2019 Illinois State Infrastructure Report

(January 1, 2019 – December 31, 2019)

May 2020

(updated July 2020)

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

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Executive Summary
(May 2020)

- **Existing Capacity:** Natural gas represents approximately 41 percent of the total installed capacity in the Illinois service territory while nuclear represents approximately 40.9 percent. In PJM natural gas and nuclear account for approximately 42.4 and 17.7 percent of total capacity.
- **Interconnection Requests:** Natural gas represents 53 percent of new interconnection requests in Illinois, while solar represents approximately 27.8 percent of new requests.
- **Deactivations:** 304 MW in Illinois gave notification of deactivation in 2019. An additional 740 MW in the MISO portion of Illinois notified PJM of deactivation.
- **RTEP 2019:** Illinois' 2019 RTEP projects total approximately $115 million. Approximately 72 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:** Illinois' load within the ComEd zone is projected to grow at about 0.1 percent annually over the next ten years. 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 Illinois State Infrastructure Report.
- **1/1/19 – 12/31/19 Market Performance:** Illinois' average hourly LMPs were below PJM average hourly LMPs.
- **Emissions:** 2019 carbon dioxide, sulfur dioxide, and nitrogen oxide emissions are all down from 2018.

PJM Service Area – Illinois

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

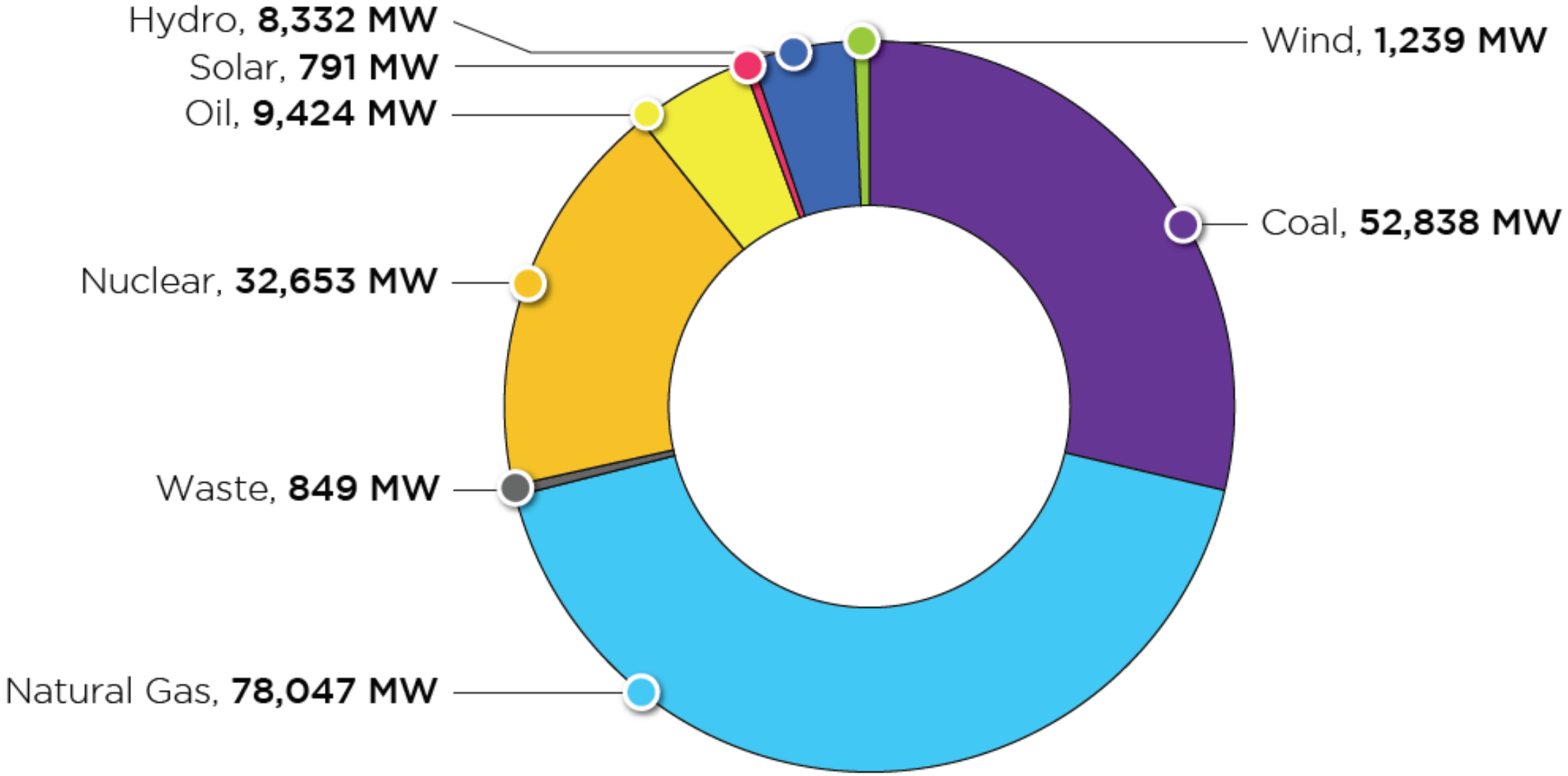
PJM operates transmission lines that extend beyond the service territory.

Planning

Generation Portfolio Analysis

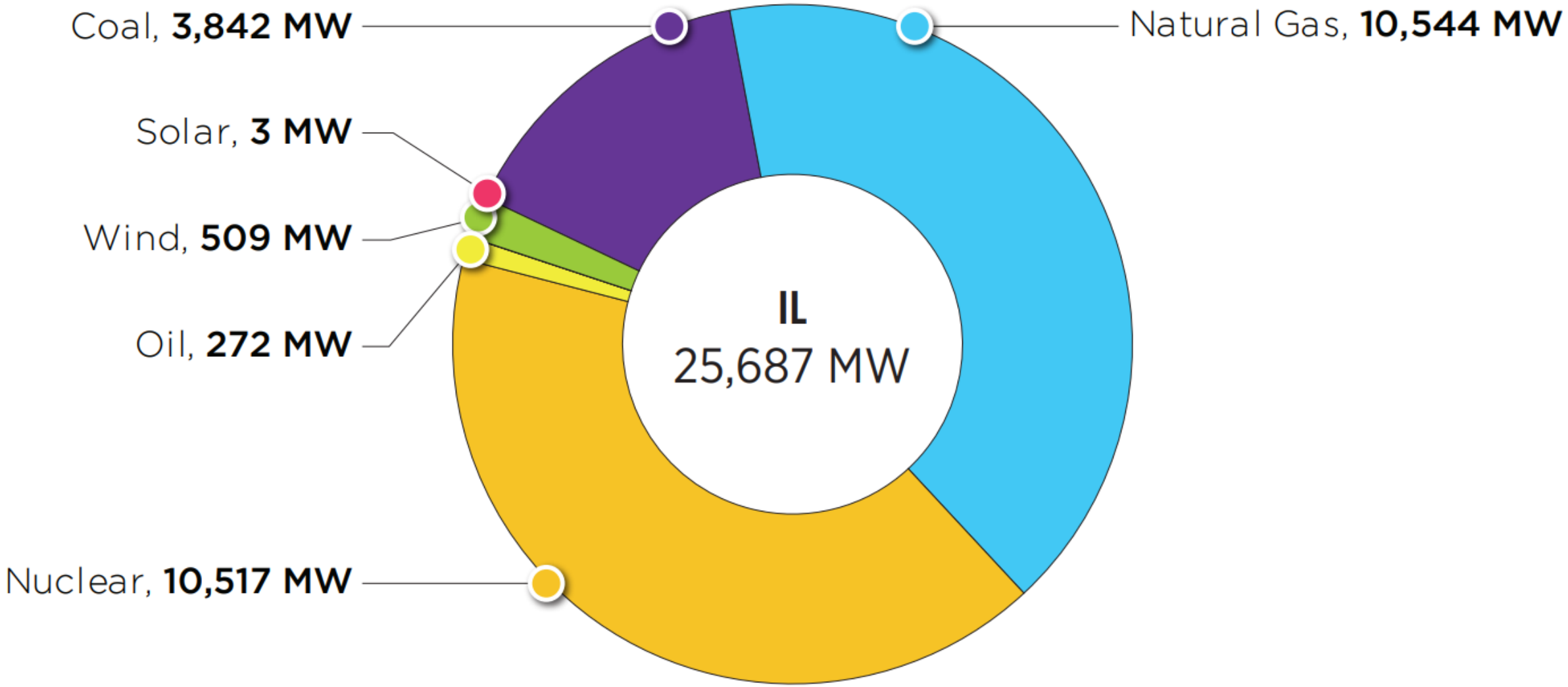
PJM – Existing Installed Capacity

(CIRs – as of Dec. 31, 2019)



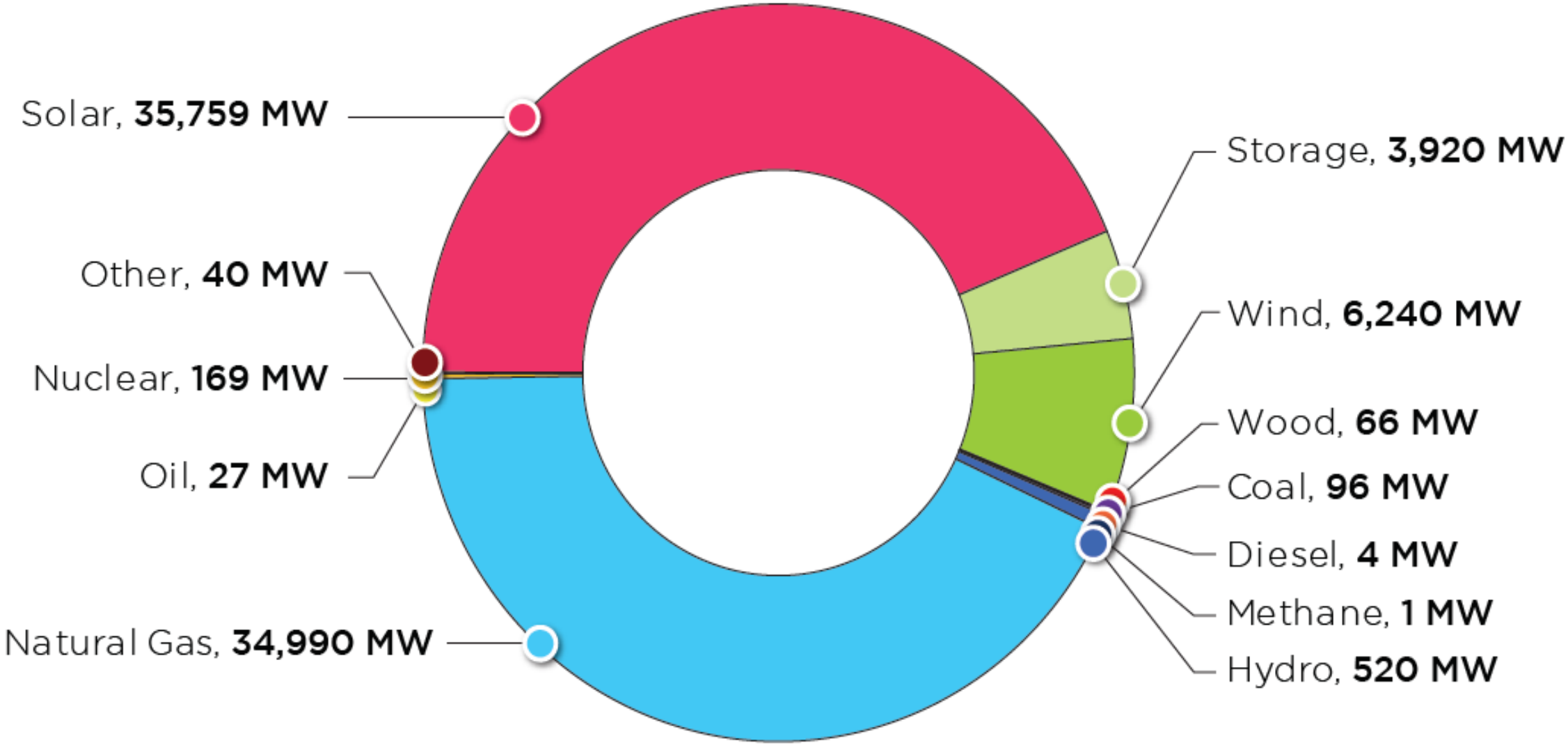
Illinois – Existing Installed Capacity

(CIRs – as of Dec. 31, 2019)



PJM – Queued Capacity (MW) by Fuel Type

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



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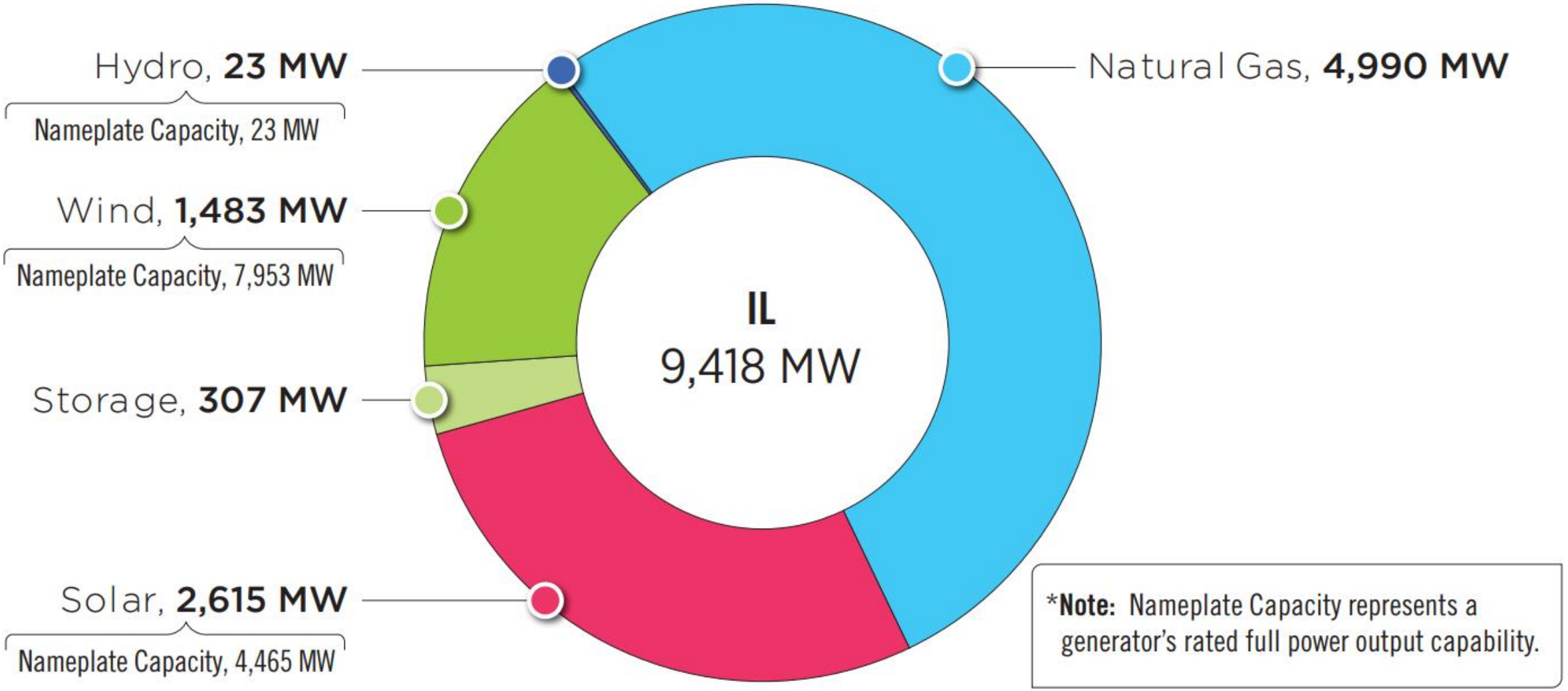
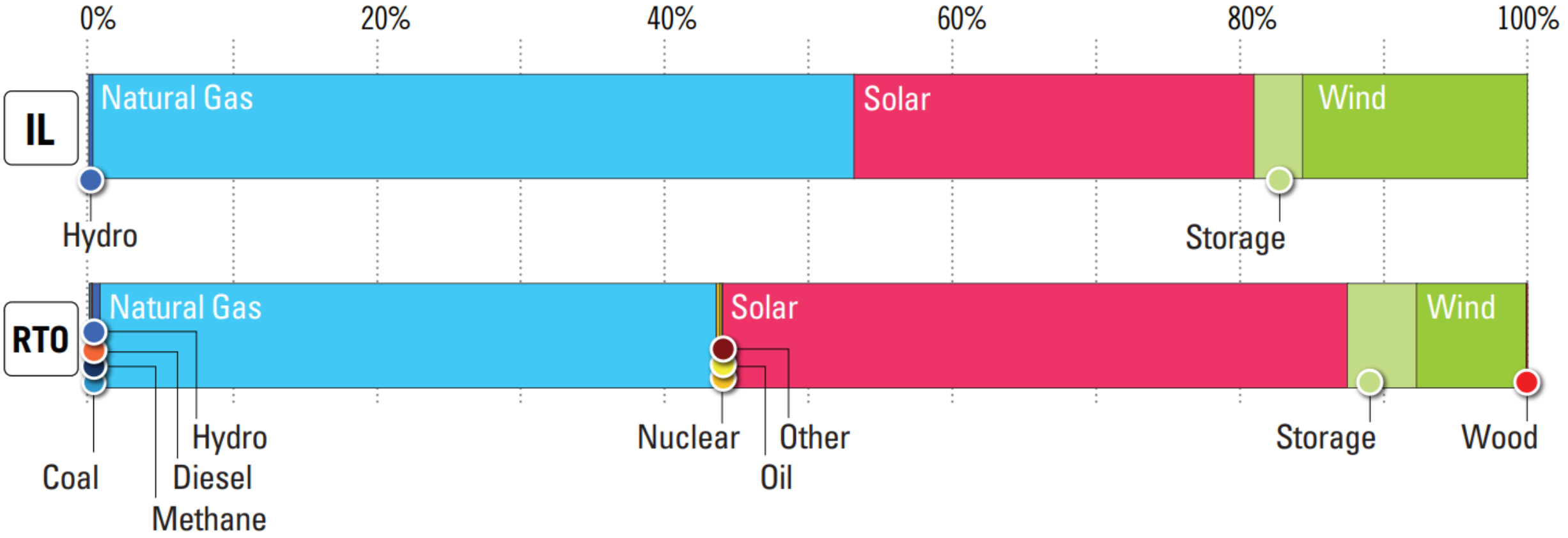


Illinois – Percentage of MW in Queue by Fuel Type

(Dec. 31, 2019)



Illinois – Interconnection Requests

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

		In Queue				Complete				Grand Total	
		Active		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)
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	0.0	2	22.0
	Natural Gas	22	3,780.3	3	1,209.9	16	1,435.6	21	8,908.3	62	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	1	20.0	3	0	4	20.0
	Storage	15	307.4	1	0.0	5	0.0	18	421.6	39	729.0
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	40	2,615.4	0	0.0	1	3.4	38	1,175.0	79	3,793.8
	Wind	30	1,359.4	5	123.6	24	709.8	107	2,760.7	166	4,953.4
	Grand Total	**107**	**8,062.5**	**11**	**1,356.2**	**63**	**2,619.6**	**216**	**17,857.7**	**397**	**29,896.0**

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

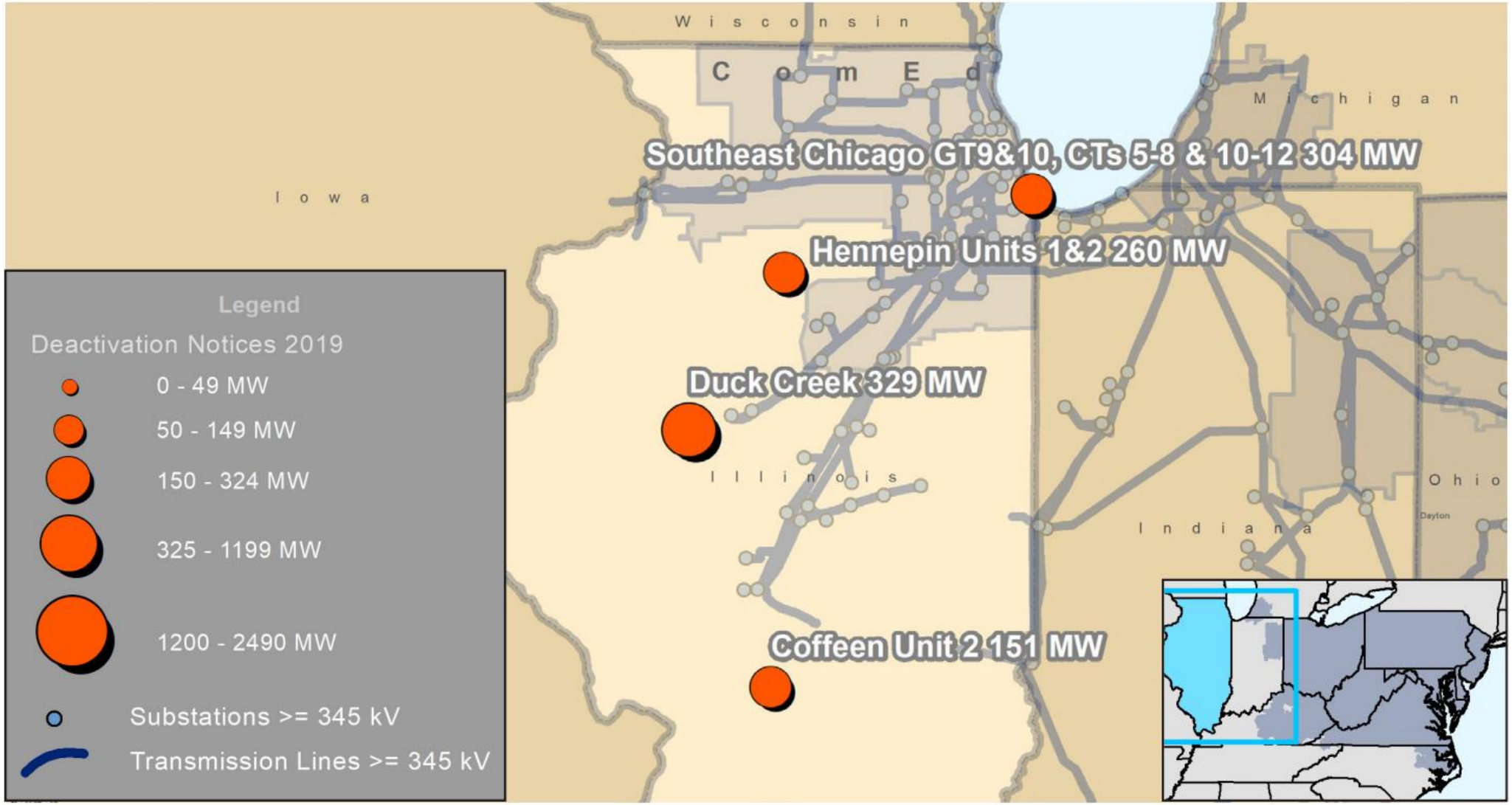
Illinois – Progression History of Interconnection Requests

Projects withdrawn after final agreement			Nameplate Capacity
8	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% Requested capacity megawatt	24% 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.

Illinois – Generation Deactivation Notifications Received in 2019



Illinois – Generation Deactivation Notifications Received in 2019

Unit	TO Zone	Fuel Type	Actual Deactivation Date	Age (Years)	Capacity (MW)
Coffeen 2	MISO*	Coal	10/17/2019	47	151.0
Hennepin Power Station 1	MISO*	Coal	10/29/2019	66	60.0
Hennepin Power Station 2	MISO*	Coal	10/29/2019	60	200.0
Duck Creek 1	MISO*	Coal	12/15/2019	43	329.0
Southeast Chicago CT11	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago CT12	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago CT5	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago CT6	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago CT7	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago CT8	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago GT10	ComEd	Natural Gas	12/17/2019	16	38.0
Southeast Chicago GT9	ComEd	Natural Gas	12/17/2019	16	38.0

*Consistent with established practices, PJM studies generation deactivations outside of PJM's footprint when they may have an impact on PJM facilities.

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

Illinois – RTEP Baseline Projects

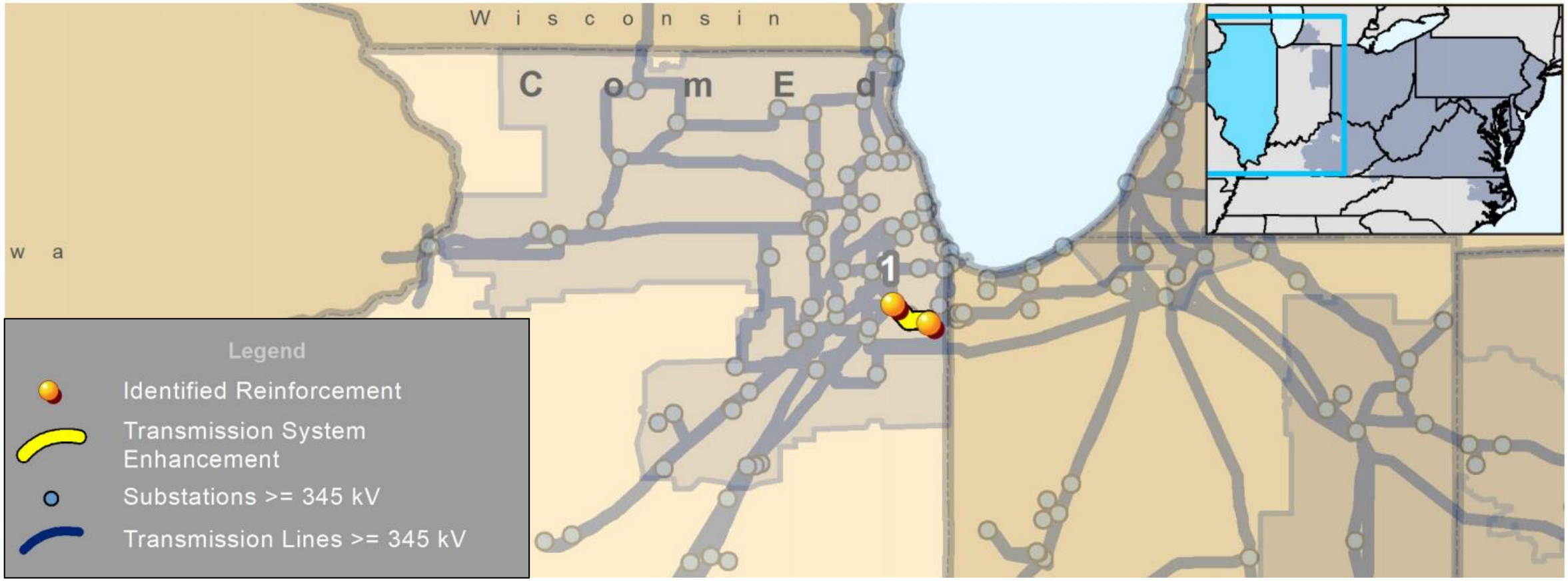
(Greater than $5 million)

Illinois had no baseline project upgrades in 2019.

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

Illinois – RTEP Network Projects

(Greater than $10 million)



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.

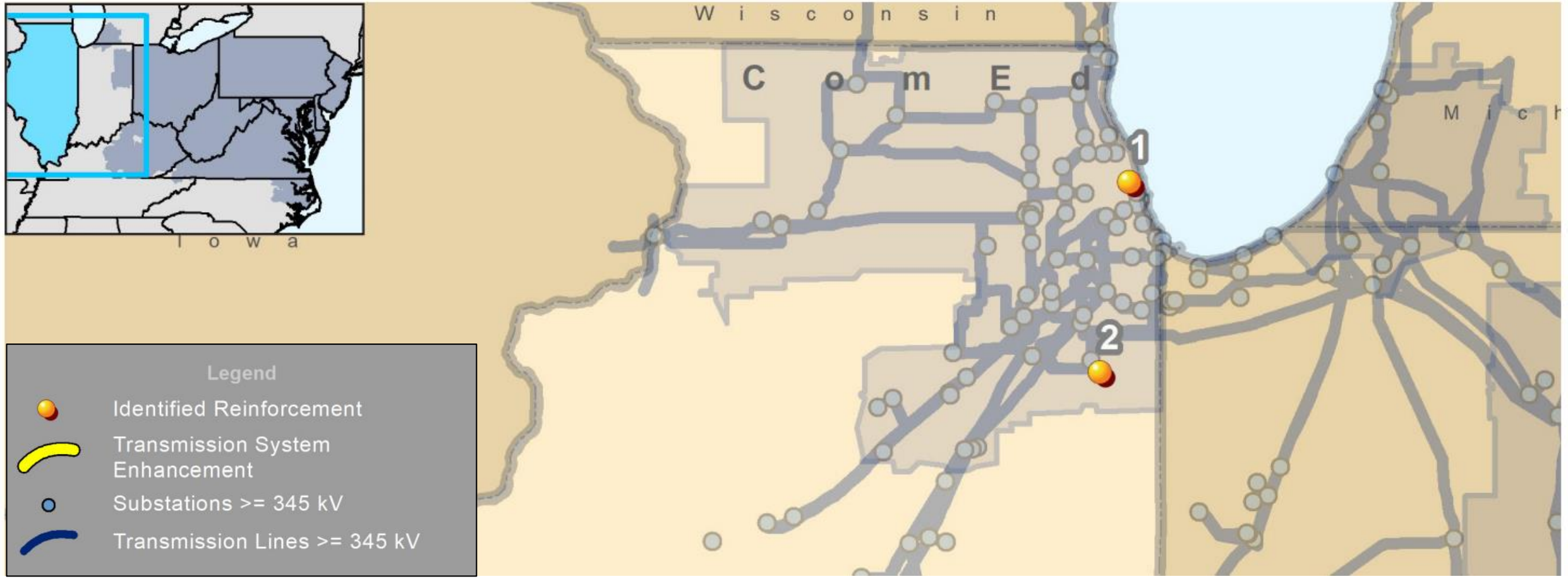
Illinois – RTEP Network Projects

(Greater than $5 million)

Map ID	Project	Description	Auction Revenue Request	Required In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	**n2089**	Reconductor ~12.5 miles of 345 kV Line No. 6607 and upgrade terminal equipment to match same as B1773.	V3-052	12/31/2012	$10.0	ComEd	11/14/2019
	n2090	Reconductor approx 9.2 miles and replace relays on 138kV line 12204. Same as b1775	V3-052	12/31/2012	$7.2	ComEd	11/14/2019
	n2093	Reconductor approximately 11.5 miles of 138kV line 12205, replace substation conductor, replace line trap. Same as b1777	V4-006	12/31/2012	$8.85	ComEd	11/14/2019
	n2094	Reconductor 7.7 miles of 138kV line 11106, replace line trap	V4-006	12/31/2012	$6.1	ComEd	11/14/2019

Illinois – TO Supplemental Projects

(Greater than $10 million)



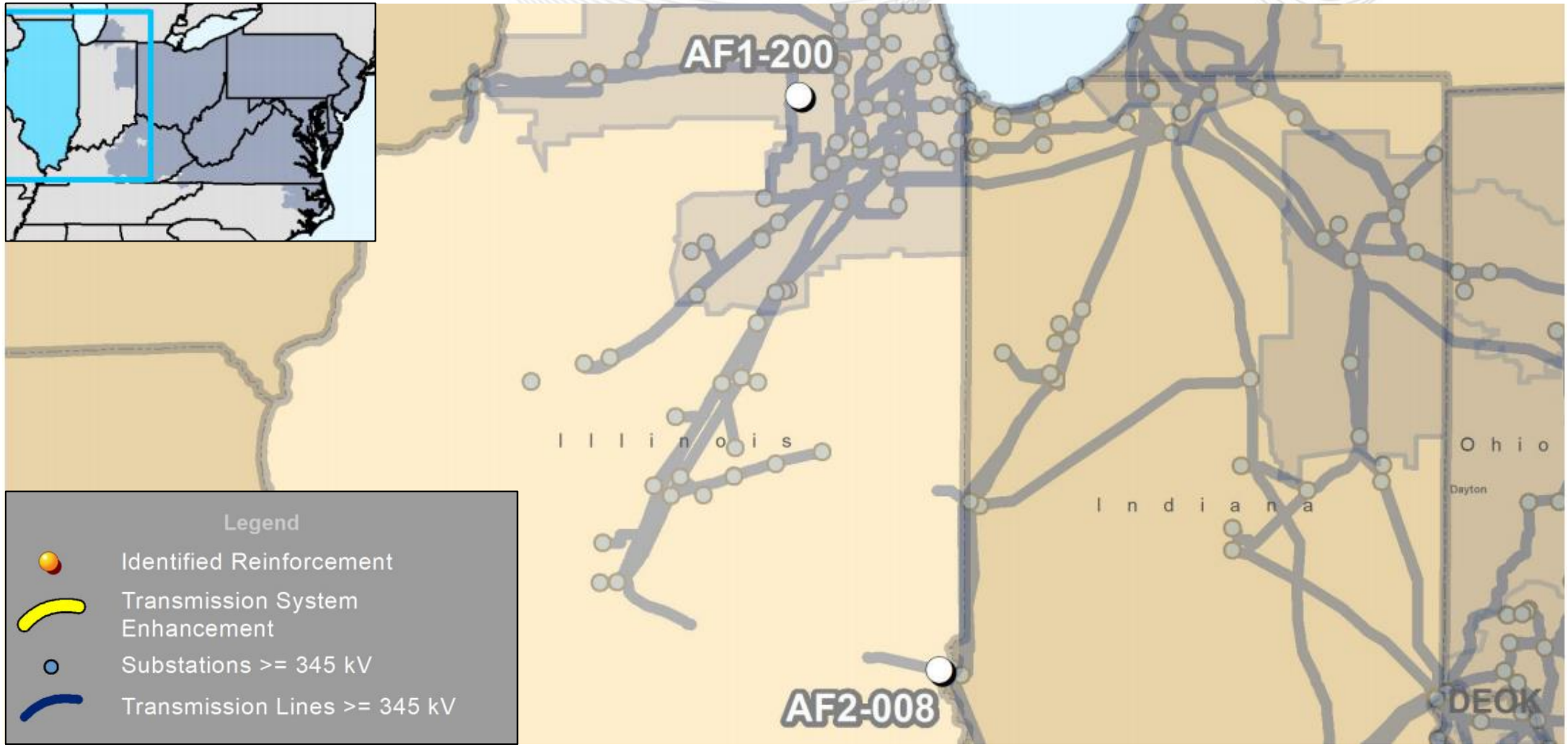
Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with PJM criteria and are not state public policy projects according to the PJM Operating Agreement. These projects are used as inputs to RTEP models, but are not required for reliability, economic efficiency or operational performance criteria, as determined by PJM.

Illinois – TO Supplemental Projects

(Greater than $5 million)

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	TEAC Date
1	**s1793**	Build a new superconducting cable that utilizes the second generation High Temperature Superconducting (HTS) wire to provide high transfer capacity between multiple 12 kV locations.	6/1/2026	$67.00	ComEd	3/25/2019
2	**s1944**	Build a double ring configuration substation near Bradley substation. Install two 138/12 kV transformers. Cut into existing Davis Creek-Kensington 138 kV lines No. 8603 & 8605.	5/31/2021	$16.00	ComEd	7/24/2019

Illinois – Merchant Transmission Projects



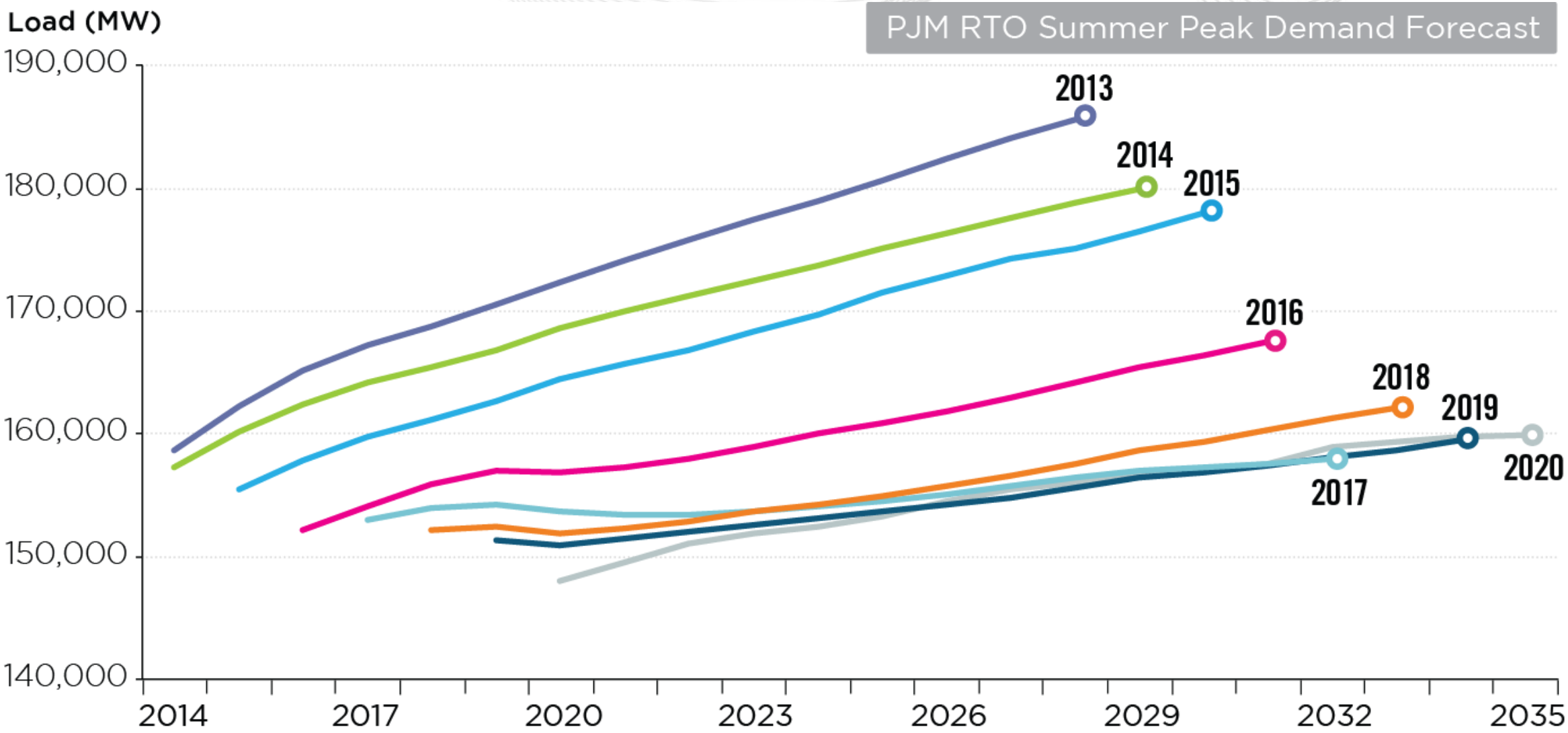
Illinois – Merchant Transmission Projects

Queue Number	Queue Name	TO Zone	Status	Actual or Requested In-Service Date	Maximum Output (MW)
AF1-200	Plano 345 kV	ComEd	Active	1/31/2025	2,035
AF2-008	Sullivan 345 kV	AEP	Active	12/31/2025	3,500

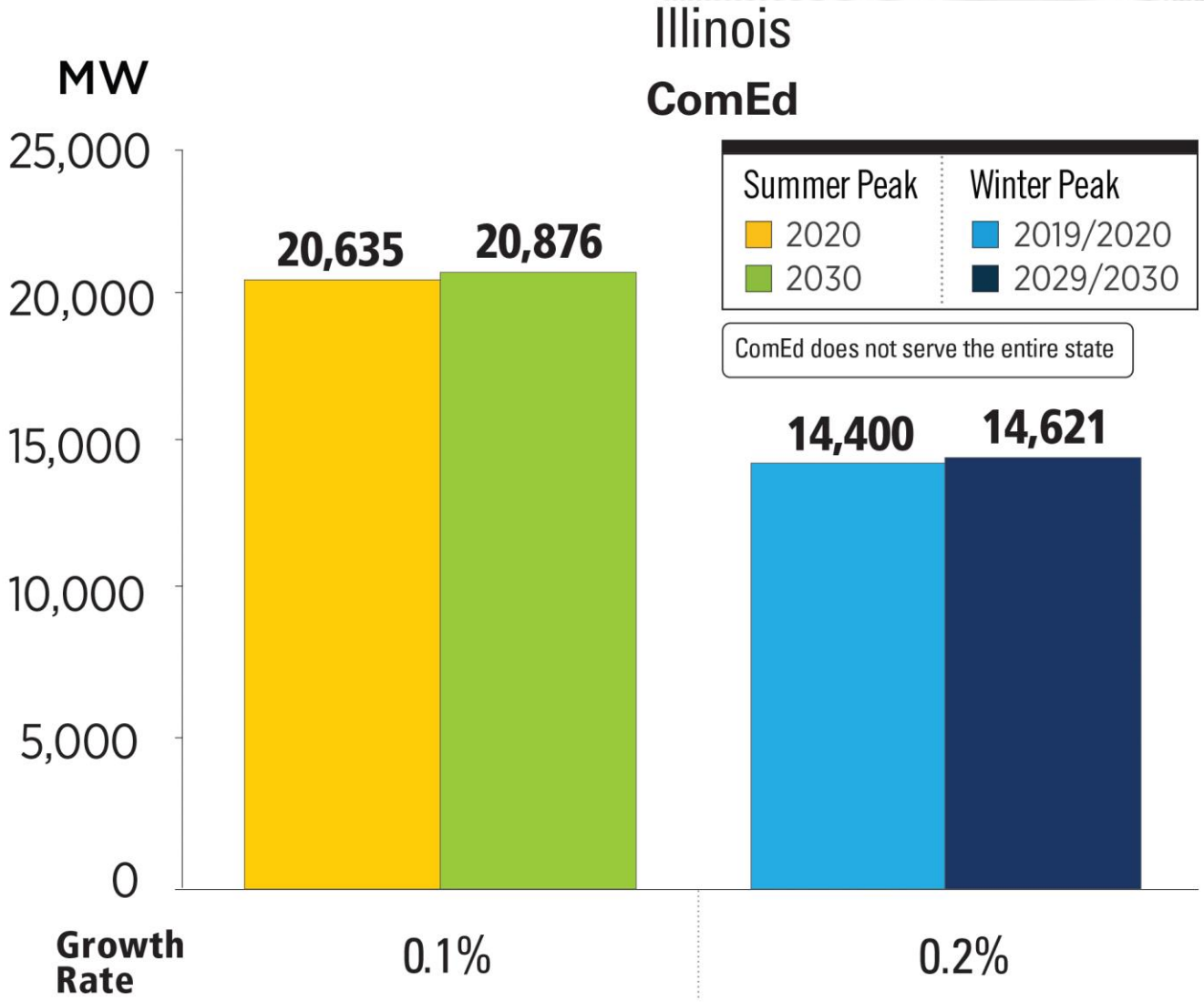
Planning
Load Forecast

PJM Annual Load Forecasts

(January 2020)



Illinois – 2020 Load Forecast Report



PJM RTO Summer Peak		PJM RTO Winter Peak	
2020	2030	2019/2020	2029/2030
148,092 MW	157,132 MW	131,287 MW	139,970 MW
Growth Rate 0.6%		Growth Rate 0.6%	

The summer and winter peak megawatt values reflect the amount of forecasted load to be served by each transmission owner in the noted state. 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.

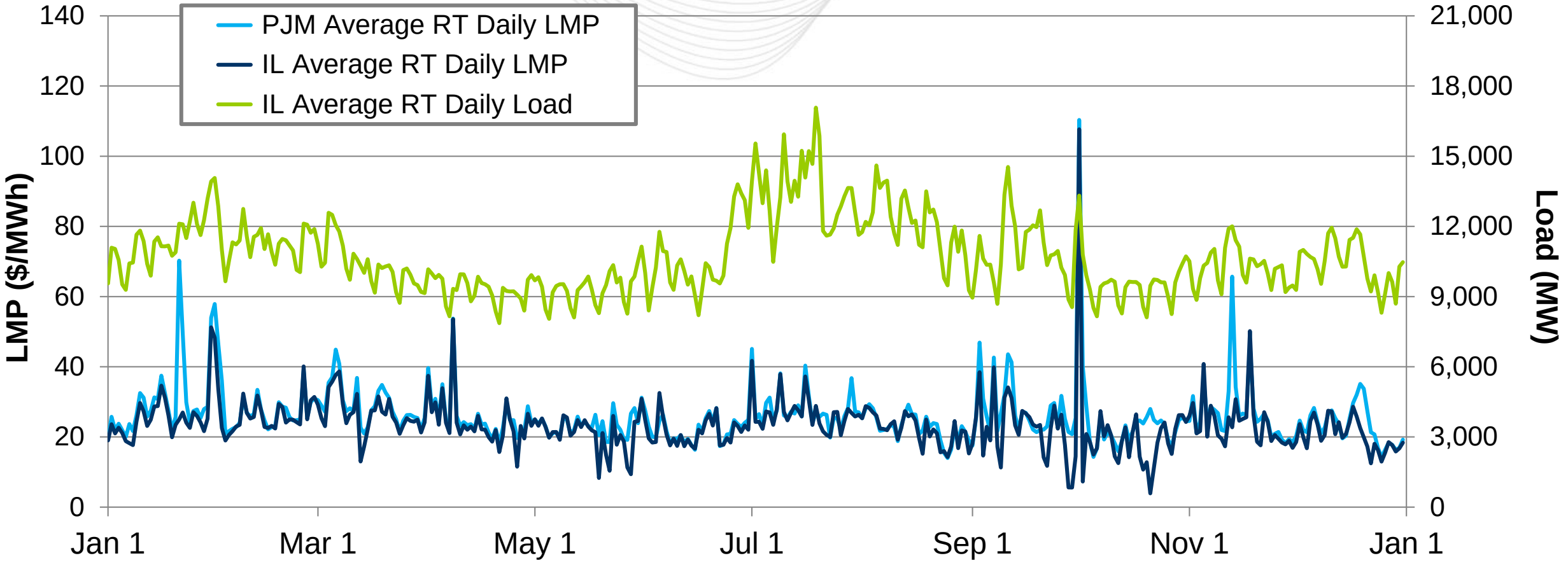
The Load Forecast was produced prior to COVID-19 and will be updated before the next Base Residual Auction to reflect changes in load patterns.

Markets

Market Analysis

Illinois – Average Daily Load and LMP

(Jan. 1, 2019 – Dec. 31, 2019)

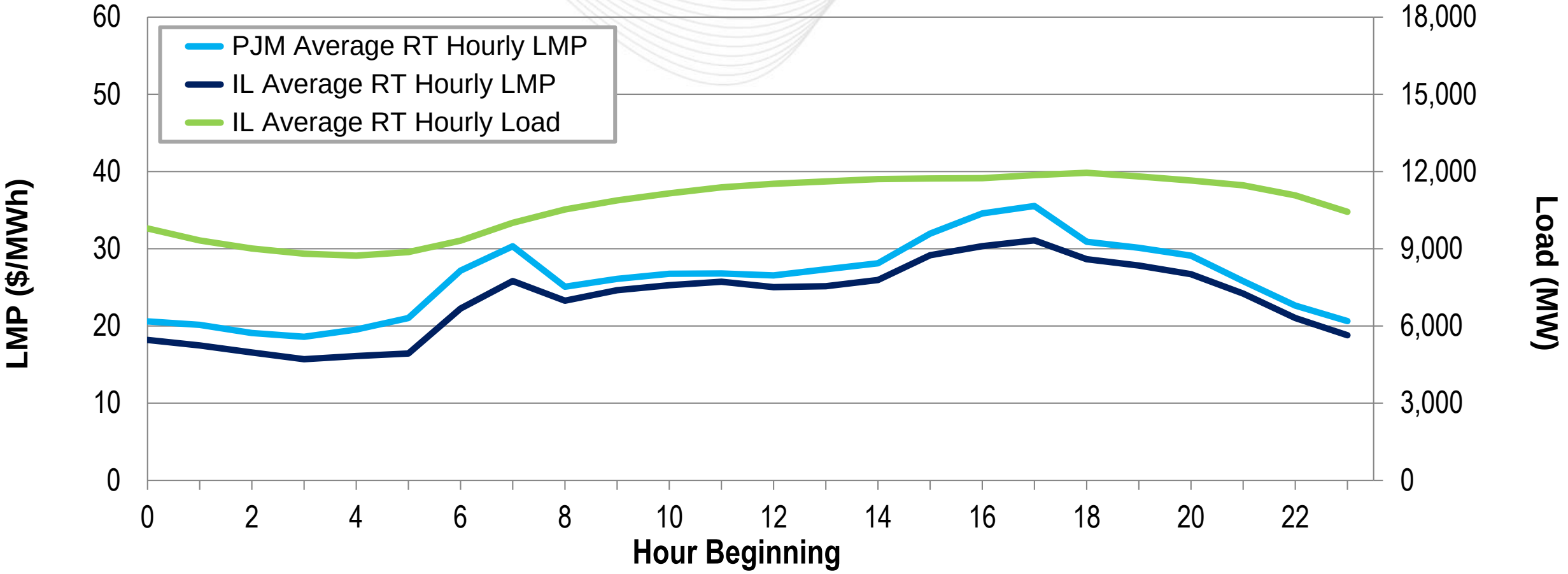


Note: The price spike in October reflects the Performance Assessment Interval event that occurred on October 2nd.

Illinois – Average Hourly Load and LMP

(Jan. 1, 2019 – Dec. 31, 2019)

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



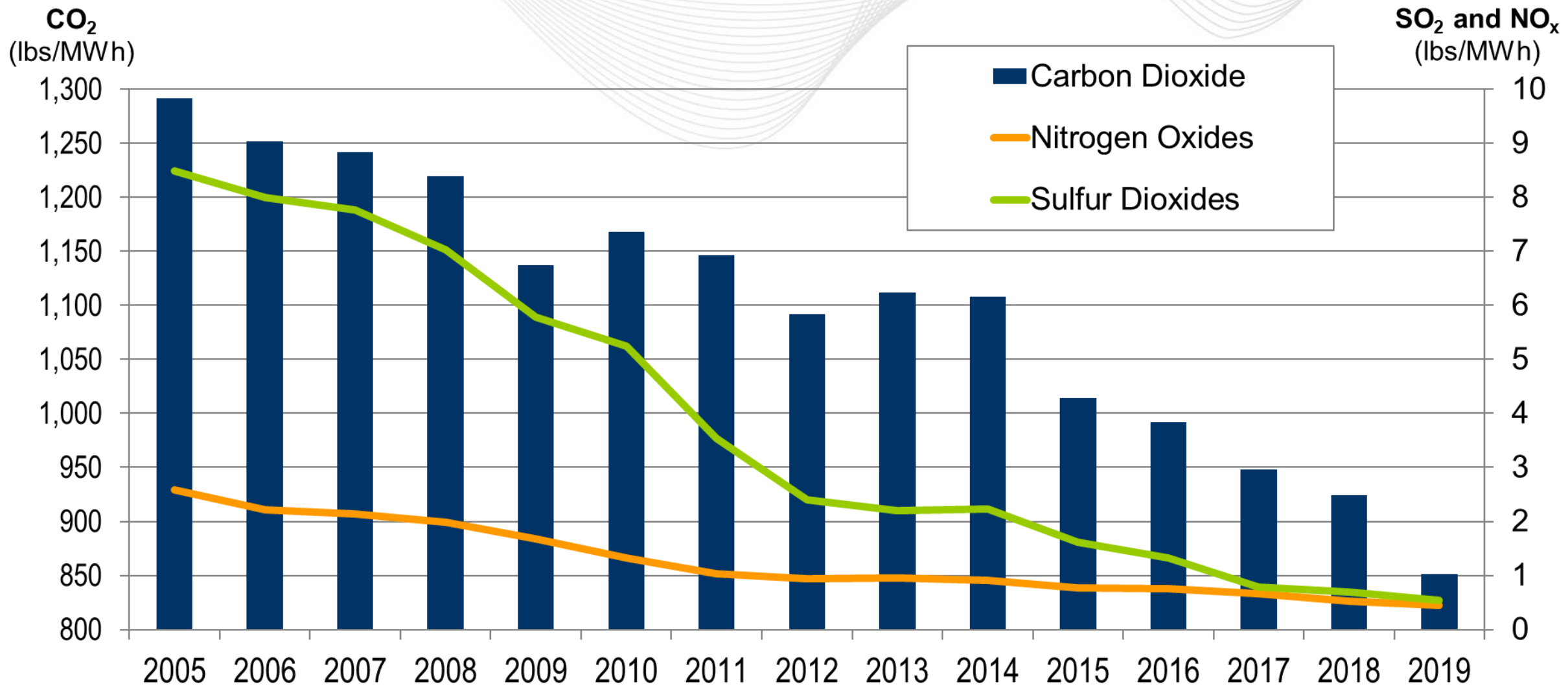
Illinois – Net Energy Import/Export Trend

(May 2019 – April 2020)

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

Operations
Emissions Data

2005 – 2019 PJM Average Emissions



Illinois – Average Emissions (lbs/MWh)

(Feb. 7, 2020)