2018 Illinois State Infrastructure Report
(January 1, 2018 – December 31, 2018)

May 2019

(updated June 2019)

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

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Executive Summary

(May 2019)

- **Existing Capacity:** Natural gas represents 41.7 percent of the total installed capacity in Illinois with nuclear a close second at 40.6 percent. Coal only represents 14.8 percent of total installed capacity in Illinois. This differs from PJM where natural gas and coal are at 40.2 and 30.7 percent of total installed capacity.
- **Interconnection Requests:** Natural gas represents approximately 71.9 percent of new interconnection requests in Illinois.
- **Deactivations**: 304 MW of capacity within the Illinois territory gave a notice of deactivation in 2018.
- **RTEP 2018:** Illinois RTEP 2018 projects total over $159 million in investment. Approximately 48.5 percent of that represents supplemental projects. These investment figures only represent RTEP projects that cost at least $5 million.
- **Load Forecast**: Illinois load growth is nearly flat, averaging between 0.2 and 0.3 percent per year over the next 10 years. This aligns with PJM RTO load growth projections.

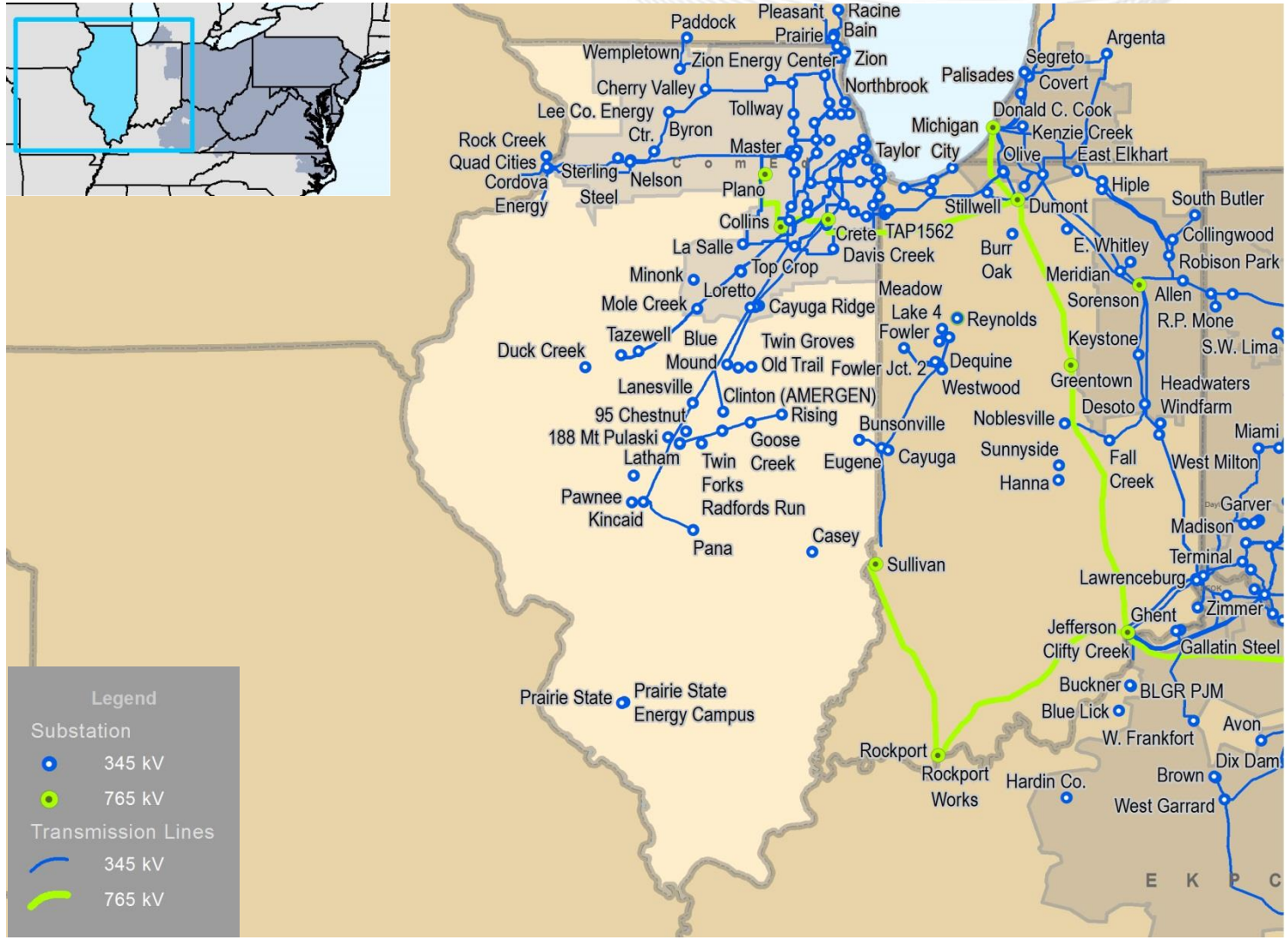
Executive Summary

(May 2019)

- **2021/22 Capacity Market**: Illinois cleared 554 MW more Demand Response and Energy Efficiency resources than in the prior auction.
- **1/1/18 – 12/31/18 Market Performance**: Illinois' hourly average locational marginal prices were below PJM's hourly average LMPs. Nuclear resources represented 67.7 percent of generation produced in Illinois while coal represented 15.8 percent. Illinois exported 25.4 percent of the generation produced within the state.
- **Emissions**: 2018 carbon dioxide and nitrogen oxide emissions were slightly up from 2017; sulfur dioxide emissions remained flat in 2018.

PJM Service Area – Illinois

(March 2019)



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

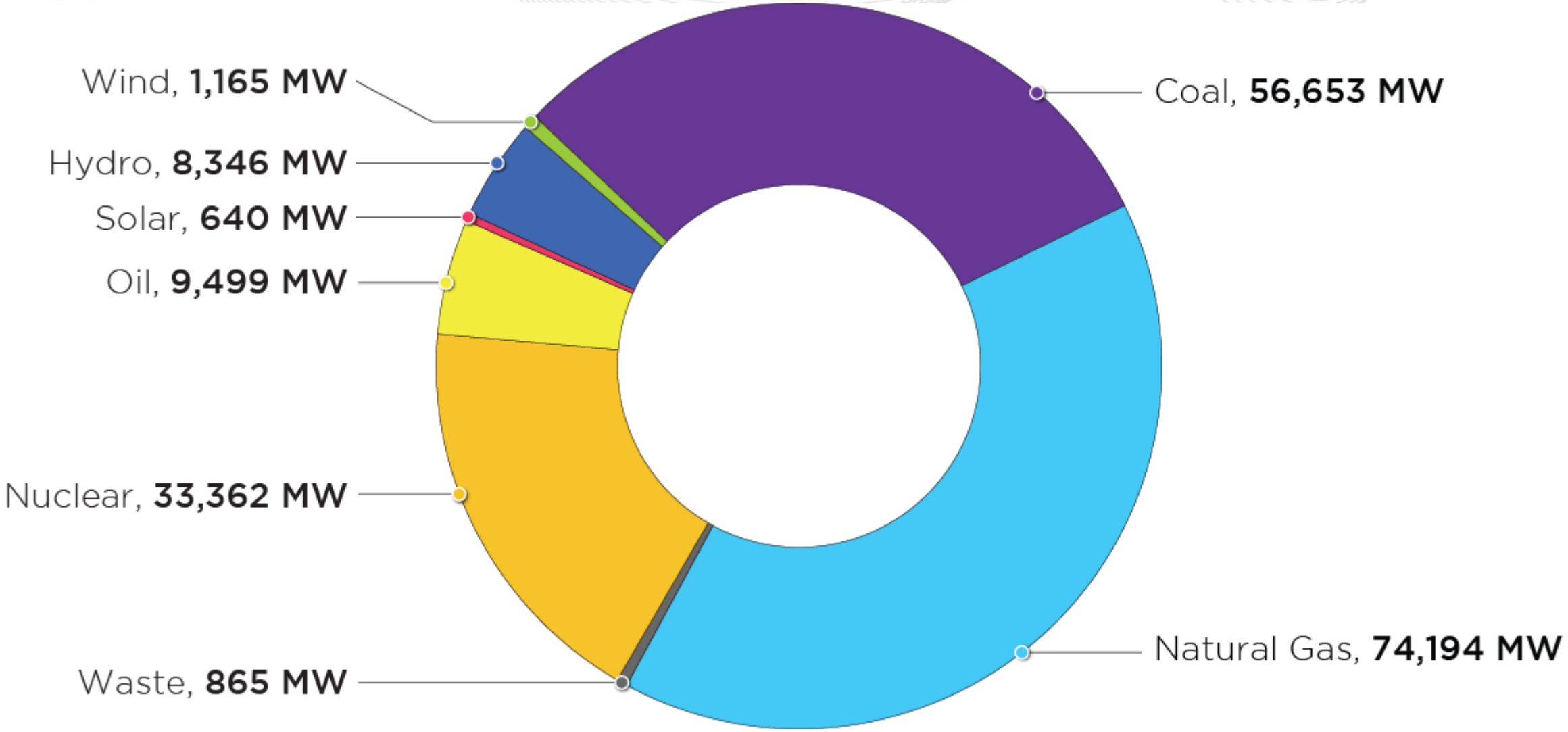
PJM operates transmission lines that extend beyond the service territory.

Planning

Generation Portfolio Analysis

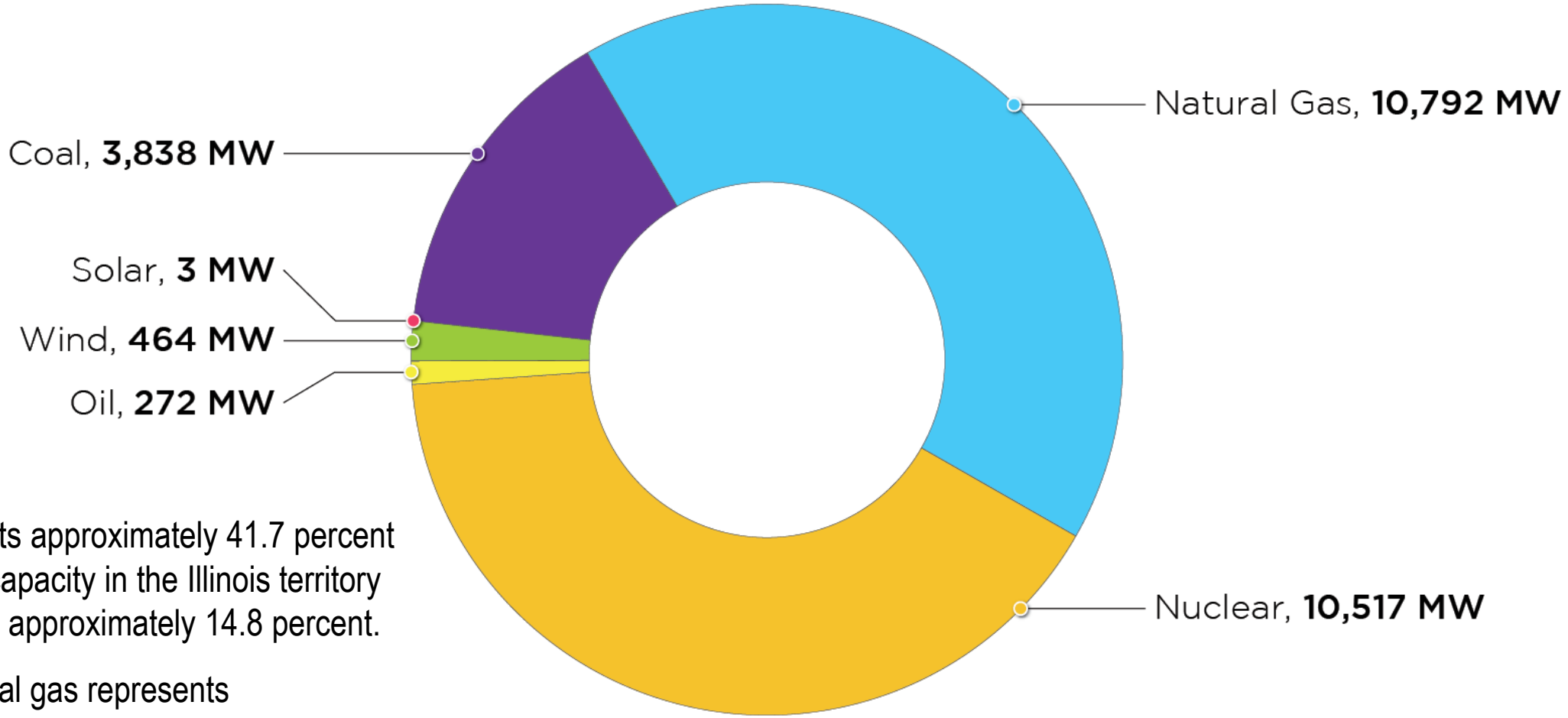
PJM Existing Installed Capacity

(CIRs, December 31, 2018)



Illinois – Existing Installed Capacity

(MW submitted to PJM, December 31, 2018)



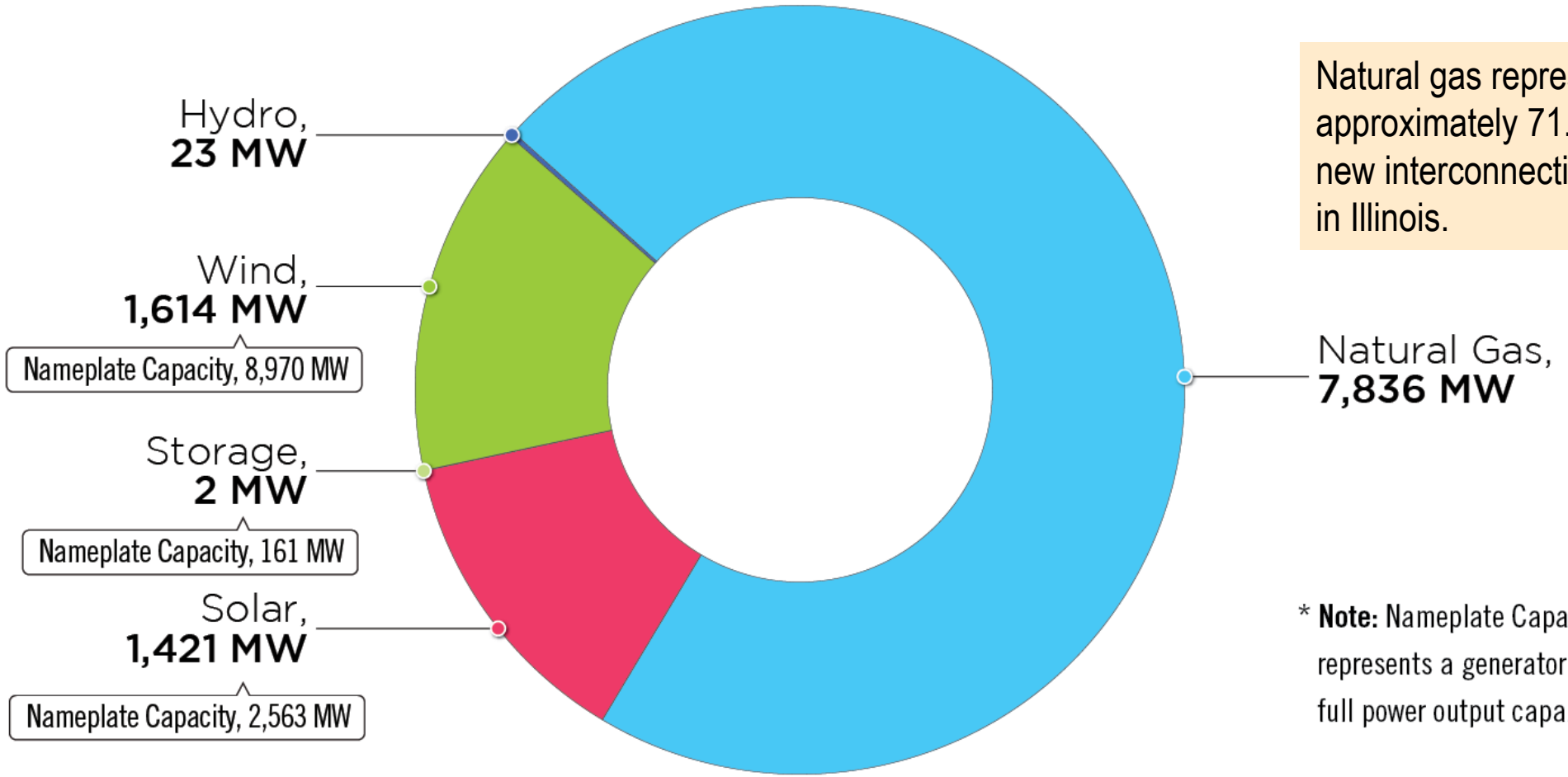
Summary:

Natural gas represents approximately 41.7 percent of the total installed capacity in the Illinois territory while coal represents approximately 14.8 percent.

Overall in PJM, natural gas represents approximately 40.2 percent of installed capacity while coal represents 30.7 percent.

Illinois – Queued Capacity (MW) by Fuel Type

(as of December 31, 2018)

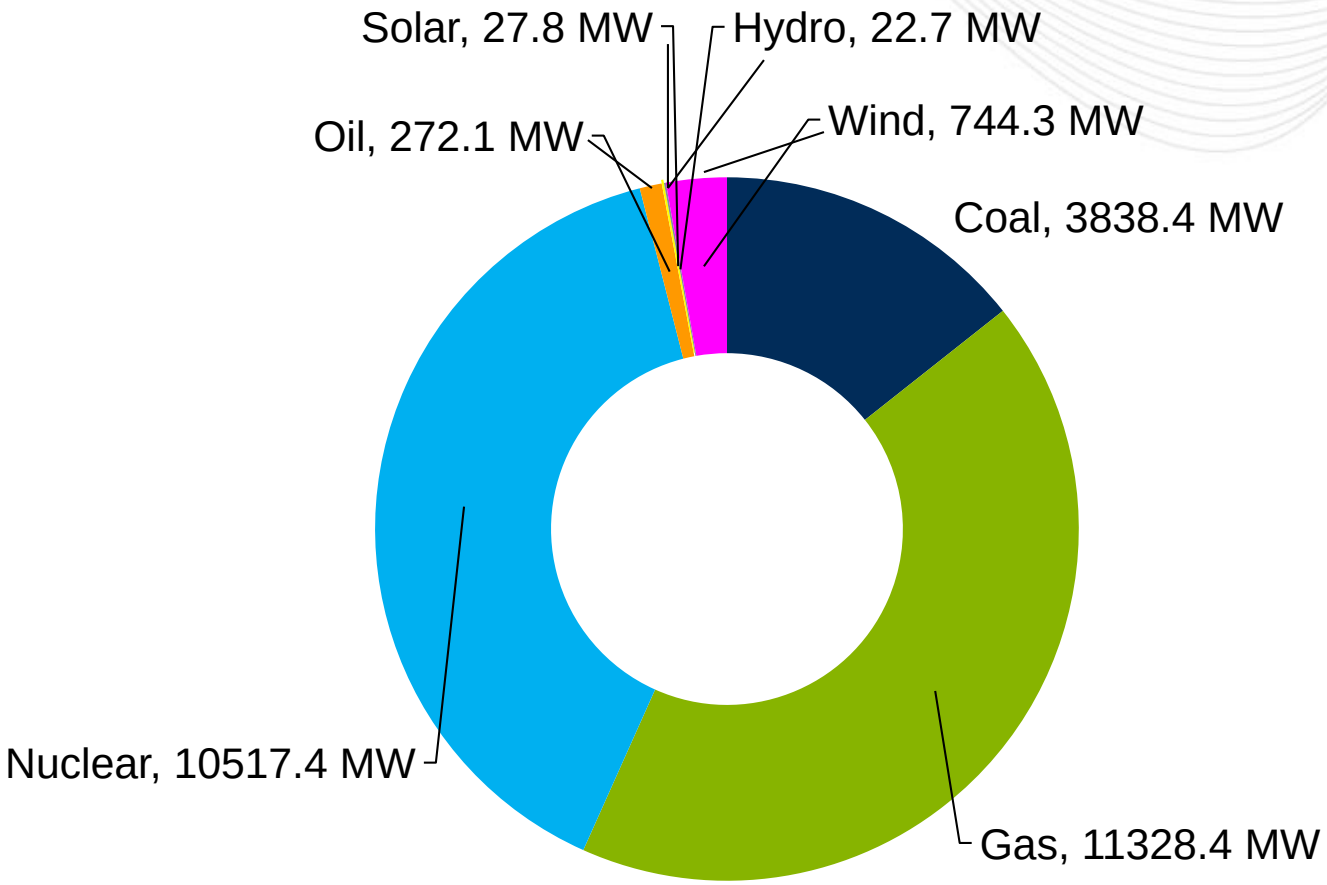


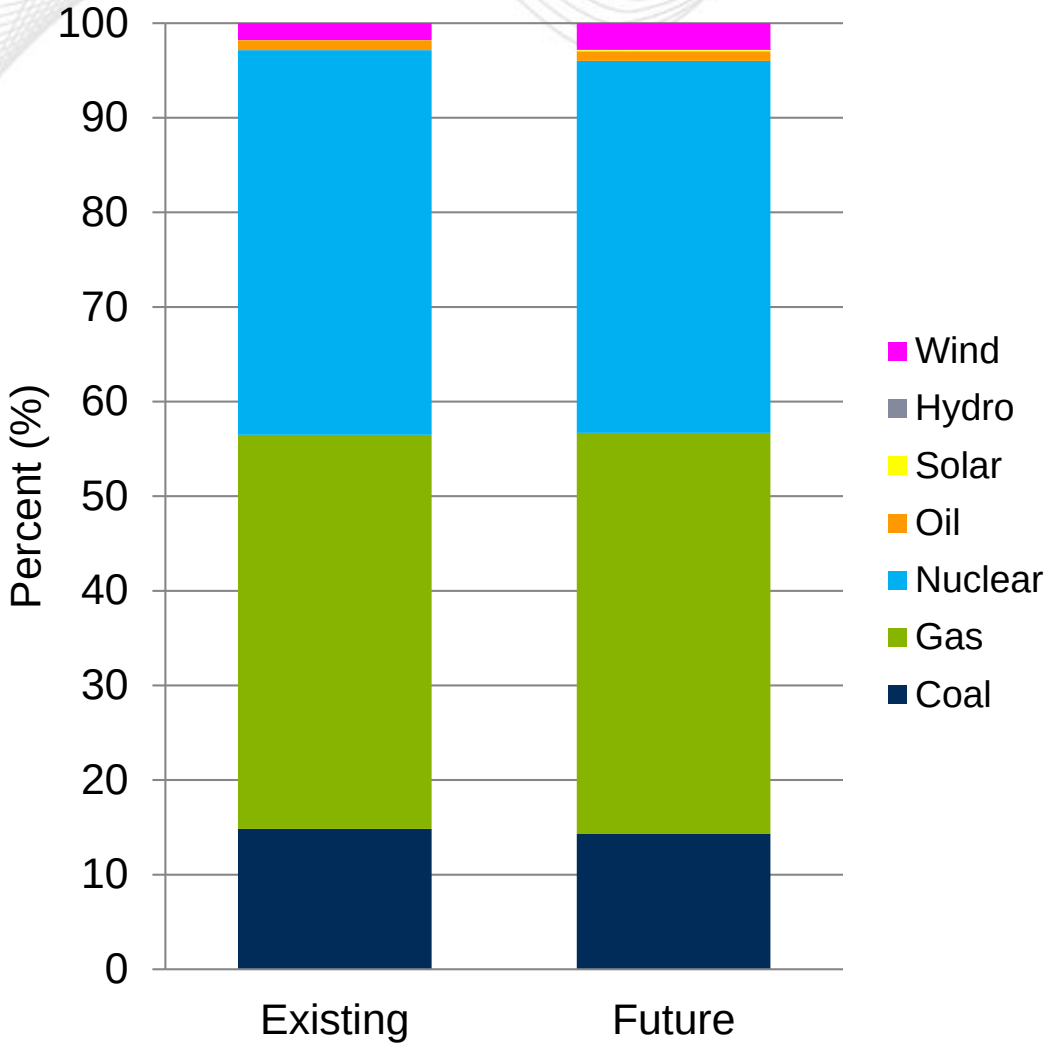
Natural gas represents approximately 71.9 percent of new interconnection requests in Illinois.

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

Illinois – Future Capacity Mix

Based on known queued interconnection requests and deactivation notices through December 31, 2022, adjusted to reflect the probability of commercialization as indicated by historical trends specific to an interconnection request's state/zonal location and fuel type.



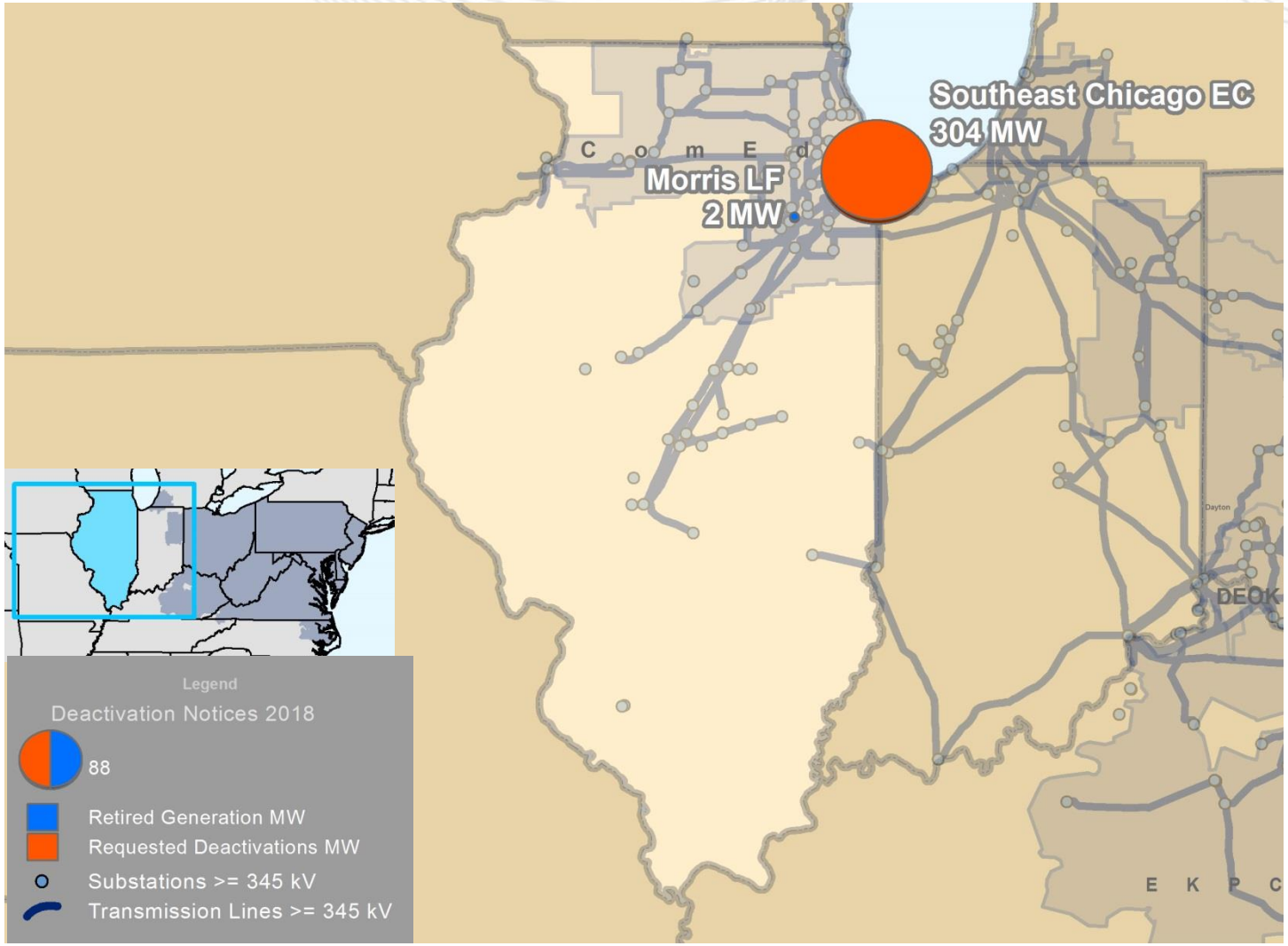


Illinois – Progression History Interconnection Requests

Projects under construction, suspended, in service, or withdrawn (as of December 31, 2018)

- **Projects withdrawn after final agreement**
  - 7 Interconnection Service Agreements – 275.6 MW (Nameplate Capacity, 1,178 MW)
  - 4 Wholesale Market Participation Agreements – 3.8 MW (Nameplate Capacity, 14.7 MW)
- **Percentage of planned capacity and projects reached commercial operation**
  - 16 % requested capacity megawatt
  - 25.7 % requested projects

Illinois – Actual Generation Deactivations and Deactivation Notifications Received in 2018



Illinois – Actual Generation Deactivations and Deactivation Notifications Received in 2018

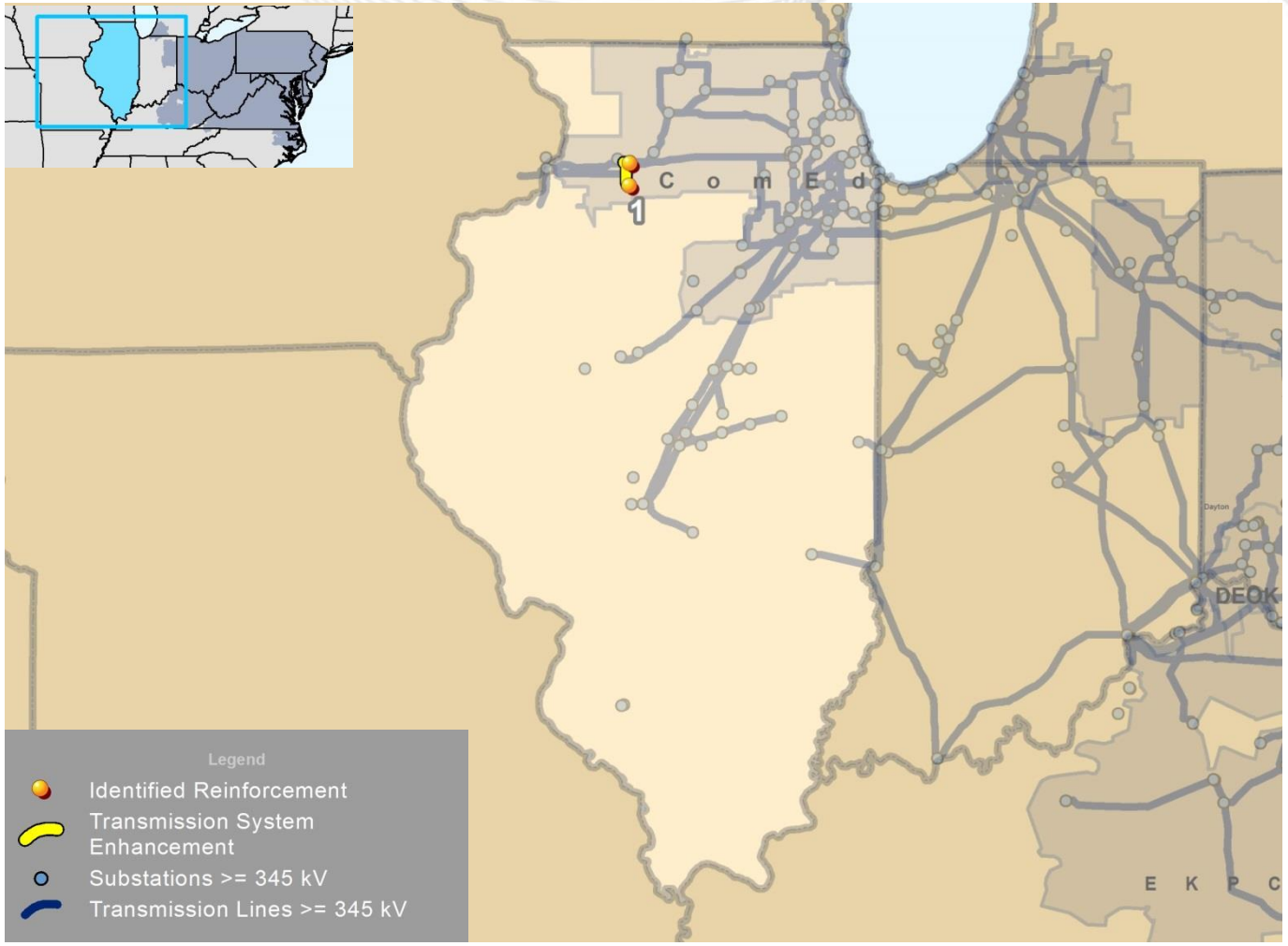
Unit	Capacity (MW)	TO Zone	Age (Years)	Projected/Actual Deactivation Date
Southeast Chicago 5	38	ComEd	16	6/1/2020
Southeast Chicago 6	38	ComEd	16	6/1/2020
Southeast Chicago 7	38	ComEd	16	6/1/2020
Southeast Chicago 8	38	ComEd	16	6/1/2020
Southeast Chicago 9	38	ComEd	16	6/1/2020
Southeast Chicago 10	38	ComEd	16	6/1/2020
Southeast Chicago 11	38	ComEd	16	6/1/2020
Southeast Chicago 12	38	ComEd	16	6/1/2020
Morris Landfill	2	ComEd	17	5/31/2018

Planning

Transmission Infrastructure Analysis

Illinois – RTEP Baseline Projects

(Greater than $10 million)



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

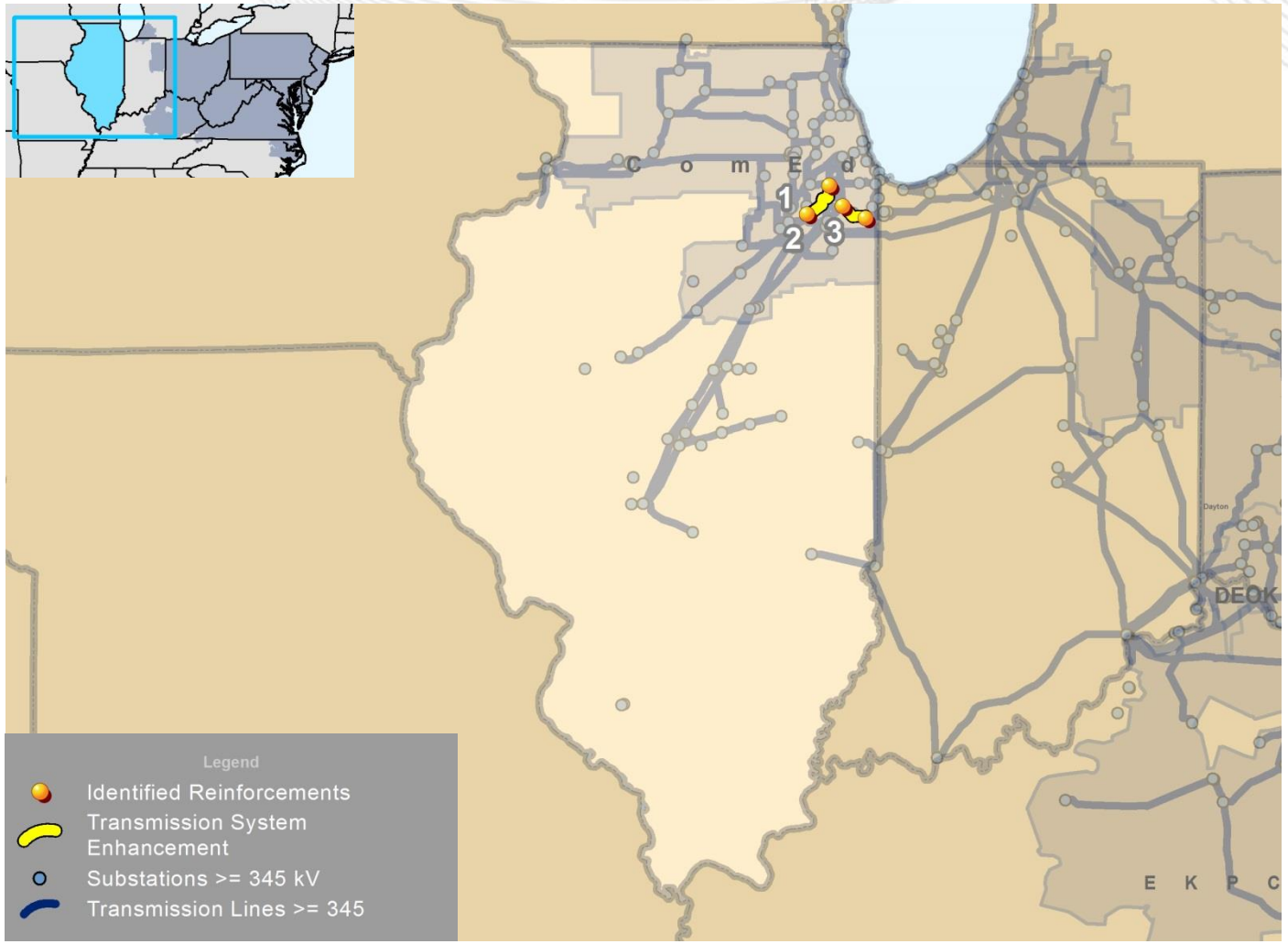
Illinois – RTEP Baseline Projects

(Greater than $5 million)

Map ID	Project	Sub ID	Description	Required In-Service Date	Project Cost ($M)	TO Zone	2018 TEAC Review	Baseline Load Growth Deliverability and Reliability
1	**b2999**		Rebuild 12.36 miles of Schauff Road-Nelson Tap 138 kV line.	11/1/2019	$17	ComEd	5/21/2018	X
	b2998		Install a 120 Mvar 345 kV shunt inductor at Powerton.	6/1/2021	$9	ComEd	5/3/2018	X

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.

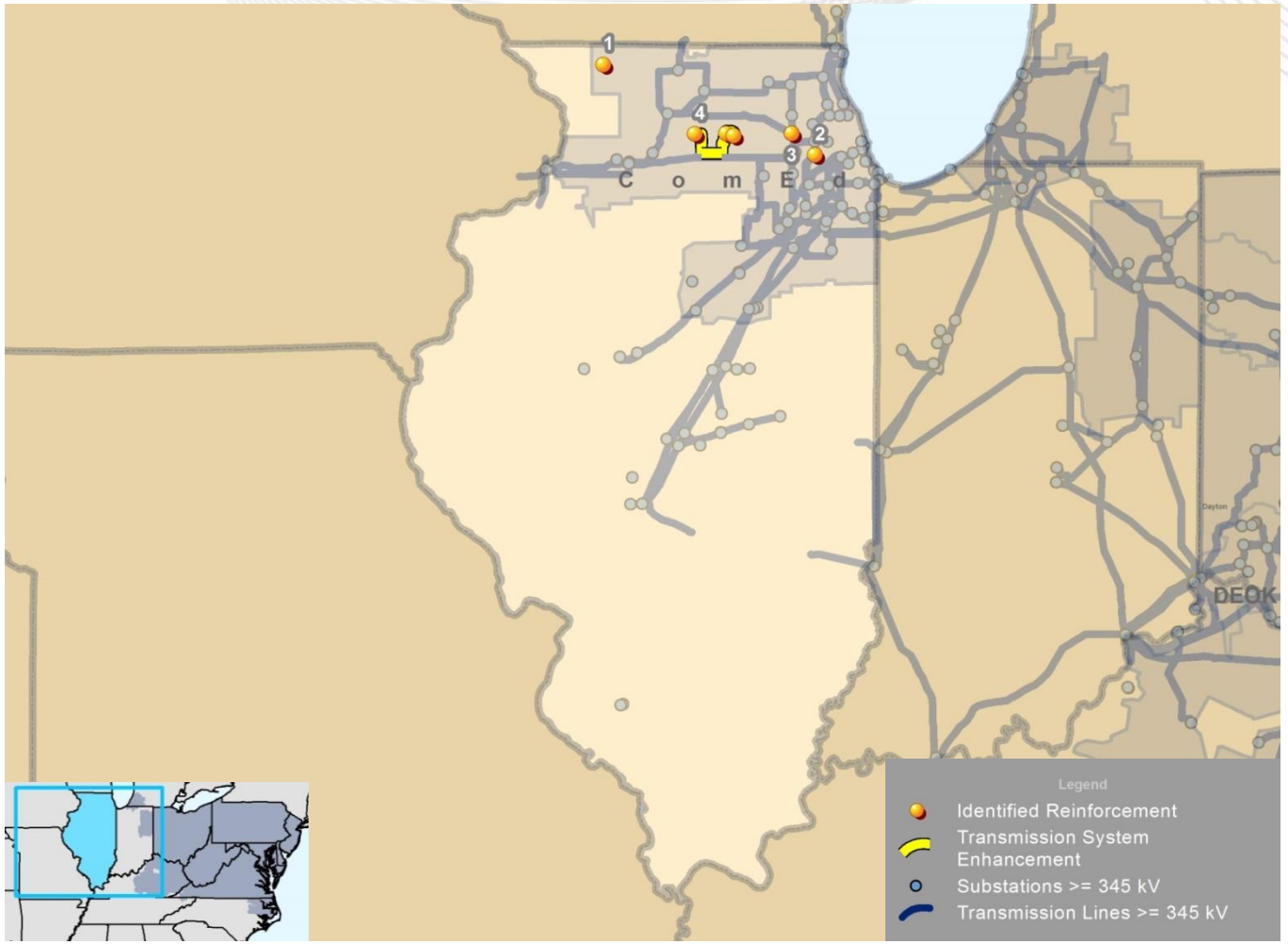
Illinois – RTEP Network Projects

(Greater than $5 million)

Map ID	Project	Description	Project Driver	Queue	Required In-Service Date	Project Cost ($M)	TO Zone	2018 TEAC Review
1	**n5915**	Reconductor the Elwood-Goodings Grove 345 kV line, upgrade the station conductor at both line terminals, and upgrade the line circuit breaker at Goodings Grove.	Generation	AC1-204 (Natural Gas)	6/1/2022	$23	ComEd	9/13/2018
2	**n5916**	Reconductor the Elwood-Goodings Grove 345 kV line, upgrade the station conductor at both line terminals, and upgrade the line circuit breaker at Goodings Grove.	Generation	AC1-204 (Natural Gas)	6/1/2022	$23	ComEd	9/13/2018
3	**n5917**	Reconductor the E. Frankfort-Crete 345 kV line.	Generation	AC1-204 (Natural Gas)	6/1/2022	$10	ComEd	9/13/2018

Illinois – TO Supplemental Projects

(Greater than $10 million)



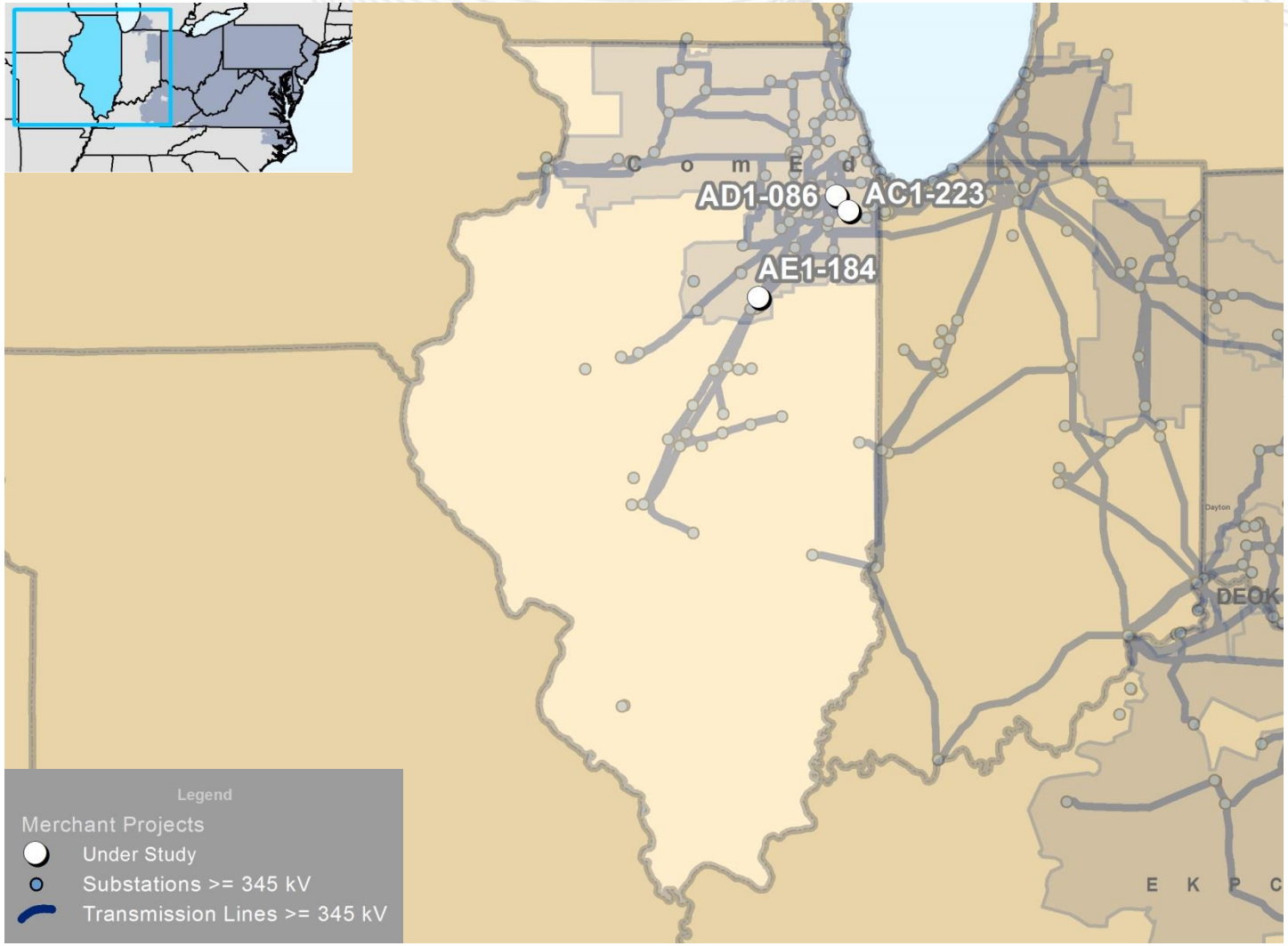
Note: Supplemental projects are transmission expansions or enhancements that are not required for compliance with the following PJM criteria: system reliability, operational performance or economic criteria, pursuant to a determination by the Office of the Interconnection and is not a state public policy project.

Illinois – TO Supplemental Projects

(Greater than $5 million)

Map ID	Project	Description	Projected In-Service Date	Project Cost ($M)	TO Zone	2018 TEAC Review
1	s1480	Install a new 138/34 kV transformer with high-side and low-side breakers at Lena. Expand the 34 kV switchgear. Replace line circuit switchers with 138 kV breakers, install new bus tie breaker.	6/1/2019	$14.2	ComEd	1/8/2018
		Normally close 138 kV line into Lena. Normally open the new 138 kV bus tie breaker.	6/1/2019		ComEd	1/8/2018
2	s1529	Install a 345 kV bus tie and breaker at Lisle 345 kV substation. Close the new and existing bus ties creating a large hybrid ring bus so each bus contains a transmission line and a transformers. Install four 345 kV line breakers and two 345 kV high-side transformer breakers.	12/31/2019	$30	ComEd	2/8/2018
3	s1530	Replace Wayne 345/138 kV transformer. Finish ring bus on 345 kV bus. Install two 345 kV breakers. Retire existing cap bank and install 138 kV cap bank.	12/31/2019	$15	ComEd	2/8/2018
4	s1533	Construct new line from the Twombley Road substation to a tap of the West DeKalb-Glidden 138 kV line just outside the West DeKalb 138 kV substation.	10/1/2021	$18	City of Rochelle	3/9/2018
		ComEd work at West DeKalb to accommodate the connection.	10/1/2021		ComEd	3/9/2018

Illinois - Merchant Transmission Project Requests



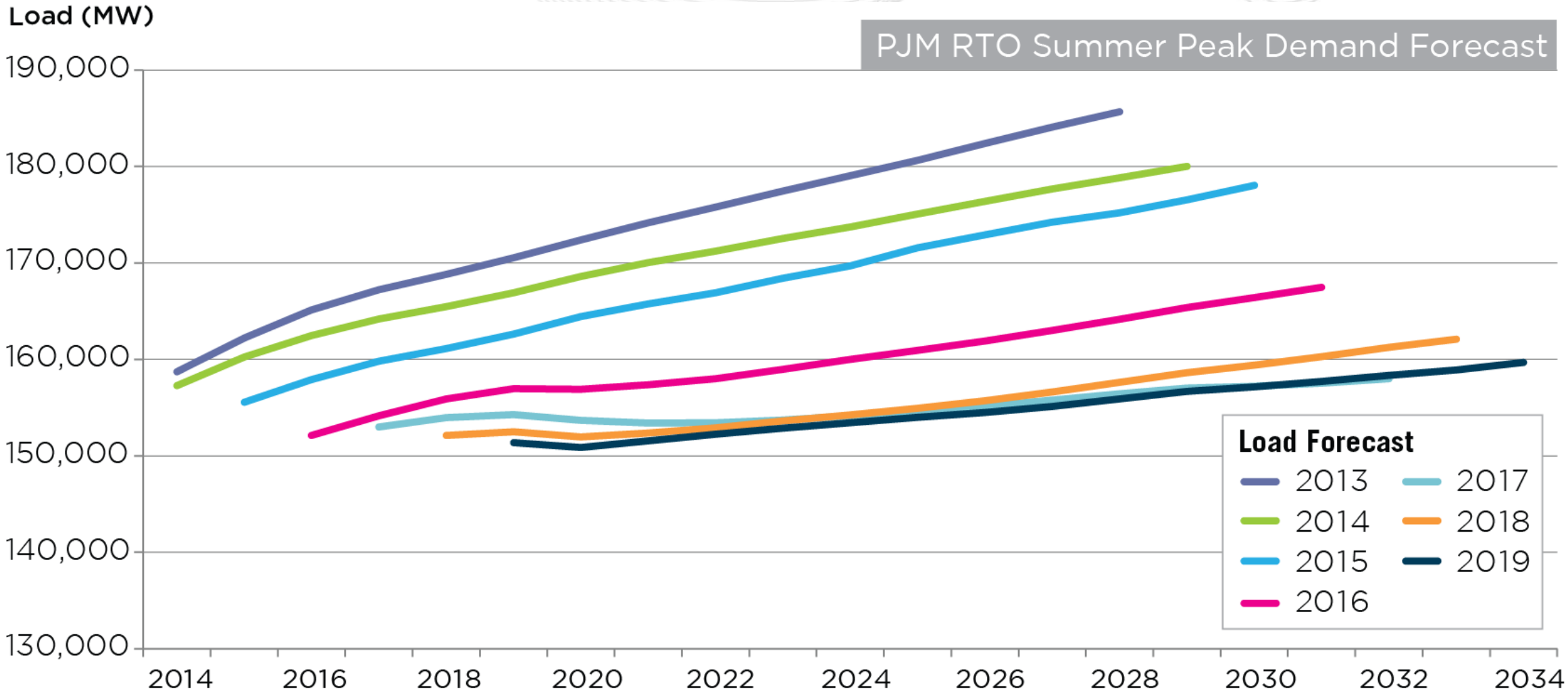
Illinois - Merchant Transmission Project Requests

Queue	Project Name	Maximum Fuel Output (MW)	Status	Projected In-Service Date	TO Zone
AC1-223	E. Frankfort-University Park North	43.2	Under Construction	6/1/2020	ComEd
AD1-086	E. Frankfort-Goodings Grove	23.9	Active	6/20/2021	ComEd
AE1-184	Pontiac Midpoint-Dresden	82.7	Active	6/1/2022	ComEd

Planning
Load Forecast

PJM Annual Load Forecasts

(January 2019)



Illinois – 2019 Load Forecast Report

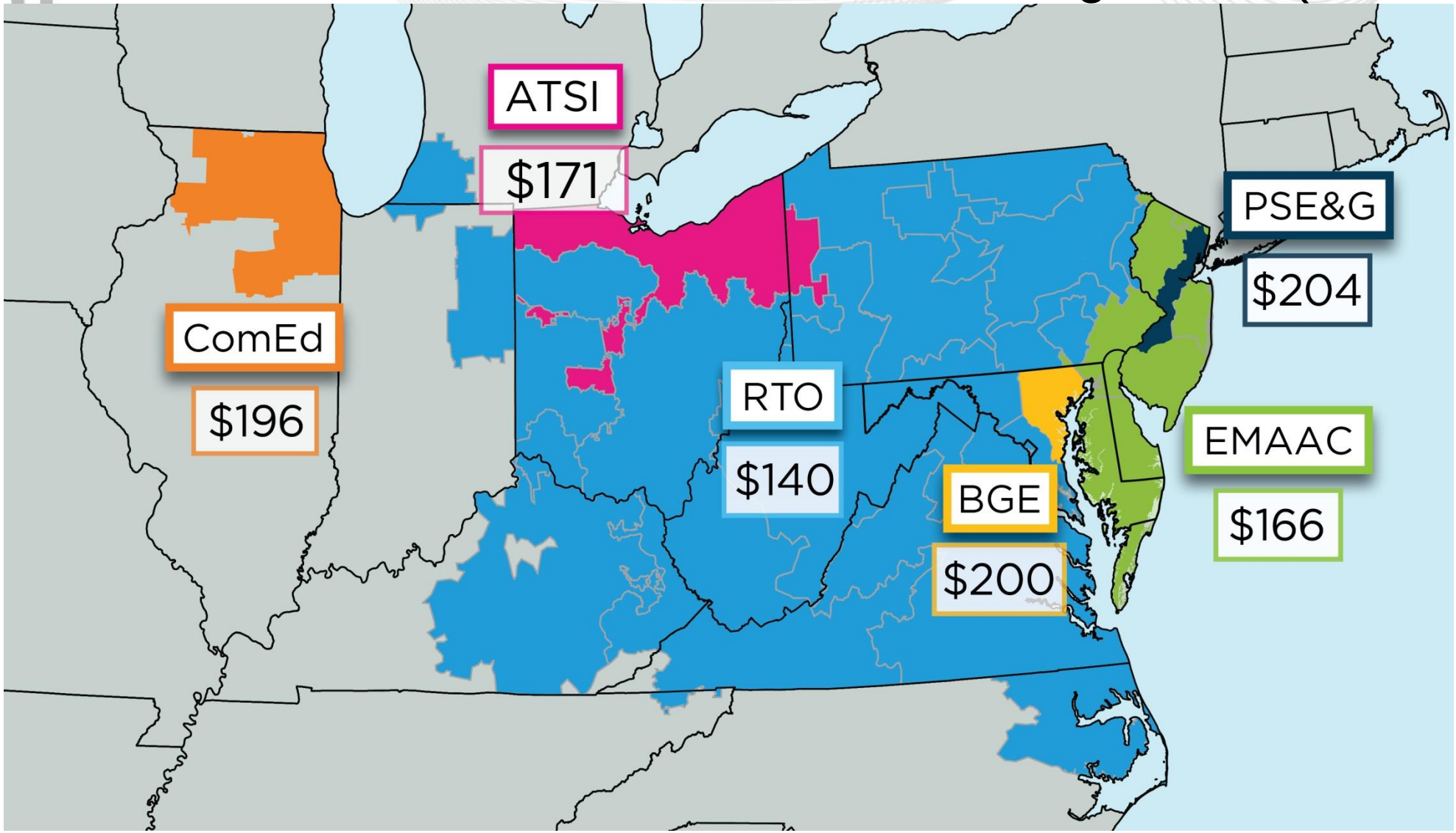
	Summer Peak (MW)			Winter Peak (MW)		
Transmission Owner	2019	2029	Growth Rate (%)	2018/19	2028/29	Growth Rate (%)
Commonwealth Edison Company	21,890	22,514	0.3%	15,515	15,806	0.2%
PJM RTO	151,358	156,689	0.3%	131,082	136,178	0.4%

* PJM notes that it does not serve the entire state of Illinois.

Markets

Capacity Market Results

2021/22 Base Residual Auction Clearing Prices ($/MW-Day)



Illinois – Cleared Resources in 2021/22 Auction

(May 23, 2018)

	Cleared MW (Unforced Capacity)	Change from 2020/21 Auction
Generation	19,864	(2,030)
Demand Response	1,998	485
Energy Efficiency	771	68.6
Total	22,633	(1,477)

ComEd Locational Clearing Prices
Clearing Price: $196

PJM – 2021/2022 Cleared MW (UCAP) by Resource Type

	Annual	Summer	Winter	Total
Generation	149,616 MW	54 MW	716 MW	150,385 MW
DR	10,674 MW	452 MW	- MW	11,126 MW
EE	2,623 MW	209 MW	- MW	2,832 MW
Total	162,912 MW	716 MW	716 MW	164,343 MW

Illinois – Offered and Cleared Resources in 2021/22 Auction

(May 23, 2018)

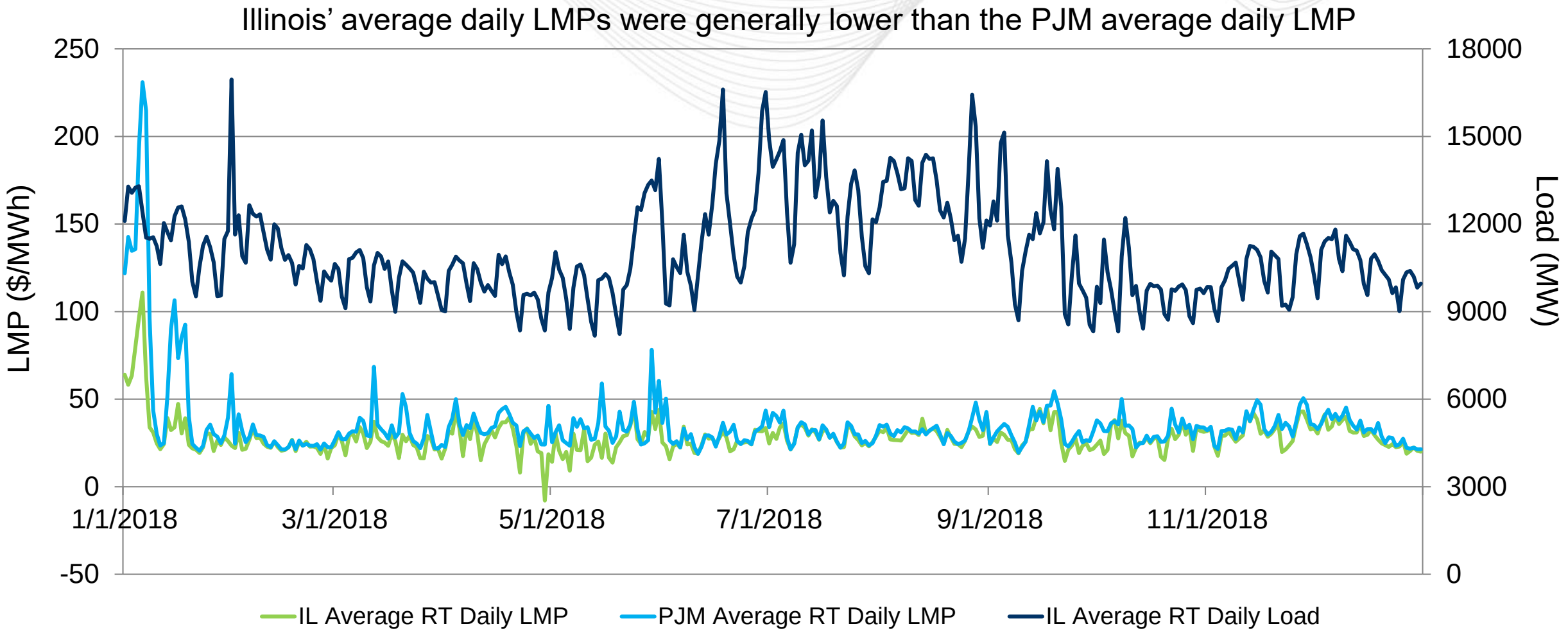
		Unforced Capacity
Generation	Offered MW	25,065
	Cleared MW	19,864
Demand Response	Offered MW	2,078
	Cleared MW	1,998
Energy Efficiency	Offered MW	788
	Cleared MW	771
Total Offered MW		27,930
Total Cleared MW		22,633

Markets

Market Analysis

Illinois – Average Daily LMP and Load

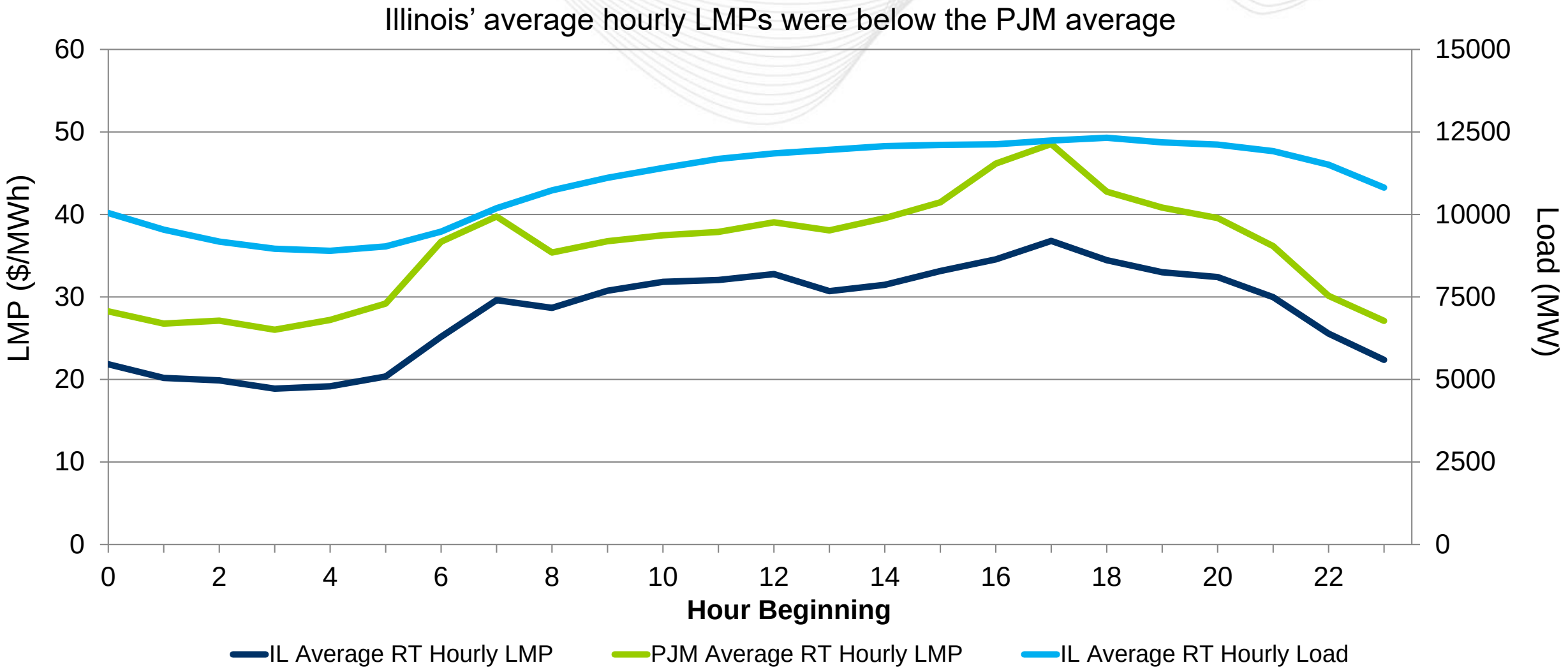
(January 1, 2018 – December 31, 2018)



Note: The price spike in January reflects the Cold Snap that lasted from 12/28/17 to 1/7/2018.

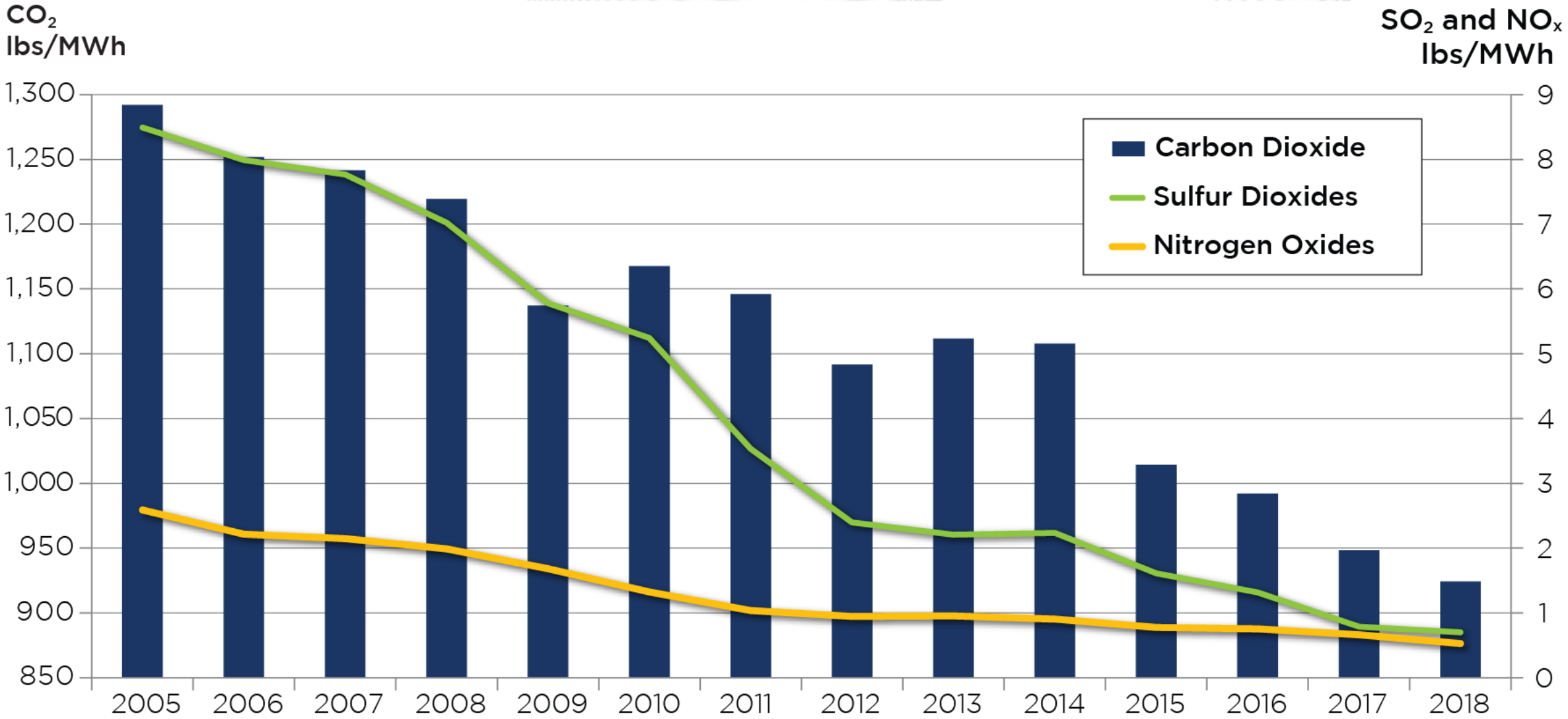
Illinois – Average Hourly LMP and Load

(January 1, 2018 – December 31, 2018)



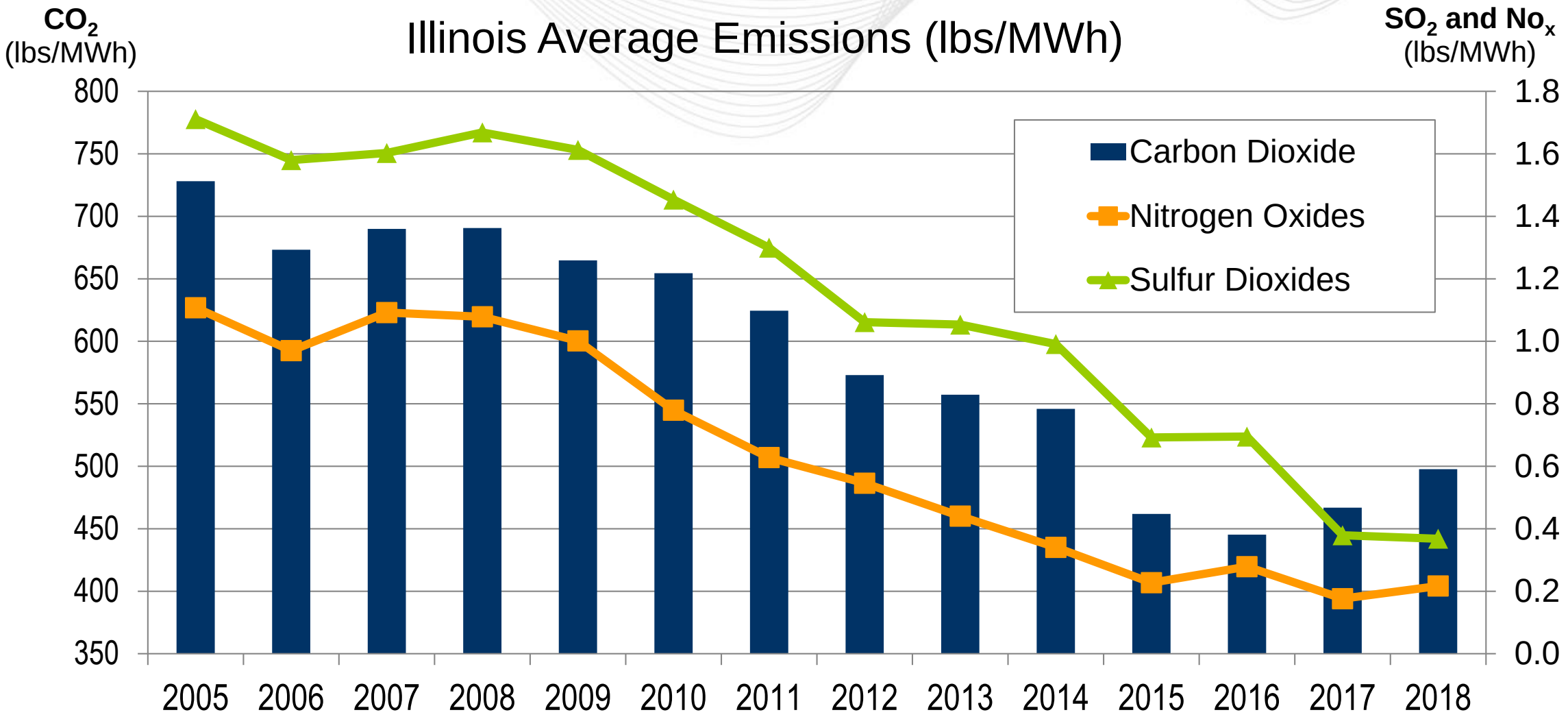
Operations
Emissions Data

2005-2018 PJM Average Emissions



Illinois – Average Emissions (lbs/MWh)

(February 4, 2019)



Appendix

Please note that PJM has 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 still included in this state report.

For a complete list of all RTEP projects, including those below the RTEP threshold of $10 million, please visit the “RTEP Upgrades & Status – Transmission Construction Status” page on pjm.com.

https://www.pjm.com/planning/rtep-upgrades-status/construct-status.aspx