2019 Maryland and District of Columbia State Infrastructure Report

(January 1, 2019 – December 31, 2019)

May 2020

(updated July 2020)

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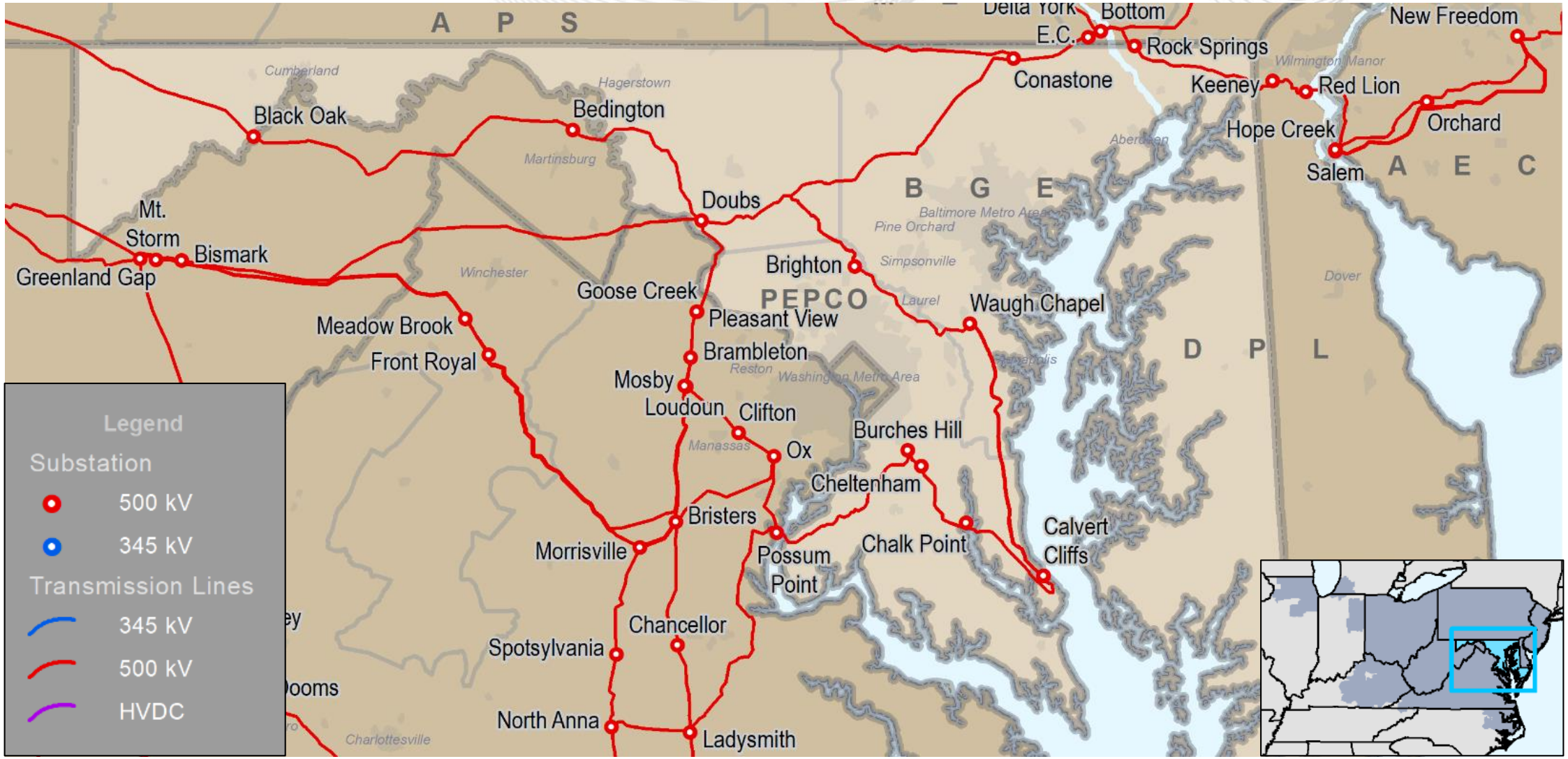
Executive Summary
(May 2020)

- **Existing Capacity:** Natural gas represents approximately 40.7 percent of the total installed capacity in the Maryland service territory while coal represents approximately 31 percent. Comparatively, across PJM natural gas and coal are at 42.4 and 28.7 percent of total installed capacity.
- **Interconnection Requests:** Natural gas represents 52.8 percent of new interconnection requests in Maryland, while solar represents approximately 38.5 percent of new requests.
- **Deactivations:** 122 MW in Maryland gave notification of deactivation in 2019.
- **RTEP 2019:** Maryland's 2019 RTEP projects total approximately $162.5 million in investment. Approximately 90 percent of that represents supplemental projects. These investment figures only represent RTEP projects that cost at least $5 million.

Executive Summary
(May 2020)

- **Load Forecast:** : Maryland and Washington, D.C. load growth is relatively flat, averaging between -0.5 and 0.8 percent annually over the next 10 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 Maryland and DC State Infrastructure Report.
- **1/1/19 – 12/31/19 Market Performance:** Maryland and DC's average hourly LMPs were higher than PJM average hourly LMPs.
- **Emissions:** 2019 carbon dioxide, sulfur dioxide, and nitrogen oxide emissions in Maryland decreased from 2018 levels.

PJM Service Area – Maryland and D.C.

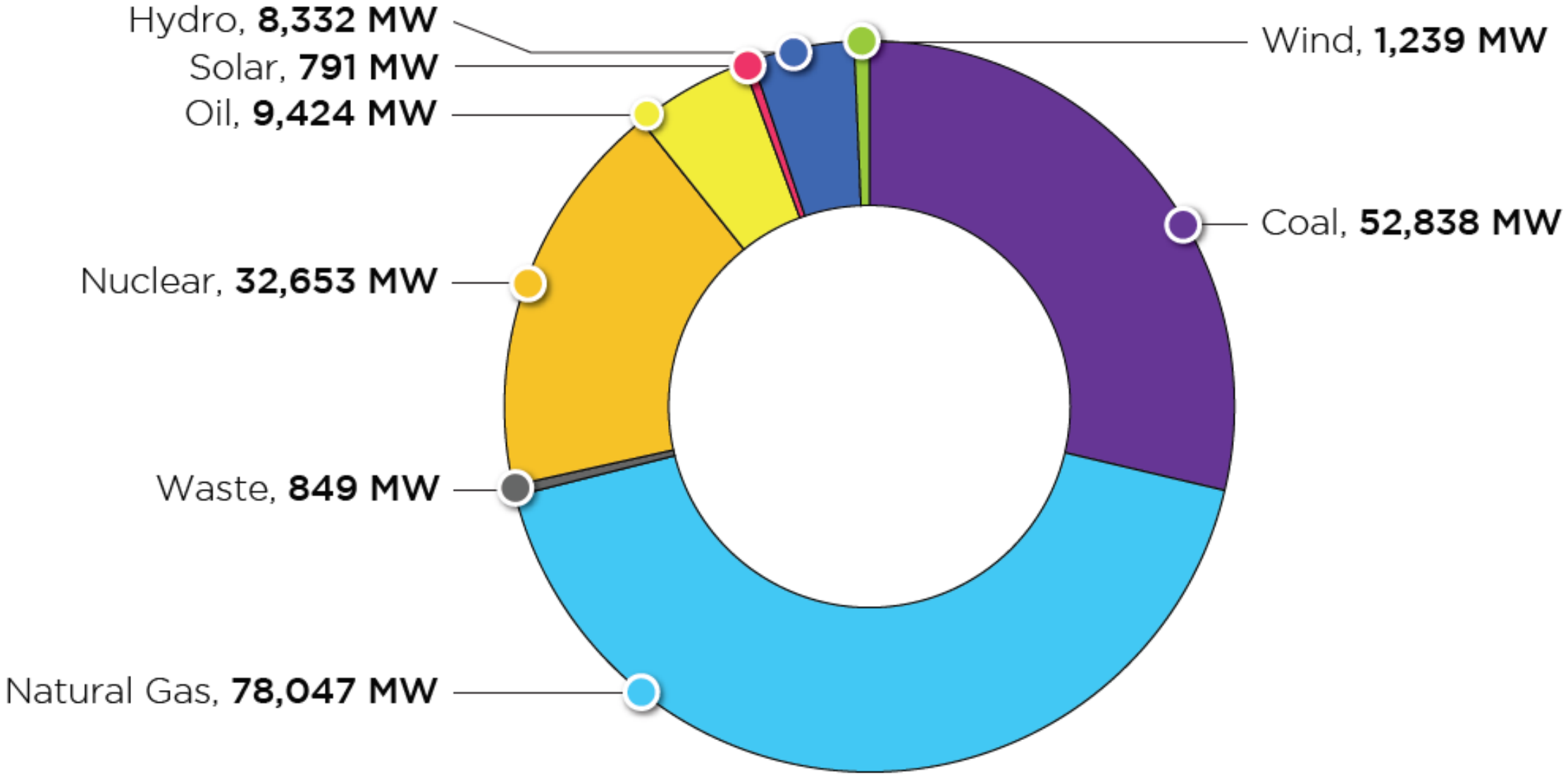


Planning

Generation Portfolio Analysis

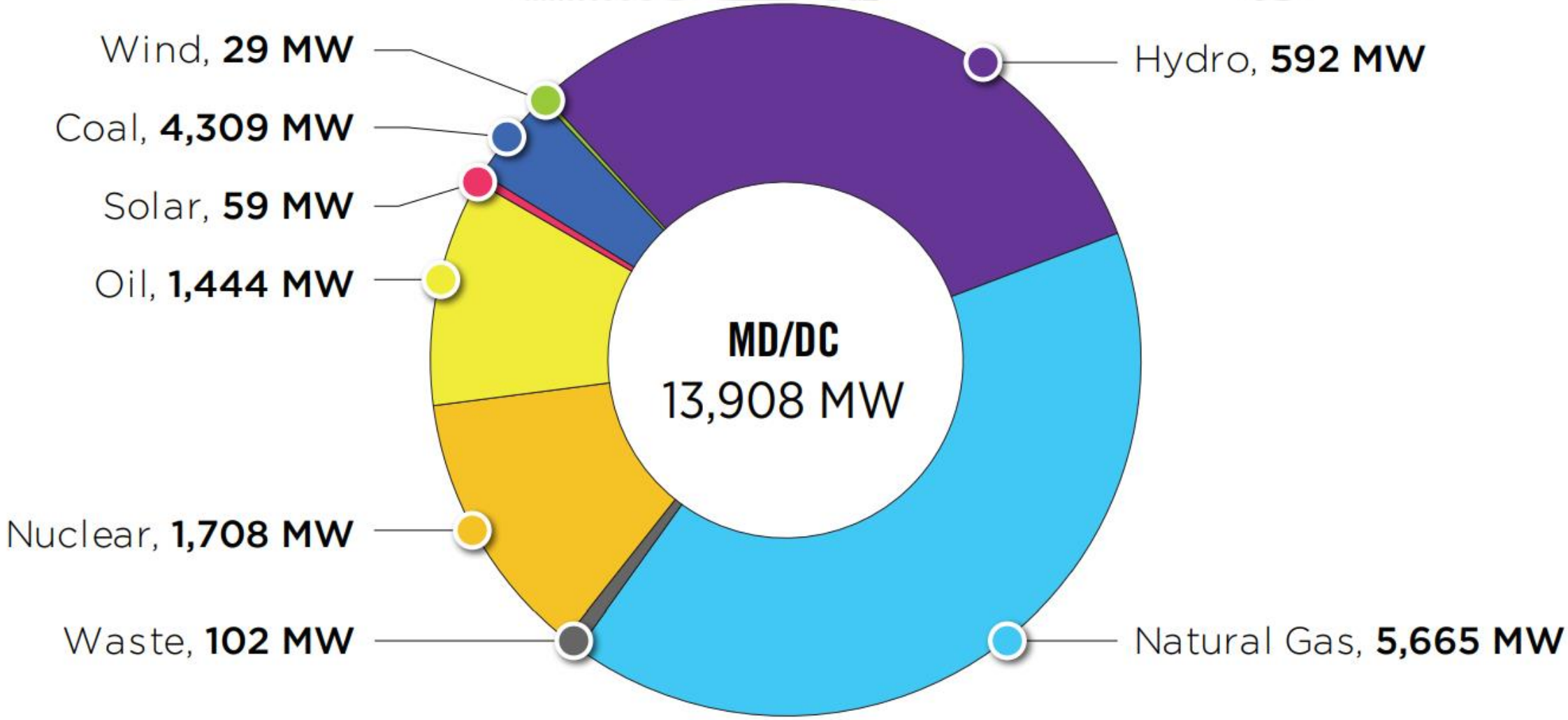
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2019)



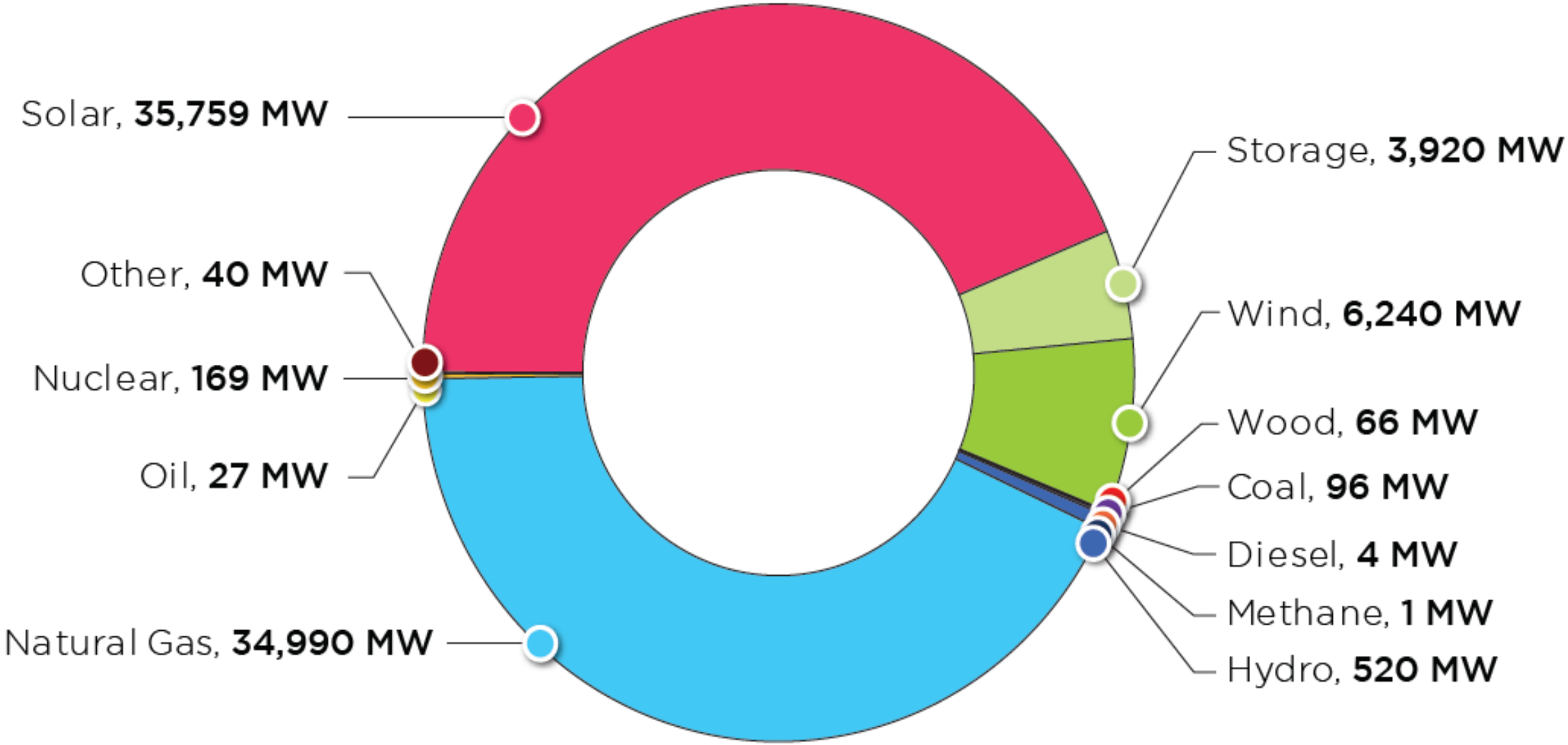
Maryland – Existing Installed Capacity

(Washington, D.C. does not have any installed capacity; CIRs – as of Dec. 31, 2019)



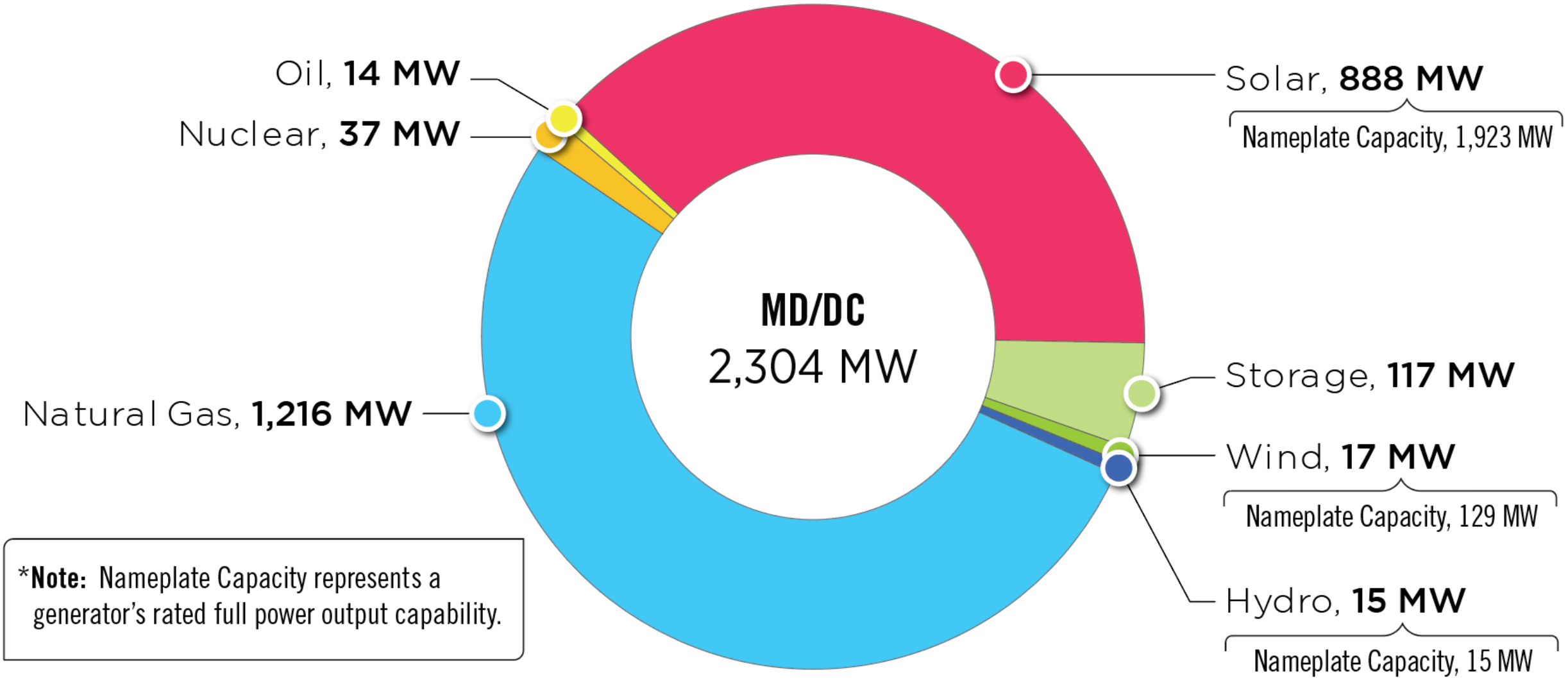
PJM – Queued Capacity (MW) by Fuel Type

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



Maryland – Queued Capacity (MW) by Fuel Type

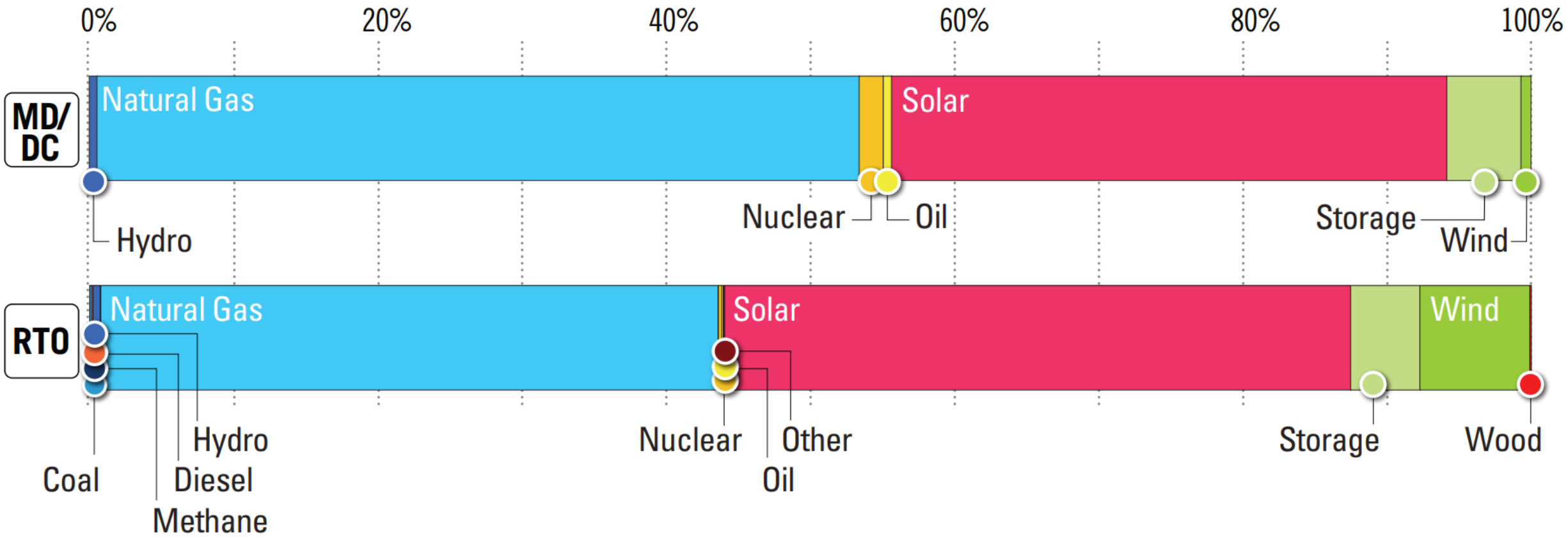
(Requested CIRs – as of Dec. 31, 2019)



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

Maryland / D.C. – Percentage of MW in Queue by Fuel Type

(Dec. 31, 2019)



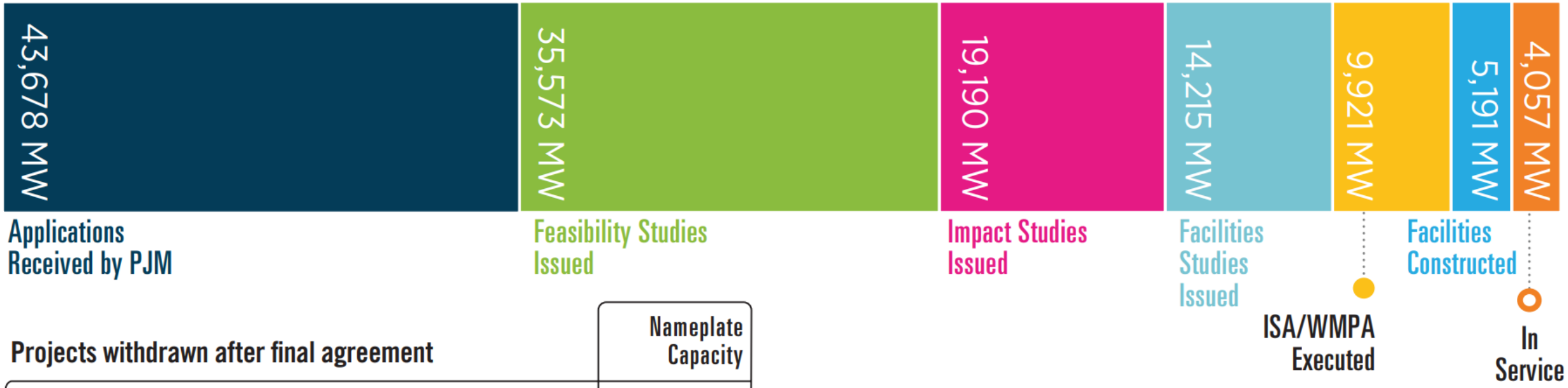
Maryland – Interconnection Requests

(Unforced Capacity – as of 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	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	1	144.6	3	952.0	3	119.5	32	3,707.7	61	31,908.5	100	36,832.3
	Nuclear	3	37.4	0	0.0	0	0.0	1	0.0	4	4,955.0	8	4,992.4
	Oil	1	14.0	0	0.0	0	0.0	2	5.0	1	2.0	4	21.0
	Other	0	0.0	0	0.0	0	0.0	0	0.0	4	132.0	4	132.0
	Storage	5	117.2	0	0.0	0	0.0	0	0.0	30	60.0	35	177.2
Renewable	Biomass	0	0.0	0	0.0	0	0.0	0	0.0	12	227.6	12	227.6
	Hydro	1	15.0	0	0.0	0	0.0	3	60.0	3	73.4	7	148.4
	Methane	0	0.0	0	0.0	0	0.0	6	18.5	6	18.3	12	36.8
	Solar	38	663.9	9	84.8	16	139.7	11	38.5	161	848.9	235	1,775.8
	Wind	0	0.0	1	9.1	1	7.8	4	32.5	9	256.5	15	305.9
	Grand Total	**49**	**992.1**	**13**	**1,045.9**	**20**	**267.0**	**61**	**3,872.2**	**292**	**38,487.2**	**435**	**44,664.3**

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

Maryland – Progression History of Interconnection Requests

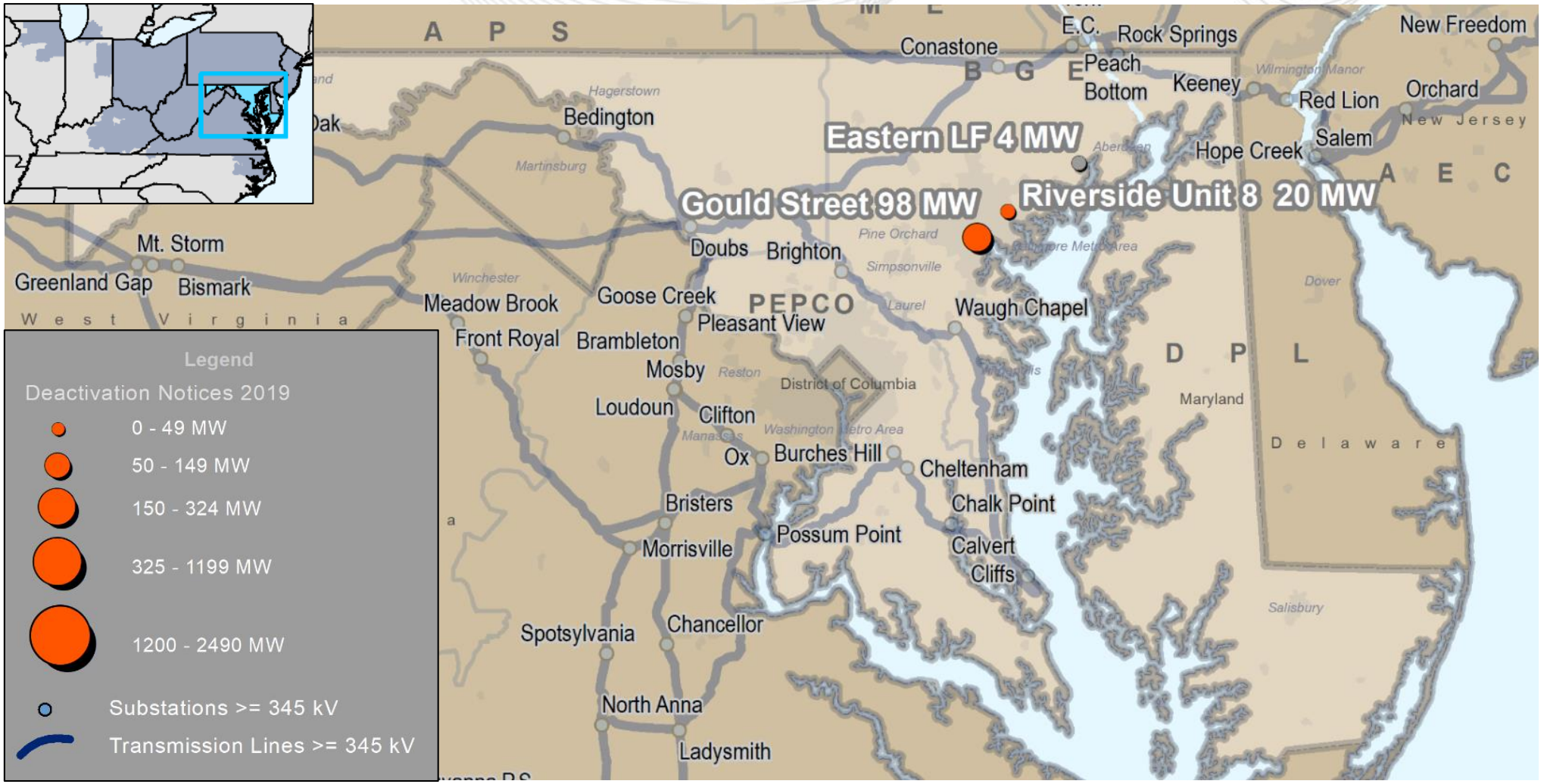


Projects withdrawn after final agreement		Nameplate Capacity
21 Interconnection Service Agreements	4,657 MW	4,941 MW
41 Wholesale Market Participation Agreements	73 MW	127 MW

Percentage of planned capacity and projects that have reached commercial operation	9% Requested capacity megawatt	17% 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.

Maryland – Generation Deactivation Notifications Received in 2019



Maryland – Generation Deactivation Notifications Received in 2019

Unit	TO Zone	Fuel Type	Projected/Actual Deactivation Date	Withdrawn Deactivation Date	Age (Years)	Capacity (MW)
Gould Street Generation Station	BGE	Natural Gas	6/1/2019		66	98
Riverside 8	BGE	Oil	12/1/2019		48	20
Eastern Land Fill	BGE	Other Gas	9/30/2019	9/26/2019	12	4

Planning

Transmission Infrastructure Analysis

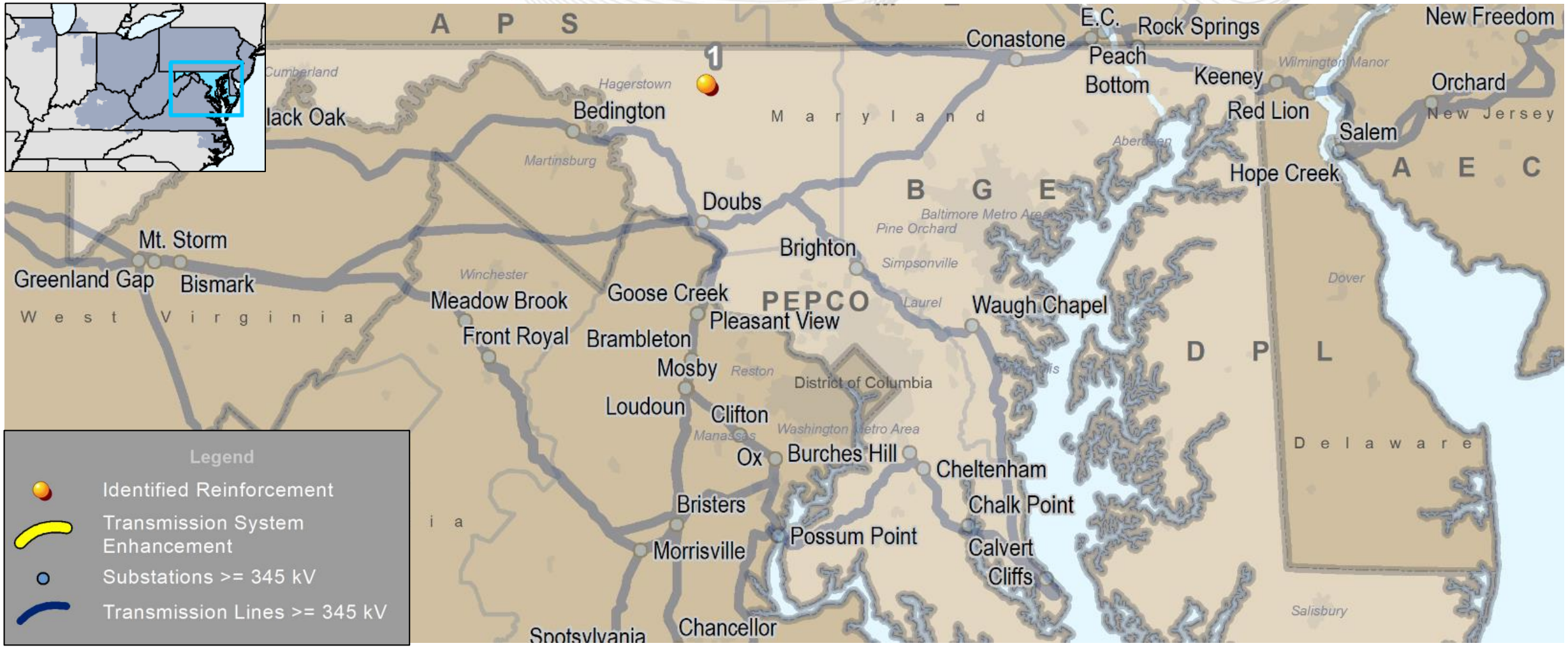
Please note that PJM historically used $5 million as the threshold for listing projects in the RTEP report. Beginning in 2018, it was decided to increase this cutoff to $10 million. All RTEP projects with costs totaling at least $5 million are included in this state report. However, only projects that 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/planning/rtep-upgrades-status/construct-status.aspx

Maryland – RTEP Baseline Projects

(No baseline projects were planned in Washington, D.C. in the 2019 RTEP; Greater than $10 million)



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

Maryland – RTEP Baseline Projects

(No baseline projects were planned in Washington, D.C. in the 2019 RTEP; Greater than $5 million)

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	**b2970**	Convert Garfield 138/12.5 kV substation to 230/12.5 kV.	6/1/2020	$15.5	APS	5/16/2019

Maryland & D.C. – RTEP Network Projects

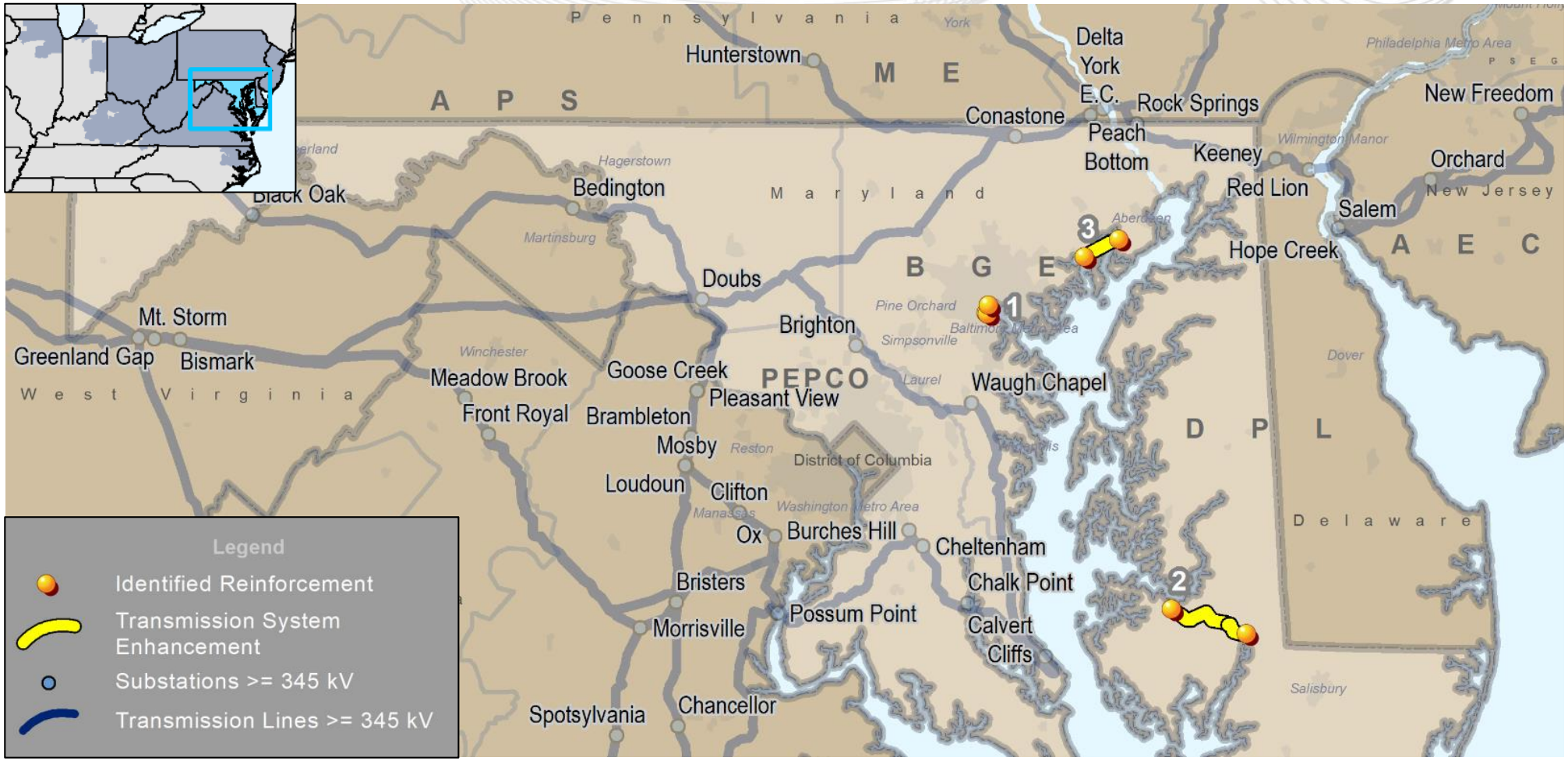
(Greater than $5 million)

Maryland and Washington, D.C. 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.

Maryland – TO Supplemental Projects

(No supplemental projects were planned in Washington, D.C. in the 2019 RTEP; 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

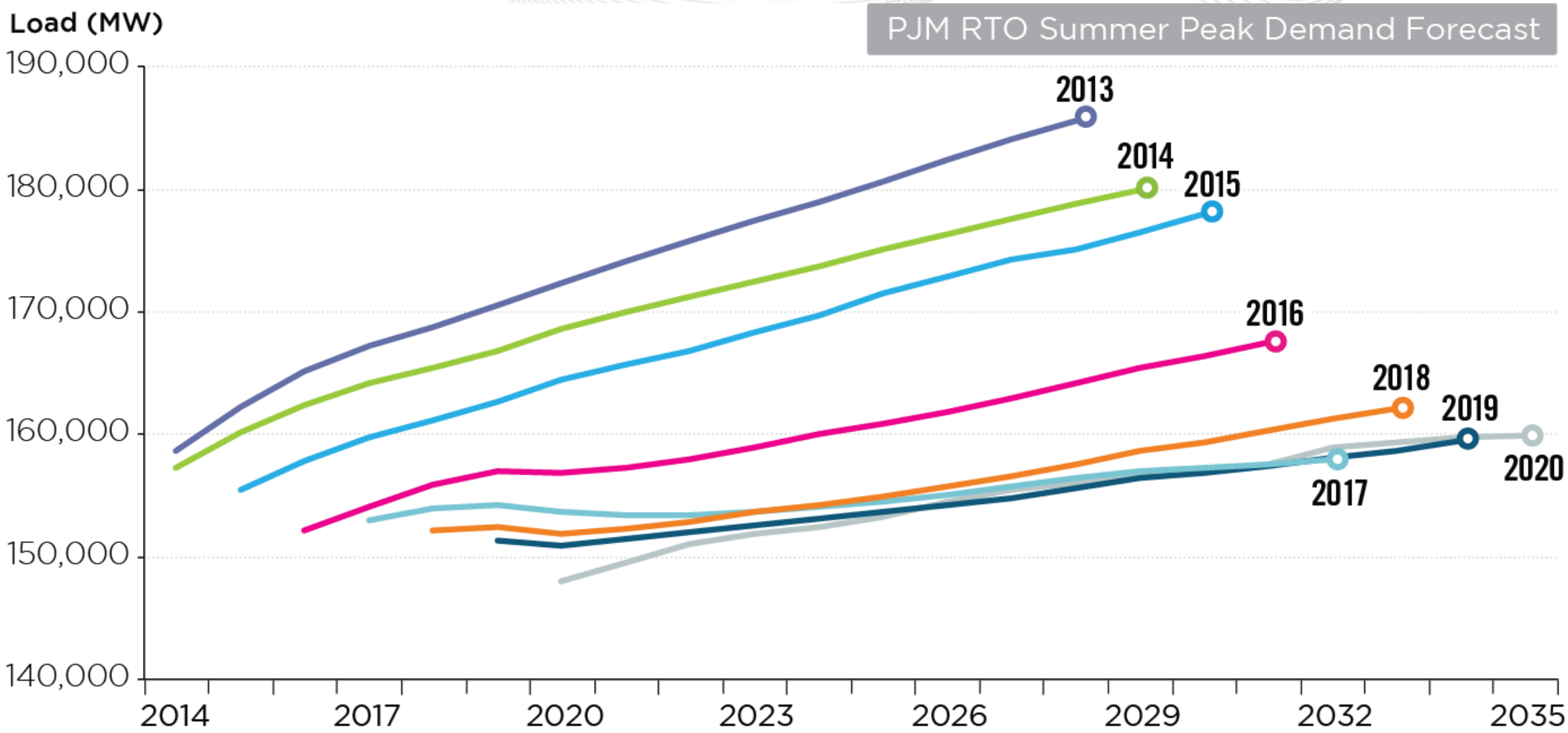
(No supplemental projects were planned in Washington, D.C. in the 2019 RTEP; Greater than $5 million)

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	**s2025**	Port Covington 115/13 kV Project.	12/1/2026	$105.0	BGE	3/25/2019
		Build a new Port Covington 115/13 kV station.				
		Expand existing Westport 115 kV station to accommodate new 115 kV underground circuits.				
		Build two 115 kV underground transmission lines from Westport to Port Covington.				
		Build two 115 kV underground transmission lines from Greene Street to Port Covington.				
2	**s2073**	Rebuild 69 kV line from Vienna-West Cambridge substations. All structures, conductor and static wire will be replaced with new steel poles, conductor and optical grand wire.	12/31/2022	$28.7	DP&L	1/25/2019
3	**s2080**	Edgewood-Perryman 115 kV circuits 110620, 110621: Replace existing three lattice towers and conductor with seven new double circuit monopole towers and conductor.	12/31/2022	$13.3	BGE	11/18/2019

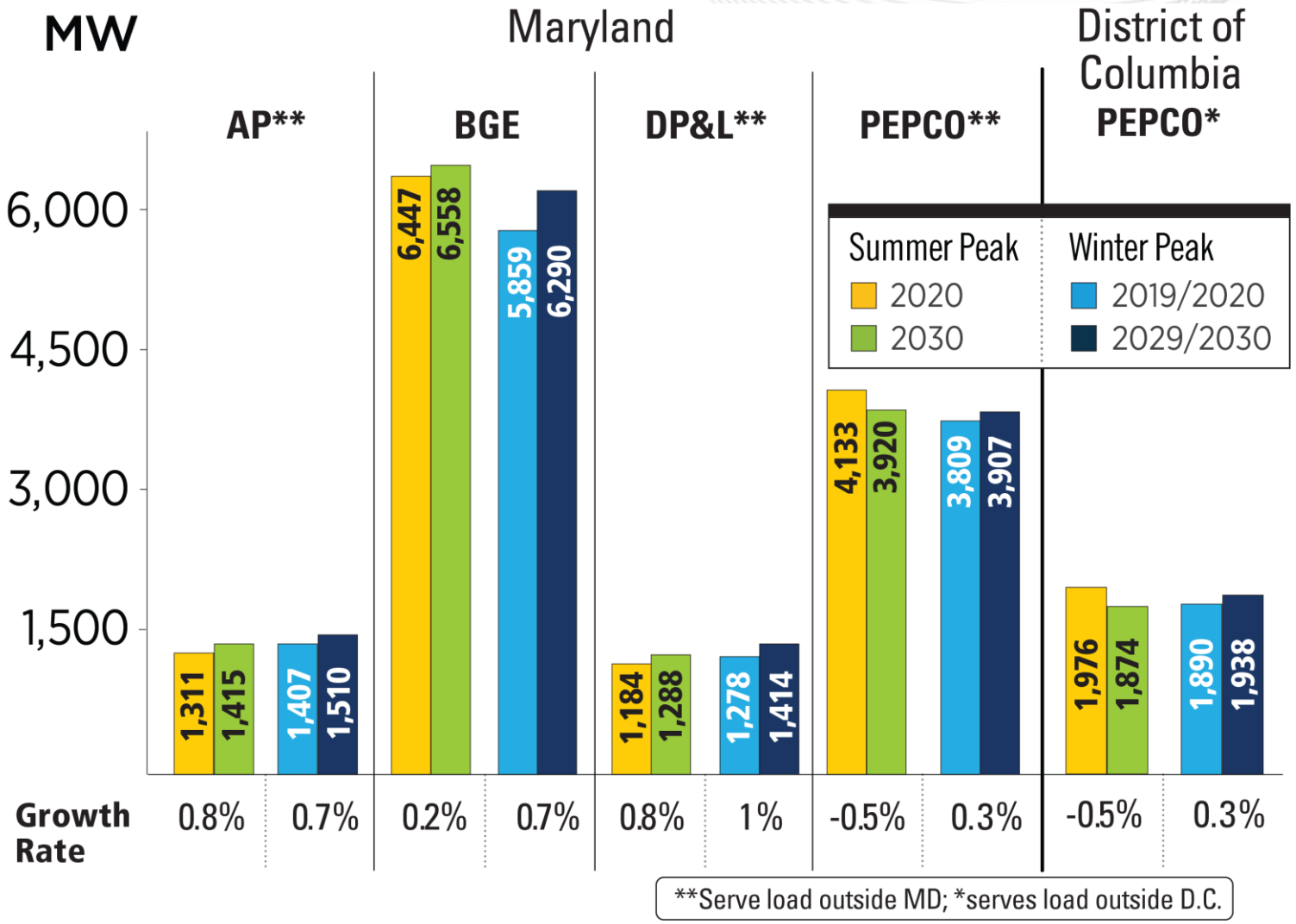
Planning
Load Forecast

PJM Annual Load Forecasts

(January 2020)



Maryland & D.C. – 2020 Load Forecast Report



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/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.

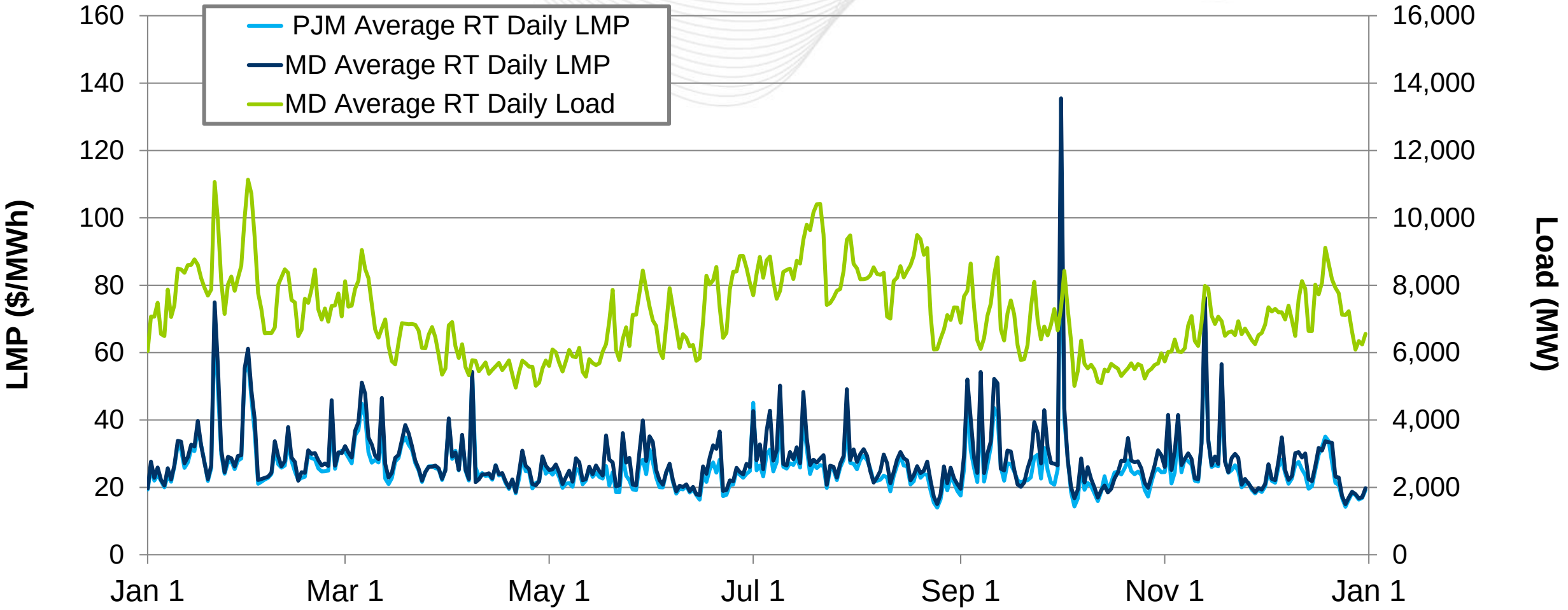
The Load Forecast was produced prior to COVID-19 and will be updated before the next Base Residual Auction to reflect changes in load patterns.

Markets

Market Analysis

Maryland – Average Daily Load and LMP

(Jan. 1, 2019 – Dec. 31, 2019)

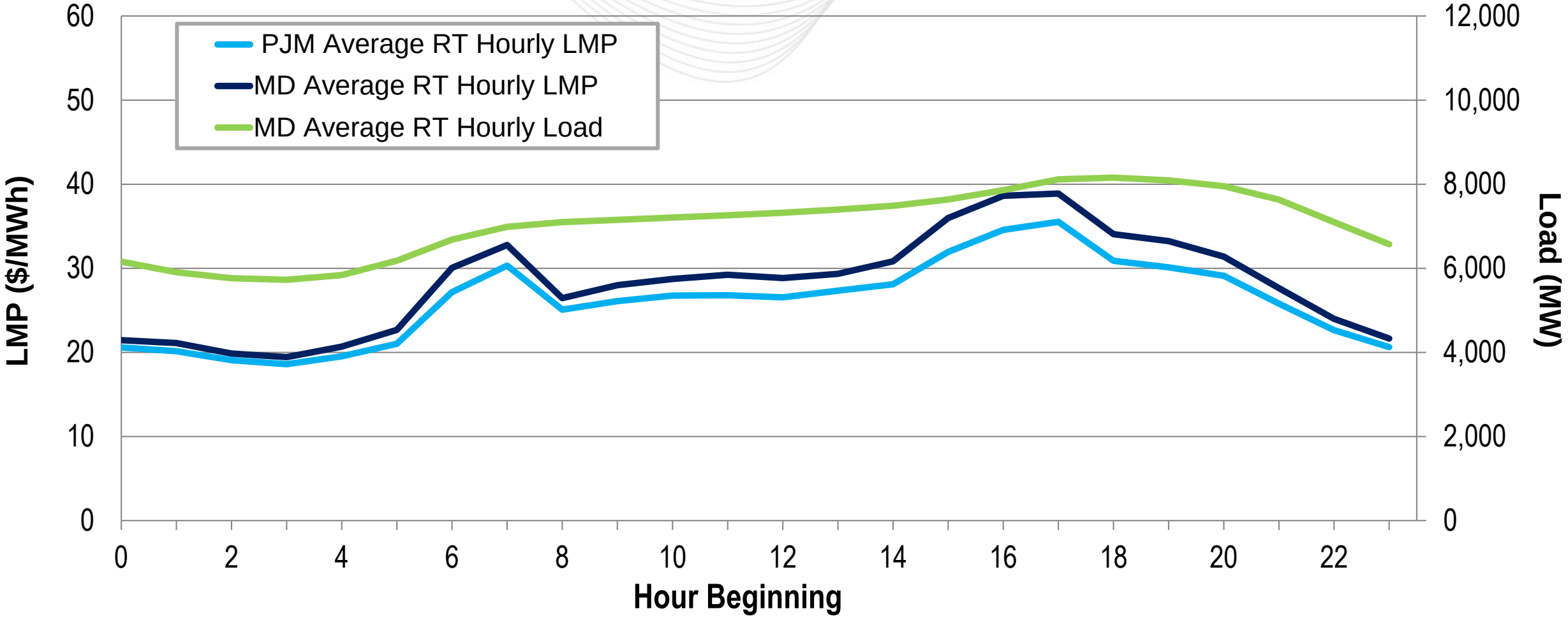


Note: The price spike in October reflects the Performance Assessment Interval event that occurred on October 2nd.

Maryland – Average Hourly Load and LMP

(Jan. 1, 2019 – Dec. 31, 2019)

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



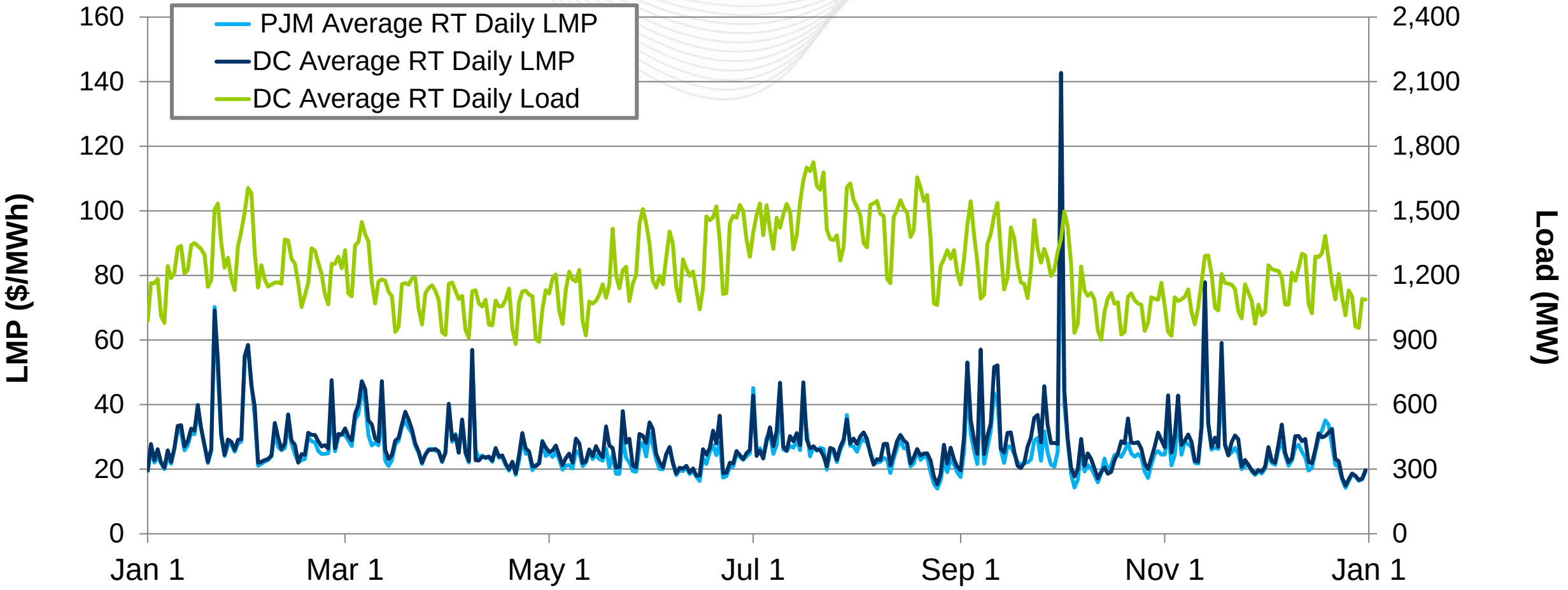
Maryland – Net Energy Import/Export Trend

(May 2019 – April 2020)

Positive values represent exports and negative values represent imports.

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

(Jan. 1, 2019 – Dec. 31, 2019)

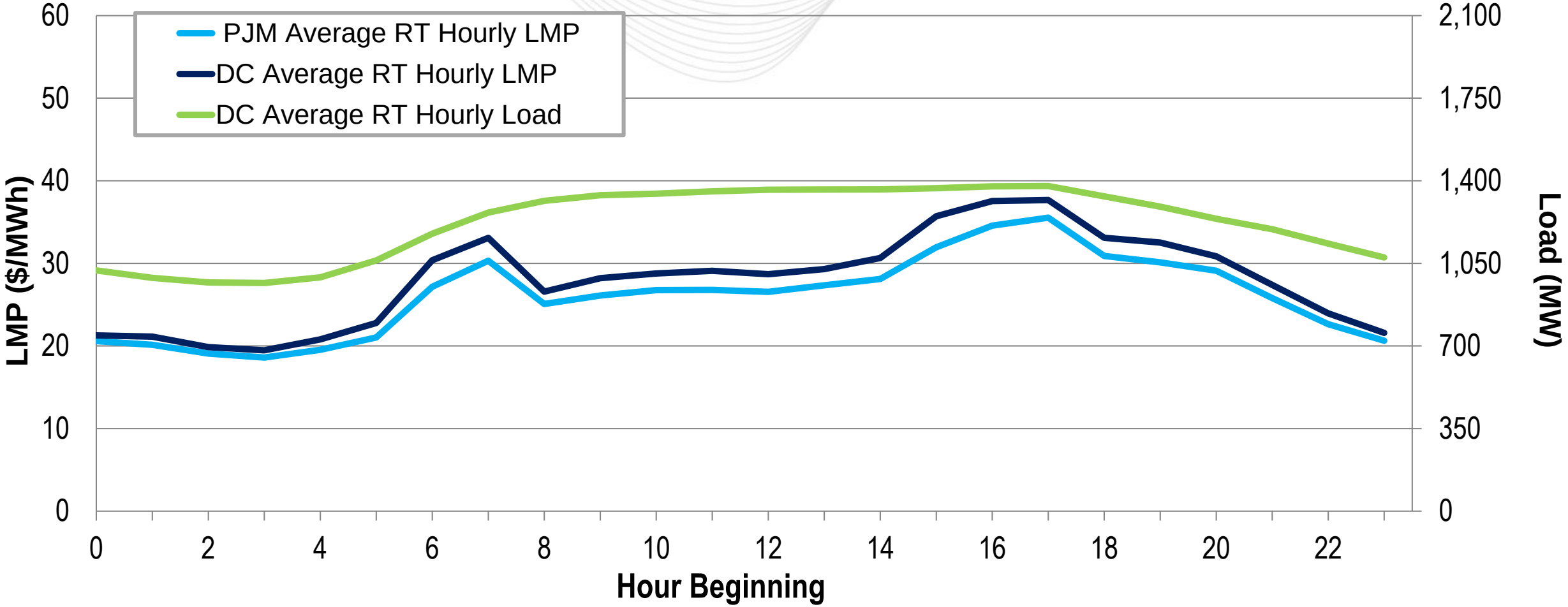


Note: The price spike in October reflects the Performance Assessment Interval event that occurred on October 2nd.

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

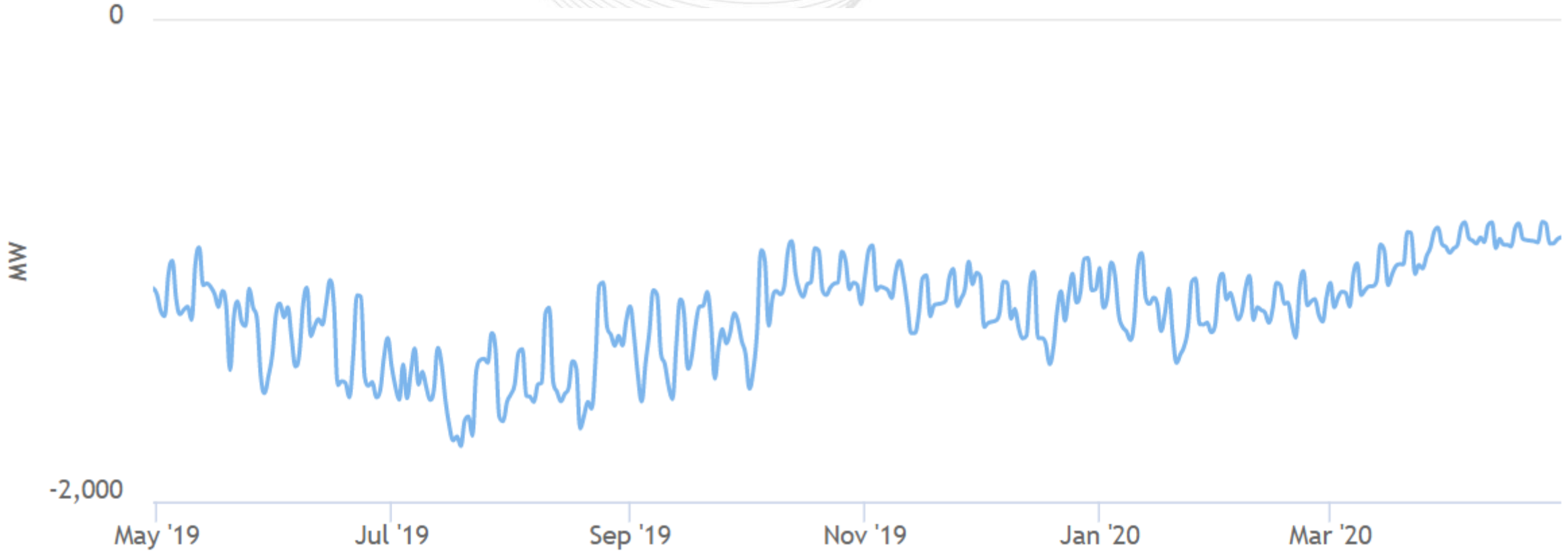
(Jan. 1, 2019 – Dec. 31, 2019)

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



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

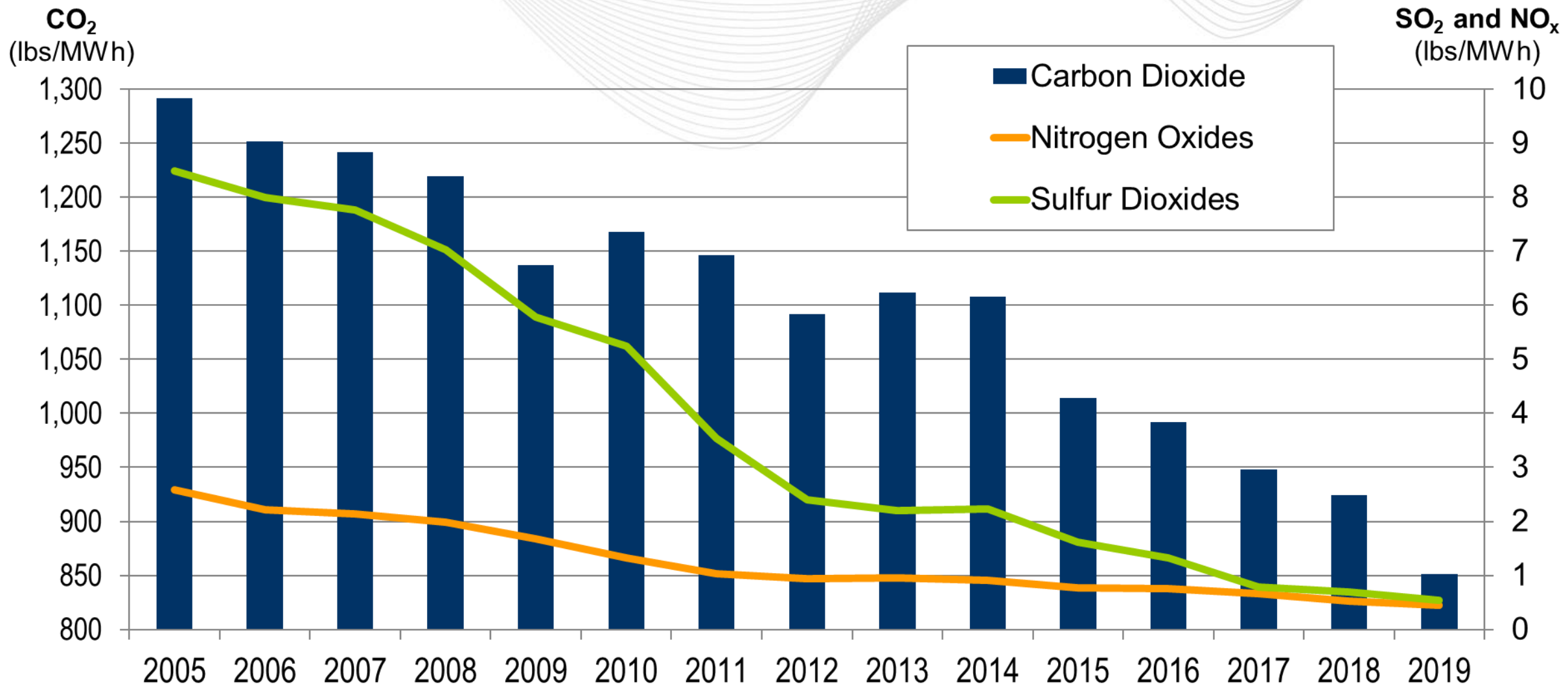
(May 2019 – April 2020)



Positive values represent exports and negative values represent imports.

Operations
Emissions Data

2005 – 2019 PJM Average Emissions



Maryland – Average Emissions (lbs/MWh)

(Feb. 7, 2020)