2022 Virginia Infrastructure Report

(January 1, 2022 – December 31, 2022)

May 2023

This report reflects information for the portion of Virginia within the PJM service territory.

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- **Existing Capacity:** Natural gas represents approximately 49.1 percent of the total installed capacity in the Virginia service territory while hydro represents approximately 14.9 percent and nuclear 13.3 percent. In PJM natural gas and coal are 46.6 and 24.0 percent of total installed capacity, and nuclear represents 17.7 percent.

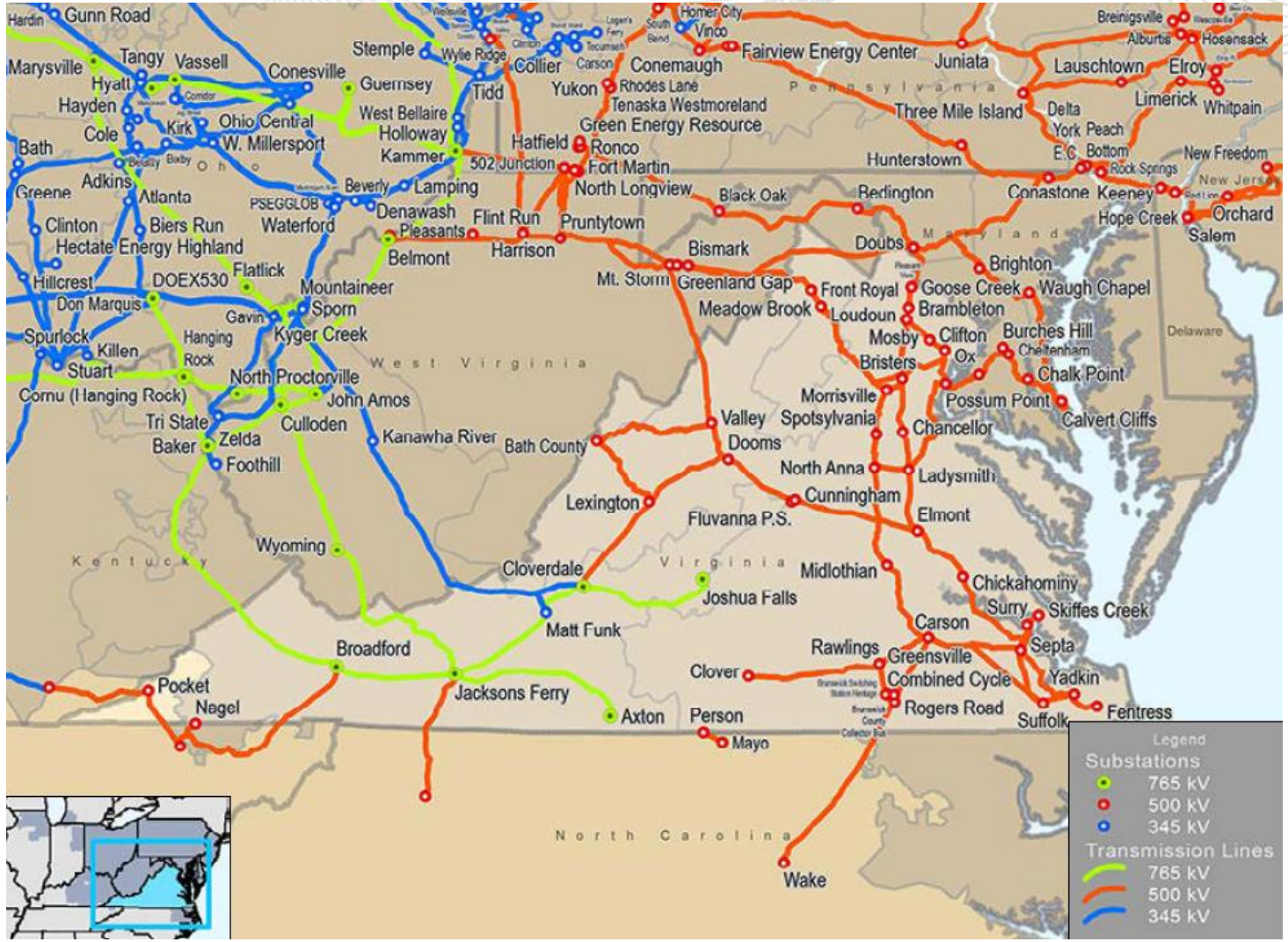
- **Interconnection Requests:** Solar represents 59.4 percent of new interconnection requests in Virginia, while storage represents approximately 29.7 percent of new requests.

- **Deactivations:** 767.1 MW of generation in Virginia gave a notice of deactivation in 2022.

- **RTEP 2022:** Virginia's 2022 RTEP project total represents approximately $1.35 billion in investment.

- **Load Forecast:** Virginia's peak load growth is projected to range between -0.5 and 5.2 percent annually over the next ten years, depending on the service territory. The overall PJM RTO projected summer load growth rate is 0.8 percent.
- **2023/24 Capacity Market:** The portion of Virginia within the PJM footprint cleared at the RTO price of $34.13/MW-day in the 2023/2024 Base Residual Auction.
- **2024/25 Capacity Market:** The portion of Virginia within the PJM footprint 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:** Virginia's average hourly LMPs were above the PJM average hourly LMP.
- **Emissions:** Virginia's average CO2 emissions remained steady in 2022 compared to 2021 levels

PJM Service Area – Virginia

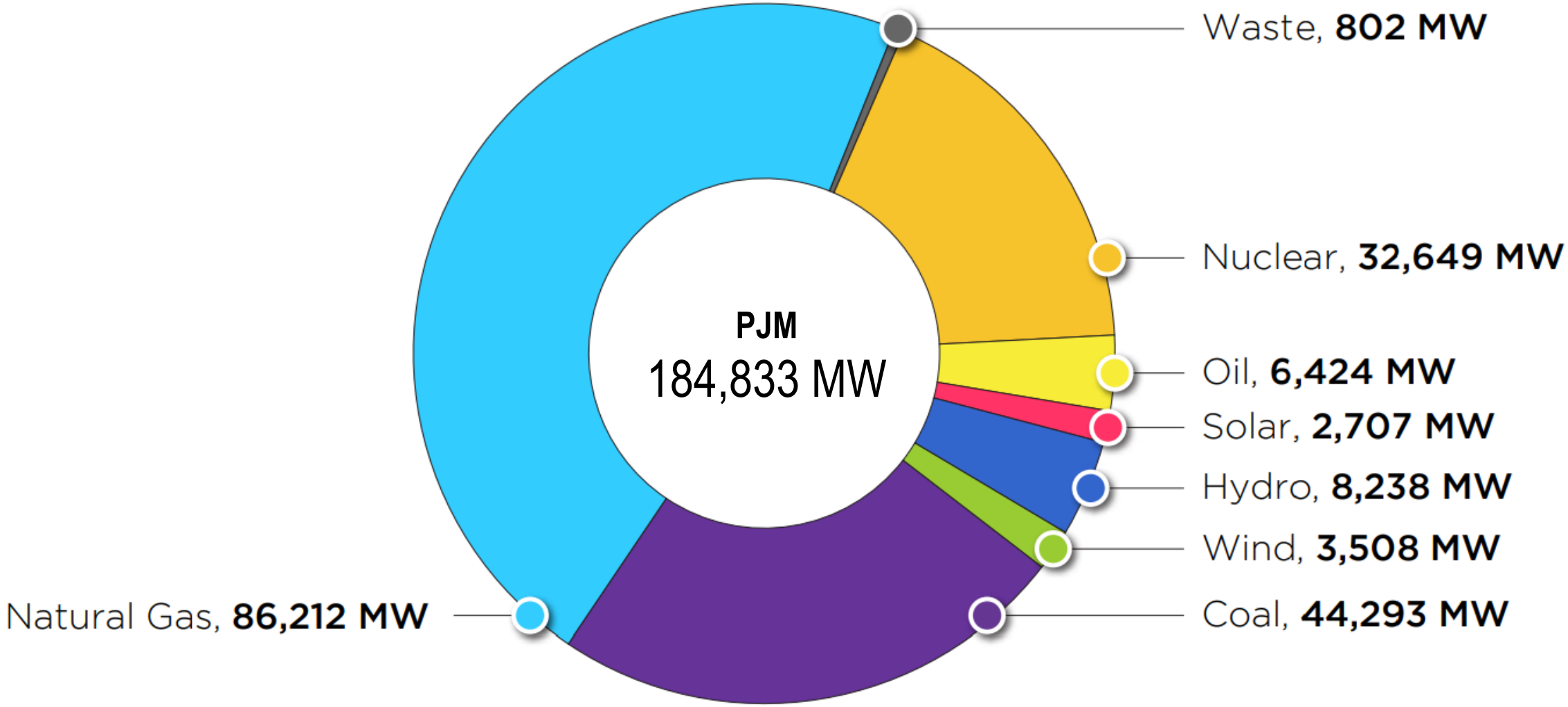


Planning

Generation Portfolio Analysis

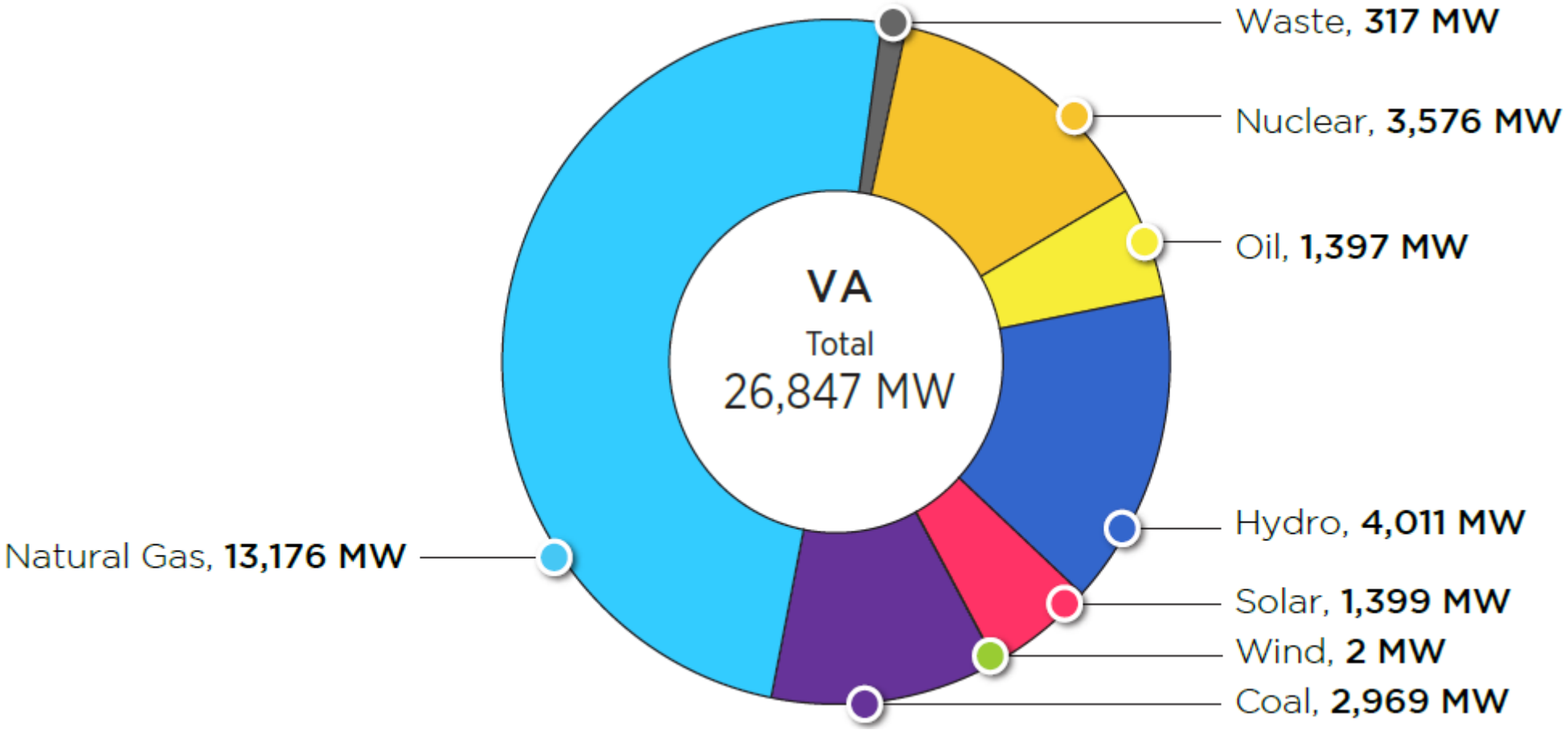
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



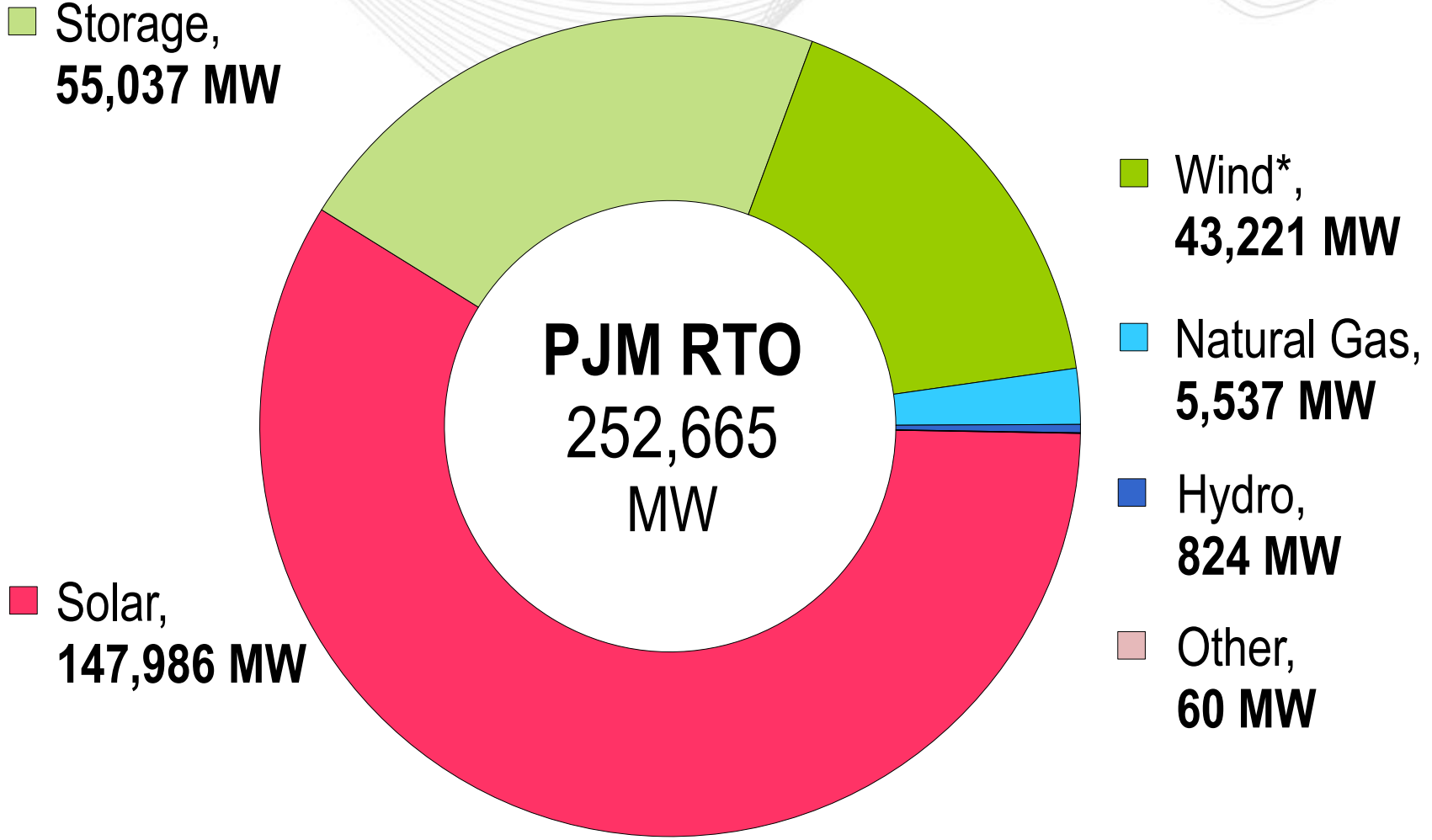
Virginia – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



PJM Queued Capacity (Nameplate) by Fuel Type

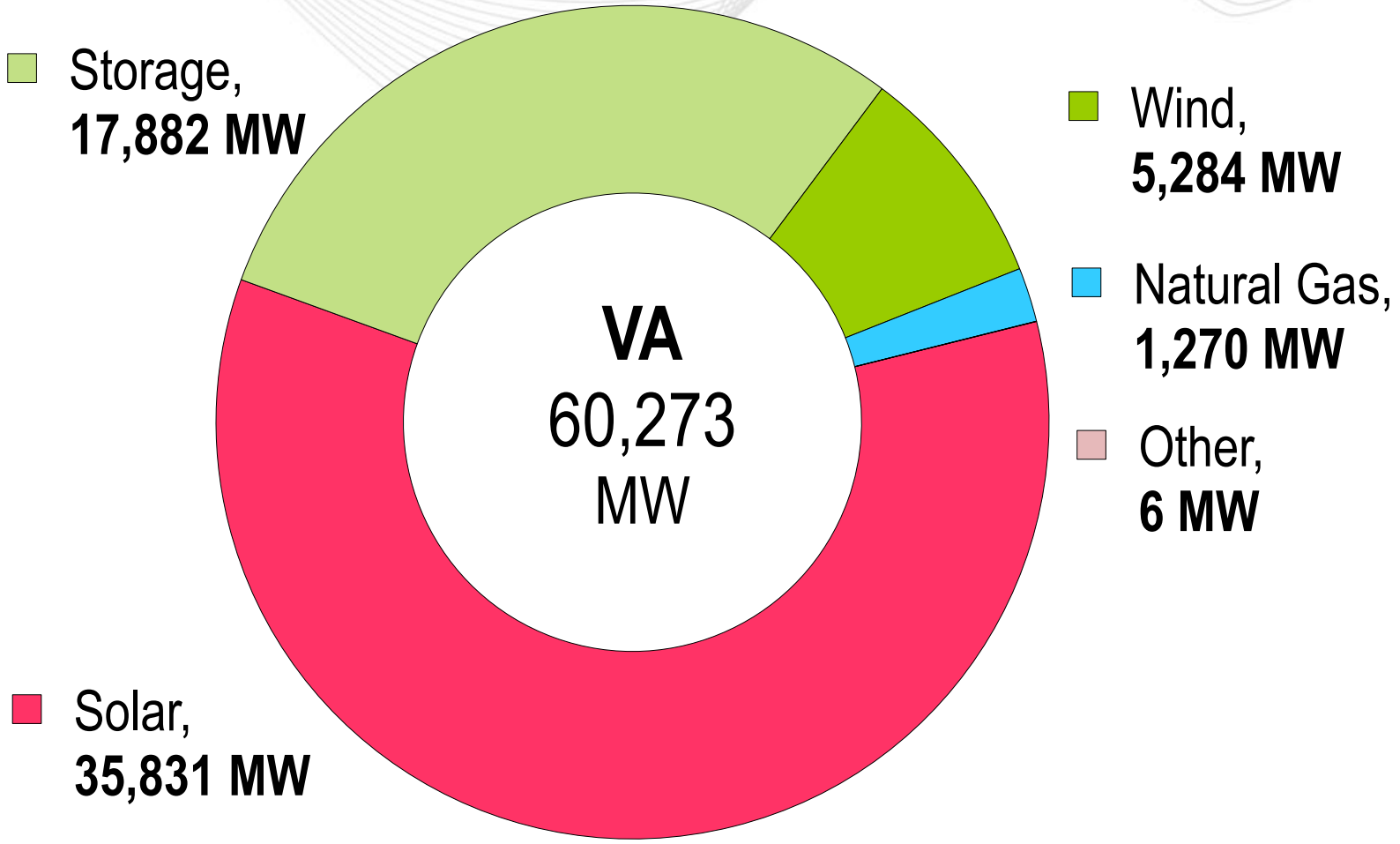
("Active" in the PJM Queue as of April 1, 2023)



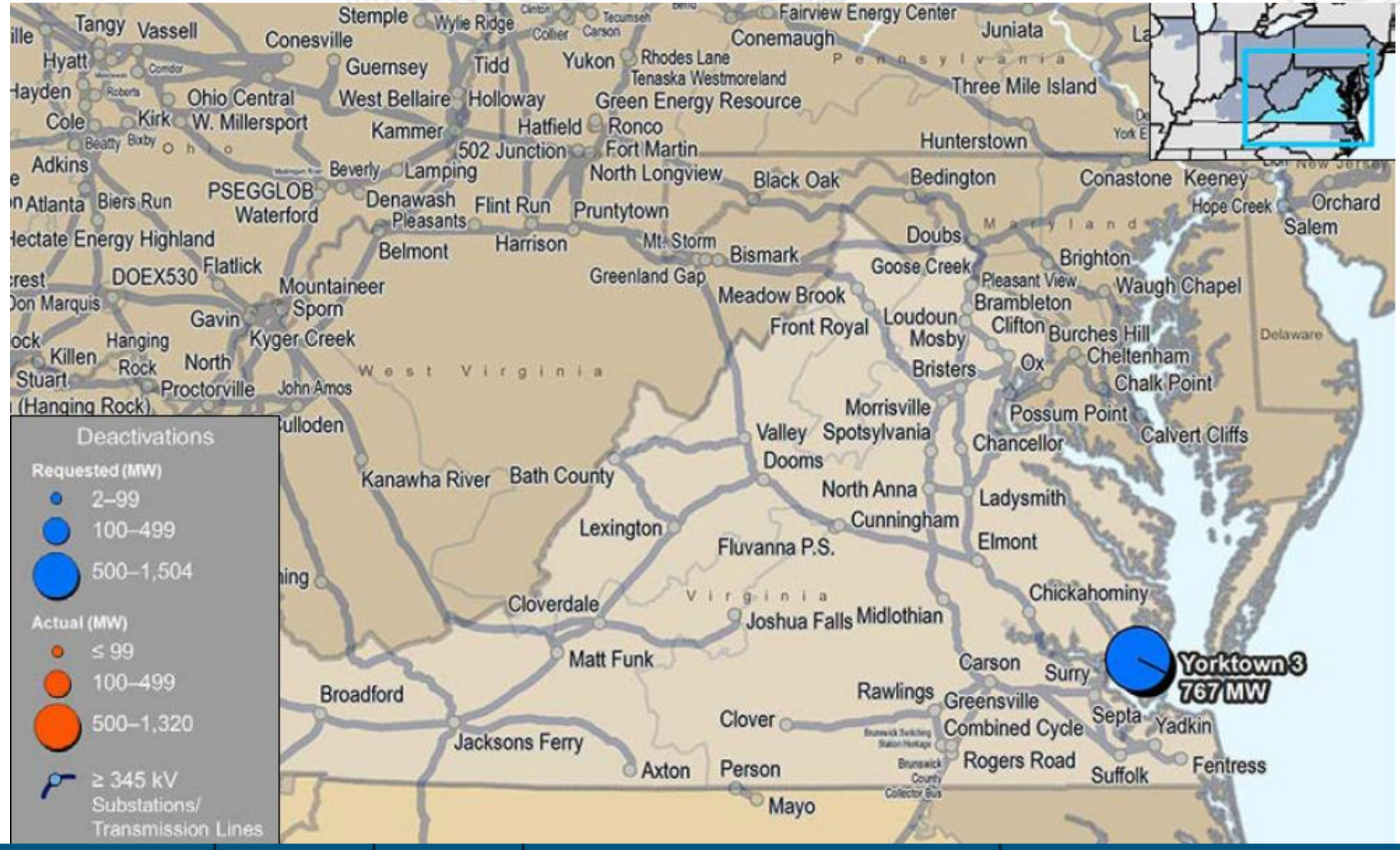
*Wind includes both onshore and offshore wind

Virginia Queued Capacity (Nameplate) by Fuel Type

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



Virginia – 2022 Generator Deactivations



Unit	TO Zone	Fuel Type	Request Received to Deactivate	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
Yorktown 3	Dominion	Oil	12/20/2022	5/31/2023	48	767.1

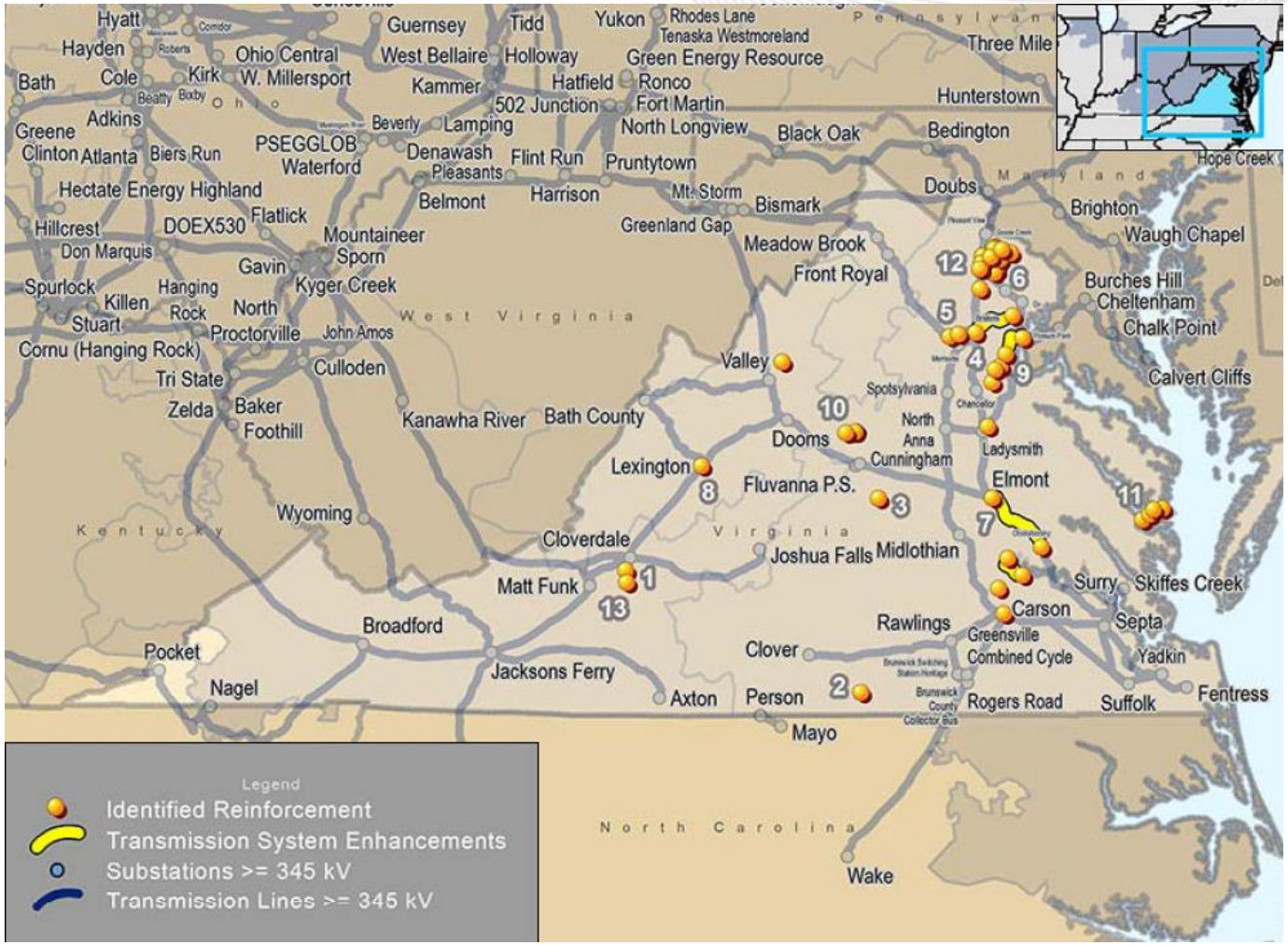
Planning

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

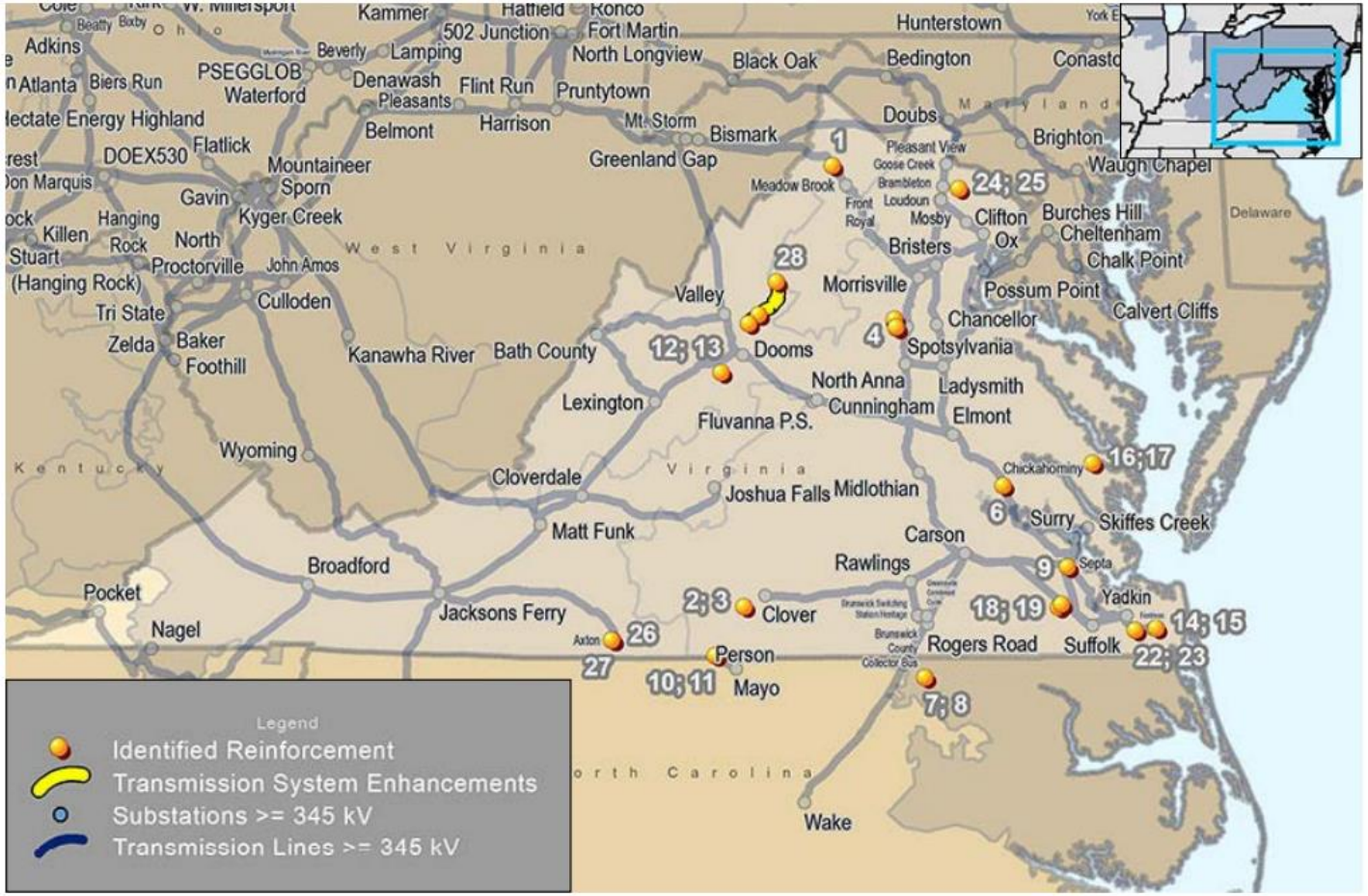
Virginia – RTEP Baseline Projects



VA Baseline Projects	
TO Zone	**Cost ($M)**
AEP	$0.10
Dominion	$879.55

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

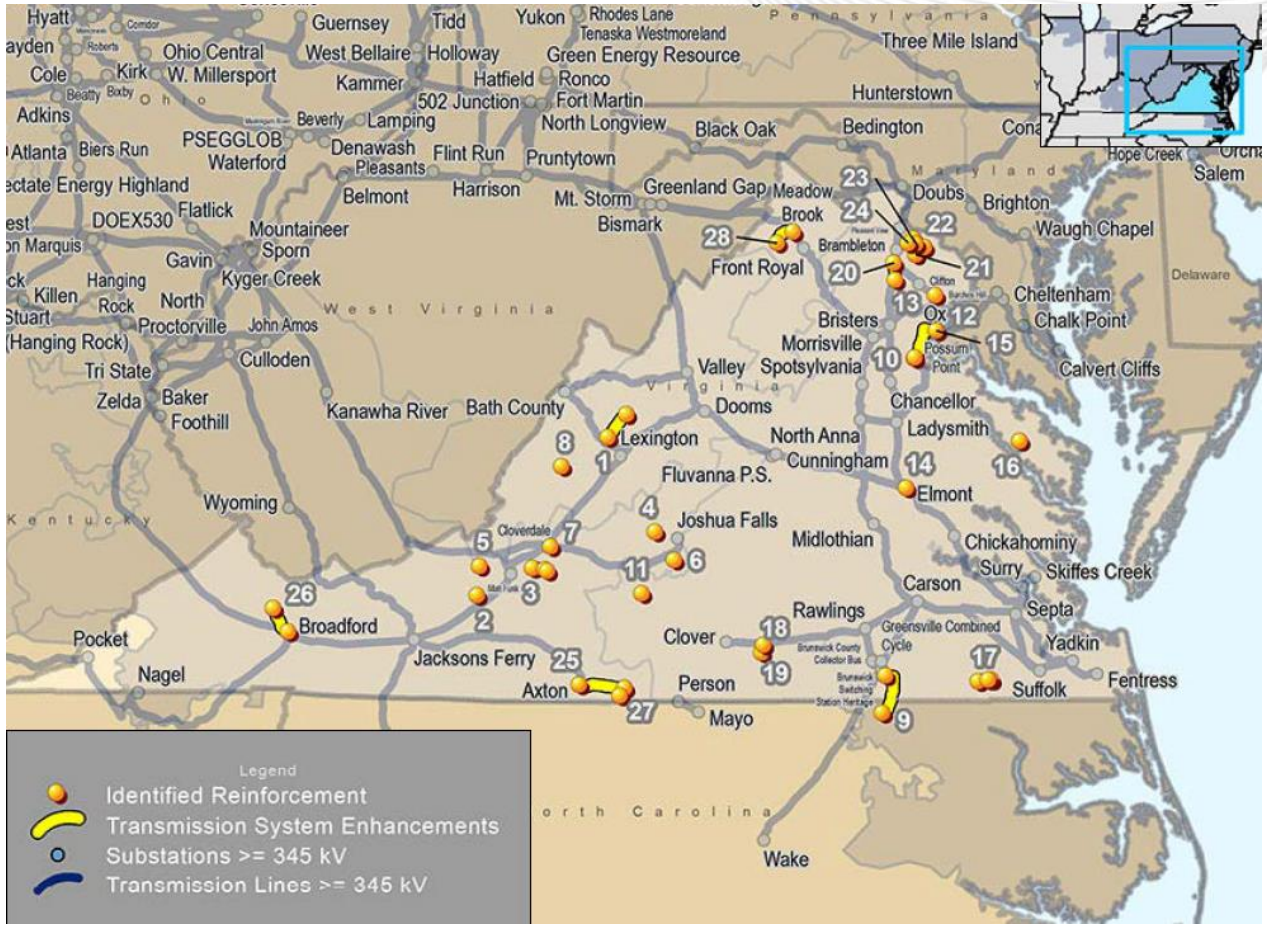
Virginia – RTEP Network Projects



VA Network Projects	
TO Zone	**Cost ($M)**
AEP	$13.50
AP	$4.67
Dominion	$97.43

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.

Virginia – TO Supplemental Projects



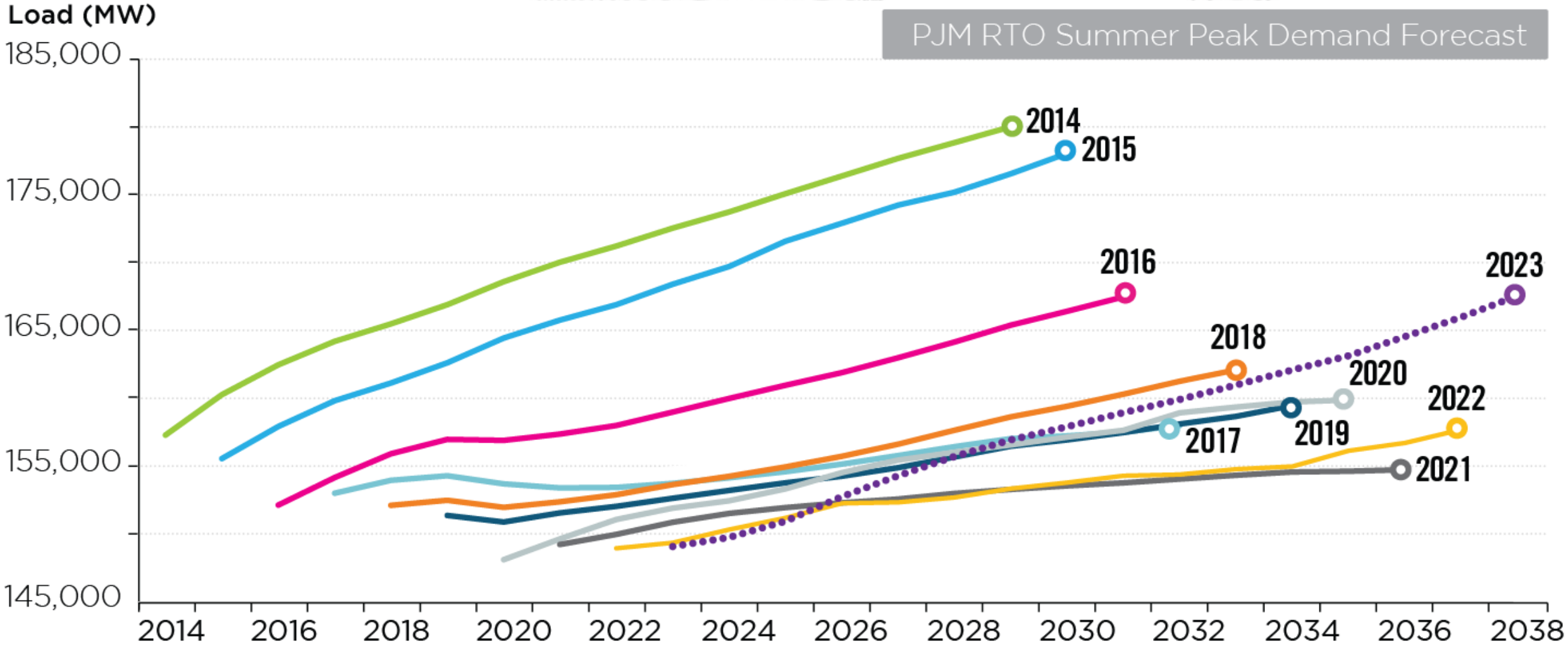
VA Supplemental Projects	
TO Zone	**Cost ($M)**
AEP	$49.59
AP	$1.10
Dominion	$308.25

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.

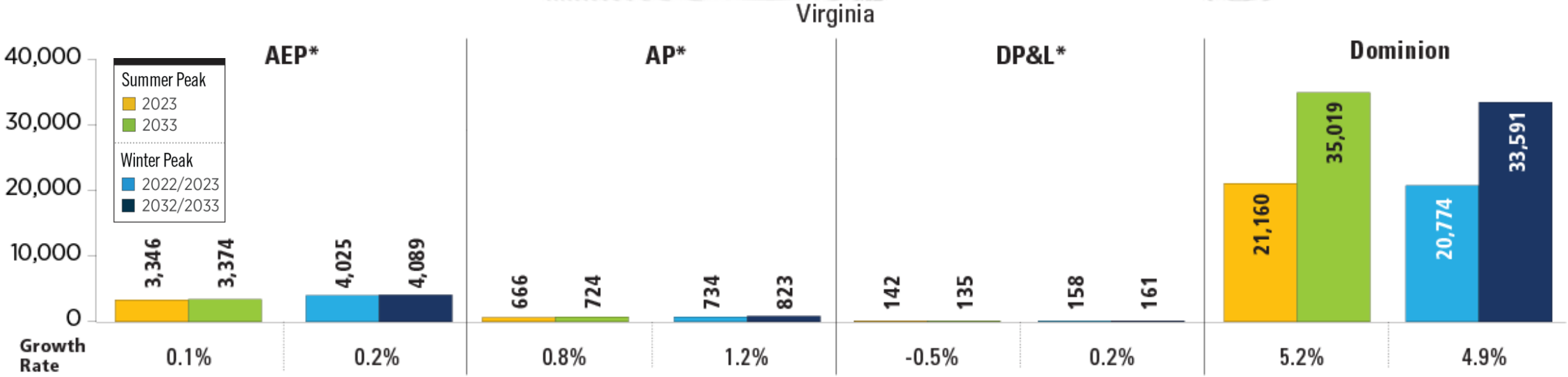
Planning
Load Forecast

PJM Annual Load Forecast

(Jan. 2023)



Virginia – 2023 Load Forecast Report



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.

PJM RTO Summer Peak

2023	2033
149,059 MW	160,971 MW

Growth Rate 0.8%

PJM RTO Winter Peak

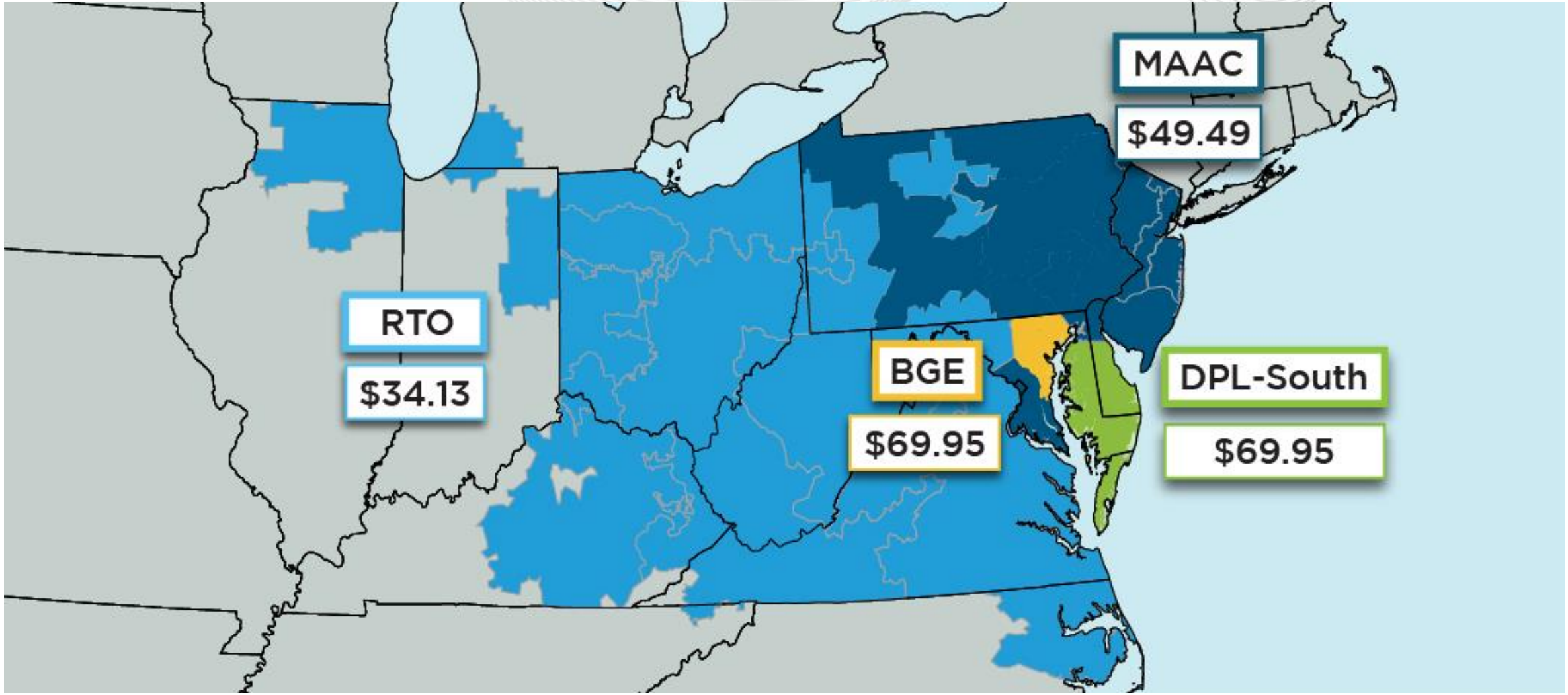
2022/2023	2032/2033
130,811 MW	144,992 MW

Growth Rate 1.0%

Markets

Capacity Market Results

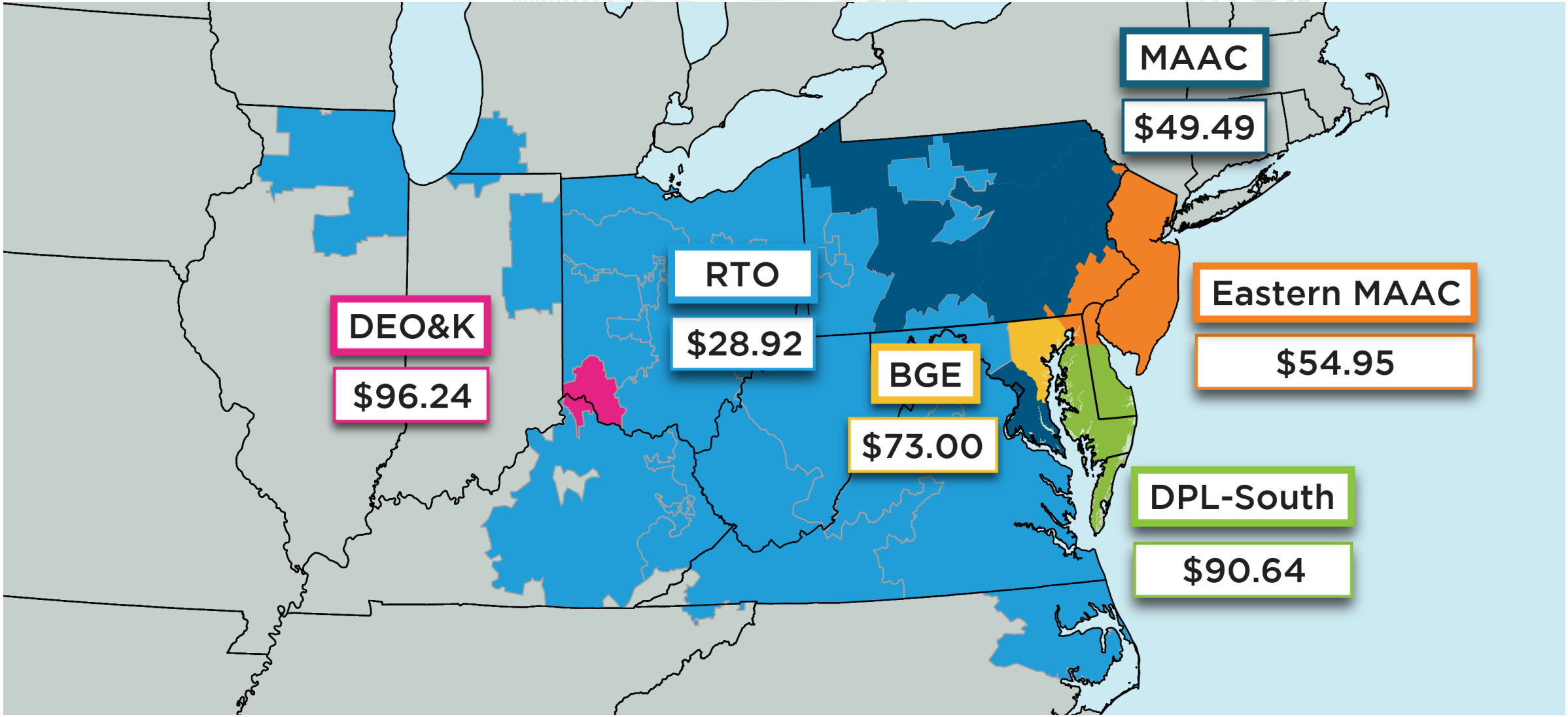
2023/24 Base Residual Auction Clearing Prices ($/MW-Day)



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

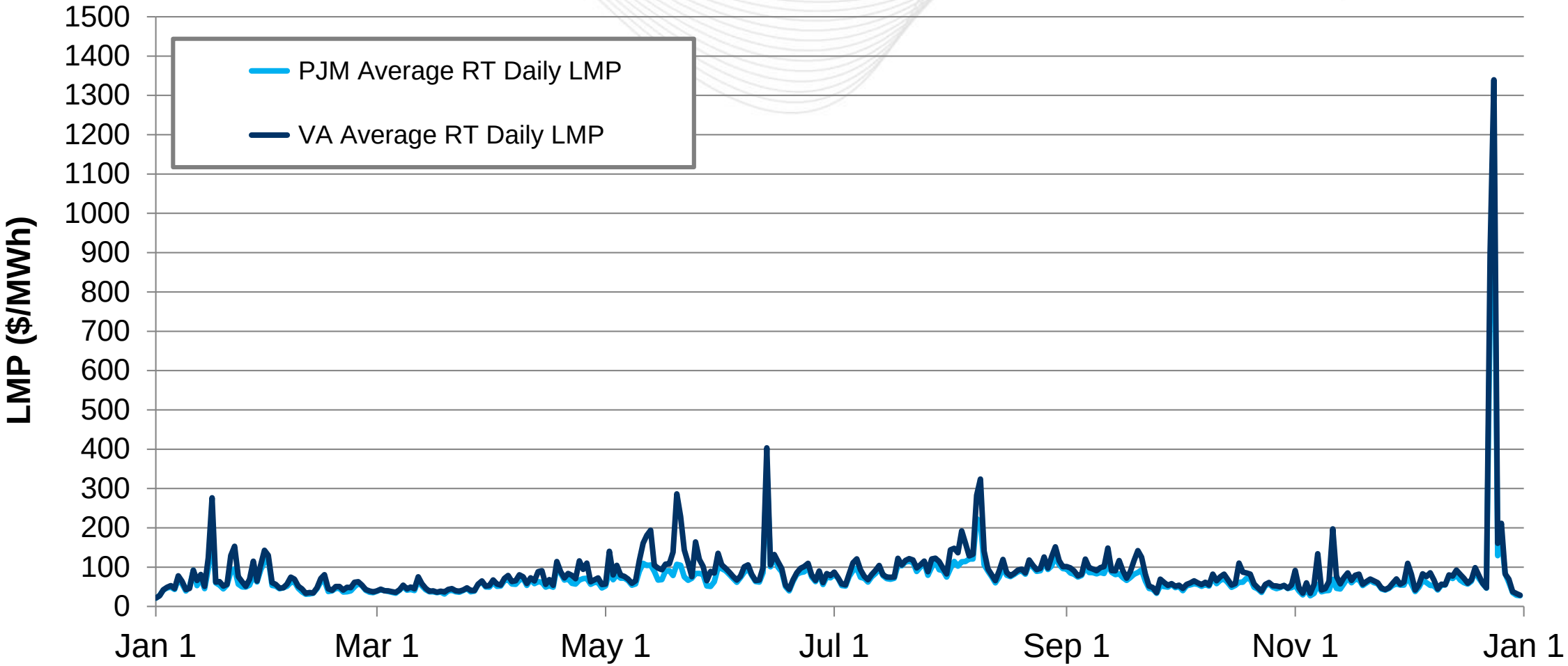
	ANNUAL	SUMMER	WINTER	Total (MW)
Generation	131,779.3	38.2	605.6	132,423.1
DR	7,804.3	188.4	0	7,992.7
EE	7,289.7	379.0	0	7,668.7
Total (MW)	**146,873.3**	**605.6**	**605.6**	

Markets

Market Analysis

Virginia – Average Daily LMP

(Jan. 1, 2022 – Dec. 31, 2022)

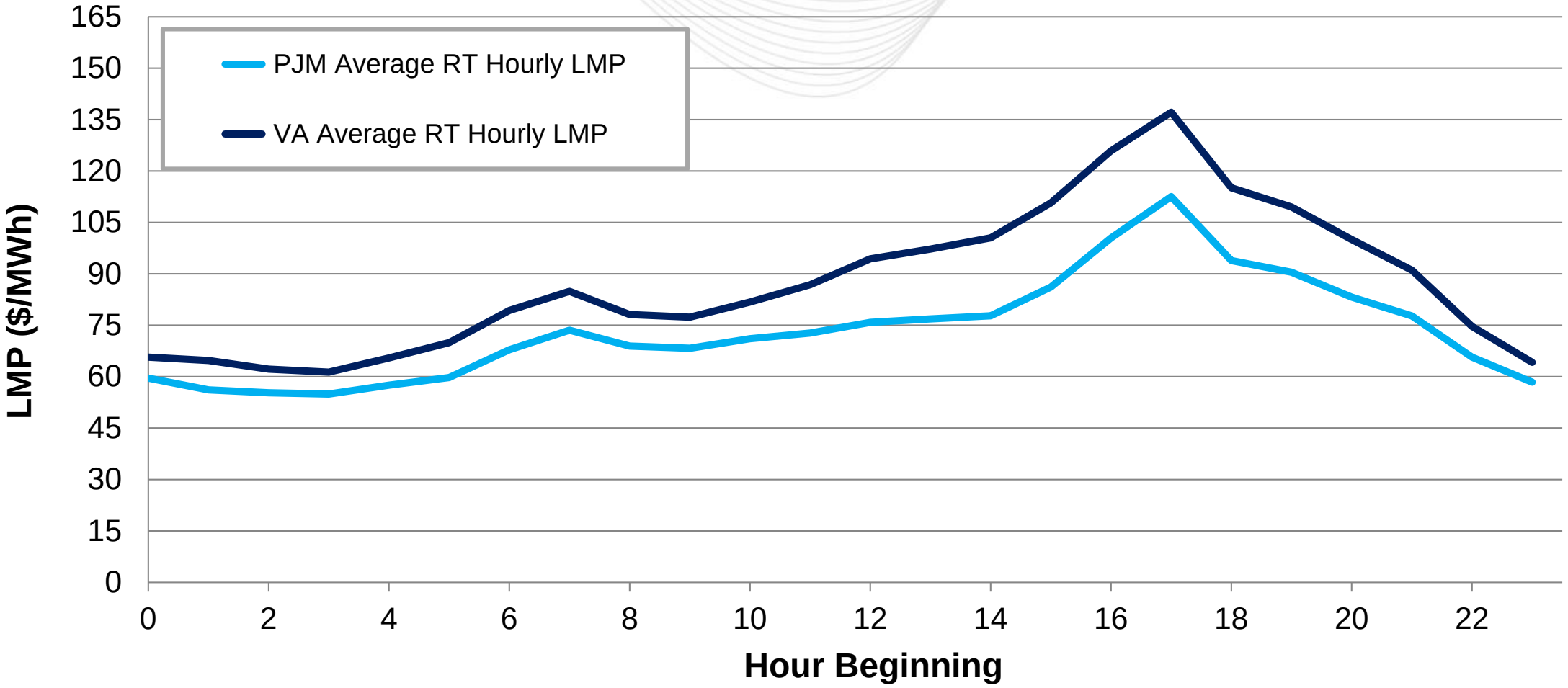


Note: The significant price spike in late Dec. 2022 was a result of Winter Storm Elliott's impact on system conditions.

Virginia – Average Hourly LMP

(Jan. 1, 2022 – Dec. 31, 2022)

Virginia's average hourly LMPs were above the PJM average hourly LMP.



Virginia – Net Energy Import/Export Trend

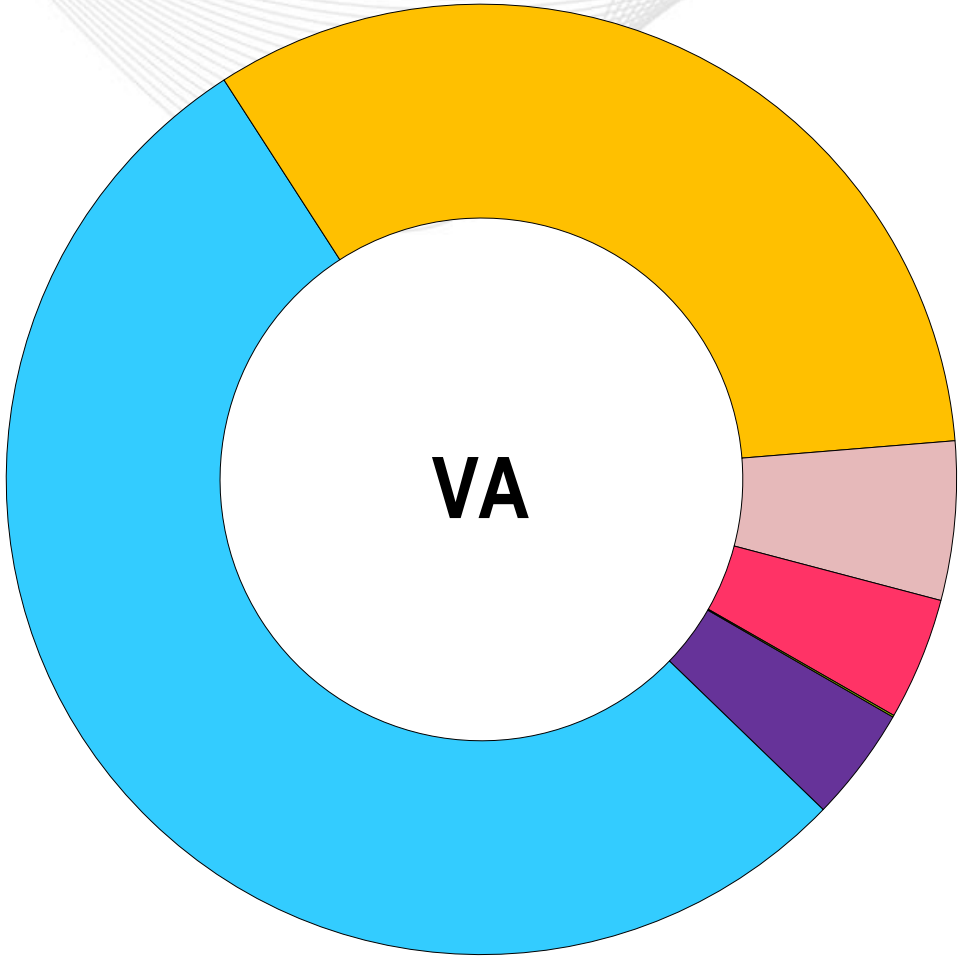
(Jan. 2022 – Dec. 2022)

This chart reflects the portion of Virginia that PJM operates. Positive values represent exports and negative values represent imports.

Note – A significant amount of generation from units owned by Virginia jurisdictional utilities and included in regulated rates charged to Virginia customers are physically located outside of Virginia. They are categorized as imports in the chart.

Operations

Virginia – 2022 Generator Production

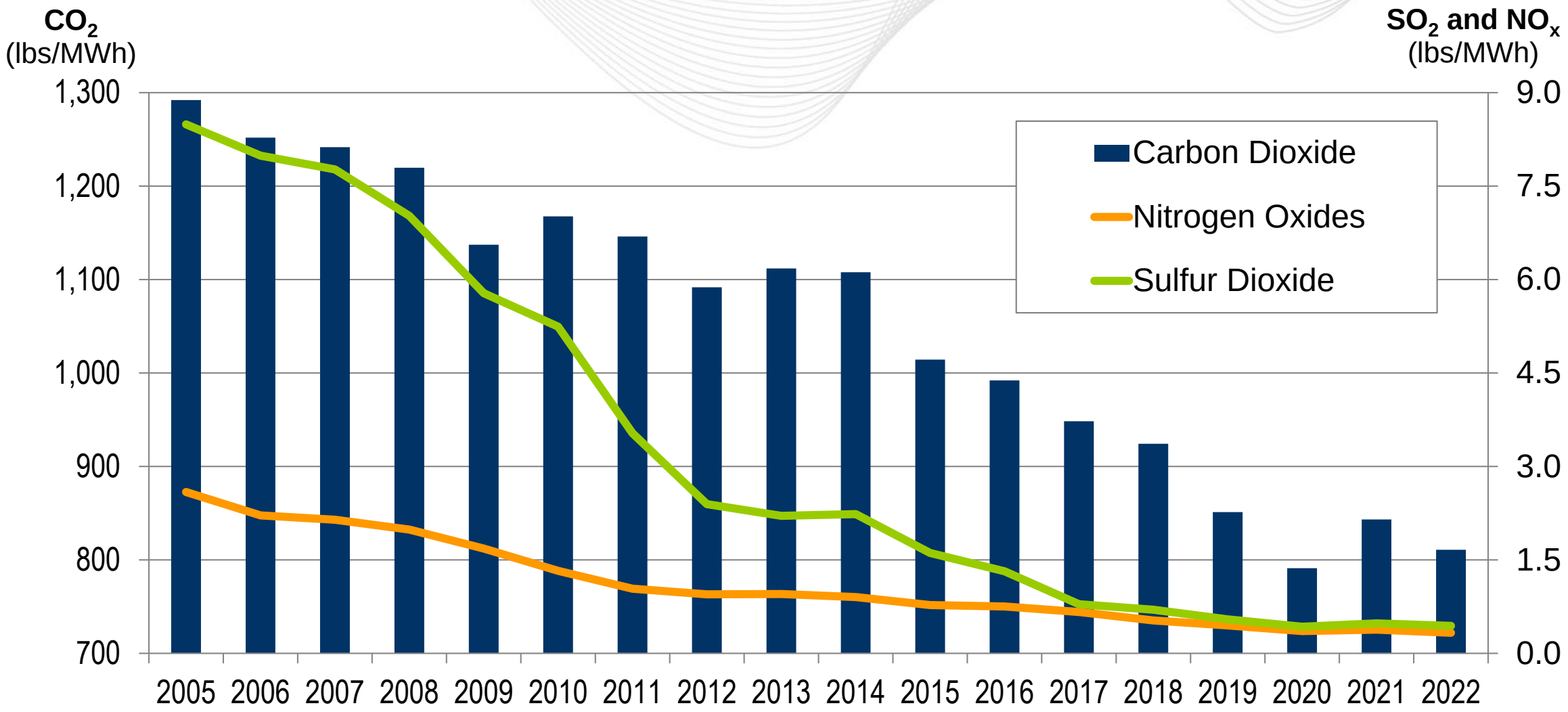


- Nuclear, **32.8%**
- Other, **5.4%**
- Solar, **4.2%**
- Wind, **0.1%**
- Coal, **3.9%**
- Natural Gas, **53.7%**

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

2005 – 2022 PJM Average Emissions

(March 2023)



Virginia – Average Emissions (lbs/MWh)

(Feb. 2023)