



2020 Illinois State Infrastructure Report

(January 1, 2020 – December 31, 2020)

April 2021

This report reflects information for the portion of Illinois within the PJM service territory.

1. Planning

- Generation Portfolio Analysis
- Transmission Analysis
- Load Forecast

2. Markets

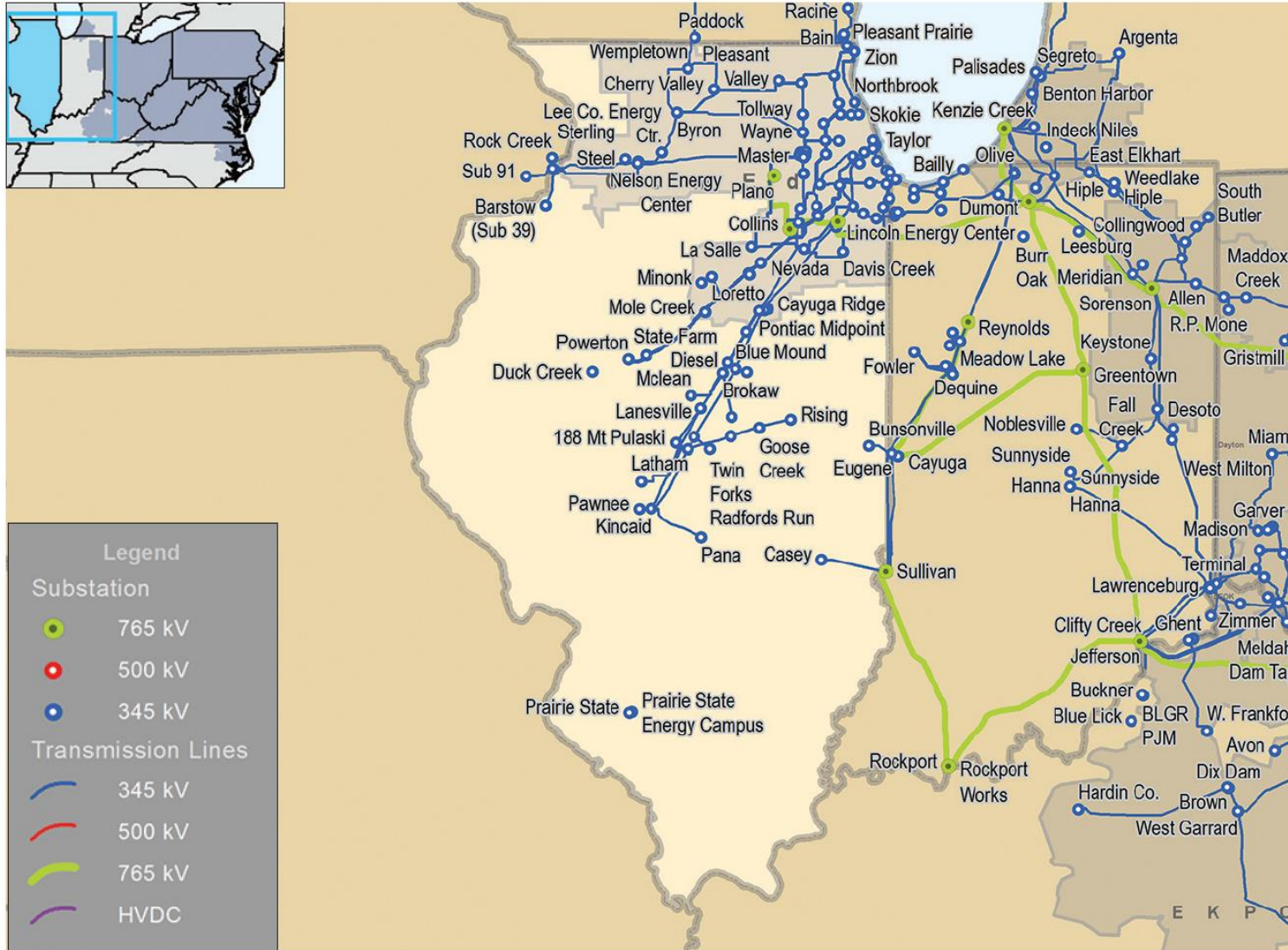
- Market Analysis
- Net Energy Import/Export Trend

3. Operations

- Emissions Data

- **Existing Capacity:** Natural gas represents approximately 40.7 percent of the total installed capacity in the Illinois service territory while nuclear represents approximately 40.4 percent. In PJM natural gas and nuclear account for approximately 43.4 and 17.7 percent of total capacity.
- **Interconnection Requests:** Solar represents 41.1 percent of new interconnection requests in Illinois, while natural gas represents approximately 35.9 percent of new requests.
- **Deactivations:** 1,803.8 MW in Illinois gave notification of deactivation in 2020.
- **RTEP 2020:** Illinois' 2020 RTEP projects total approximately \$356.6 million. Approximately 90 percent of that represents supplemental projects. These investment figures only represent RTEP projects that cost at least \$5 million, and the listed network project's cost is borne by the interconnecting customer.

- **Load Forecast:** Illinois' summer peak load within the ComEd zone is projected to decrease by 0.5 percent annually over the next ten years. 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 Illinois State Infrastructure Report.
- **1/1/20 – 12/31/20 Market Performance:** Illinois's average hourly LMPs were below the PJM average hourly LMP.
- **Emissions:** 2020 carbon dioxide, sulfur dioxide, and nitrogen oxide emissions are all down from 2019.

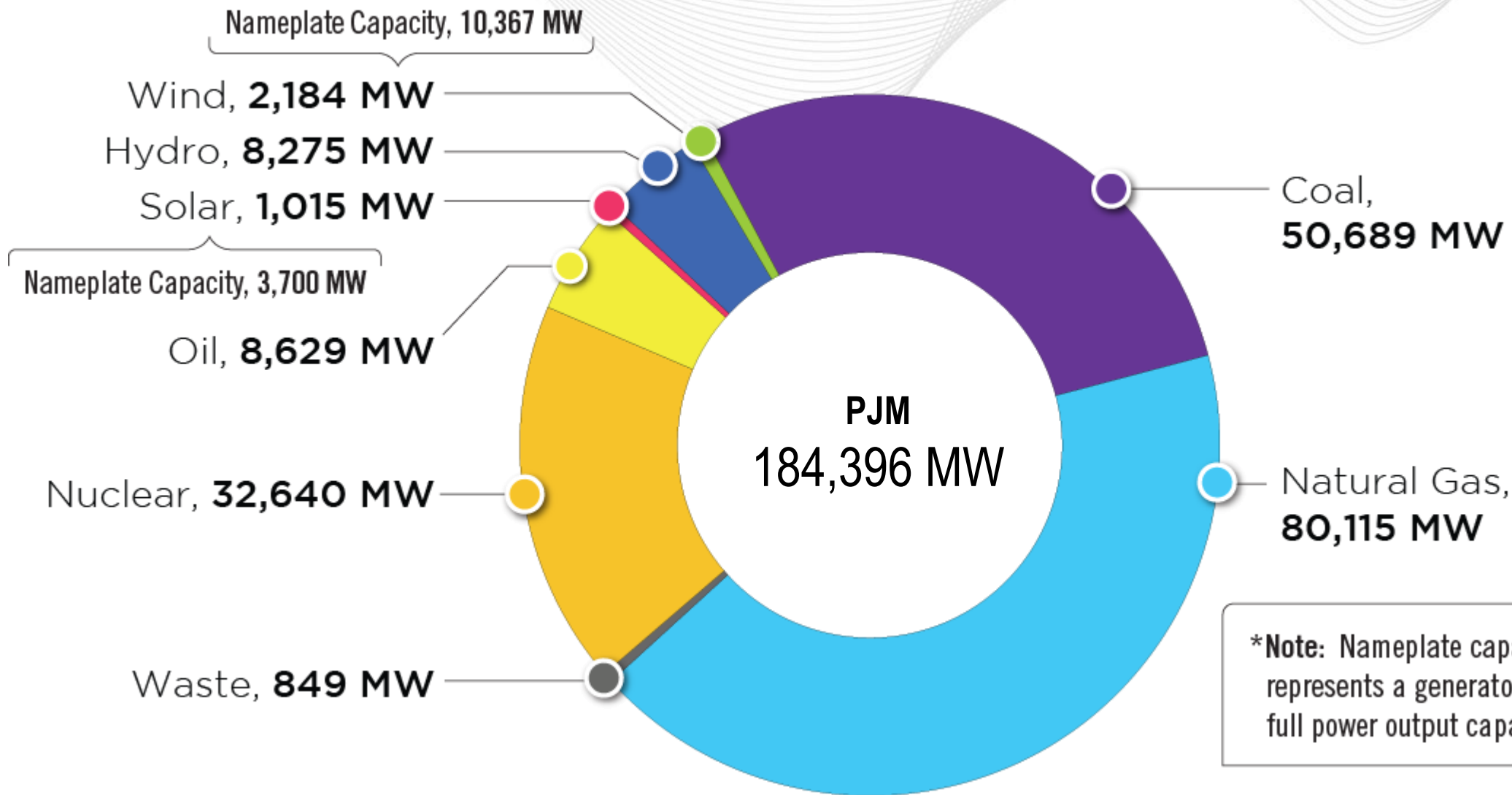


The PJM service area in Illinois is the ComEd zone and is represented by the shaded portion of the map.

PJM operates transmission lines that extend beyond the service territory.

Planning

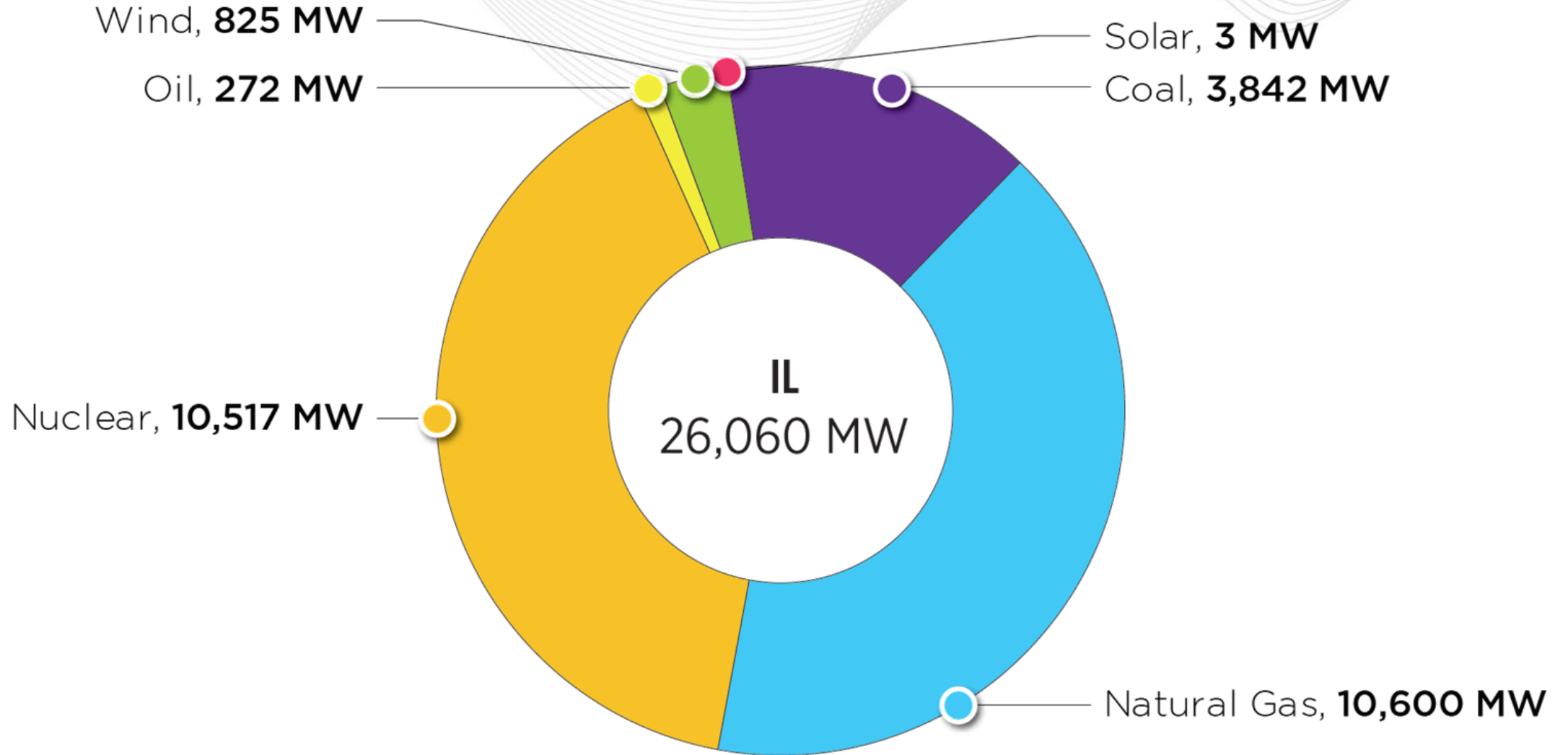
Generation Portfolio Analysis

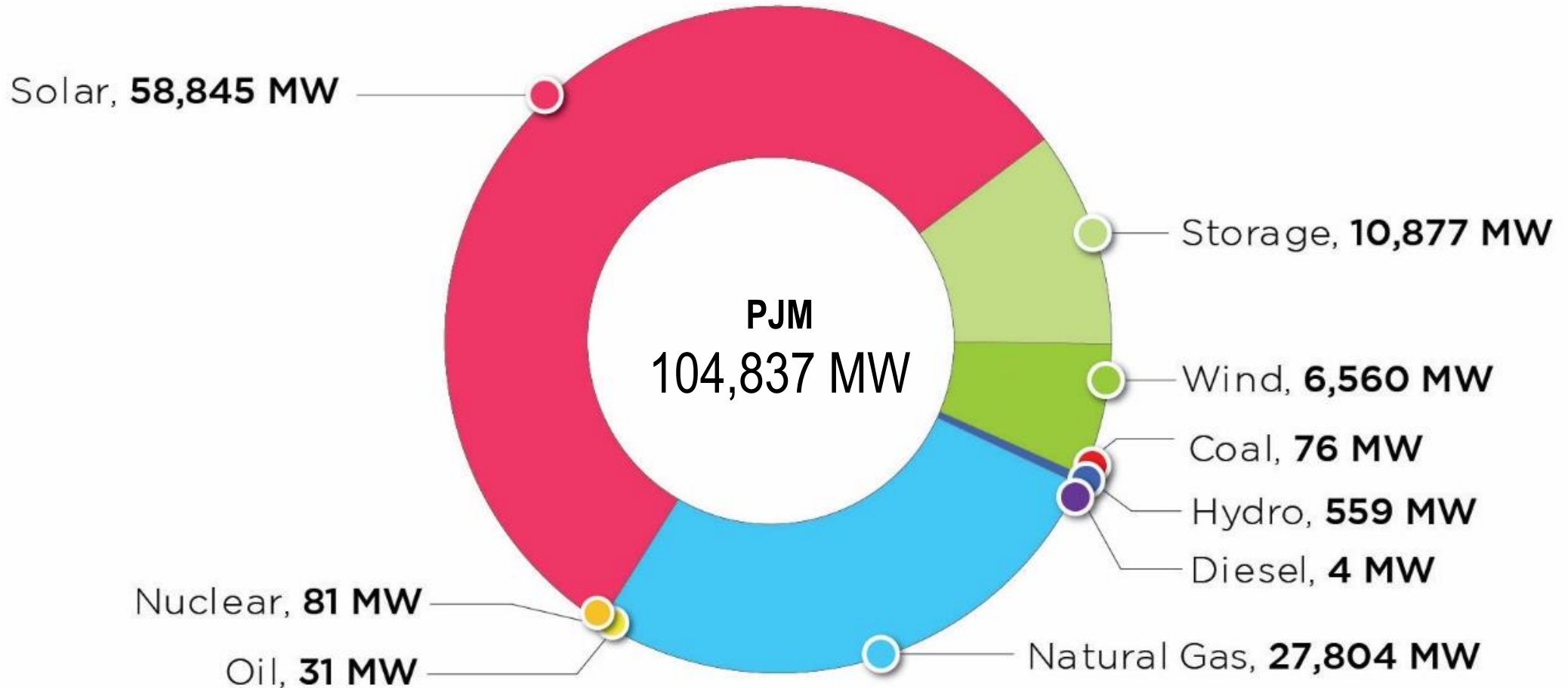


***Note:** Nameplate capacity represents a generator's rated full power output capability.

Illinois – Existing Installed Capacity

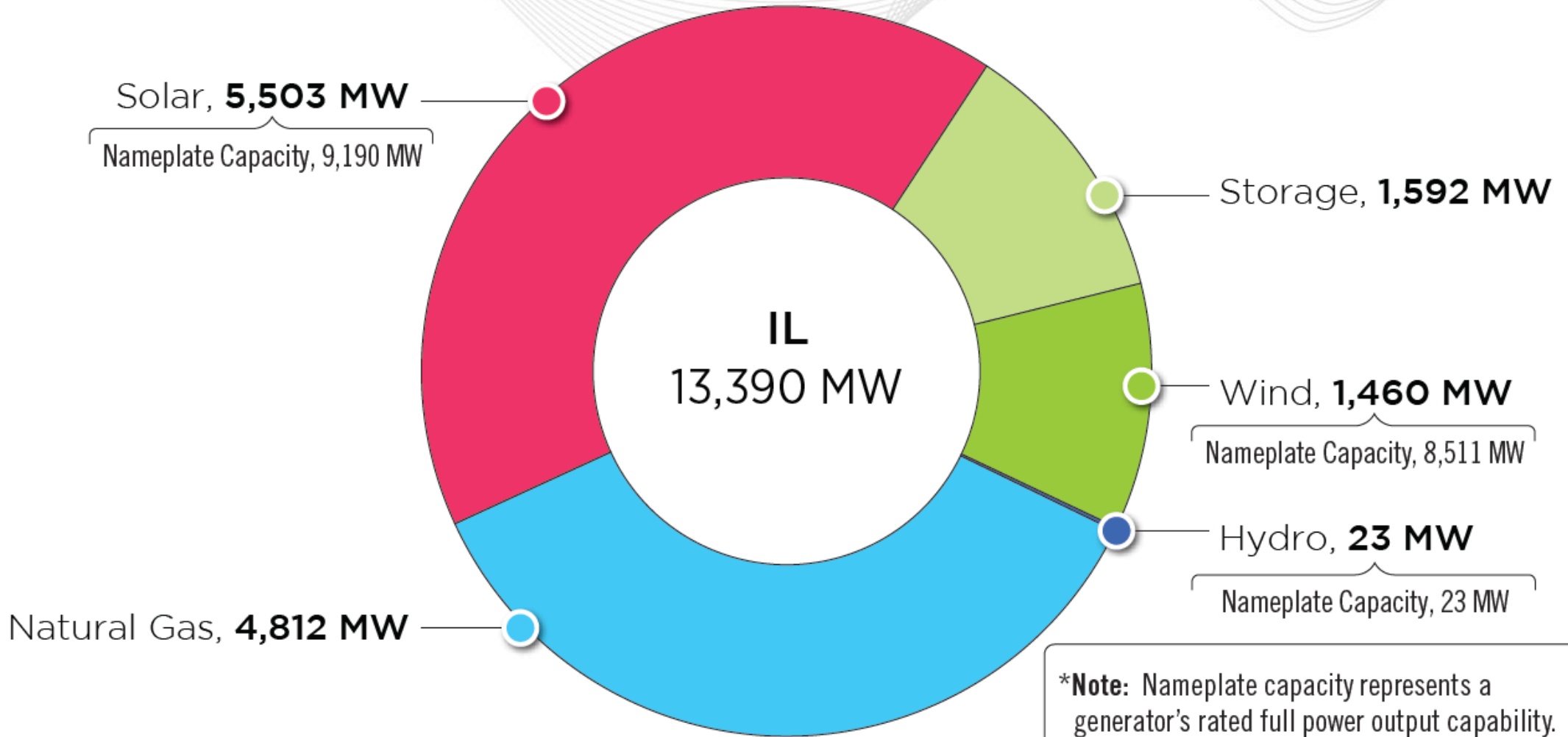
(CIRs – as of Dec. 31, 2020)





Illinois – Queued Capacity (MW) by Fuel Type

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



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



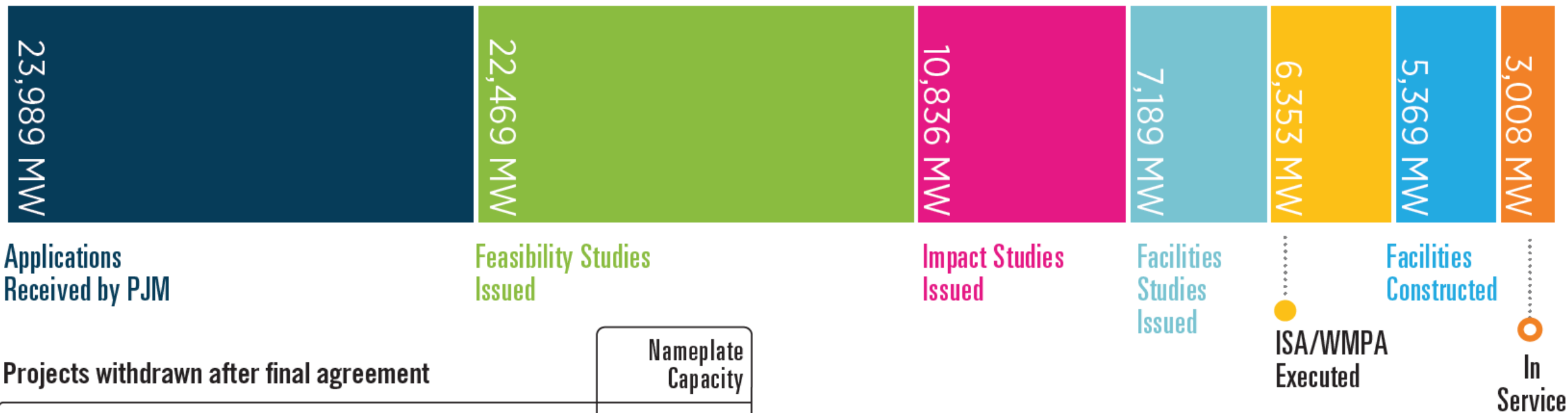
Illinois – Interconnection Requests by Fuel Type

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

		In Queue				Complete				Grand Total	
		Active		Under Construction		In Service		Withdrawn			
		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	5	3,652.0	5	3,652.0
	Diesel	0	0.0	0	0.0	2	22.0	0	0	2	22.0
	Natural Gas	15	2,413.3	7	2,398.9	20	1,613.6	21	8,908.3	63	15,334.1
	Nuclear	0	0.0	0	0.0	10	385.8	5	782.0	15	1,167.8
	Other	0	0.0	0	0.0	0	0.0	3	0	3	0
	Storage	32	1,592.0	0	0.0	6	0.0	24	511.6	62	2,103.5
Renewable	Biomass	0	0.0	0	0.0	0	0.0	3	90.0	3	90.0
	Hydro	0	0.0	2	22.7	0	0.0	2	4.3	4	27.0
	Methane	0	0.0	0	0.0	4	43.0	14	63.9	18	106.9
	Solar	61	5,502.9	0	0.0	1	3.4	50	1,751.4	112	7,257.7
	Wind	40	1,434.0	1	26.0	31	853.5	110	2,856.7	182	5,170.2
Grand Total		148	10,942.2	10	2,447.6	74	2,921.3	237	18,620.1	469	34,931.1

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

Illinois – Progression History of Interconnection Requests



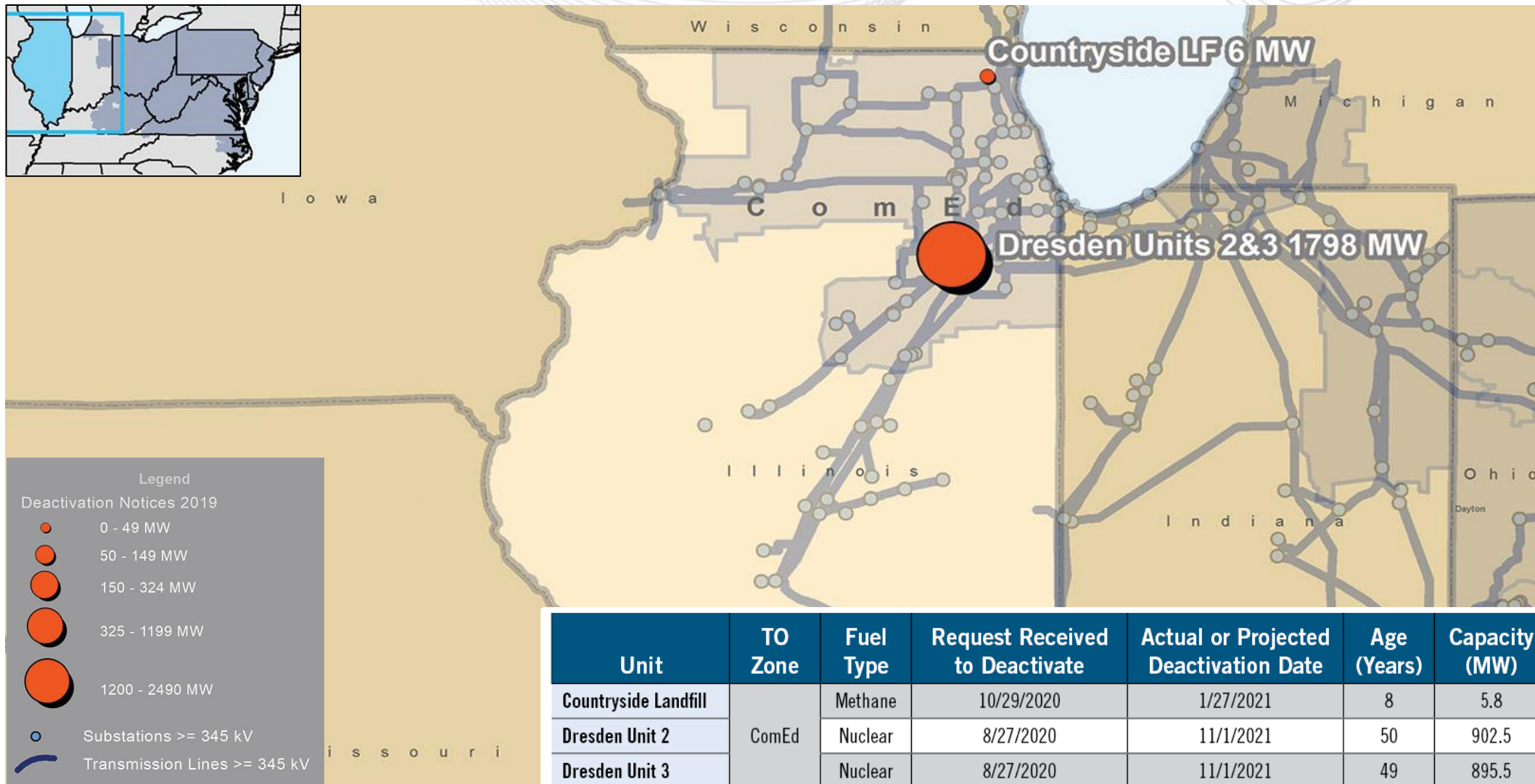
Projects withdrawn after final agreement

		Nameplate Capacity
9 Interconnection Service Agreements	376 MW	1,678 MW
4 Wholesale Market Participation Agreements	4 MW	15 MW

Percentage of planned capacity and projects that have reached commercial operation	13%	24%
	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.

Illinois – Generation Deactivation Notifications Received in 2020



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>

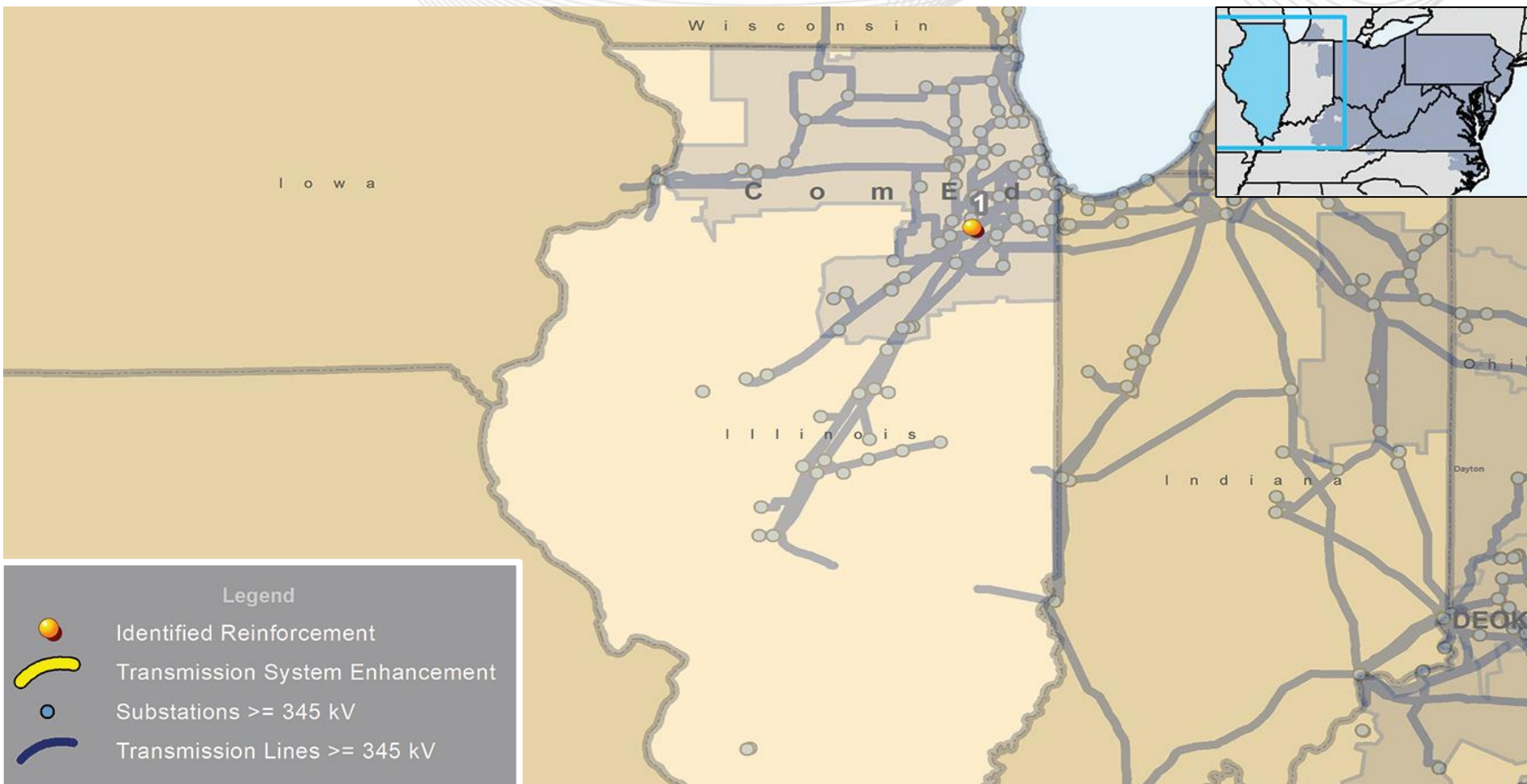


Illinois – RTEP Baseline Projects

(Greater than \$5 million)

Illinois had no baseline project upgrades in 2020.

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



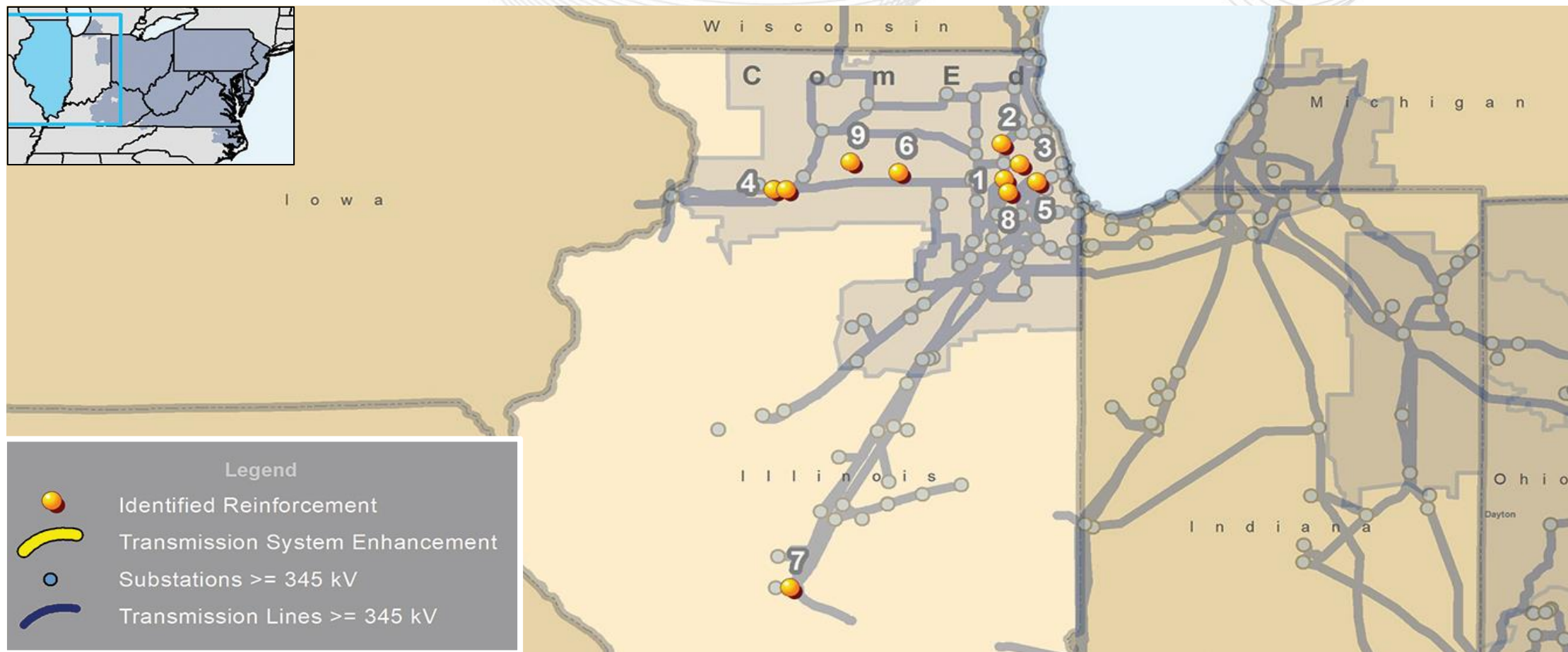
Note: Network upgrades are new or upgraded facilities required primarily to eliminate reliability criteria violations caused by proposed generation, merchant transmission or long term firm transmission service requests, as well as certain direct connection facilities required to interconnect proposed generation projects. The costs of network projects are borne by the interconnection customer.



Illinois – RTEP Network Projects

(Greater than \$5 million)

Map ID	Project	Description	Generation	Required In-Service Date	Project Cost (\$M)	TO Zone	TEAC Date
1	n6025	Expansion of TSS 900 Elwood to accommodate AC1-204 attachment.	AC1-204	6/1/2022	\$35.76	ComEd	9/28/2020



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.

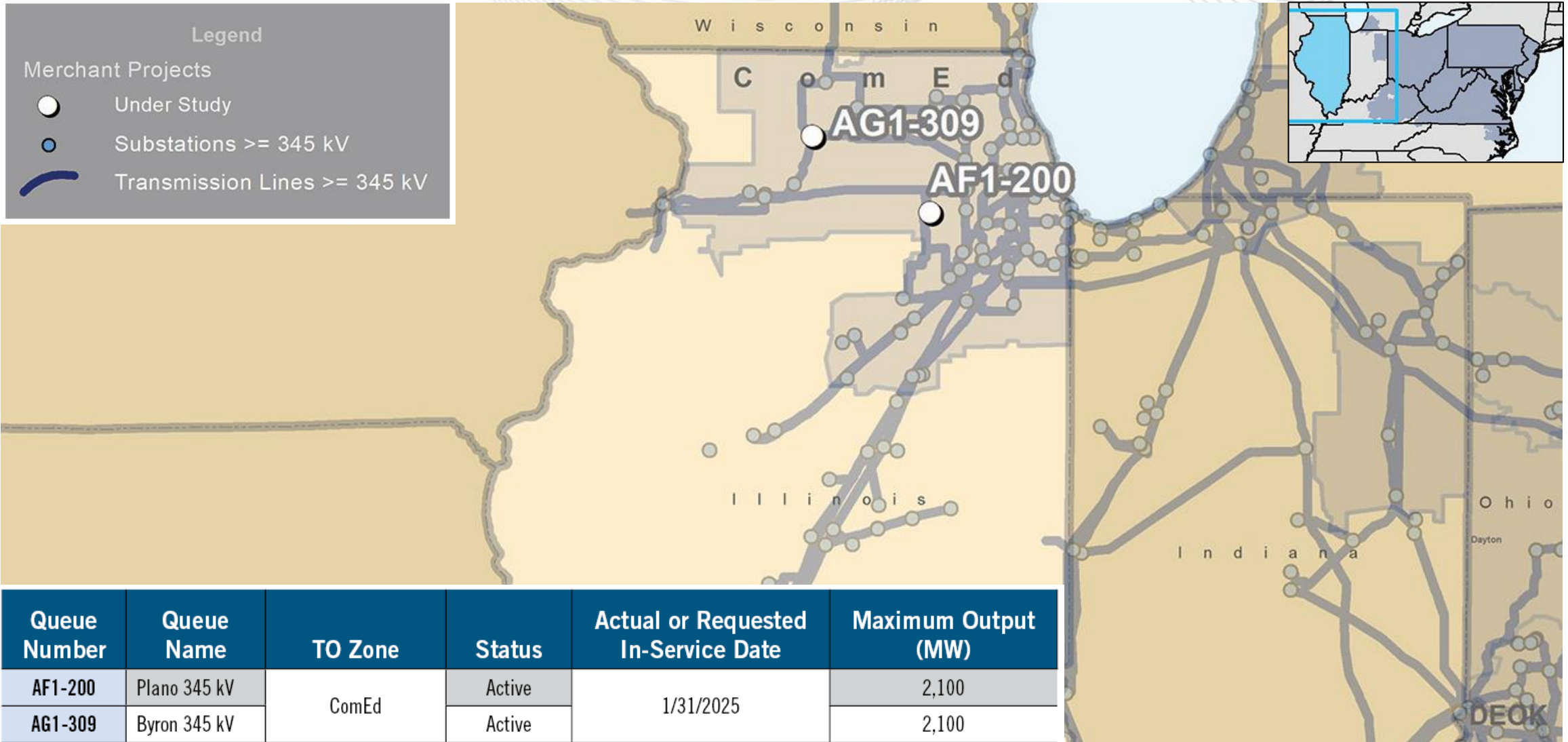


Illinois – TO Supplemental Projects

(Greater than \$5 million)

Map ID	Project	Description	Projected In-Service Date	Project Cost (\$M)	TO Zone	TEAC Date
1	s2247	Replace Lisle Transformer 83. Add high-side CB.	12/31/2021	\$10.00	ComEd	4/14/2020
2	s2266	Rebuild Itasca 345 kV bus as an indoor GIS double ring bus expandable to breaker-and-a-half connecting four lines and two transformers. Replace 345/138 kV Transformer 82 and retire tertiary cap bank.	6/1/2024	\$65.00		5/12/2020
3	s2267	Rebuild Elmhurst 345 kV bus as indoor GIS double-ring bus, expandable to breaker-and-a-half connecting two lines and three transformers.		\$55.00		
4	s2268	Build a second circuit 4.5 miles in existing right-of-way from Nelson 138 kV to tap point and split into a pair of two-terminal lines. Ratings on the new section will be 351/449 MVA SN/SLTE consistent with b2999 project.	6/1/2022	\$15.20		5/22/2020
5	s2285	Rebuild McCook 345 kV bus as indoor GIS double ring bus, expandable to breaker-and-a-half (BAAH).	12/31/2024	\$64.00		6/2/2020
6	s2349	Cut into existing lines 11323 and 11106. Install new 138 kV breaker-and-a-half substation by Sept. 1, 2021. Install two 138 kV, 43.2 MVAR cap banks, first by June 1, 2022, second by June 1, 2024.	9/1/2021	\$61.90		7/17/2020
7	s2350	Replace five 345 kV oil circuit breakers with two-cycle IPO SF6 circuit breakers. Change timer settings for breaker failure relays and remove Kincaid special protection scheme.	12/31/2024	\$15.70		7/7/2020
8	s2353	Cut into existing line 1802. Install new 138 kV four-breaker ring bus substation.	6/30/2022	\$18.70		8/14/2020
9	s2354	Cut into existing 138 kV line 16914. Install new 138 kV, three-breaker ring substation.	12/31/2021	\$15.30		

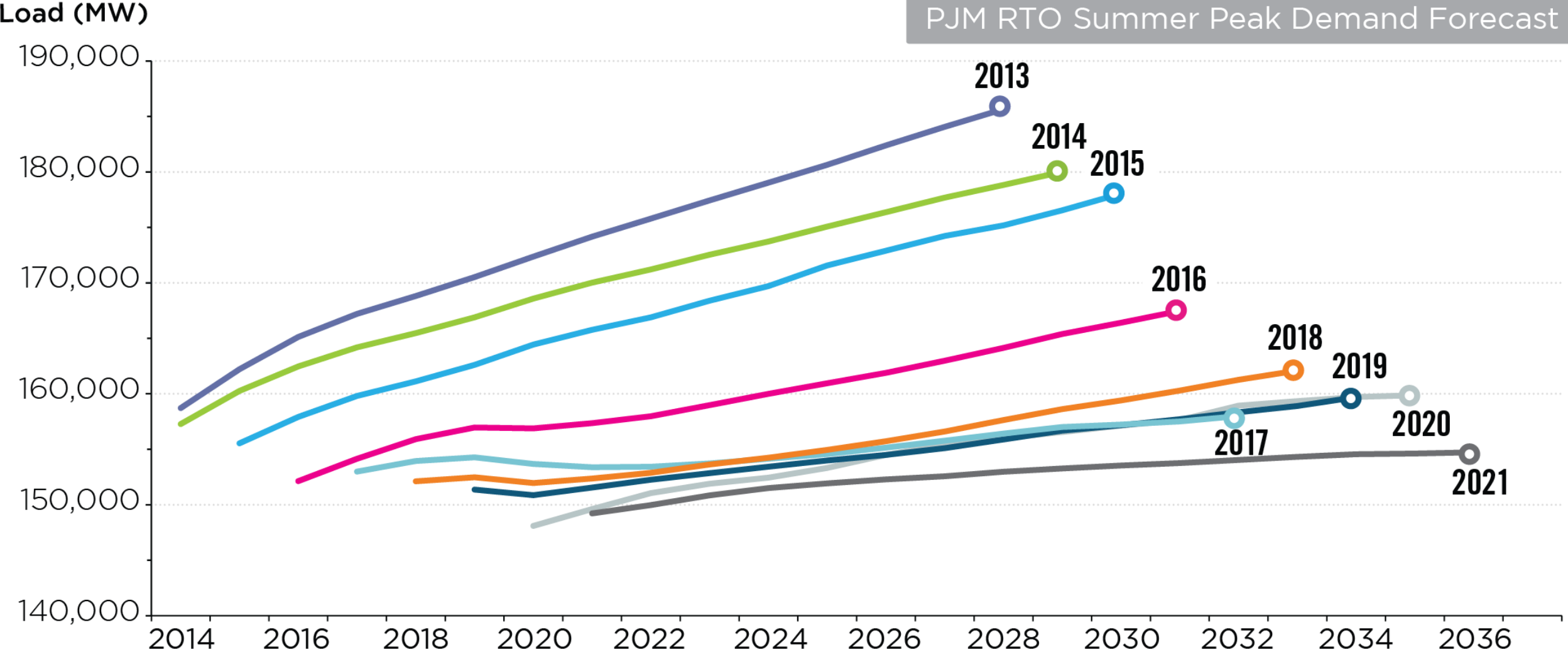
Illinois – Merchant Transmission Project Requests



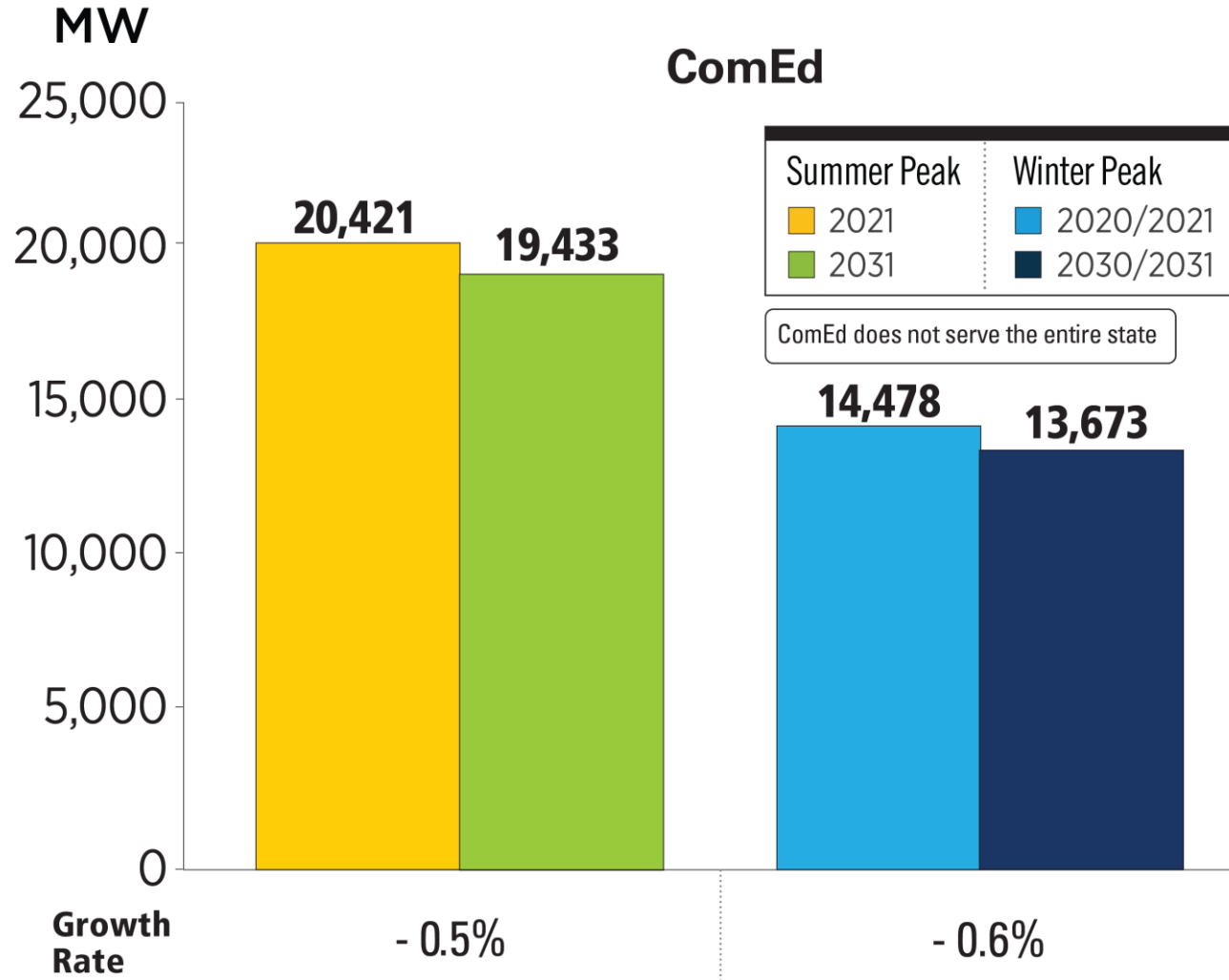
Planning

Load Forecast

PJM RTO Summer Peak Demand Forecast



Illinois



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%

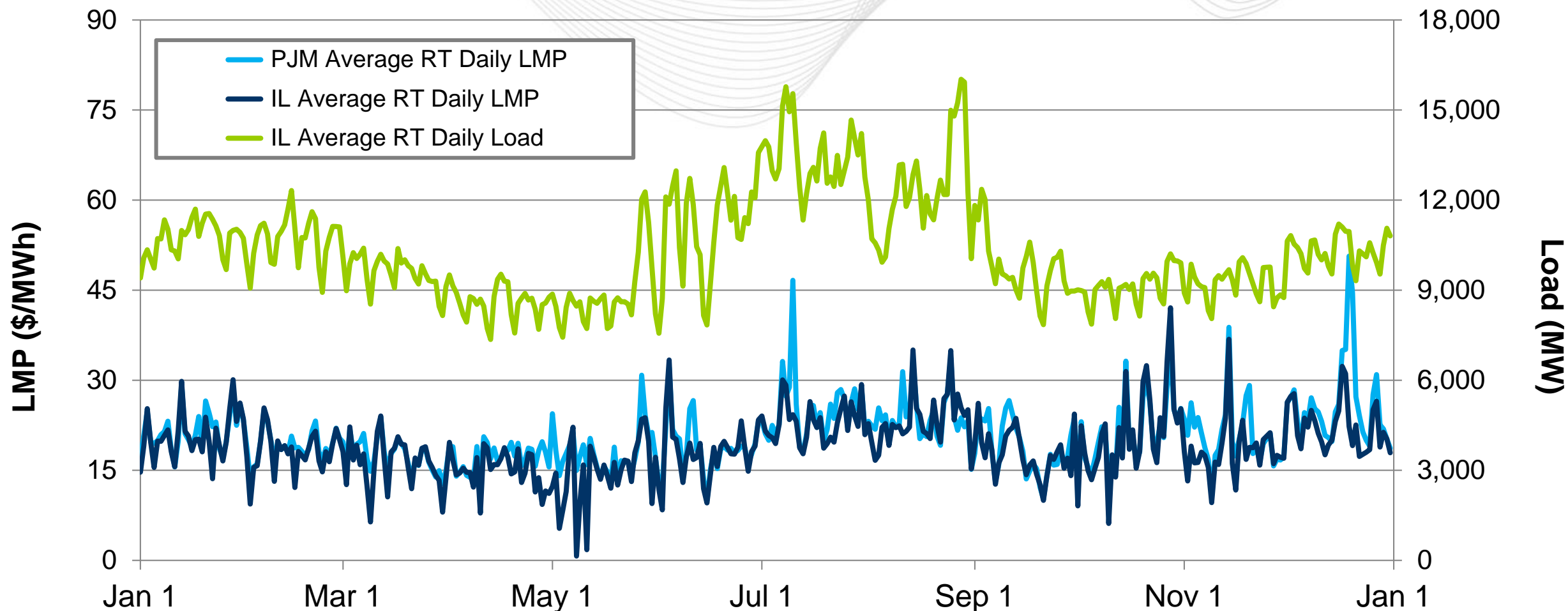
The summer and winter peak megawatt values reflect the estimated amount of forecasted load to be served by each transmission owner in the noted state/district. Estimated amounts were calculated based on the average share of each transmission owner's real-time summer and winter peak load in those areas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

Markets

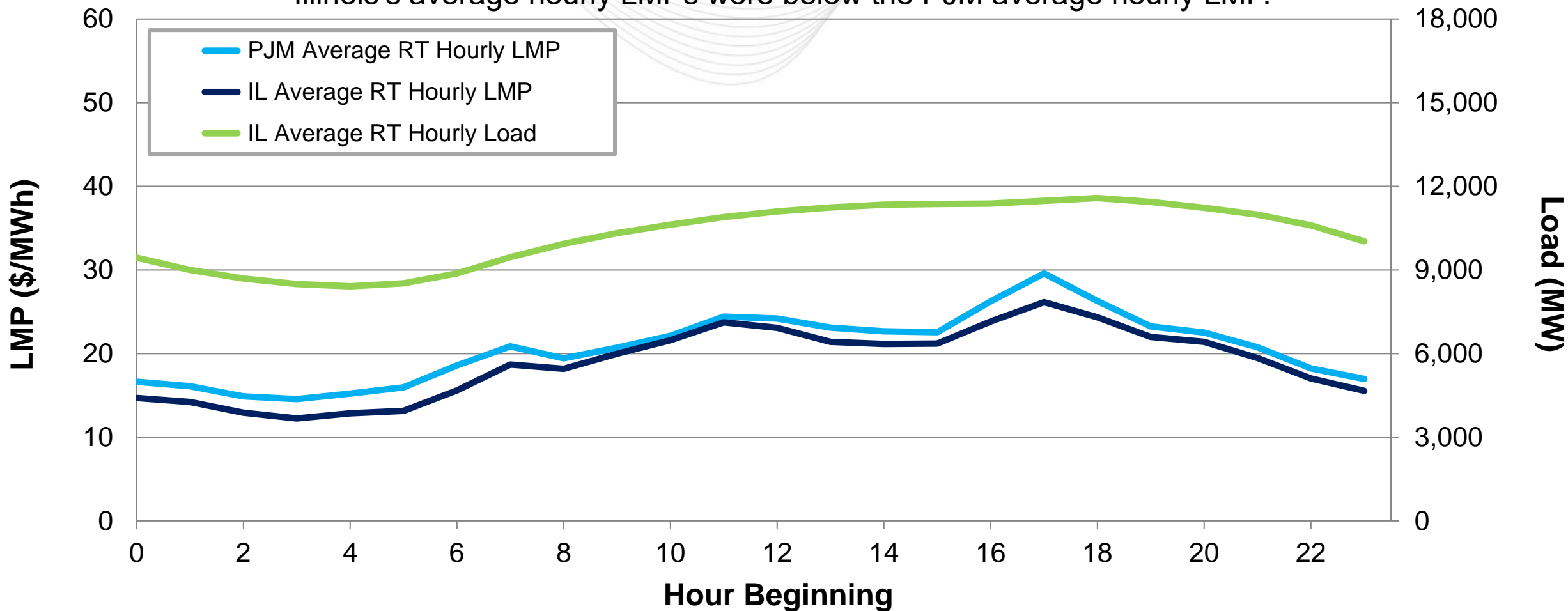
Market Analysis

Illinois – Average Daily LMP and Load

(Jan. 1, 2020 – Dec. 31, 2020)

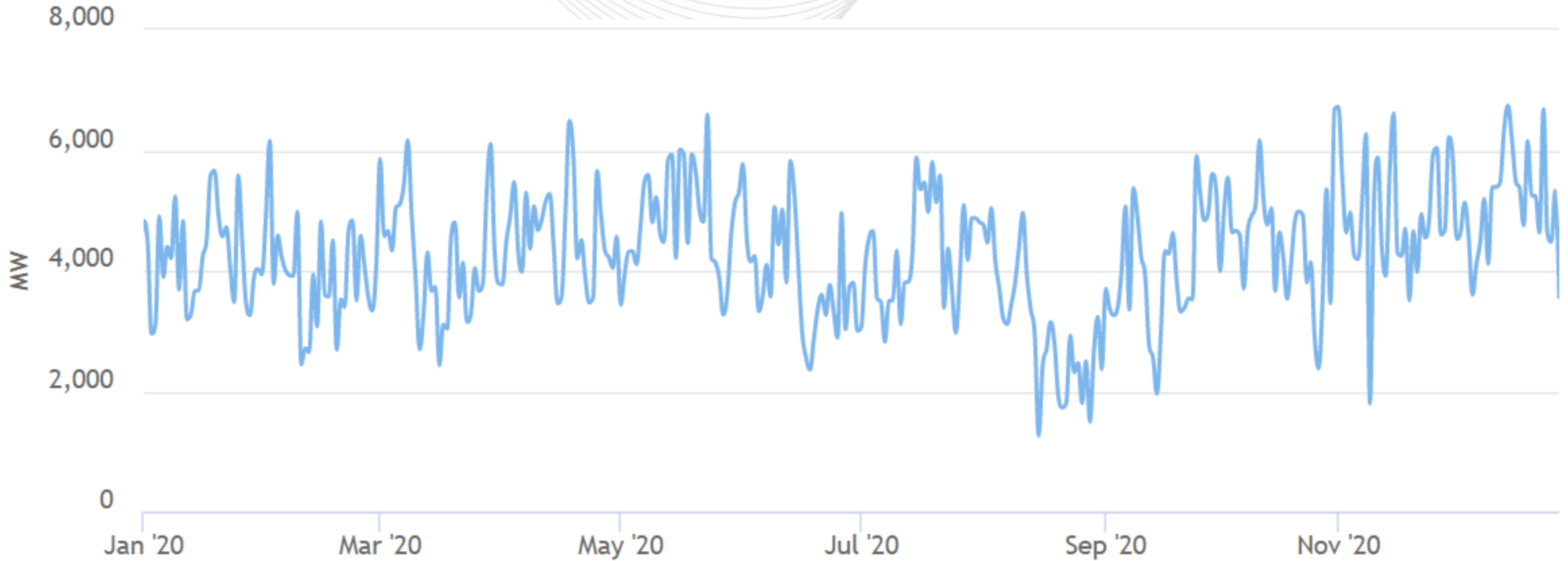


Illinois's average hourly LMPs were below the PJM average hourly LMP.



Illinois – Net Energy Import/Export Trend

(Jan. 2020 – Dec. 2020)

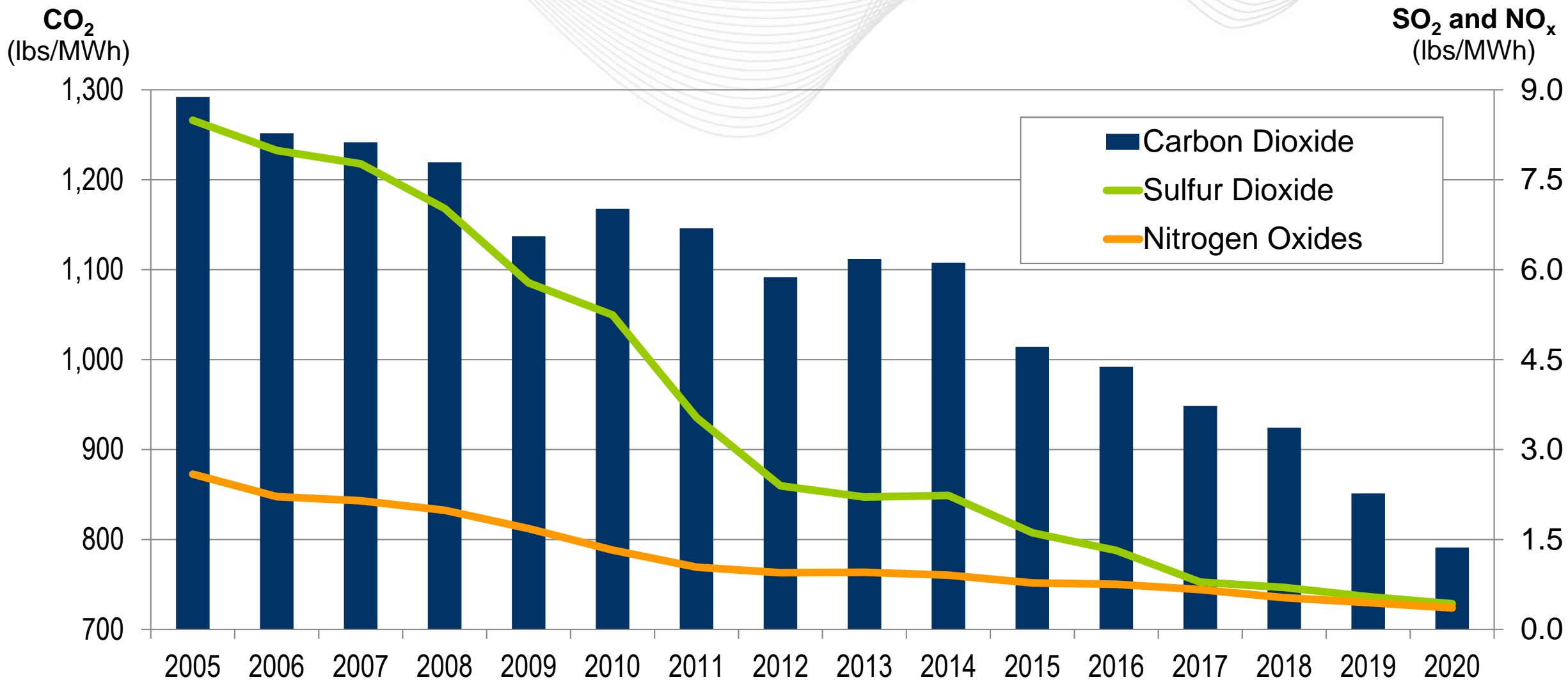


This chart reflects the portion of Illinois that PJM operates. Positive values represent exports and negative values represent imports.

Operations Emissions Data



2005 – 2020 PJM Average Emissions



Illinois – Average Emissions (lbs/MWh)

(Feb. 2021)

