FRCC
Florida Reliability Coordinating Council, Inc.

2025 Ten-Year Site Plans
FRCC Overview Presentation

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Agenda

2025 Ten Year Site Plan Workshop

- FRCC Overview
- Executive Summary
- Integrated Resource Planning Process
- Load Forecast, Capacity Additions, Reserve Margins
- Generation Mix
- Natural Gas Infrastructure in Florida
- Transmission Adequacy / Reliability
- Outage Coordination
- Small Modular Reactors
- Large Loads
- Industry Lessons Learned for Evolving Grids

Florida Reliability Coordinating Council

Mission

To coordinate a safe, reliable, and secure bulk power system in Florida.

How We Achieve Our Mission

- Regional Planning Authority

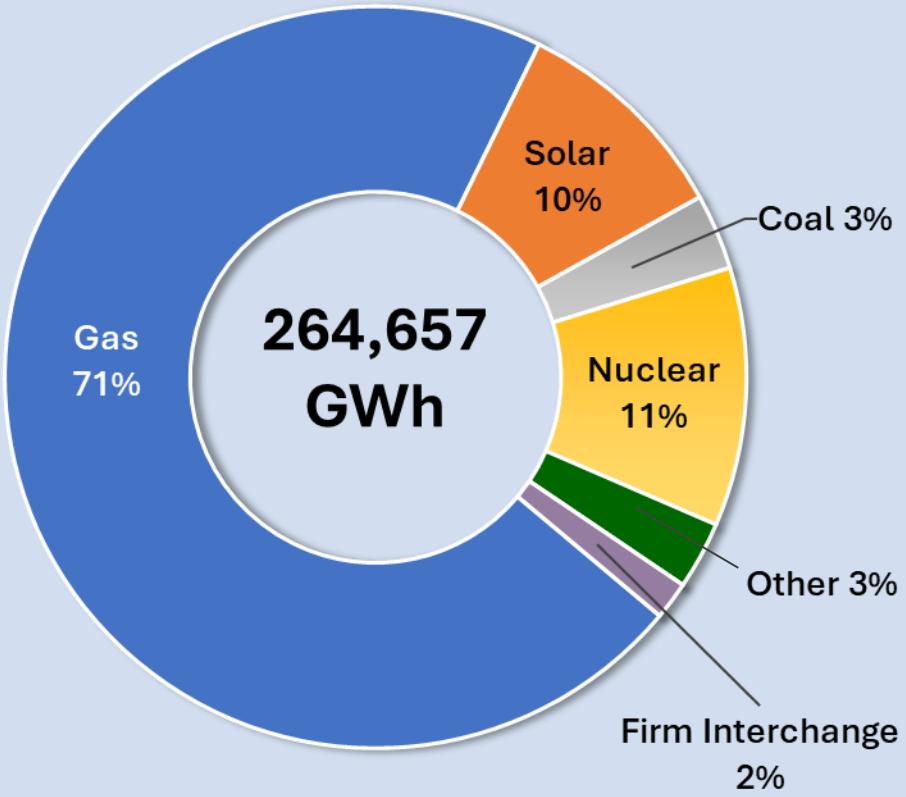
- Reliability Coordination

- Reliability and Compliance Assurance

- Member Support, Coordination, and Training

2025 FRCC Overview

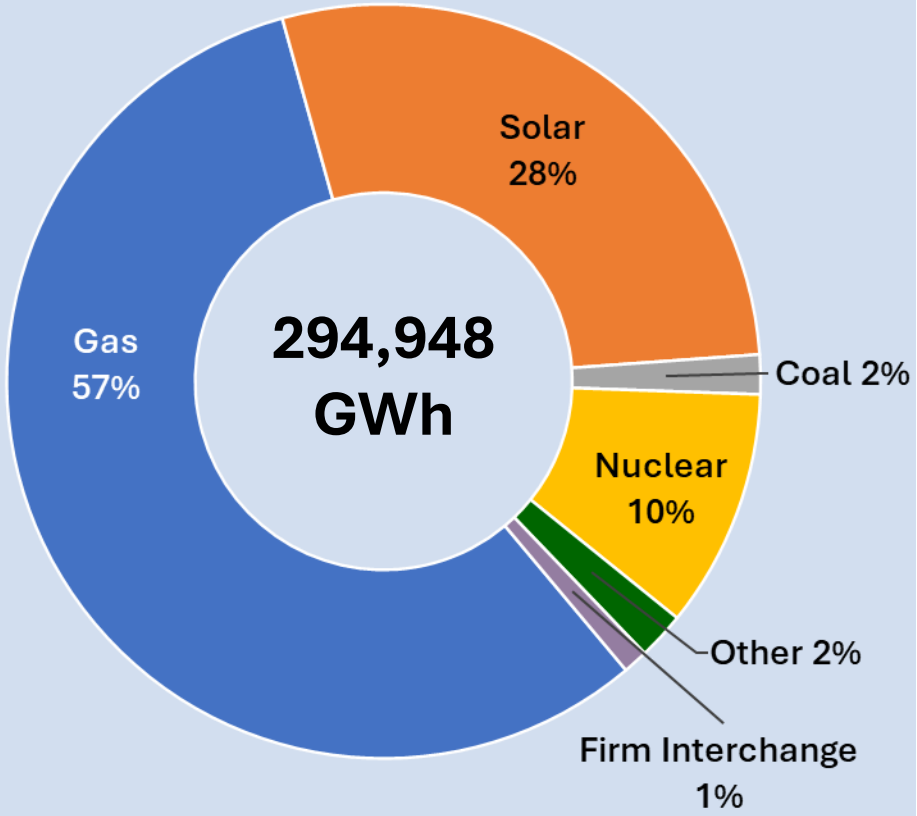
2025 Net Energy Production



- 19,425 miles of transmission lines that serve over 23 million Floridians
- 19 Members, 6 Sectors Available for Membership
- Estimated 2025 Capacity Resources: 63 GW
- All-time Summer Peak: 54.2 GW (2023)
- All-time Winter Peak: 52.4 GW (2010)

Future Grid Requires Navigation to Coordinate a Safe, Reliable, and Secure Bulk Power System in Florida

2034 Net Energy Production



- ~+11% expected load growth by 2034
- +23.8 GW Solar nameplate capacity, ~28% of energy!
- +9 GW Battery nameplate capacity
- Projected Peak: from 53.9 GW (2025) to 59.7 GW
- Capacity Resources: from 63 GW (2025) to 68.6 GW
- 2.8 GW of retirements by 2034

Executive Summary

Solar & Battery Expansion - Florida utilities are rapidly increasing planned solar and battery installations, presenting several new reliability considerations.

Load Forecast Trends - Distributed solar and EV adoption continue to rise, though growth is slower than previously projected. Data center load emerging as long-term growth driver.

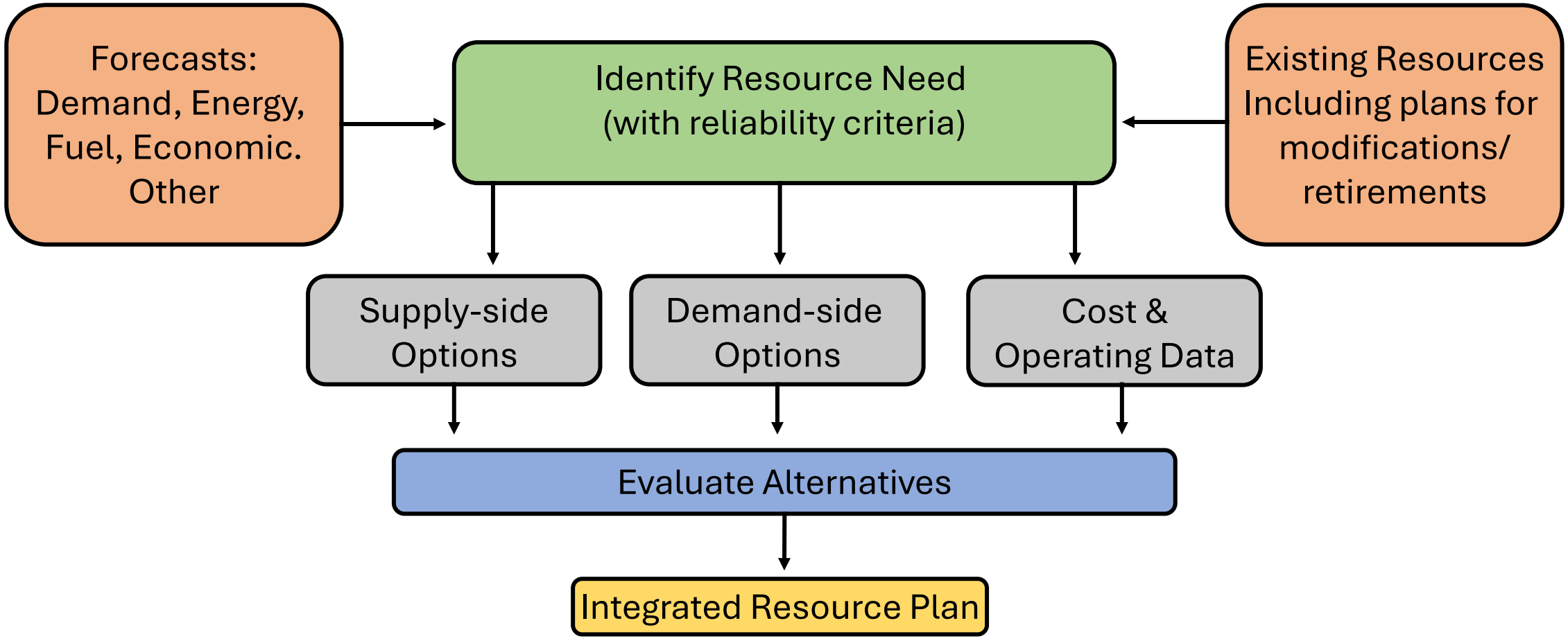
Strong Reserve Margins - Planned Reserve Margins remain healthy – consistently above 20%

Reliable Operations – Statewide outage coordination supports short-term system reliability.

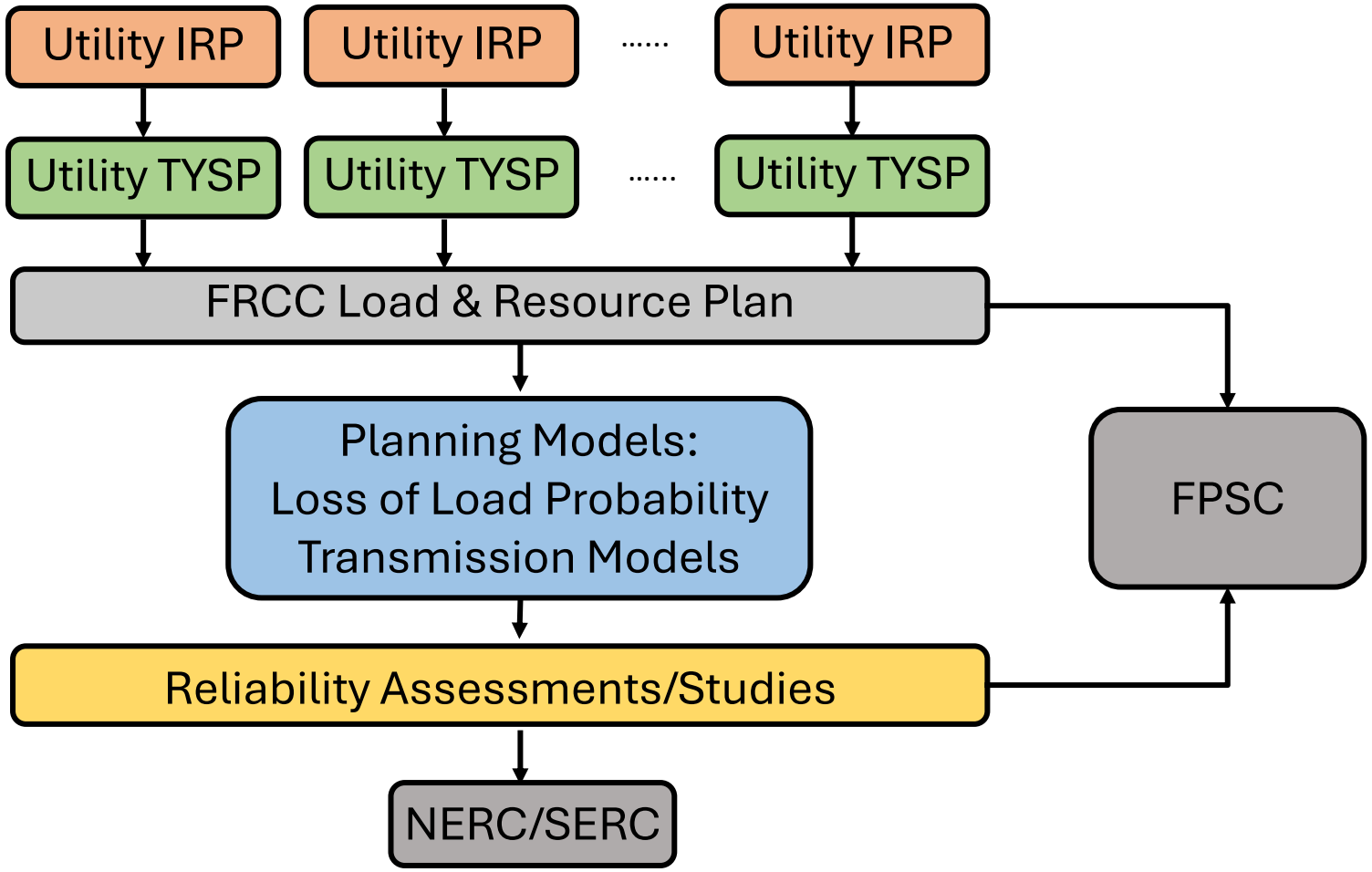
Natural Gas Coordination - Utilities continue joint planning efforts to ensure strong natural gas infrastructure.

Transmission System Readiness - Existing and planned facilities meet performance criteria for expected future conditions within the FRCC Region.

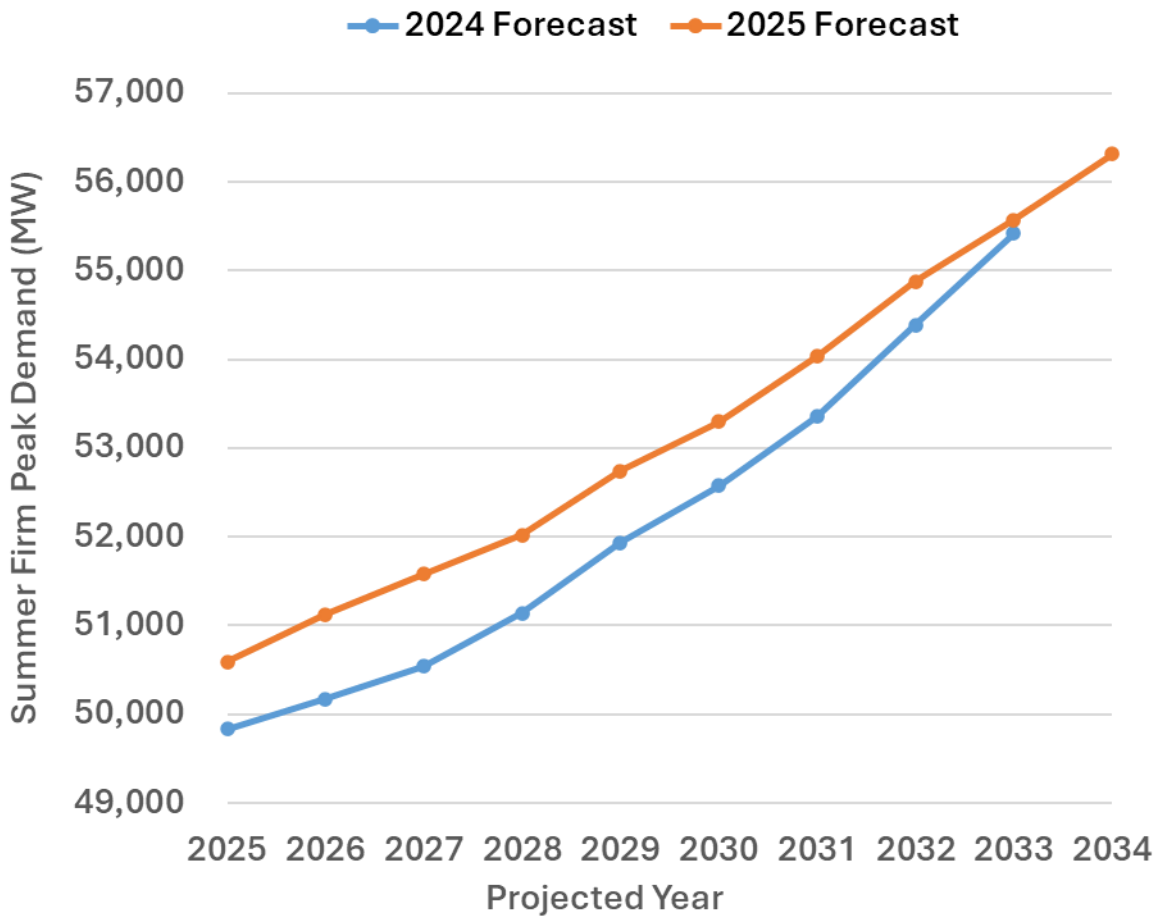
Utility Integrated Resource Planning (IRP) Process Overview



FRCC Planning Process Overview



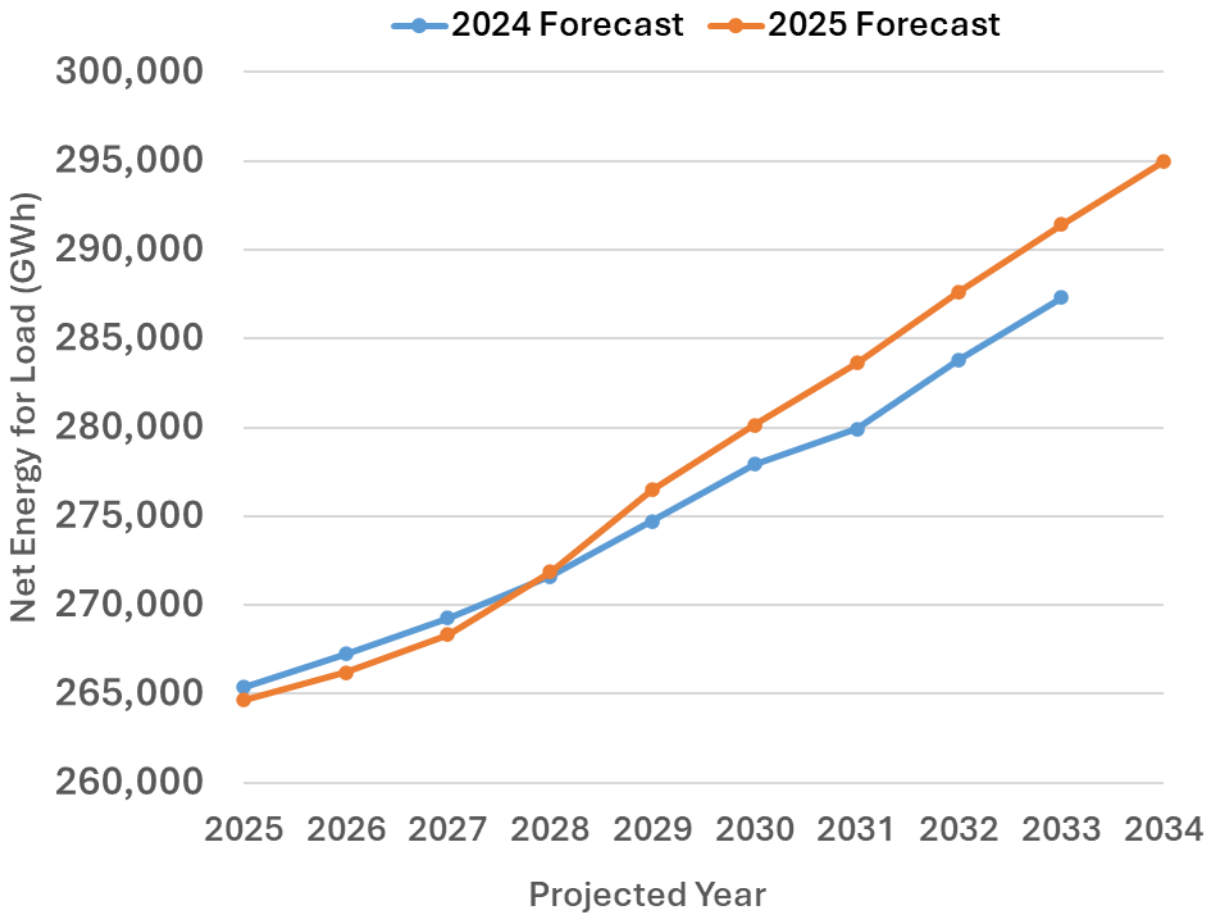
Firm Peak Summer Demand Forecast Higher[1]



- Projected growth of approximately 5,724 MW (2025-2034)
- Average annual growth of Firm summer peak demand (MW) 1.2% (Recent actuals higher than forecasted)
- DER expected to reduce peak summer demand by nearly 4.4 GW in 2034
- EV growth is strong but moderating, growing to at least 3.2 GW by 2034
- Data center load is ~700 MW in current load forecast, anticipated to become a large driver of future growth

[1] Demand-Side Management (DSM) is made up of Demand Response (DR) and Utility-sponsored Energy Efficiency/Energy Conservation (EE/EC).

Net Energy for Load (NEL) Forecast[1] Increasing

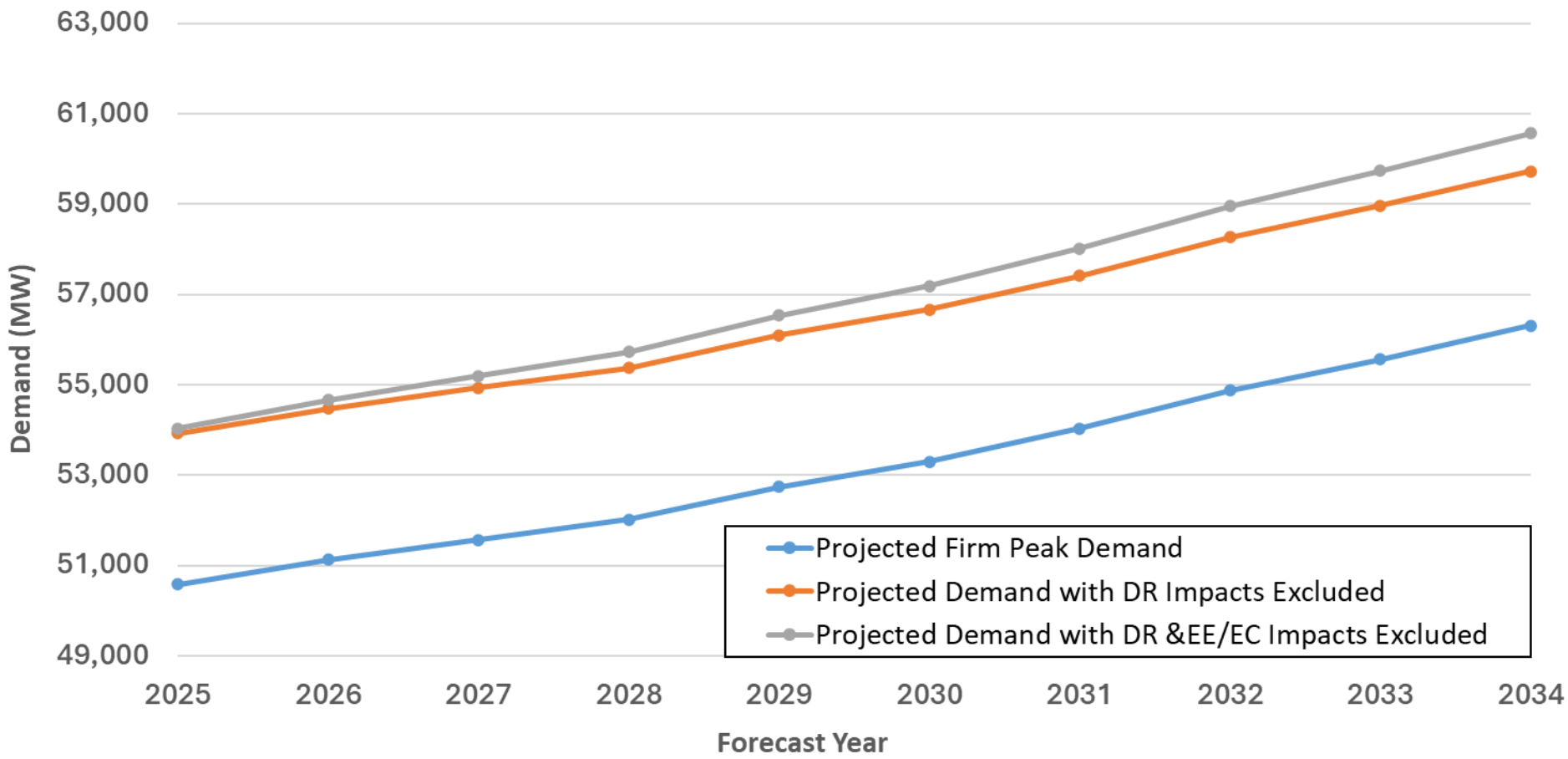


- Forecasted energy sales (GWh) growing at 1.2%, slightly higher than forecasted in 2024
- Projected growth of approximately 30,291 GWh from 2025-2034
- Population growth is projected to remain strong
- EE codes and standards and distributed solar dampen energy use growth

[1] Net Energy for Load (NEL) includes impacts of utility-sponsored Energy Efficiency/Energy Conservation, Energy Efficiency Codes and Standards, and the impact of customer-owned DER.

Forecasted Summer Peak Demands [1,2]

Lessened by Energy Efficiency and Demand Response Programs



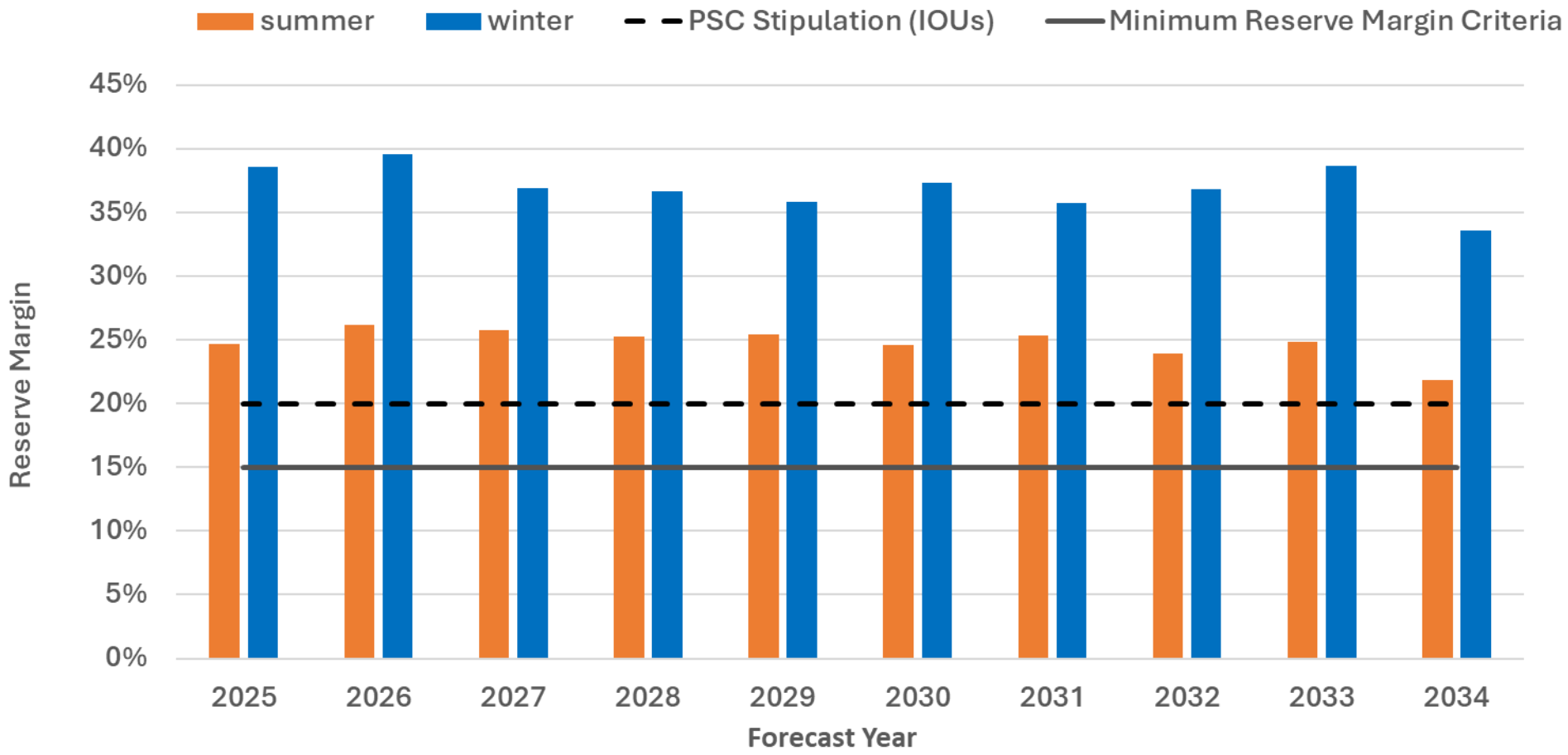
Energy Efficiency reduces firm summer peak by 846 MW (1.4%) in 2034

Demand Response reduces firm summer peak by 3,412 MW (5.7%) in 2034

[1] Demand-Side Management (DSM) is made up of Demand Response (DR) and Utility-sponsored Energy Efficiency/Energy Conservation (EE/EC).
[2] Projected impacts of Energy Efficiency codes and standards included in all utilities' forecasts.

Planned Reserve Margins Remain Strong

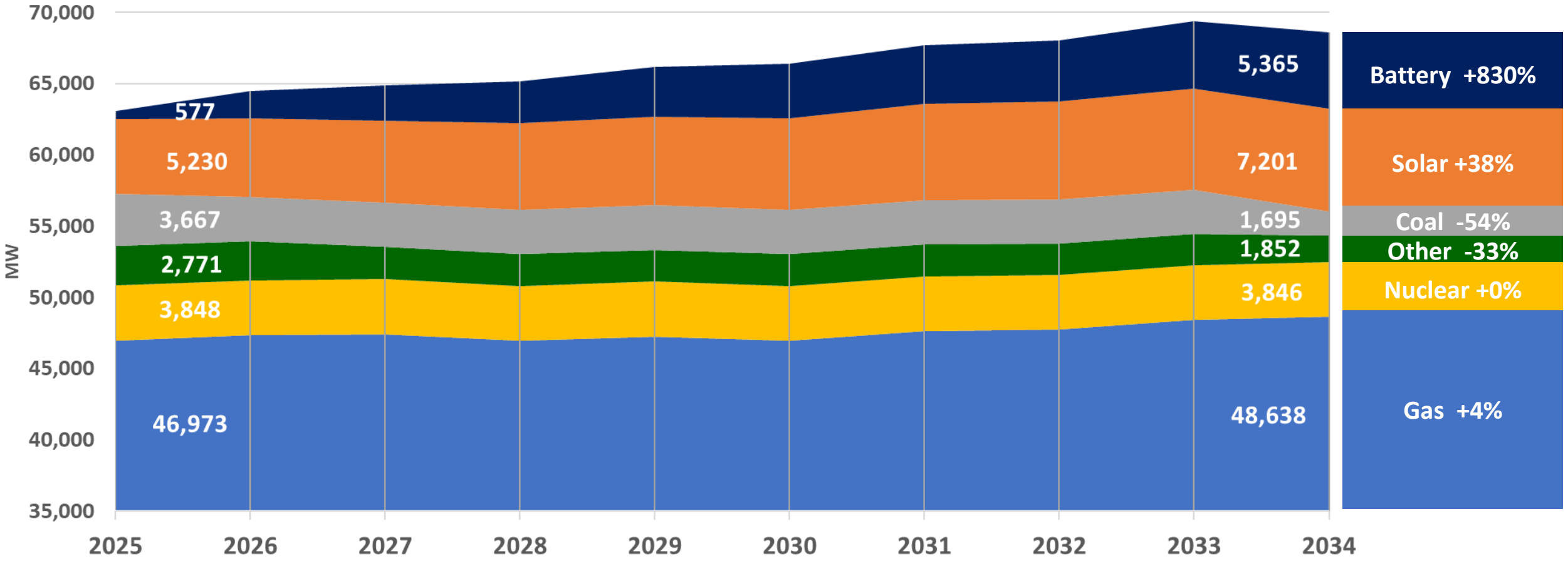
Based on Firm Load



Includes impacts of DSM (cumulative Demand Response and incremental (2025-on), utility-sponsored Energy Efficiency/Energy Conservation), Energy Efficiency Codes and Standards, and customer-owned DER.

Solar and Batteries Dominate New Resource Additions

Firm Capacity at Time of Summer Peak (MW)

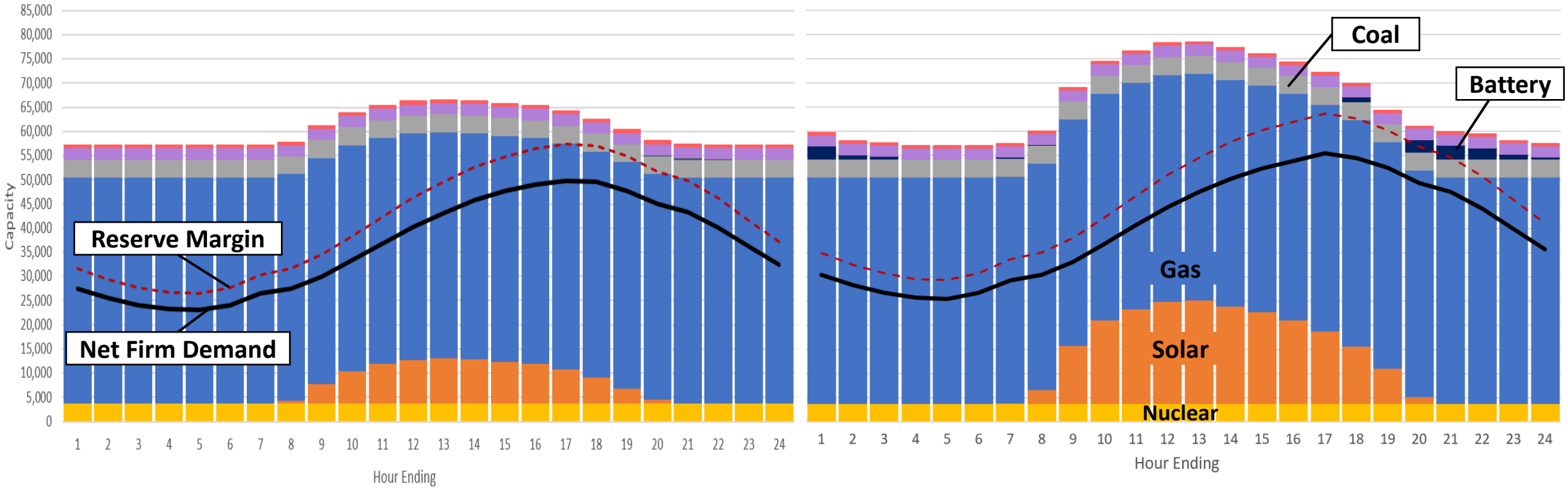


Evolving Grid Increases Reliance on Legacy Resources & Batteries

Forecasted Hourly Summer Peak Day Analysis

2025 Summer
Load and Resource Balance

2033 Summer
Load and Resource Balance



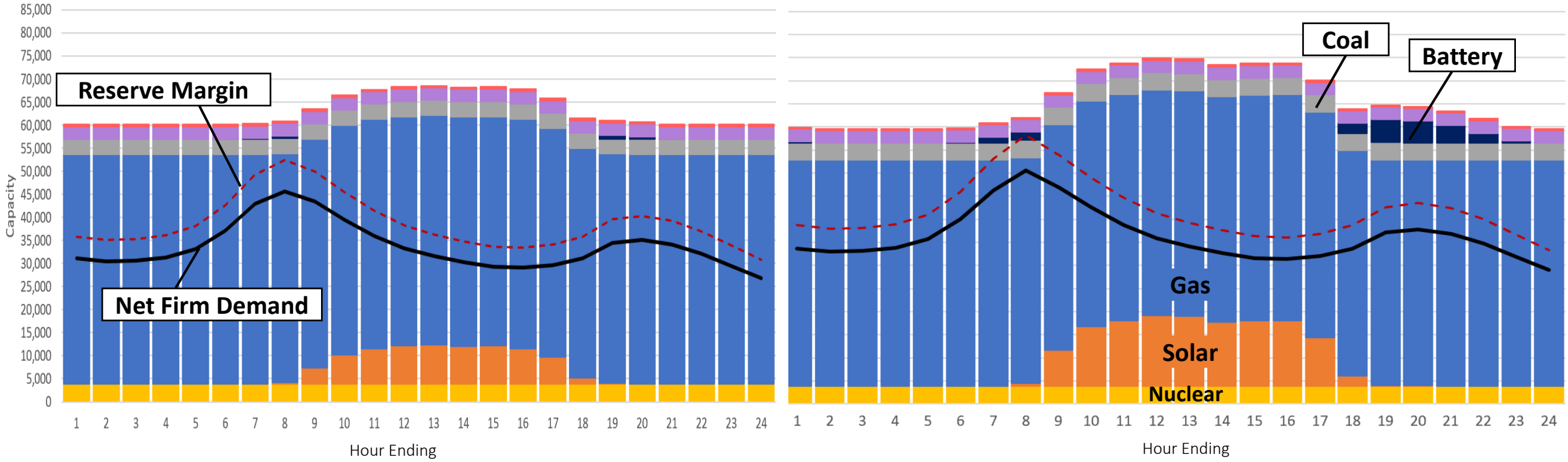
[1/] Minimum load requirement to carry 15% reserve margins

Resource Planning and Timing Critical During Winter Peaks

Forecasted Hourly Winter Peak Day Analysis

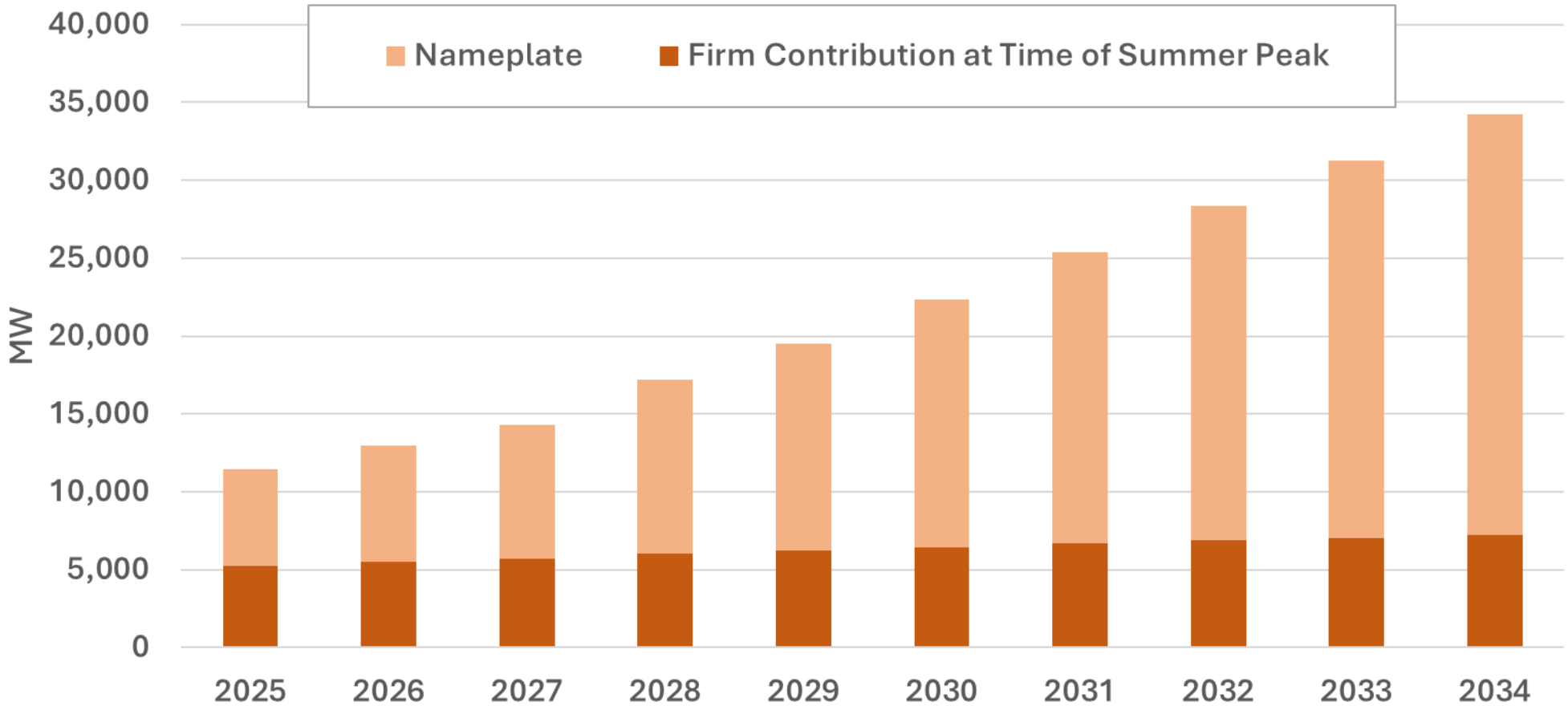
2025/26 Winter
Load and Resource Balance

2032/33 Winter
Load and Resource Balance



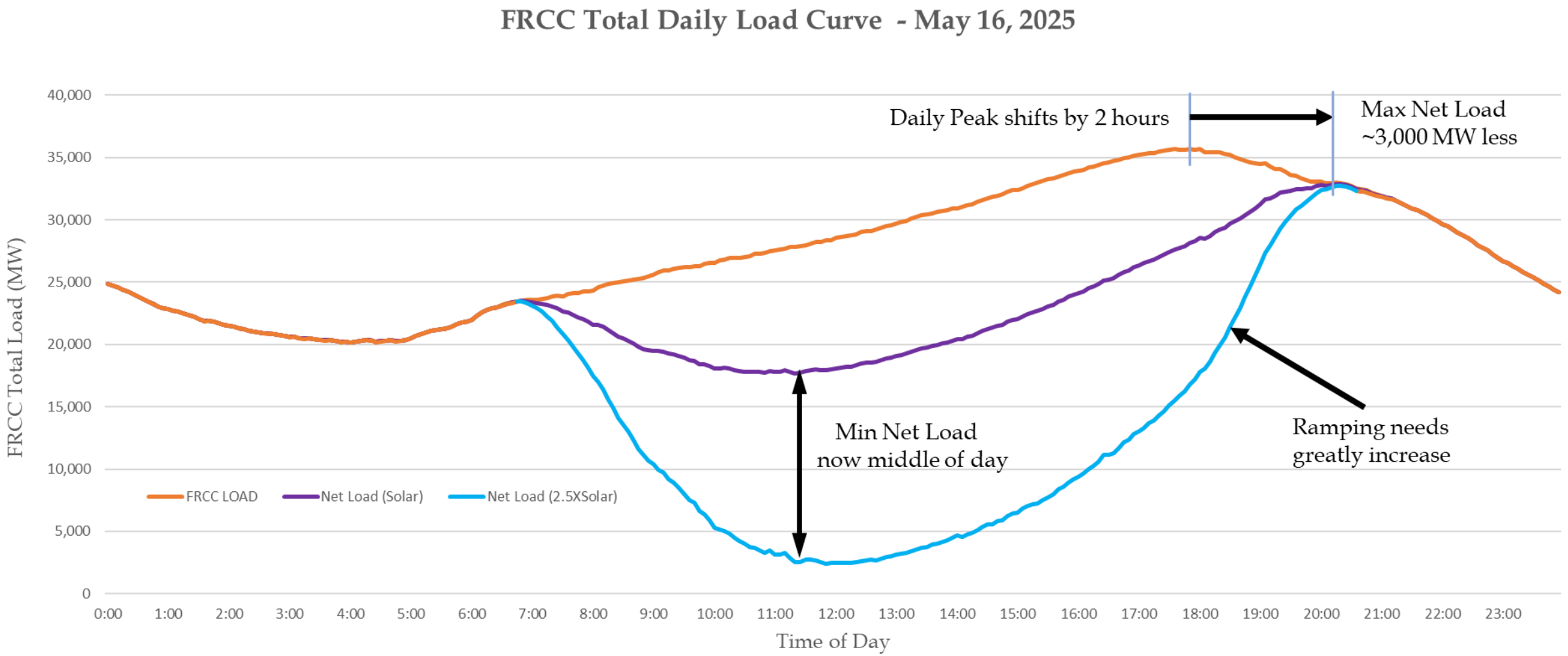
[1/] Minimum load requirement to carry 15% reserve margins

Lower Capacity Value Assigned To Solar As Penetration Increases

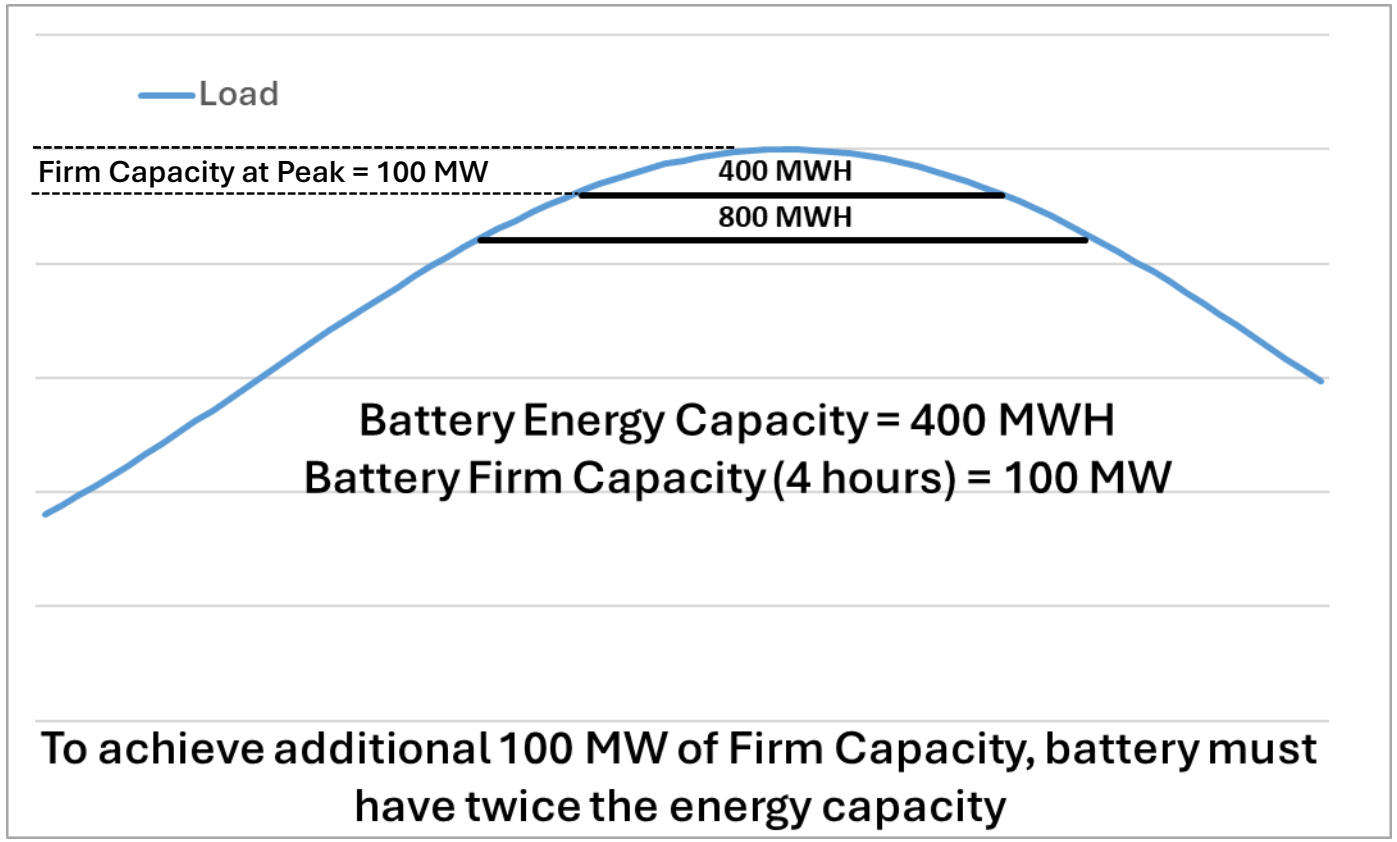


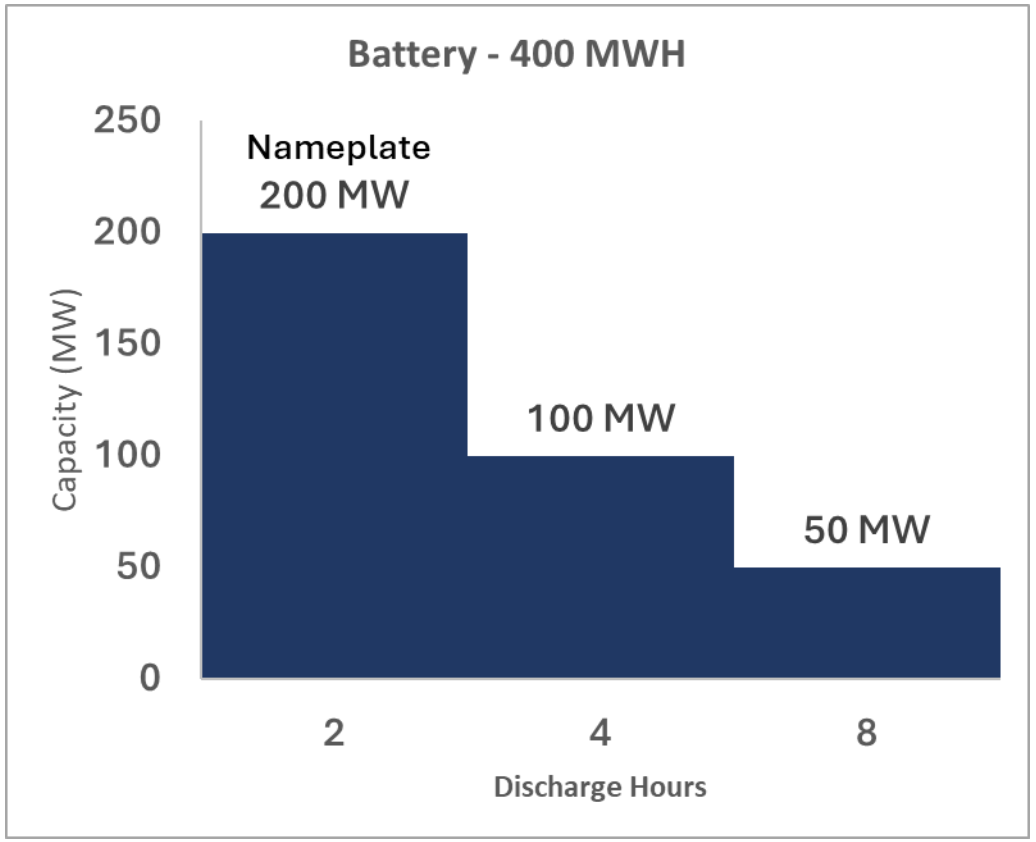
2025 TYSP Cumulative Solar Capability

Planning & Managing the New Grid

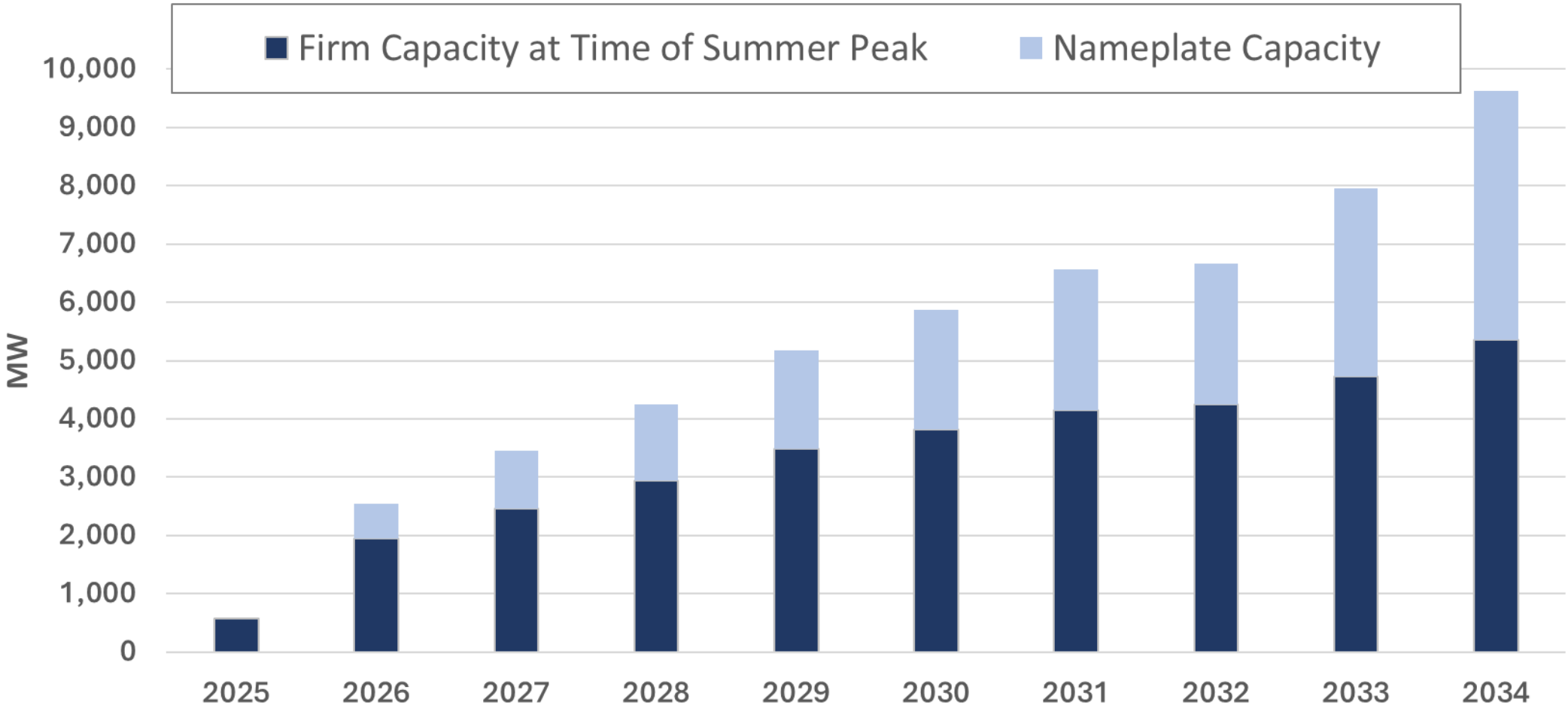


Energy Storage: Firm Capacity Value and Duration





Battery Capacity Values Lower As Penetration Increases



2025 TYSP Battery Capacity (MW)

Strong Natural Gas Infrastructure and Dual Fuel Capabilities in Florida

- Gas infrastructure and associated gas capacity contracts remains on pace with generation needs
- Comparison of gas infrastructure capacity against TYSP forecasted needs under various dispatch assumptions
- Coordination of regional response to fuel emergencies with utilities and pipelines
- Florida's dual fuel capability for gas generation remains strong. Between 54%- 56% have fuel switching capabilities
- Natural gas is almost entirely dedicated to the electric utility industry in Florida.

Series of Studies Validate Transmission Adequacy[1]

- Scenarios studied (Represent 2026 – 2035)
  - Peak loads – Summer and Winter
  - Off-peak load for Summer conditions
- Sensitivity scenarios studied (Represent 2026 – 2030)
  - Winter peak 20% higher loads than forecasted
  - Summer peak 6% higher loads than forecasted
  - Summer peak with high imports into the state
  - Off-peak with solar at zero and at maximum capacity
  - Winter peak day with multiple large units unavailable
  - Summer peak with solar at 20%
- Probabilistic Studies being performed

[1] NERC Reliability Standards - TPL-001.5

FRCC Planned Outage Coordination

- Individual entities develop their planned generation and transmission outages
- Planned outages are entered into an FRCC application tool
- All FRCC studies incorporate planned outages and load forecasts
- Identified outage conflicts are coordinated and resolved by the entities

Small Modular Reactors (SMRs)

- No small modular reactors planned in 2025 TYSP's to date in next 10 years
- Executive Orders – May 2025 – Key changes:
  - Speed up Nuclear Reactor Licensing
  - Add 300 Gigawatts of New U.S. Nuclear Capacity by 2050
  - 10 new large reactors with complete designs under construction by 2030
  - Faster Reactor Testing - Three pilot reactors, built and tested, with the goal of achieving criticality by July 4, 2026
- TVA first utility to submit SMR application – 300 MW by 2032
- Data center load may drive future SMR's

Concept design for Holtec International's SMR-300 small modular reactor.

Potential Impact of Large Loads

- Data center load (~700 MW) included in current forecast; new large loads expected
- Changing resource mix and large loads drive need for detailed energy assessments
- Supply chain and permitting delays impact generation and transmission construction timelines
- NERC's Large Loads Task Force collaborating to identify risks and mitigation strategies
- Mitigations include backup generation, demand response, long-duration storage, and emerging tech (e.g., small modular reactors)
- Reliable interconnection requires incorporating large load equipment characteristics into planning and operations
- Typical data center life cycle is between 15 to 20 years

FRCC Coordinating with Members to Maintain Reliability of Florida's Evolving Grid

- A more dynamic system requires reliable resources, faster frequency and voltage controls
- Rigorous reliability studies and security assessments are needed for dynamic and complex grids
- Maintaining dynamic reactive support and synchronizing torque is critical
- Power plant protection and control should be coordinated throughout the power grid[1]
- New and improved capabilities and tools needed to maintain the reliability of Florida's evolving grid

[1] EPRI Webcast of Initial Findings from April 28, 2025 Iberia *https://www.youtube.com/watch?v=LNStOXAsiDo*

Conclusion

Florida's Grid Reliability & Future Readiness Requires Vigilance

- Florida remains well-positioned to support grid evolution through strong coordination, joint assessments, and FRCC members' ongoing commitment to reliability.
- Rapid growth in solar, batteries, and large loads (e.g., AI/data centers) is shifting the resource mix and introducing new reliability challenges.
- FRCC and its members remain vigilant as future grid demands challenge traditional reliability frameworks, requiring adaptive planning and operational strategies.
- Reserve margins remain strong, consistently exceeding 20%.

Questions?

Additional Information

Incremental Summer Firm Capacity Changes Over 10-yr Planning Horizon by Fuel Type (MW)