



PJM's Approach to Forecasting DERs & EVs

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Conference

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Distributed Energy Resources

Visibility

Forecast
and
measure

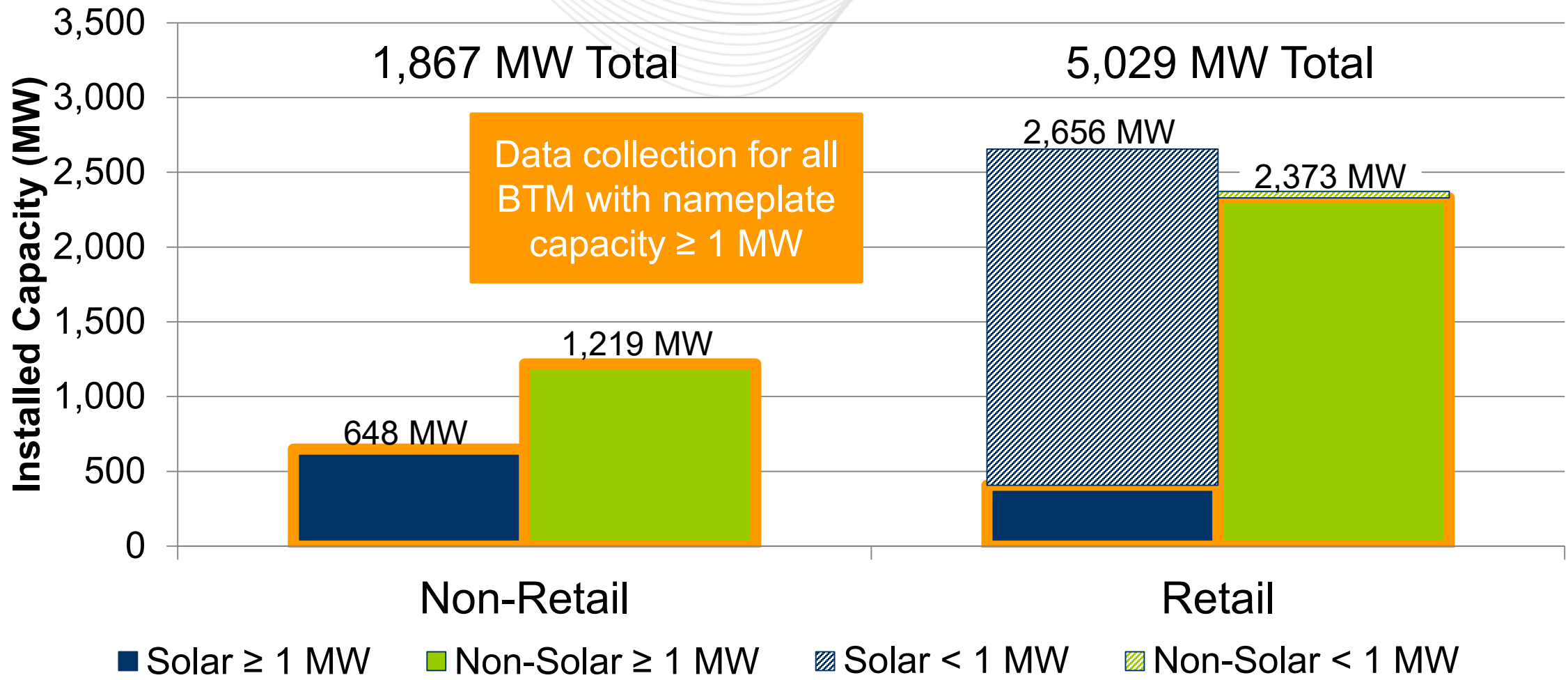
Incent

Visibility



Categories of Behind the Meter Generation

Installed Capacity of BTM Generation in PJM by Category



≥ 1 MW

**Adding to
Dispatch maps**

**Including in
PCLLRW reports**

≥ 10 MW

Modeling in EMS

**Obtaining real-
time telemetry**

Generators

Plant 12 Applegate Solar LLC

[View Generator Data Sheet](#)

[< Back to Plants](#)

Export: [CSV](#)

[Reset](#)

Actions



Edit Generator PV1

Generator Detail

Outreach Transmission Owner Info

Load Station

DER Contact Name

Load Voltage(kV)

DER Contact Phone

Load Equipment Name

DER Contact eMail

Operational Mode

Modeling Data (Required for plants 10 MW or greater. Optional for others.)

Generator MW Object ID

Generator MVAR Object ID

ICCP Link Name

Generator Single Line [+ Choose File](#)

Sub Station Single Line [+ Choose File](#)

Dispatch Interactive Map Application (DIMA)

- Multi-search
- Advanced Substation Panel
- Gas Layer
- Generation Layer
- Transmission Outages

The screenshot displays the DIMA interface with several key components:

- Search Panel:** A search bar with "Belmont" entered and a "Clear All" button. Below it, a list of search results includes "Pruntytown", "Mountaineer", and "Harrison".
- Line Outages Panel:** A panel on the left showing "Line Outages" with a legend for "Outage State" (All, Out of Service, Outage Full Duration, Outage Not Full Duration, Outage No Ticket, Unknown) and a table of "Outages visible on the map".
- Lasso Tool Results Panel:** A central panel showing "Lasso Tool Results" with a table of "Load Management" data.
- Substation Panels:** Three panels on the right showing details for "Salem (New Jersey)", "Limerick (Pennsylvania)", and "Cromby (Pennsylvania)", including generator information and equipment status.

status	name	kV	zone
■	502 Junction - Harrison	500	APS
■	502 Junction - Kammer	500	APS, AEP
■	Arsenal - Brunot Island	345	DL
■	Arsenal - Logan's Ferry	345	DL
■	Avon - Beaver	345	ATSI
■	Avon - Beaver	345	ATSI
■	Bath County - Valley	500	Dominion
■	Bay Shore - Davis-Besse	345	ATSI
■	Bay Shore - Monroe (DETED)	345	ATSI
■	Beaver Valley - Hanna	345	DL, ATSI

status	name	kV	zone
■	138th Street - Bethany	138	DPL
■	Alburtis - Wescosville	500	PPL
■	Alburtis - Branchburg	500	PPL, JCPL

County	Zip Code	MW
Buckhannon	26201	3.0
Elkins	26241	1.8
Philippi	26416	1.2
Parsons	26287	0.2

Name	Type	Current MW	ICAP MW	EcoMax	Gas	Status
LIMERICK 1	Nuclear	1,000	1,800	1,700	No	●
LIMERICK 2	Nuclear	1,100	1,500	1,300	No	●
LIME 1	CT	80	100	85	Yes	●

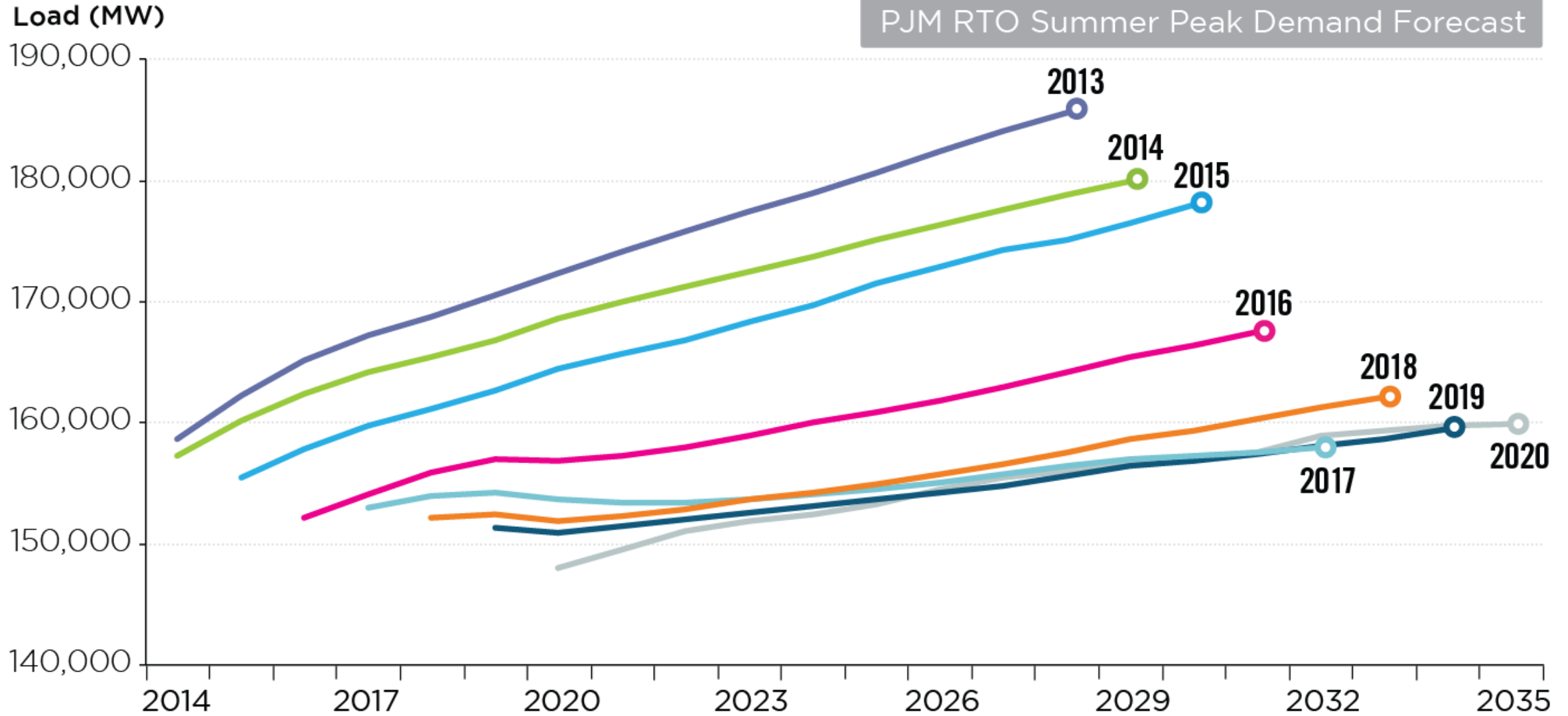
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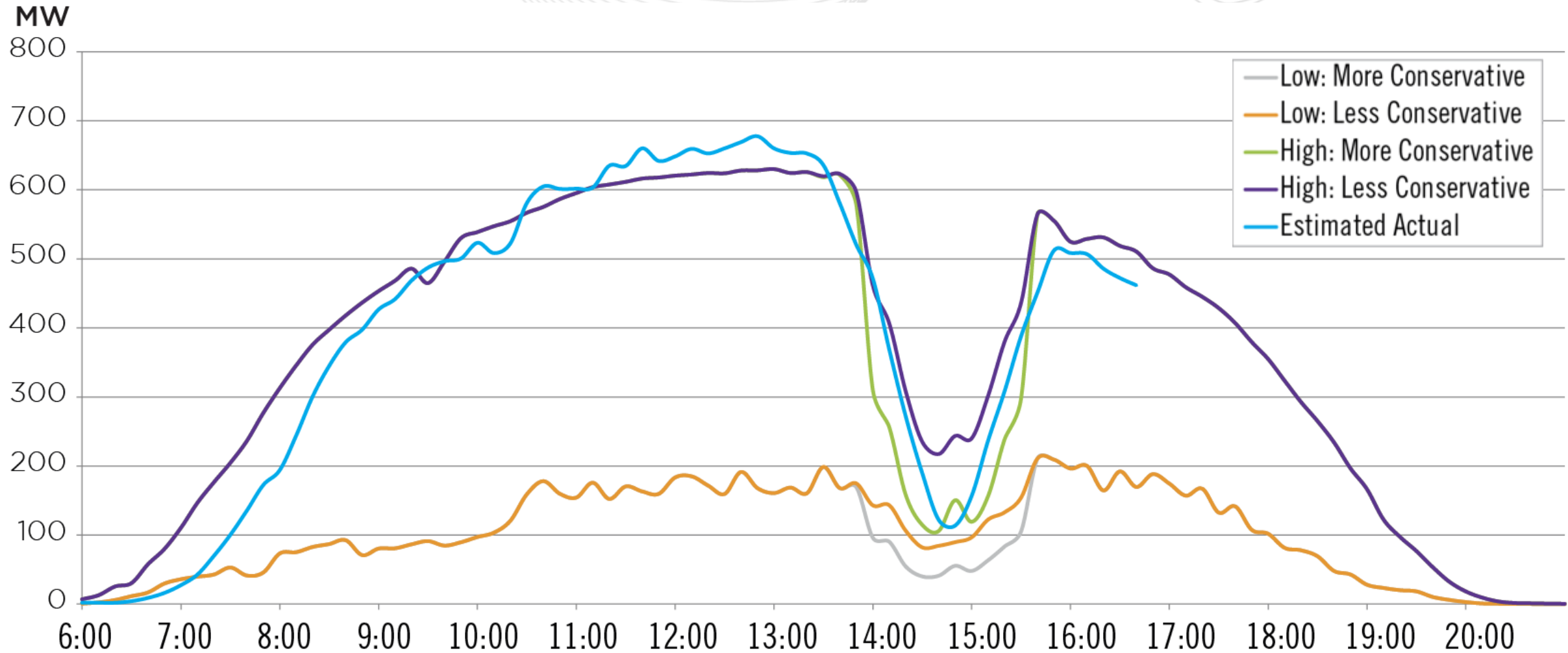
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Forecast and Measure

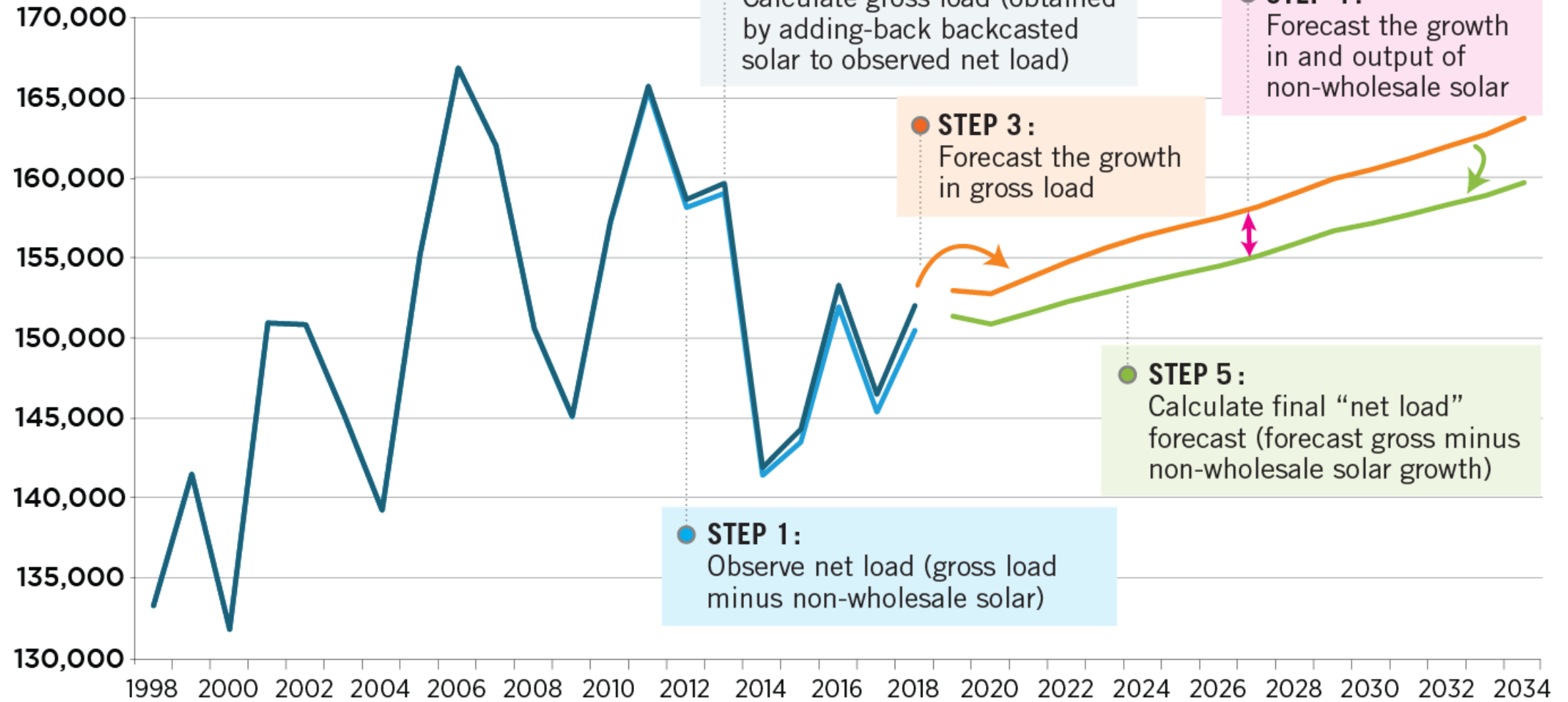
Declining Electricity Demand Growth

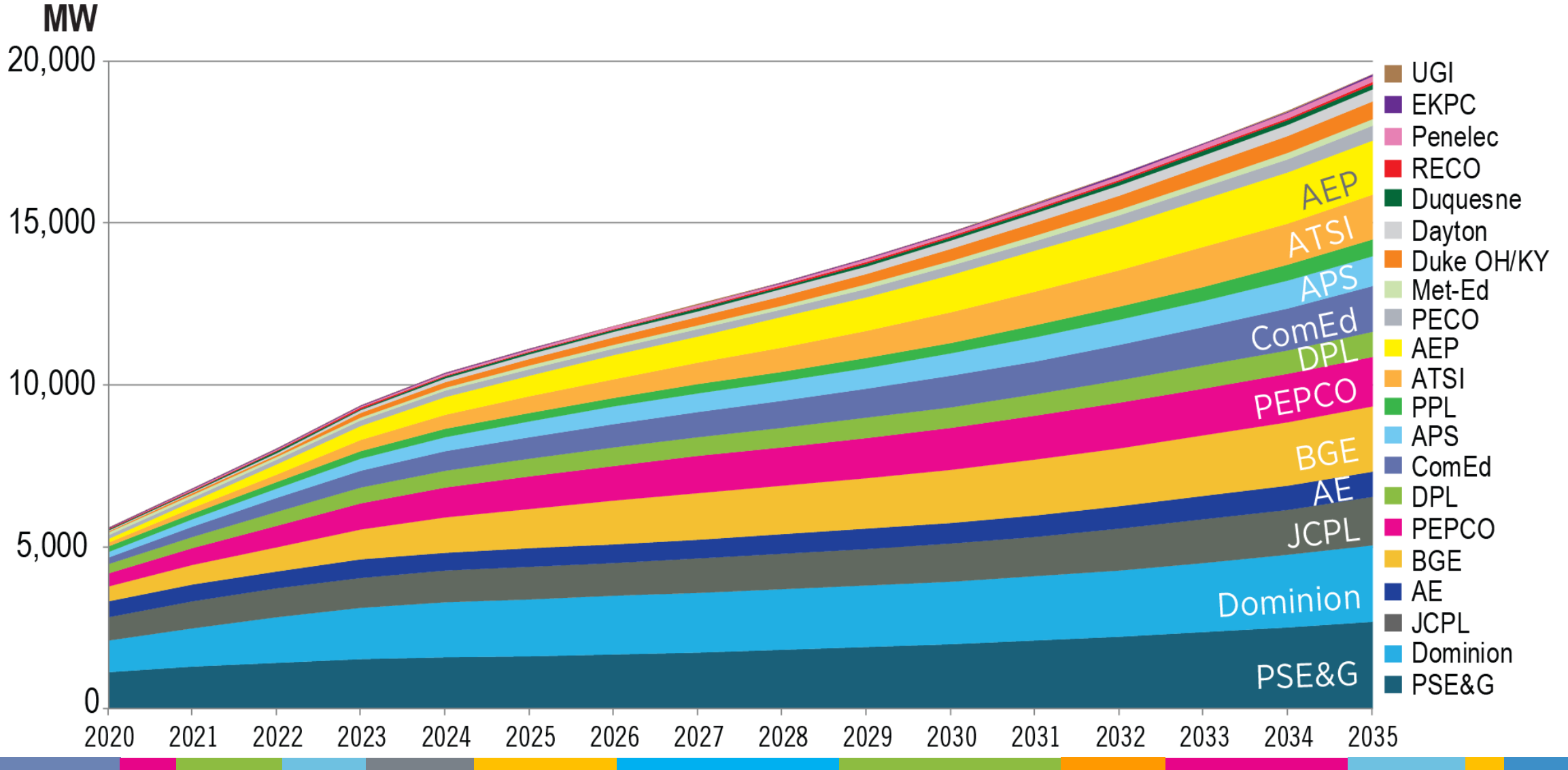
PJM RTO Summer Peak Demand Forecast





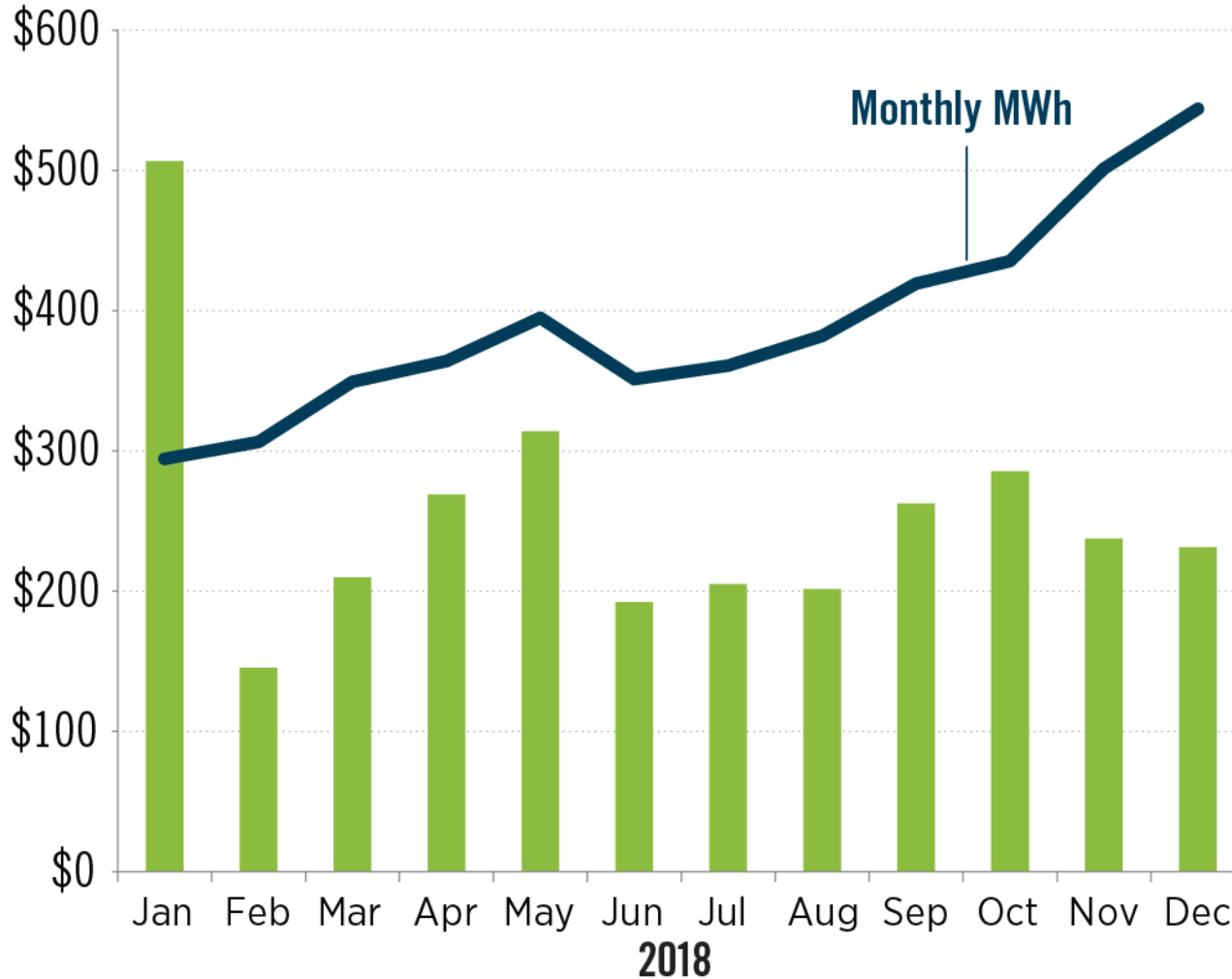
Capacity (MW)



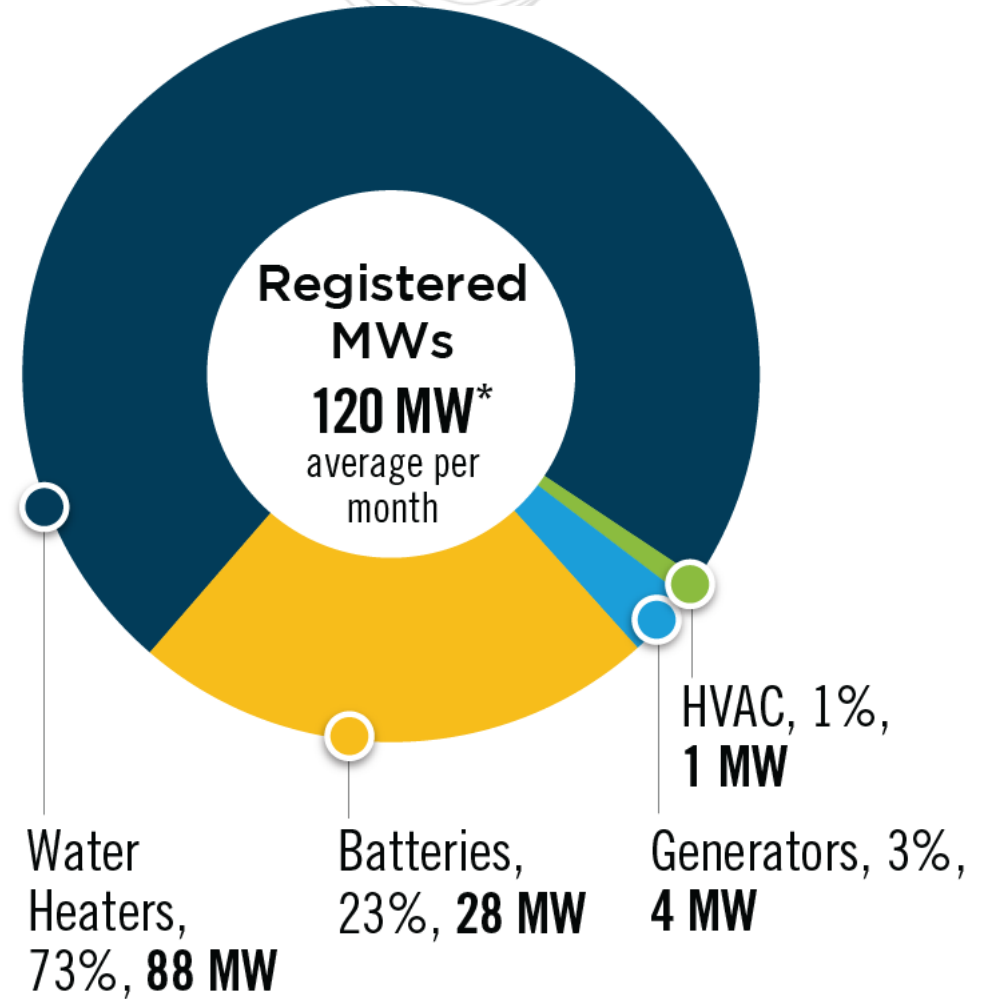
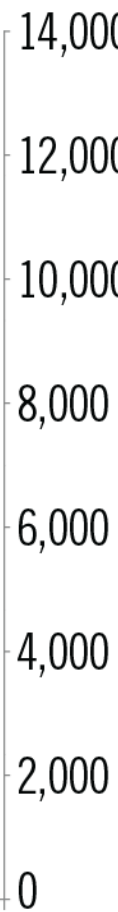


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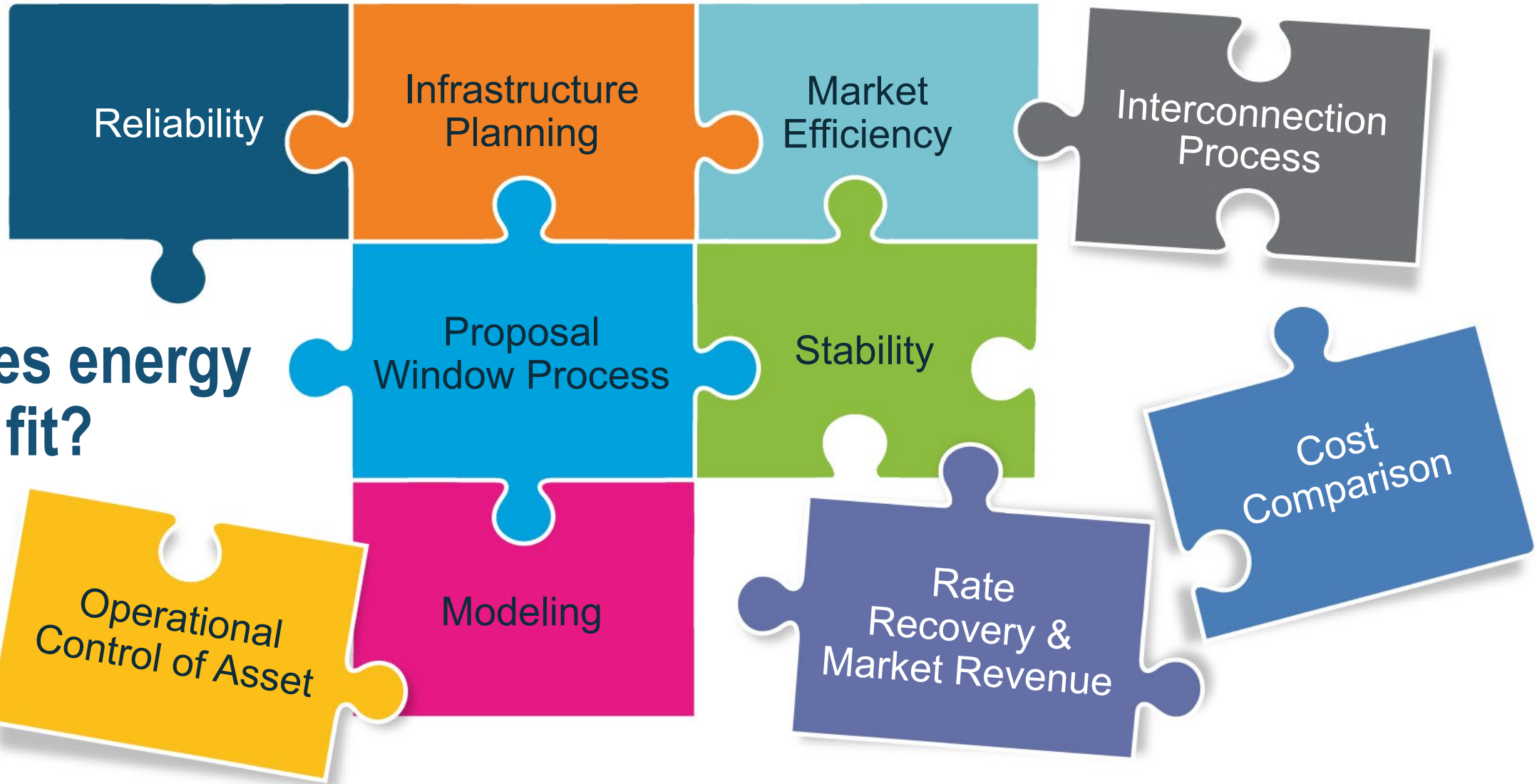
Monthly Revenue (Thousands)



MWh



*Average monthly megawatts for 2018 – registered resource types



How does energy storage fit?

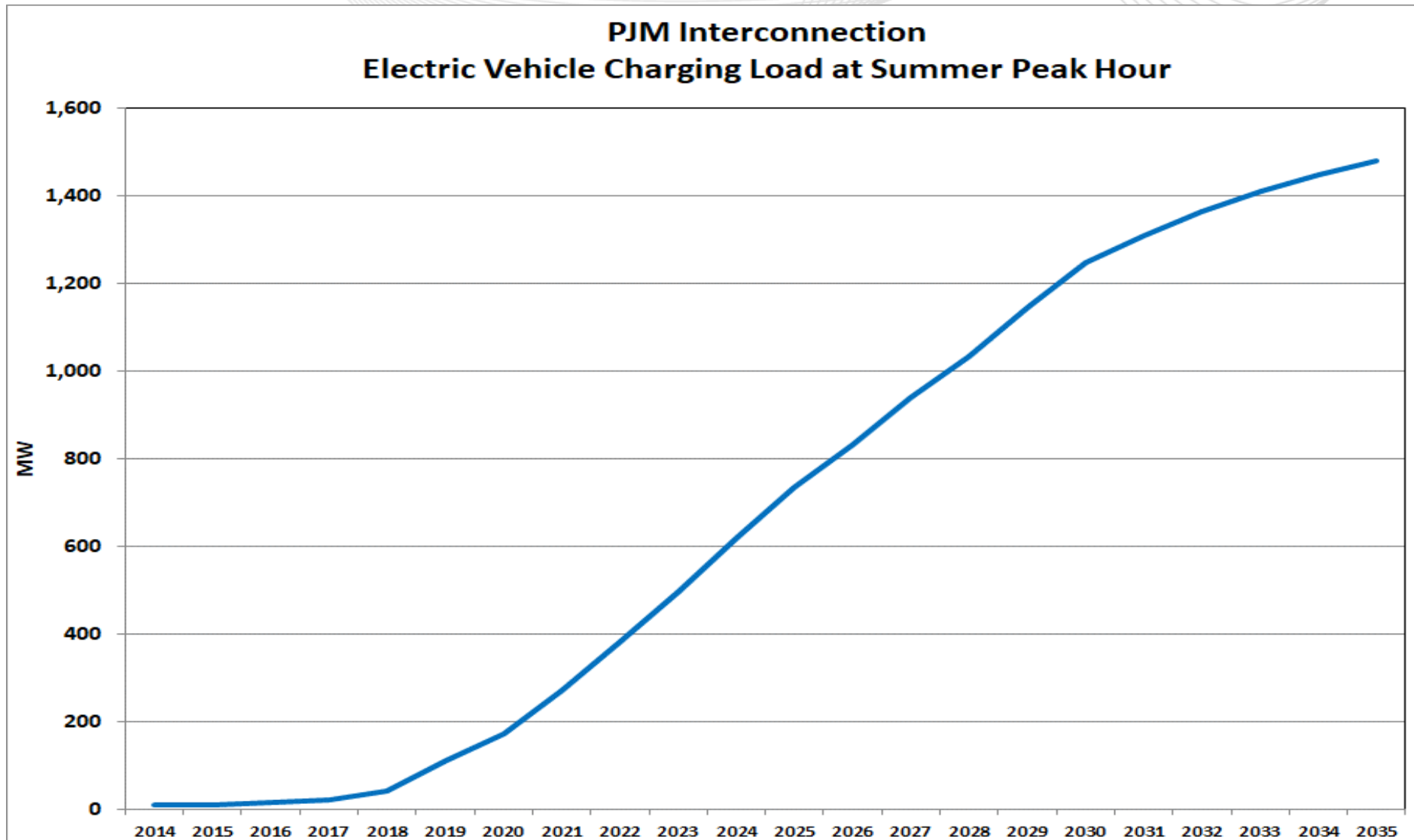
Electric Vehicles

Derive an estimate of PEV load at peak from:

- Registered PEVs by state - [Office of Energy Efficiency & Renewable Energy](#)
- Forecasted PEV sales by census region - [EIA Annual Energy Outlook](#)
- PJM share of state population – [Census Bureau](#)
- Vehicle retirement rate - [Jacobsen, Mark R., and Arthur A. van Benthem. 2015. "Vehicle Scrappage and Gasoline Policy." *American Economic Review*, 105 \(3\): 1312-38.](#)
- Prevalence of Level 1 (1 kW) vs Level 2 (7 kW) charging
- Prevalence of PEV charging at peak

Estimated
from
literature
review

Derive an estimate of PEV annual energy at 4,500 kWh per vehicle





Forecasts by Year – Peak Hour

