



# 2023 North Carolina State Infrastructure Report (January 1, 2023 – December 31, 2023)

June 2024

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

## Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

## Markets

- Market Analysis
- Net Energy Import/Export Trend

## Operations

- Generator Production
- Emissions Data

## In the North Carolina service territory:



### Existing Capacity:

- In the North Carolina portion of PJM, solar represents 59% of the total installed capacity, hydro represents 25%, and natural gas 13%.
- In PJM, natural gas and coal are 48% and 22% of total installed capacity.



### Interconnection Requests:

- Solar represents 89% of new interconnection requests while storage represents 11% of new requests.



### Deactivations:

North Carolina had no generators deactivate or give a notice of deactivation in 2023.



### RTEP 2023:

North Carolina's 2023 RTEP project total represents approximately \$98.8 million in investment.

## In the North Carolina service territory:



### Load Forecast:

North Carolina's summer peak load is projected to increase by 0.7% annually over the next ten years, while the winter peak is projected to increase by 0.6%.



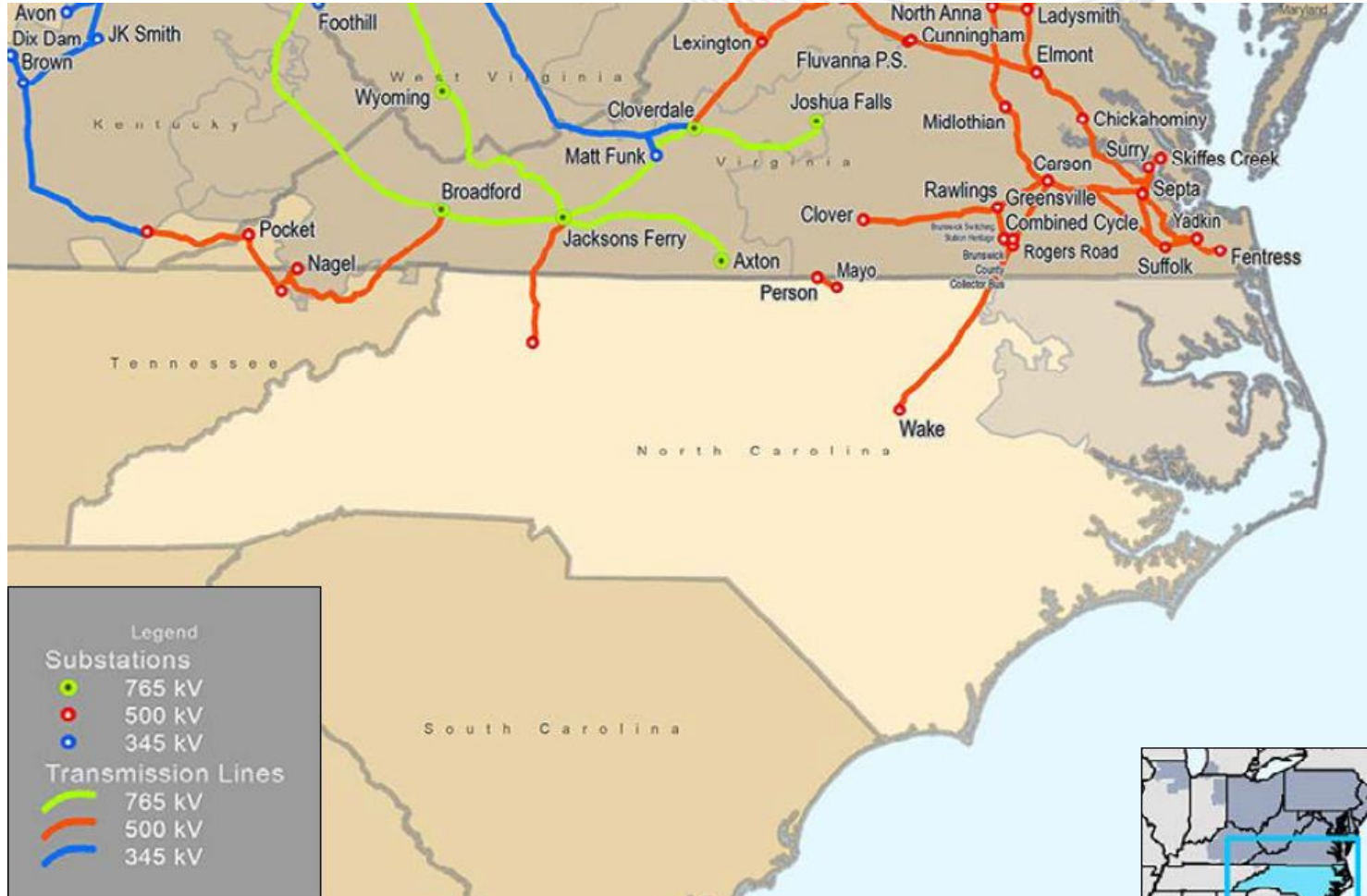
### Capacity Market:

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



### Market Performance:

North Carolina's average hourly LMPs were higher than the PJM average hourly LMP.



The PJM service area in North Carolina is the Dominion zone and is represented by the shaded portion of the map.

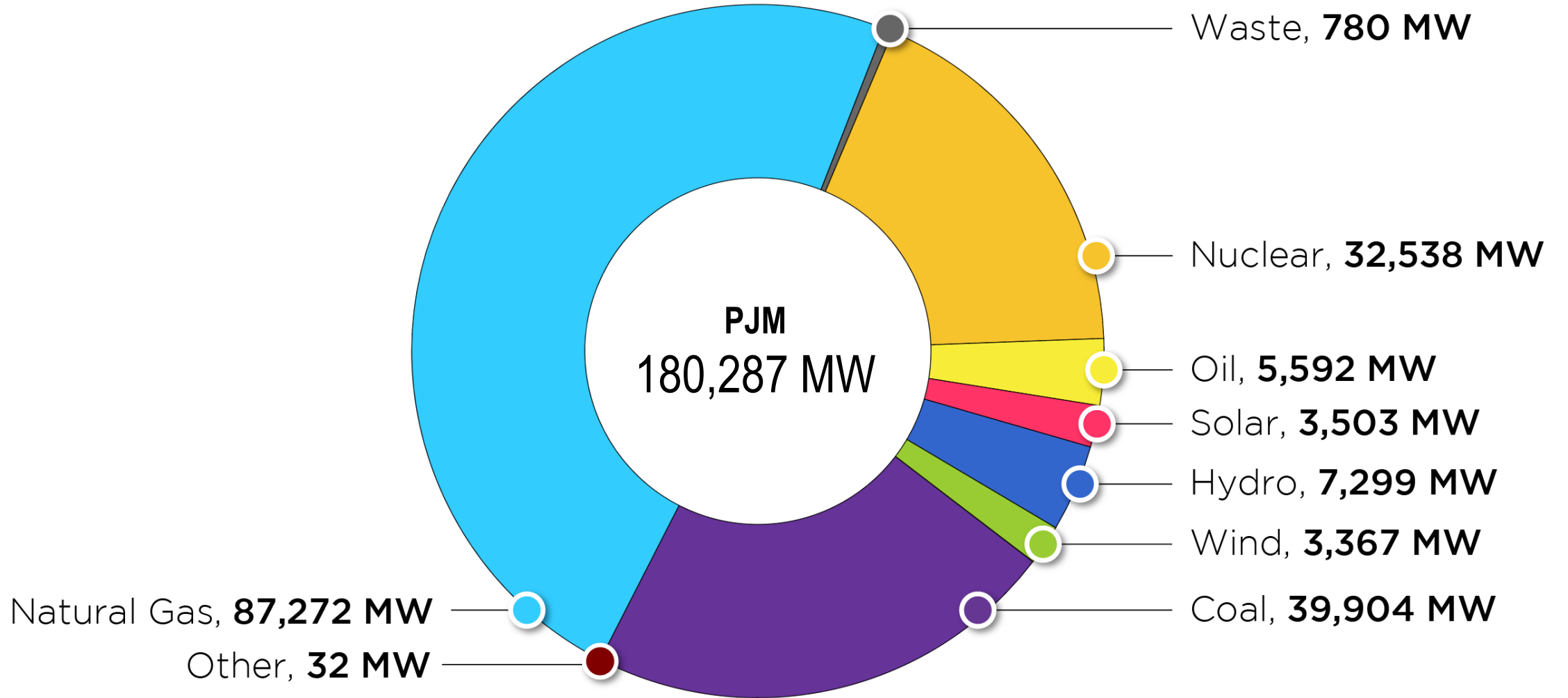
PJM operates transmission lines that extend beyond the service territory.

# Planning

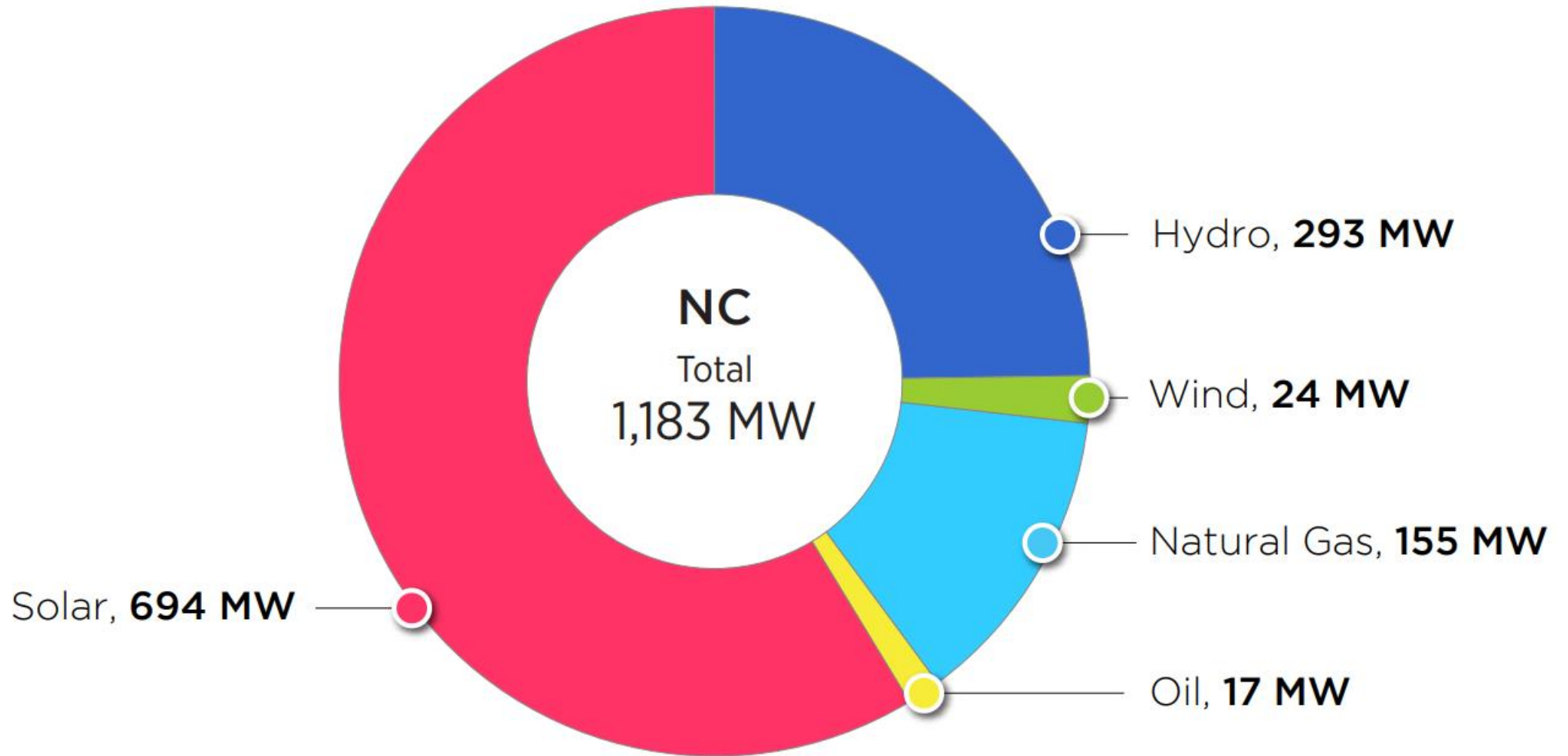
## Generation Portfolio Analysis

# PJM Existing Installed Capacity Mix

(CIRs – as of Dec. 31, 2023)



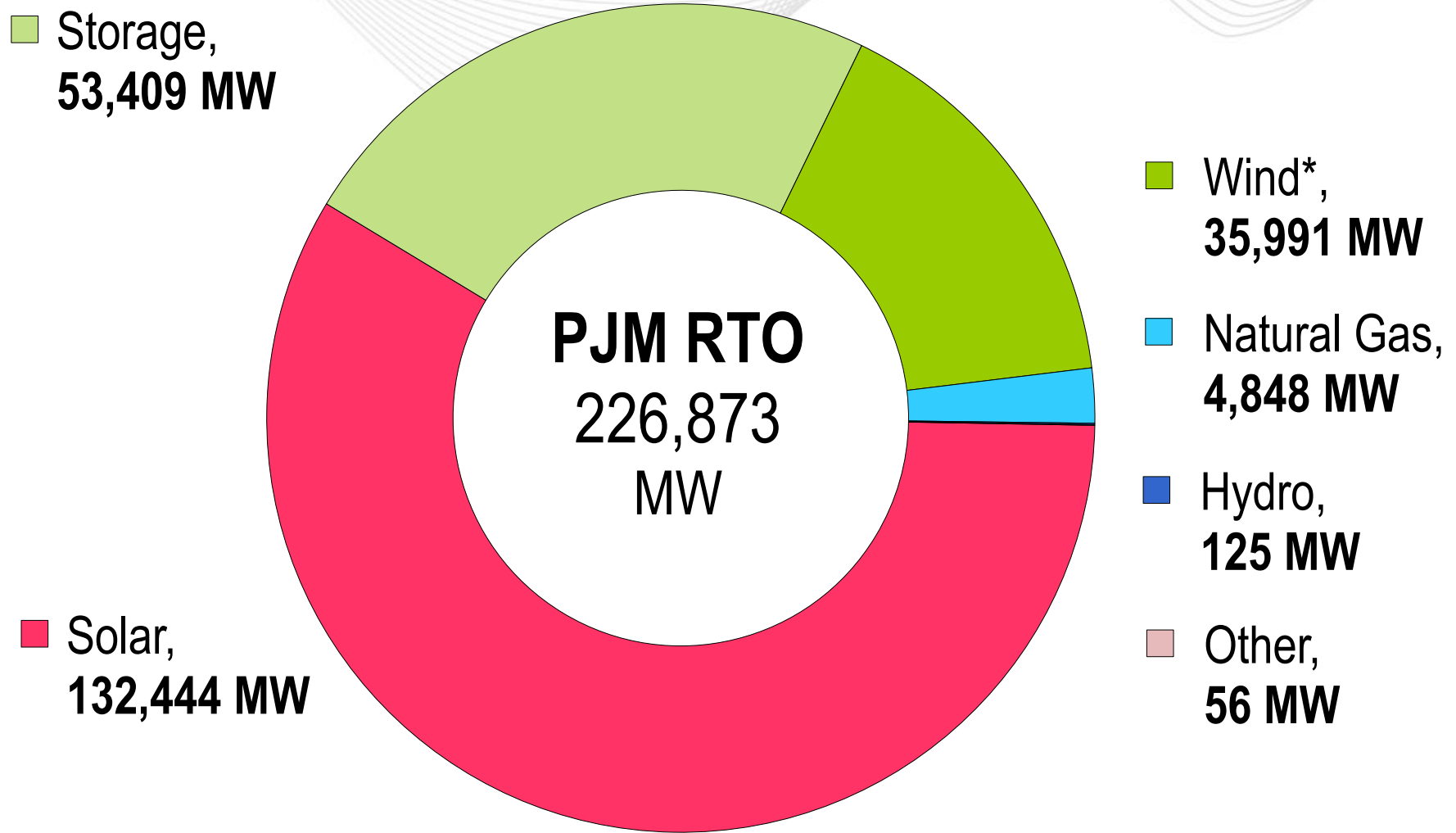






# PJM Queued Capacity (Nameplate) by Fuel Type

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

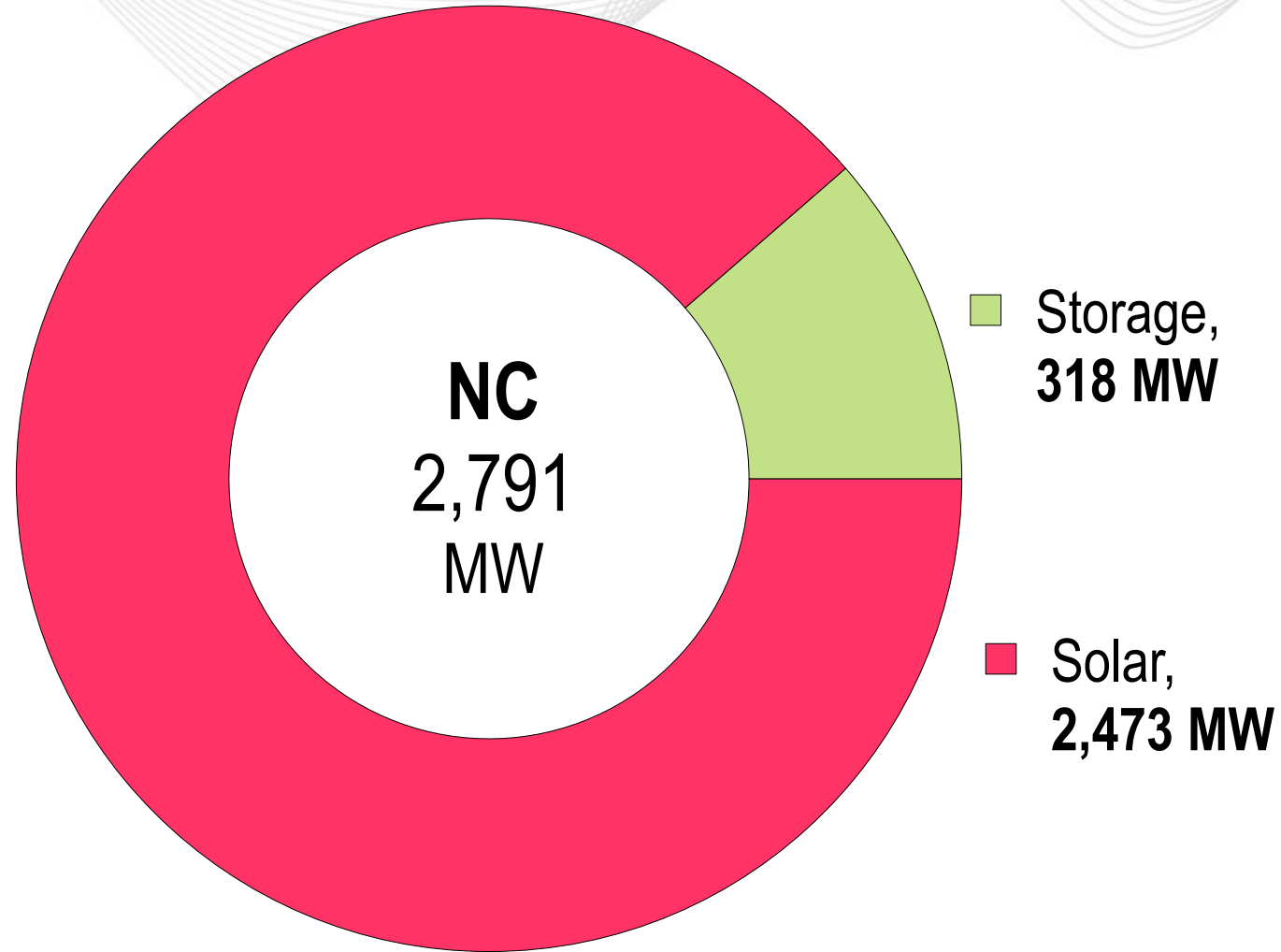


\*Wind includes both onshore and offshore wind



# North Carolina Queued Capacity (Nameplate) by Fuel Type

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





# North Carolina – 2023 Generator Deactivations

North Carolina had no generators deactivate or give a notice of deactivation in 2023.

# Planning

## Transmission Infrastructure Analysis

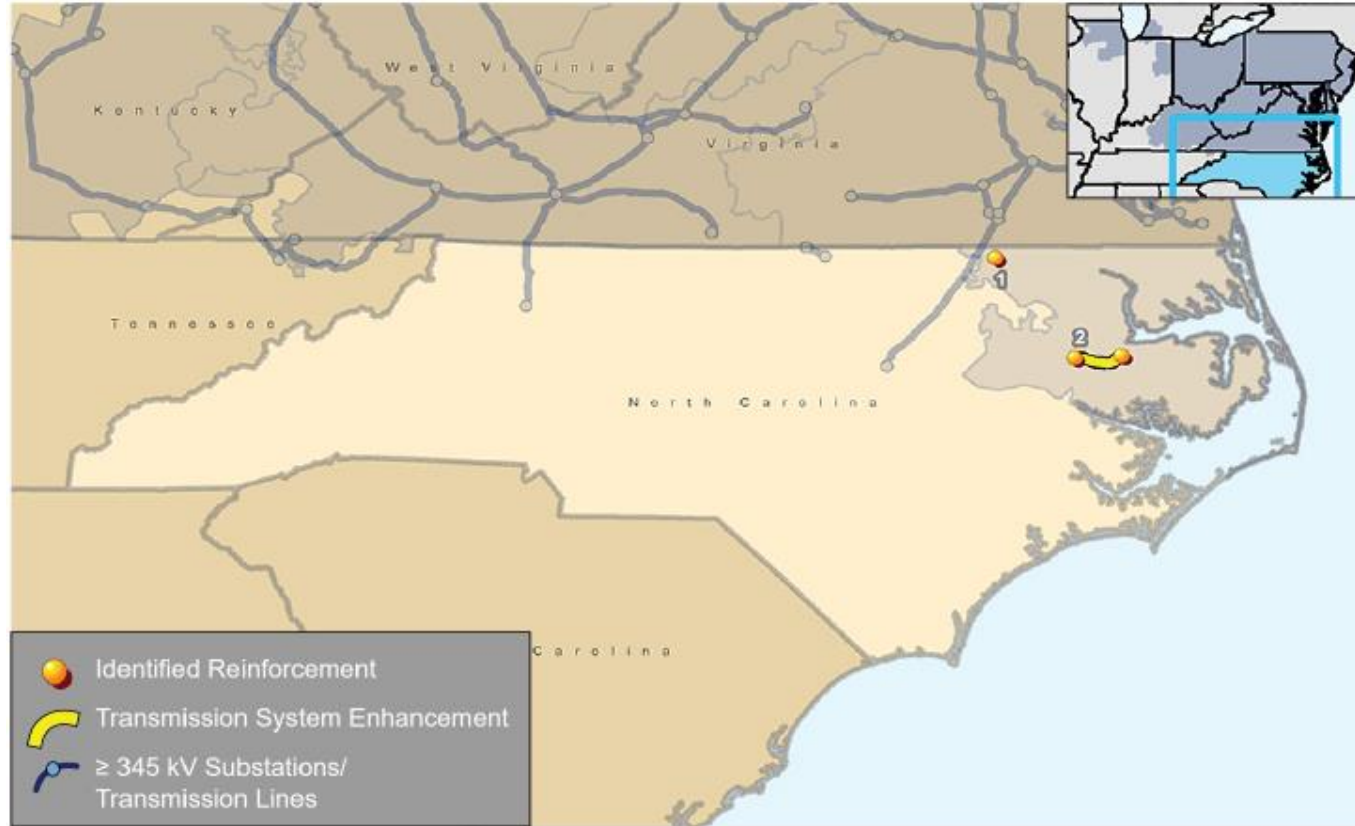
For reporting purposes, the 2023 state infrastructure reports provide maps displaying all baseline, network, and supplemental projects for the respective state. The reports also include aggregated project costs for each type of project within each state. The costs listed in the state infrastructure reports 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>.

North Carolina had no baseline projects in 2023.

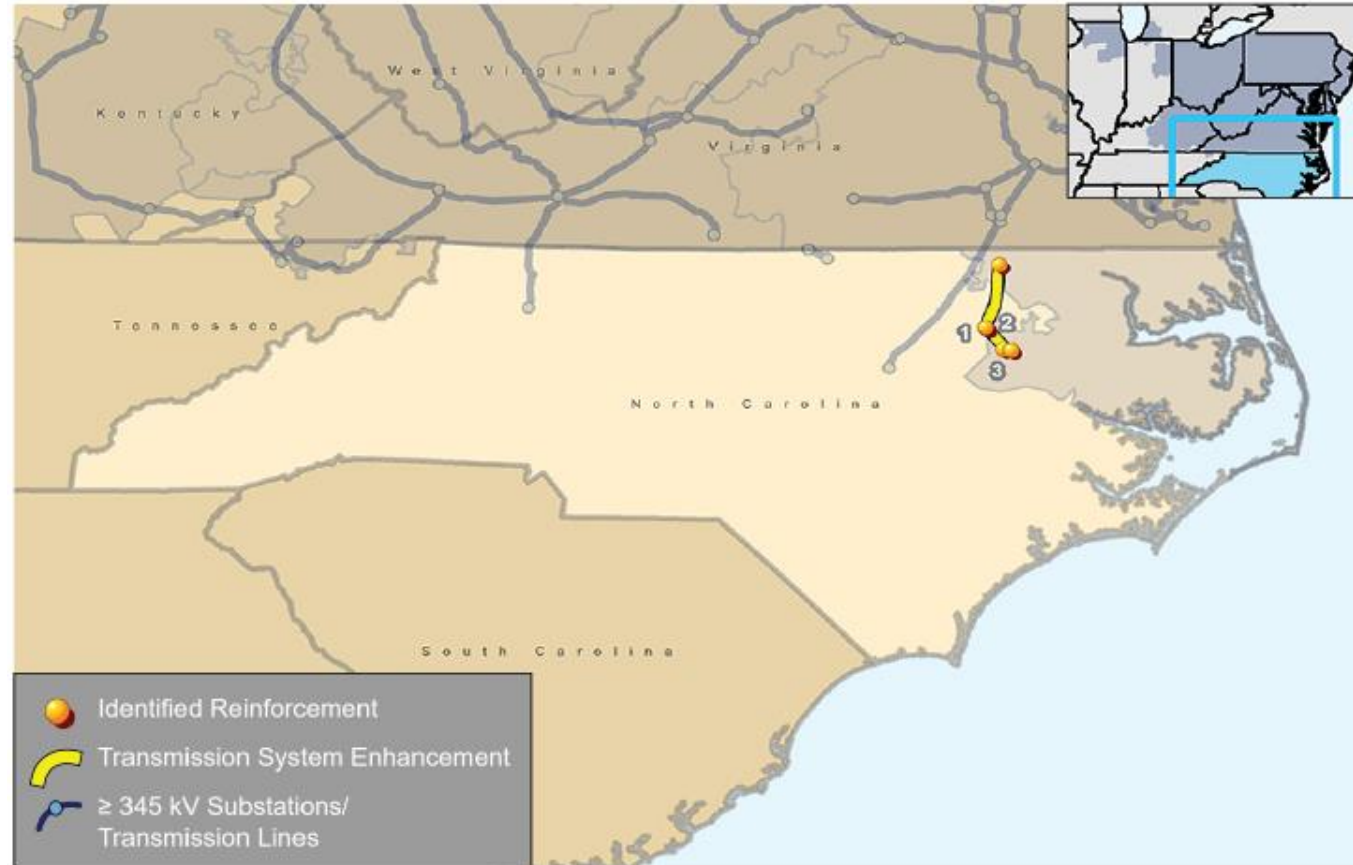
Note: Baseline upgrades are those that resolve a system reliability criteria violation. Baseline projects listed in the annual RTEP report reflect project costs within a specific location and are not indicative of the project's cost allocation.



The 2023 RTEP has \$6.7 million in network upgrades located in North Carolina.

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 \$92.1 million in supplemental projects located in North Carolina.

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

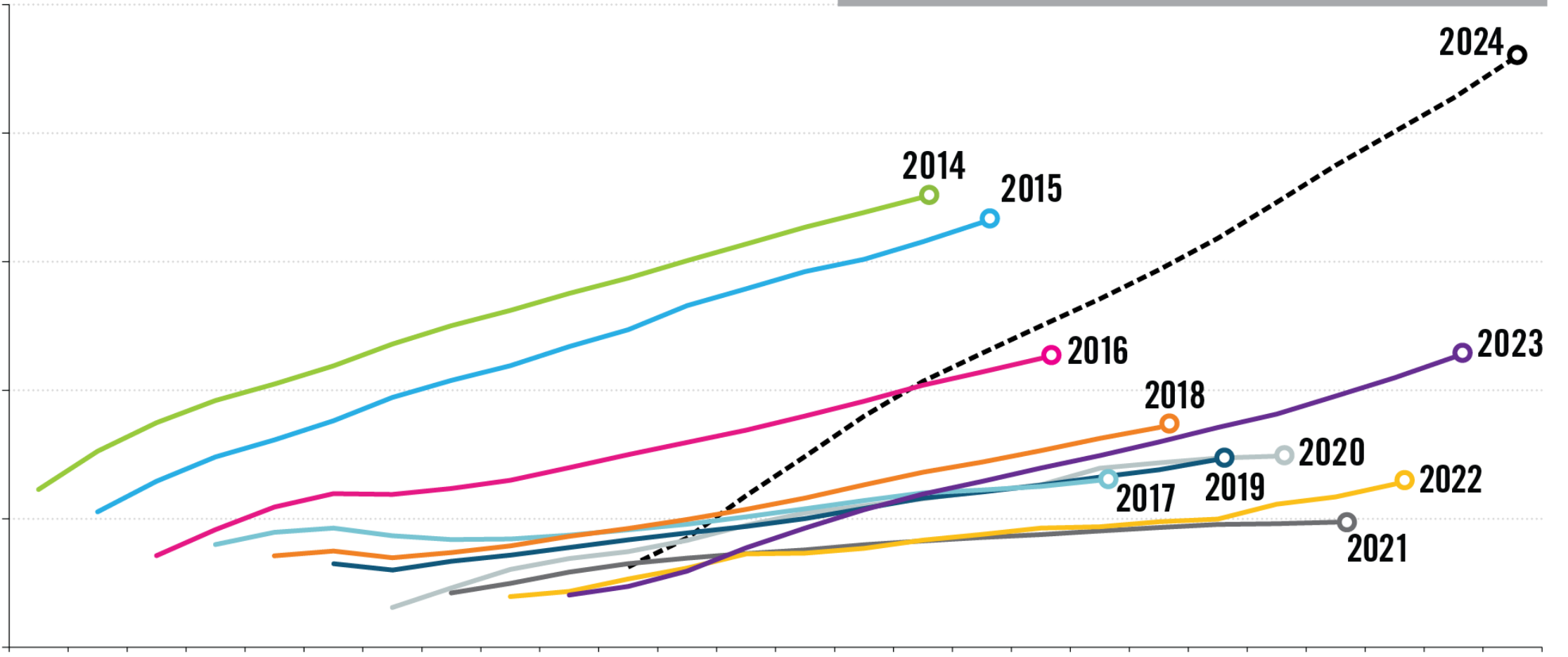
165,000

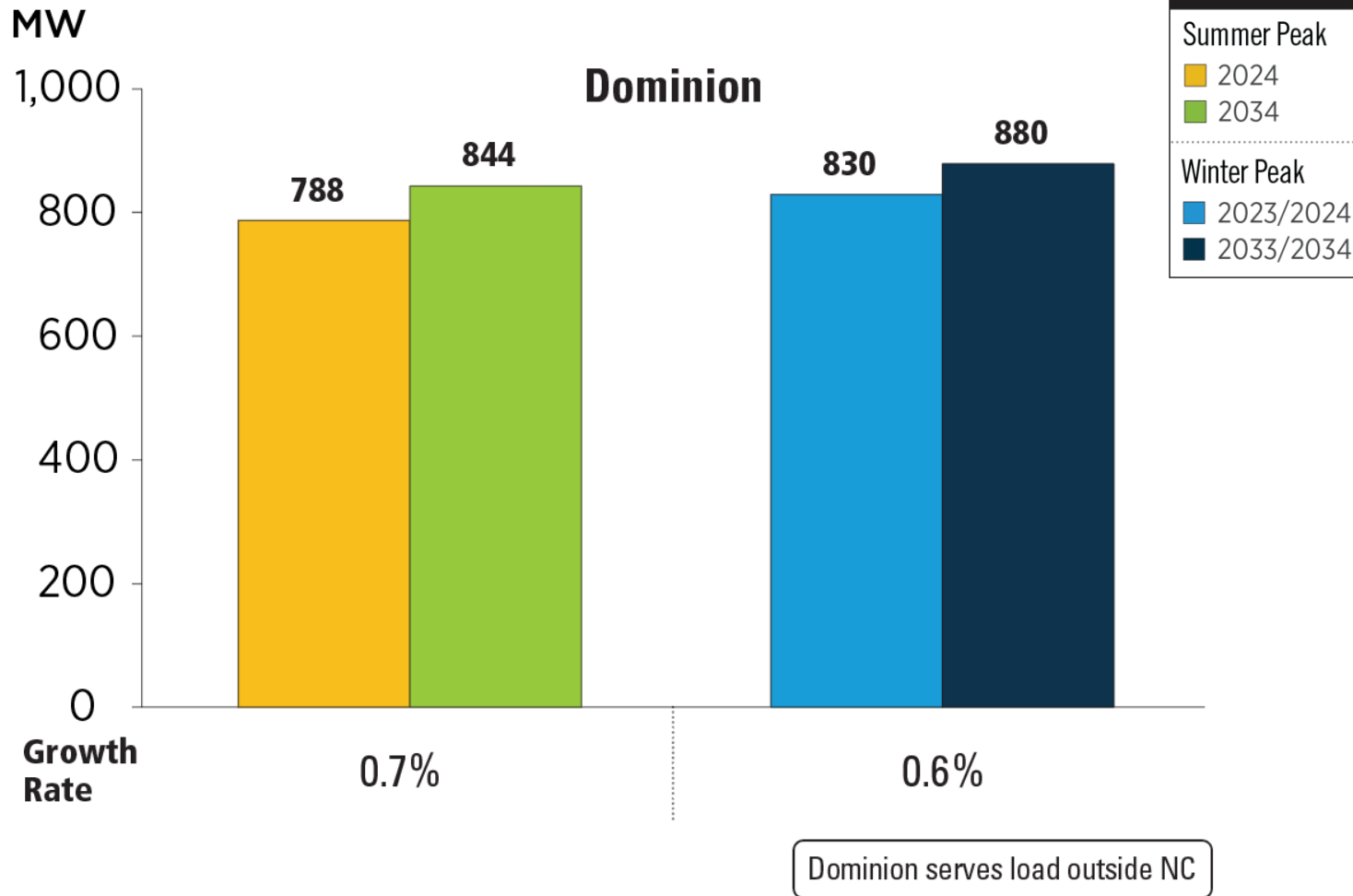
155,000

145,000

PJM RTO Summer Peak Demand Forecast

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



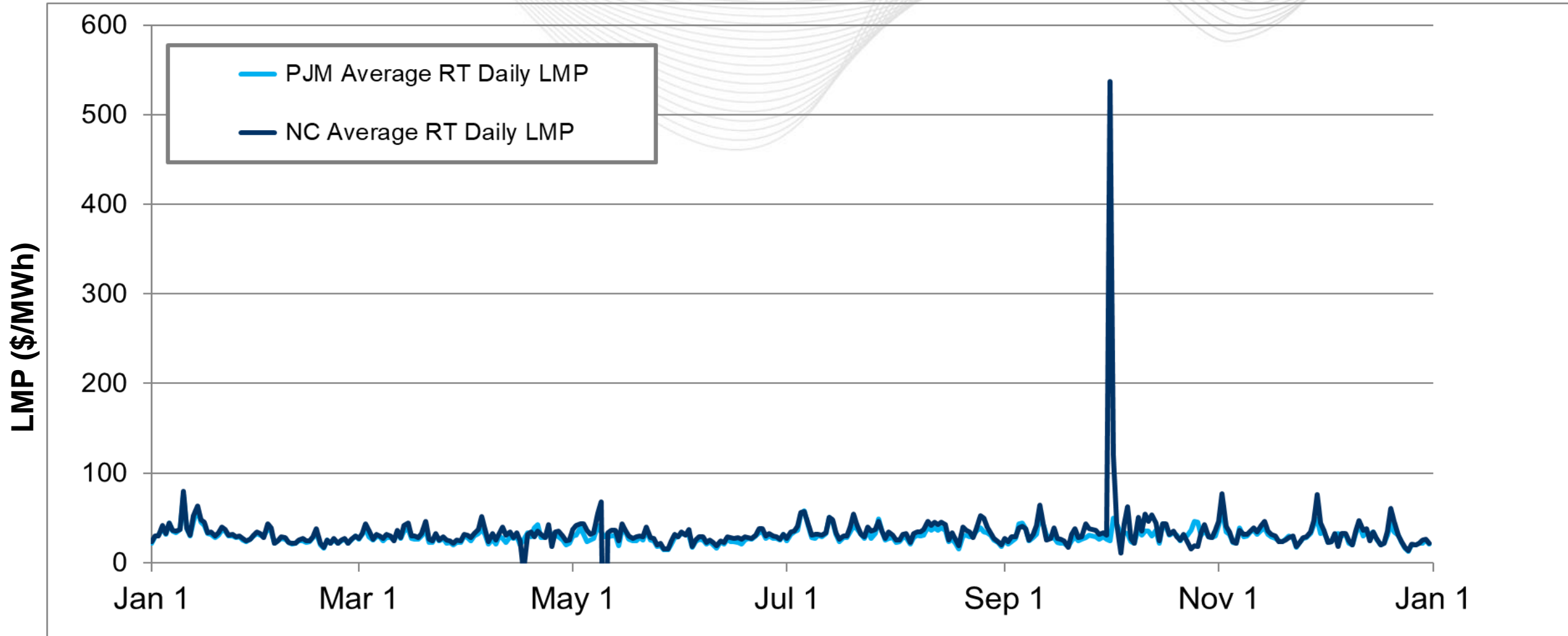


PJM RTO Summer Peak		PJM RTO Winter Peak	
2024	2034	2023/2024	2033/2034
151,247 MW	176,822 MW	134,659 MW	163,069 MW
Growth Rate 1.6%		Growth Rate 1.9%	

\* PJM notes that Dominion Virginia Power serves load other than in North Carolina. The summer and winter peak megawatt values in this table each reflect the estimated amount of forecasted load to be served by Dominion Virginia Power solely in North Carolina. Estimated amounts were calculated based on the average share of Dominion Virginia Power’s real-time summer and winter peak load located in North Carolina over the past five years.

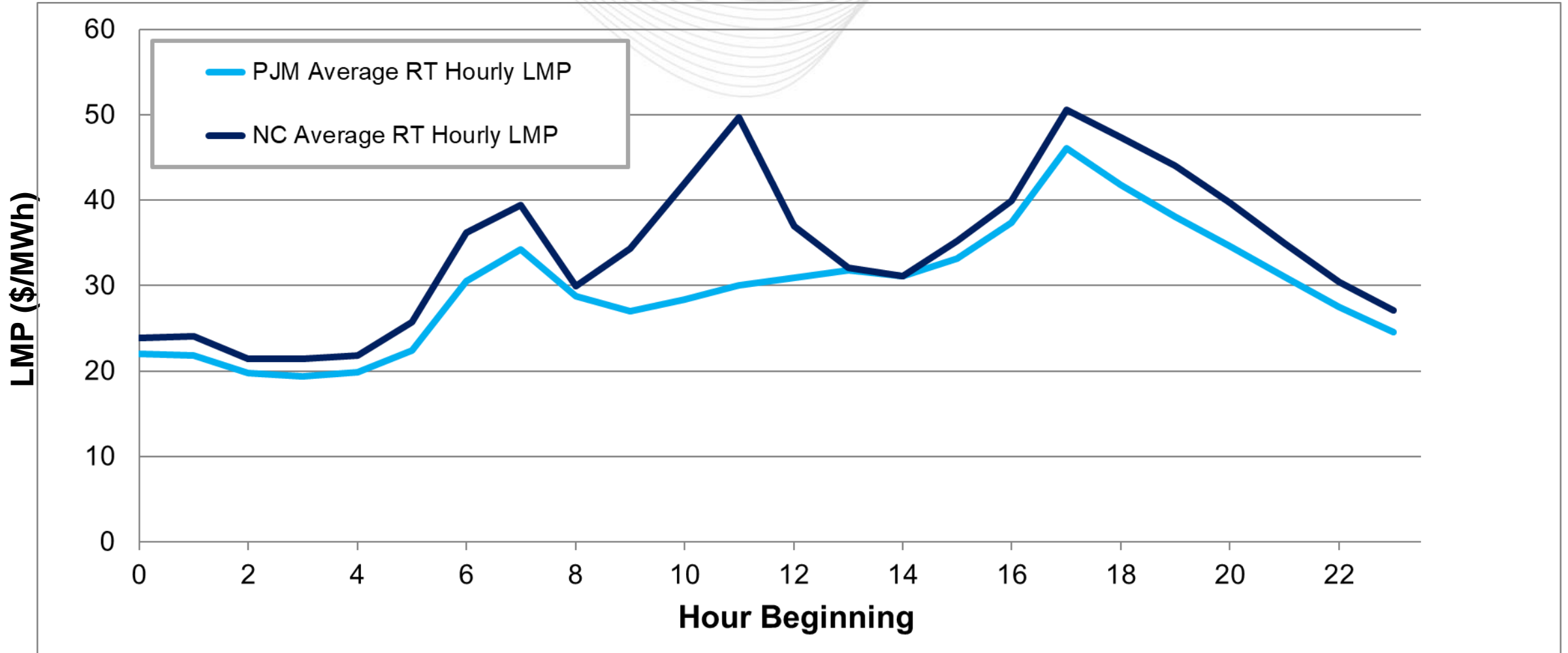
# Markets

## Market Analysis



**NOTE:** North Carolina saw negative average daily LMPs on April 17 and May 10. The significant price spike on Oct. 1 and 2 was the result of local system congestion.

North Carolina's average hourly LMPs were higher than the PJM average hourly LMP.

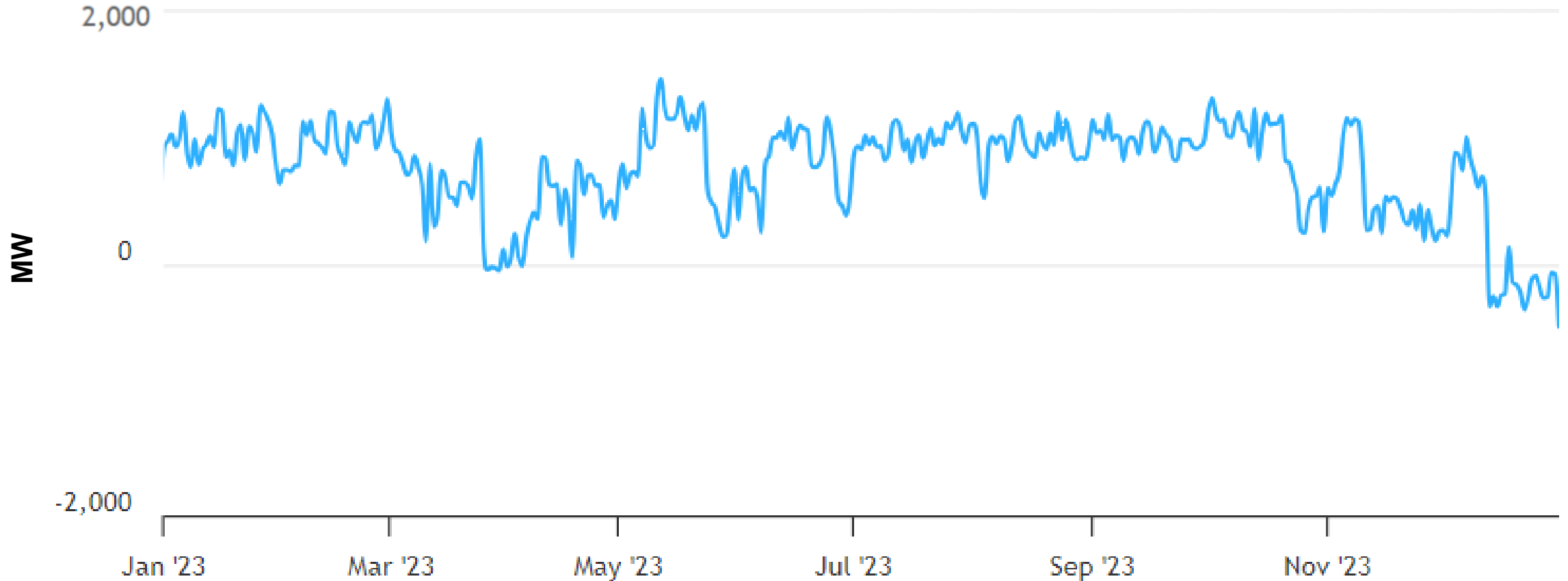






# North Carolina – Net Energy Import/Export Trend

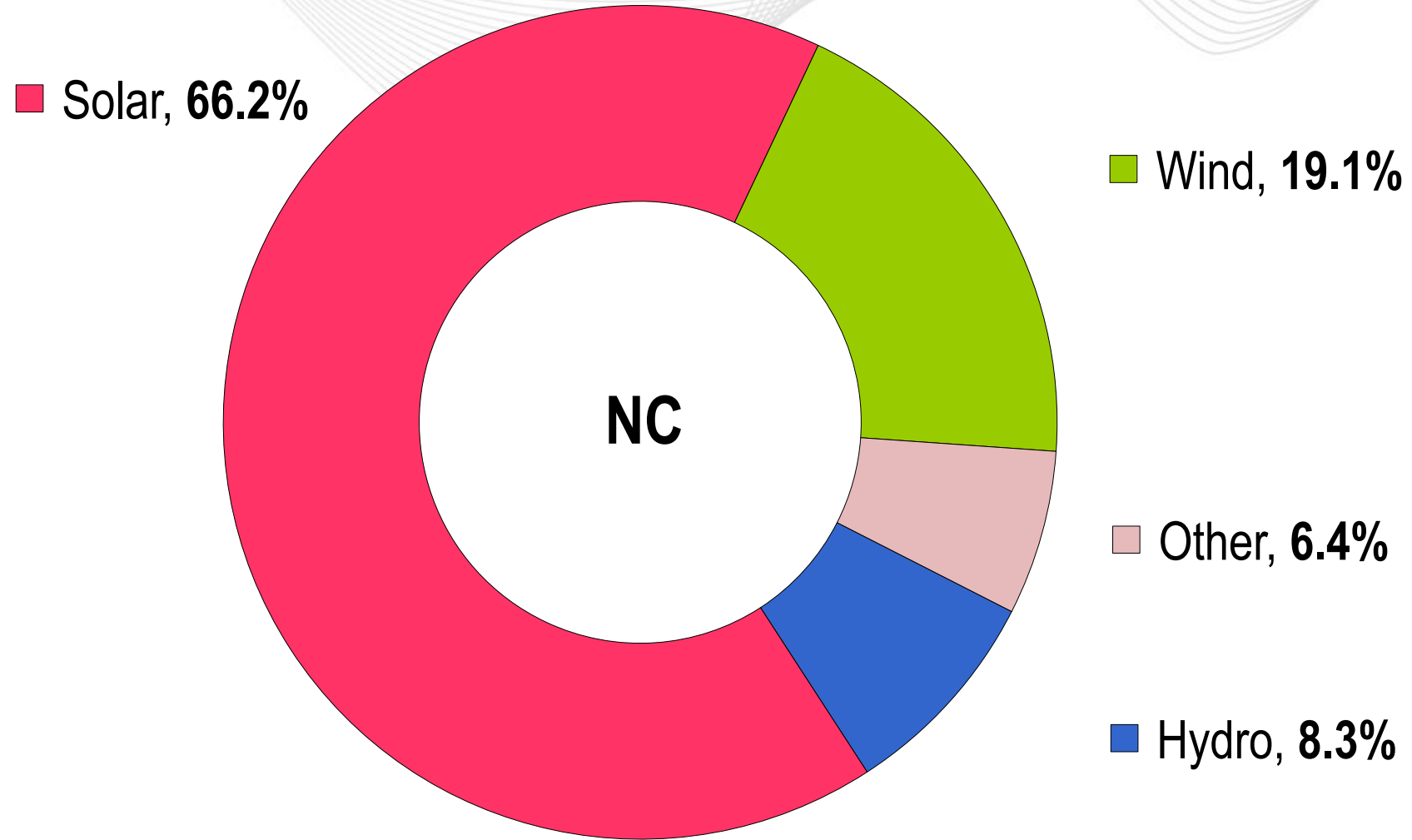
(Jan. 2023 – Dec. 2023)



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

# Operations

# North Carolina – 2023 Generator Production



The data in this chart comes from EIA Form 923 (2023) and represents only generators within the PJM portion of North Carolina.



# 2005–2023 PJM Average Emissions

(March 2024)

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

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

