



2023 Ten-Year Site Plans FRCC Overview Presentation

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FRCC

Mission

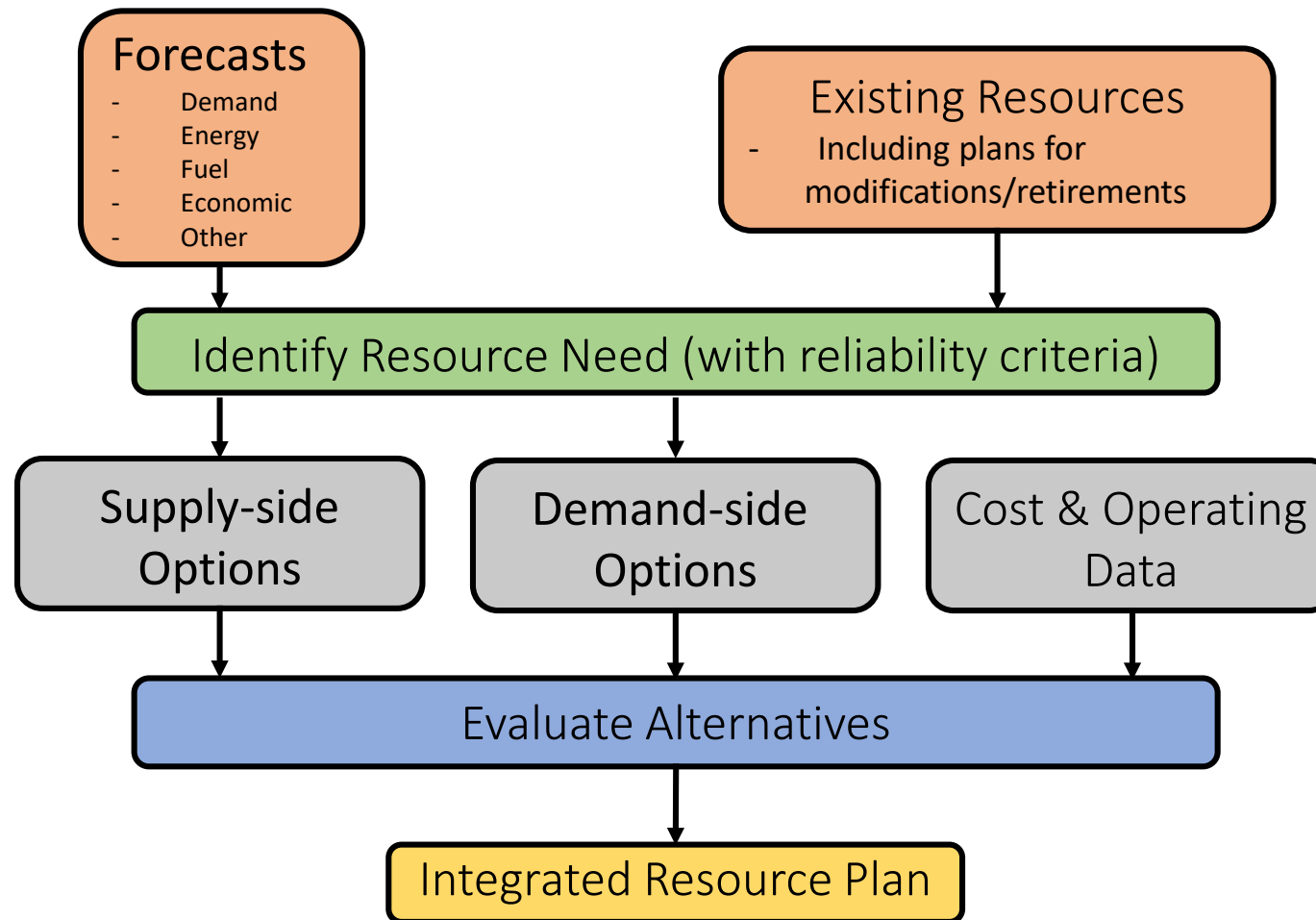
To coordinate a safe, reliable, and secure bulk power system in Florida.

Agenda

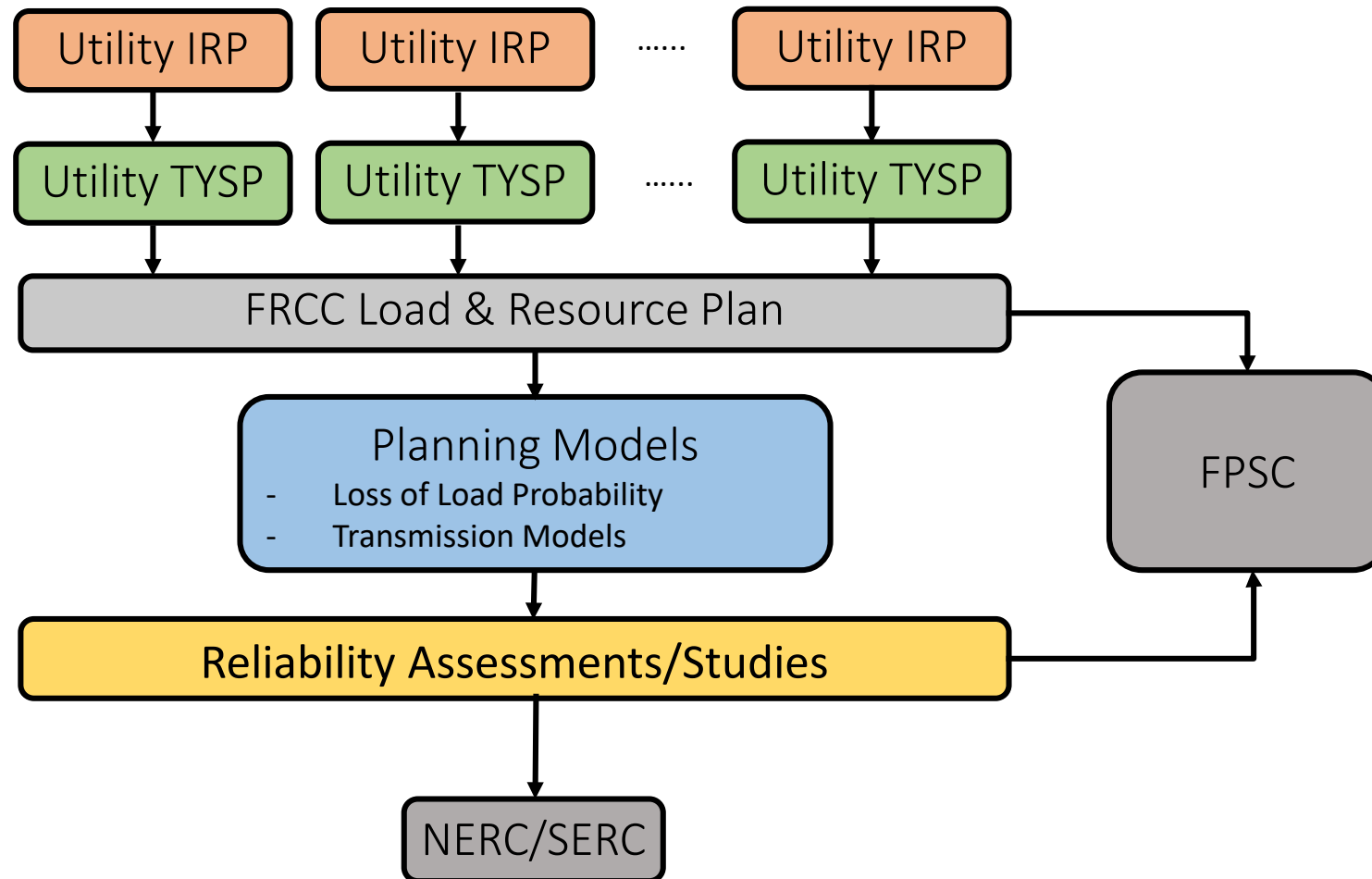
2023 Load & Resource Plan

- Summary
- Integrated Resource Planning Process
- Load Forecast
- Capacity Additions and Reserve Margins
- Generation Mix
- Reliability Considerations of Utility Solar Generation Additions
- Natural Gas Infrastructure in Florida

Utility Integrated Resource Planning (IRP) Process Overview



FRCC Planning Process Overview



Load Forecast and DSM^{1,2,3}

- Firm summer peak demand (MW) and forecasted energy sales (MWh) growth are similar to last year's TYSP at about 1%
- Demand Response reduces firm summer peak (MW) by 7.3% in 2032
- Customer-owned distributed solar is expected to reduce summer demand by 4.9% in 2032

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.

³ All 2023 TYSP data was filed before the Environmental Protection Agency (EPA) proposed the Greenhouse Gas Standards and Emission Guidelines for Fossil Fuel-fired Power Plants on May 23, 2023.

Load Forecast Factors



Florida unemployment (actual) has decreased



Population growth is projected to remain strong



Wage and income growth have not kept pace with employment growth



EE codes and standards and distributed solar dampen energy use growth



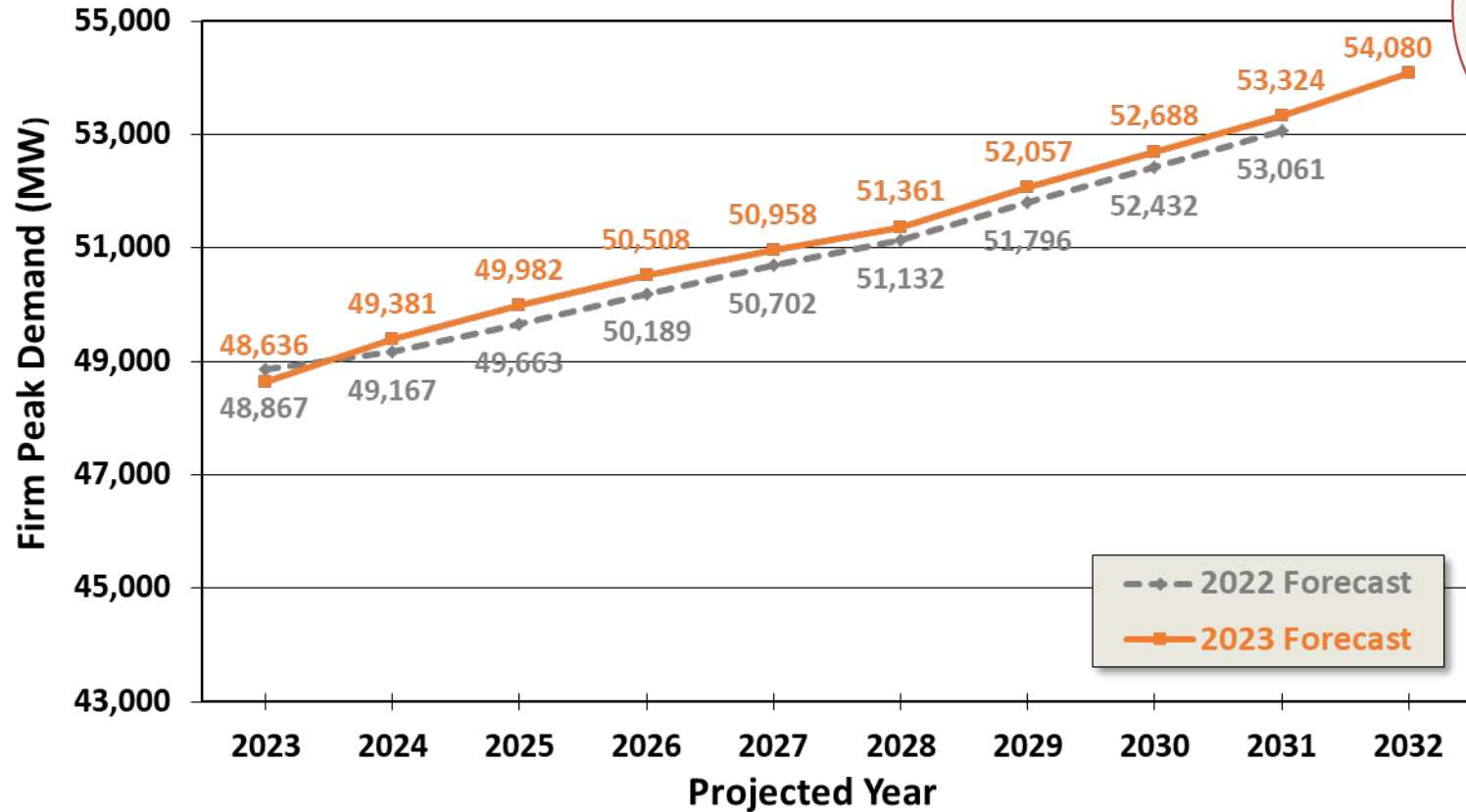
Commercial customer forecasts affected by online commerce



EV Impact Grows to over 2 GW by 2032

Classification: Public

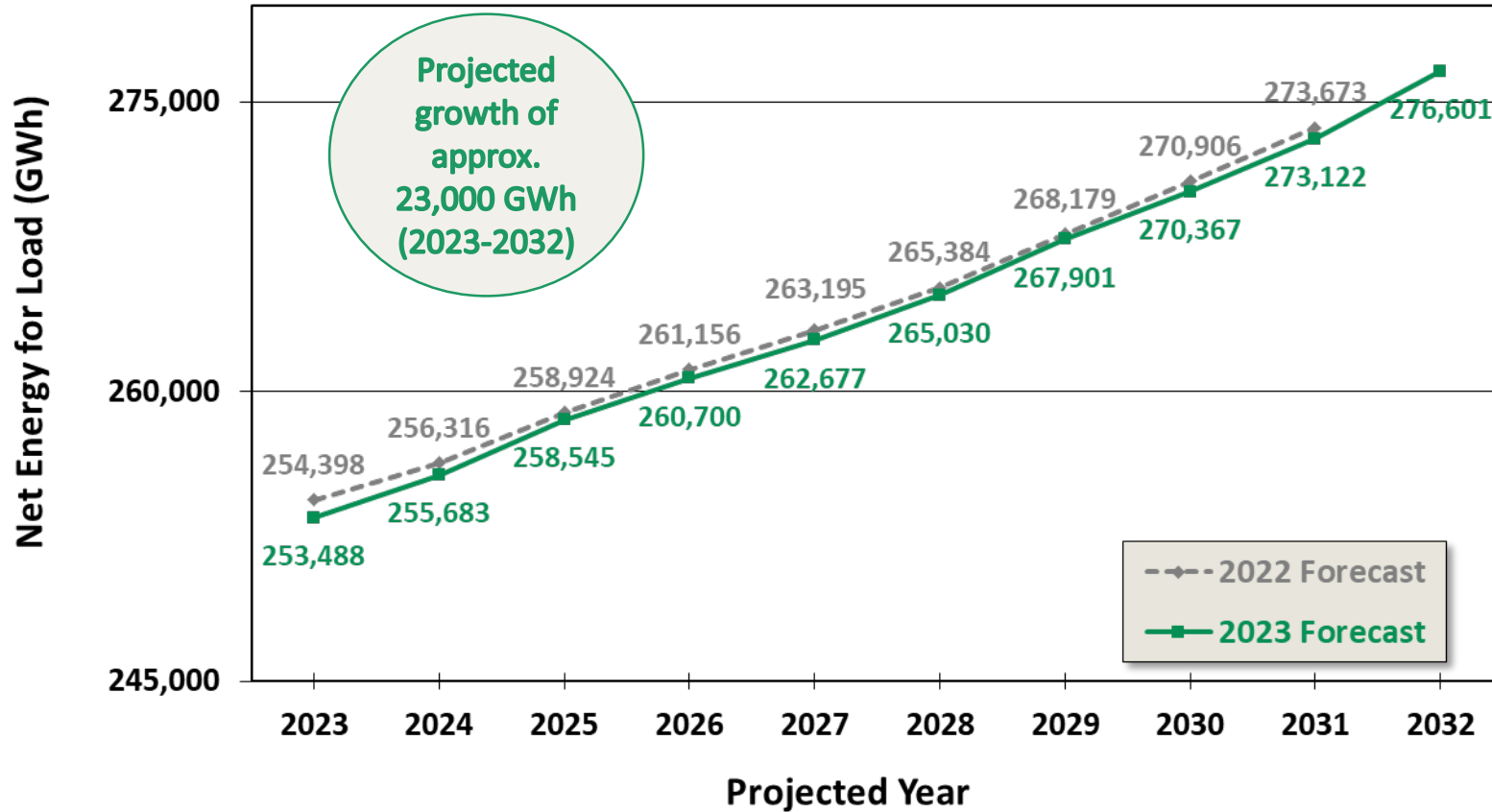
Comparison of 2022 vs. 2023 Firm Peak Demand Forecast¹ (Summer)



Projected growth of approx. 5,500 MW (2023-2032)

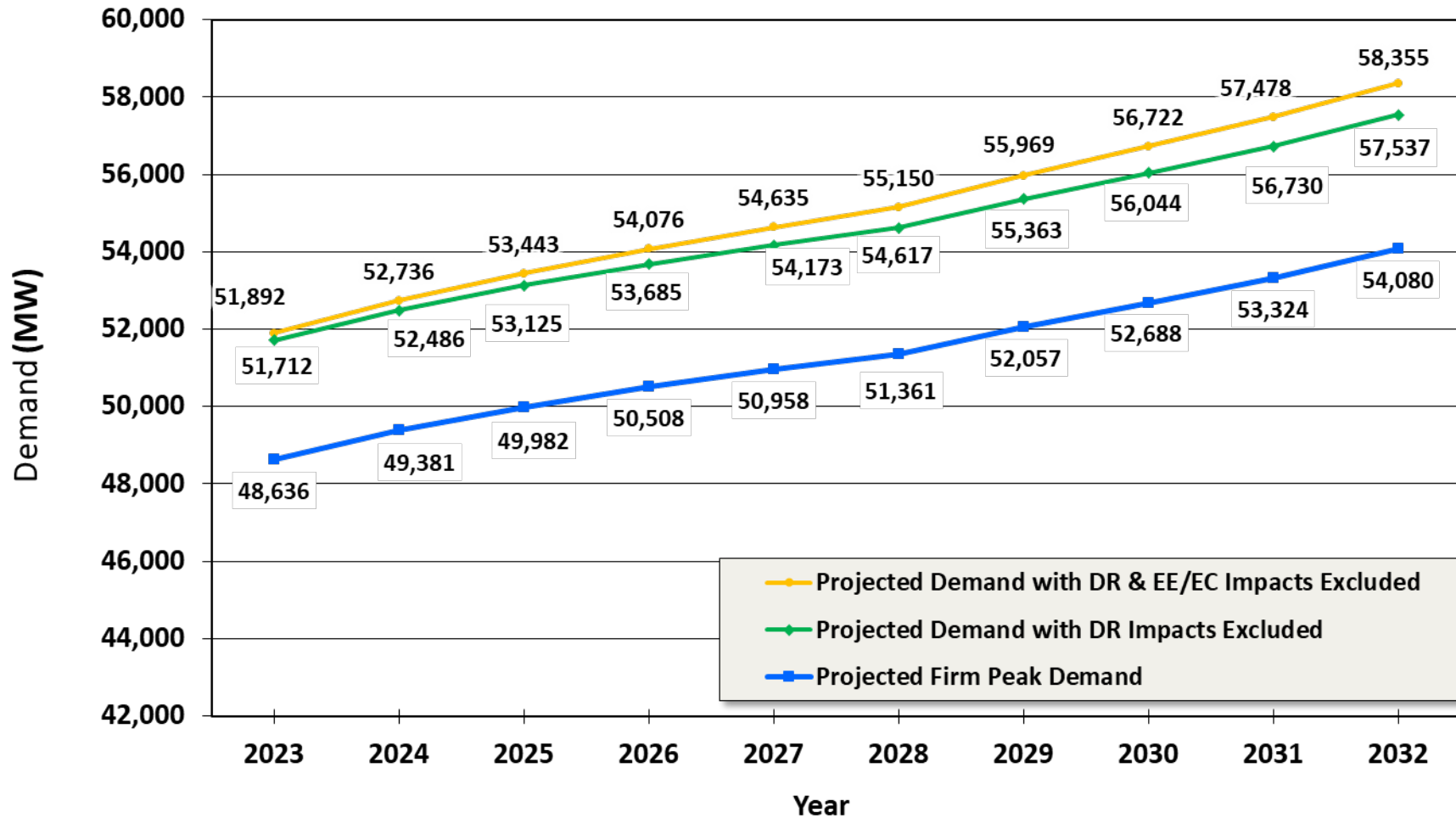
¹ Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2023-on), utility-sponsored Energy Efficiency/Energy Conservation), Energy Efficiency Codes and Standards, and the impact of customer-owned DER.

Comparison of 2022 vs. 2023 Net Energy for Load (NEL) Forecast¹



¹ Net Energy for Load (NEL) includes impacts of Energy Efficiency Codes and Standards, conservation, and customer-owned DER.

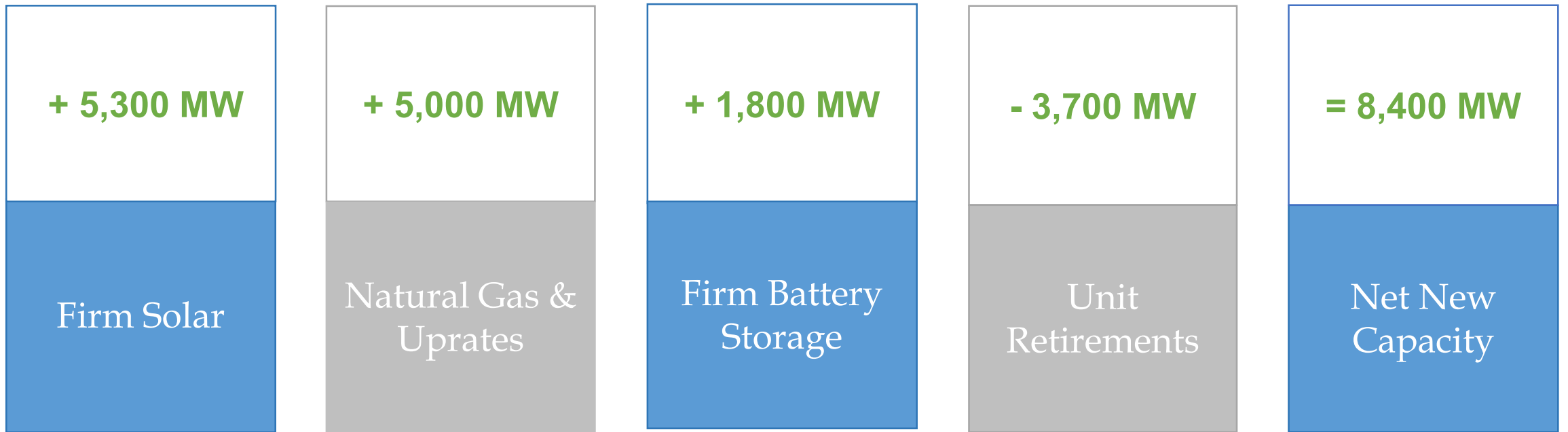
Forecasted Summer Peak Demands¹



¹ Projected impacts of Energy Efficiency codes and standards are included in all projections.

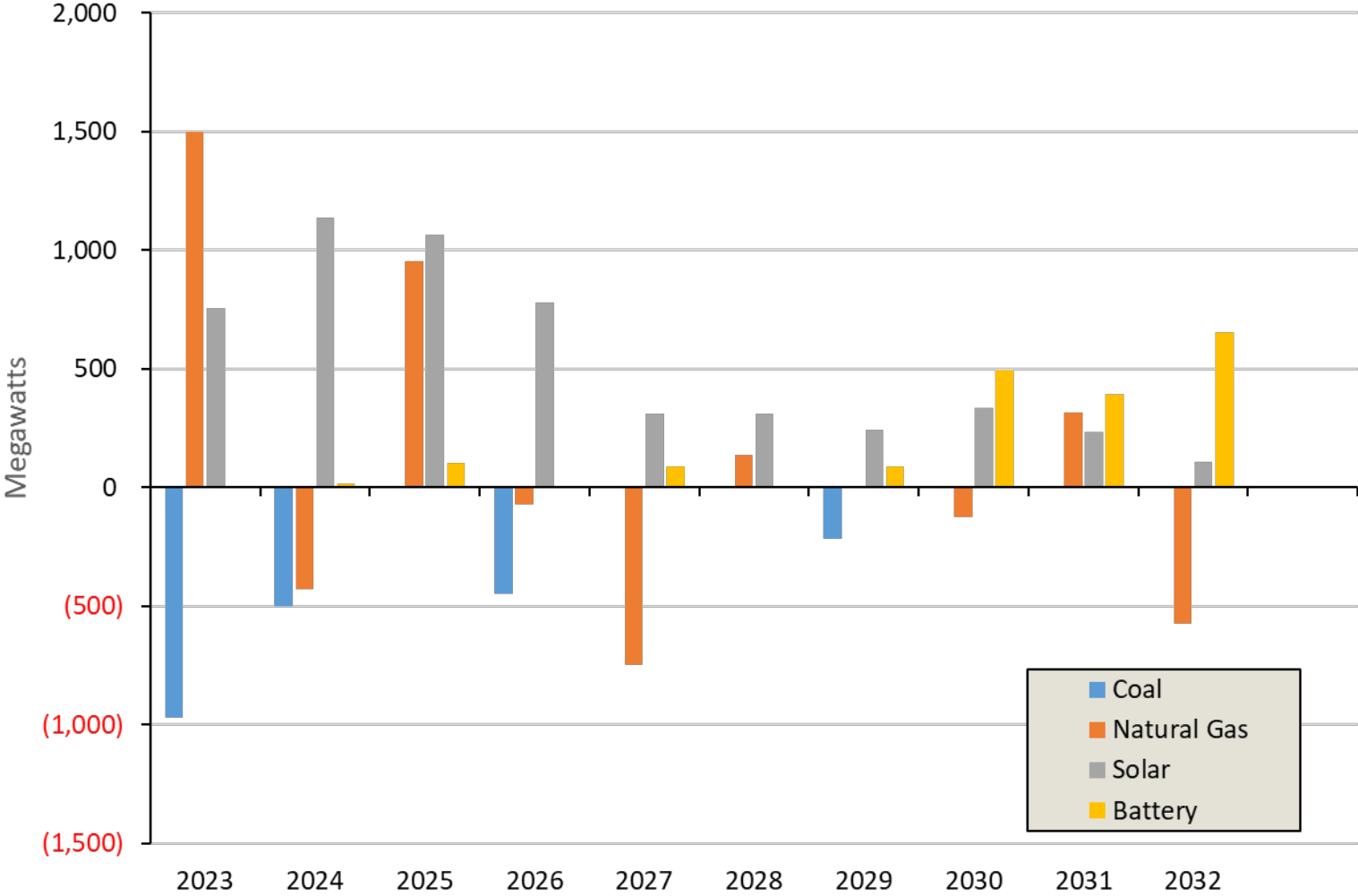
Capacity Additions

Outlook for 2023 – 2032 ¹



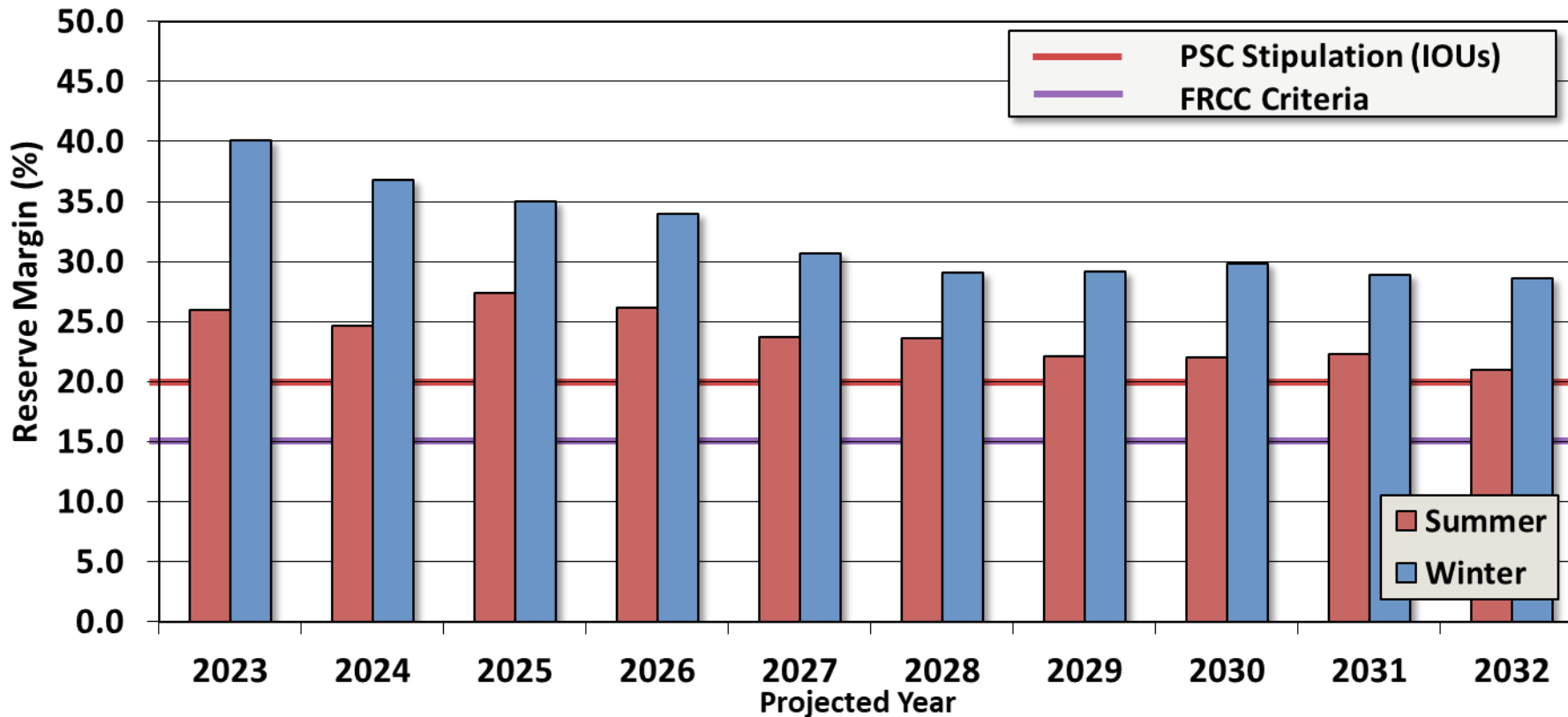
¹ All 2023 TYSP data was filed before the Environmental Protection Agency (EPA) proposed the Greenhouse Gas Standards and Emission Guidelines for Fossil Fuel-fired Power Plants on May 23, 2023.

Incremental Summer Firm Capacity Changes Over 10-yr Planning Horizon by Fuel Type in MW¹



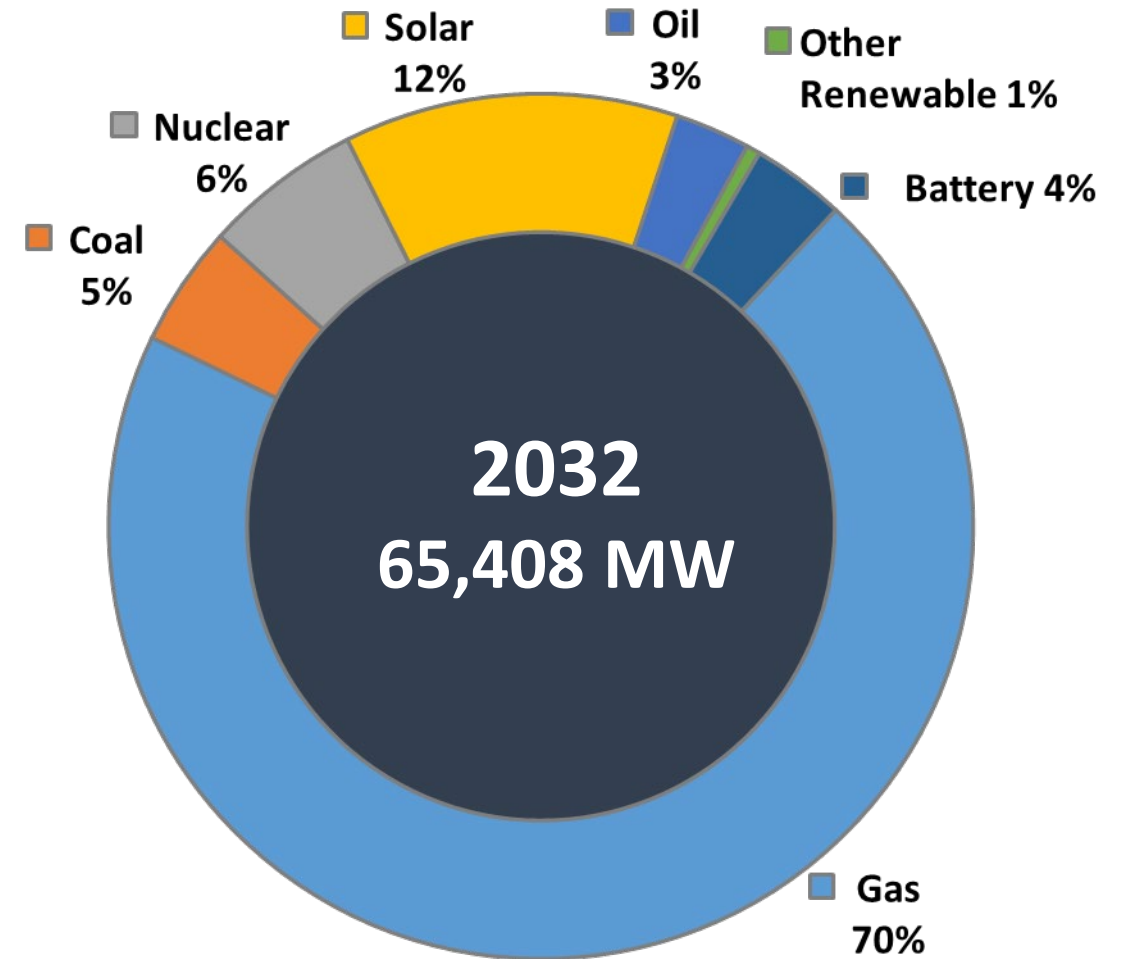
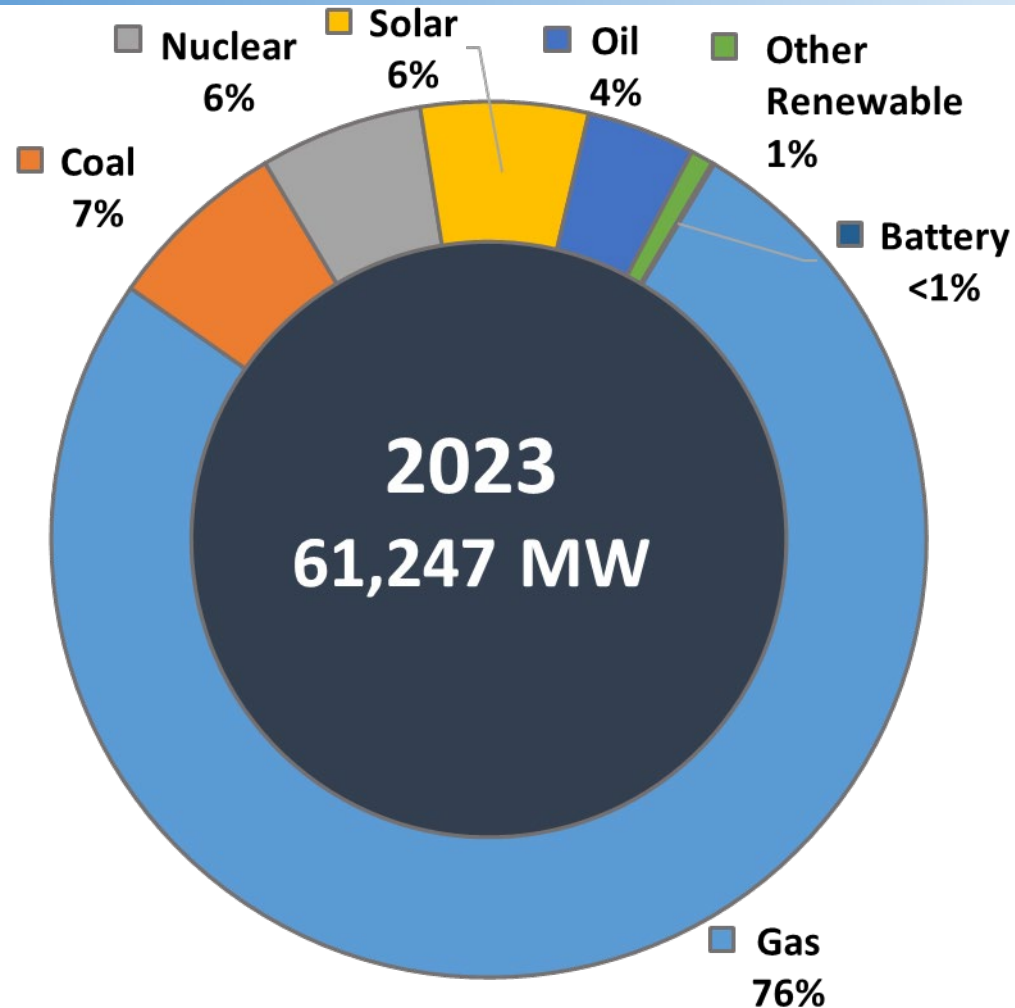
¹ All 2023 TYSP data was filed before the Environmental Protection Agency (EPA) proposed the Greenhouse Gas Standards and Emission Guidelines for Fossil Fuel-fired Power Plants on May 23, 2023.

Planned Reserve Margin¹ (Based on Firm Load)



¹ Includes impacts of DSM (cumulative Demand Response and incremental (2023-on), utility-sponsored Energy Efficiency/Energy Conservation), Energy Efficiency Codes and Standards, and customer-owned DER.

Forecasted Firm Summer Resource Capacity¹

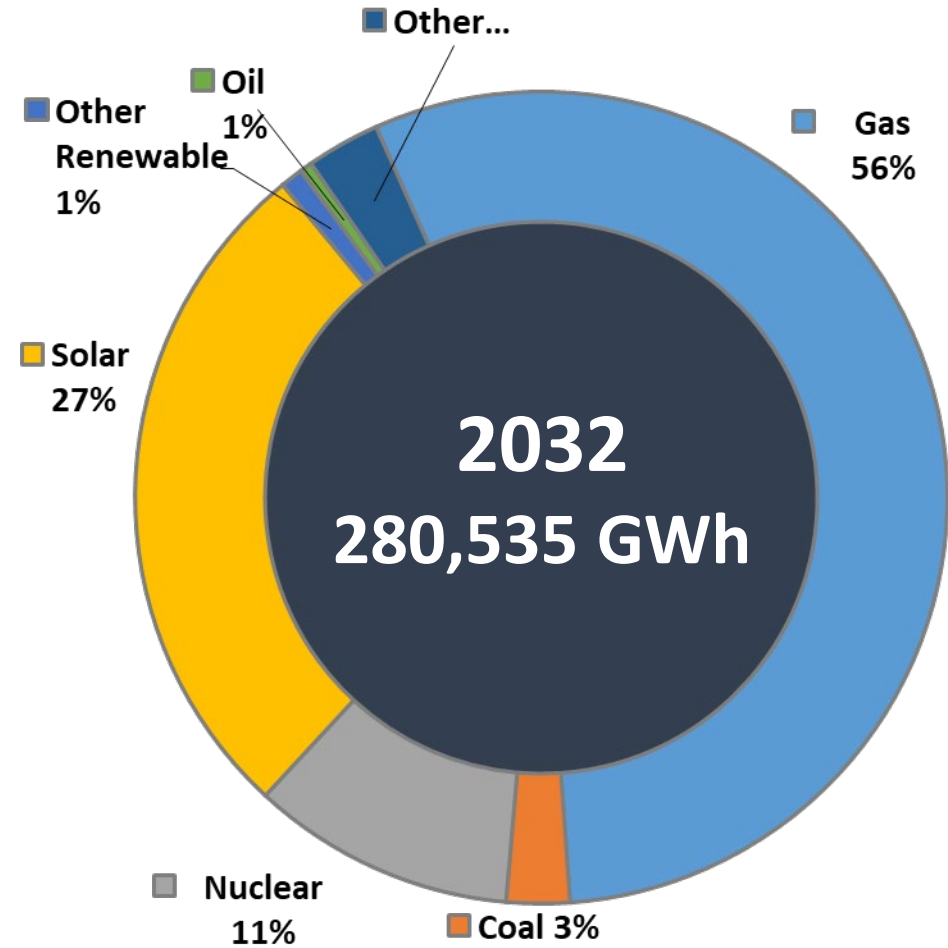
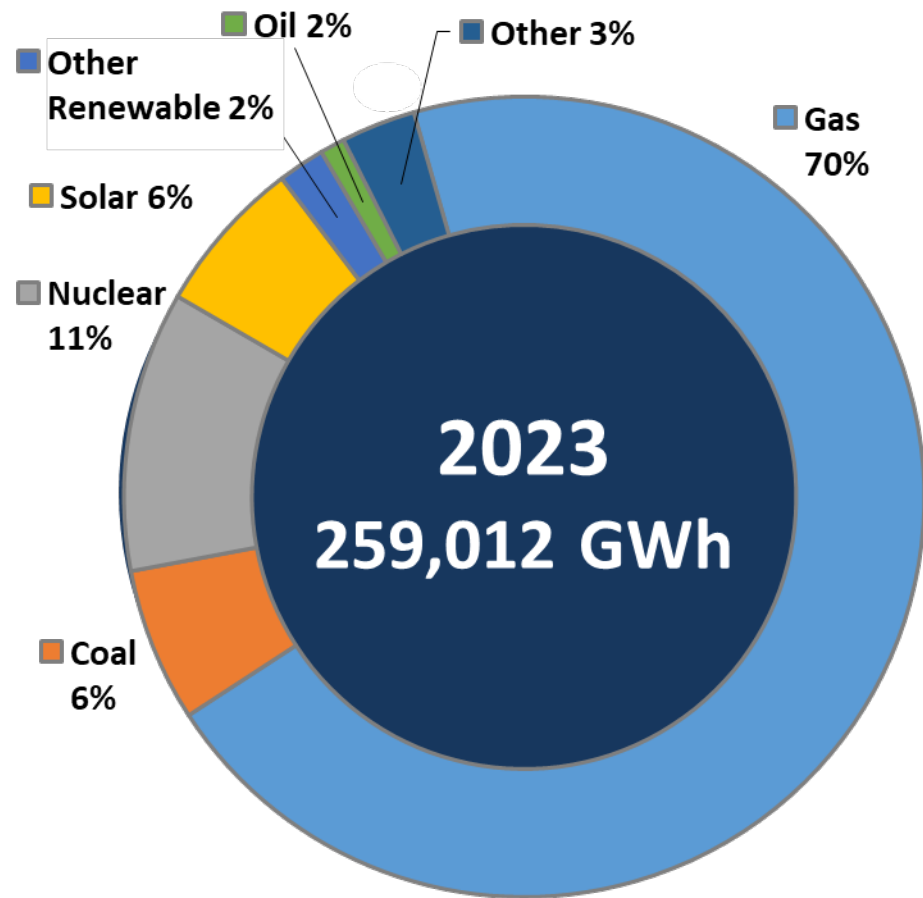


¹ Excludes Firm Demand Response.

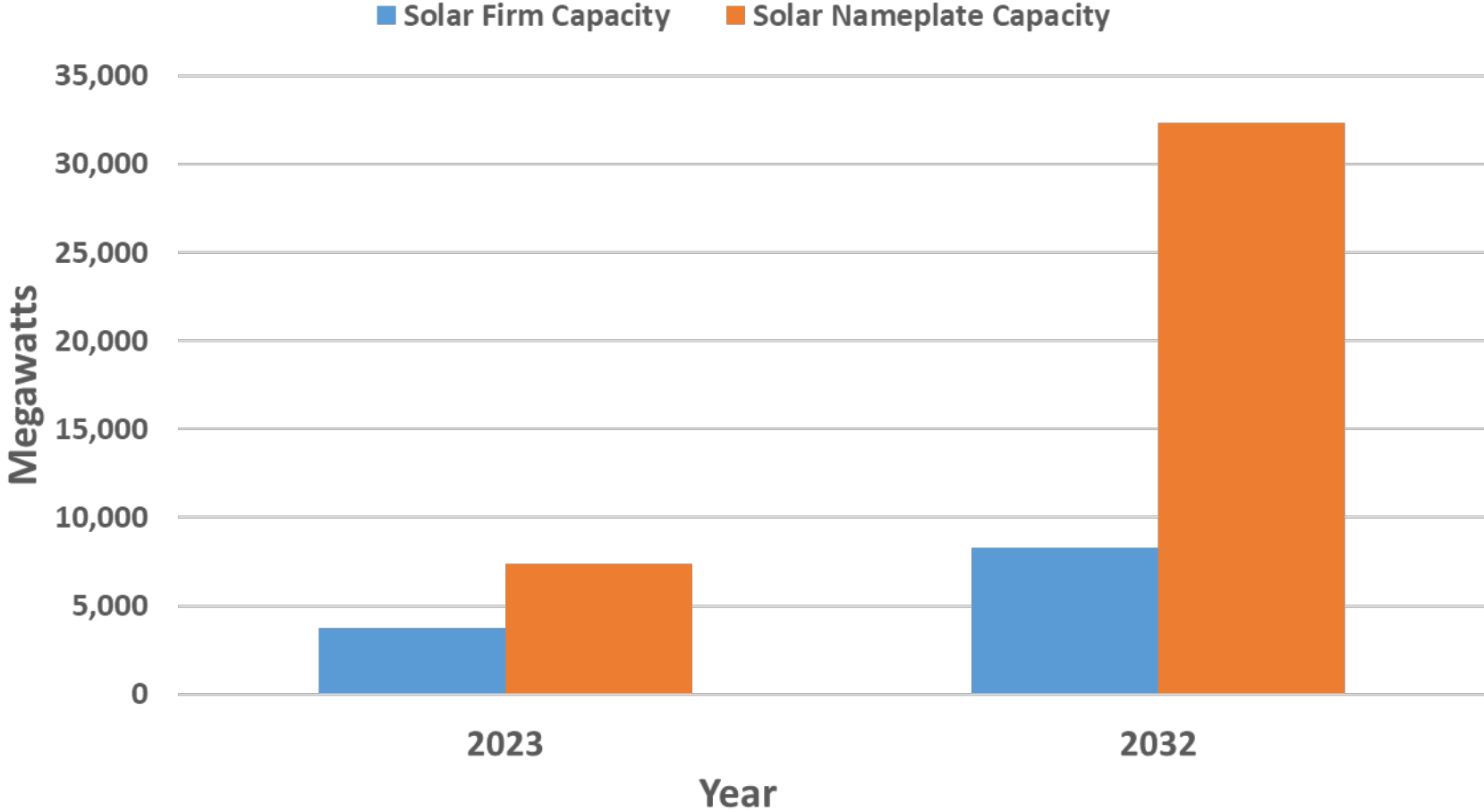
Classification: Public

Forecasted Generation Mix

Net Energy for Load (GWh)

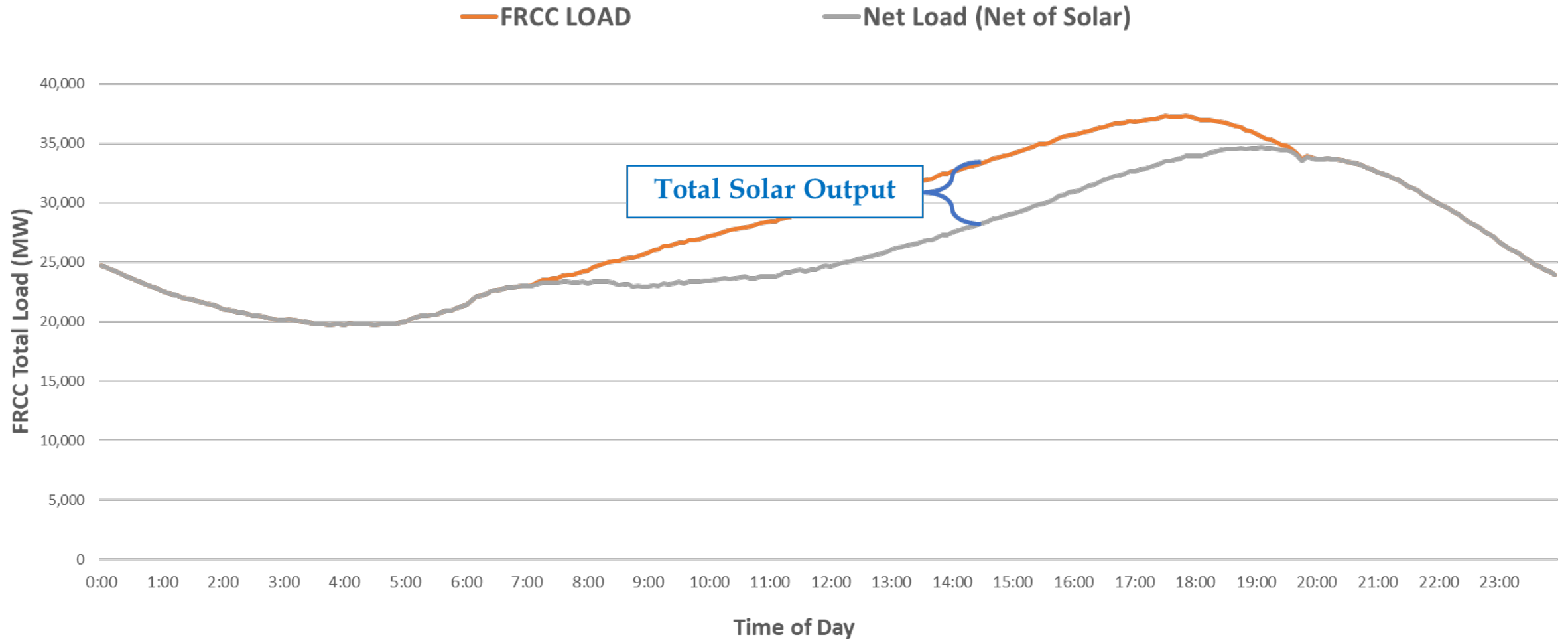


2023 TYSP Firm & Nameplate Solar



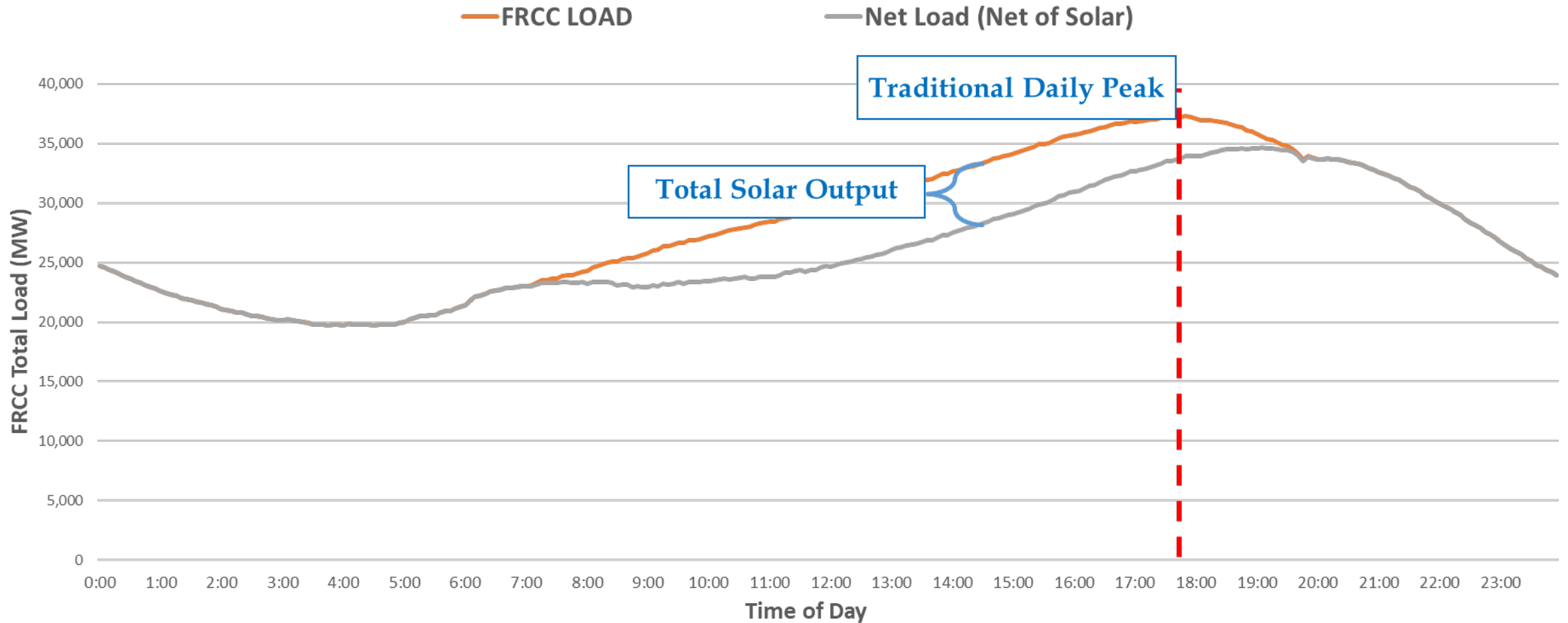
FRCC Total Daily Load Curve

May 3, 2023 Actual Data



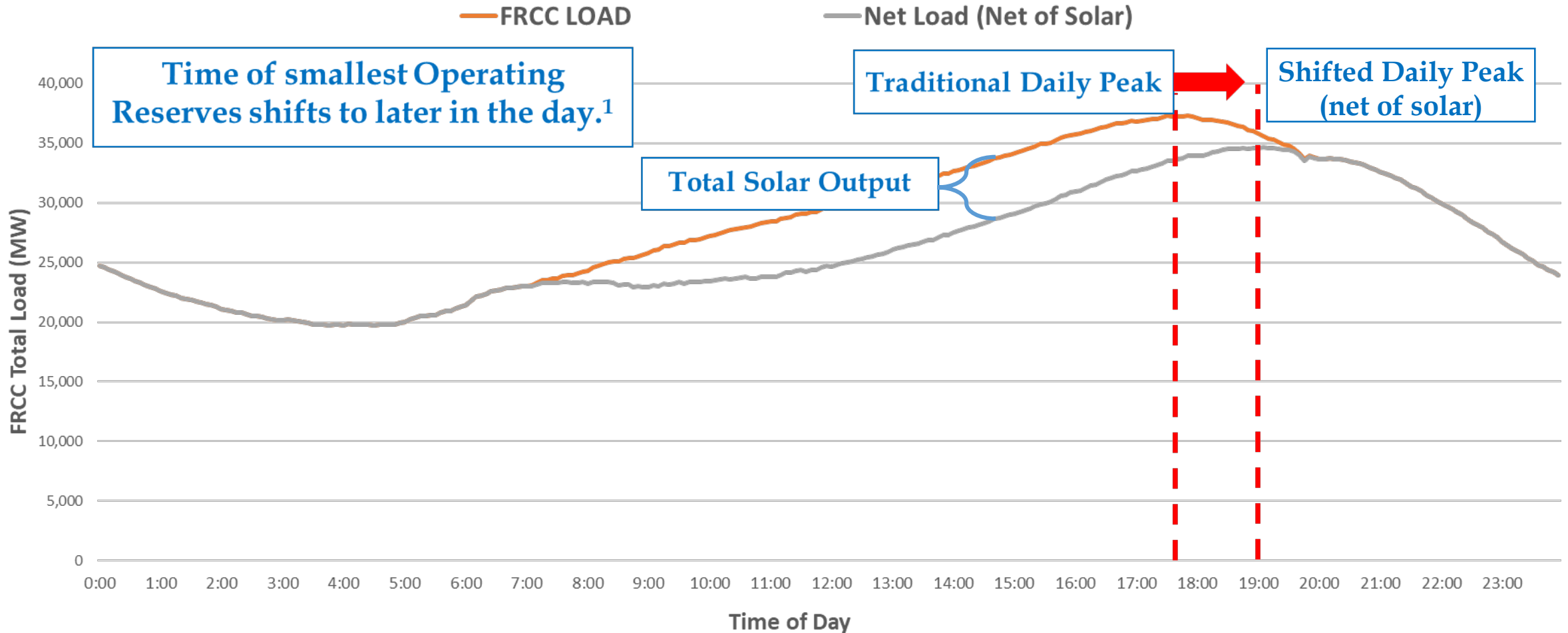
FRCC Total Daily Load Curve

May 3, 2023 Actual Data



FRCC Total Daily Load Curve - May 3, 2023

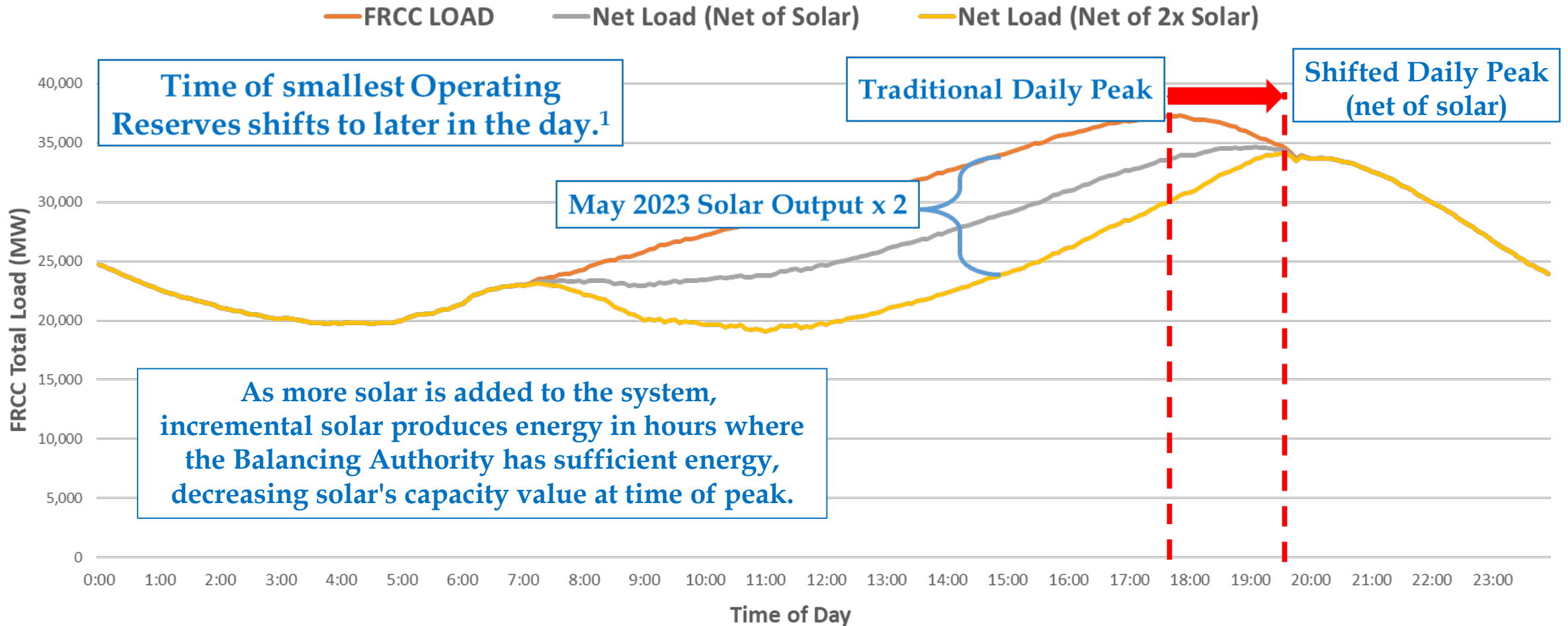
Actual Data & Projected Illustrative Data



¹Prior to solar, time of smallest Operating Reserves was Peak Load. With Solar, Net Peak (Load less solar) becomes time of smallest Operating Reserves and is shifted later

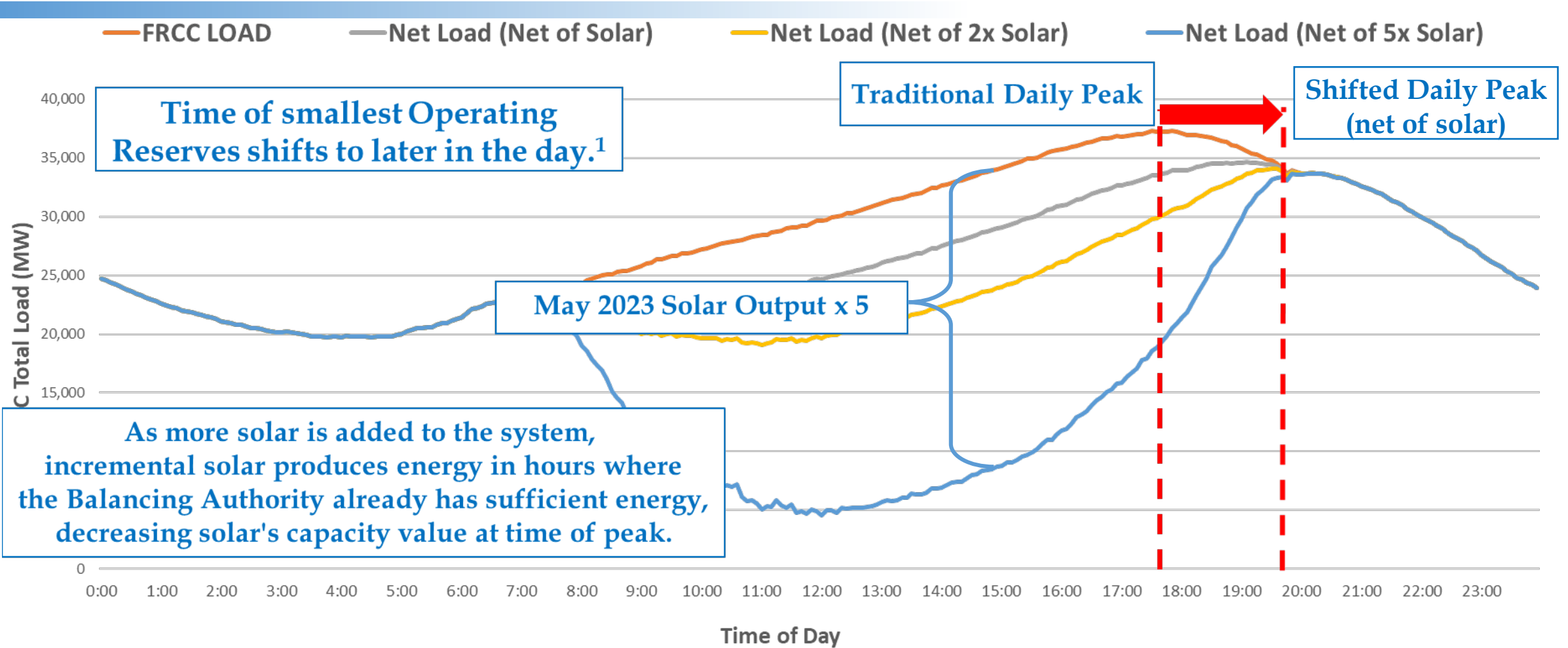
FRCC Total Daily Load Curve - May 3, 2023

Actual Data & Projected Illustrative Data with 2 times Solar



FRCC Total Daily Load Curve - May 3, 2023

Actual Data & Projected Illustrative Data with 2 & 5 times Solar



Reliability Considerations

Utility Solar Generation Additions

- Adding solar shifts period of lowest operating generation margins (Net Peak) to later in the day
- Planners assigning lower capacity value to solar as penetration increases and Net Peak moves to a time of day when less solar energy is generated.
- Planners evaluating adequacy beyond summer and winter peaks
- Operators utilizing dispatchable resources to manage energy adequacy and increased ramping needs related to increased solar
- Utilities continue developing experience with operations, dispatch, and output forecasting and continue to develop tools and monitor capability
- Utilities assessing impact of increased solar and reviewing lessons learned in other parts of the country that have higher penetration rates

Natural Gas Infrastructure in Florida



- Maintain a comprehensive gas infrastructure model and utility fuels database
- Perform periodic reliability analysis
- Compare gas infrastructure assessments to TYSPs forecasted needs based on economic dispatch
- Gas infrastructure on pace with generation additions
- Coordinate regional response to fuel emergencies with utilities and pipelines
- Gas generation with alternate fuel capability remains between 57-62%
- Natural gas is almost entirely dedicated to the electric utility industry in Florida

Conclusion

- Florida utilities continue to increase planned solar and battery capacity installations, with decreasing capacity value attributed to solar as Net Peak shifts to later hours of the day
- Distributed solar penetration noticeably decreases utility load forecasts
- Electric vehicle impact to load forecast expected to increase substantially but still relatively small
- Planned Reserve Margins above 20%
- Florida utilities continue to coordinate at FRCC to ensure reliability through studies of the transmission system, natural gas infrastructure, and solar and battery impacts to operations and planning

Questions?