



# 2020 Maryland and District of Columbia State Infrastructure Report

(January 1, 2020 – December 31, 2020)

April 2021

# 1. Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

# 2. Markets

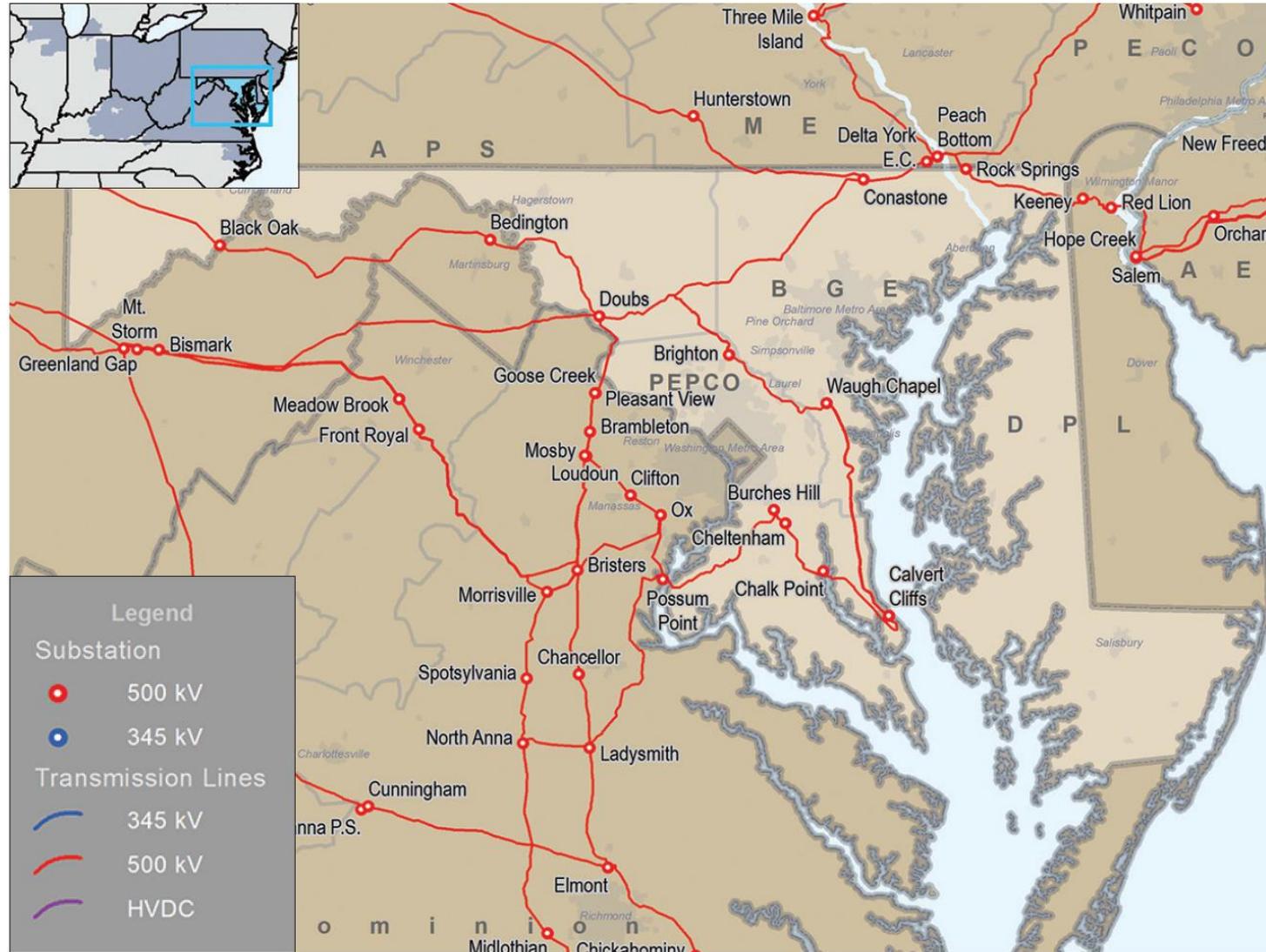
- Market Analysis
- Net Energy Import/Export Trend

# 3. Operations

- Emissions Data

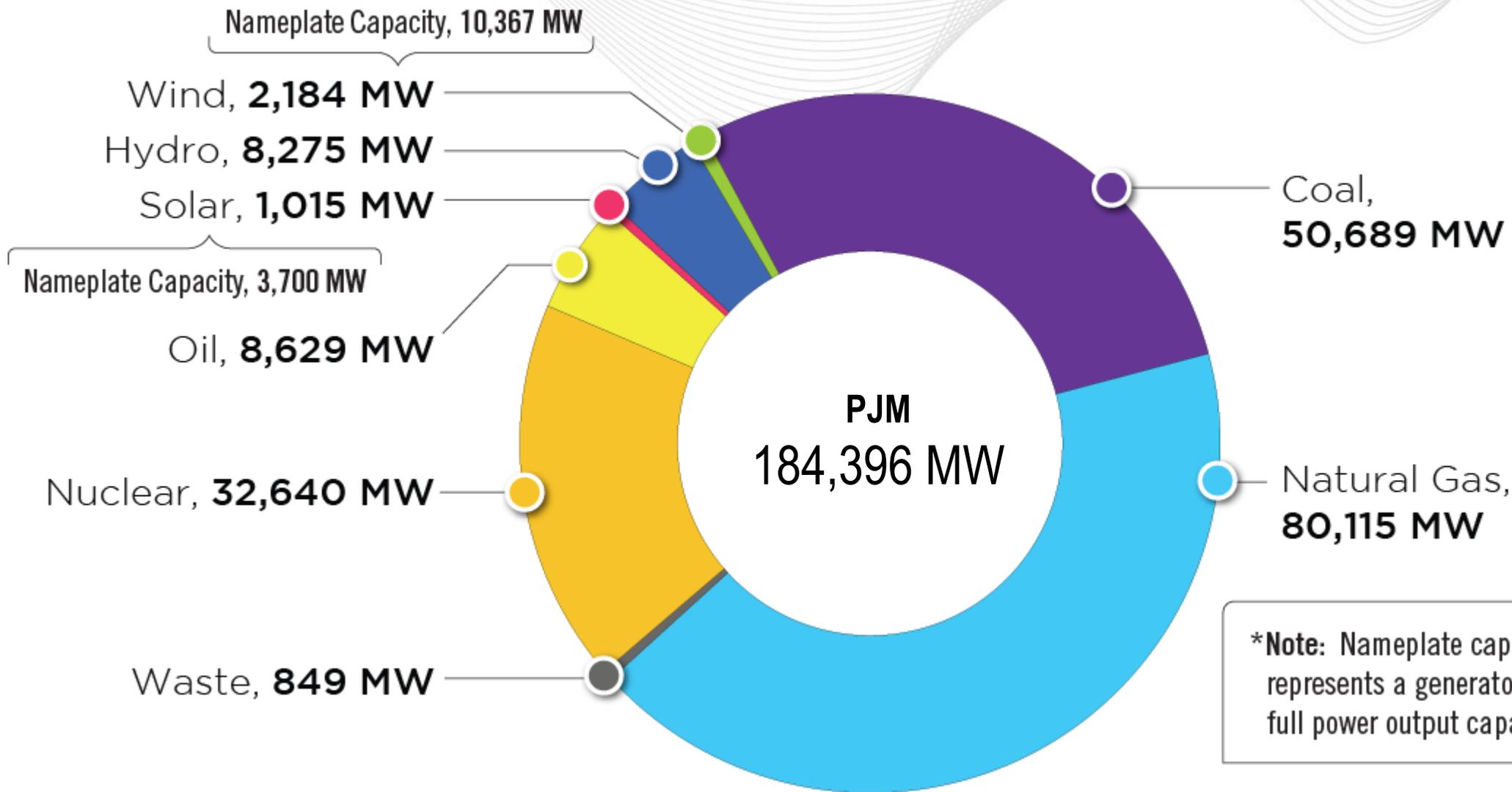
- **Existing Capacity:** Natural gas represents approximately 41.6 percent of the total installed capacity in the Maryland service territory while coal represents approximately 28 percent. Comparatively, across PJM natural gas and coal are at 43.4 and 27.5 percent of total installed capacity.
- **Interconnection Requests:** Solar represents 75.2 percent of new interconnection requests in Maryland, while storage represents approximately 15.6 percent of new requests.
- **Deactivations:** 1,210.8 MW in Maryland provided notification of deactivation in 2020.
- **RTEP 2020:** Maryland's 2020 RTEP projects total approximately \$152.9 million in investment, which is slightly down from the 2019 total. Approximately 90.2 percent of that represents supplemental projects. These investment figures only represent RTEP projects that cost at least \$5 million.

- **Load Forecast:** Maryland and Washington, D.C.'s projected summer peak load growth is relatively flat, averaging between -1.2 and 0.3 percent annually over the next 10 years depending on the service territory. Comparatively, the overall PJM RTO projected 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 Maryland & District of Columbia State Infrastructure Report.
- **1/1/20 – 12/31/20 Market Performance:** Maryland and D.C.'s average hourly LMPs were slightly higher than the PJM average hourly LMP.
- **Emissions:** 2020 carbon dioxide, sulfur dioxide, and nitrogen oxide emissions in Maryland decreased from 2019 levels.



# Planning

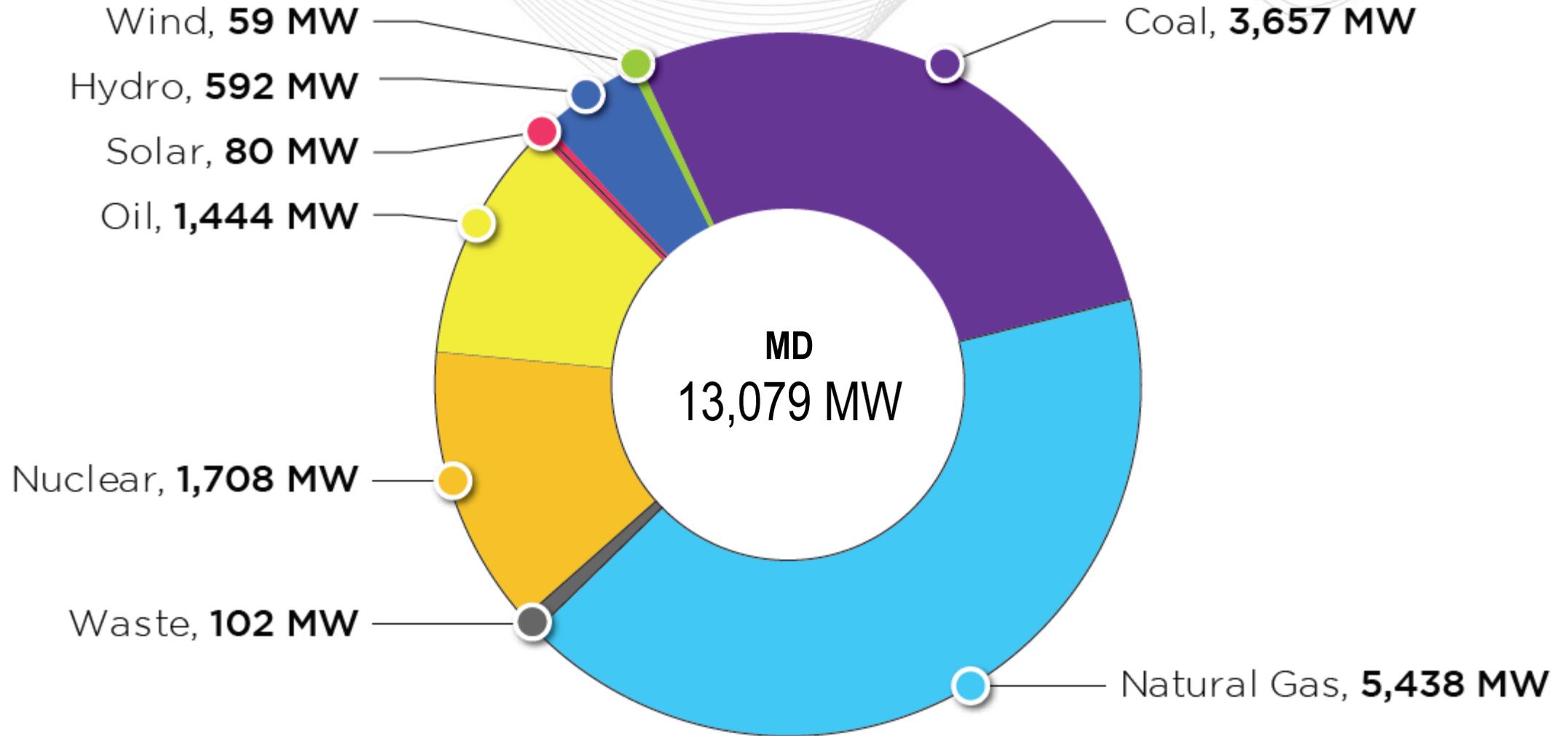
## Generation Portfolio Analysis

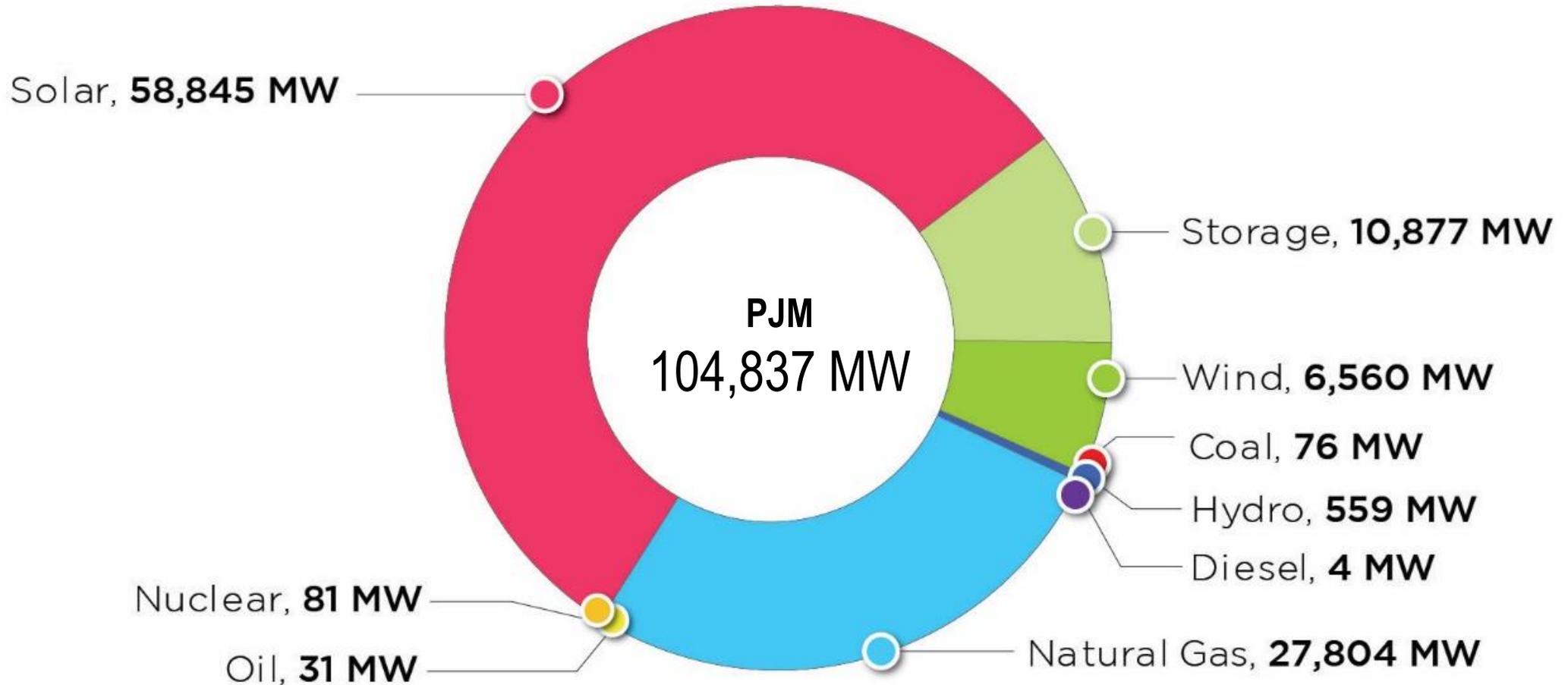


**\*Note:** Nameplate capacity represents a generator's rated full power output capability.

# Maryland – Existing Installed Capacity

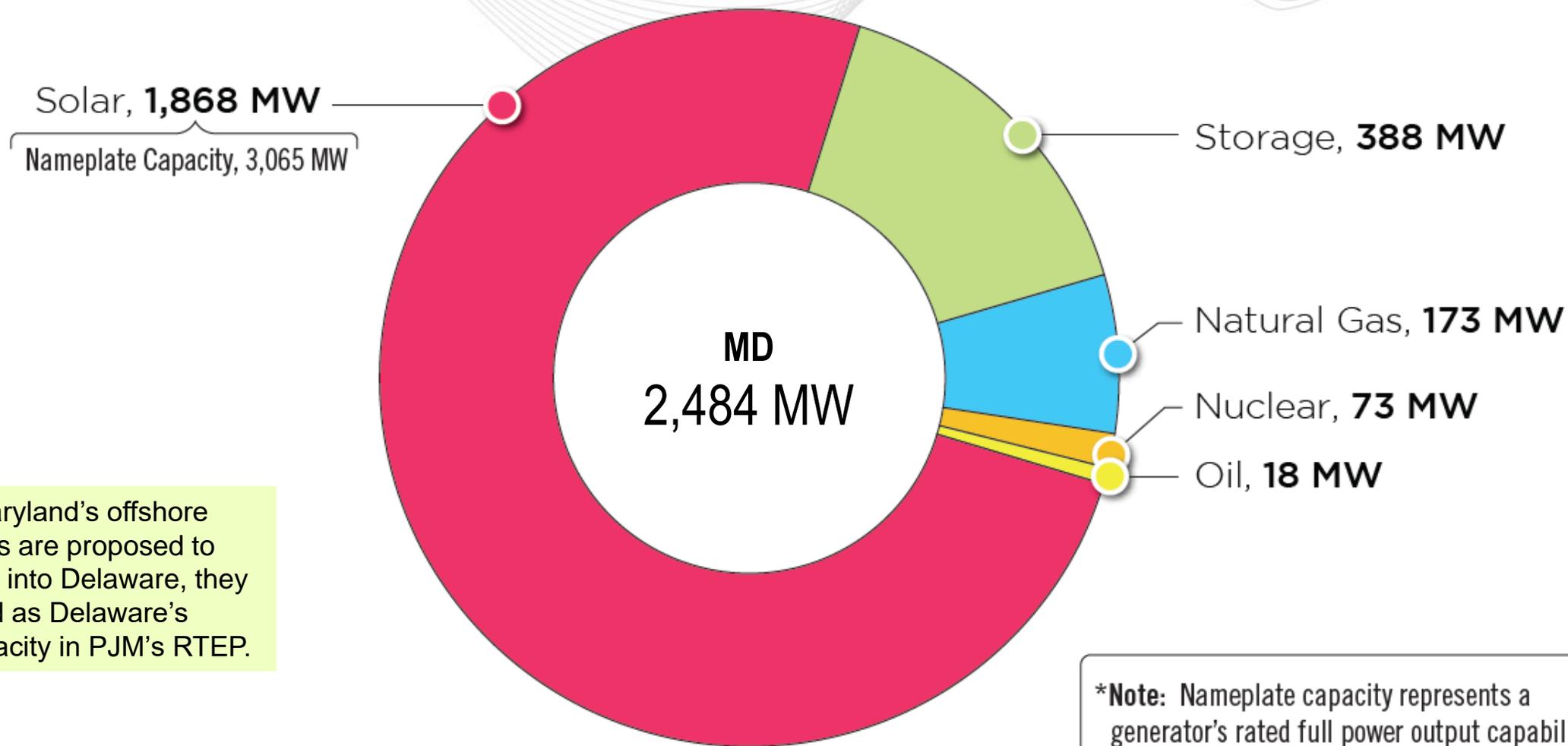
(CIRs – as of Dec. 31, 2020)





# Maryland – Queued Capacity (MW) by Fuel Type

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



Because Maryland's offshore wind projects are proposed to interconnect into Delaware, they are captured as Delaware's queued capacity in PJM's RTEP.

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



# Maryland – Interconnection Requests by Fuel Type

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

		In Queue						Complete				Grand Total	
		Active		Suspended		Under Construction		In Service		Withdrawn		Projects	Capacity (MW)
		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	1	10.0	0	0.0	1	10.0
	Diesel	0	0.0	0	0.0	0	0.0	1	0.0	1	5.0	2	5.0
	Natural Gas	8	172.6	0	0.0	1	0.0	34	3,827.2	64	32,860.5	107	36,860.3
	Nuclear	3	37.4	0	0.0	0	0.0	1	0.0	4	4,955.0	8	4,992.4
	Oil	3	18.0	0	0.0	0	0.0	2	5.0	1	2.0	6	25.0
	Other	0	0.0	0	0.0	0	0.0	0	0.0	4	132.0	4	132.0
	Storage	14	388.2	0	0.0	0	0.0	0	0.0	35	293.2	49	681.4
Renewable	Biomass	0	0.0	0	0.0	0	0.0	0	0.0	12	227.6	12	227.6
	Hydro	0	0.0	0	0.0	0	0.0	3	60.0	4	88.4	7	148.4
	Methane	0	0.0	0	0.0	0	0.0	6	18.5	6	18.3	12	36.8
	Solar	47	1,585.1	7	72.8	22	209.8	13	42.2	172	1,021.6	261	2,931.4
	Wind	0	0.0	0	0.0	0	0.0	5	40.3	10	265.6	15	305.9
Other	Battery	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
<b>Grand Total</b>		<b>76</b>	<b>2,201.3</b>	<b>7</b>	<b>72.8</b>	<b>23</b>	<b>209.8</b>	<b>66</b>	<b>4,003.2</b>	<b>313</b>	<b>39,869.2</b>	<b>485</b>	<b>46,356.2</b>

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



# Maryland – Progression History of Interconnection Requests



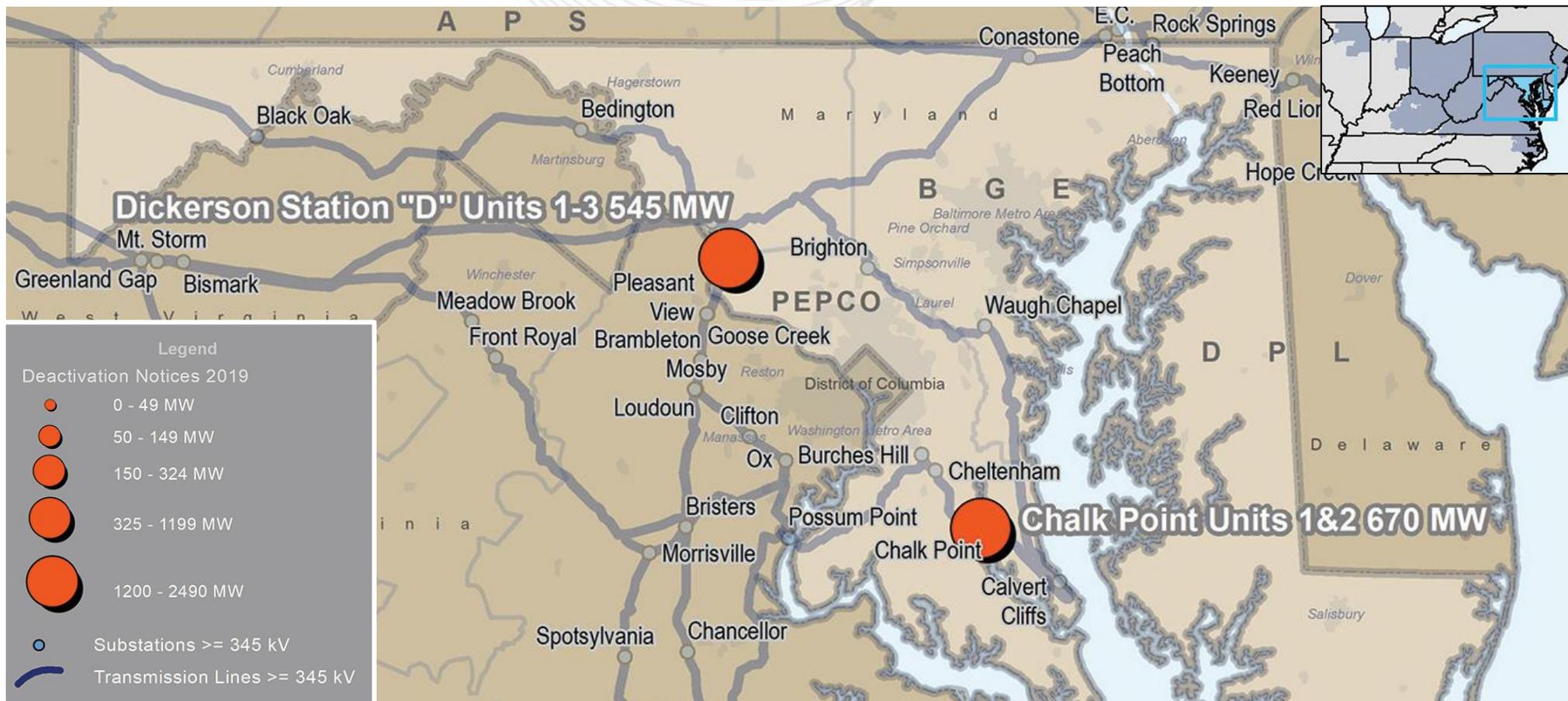
## Projects withdrawn after final agreement

		Nameplate Capacity
26	Interconnection Service Agreements	5,627 MW
44	Wholesale Market Participation Agreements	93 MW
		179 MW

Percentage of planned capacity and projects that have reached commercial operation	<b>9%</b>	<b>17%</b>
	Requested capacity megawatts	Requested projects

*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.*

# Maryland – Generation Deactivation Notifications Received in 2020





# Maryland – Generation Deactivation Notifications Received in 2020

Unit	TO Zone	Fuel Type	Request Submittal Date	Actual Deactivation Date	Age (Years)	Capacity (MW)
Dickerson Station Unit 1	PEPCO	Coal	5/15/2020	8/13/2020	61	182.0
Dickerson Station Unit 2			5/15/2020	8/13/2020	60	180.0
Dickerson Station Unit 3			5/15/2020	8/13/2020	58	180.5
Chalk Point Unit 1			8/10/2020	6/1/2021	56	333.1
Chalk Point Unit 2			8/10/2020	6/1/2021	55	337.2

# 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>





# Maryland – RTEP Baseline Projects

(No baseline projects were planned in Washington, D.C. in the 2020 RTEP; Projects greater than \$5 million)

Map ID	Project	Description	Required In-Service Date	Project Cost (\$M)	TO Zone	TEAC Date
1	b3155	Rebuild approximately 12 miles of Wye Mills - Stevensville line to achieve needed ampacity.	12/1/2023	\$15.00	DP&L	12/16/2019



# Maryland & D.C. – RTEP Network Projects

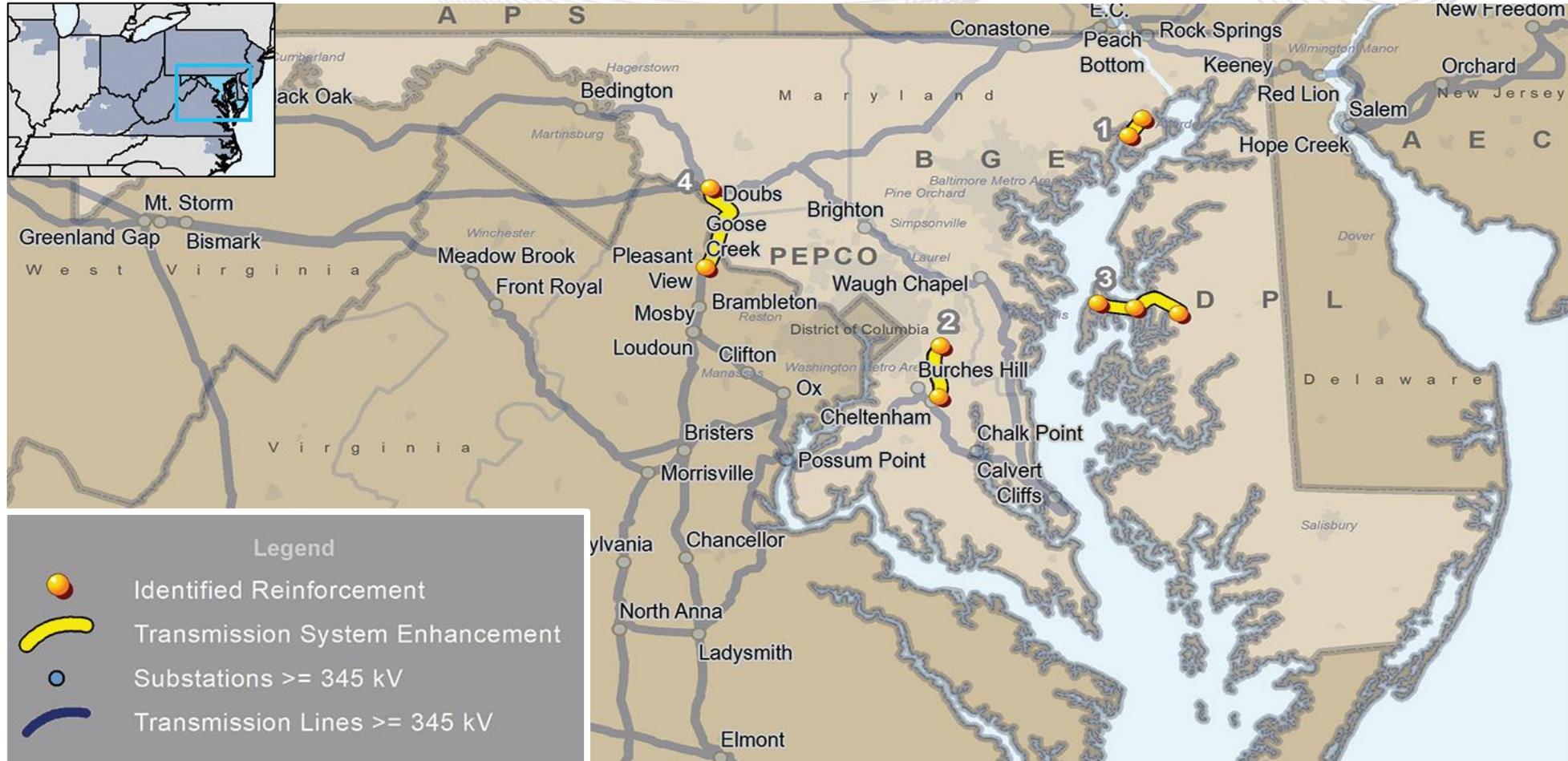
(Projects greater than \$5 million)

Maryland and Washington, D.C. 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.

# Maryland – TO Supplemental Projects

(No supplemental projects were planned in Washington, D.C. in the 2020 RTEP; Projects greater than \$10 million)



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.



# Maryland – TO Supplemental Projects

(No supplemental projects were planned in Washington, D.C. in the 2020 RTEP; Projects greater than \$5 million)

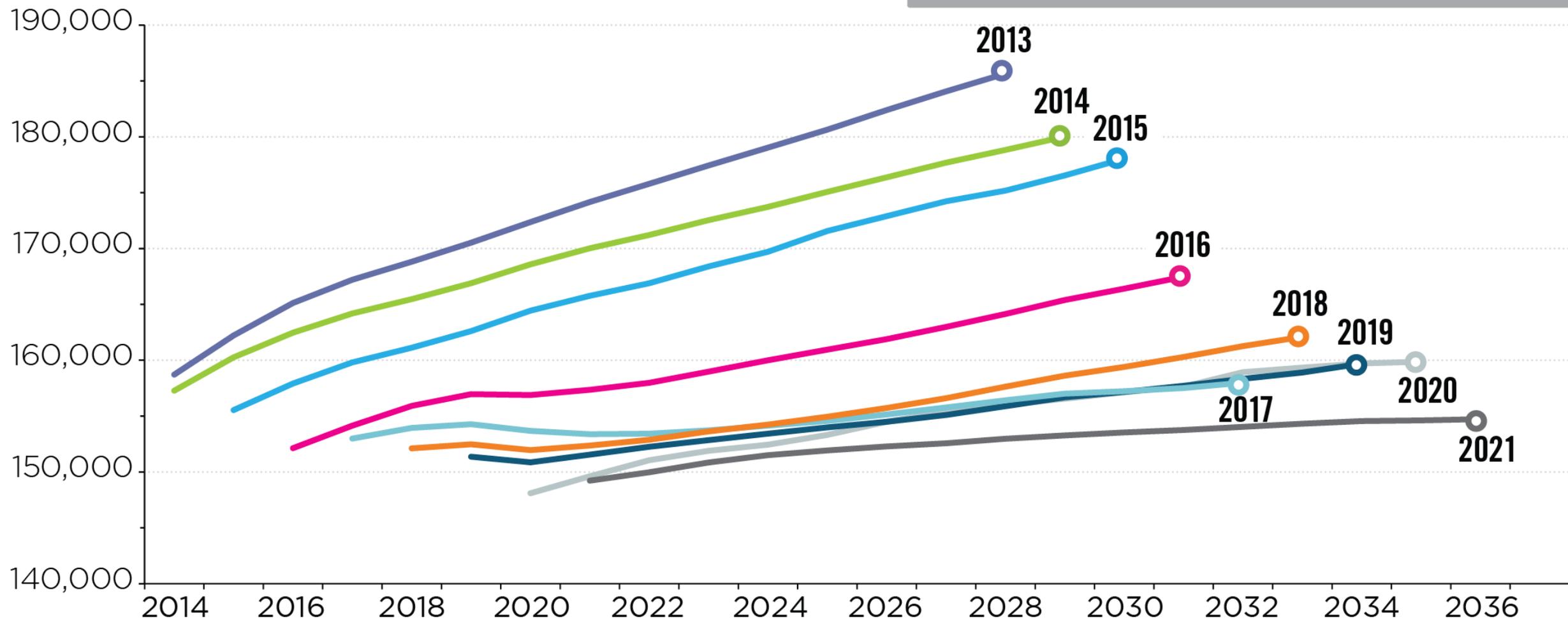
Map ID	Project	Description	Projected In-Service Date	Project Cost (\$M)	TO Zone	TEAC Date
1	s2209	Rebuild two single-circuit 115 kV wood H-frame circuits (110617/110618) as one double-circuit steel-pole line.	12/31/2021	\$21.40	BGE	3/20/2020
2	s2356	Rebuild 10 miles of existing Talbert-Oak Grove 230 kV double-circuit lattice tower transmission lines 23067 and 23087 with new steel monopole structures along the existing route.	12/1/2024	\$38.00	PEPCO	9/1/2020
3	s2378	Construct two 69 kV substations along the existing Wye Mills to Stevensville circuit and retire existing Grasonville substation.	6/1/2023	\$18.50	DP&L	10/15/2020
		Construct new five-breaker ring bus substation west of existing Grasonville substation (w/30 MVAR Capacitor Bank).				
		Construct new five-breaker ring bus substation west of existing Wye Mills substation (w/30 MVAR Capacitor Bank).				
4	s2386	Rebuild and reconductor the FE portion of the Doubs-Goose Creek 500 kV line (~14.8 miles of steel lattice tower construction) utilizing existing right-of-way. Replace breaker disconnect switches, line metering and relaying, substation conductor and breakers at Doubs 500 kV station.	6/1/2025	\$60.00	AP	10/6/2020

# Planning

## Load Forecast

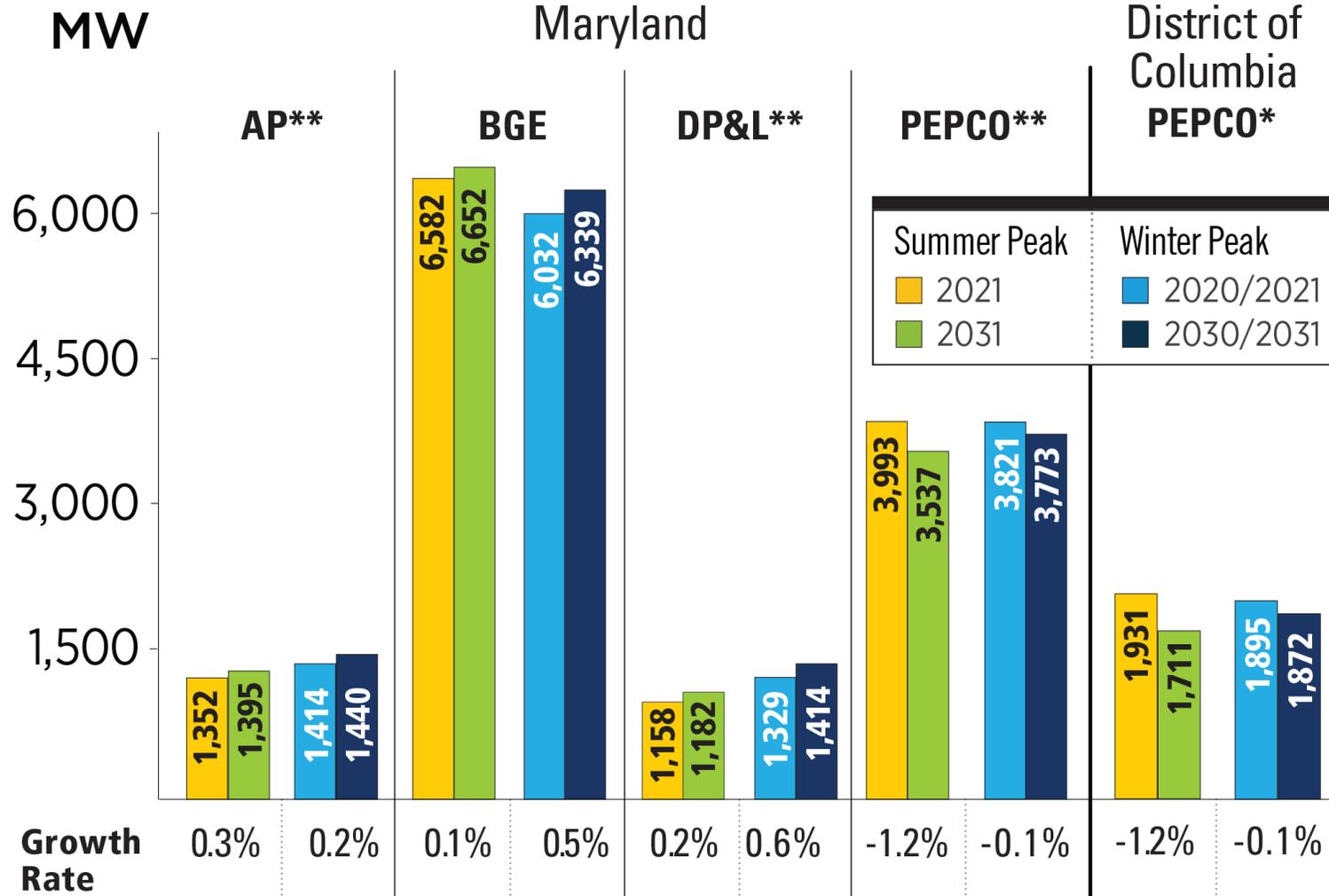
## PJM RTO Summer Peak Demand Forecast

Load (MW)





# Maryland & D.C. – 2021 Load Forecast Report



\*\*Serve load outside MD; \*serves load outside D.C.

PJM RTO Summer Peak		PJM RTO Winter Peak	
2021	2031	2020/2021	2030/2031
149,223 MW	153,759 MW	132,027 MW	135,568 MW
Growth Rate 0.3%		Growth Rate 0.2%	

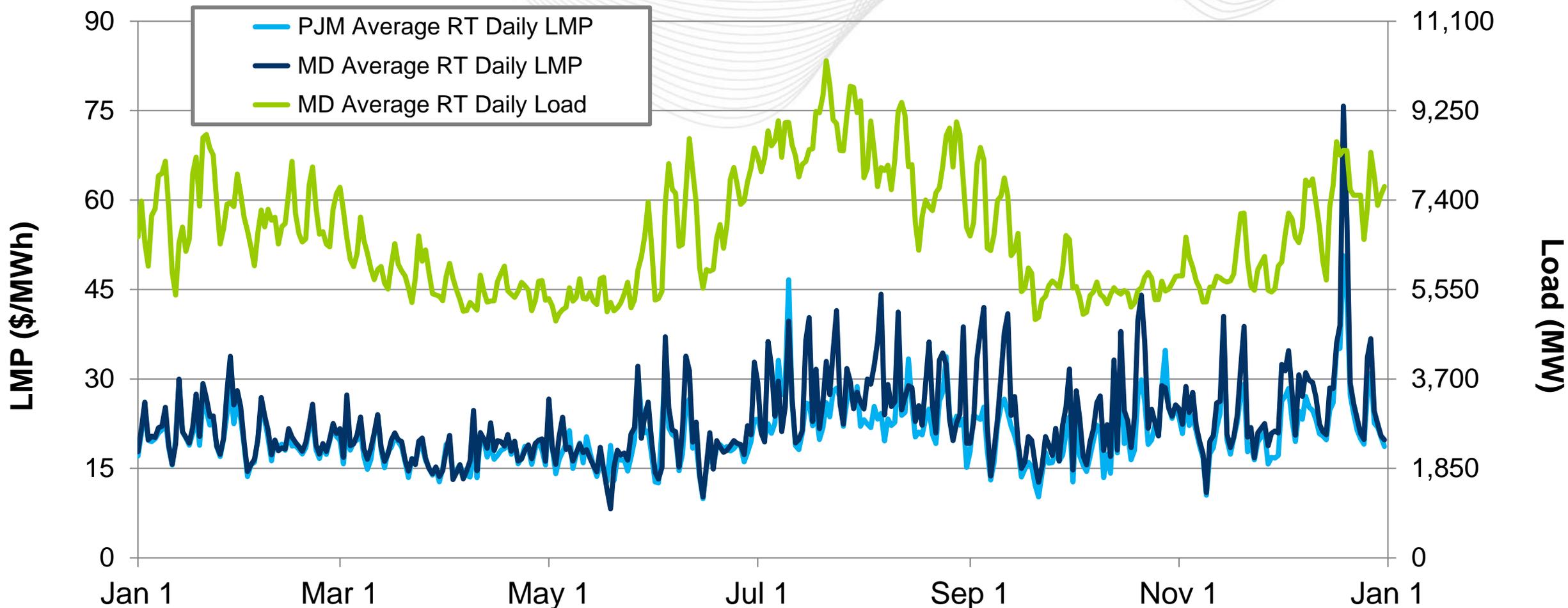
The summer and winter peak megawatt values reflect the estimated amount of forecasted load to be served by each transmission owner in the noted state/district. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas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

# Markets

## Market Analysis

# Maryland – Average Daily LMP and Load

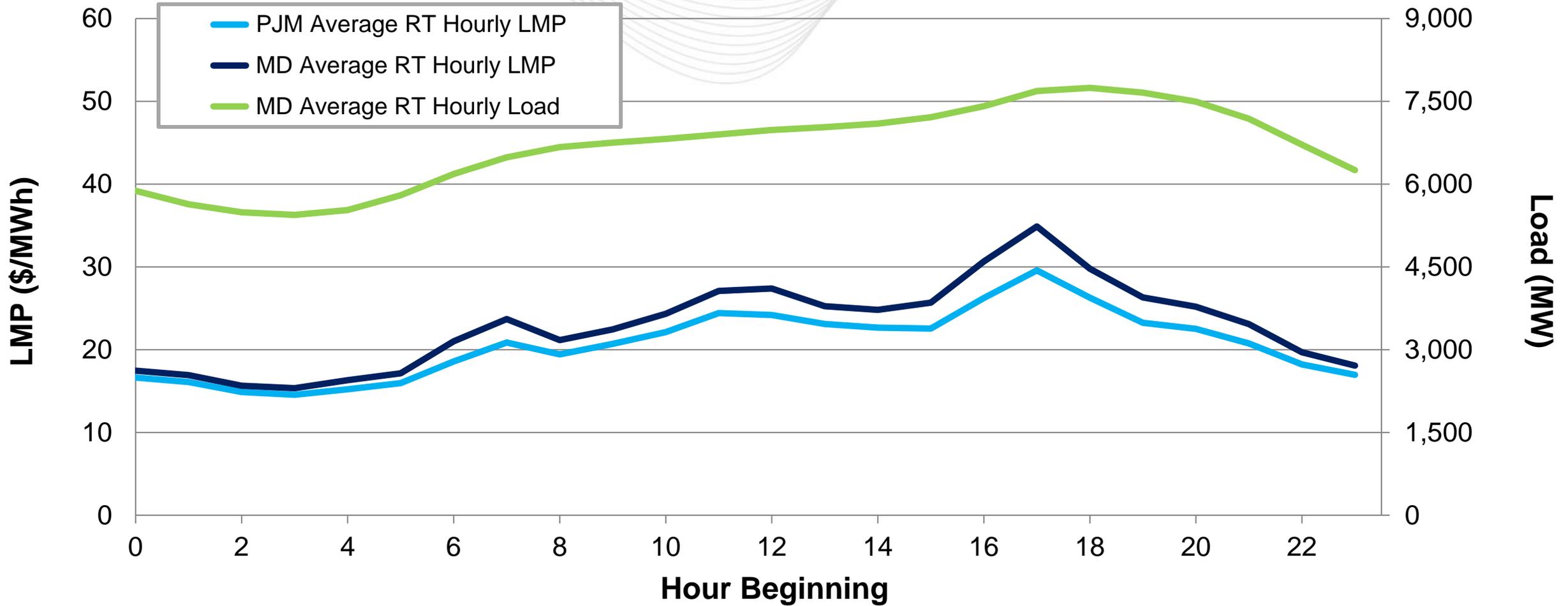
(Jan. 1, 2020 – Dec. 31, 2020)



# Maryland – Average Hourly LMP and Load

(Jan. 1, 2020 – Dec. 31, 2020)

Maryland's average hourly LMPs were slightly higher than the PJM average hourly LMP.



# Maryland – Net Energy Import/Export Trend

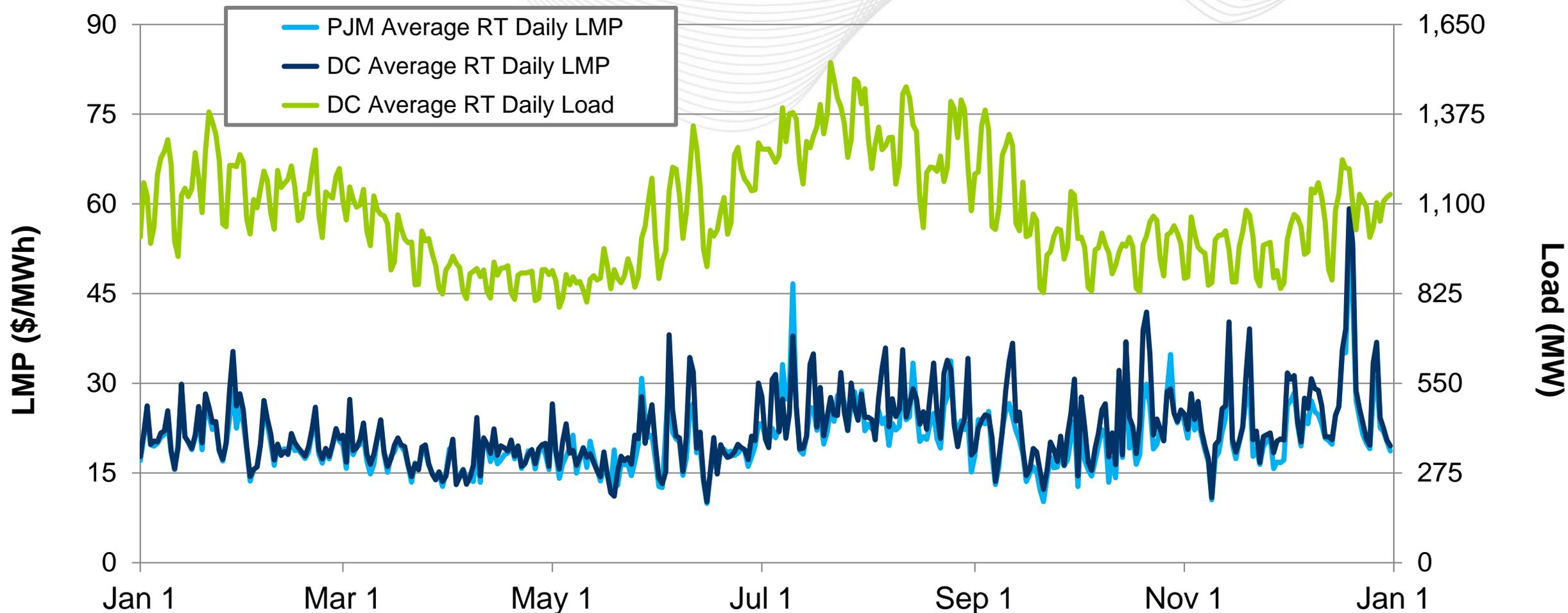
(Jan. 2020 – Dec. 2020)



Positive values represent exports and negative values represent imports.

# Washington, D.C. – Average Daily LMP and Load

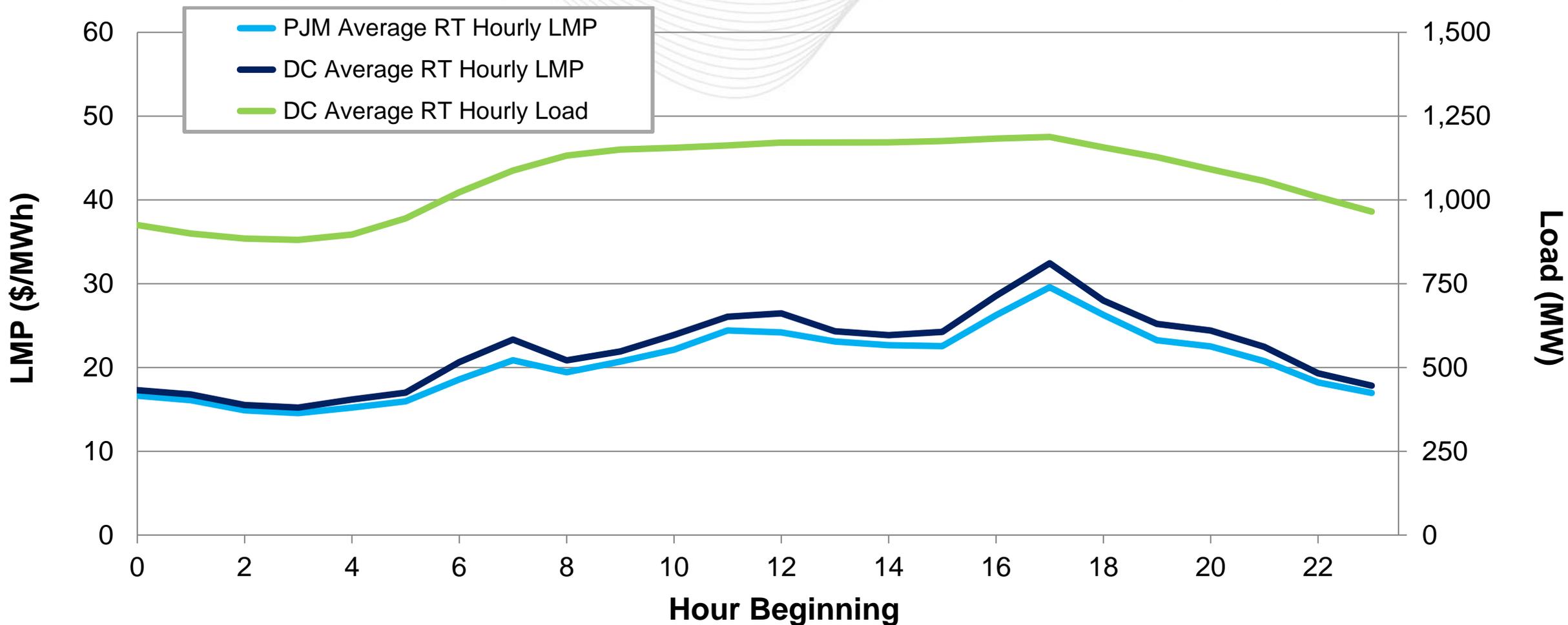
(Jan. 1, 2020 – Dec. 31, 2020)



# Washington, D.C. – Average Hourly LMP and Load

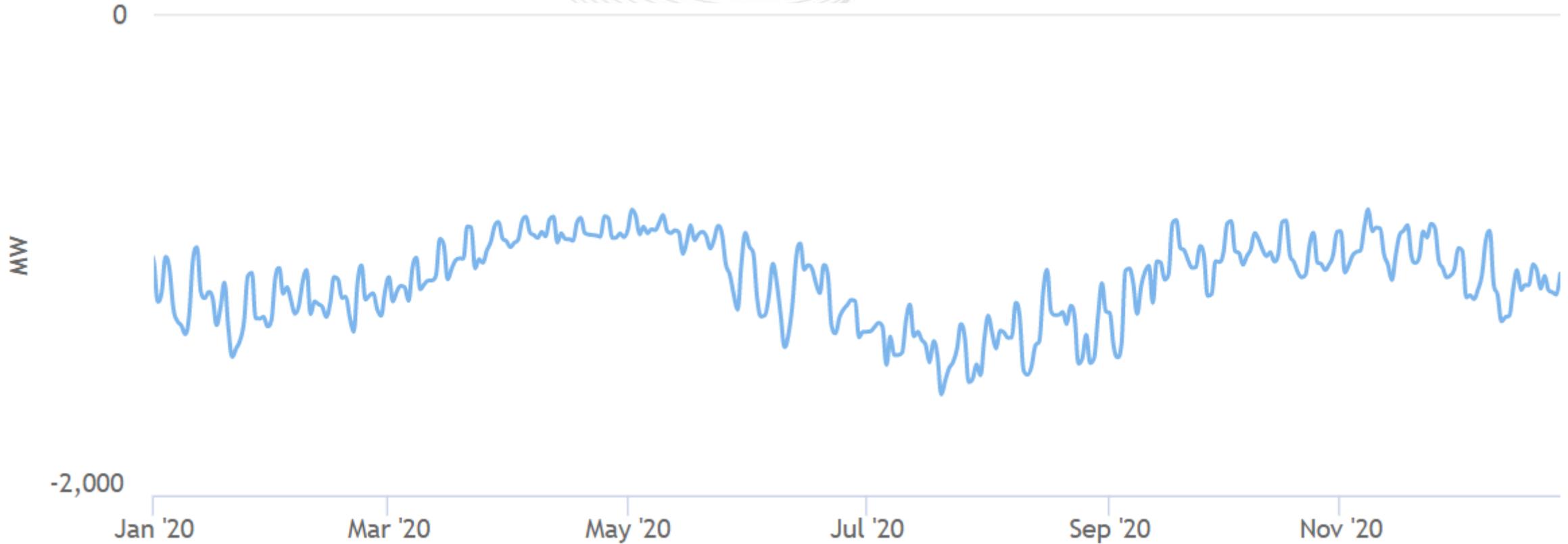
(Jan. 1, 2020 – Dec. 31, 2020)

Washington, D.C.'s average hourly LMPs were slightly higher than the PJM average hourly LMP.



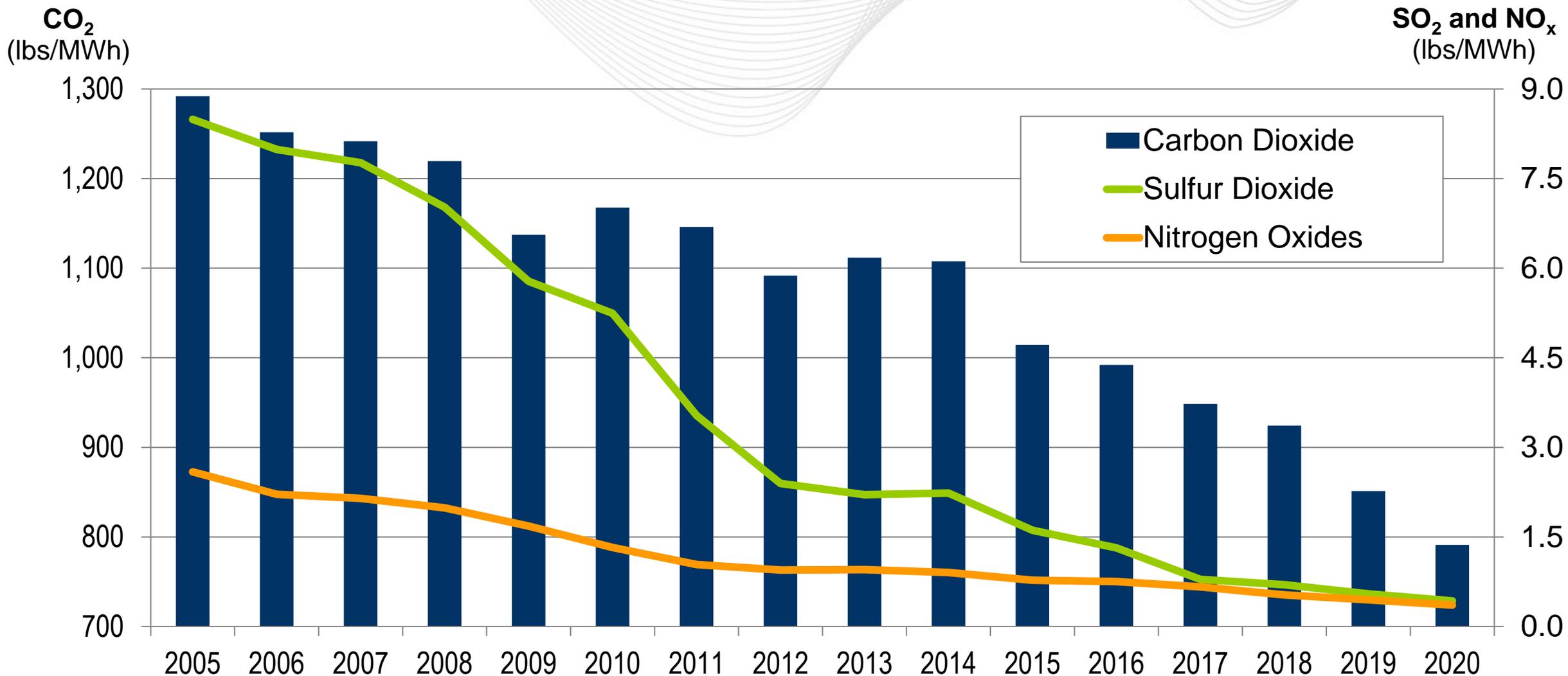
# Washington, D.C. – Net Energy Import/Export Trend

(Jan. 2020 – Dec. 2020)



Positive values represent exports and negative values represent imports.

# Operations Emissions Data



# Maryland – Average Emissions (lbs/MWh)

(Feb. 2021)

