



# 2022 North Carolina State Infrastructure Report

(January 1, 2022 – December 31, 2022)

May 2023

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

## 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:** Solar represents approximately 53.1 percent of the total installed capacity in the North Carolina service territory while hydro represents approximately 25.9 percent.
- **Interconnection Requests:** Solar represents 89.8 percent of new interconnection requests in North Carolina.
- **Deactivations:** North Carolina had no generators deactivate or give a notice of deactivation in 2022.
- **RTEP 2022:** North Carolina's 2022 RTEP project total represents approximately \$105.56 million in investment.

- **Load Forecast:** North Carolina's peak load within the PJM footprint is projected to grow 0.5 percent annually over the next ten years. Comparatively, the overall PJM RTO projected load growth rate is 0.8 percent in the summer and 1.0 percent in the winter.
- **2023/24 Capacity Auction:** The portion of North Carolina within the PJM footprint cleared at the RTO price of \$34.13/MW-day in the 2023/2024 Base Residual Auction.
- **2024/25 Capacity Auction:** The portion of North Carolina within the PJM footprint cleared at the RTO price of \$28.92/MW-day for the 2024/2025 Base Residual Auction.
- **1/1/22 – 12/31/22 Market Performance:** North Carolina's average hourly LMPs were slightly above the PJM average hourly LMP, except during mid-day hours.

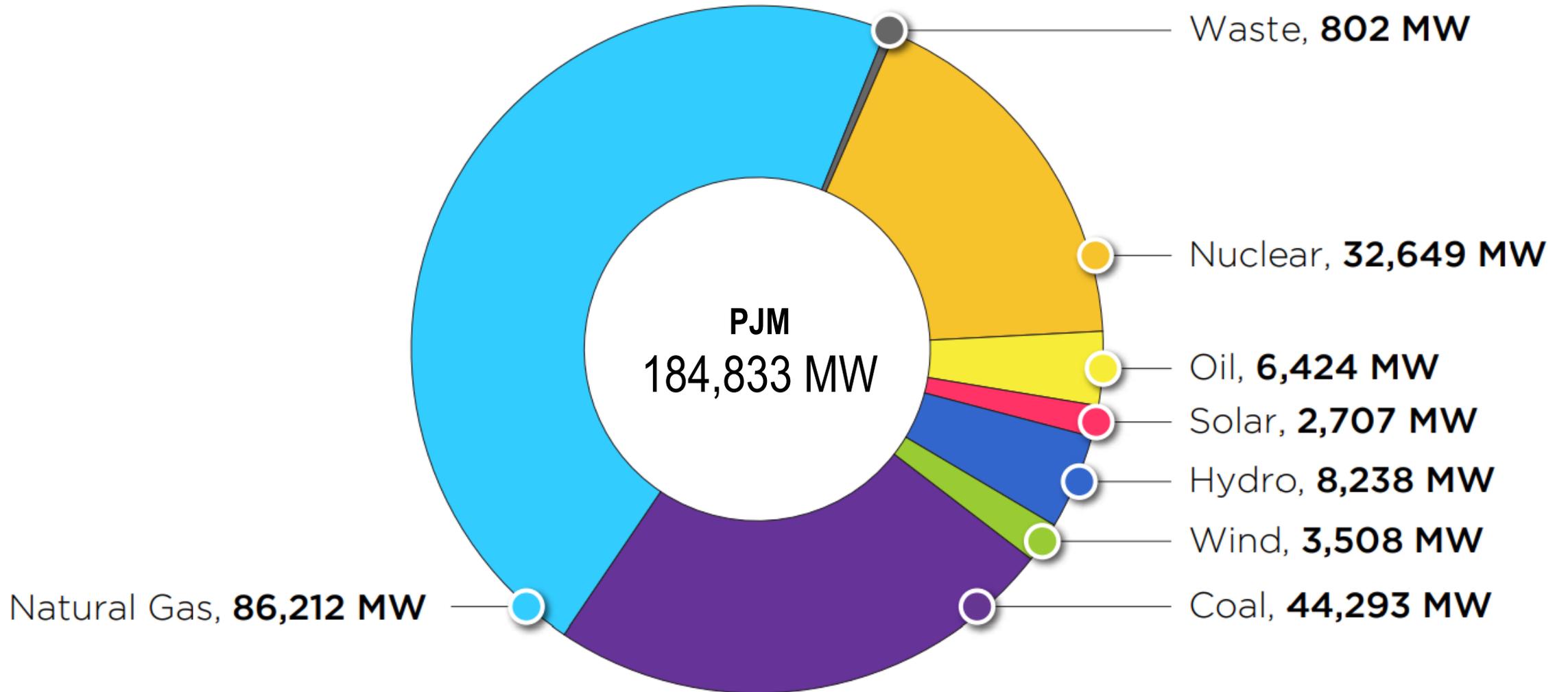


# Planning

## Generation Portfolio Analysis

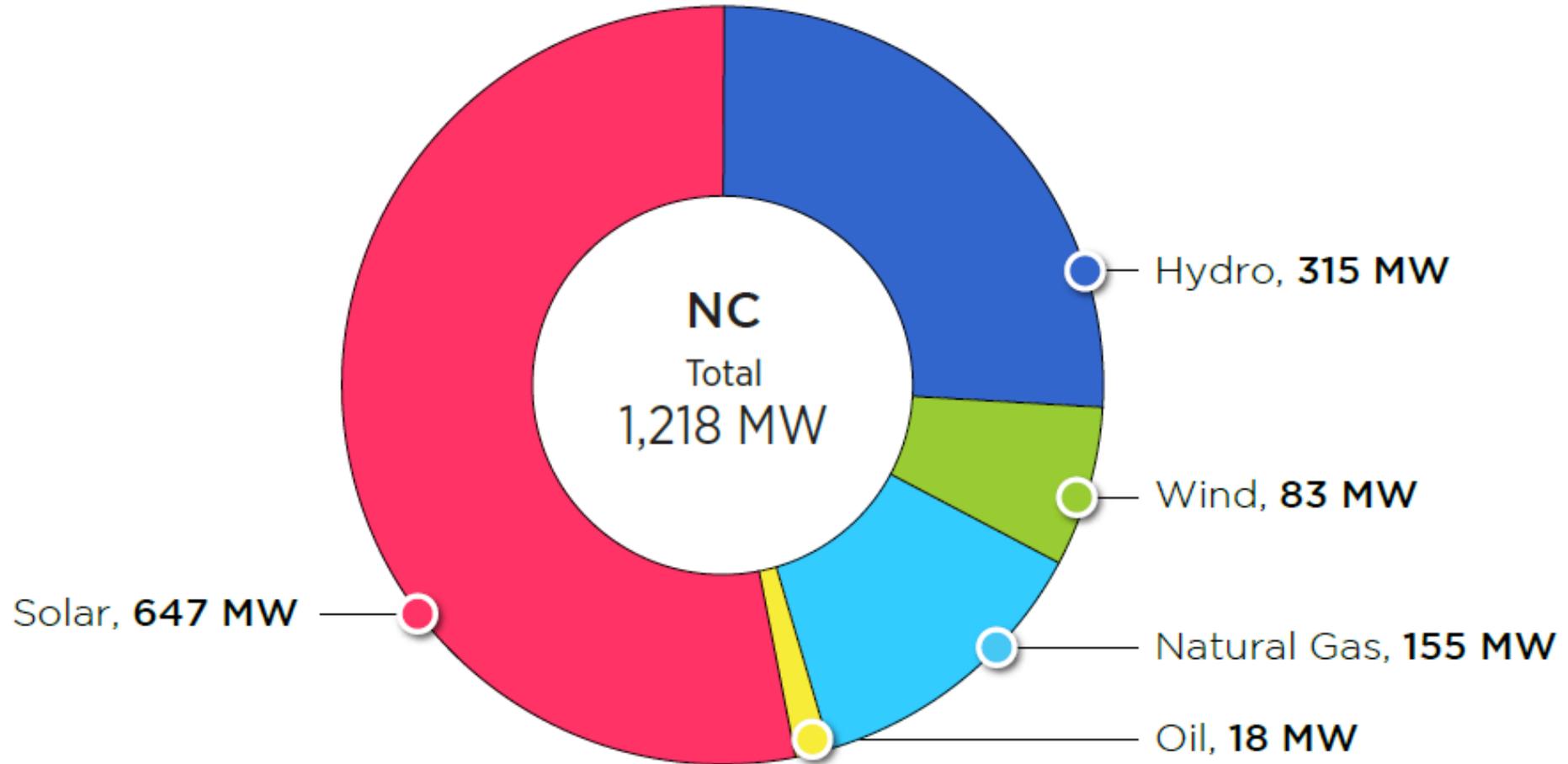
# PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



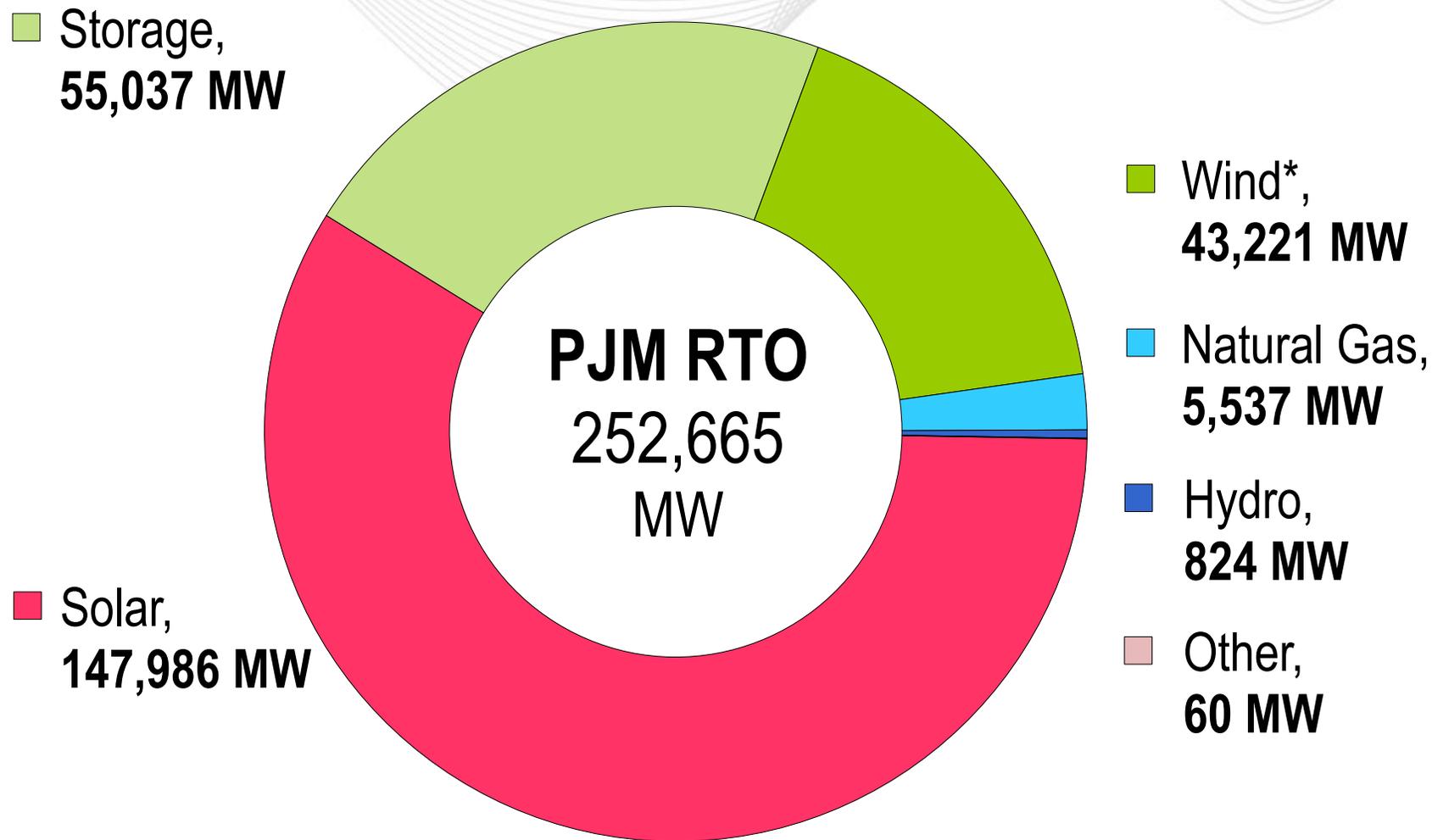
# North Carolina – Existing Installed Capacity

(CIRs – as of Dec. 31, 2022)



# PJM Queued Capacity (Nameplate) by Fuel Type

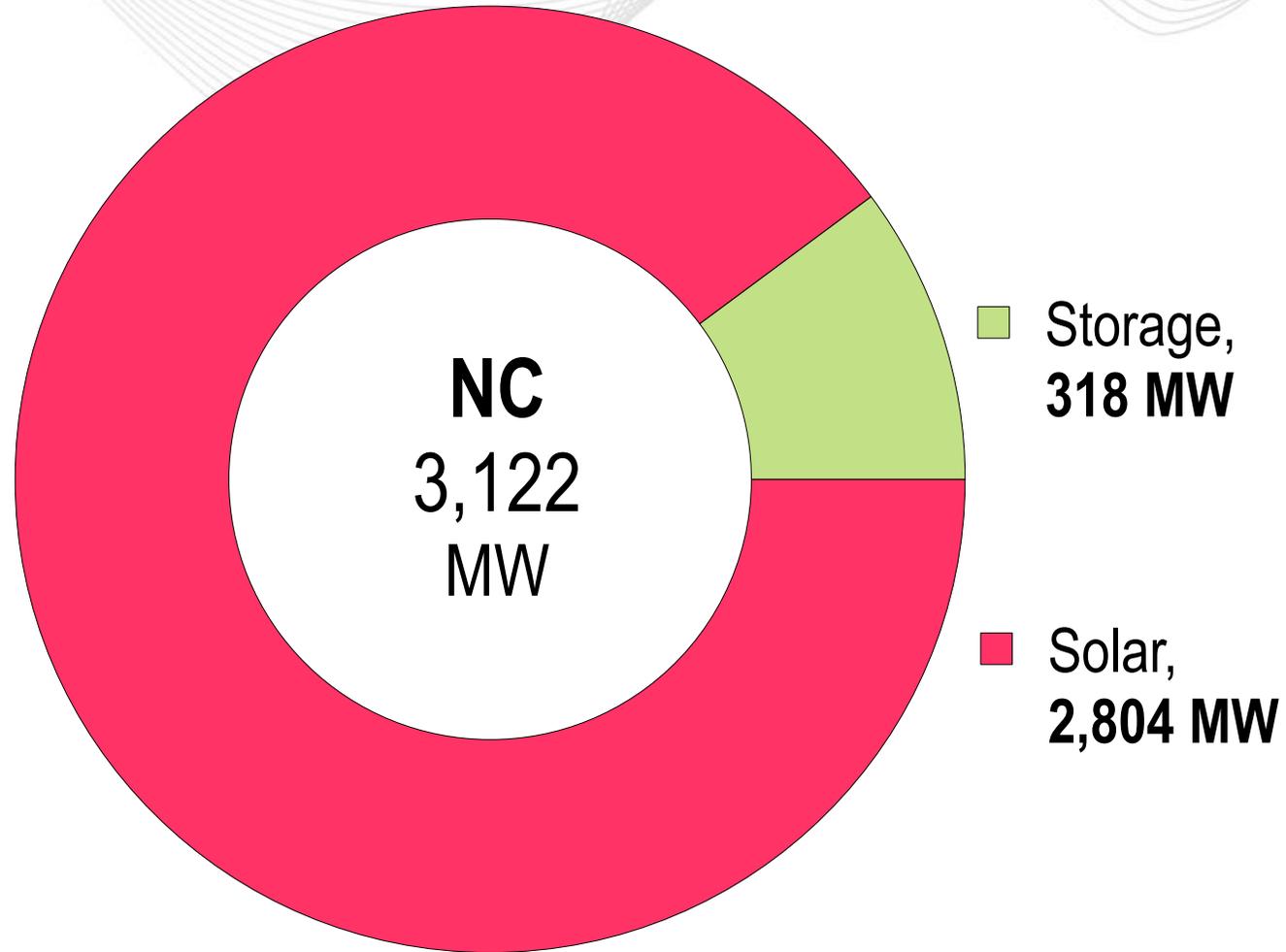
("Active" in the PJM Queue as of April 1, 2023)



\*Wind includes both onshore and offshore wind

# North Carolina Queued Capacity (Nameplate) by Fuel Type

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





# North Carolina – 2022 Generator Deactivations

North Carolina had no generators deactivate or give a notice of deactivation in 2022.

# Planning

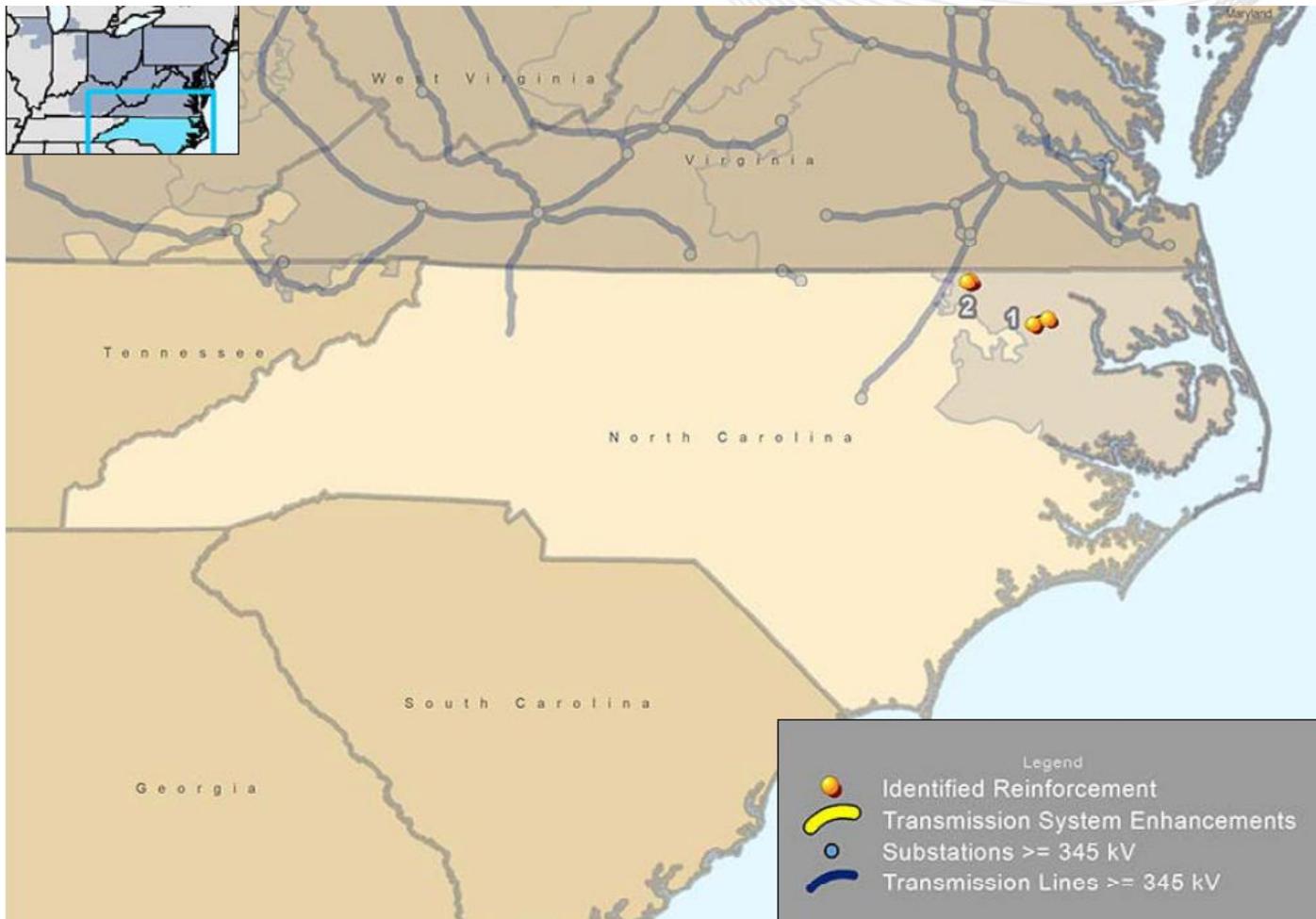
## Transmission Infrastructure Analysis

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>

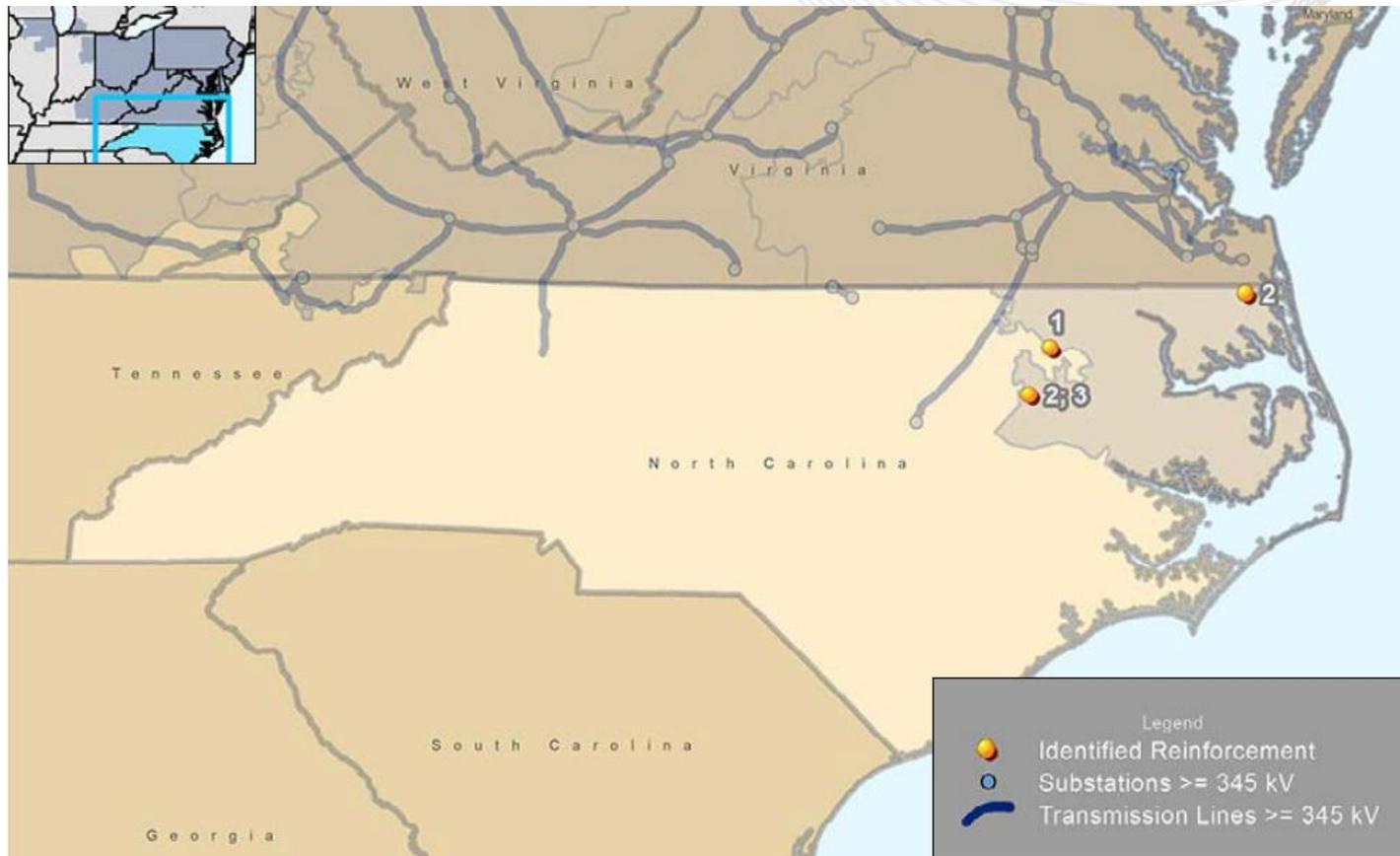
The complete list of all RTEP projects in PJM, including those from prior years, can be found at the **RTEP Upgrades & Status – Transmission Construction Status** page on pjm.com:

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



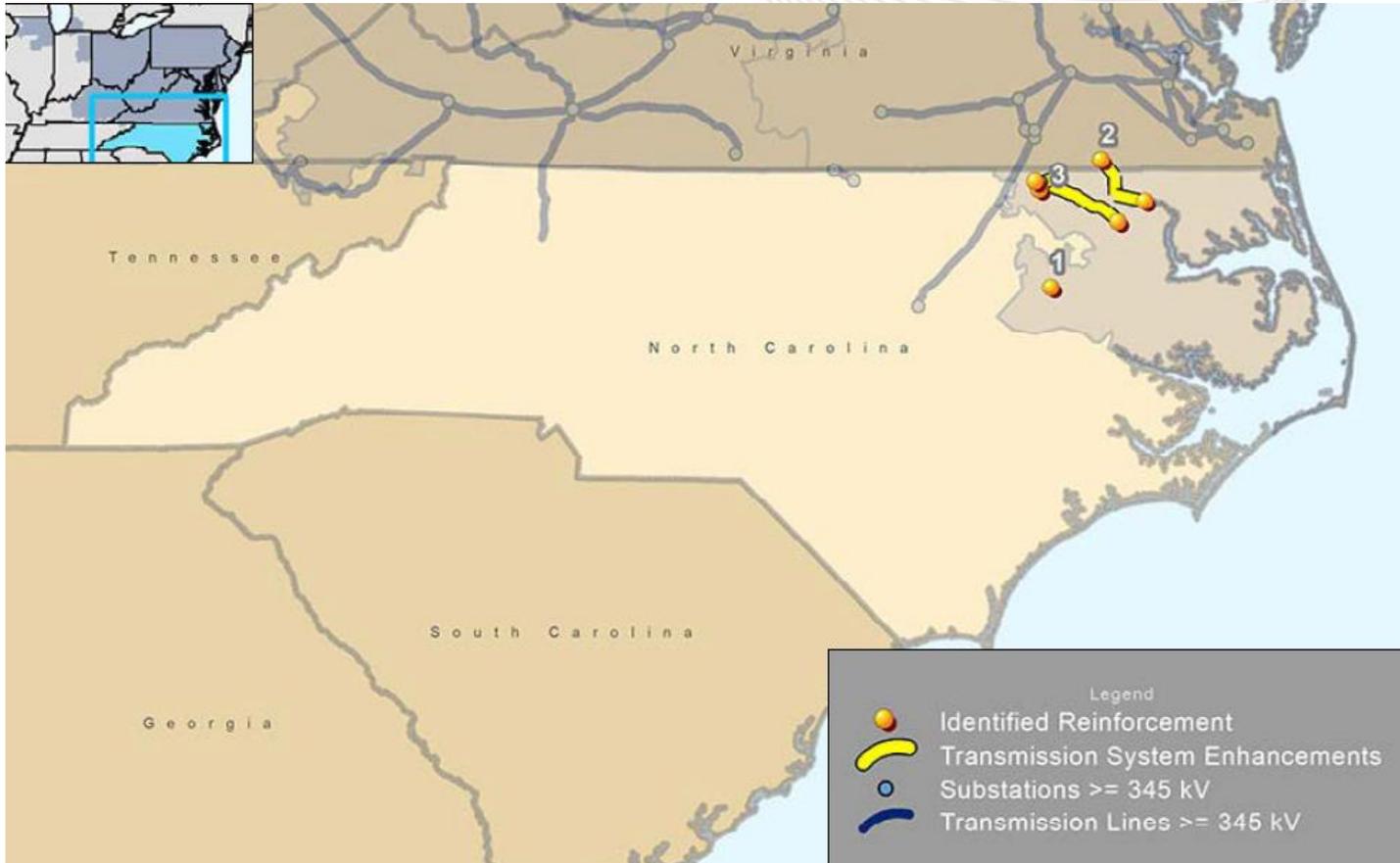
NC Baseline Projects	
TO Zone	Cost (\$M)
Dominion	\$19.94

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



NC Network Projects	
TO Zone	Cost (\$M)
Dominion	\$13.92

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.



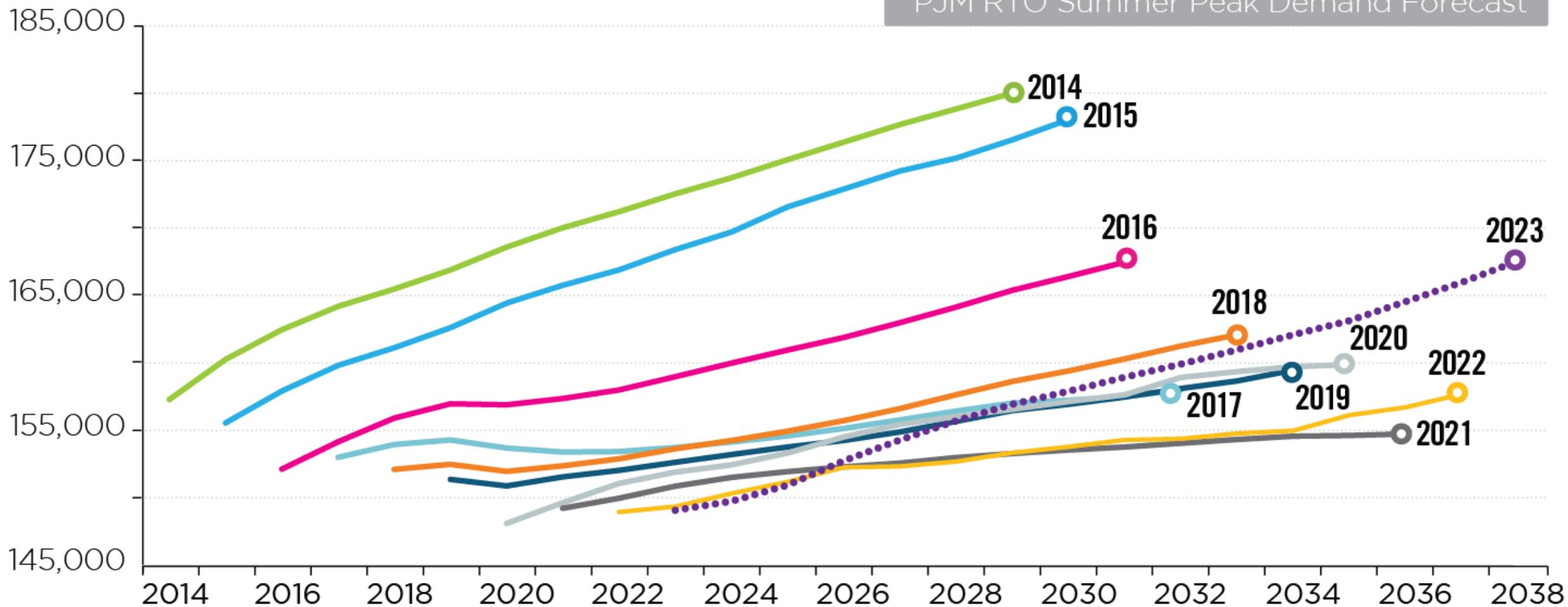
NC Supplemental Projects	
TO Zone	Cost (\$M)
Dominion	\$71.70

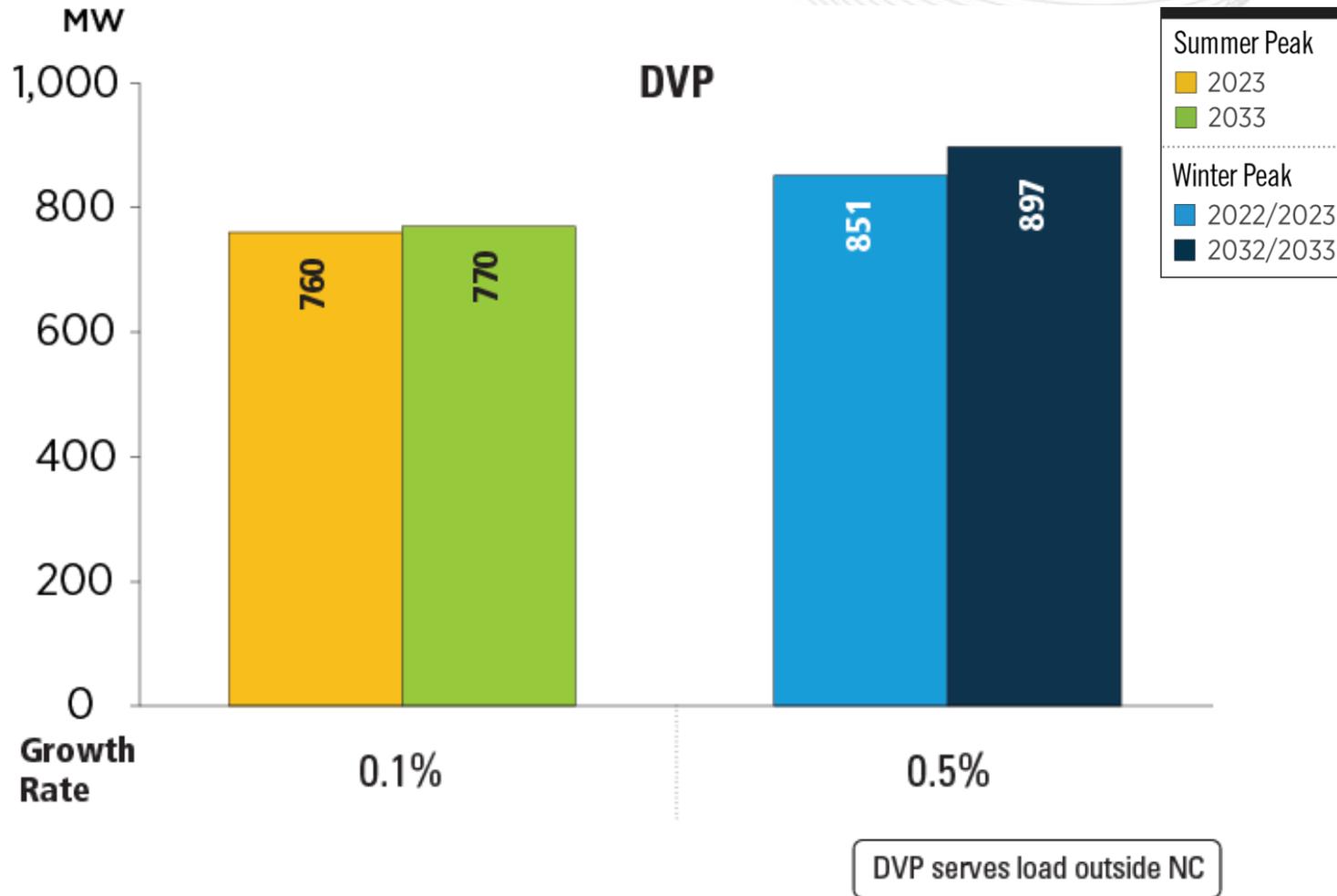
Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic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

# Planning Load Forecast

Load (MW)

PJM RTO Summer Peak Demand Forecast





### PJM RTO Summer Peak

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%

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.

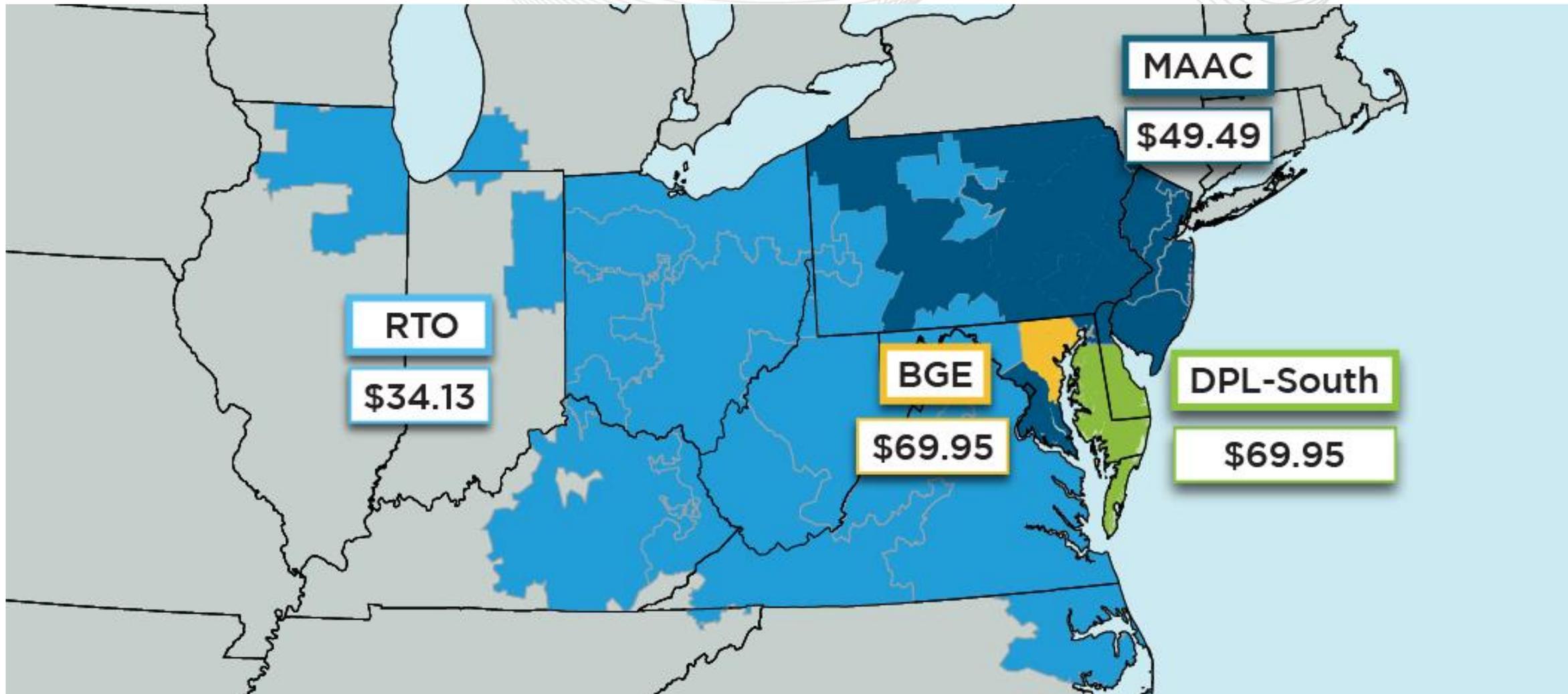


# Markets

## Capacity Market Results



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



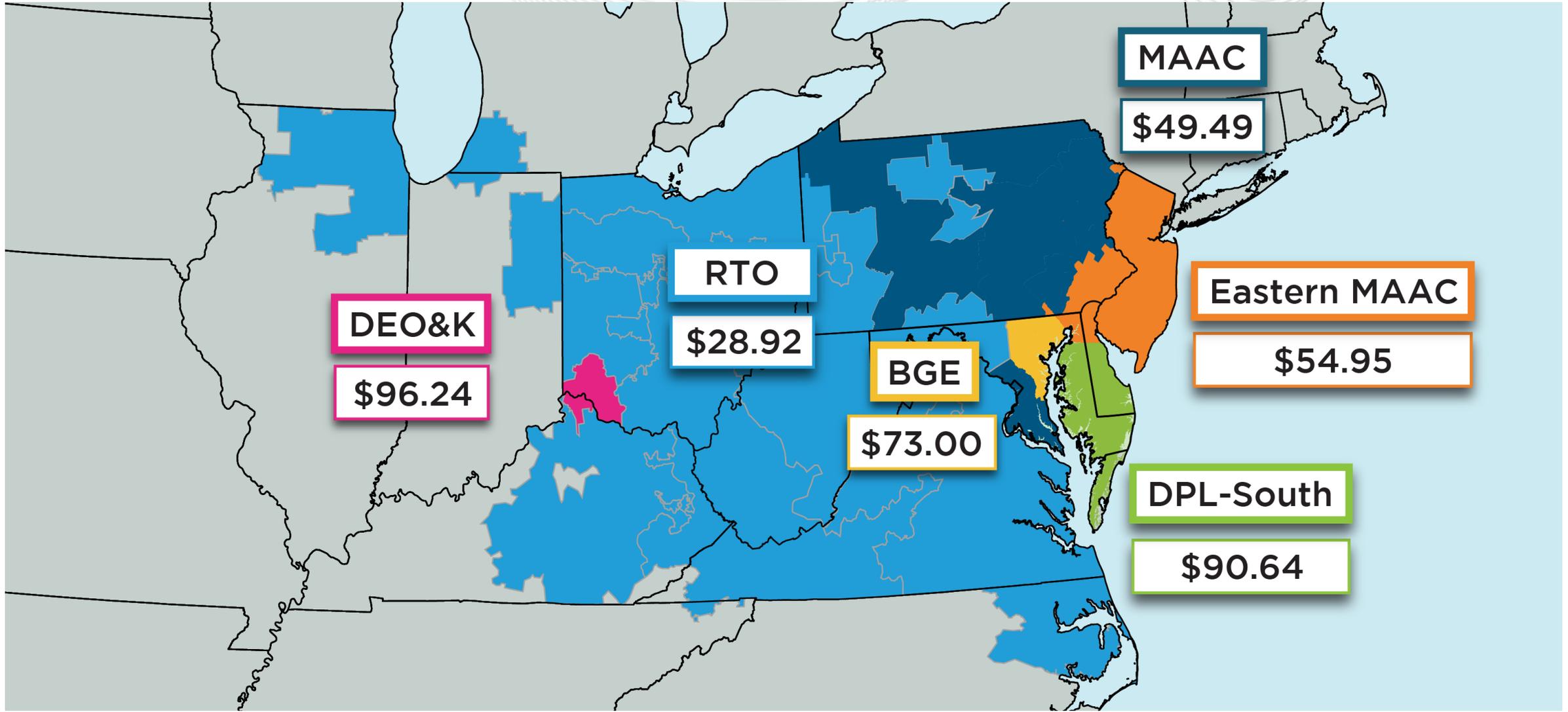


# 2023/24 Cleared MW (UCAP) by Resource Type

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



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





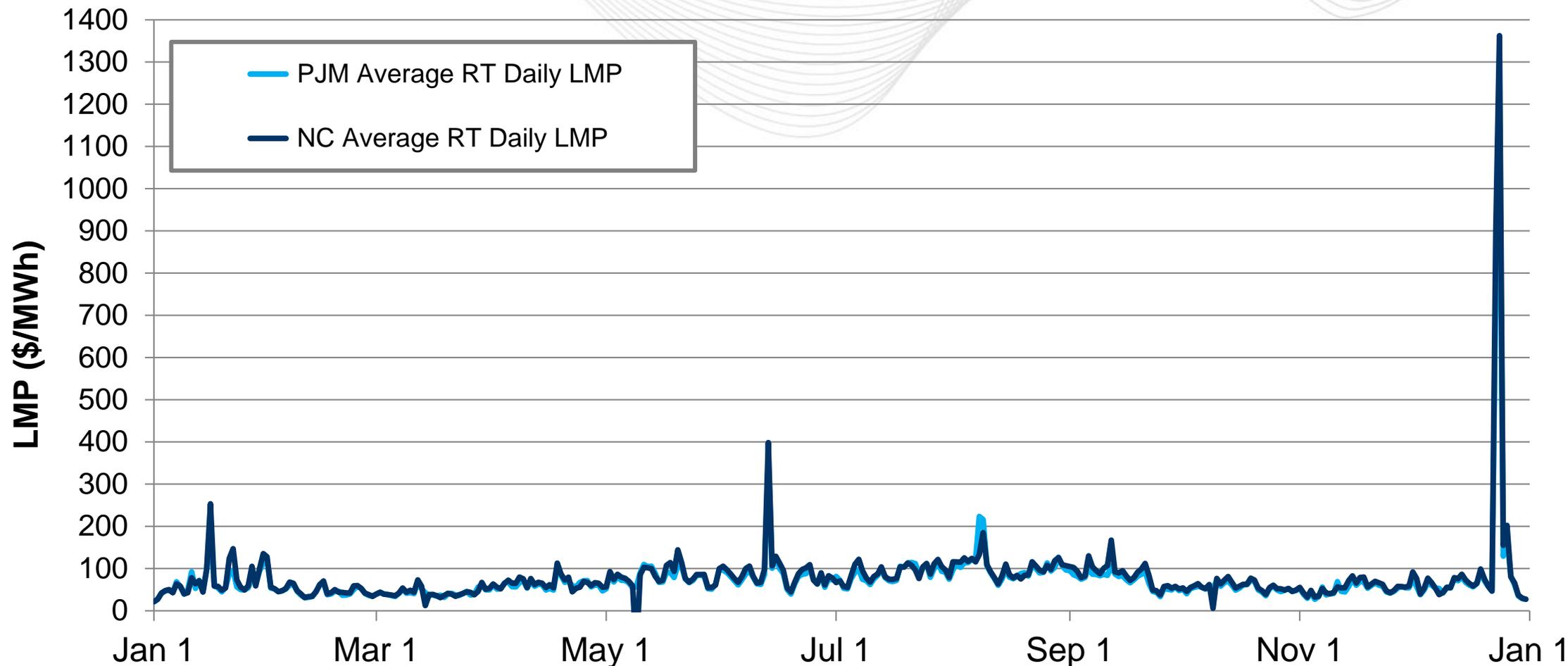
# 2024/2025 Cleared MW (UCAP) by Resource Type

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



# Markets

## Market Analysis



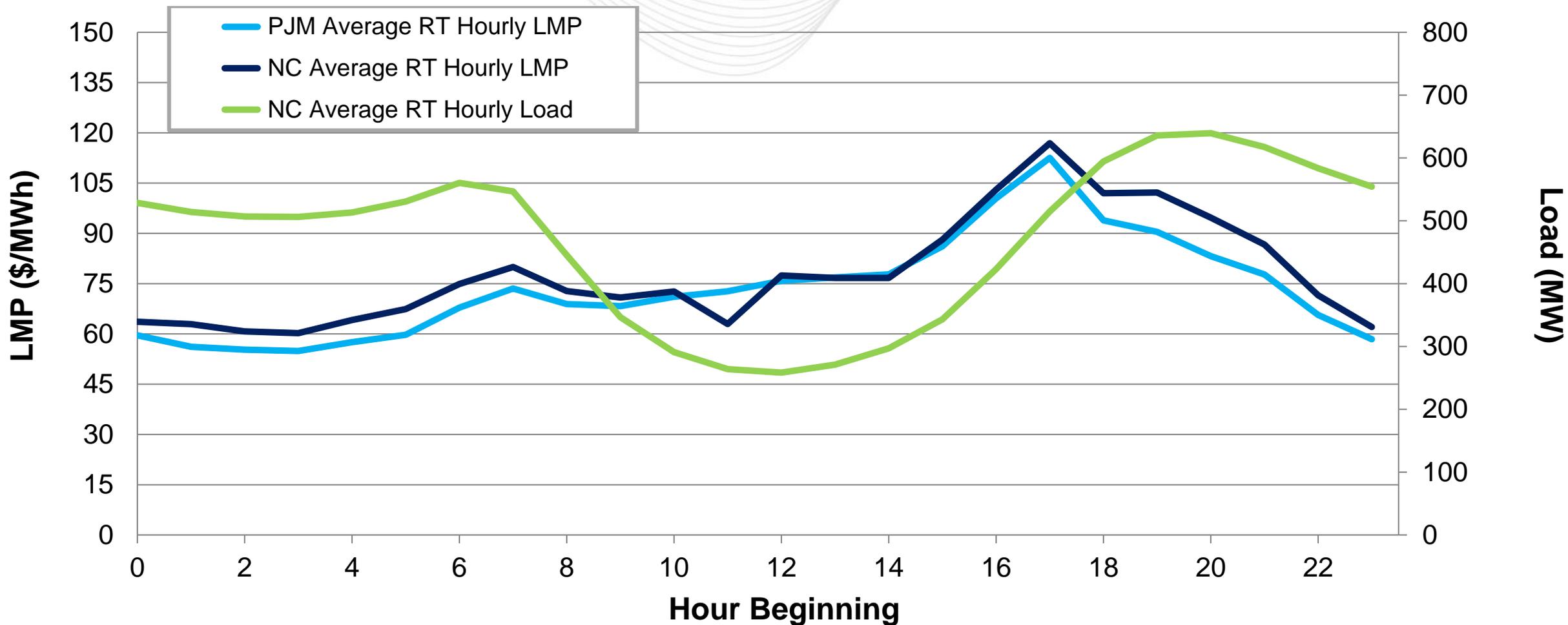
**Note:** The significant price spike in late Dec. 2022 was a result of Winter Storm Elliott's impact on system conditions. North Carolina had a negative average daily LMP on May 9, 2022.



# North Carolina – Average Hourly LMP and Load

(Jan. 1, 2022 – Dec. 31, 2022)

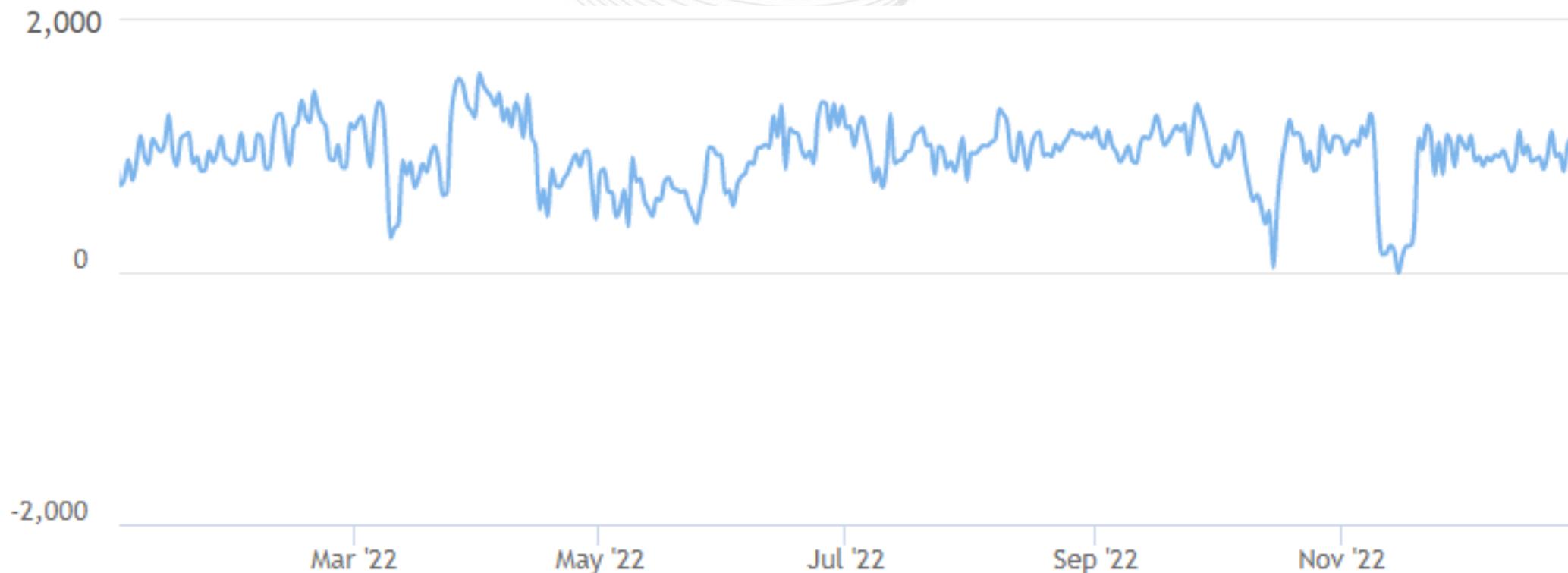
North Carolina's average hourly LMPs were slightly above the PJM average hourly LMP, except during mid-day hours.





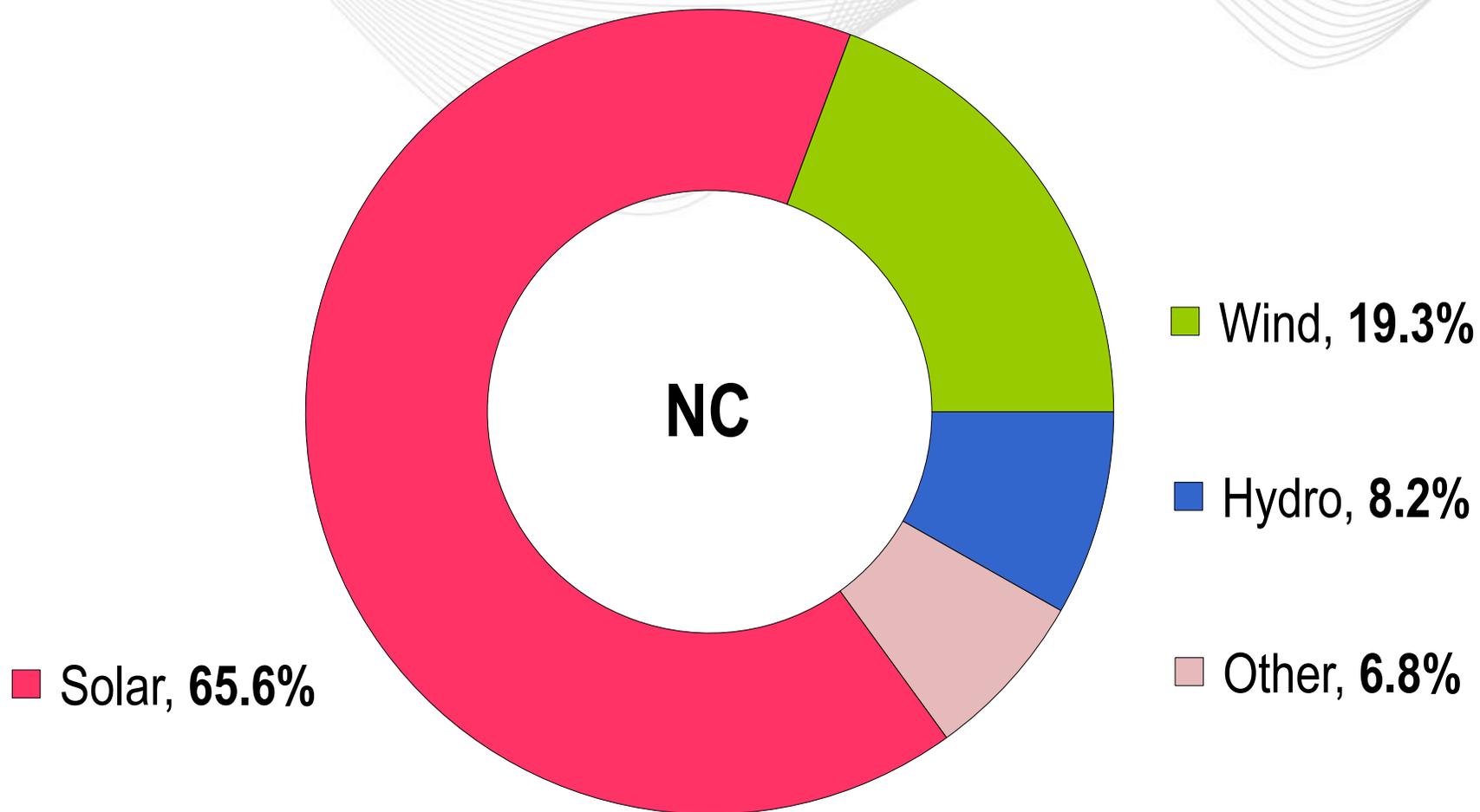
# North Carolina – Net Energy Import/Export Trend

(Jan. 2022 – Dec. 2022)



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

# Operations



The data in this chart comes from EIA Form 923 (2022) and represents only generators within the PJM portion of NC.



# 2005 – 2022 PJM Average Emissions

(March 2023)

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

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

