2025 Summer Preliminary Capacity Overview

Dispatcher Training Subcommittee

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May 20, 2025

Background/Purpose

BACKGROUND:

As part of PJM's summer preparations, an analysis is performed of the anticipated operational capacity position for the PJM RTO.

- The analysis helps provide an advanced identification of any potential Emergency Procedures that may be required under both typical and stressed scenarios to meet expected demand levels.
- This analysis is separate, but complementary to the OATF power flow analysis that is also performed.

Unit Type Breakdown

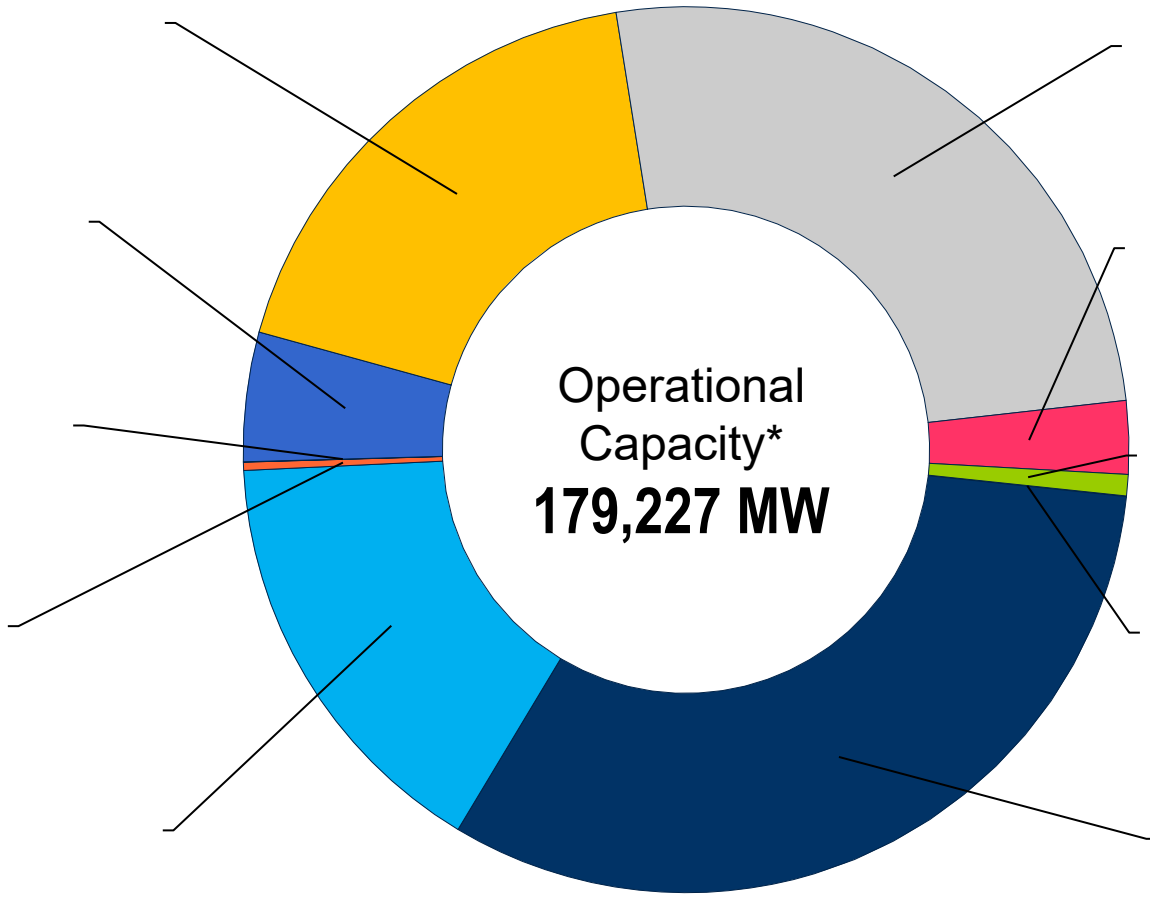
Nuclear
32,600MW,

Hydro
8,449MW,

Fuel Cell
25MW,

Diesel
542MW,

CT
28,040MW,



Steam
46,149MW,

Solar
4,786MW,

Wind
1,391MW,

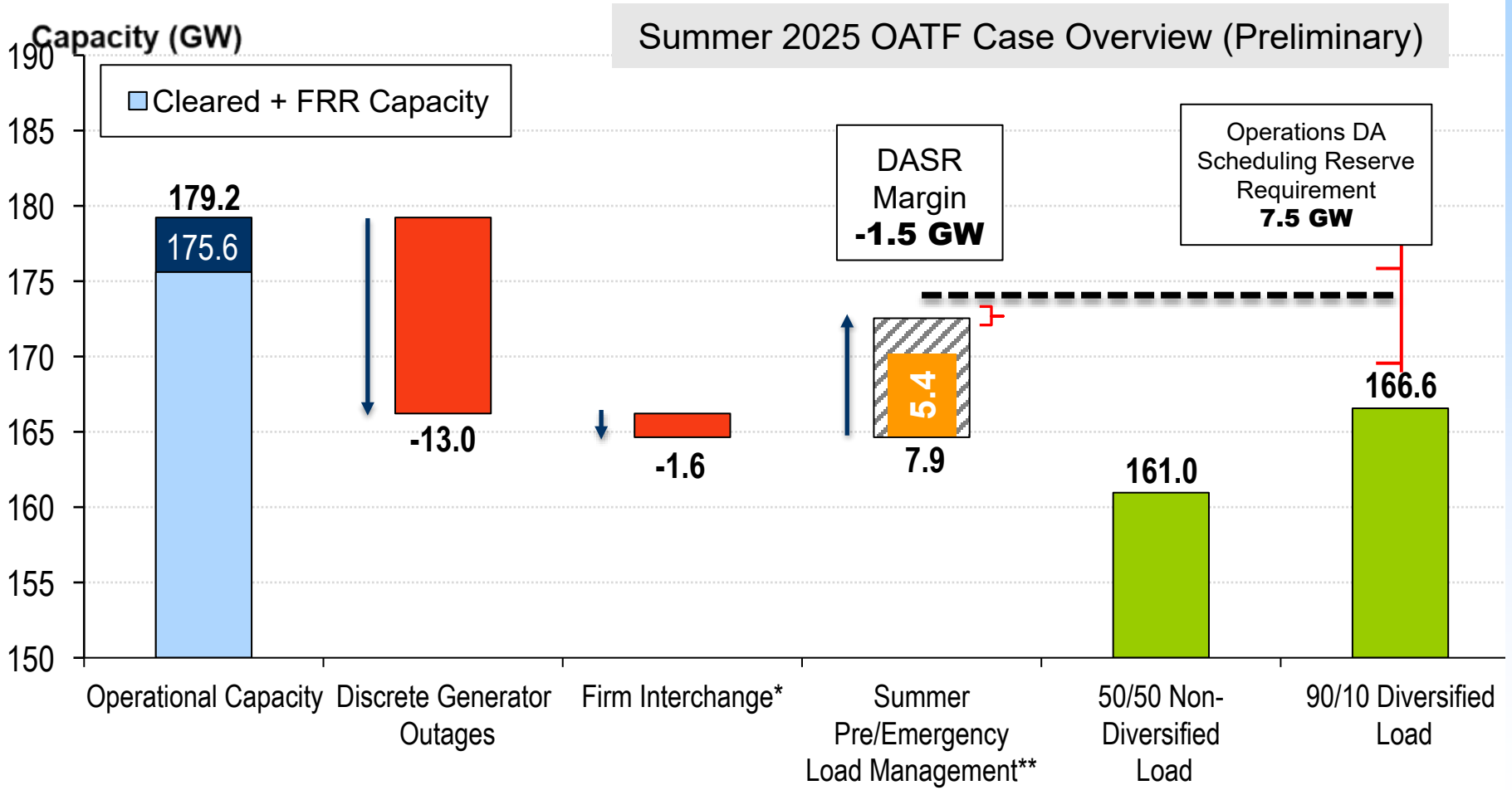
Battery
44MW,

CC
57,201MW,

operational capacity = ICAP for all units, plus summer ELCC adjusted values for wind and solar

As of Feb. 6, 2025

Waterfall Chart
(Summer 2025 – Preliminary)

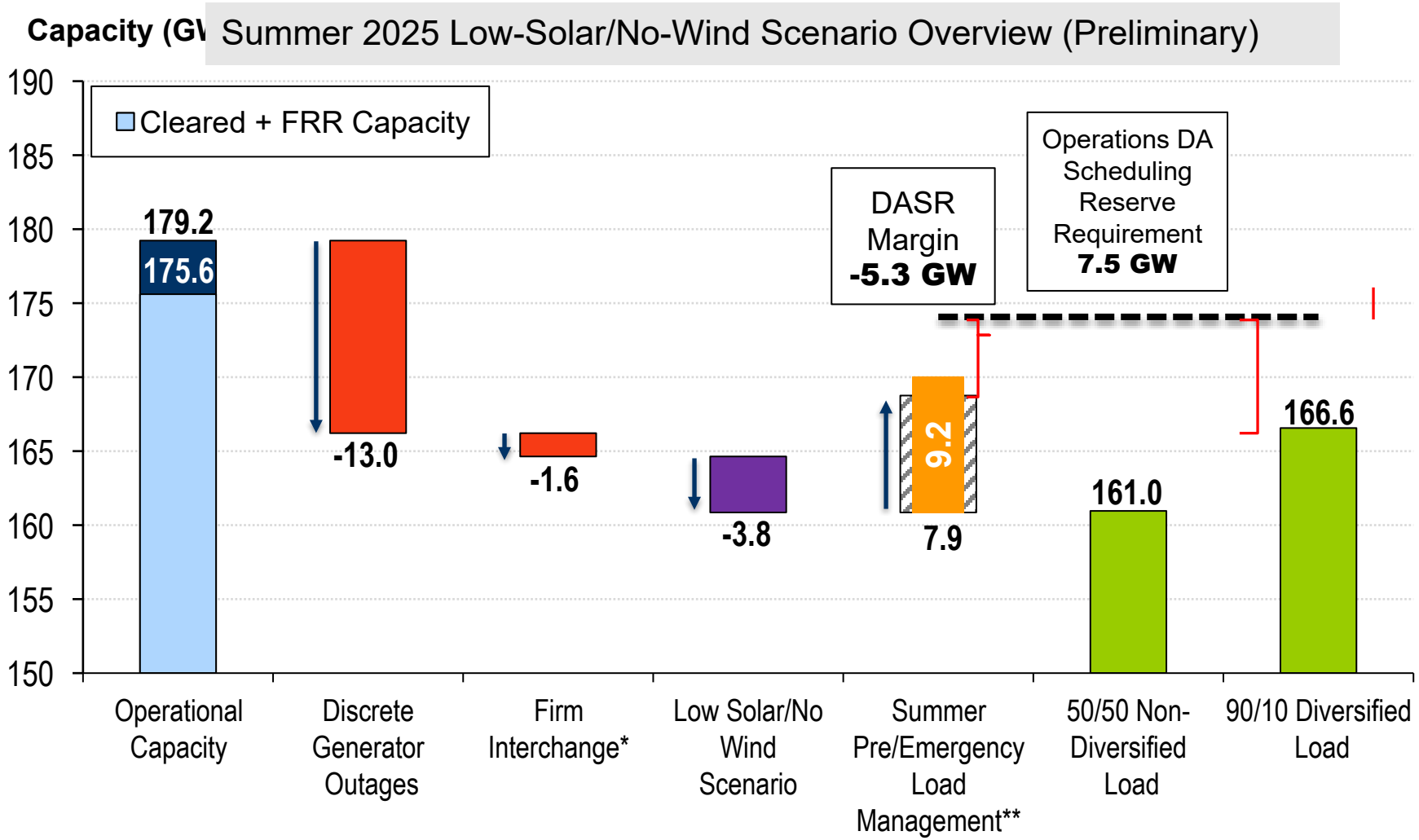


Anticipated PJM actions to reliably serve the 90/10 Forecast:

1. Issue Max Gen/Load Management Alert (DA)
2. Schedule all Available Generation (DA)
3. Curtail all Recallable Exports (RT)
4. Implement Demand Response (~5.4 GW) to Maintain Primary Reserve Requirement of 3.5 GW (RT)

1,600 MW out of the total **net interchange (4,200 MW) are capacity backed exports.*
*** 97% of Load Management is Pre-Emergency.*

Low-Solar and No-Wind Scenario
(Summer 2025 – Preliminary)



Anticipated PJM actions to reliably serve the 90/10 Forecast:

1. Issue Max Gen/Load Management Alert (DA)
2. Schedule all Available Generation (DA)
3. Curtail all Recallable Exports (RT)
4. Implement **all** Demand Response (**7.9 GW**) to meet the load + Primary Reserve Requirement of 3.5 GW (RT)
5. Call Maximum Emergency Energy into capacity and purchase Emergency Energy (If available) to address the **1.3 GW shortfall**
6. Initiate escalating Emergency Procedures if needed (RT)

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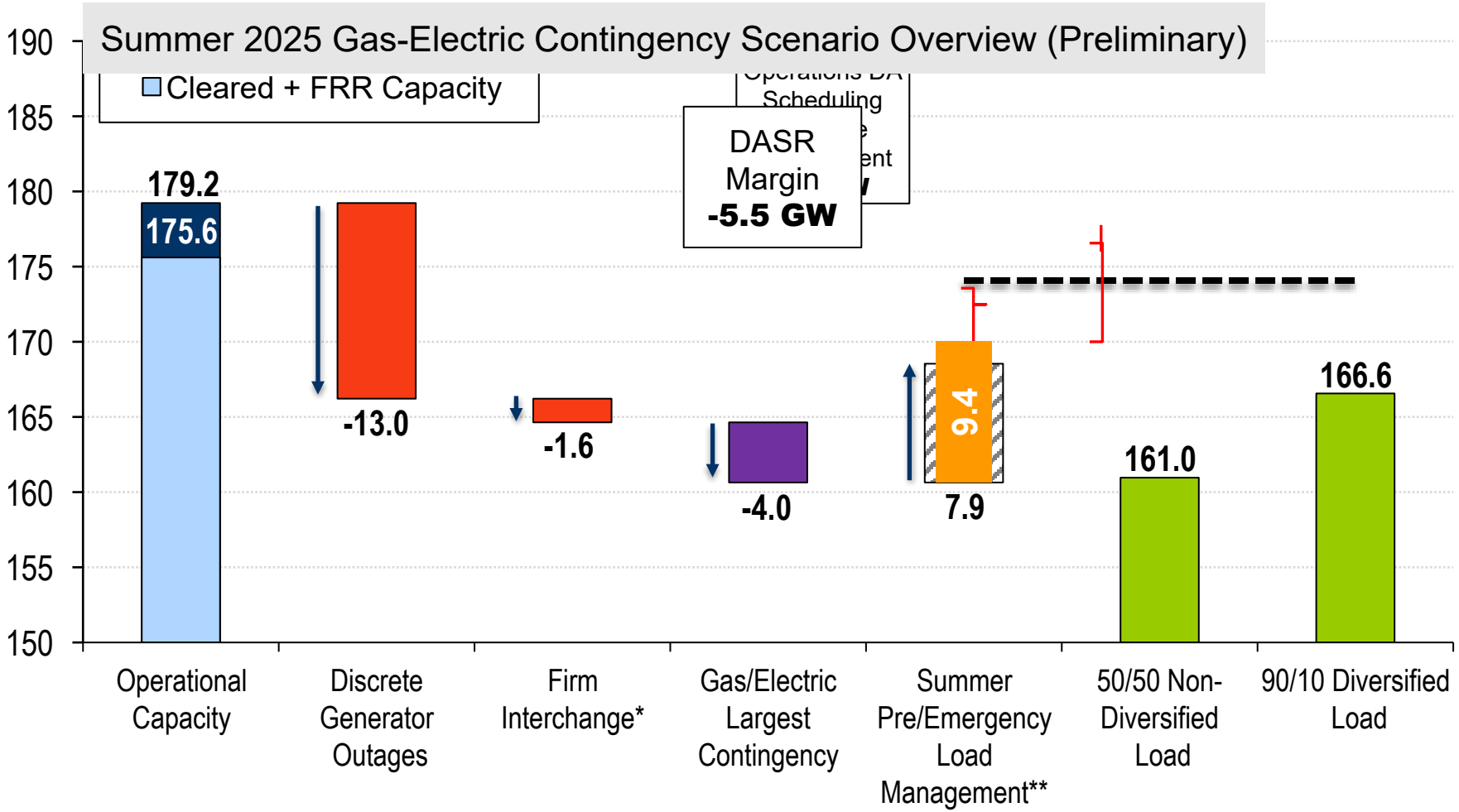
Gas-Electric Contingency Scenario
(Summer 2025 – Preliminary)



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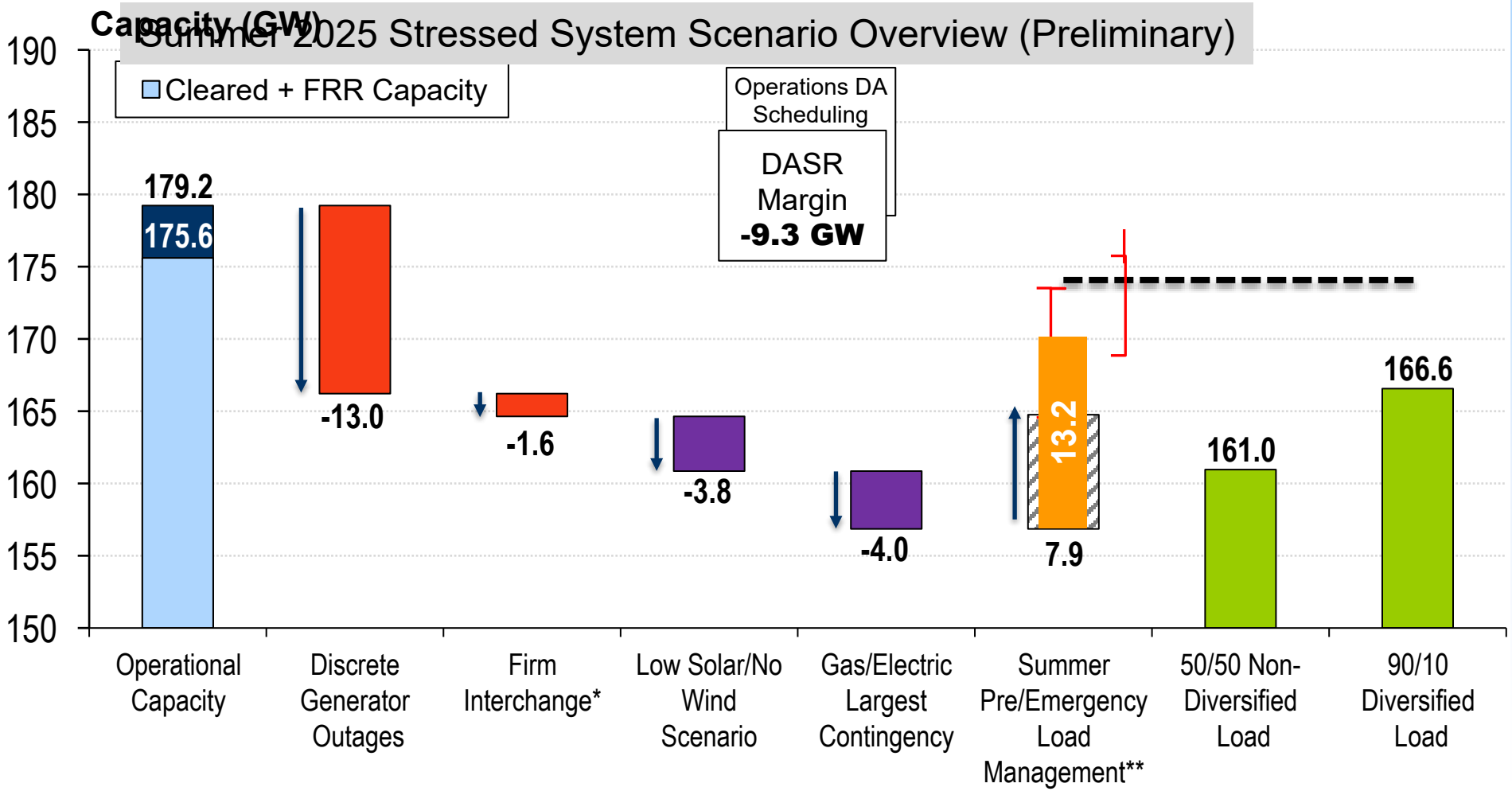
Stressed System Scenario
(Summer 2025 – Preliminary)



Anticipated PJM actions to reliably serve the 90/10 Forecast:

1. Issue Max Gen/Load Management Alert (DA)
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3. Curtail all Recallable Exports (RT)
4. Implement **all** Demand Response (**7.9 GW**) to meet the load + Primary Reserve Requirement of 3.5 GW (RT)
5. Call Maximum Emergency Energy into capacity and purchase Emergency Energy (If available) to address the **5.3 GW shortfall**
6. Initiate escalating Emergency Procedures if needed (RT)

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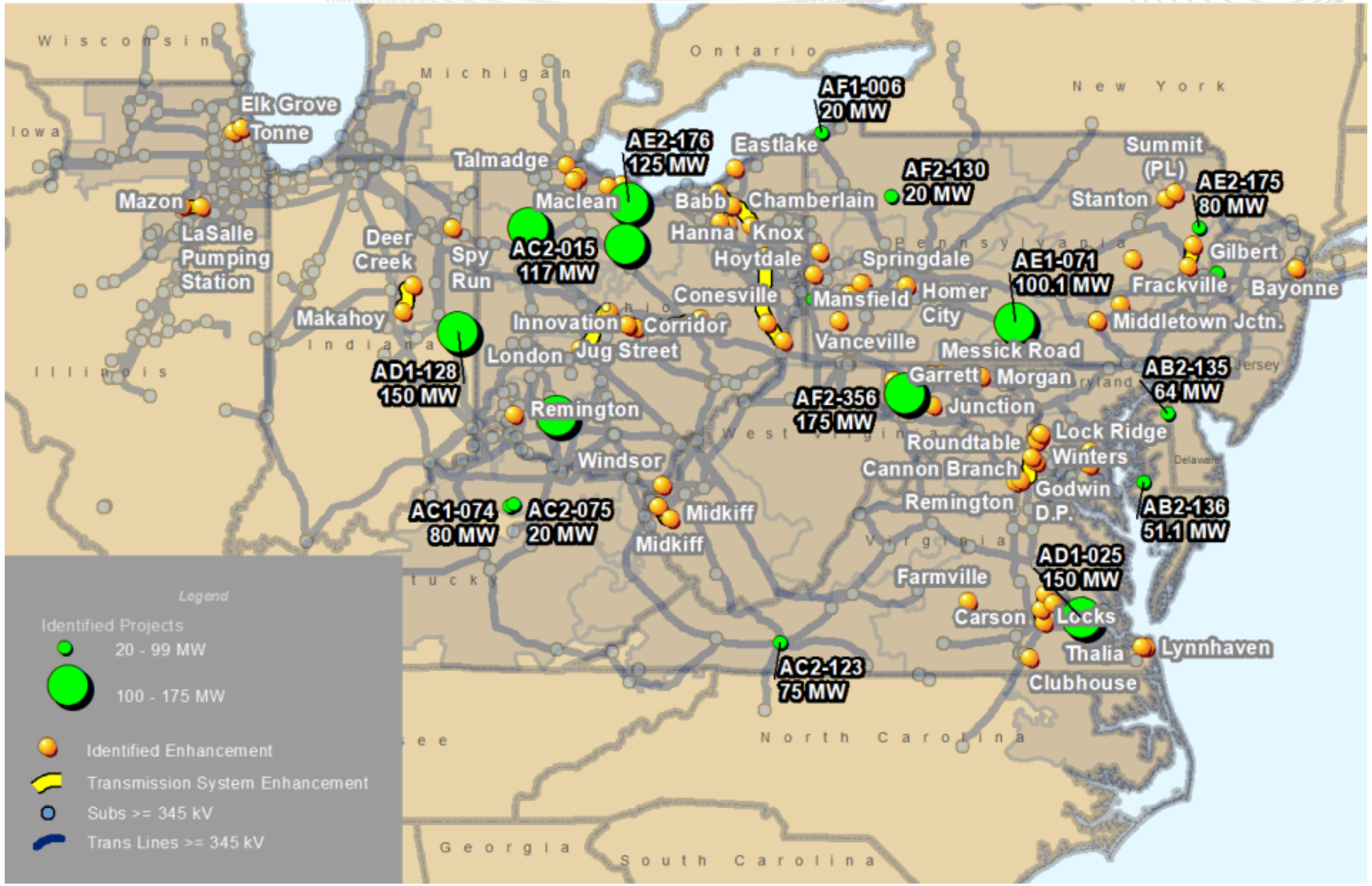
Key Takeaways

- Load forecasts have increased year over year due to data center and economic growth, as well as increased electrification in the PJM footprint.
- Available generation capacity has decreased due to retirements and delays in new additions to the fleet.
- Based on the load increase and generation decrease, PJM is projecting potential reserve margin shortages during peak operating periods. As a result, there is an increased risk that Emergency Procedures may be required to meet load and reserve requirements.
- PJM will be heavily reliant on good generation performance from both fossil and inverter-based generation to avoid/minimize the need for Emergency Procedures.

Operations Assessment Task Force
2025 Summer Study

Upcoming Generation and Transmission Projects



50/50 Non-diversified Peak Load Base Case	
LAS Load Forecast	160,961 MW
RTO Case Interchange	4,200 MW** (Exporting)
PJM RTO Installed Capacity	179,227 MW (Preliminary)
Discrete Generator Outages	13,012 MW

**OATF Case Interchange (-3,000 MW) = Forecasted Net Interchange(-4,200 MW) + Pseudo-Tie Adjustment (1,200 MW)

Peak Load Analysis

- Several thermal overloads identified above emergency
- No thermal exceedances above load dump in the N-1 analysis

50/50 Preliminary Peak Load Study Results

- Re-dispatch and switching required to control local thermal or voltage exceedances in some areas.
- Most networked thermal overloads and voltage exceedances observed were relieved through shunt and tap adjustments, switching, PAR adjustments, applicable operating procedures, and generation re-dispatch
- Identified 12 post-contingency overloads between 100-113% of emergency ratings. None of which are above their respective load dump limits
- The exceedances reported are only controllable by post contingency local load relief or post contingency switching

2025 Summer OATF Study

Sensitivity Studies	Results
External Contingencies Impactful to PJM Reliability	No Reliability Concerns
N-1-1 Relay Trip Conditions	No Reliability Concerns
Max-Cred Contingency Analysis	No Reliability Concerns
90/10 Load Forecast Study (166,562 MW Diversified Peak Load Forecast)	No Reliability Concerns
Solar and Wind Generation Sensitivity Study	No Reliability Concerns
Transfer Interface Analysis	No Reliability Concerns
BGE/PEPCO Import Capability	No Reliability Concerns

Preliminary Reactive Interface Transfer Analysis

Interface	Projected Limit (MW)	Back-off (MW)
Eastern	8780	300
Central	1185	200
Western	4612	200
BED – BLA	1631	50
AP South	4156	100
AEP – DOM	4972	100
Cleveland	4063	200
CE-EAST	4099	200
5004/5005	2411	50

Contact

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Operations Assessment Task Force
2025 Summer Study

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