



2019 Delaware State Infrastructure Report

(January 1, 2019 – December 31, 2019)

May 2020
(updated July 2020)

1. Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

2. Markets

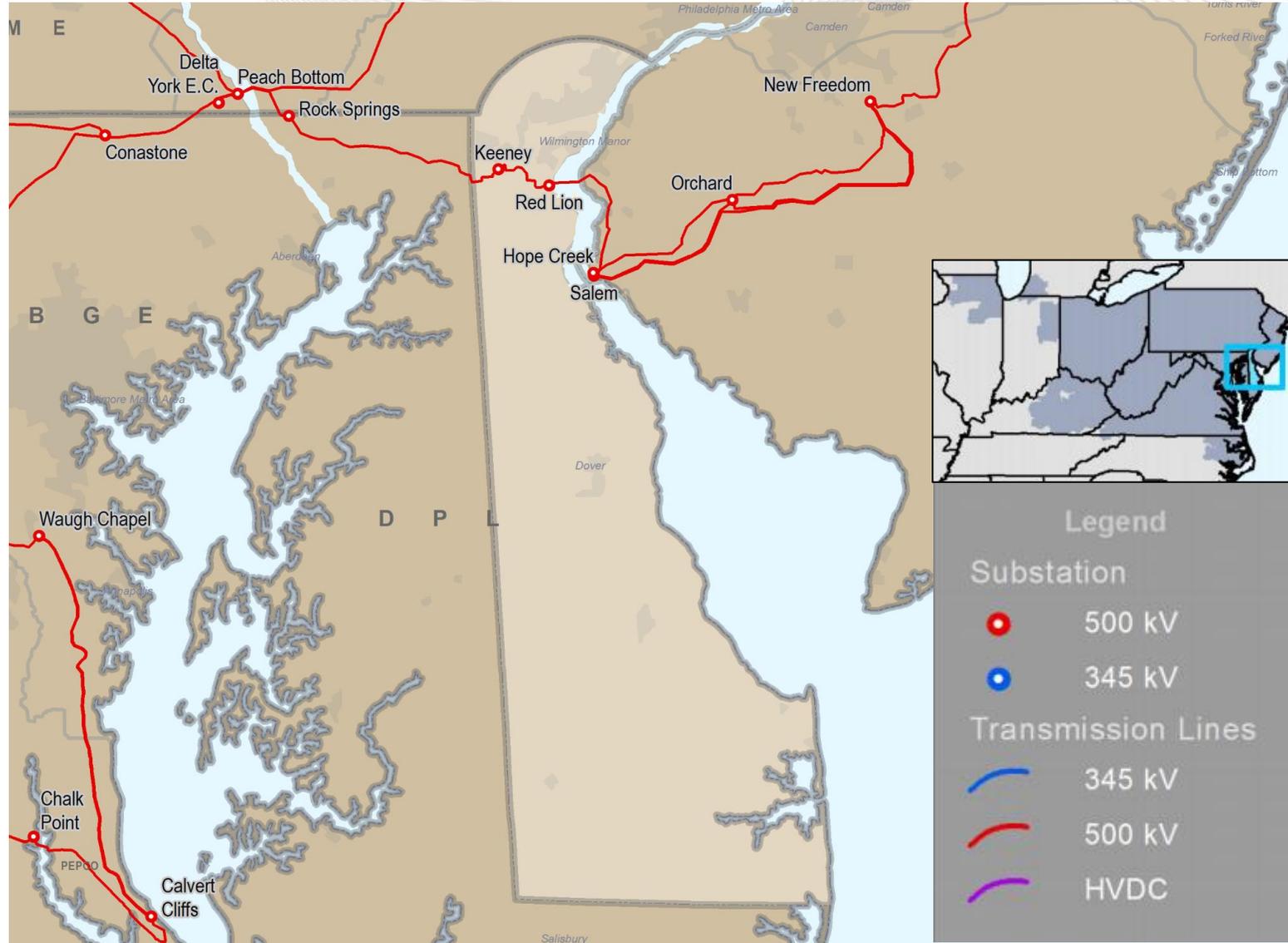
- Market Analysis

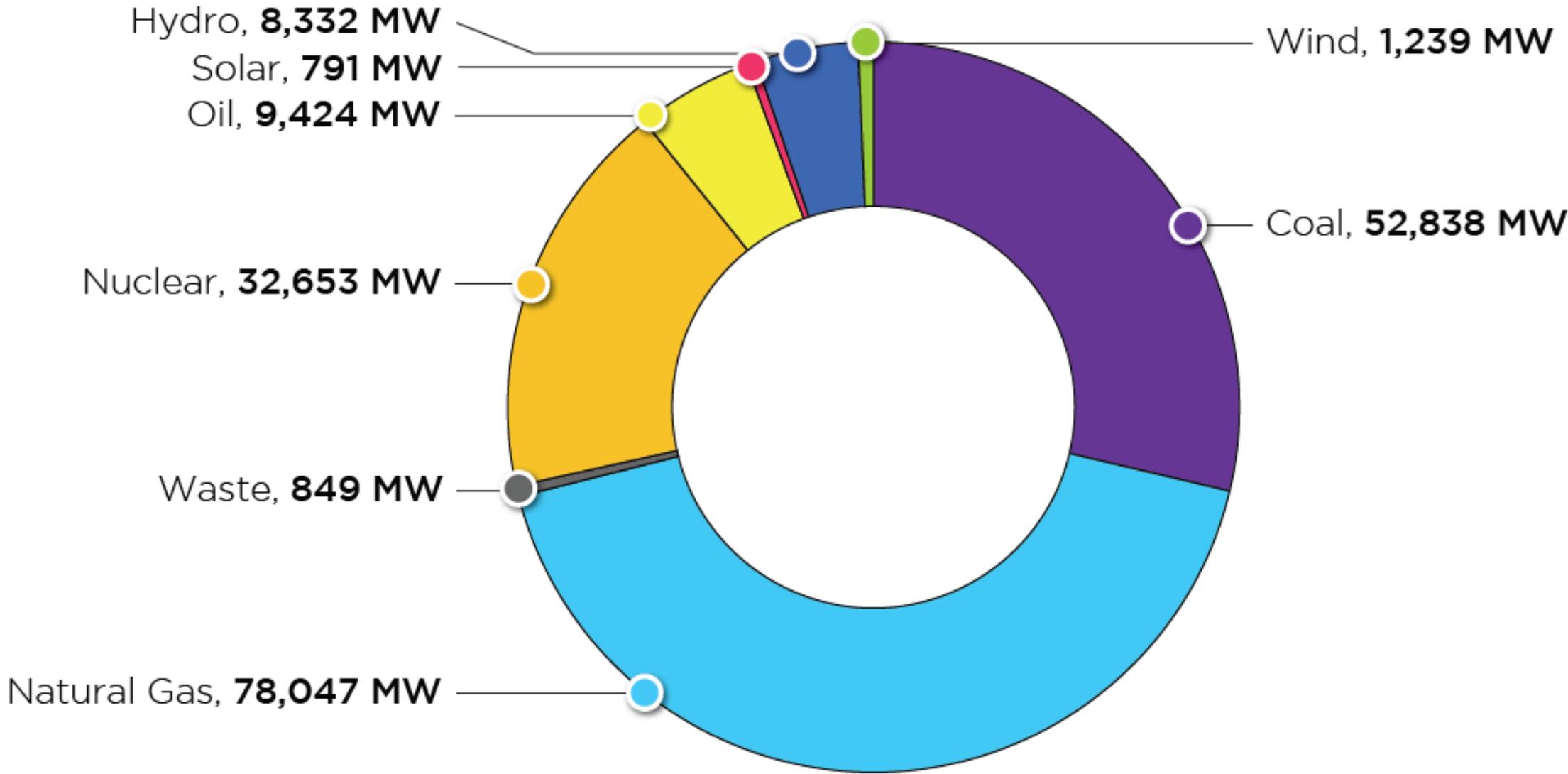
3. Operations

- Emissions Data

- **Existing Capacity:** Natural gas represents approximately 63.1 percent of the total installed capacity in the Delaware service territory while oil represents approximately 24.2 percent. This differs from PJM where natural gas and oil are at 42.4 and 5.1 percent of total installed capacity.
- **Interconnection Requests:** Natural gas represents 53.9 percent of new interconnection requests in Delaware, while solar represents approximately 24.3 percent of new requests and wind 21.7 percent.
- **Deactivations:** 102 MW in Delaware gave notification of deactivation in 2019.
- **RTEP 2019:** Delaware's 2019 RTEP projects total approximately \$26 million in investment. 100 percent of that figure is supplemental projects. These totals represent only RTEP projects that cost at least \$5 million.

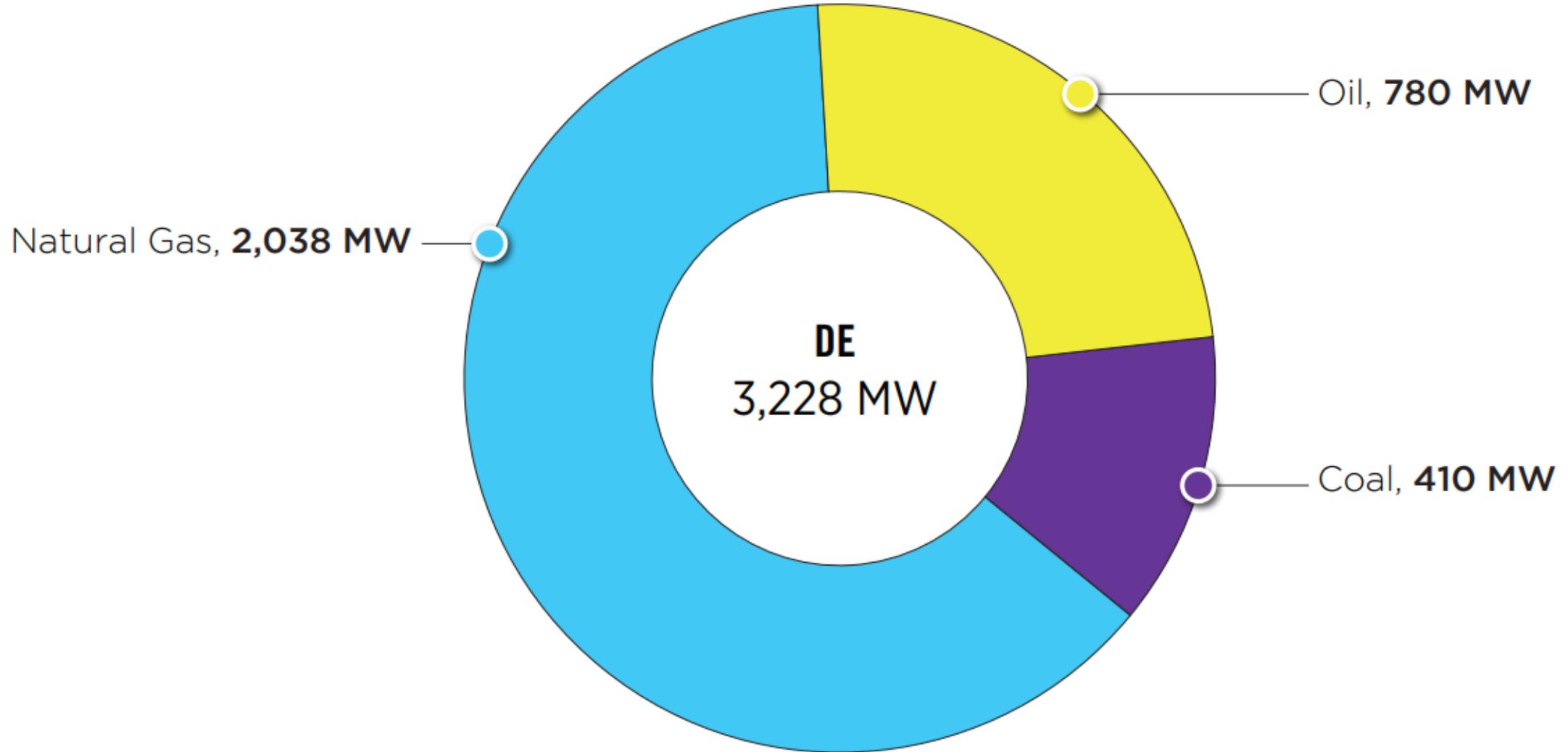
- **Load Forecast:** Delaware's load is projected to grow between 0.8 and 1.0 percent annually over the next ten years. Comparatively, the overall PJM RTO projected load growth rate is 0.6 percent.
- **2022/23 Capacity Market:** No Base Residual Auction was conducted in 2019. For the most recent auction results, please see the 2018 Delaware State Infrastructure Report.
- **1/1/19 – 12/31/19 Market Performance:** Delaware's average hourly LMPs were generally lower than PJM average hourly LMP, except during peak hours.
- **Emissions:** 2019 carbon dioxide emissions are down from 2018; sulfur dioxide, and nitrogen oxide emissions remain flat from 2018 levels.





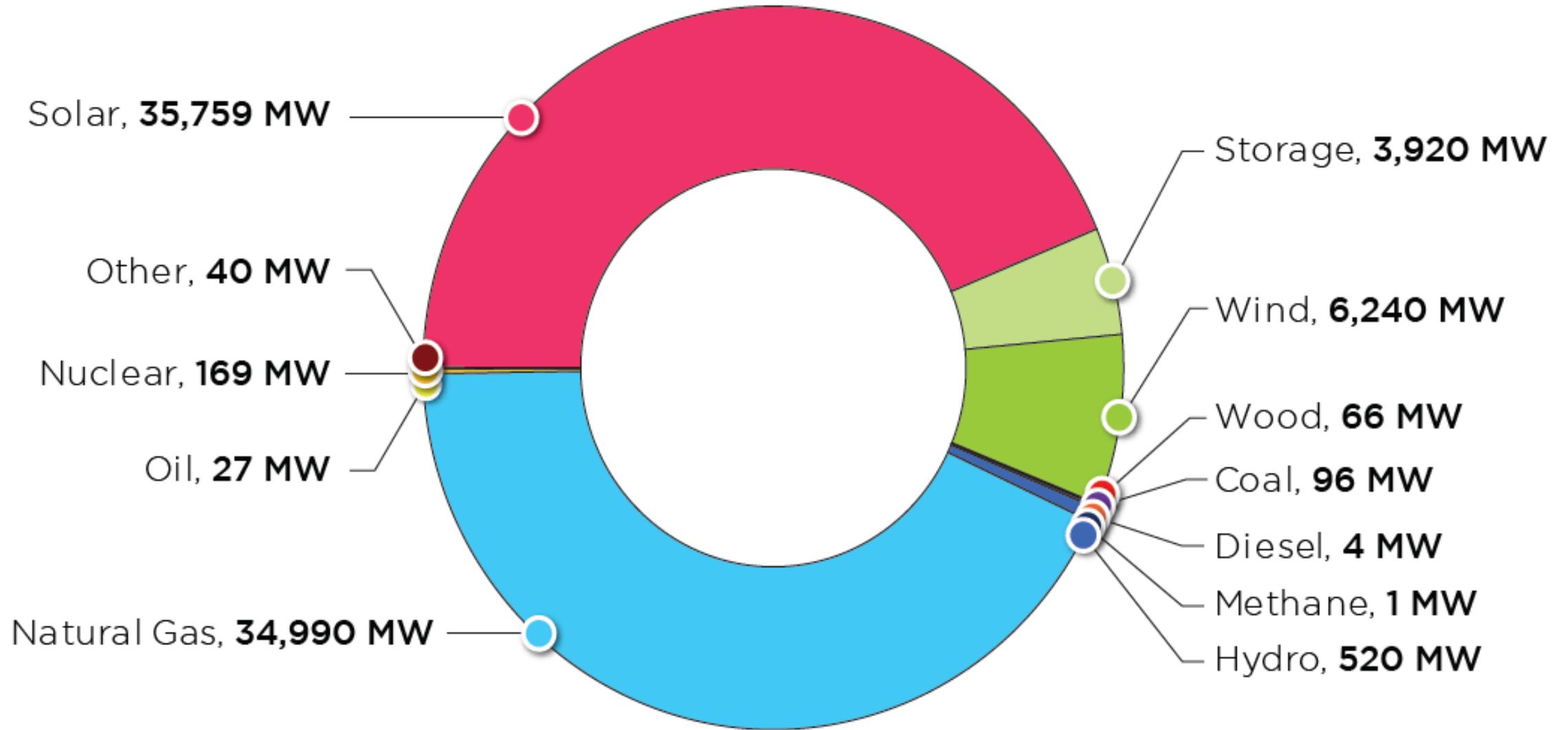
Delaware – Existing Installed Capacity

(CIRs – as of Dec. 31, 2019)



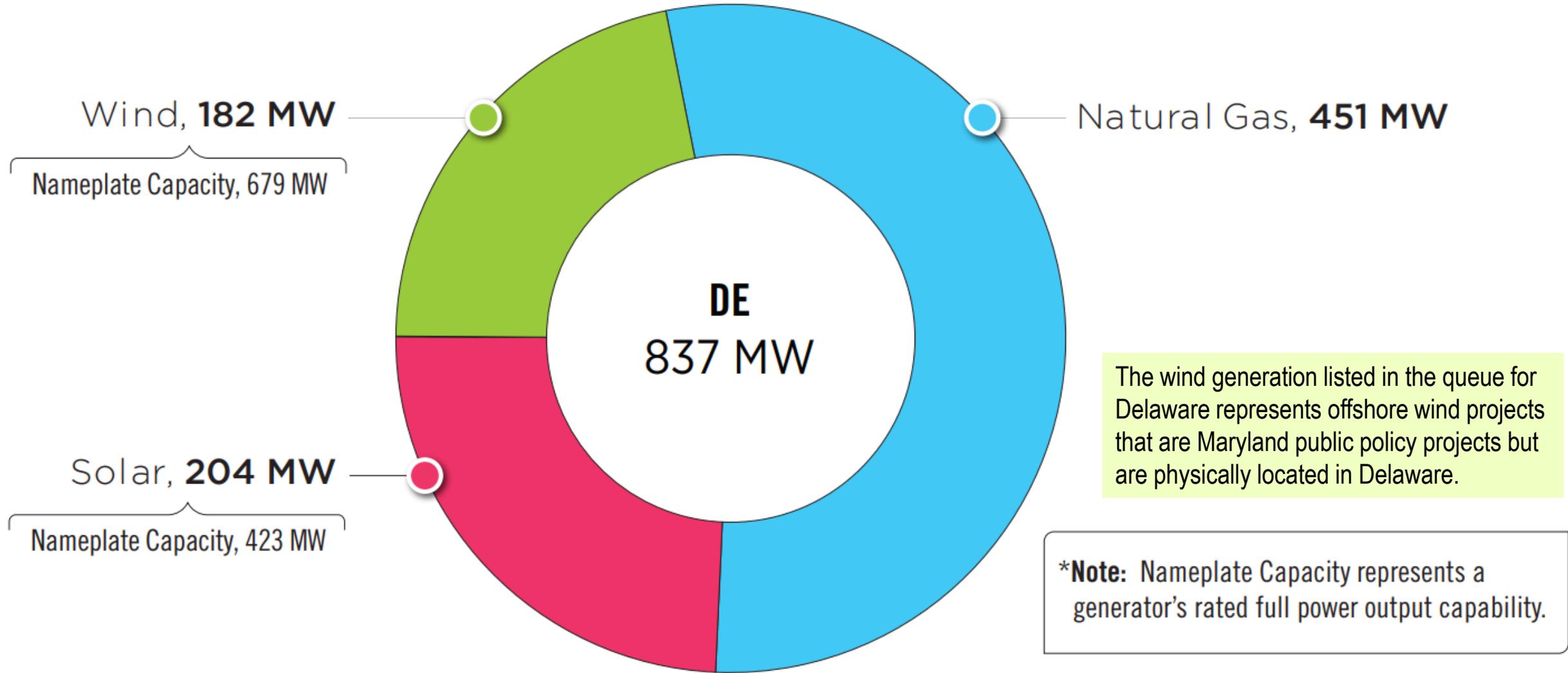
PJM – Queued Capacity (MW) by Fuel Type

(Requested CIRs – as of Dec. 31, 2019)



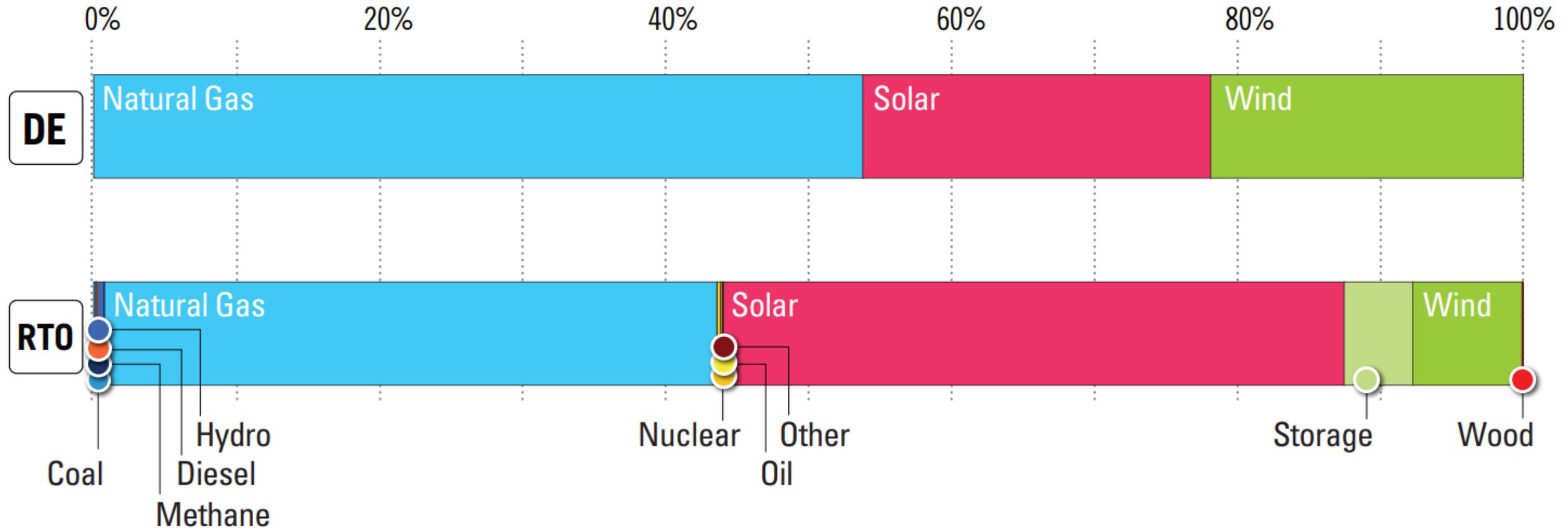
Delaware – Queued Capacity (MW) by Fuel Type

(Requested CIRs – as of Dec. 31, 2019)



Delaware – Percentage of MW in Queue by Fuel Type

(Dec. 31, 2019)



		In Queue						Complete				Grand Total	
		Active		Suspended		Under Construction		In Service		Withdrawn			
		No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)	No. of Projects	Capacity (MW)
Non-Renewable	Coal	0	0.0	0	0.0	0	0.0	2	23.0	1	630.0	3	653.0
	Natural Gas	0	0.0	1	451.0	0	0.0	19	1,097.1	19	5,556.4	39	7,104.5
	Oil	0	0.0	0	0.0	0	0.0	5	168.2	1	1.0	6	169.2
	Other	0	0.0	0	0.0	0	0.0	2	30.0	0	0.0	2	30.0
	Storage	1	0.2	0	0.0	0	0.0	0	0.0	4	45.0	5	45.2
Renewable	Biomass	0	0.0	0	0.0	0	0.0	1	0.0	4	24.0	5	24.0
	Methane	0	0.0	0	0.0	0	0.0	4	9.0	3	28.8	7	37.8
	Solar	14	162.4	0	0.0	2	41.8	0	0.0	18	190.5	34	394.7
	Wind	4	117.9	0	0.0	1	64.4	0	0.0	4	355.4	9	537.7
Grand Total		19	280.5	1	451.0	3	106.2	33	1,327.3	54	6,831.1	110	8,996.1

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

Delaware – Progression History of Interconnection Requests



Projects withdrawn after final agreement		Nameplate Capacity
3	Interconnection Service Agreements	420 MW / 780 MW
4	Wholesale Market Participation Agreements	13 MW / 47 MW

Percentage of planned capacity and projects that have reached commercial operation	15%	Requested projects
	Requested capacity megawatt	

This graphic shows the final state of generation submitted in all PJM queues that reached in-service operation, began construction, or was suspended or withdrawn as of Dec. 31, 2019.

Delaware – Generation Deactivation Notifications Received in 2019





Delaware – Generation Deactivation Notifications Received in 2019

Unit	TO Zone	Fuel Type	Request Received to Deactivate	Status	Actual or Projected Deactivation Date	Age (Years)	Capacity (MW)
McKee 3	DP&L	Natural Gas	3/8/2019	Pending	6/1/2021	44	102.00

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/rtep-upgrades-status/construct-status.aspx>

Delaware had no baseline project upgrades in 2019.

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

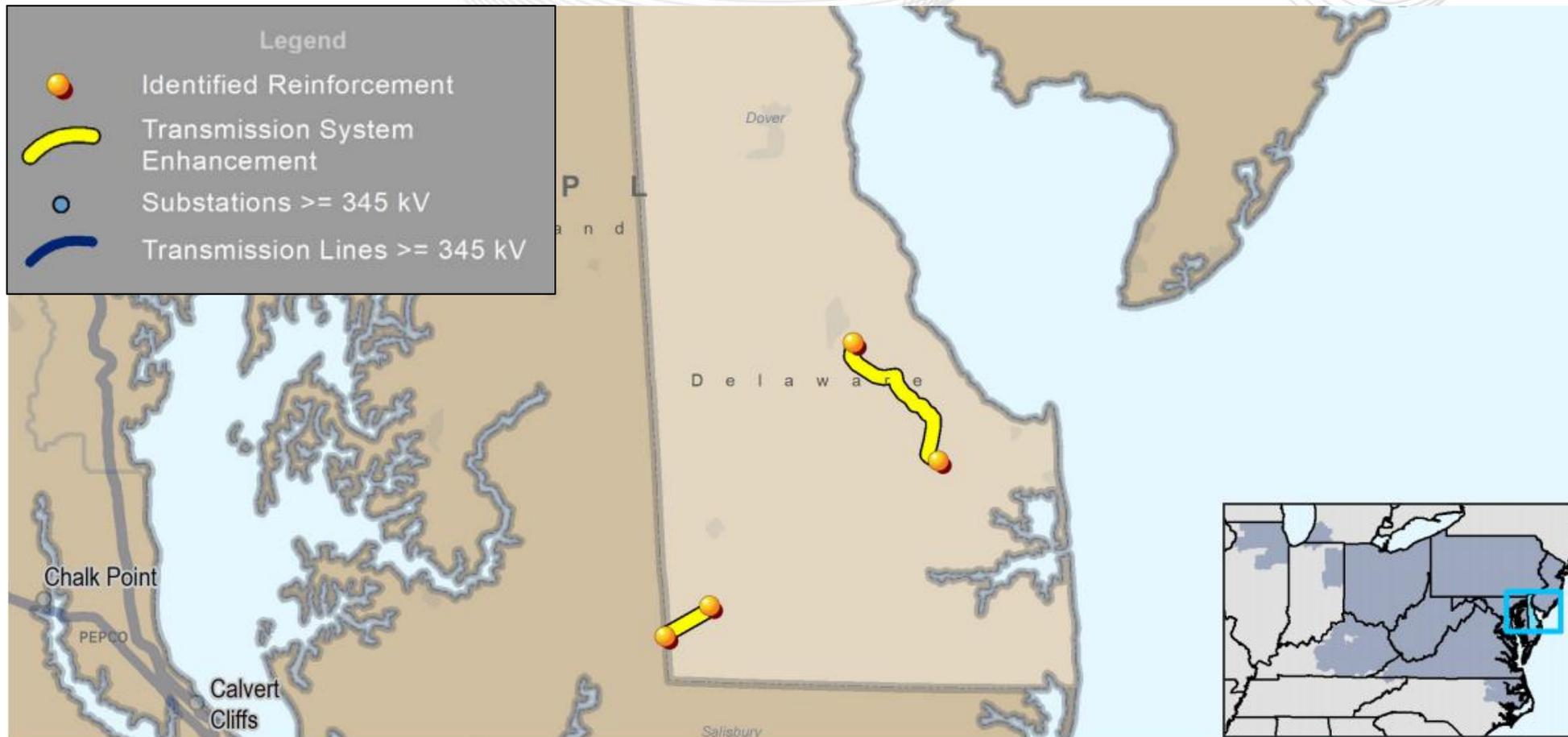


Delaware – RTEP Network Projects

(Greater than \$5 million)

Delaware had no network project upgrades in 2019.

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.



Delaware – TO Supplemental Projects

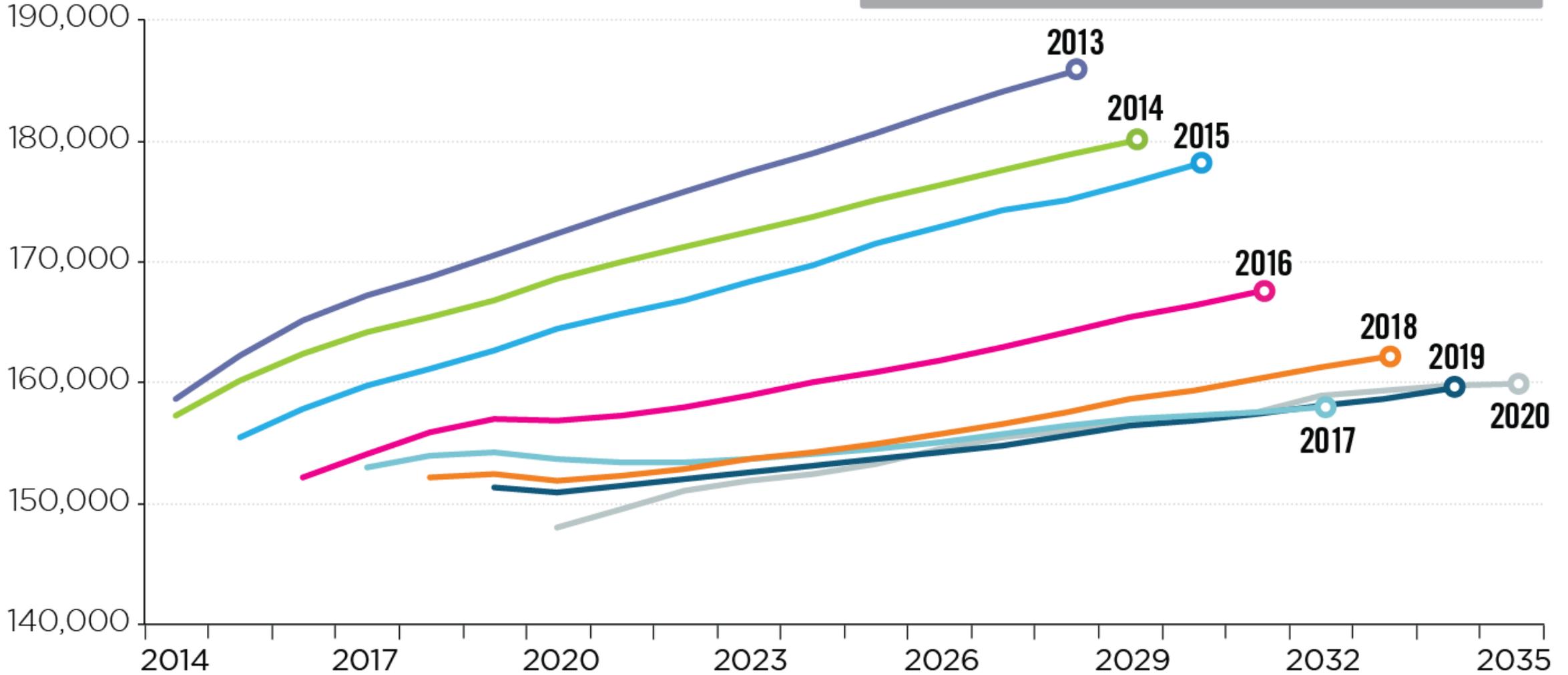
(Greater than \$5 million)

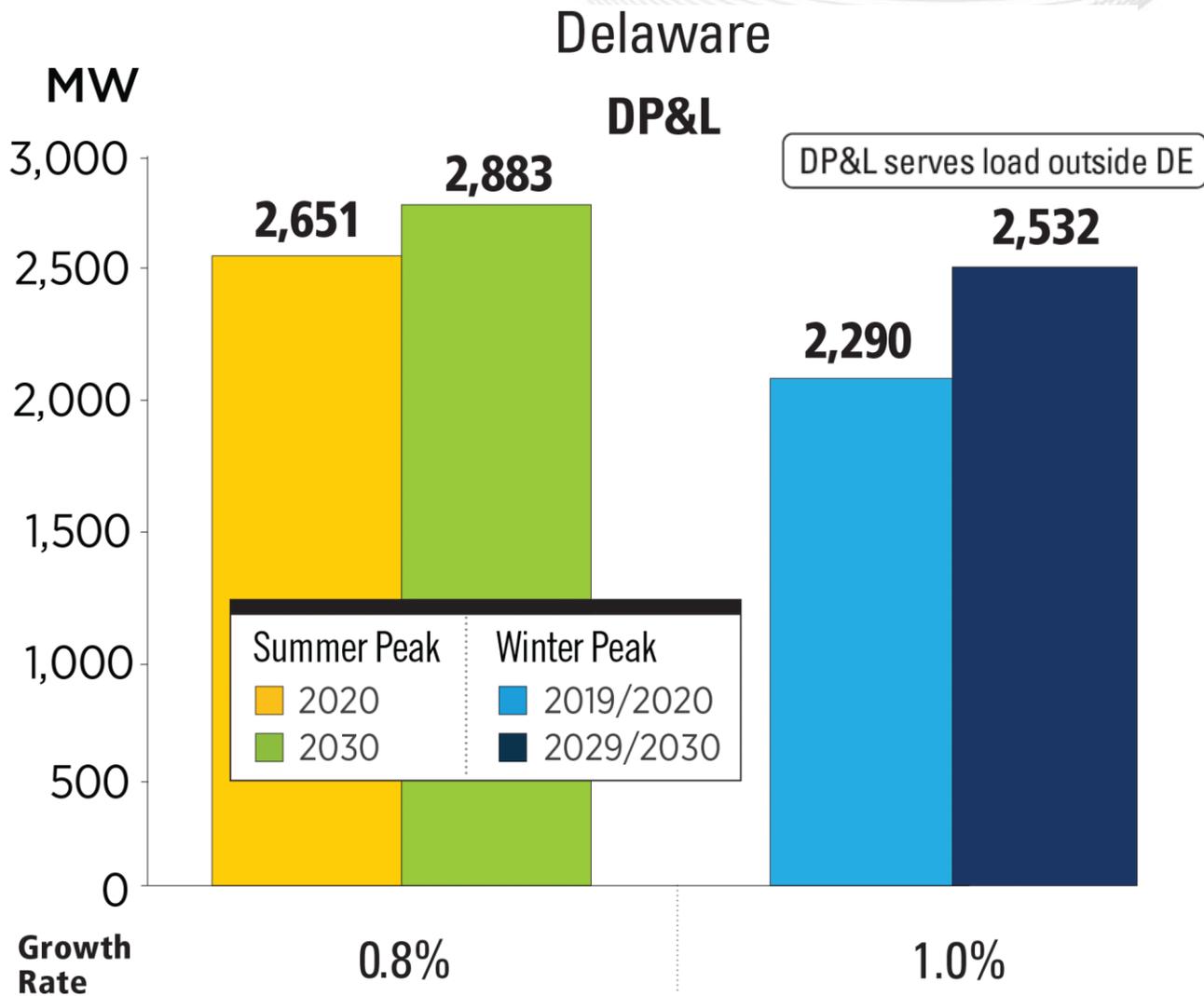
Map ID	Project	Description	Projected In-Service Date	Project Cost (\$M)	TO Zone	TEAC Date
1	s1871	Build a three-breaker ring 230 kV bus that would tie into the existing 23069 Milford-Cool Spring 230 kV line.	5/31/2022	\$15.0	DP&L	2/22/2019
2	s2072	Rebuild 69 kV line from Sharptown-Laurel substations. All structures, conductor and static wire will be replaced with new steel poles, conductor and optical grounding wire communications.	5/31/2022	\$11.0	DP&L	1/25/2019

Planning Load Forecast

PJM RTO Summer Peak Demand Forecast

Load (MW)





PJM RTO Summer Peak

2020	2030
148,092 MW	157,132 MW

Growth Rate 0.6%

PJM RTO Winter Peak

2019/2020	2029/2030
131,287 MW	139,970 MW

Growth Rate 0.6%

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. 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.

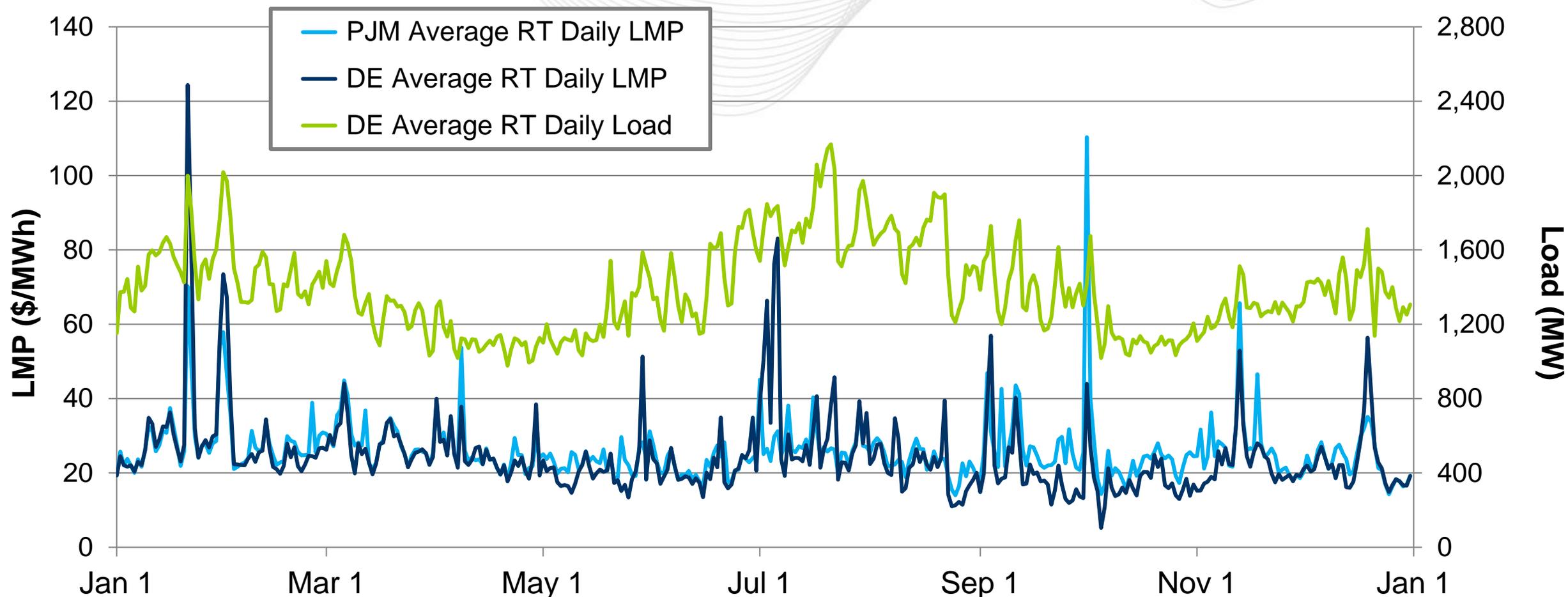
The Load Forecast was produced prior to COVID-19 and will be updated before the next Base Residual Auction to reflect changes in load patterns.

Markets

Market Analysis

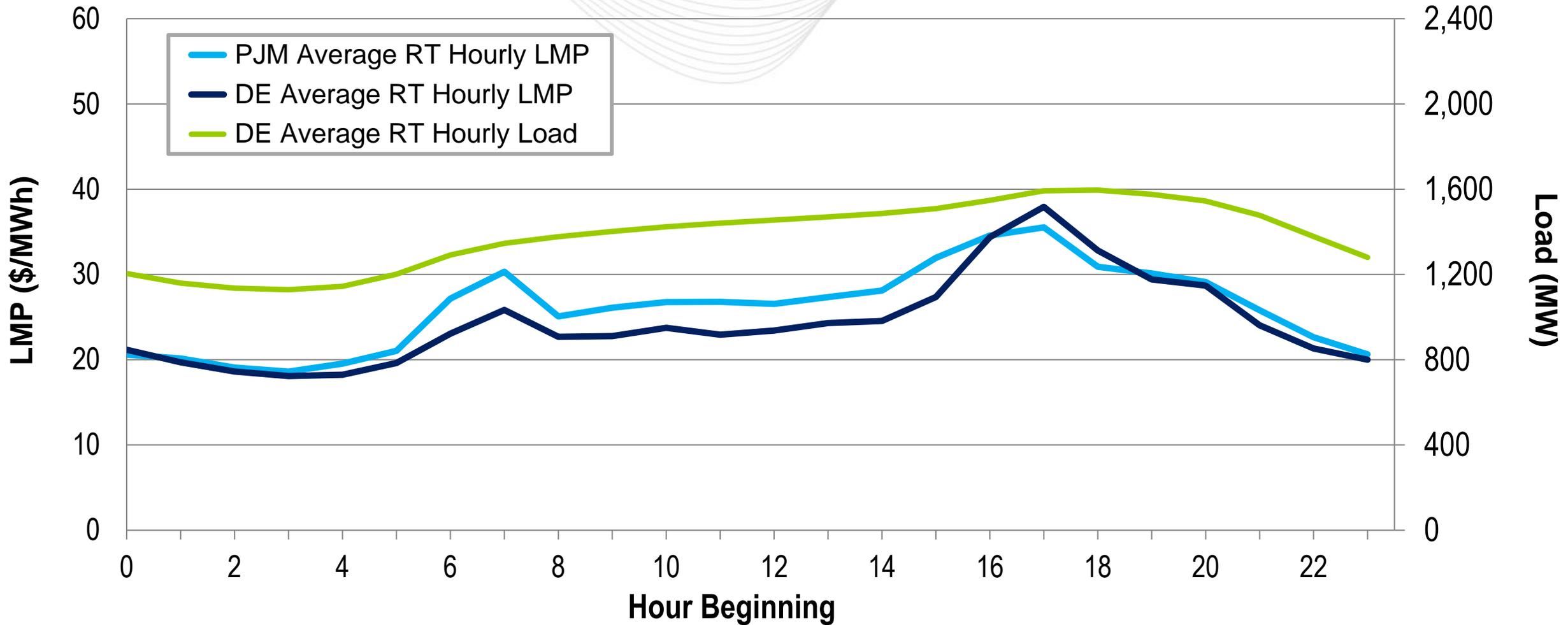
Delaware – Average Daily Load and LMP

(Jan. 1, 2019 – Dec. 31, 2019)



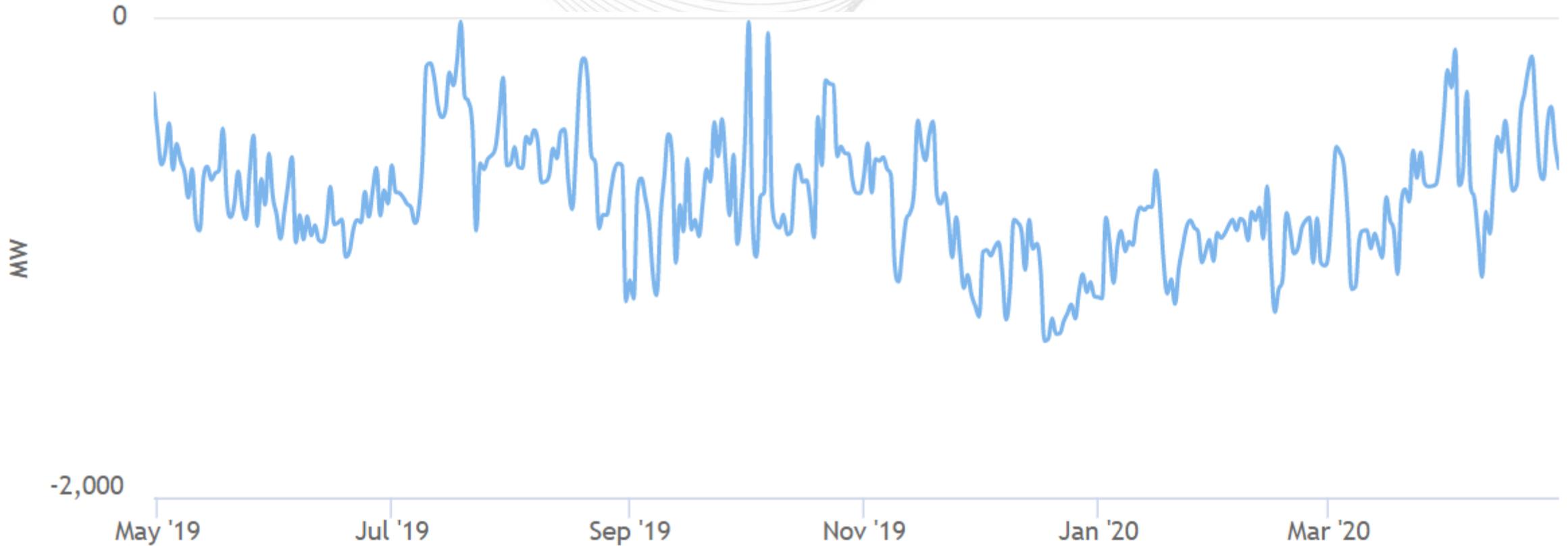
Note: The price spike in late January reflects severe cold weather across the RTO footprint that impacted outage rates and cumulative demand. The spike in October reflects the Performance Assessment Interval event that occurred on October 2nd.

Delaware's average hourly LMPs were generally lower than the PJM average hourly LMP, except during peak hours.



Delaware – Net Energy Import/Export Trend

(May 2019 – April 2020)

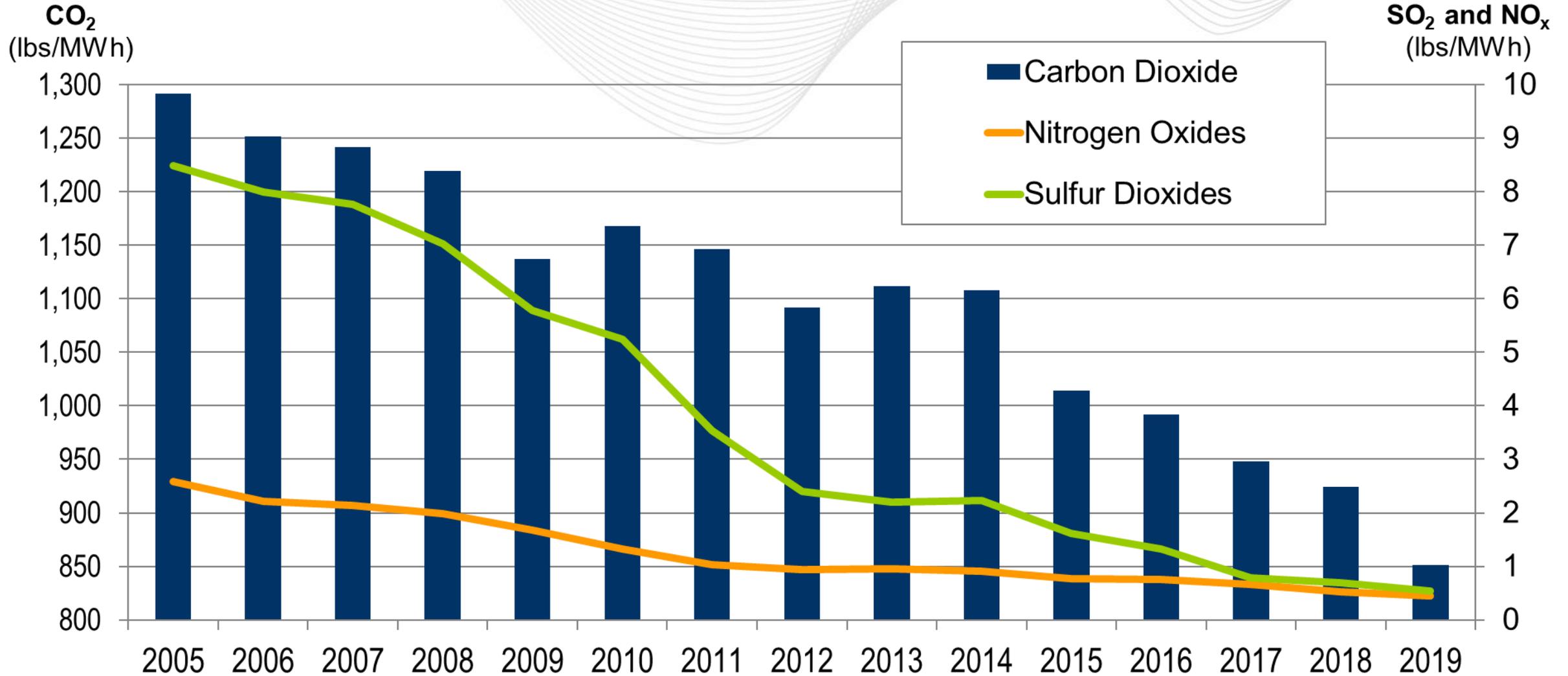


Positive values represent exports and negative values represent imports.

Operations Emissions Data



2005 – 2019 PJM Average Emissions





Delaware – Average Emissions (lbs/MWh)

(Feb. 7, 2020)

CO₂
(lbs/MWh)

SO₂ and NO_x
(lbs/MWh)

