2019 Delaware State Infrastructure Report
(January 1, 2019 – December 31, 2019)

May 2020
(updated July 2020)
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• **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.
PJM – Existing Installed Capacity
(CIRs – as of Dec. 31, 2019)

- Coal, 52,838 MW
- Natural Gas, 78,047 MW
- Waste, 849 MW
- Nuclear, 32,653 MW
- Oil, 9,424 MW
- Solar, 791 MW
- Hydro, 8,332 MW
- Wind, 1,239 MW
Delaware – Existing Installed Capacity

(CIRs – as of Dec. 31, 2019)

- Natural Gas: 2,038 MW
- Oil: 780 MW
- Coal: 410 MW

Total: 3,228 MW
PJM – Queued Capacity (MW) by Fuel Type

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

- Solar, 35,759 MW
- Other, 40 MW
- Nuclear, 169 MW
- Oil, 27 MW
- Natural Gas, 34,990 MW
- Storage, 3,920 MW
- Wind, 6,240 MW
- Wood, 66 MW
- Coal, 96 MW
- Diesel, 4 MW
- Methane, 1 MW
- Hydro, 520 MW
The wind generation listed in the queue for Delaware represents offshore wind projects that are Maryland public policy projects but are physically located in Delaware.

*Note: Nameplate Capacity represents a generator’s rated full power output capability.
Delaware – Percentage of MW in Queue by Fuel Type
(Dec. 31, 2019)
### Delaware – Interconnection Requests

(Unforced Capacity – as of Dec. 31, 2019)

<table>
<thead>
<tr>
<th></th>
<th>In Queue</th>
<th></th>
<th>Complete</th>
<th></th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Active</td>
<td>Suspected</td>
<td>Under Construction</td>
<td>In Service</td>
<td>Withdrawn</td>
</tr>
<tr>
<td></td>
<td>No. of Projects</td>
<td>Capacity (MW)</td>
<td>No. of Projects</td>
<td>Capacity (MW)</td>
<td>No. of Projects</td>
</tr>
<tr>
<td>Non-Renewable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
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<tr>
<td>Natural Gas</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>451.0</td>
<td>19</td>
</tr>
<tr>
<td>Oil</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
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<tr>
<td>Storage</td>
<td>1</td>
<td>0.2</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Renewable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomass</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>Methane</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
<td>4</td>
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<tr>
<td>Solar</td>
<td>14</td>
<td>162.4</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Wind</td>
<td>4</td>
<td>117.9</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
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<tr>
<td>Grand Total</td>
<td>19</td>
<td>280.5</td>
<td>1</td>
<td>451.0</td>
<td>3</td>
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</table>

**Note:** The "Under Construction" column includes both “Engineering and Procurement” and “Under Construction” project statuses.
Delaware – Progression History of Interconnection Requests

Applications Received by PJM

Projects withdrawn after final agreement

<table>
<thead>
<tr>
<th>Projects withdrawn</th>
<th>Nameplate Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnection Service Agreements</td>
<td>420 MW 780 MW</td>
</tr>
<tr>
<td>Wholesale Market Participation Agreements</td>
<td>13 MW 47 MW</td>
</tr>
</tbody>
</table>

Percentage of planned capacity and projects that have reached commercial operation

- 15% Requested capacity megawatt
- 36% Requested projects

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

<table>
<thead>
<tr>
<th>Unit</th>
<th>TO Zone</th>
<th>Fuel Type</th>
<th>Request Received to Deactivate</th>
<th>Status</th>
<th>Actual or Projected Deactivation Date</th>
<th>Age (Years)</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>McKee 3</td>
<td>DP&amp;L</td>
<td>Natural Gas</td>
<td>3/8/2019</td>
<td>Pending</td>
<td>6/1/2021</td>
<td>44</td>
<td>102.00</td>
</tr>
</tbody>
</table>
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.

Delaware – RTEP Baseline Projects

(Greater than $5 million)

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

Delaware had no baseline project upgrades in 2019.
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)

<table>
<thead>
<tr>
<th>Map ID</th>
<th>Project</th>
<th>Description</th>
<th>Projected In-Service Date</th>
<th>Project Cost ($M)</th>
<th>TO Zone</th>
<th>TEAC Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>s1871</td>
<td>Build a three-breaker ring 230 kV bus that would tie into the existing 23069 Milford-Cool Spring 230 kV line.</td>
<td>5/31/2022</td>
<td>$15.0</td>
<td>DP&amp;L</td>
<td>2/22/2019</td>
</tr>
<tr>
<td>2</td>
<td>s2072</td>
<td>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.</td>
<td>5/31/2022</td>
<td>$11.0</td>
<td>DP&amp;L</td>
<td>1/25/2019</td>
</tr>
</tbody>
</table>
Planning
Load Forecast
PJM Annual Load Forecasts
(Jan. 2020)

PJM RTO Summer Peak Demand Forecast

Load (MW)

2014 2017 2020 2023 2026 2029 2032 2035
140,000 150,000 160,000 170,000 180,000 190,000


2013
2014
2015
2016
2017
2018
2019
2020

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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
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

**CO₂ (lbs/MWh)**

- 2005: 1,300 lbs/MWh
- 2006: 1,300 lbs/MWh
- 2007: 1,250 lbs/MWh
- 2008: 1,250 lbs/MWh
- 2009: 1,200 lbs/MWh
- 2010: 1,200 lbs/MWh
- 2011: 1,150 lbs/MWh
- 2012: 1,150 lbs/MWh
- 2013: 1,100 lbs/MWh
- 2014: 1,100 lbs/MWh
- 2015: 1,050 lbs/MWh
- 2016: 1,050 lbs/MWh
- 2017: 1,000 lbs/MWh
- 2018: 1,000 lbs/MWh
- 2019: 950 lbs/MWh

**SO₂ and NOₓ (lbs/MWh)**

- 2005: 10 lbs/MWh
- 2006: 9 lbs/MWh
- 2007: 8 lbs/MWh
- 2008: 7 lbs/MWh
- 2009: 6 lbs/MWh
- 2010: 5 lbs/MWh
- 2011: 4 lbs/MWh
- 2012: 3 lbs/MWh
- 2013: 2 lbs/MWh
- 2014: 1 lbs/MWh
- 2015: 1 lbs/MWh
- 2016: 1 lbs/MWh
- 2017: 1 lbs/MWh
- 2018: 1 lbs/MWh
- 2019: 0 lbs/MWh

Legend:
- Blue: Carbon Dioxide
- Orange: Nitrogen Oxides
- Green: Sulfur Dioxides
Delaware – Average Emissions (lbs/MWh)

(Feb. 7, 2020)

Carbon Dioxide
Nitrogen Oxides
Sulfur Dioxides