



2020 New Jersey State Infrastructure Report

(January 1, 2020 – December 31, 2020)

April 2021

1. Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

2. Markets

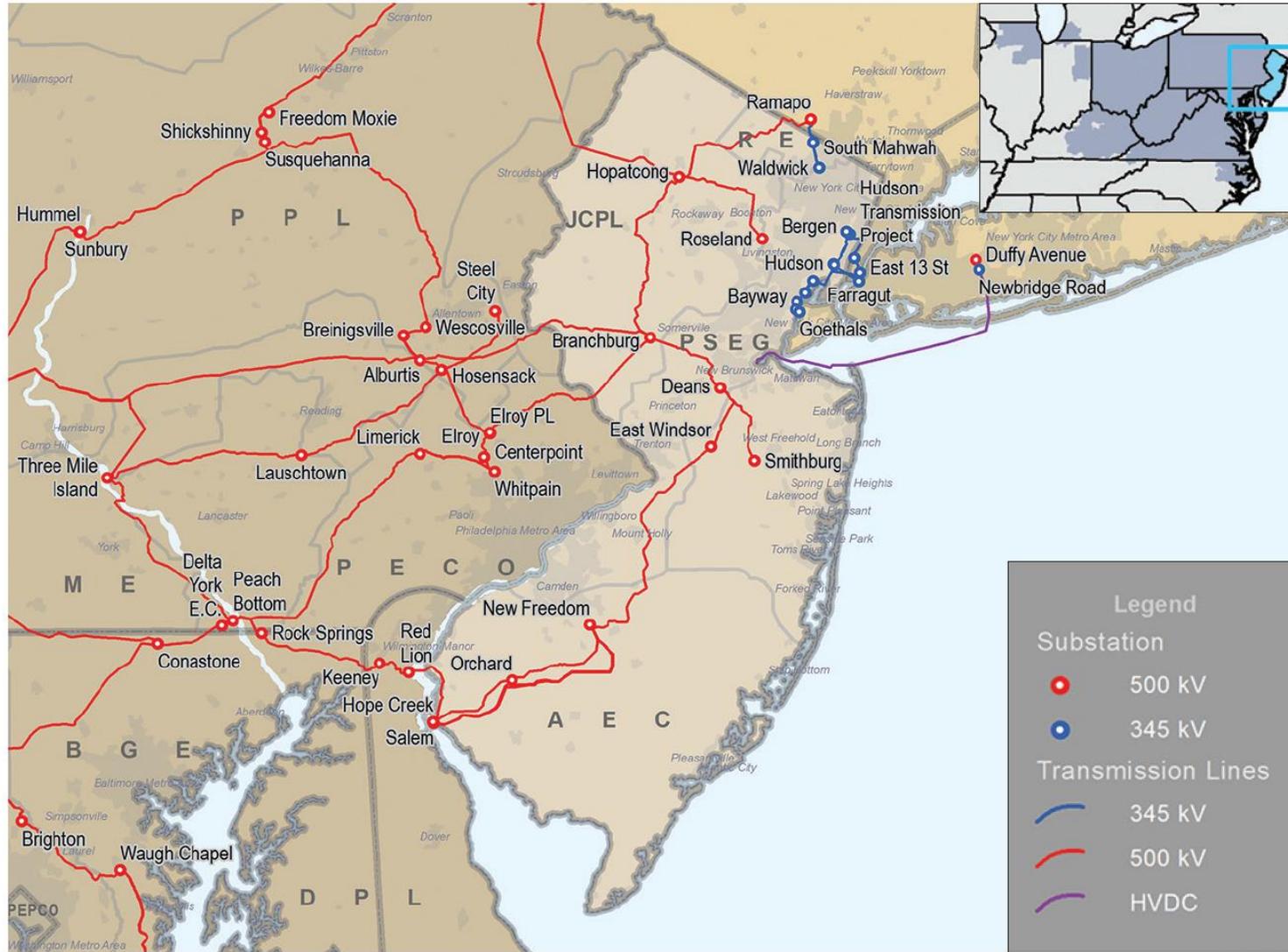
- Market Analysis
- Net Energy Import/Export Trend

3. Operations

- Emissions Data

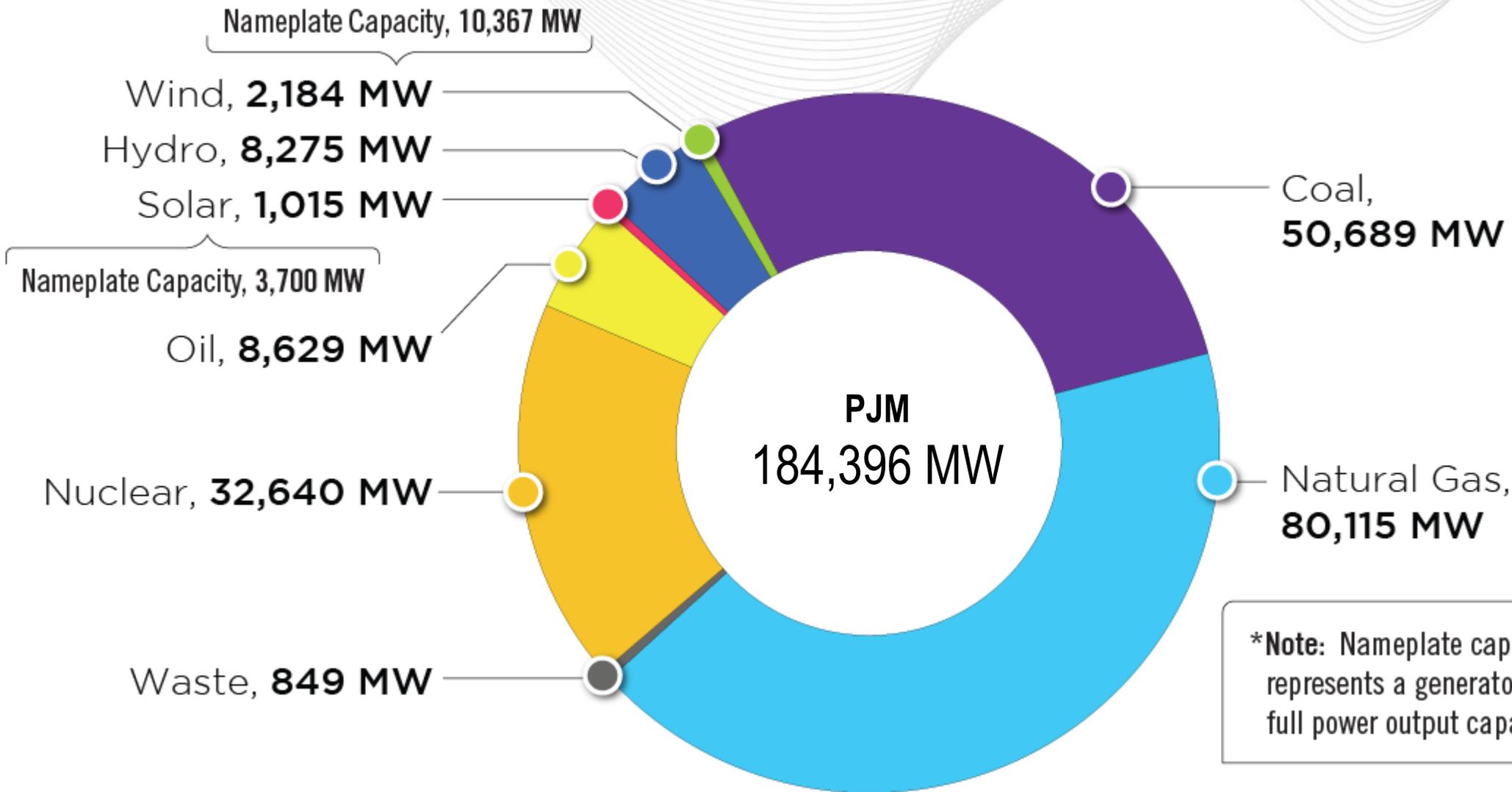
- **Existing Capacity:** Natural gas represents approximately 66.8 percent of the total installed capacity in the New Jersey service territory while nuclear represents approximately 23.5 percent. This differs from PJM where natural gas and nuclear are at 43.4 and 17.7 percent of total capacity.
- **Interconnection Requests:** Wind represents 41.3 percent of new interconnection requests in New Jersey, while storage and natural gas represent approximately 23.6 and 21.7 percent of new requests.
- **Deactivations:** 80 MW in New Jersey provided notification of deactivation to PJM in 2020.
- **RTEP 2020:** New Jersey's 2020 RTEP projects total approximately \$265.3 million in investment, which all came from supplemental projects. These investment figures only represent RTEP projects that cost at least \$5 million.

- **Load Forecast:** New Jersey's summer peak load is projected to be between 0.0 and 0.5 percent annually over the next ten years, based on the individual LSE service territory. Comparatively, the overall PJM RTO projected summer peak load growth rate is 0.3 percent.
- **2022/23 Capacity Market:** No Base Residual Auction was conducted in 2020. For the most recent auction results, please see the 2018 New Jersey State Infrastructure Report.
- **1/1/20 – 12/31/20 Market Performance:** New Jersey's average hourly LMPs were generally below the PJM average hourly LMP.
- **Emissions:** 2020 average carbon dioxide emissions decreased from 2019, while sulfur dioxide and nitrogen oxide emissions remained flat from 2019 levels.



Planning

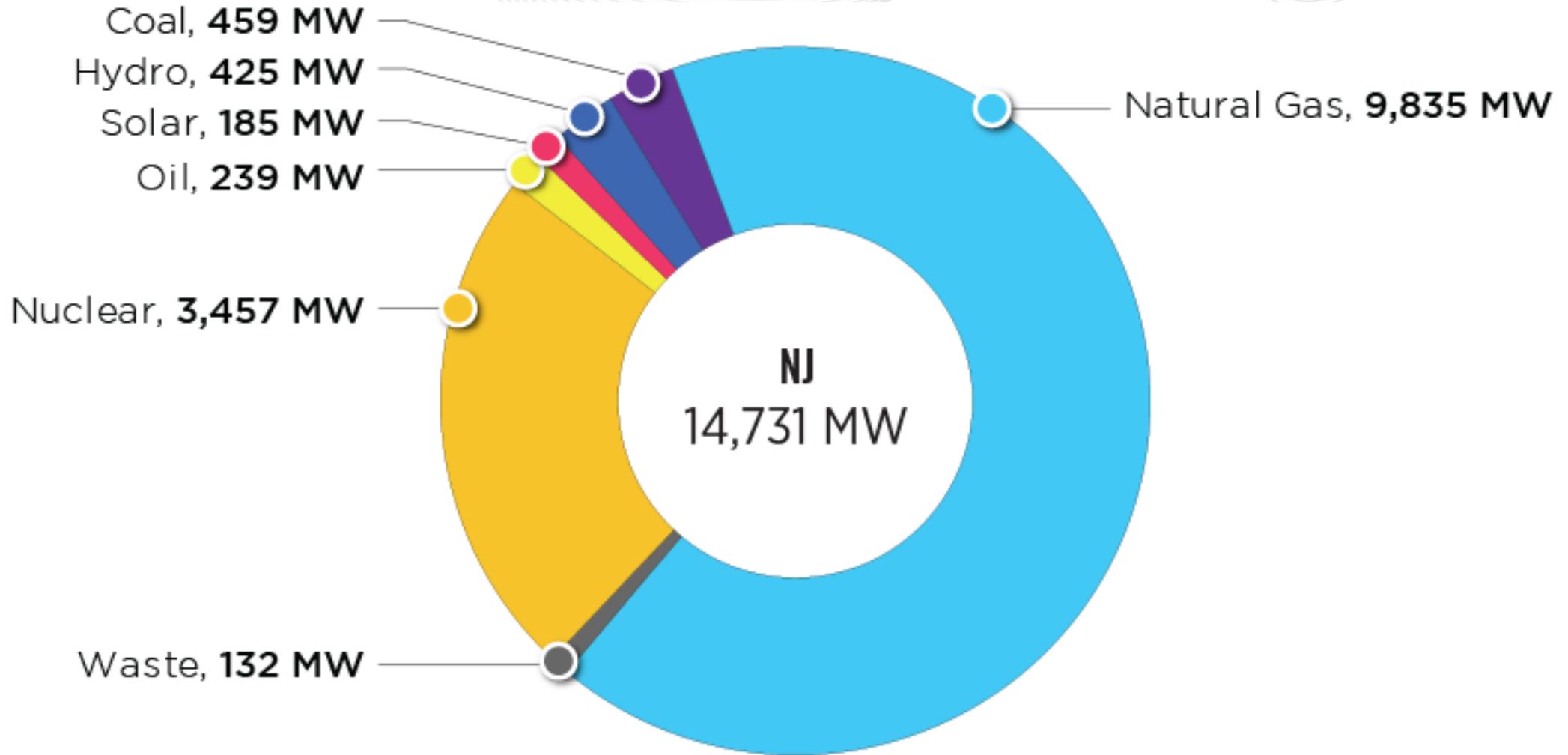
Generation Portfolio Analysis

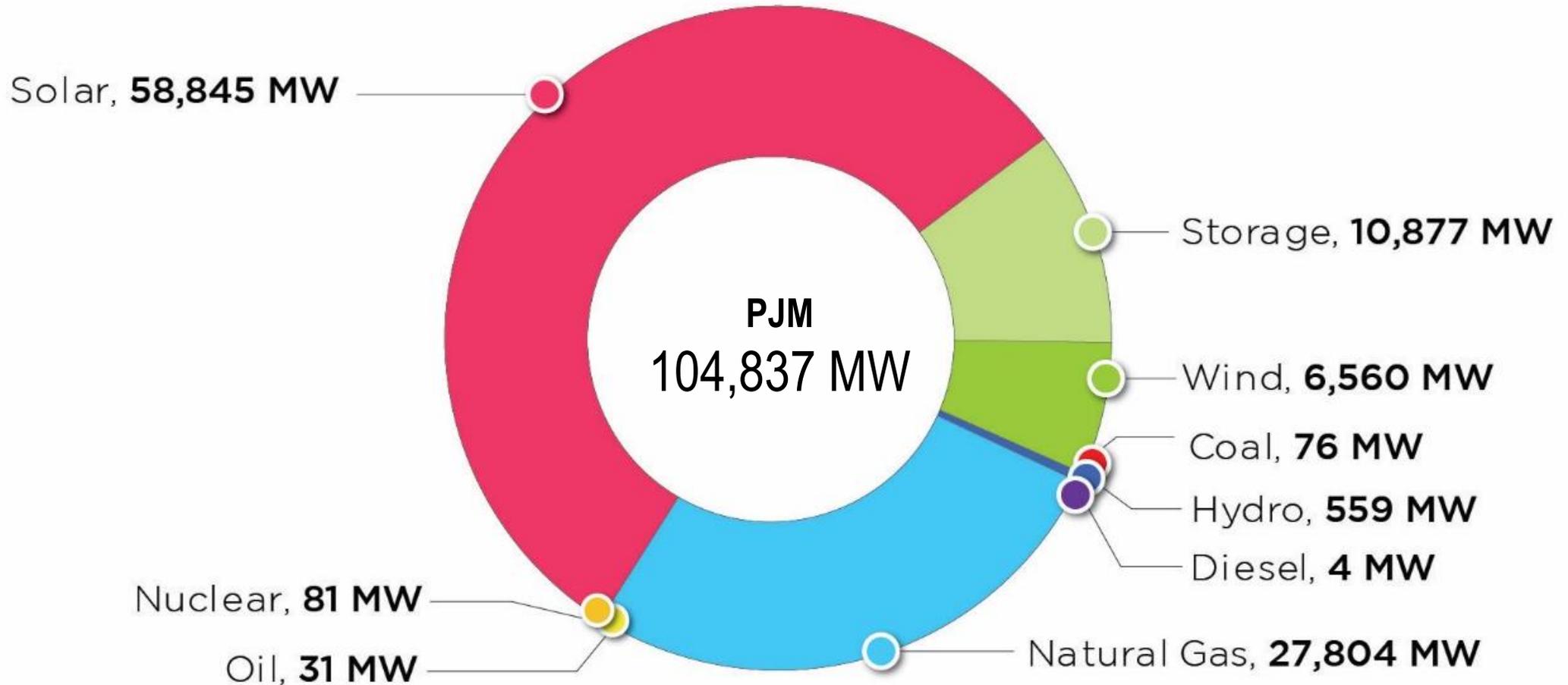


***Note:** Nameplate capacity represents a generator's rated full power output capability.

New Jersey – Existing Installed Capacity

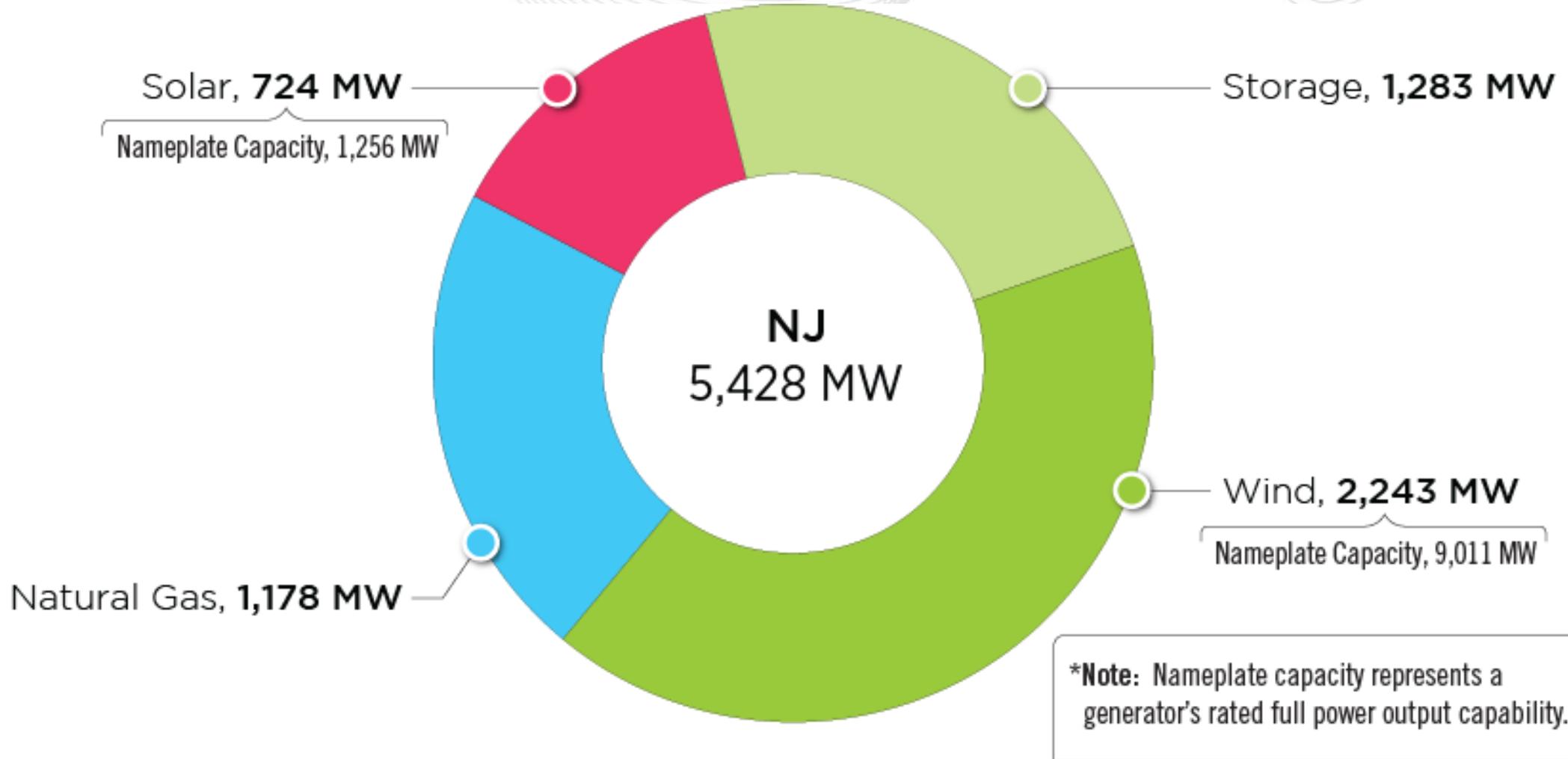
(CIRs – as of Dec. 31, 2020)





New Jersey – Queued Capacity (MW) by Fuel Type

(Requested CIRs – as of Dec. 31, 2020)





New Jersey – Interconnection Requests by Fuel Type

(Unforced Capacity – as of Dec. 31, 2020)

| | | In Queue | | | | | | Complete | | | | Grand Total | |
|--------------------|-------------|------------|----------------|-----------|---------------|--------------------|---------------|------------|----------------|------------|-----------------|--------------|-----------------|
| | | Active | | Suspended | | Under Construction | | In Service | | Withdrawn | | Grand Total | |
| | | Projects | Capacity (MW) | Projects | Capacity (MW) | Projects | Capacity (MW) | Projects | Capacity (MW) | Projects | Capacity (MW) | Projects | Capacity (MW) |
| Non-Renewable | Coal | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 1 | 15.0 | 1 | 15.0 |
| | Natural Gas | 6 | 372.3 | 2 | 746.0 | 2 | 59.2 | 80 | 8,017.9 | 179 | 51,724.3 | 269 | 60,919.7 |
| | Nuclear | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 6 | 381.0 | 0 | 0.0 | 6 | 381.0 |
| | Oil | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 2 | 35.0 | 8 | 945.0 | 10 | 980.0 |
| | Other | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 7 | 45.5 | 7 | 45.5 |
| | Storage | 39 | 1,283.2 | 4 | 0.0 | 3 | 0.0 | 6 | 4.0 | 44 | 214.0 | 96 | 1,501.1 |
| Renewable | Biomass | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 3 | 17.3 | 3 | 17.3 |
| | Hydro | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 2 | 20.5 | 2 | 1,001.1 | 4 | 1,021.6 |
| | Methane | 0 | 0 | 0 | 0.0 | 0 | 0.0 | 16 | 45.3 | 9 | 40.6 | 25 | 85.9 |
| | Solar | 46 | 692.6 | 1 | 4.1 | 19 | 27.7 | 114 | 248.2 | 480 | 1,609.6 | 660 | 2,582.3 |
| | Wind | 13 | 2,242.9 | 0 | 0 | 0 | 0.0 | 1 | 0.0 | 20 | 683.3 | 34 | 2,926.2 |
| Grand Total | | 104 | 4,590.9 | 7 | 750.1 | 24 | 86.9 | 227 | 8,751.9 | 753 | 56,295.8 | 1,115 | 70,475.6 |

Note: The "Under Construction" column includes both "Engineering and Procurement" and "Under Construction" project statuses.

New Jersey – Progression History of Interconnection Requests



Projects withdrawn after final agreement

| | | Nameplate Capacity |
|------------|---|--------------------|
| 24 | Interconnection Service Agreements | 3,067 MW |
| 146 | Wholesale Market Participation Agreements | 1,073 MW |
| | | 2,595 MW |

| | | |
|---|--|------------|
| Percentage of planned capacity and projects that have reached commercial operation | <div style="border: 2px solid orange; padding: 5px; display: inline-block;">13%</div> | 24% |
| | Requested capacity megawatts | |

This graphic shows the final state of generation submitted to the PJM queue that completed the study phase as of Dec. 31, 2020, meaning the generation reached in-service operation, began construction, or was suspended or withdrawn. It does not include projects considered active in the queue as of Dec. 31, 2020.



New Jersey – Generation Deactivation Notifications Received in 2020

| Unit | TO Zone | Fuel Type | Request Received to Deactivate | Actual or Projected Deactivation Date | Age (Years) | Capacity (MW) |
|------------------|---------|-------------|--------------------------------|---------------------------------------|-------------|---------------|
| BC Landfill | PSEG | Methane | 1/27/2020 | 6/1/2020 | 13 | 6.00 |
| Salem County LF | AE | Methane | 1/27/2020 | 6/1/2020 | 12 | 1.70 |
| Sussex County LF | JCP&L | Methane | 1/27/2020 | 6/1/2020 | 9 | 2.00 |
| Elmwood Park | PSEG | Natural Gas | 12/8/2020 | 3/12/2021 | 31 | 70.30 |

Planning

Transmission Infrastructure Analysis

Please note that PJM historically used \$5 million as the threshold for listing projects in the RTEP report. Beginning in 2018, it was decided to increase this cutoff to \$10 million. All RTEP projects with costs totaling at least \$5 million are included in this state report. However, only projects that are \$10 million and above are displayed on the project maps.

For a complete list of all RTEP projects, please visit the “RTEP Upgrades & Status – Transmission Construction Status” page on [pjm.com](https://www.pjm.com).

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



New Jersey – RTEP Baseline Projects

(Greater than \$5 million)

New Jersey had no baseline project upgrades in 2020.

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

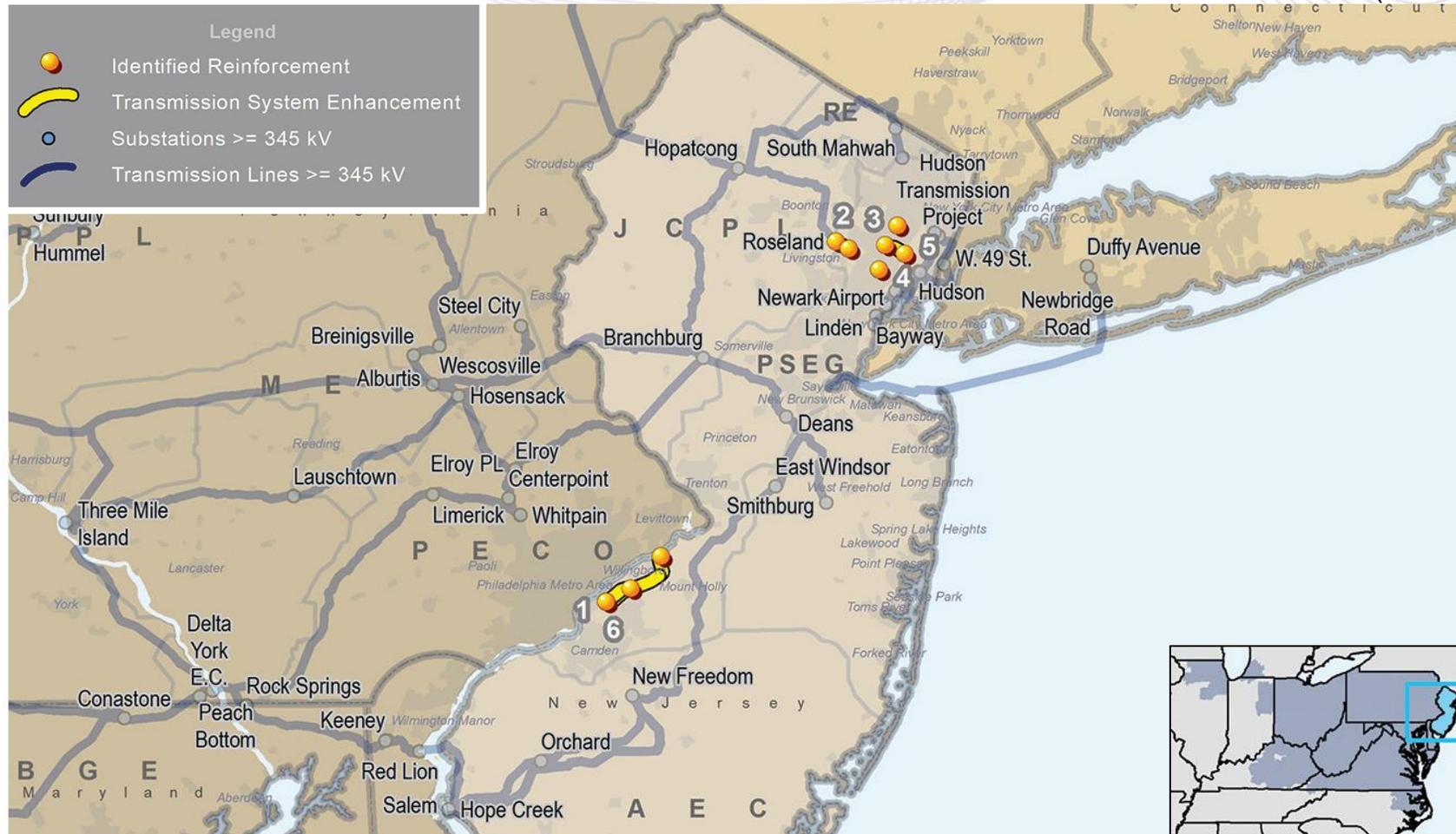


New Jersey – RTEP Network Projects

(Greater than \$5 million)

New Jersey had no network project upgrades in 2020.

Note: Network upgrades 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.



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.



New Jersey – TO Supplemental Projects

(Greater than \$5 million)

| Map ID | Project | Description | Projected In-Service Date | Project Cost (\$M) | TO Zone | TEAC Date |
|--------|---------|---|---------------------------|--------------------|---------|-----------|
| 1 | s2276 | Install a new 230/13 kV station (Rancocas) on existing right-of-way with two 230/13kV transformers. Cut and loop the Camden-Burlington 230 kV line in to the 230 kV bus. | 5/31/2024 | \$39.00 | PSEG | 6/2/2020 |
| 2 | s2316 | Install Livingston 230 kV station with two 230/13 kV transformers. Cut and loop the Roseland-Laurel Ave 230 kV line into the 230 kV bus. Transfer load from heavily loaded Marion Drive and West Caldwell to the new station. | 12/31/2024 | \$29.80 | | 8/4/2020 |
| 3 | s2317 | Construct a new Oak St. 69/13 kV station in Southern Passaic County Area and retire the Oak St. 26 kV station. | 9/30/2024 | \$75.60 | | 8/13/2020 |
| | | Purchase property to accommodate the new Oak St. 69/13 kV construction. | | | | |
| | | Install Oak St. 69 kV station with two 69/13 kV transformers. | | | | |
| | | Loop in the existing Kuller Rd.-Passaic 69 kV to the new Oak St. and build a new 69 kV line from Harvey to Oak St. | | | | |

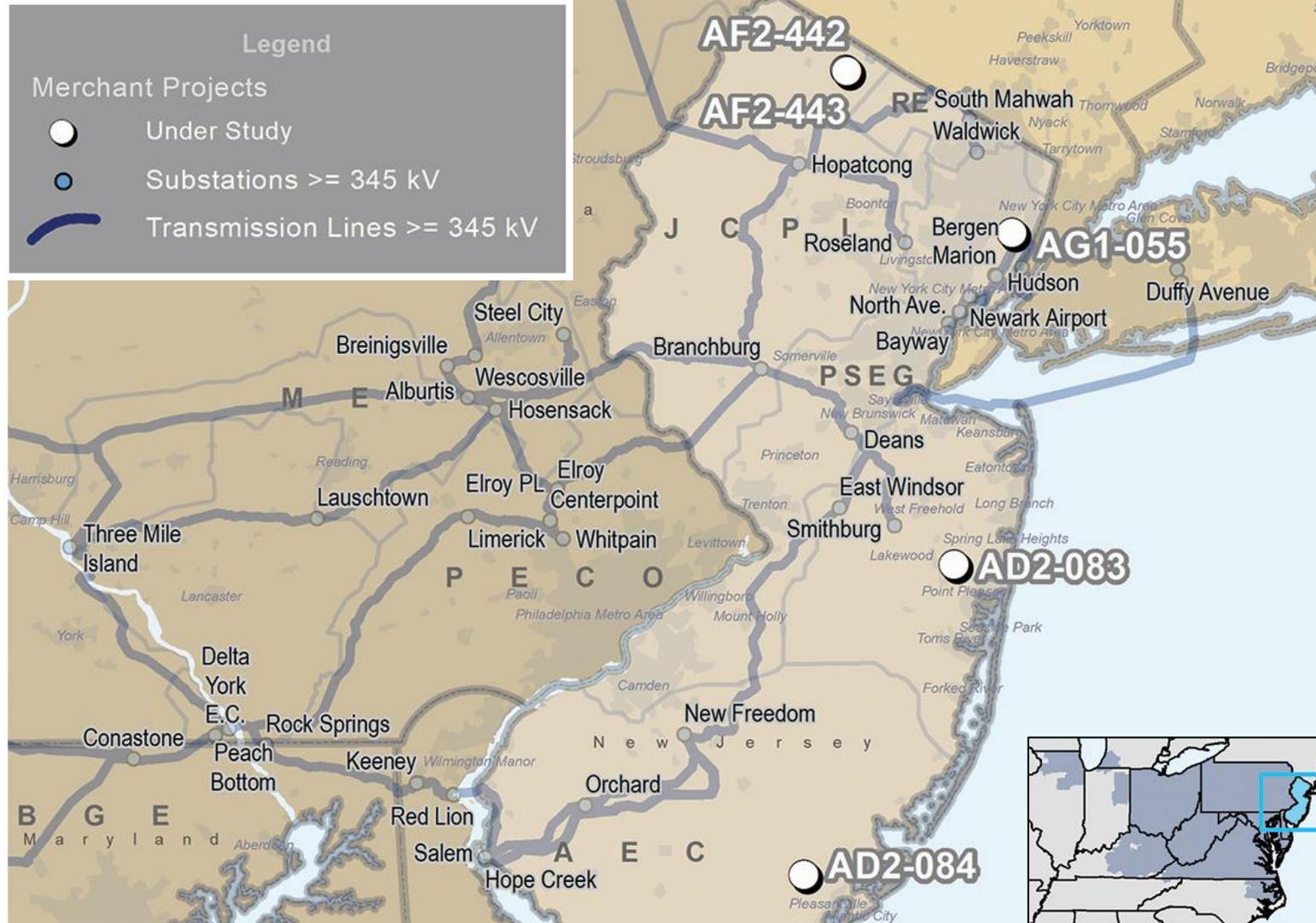


New Jersey – TO Supplemental Projects

(Greater than \$5 million)

| Map ID | Project | Description | Projected In-Service Date | Project Cost (\$M) | TO Zone | TEAC Date |
|--------|---------|--|---------------------------|--------------------|---------|-----------|
| 4 | s2318 | Construct a new Central Ave. 69/4 kV station in Western Newark area. | 5/31/2024 | \$34.30 | PSEG | 8/13/2020 |
| | | Purchase property to accommodate the new Central Ave. 69/4 kV station construction. | | | | |
| | | Install a Central Ave. 69 kV station with four 69/4 kV transformers. | | | | |
| | | Loop in the existing McCarter-Clay Street and McCarter-Orange Heights 69 kV circuits to the new Central Ave. 69 kV station. | | | | |
| 5 | s2384 | Construct new 230-13 kV station along the existing right-of-way at Washington Ave. Cut and loop the Cook Rd.-Kingsland 230 kV line into the new 230 kV bus (Washington Ave.), and install a 230 kV bus station with two 230/13 kV transformers. Transfer load from heavily loaded Cook Rd. to the new station. | | \$31.20 | | 10/6/2020 |
| 6 | s2385 | Construct new 230-13 kV station along the existing right-of-way in Pennsauken. Cut and loop the Camden-Cinnaminson 230 kV line into the new 230 kV bus (Pennsauken), and install a 230 kV station with two 230/13 kV transformers. Transfer load from heavily loaded Cuthbert Blvd. to the new station. | | \$48.60 | | |
| | s2300 | Install one 230-34.5 kV Transformer at Oyster Creek. Extend the 230 kV bus and install two 230 kV breakers. Install two 34.5 kV breakers for connection to the 34.5 kV | 6/1/2023 | \$6.80 | JCPL | 7/7/2020 |

New Jersey – Merchant Transmission Project Requests





New Jersey – Merchant Transmission Project Requests

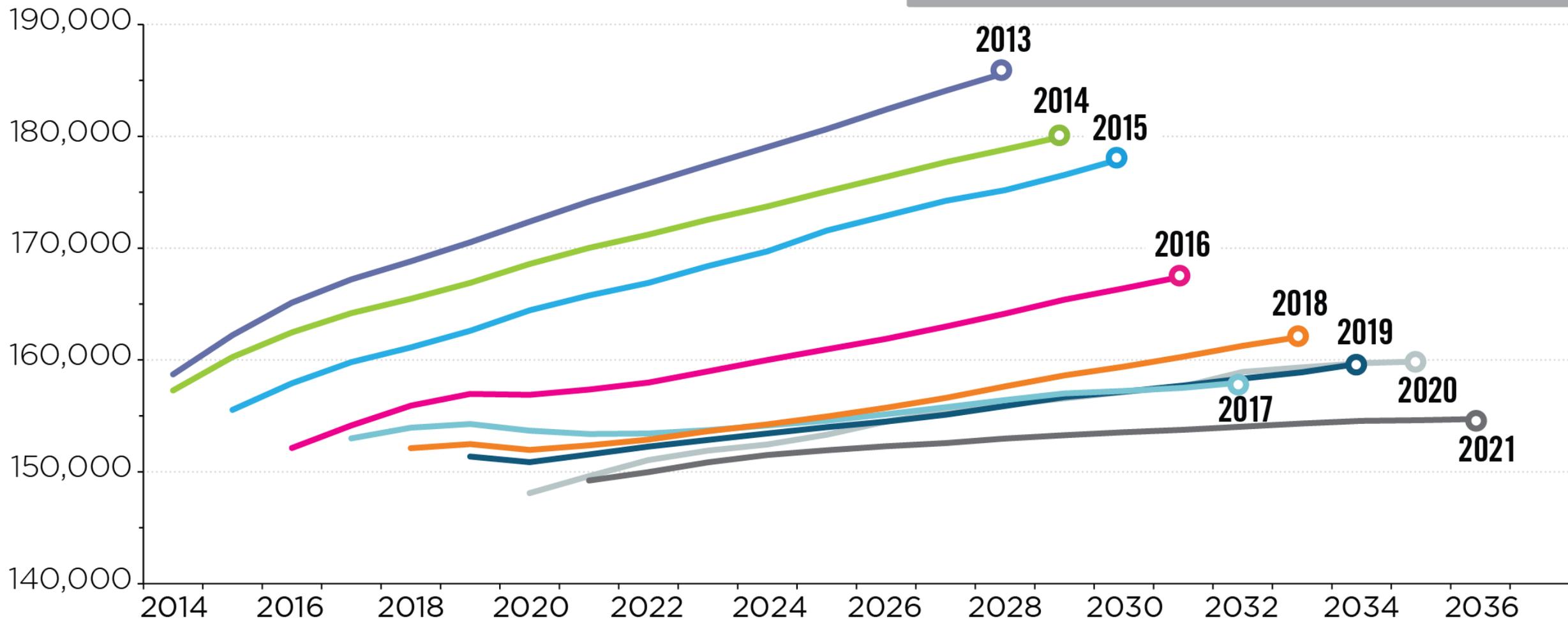
| Queue Number | Queue Name | TO Zone | Status | Actual or Requested In-Service Date | Maximum Output (MW) |
|--------------|-----------------|---------|--------|-------------------------------------|---------------------|
| AD2-083 | Larrabee 230 kV | JCP&L | Active | 12/31/2025 | 1,100 |
| AD2-084 | Cardiff 230 kV | AE | Active | | 1,100 |
| AF2-442 | Vernon 115 kV | JCP&L | Active | 5/31/2023 | 84 |
| AF2-443 | Vernon 115 kV | | Active | | 84 |
| AG1-055 | Bergen 230 kV | PSEG | Active | 6/1/2022 | 660 |

Planning

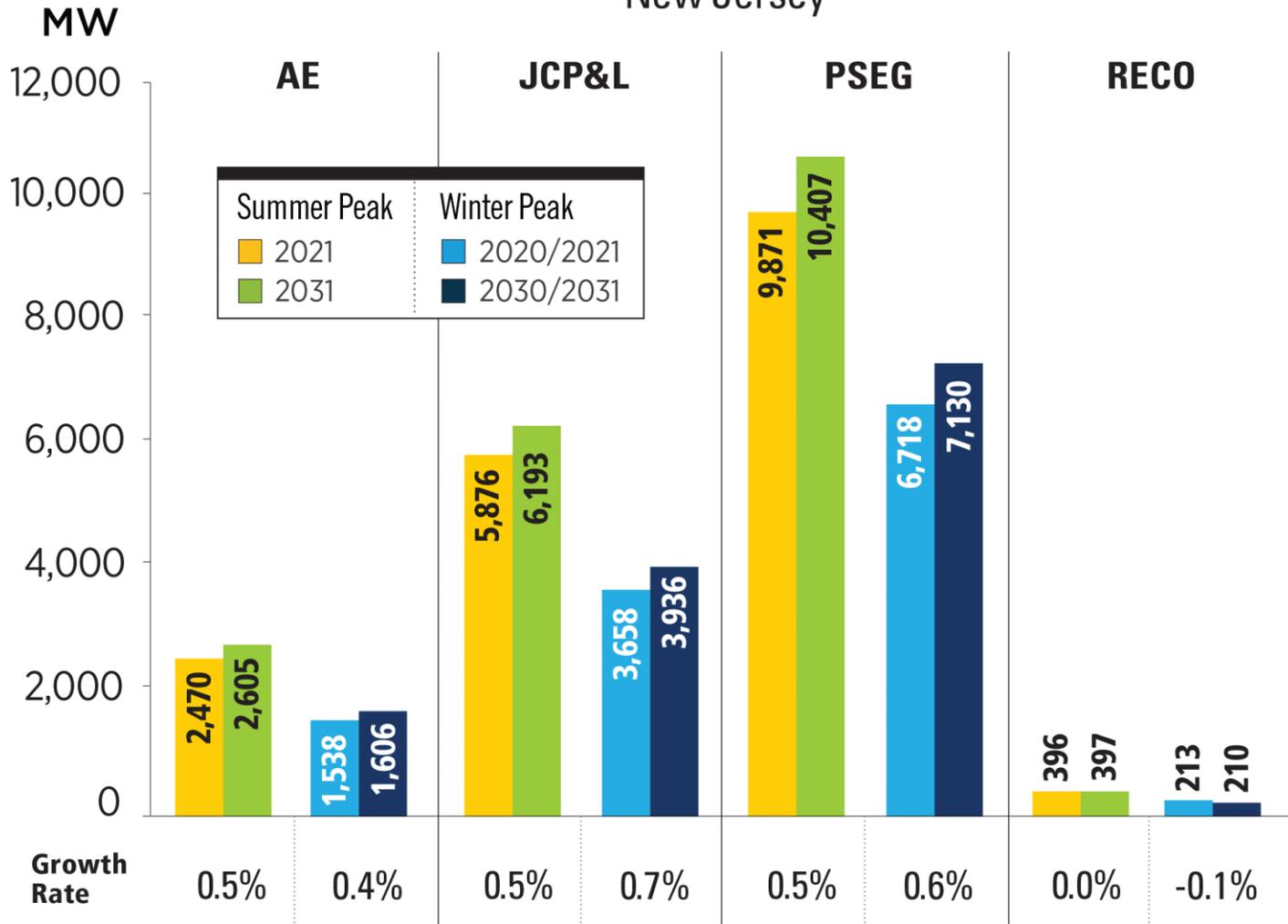
Load Forecast

PJM RTO Summer Peak Demand Forecast

Load (MW)



New Jersey



PJM RTO Summer Peak

| | |
|------------|------------|
| 2021 | 2031 |
| 149,223 MW | 153,759 MW |

Growth Rate 0.3%

PJM RTO Winter Peak

| | |
|------------|------------|
| 2020/2021 | 2030/2031 |
| 132,027 MW | 135,568 MW |

Growth Rate 0.2%

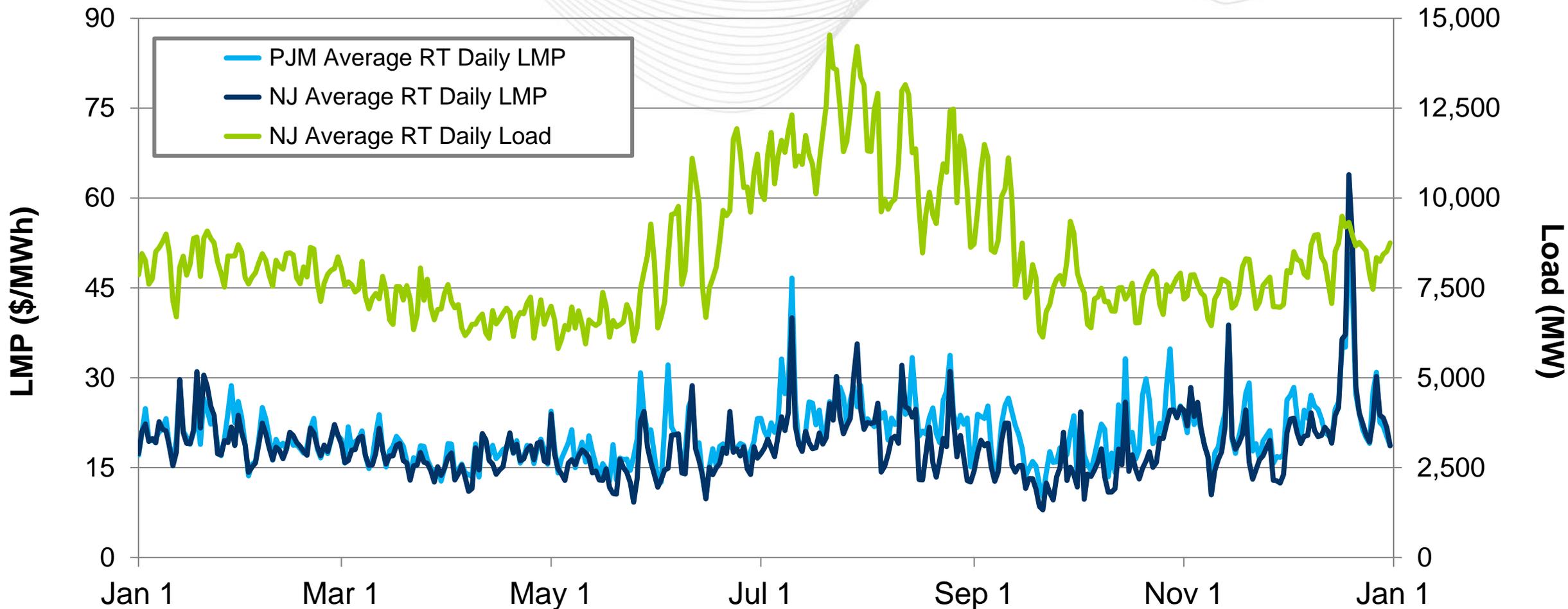
The summer and winter peak megawatt values reflect the estimated amount of forecasted load to be served by each transmission owner in the noted state/district. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas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

Markets

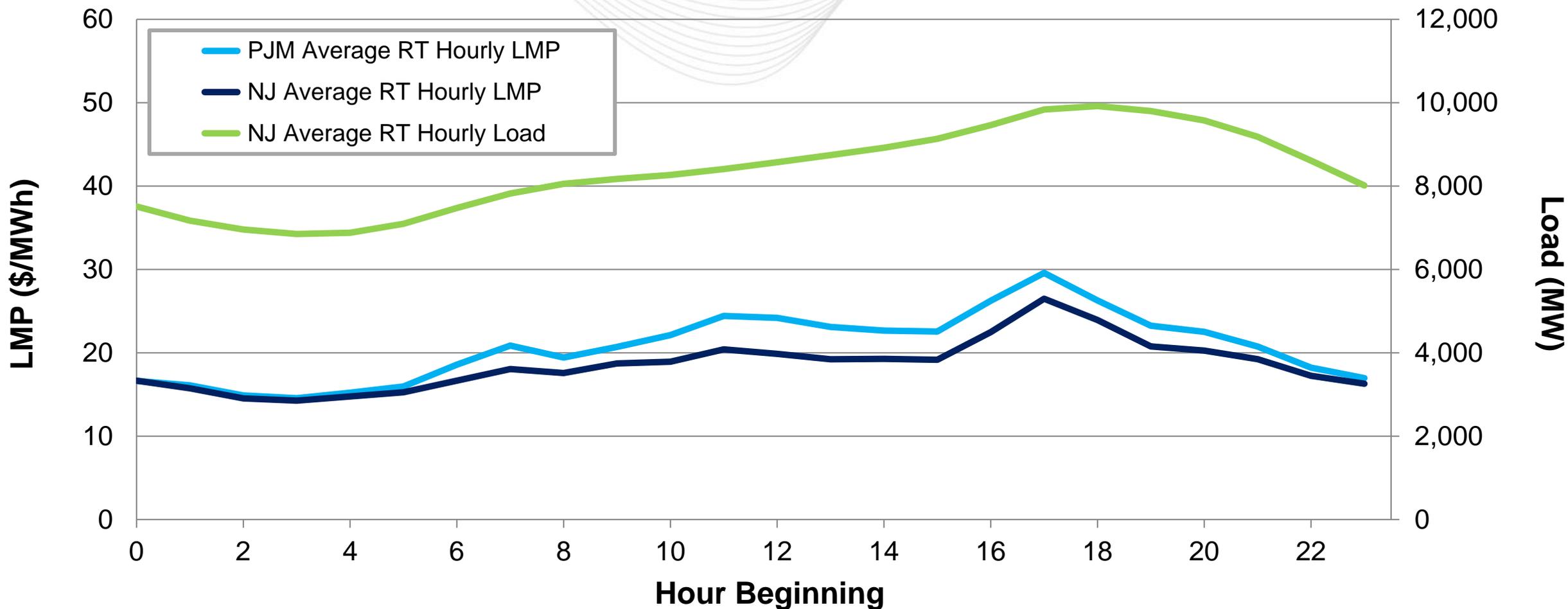
Market Analysis

New Jersey – Average Daily LMP and Load

(Jan. 1, 2020 – Dec. 31, 2020)



New Jersey's average hourly LMPs were generally below the PJM average hourly LMP.



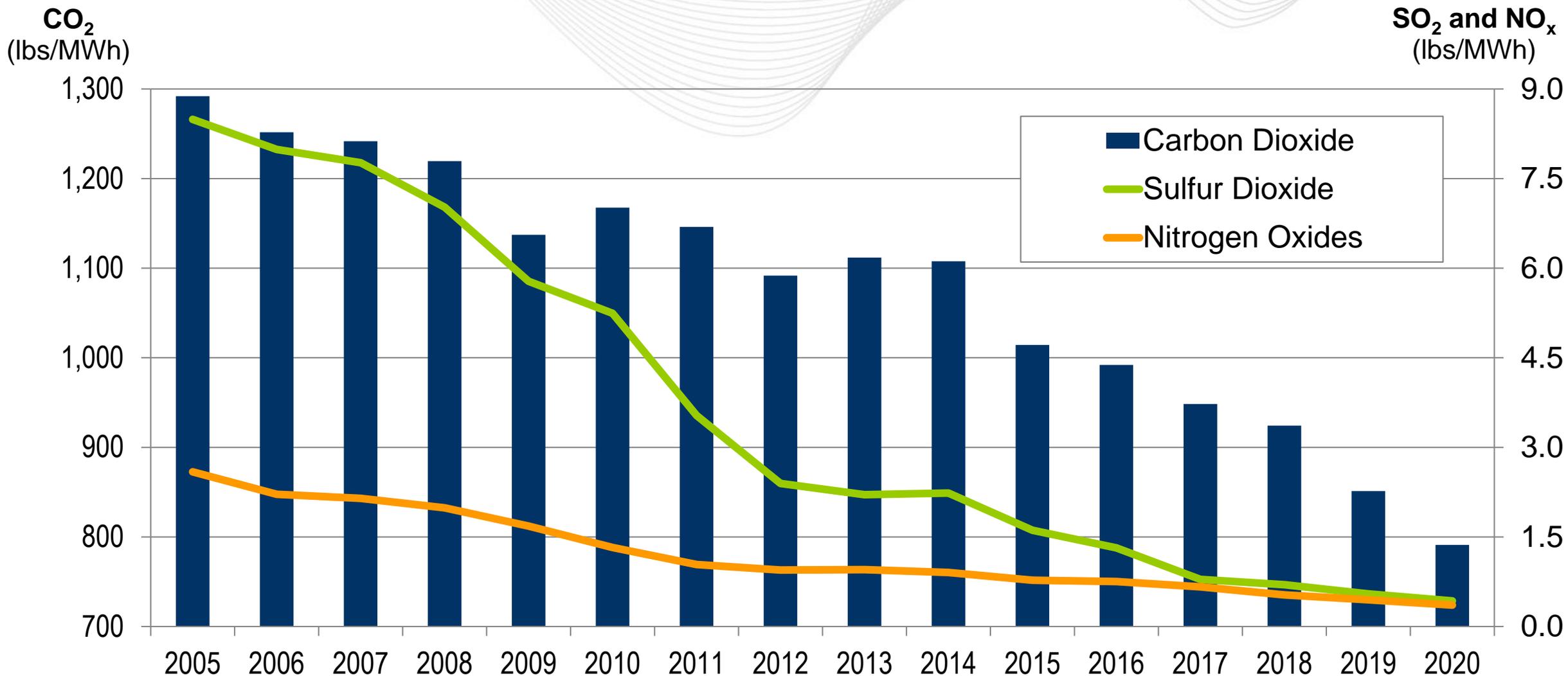
New Jersey – Net Energy Import/Export Trend

(Jan. 2020 – Dec. 2020)



Positive values represent exports and negative values represent imports.

Operations Emissions Data





New Jersey – Average Emissions (lbs/MWh)

(Feb. 2021)

