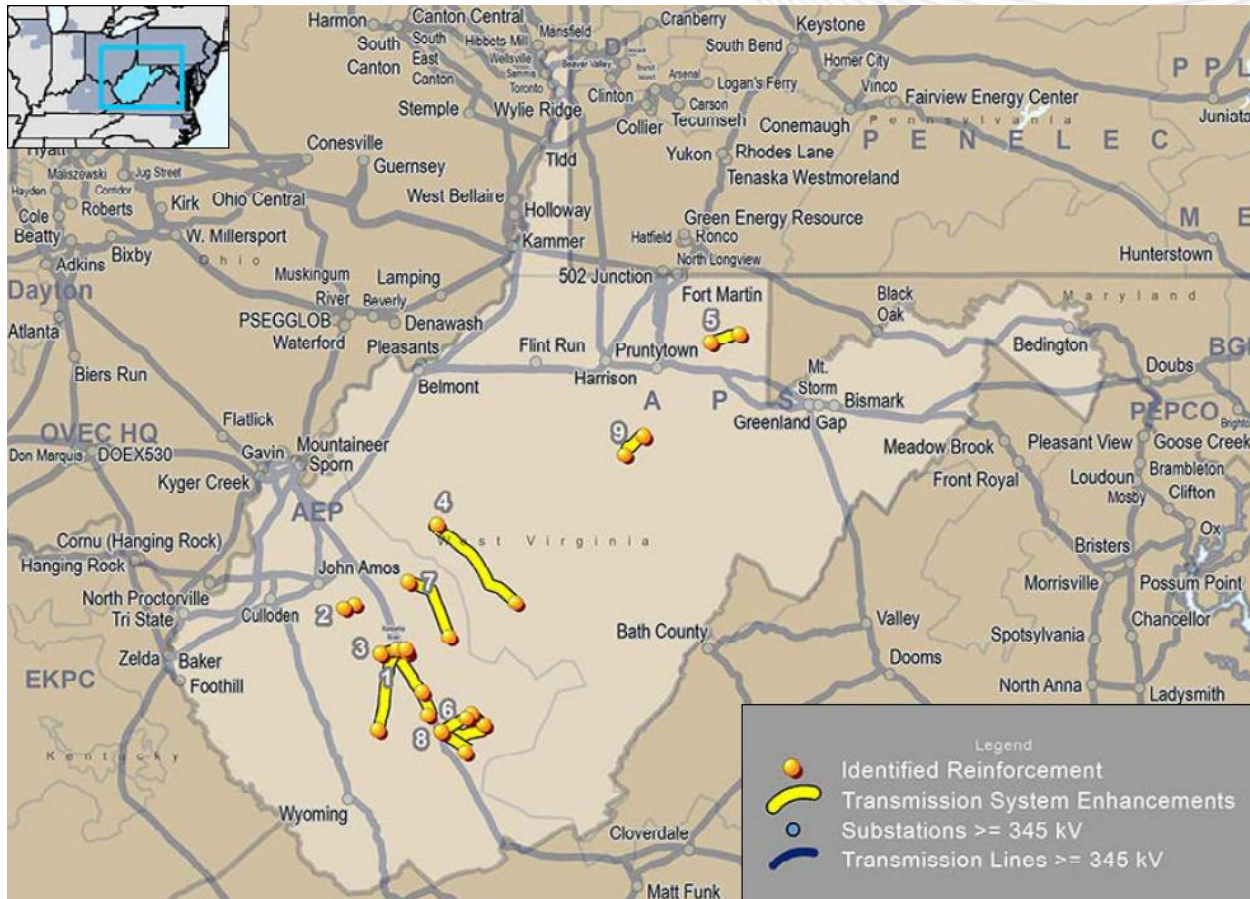
WV Baseline Projects	
TO Zone	Cost (\$M)
AEP	\$92.58
AP	\$29.34

Note: Baseline upgrades are those that resolve a system reliability criteria violation.



WV Network Projects	
TO Zone	Cost (\$M)
AP	\$5.21

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.



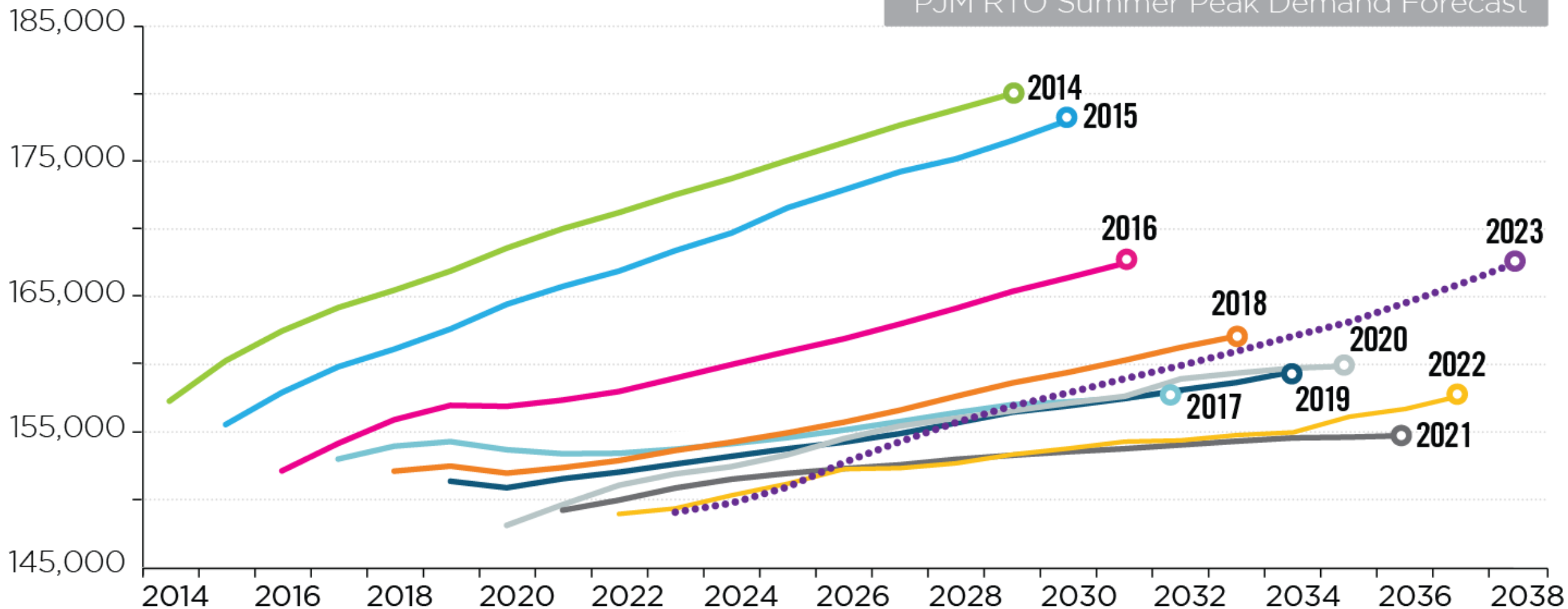
WV Supplemental Projects	
TO Zone	Cost (\$M)
AEP	\$221.60
AP	\$10.10

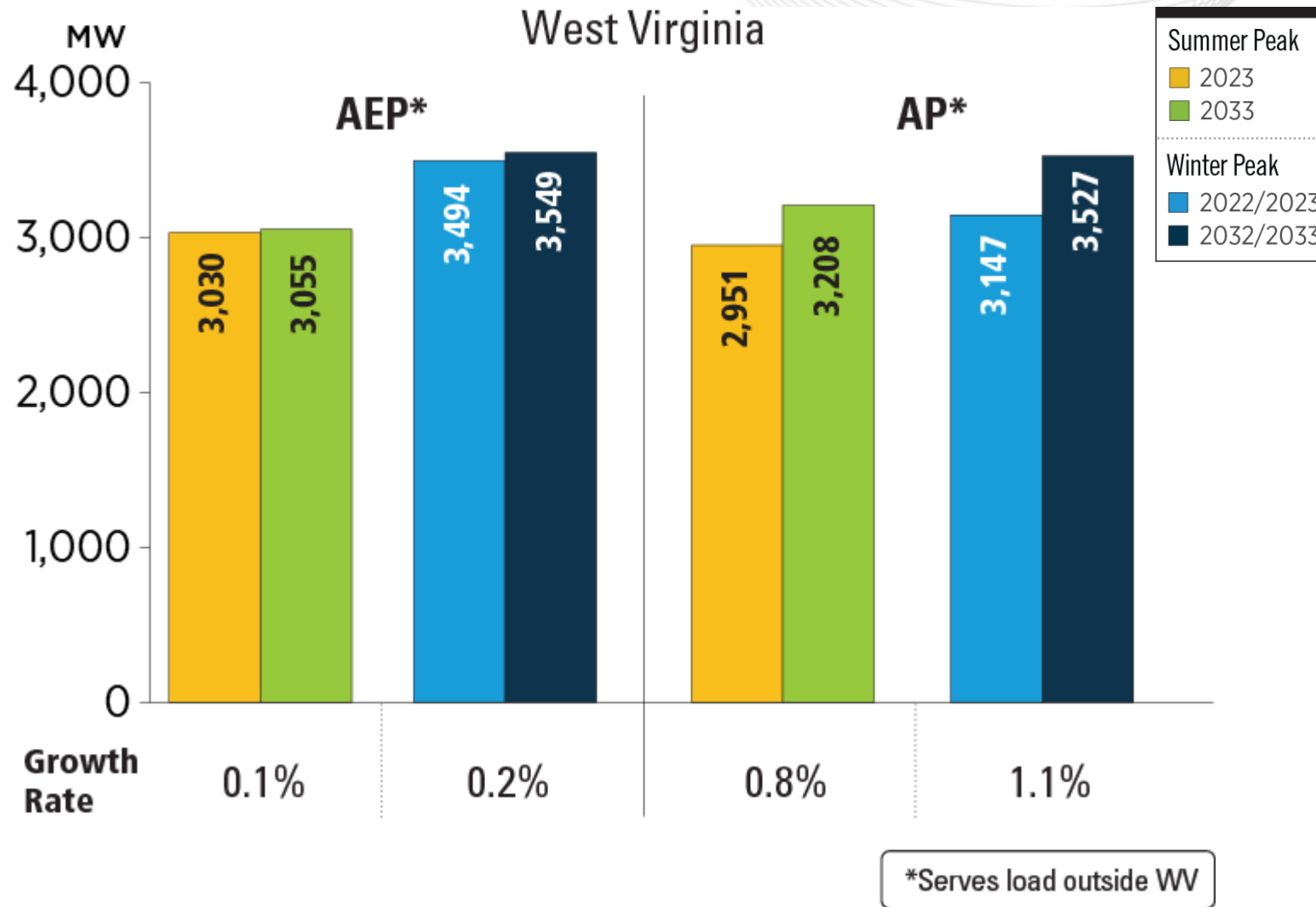
Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic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

Planning Load Forecast

Load (MW)

PJM RTO Summer Peak Demand Forecast





PJM RTO Summer Peak		PJM RTO Winter Peak	
2023	2033	2022/2023	2032/2023
149,059 MW	160,971 MW	130,811 MW	144,992 MW
Growth Rate 0.8%		Growth Rate 1.0%	

The summer and winter peak megawatt values reflect the estimated amount of forecast load to be served by each transmission owner in the noted state/district. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas over the past five years.

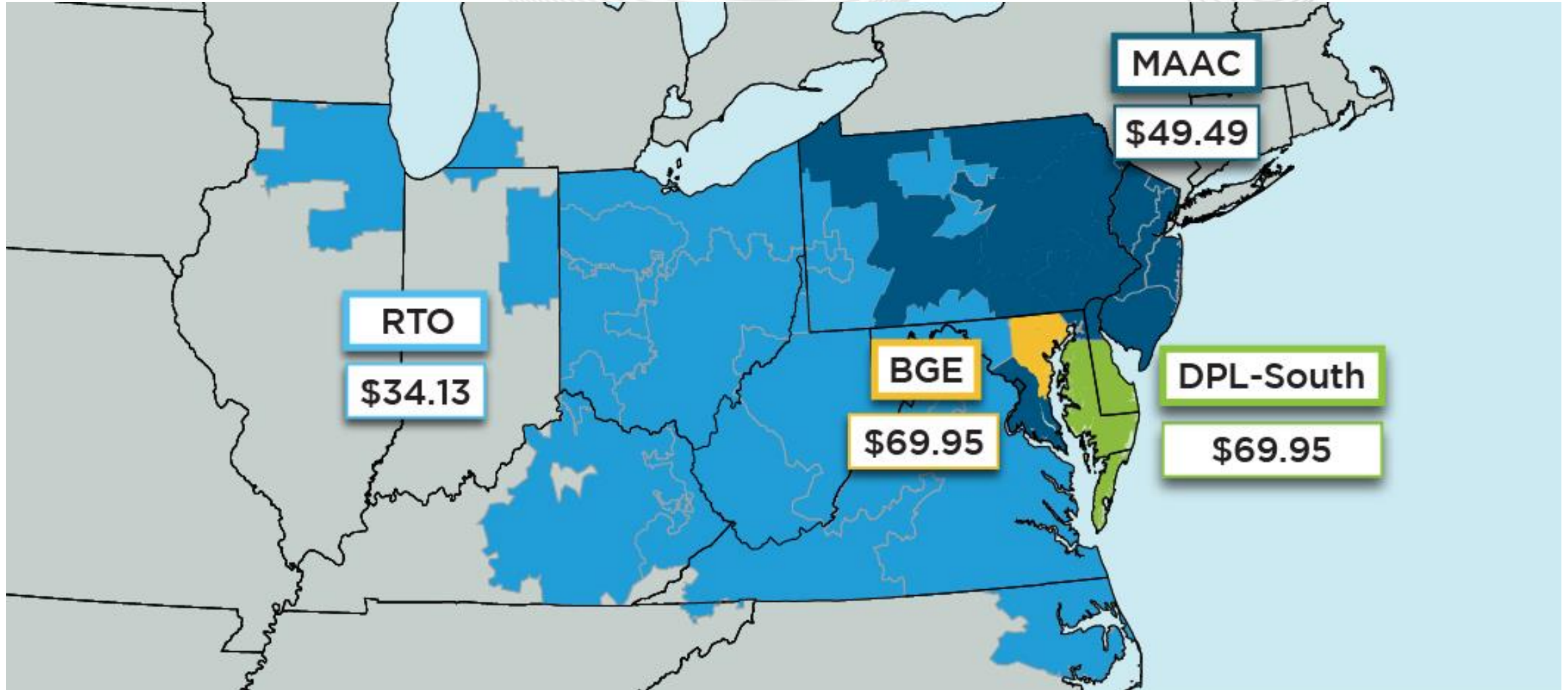


Markets

Capacity Market Results



2023/24 Base Residual Auction Clearing Prices (\$/MW-Day)



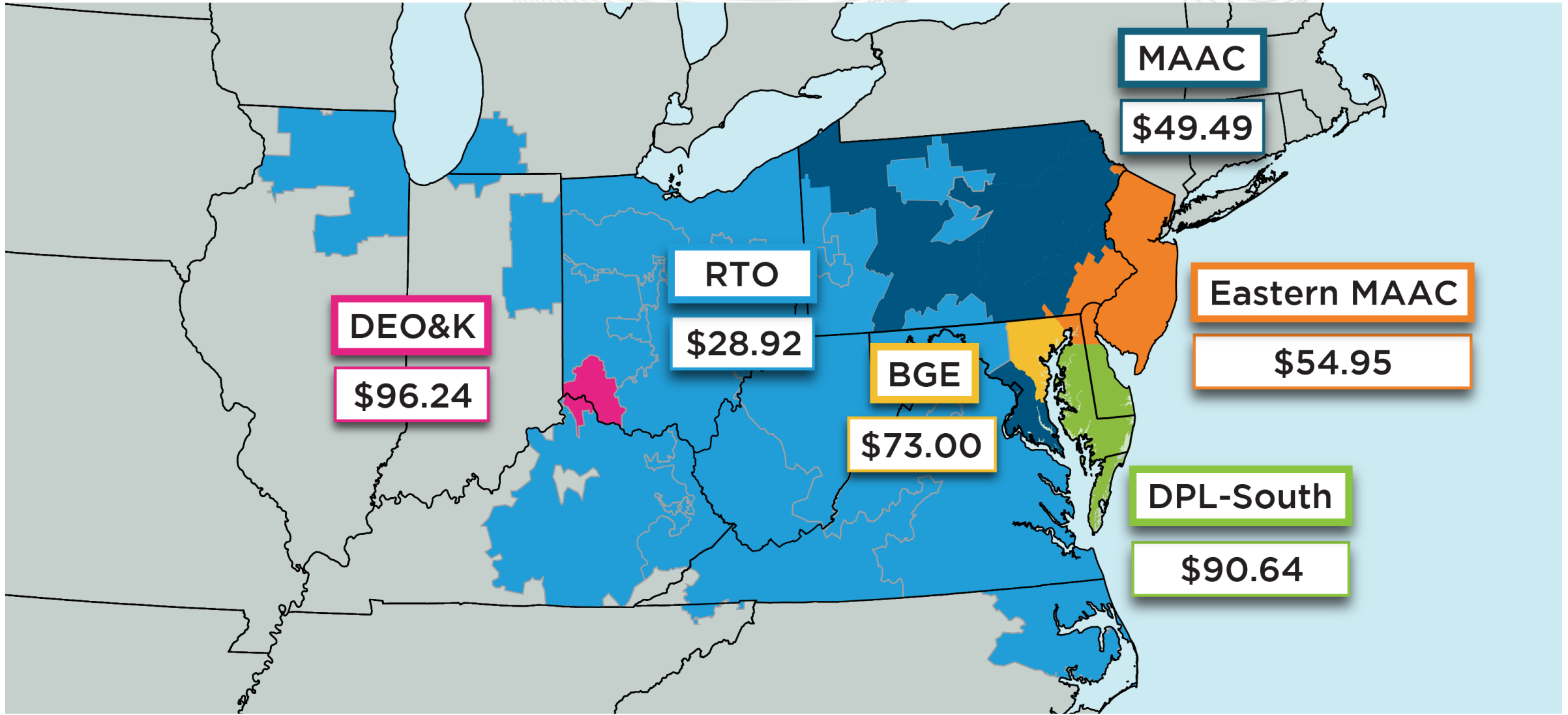


2023/24 Cleared MW (UCAP) by Resource Type

	ANNUAL	SUMMER	WINTER	Total (MW)
Generation	131,256.3	47.0	474.1	131,777.4
DR	7,919.1	177.1	0.0	8,096.2
EE	5,221.1	250.0	0.0	5,471.1
Total (MW)	144,396.5	474.1	474.1	



2024/25 Base Residual Auction Clearing Prices (\$/MW-Day)





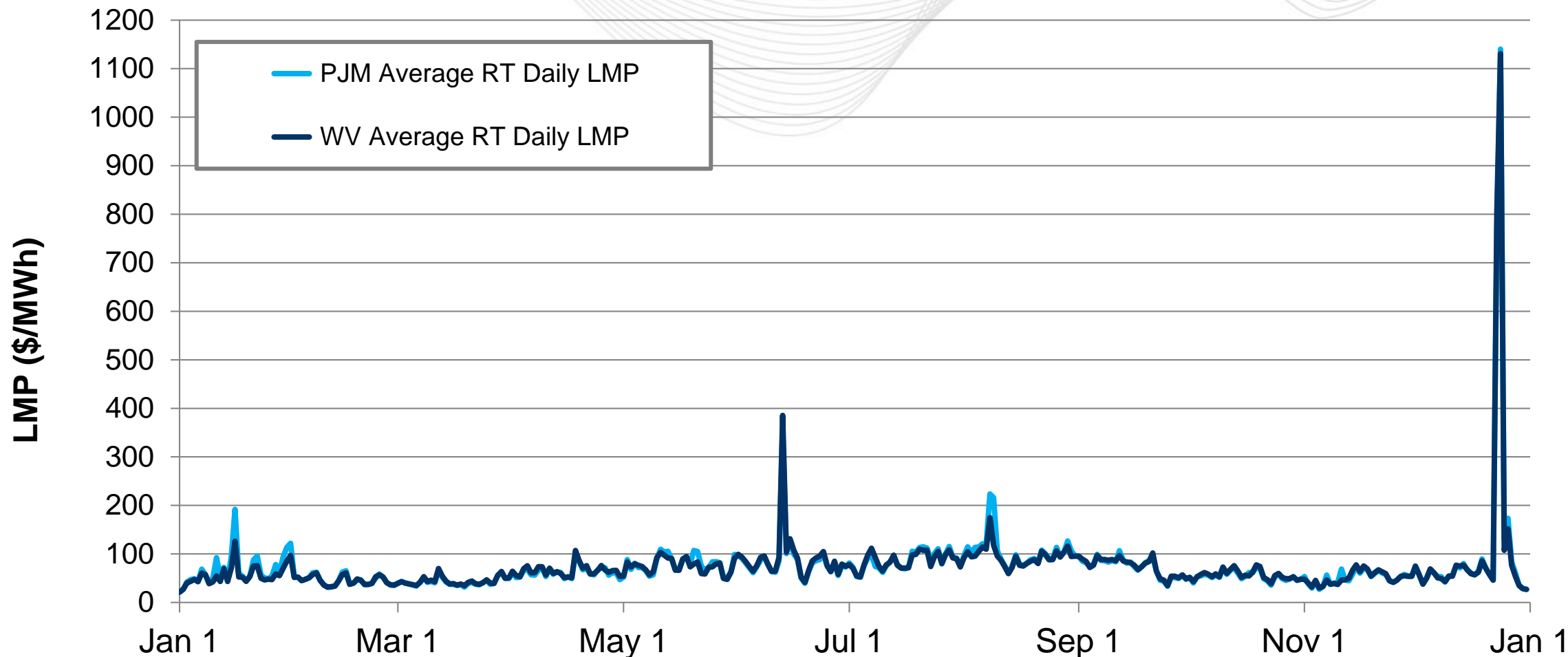
2024/2025 Cleared MW (UCAP) by Resource Type

	ANNUAL	SUMMER	WINTER	Total (MW)
Generation	131,779.3	38.2	605.6	132,423.1
DR	7,804.3	188.4	0	7,992.7
EE	7,289.7	379.0	0	7,668.7
Total (MW)	146,873.3	605.6	605.6	



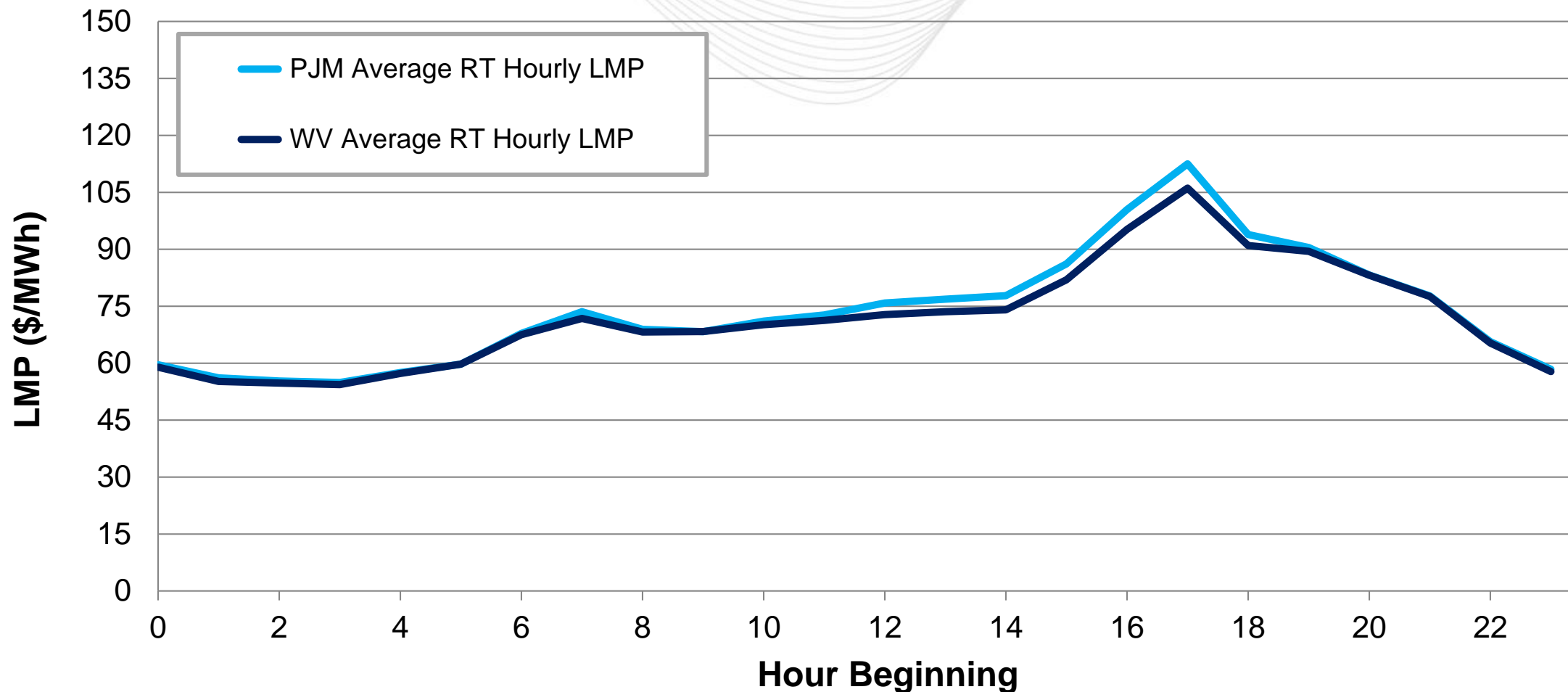
Markets

Market Analysis



Note: The significant price spike in late Dec. 2022 was a result of Winter Storm Elliott's impact on system conditions.

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



West Virginia – Net Energy Import/Export Trend

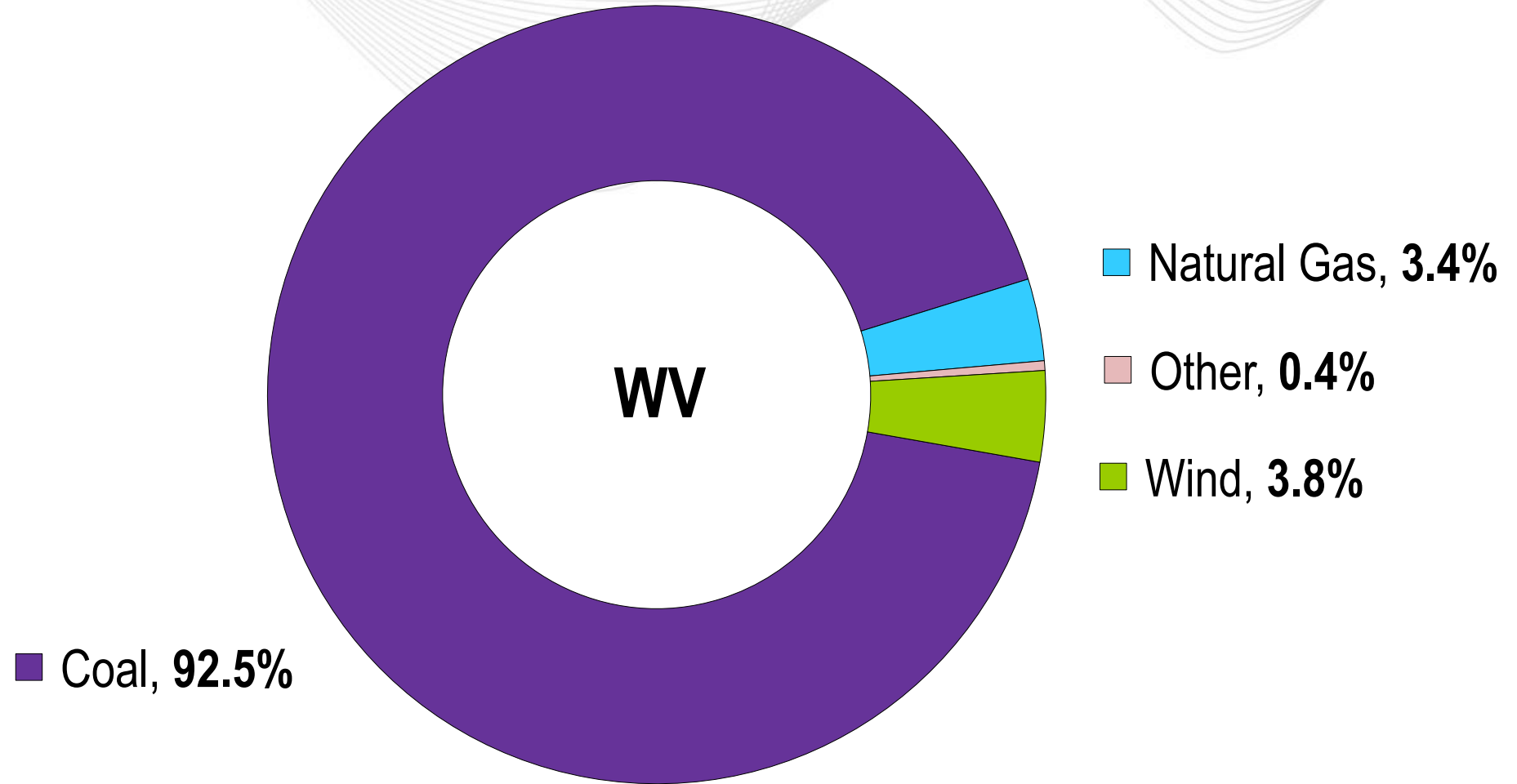
(Jan. 2022 – Dec. 2022)



Positive values represent exports and negative values represent imports.

Operations

West Virginia – 2022 Generator Production



The data in this chart comes from EIA Form 923 (2022).

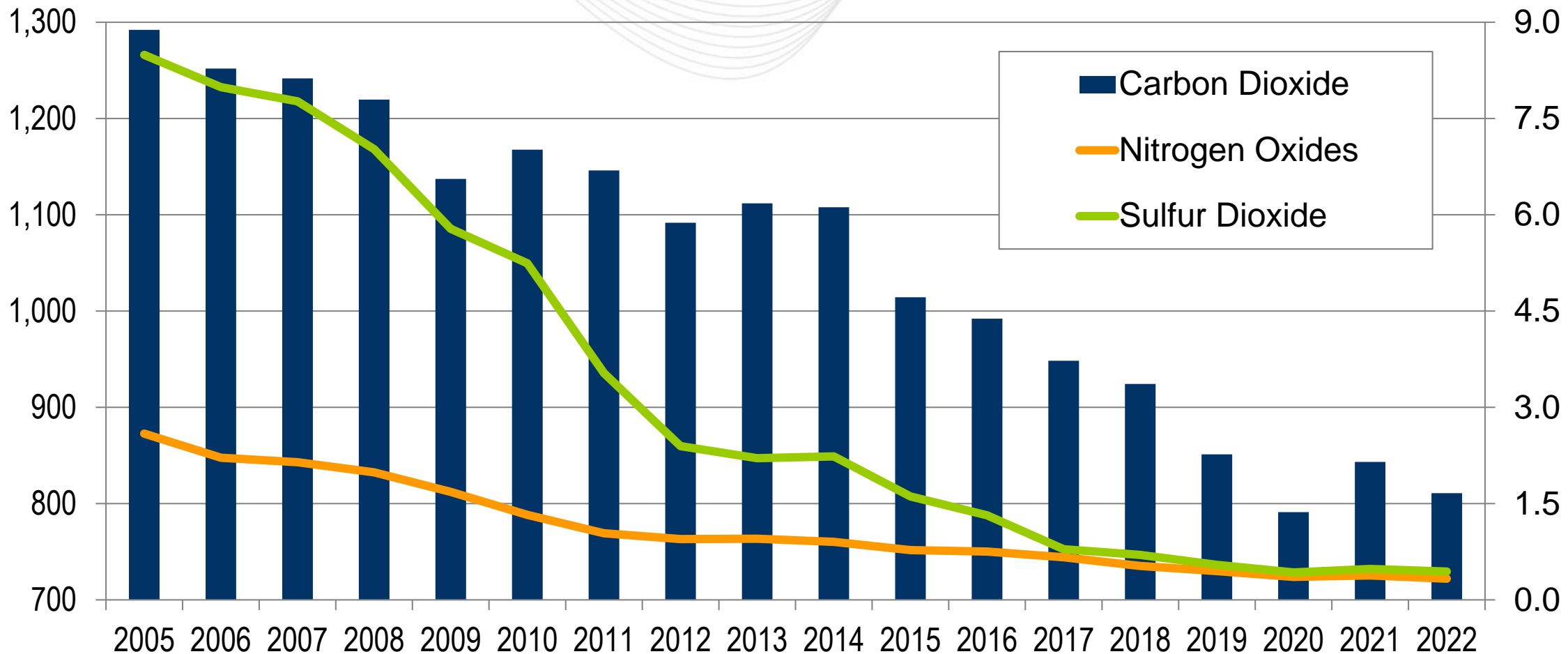


2005 – 2022 PJM Average Emissions

(March 2023)

CO₂
(lbs/MWh)

SO₂ and NO_x
(lbs/MWh)





West Virginia – Average Emissions (lbs/MWh)

(March 2023)

CO₂
(lbs/MWh)

SO₂ and NO_x
(lbs/MWh)

