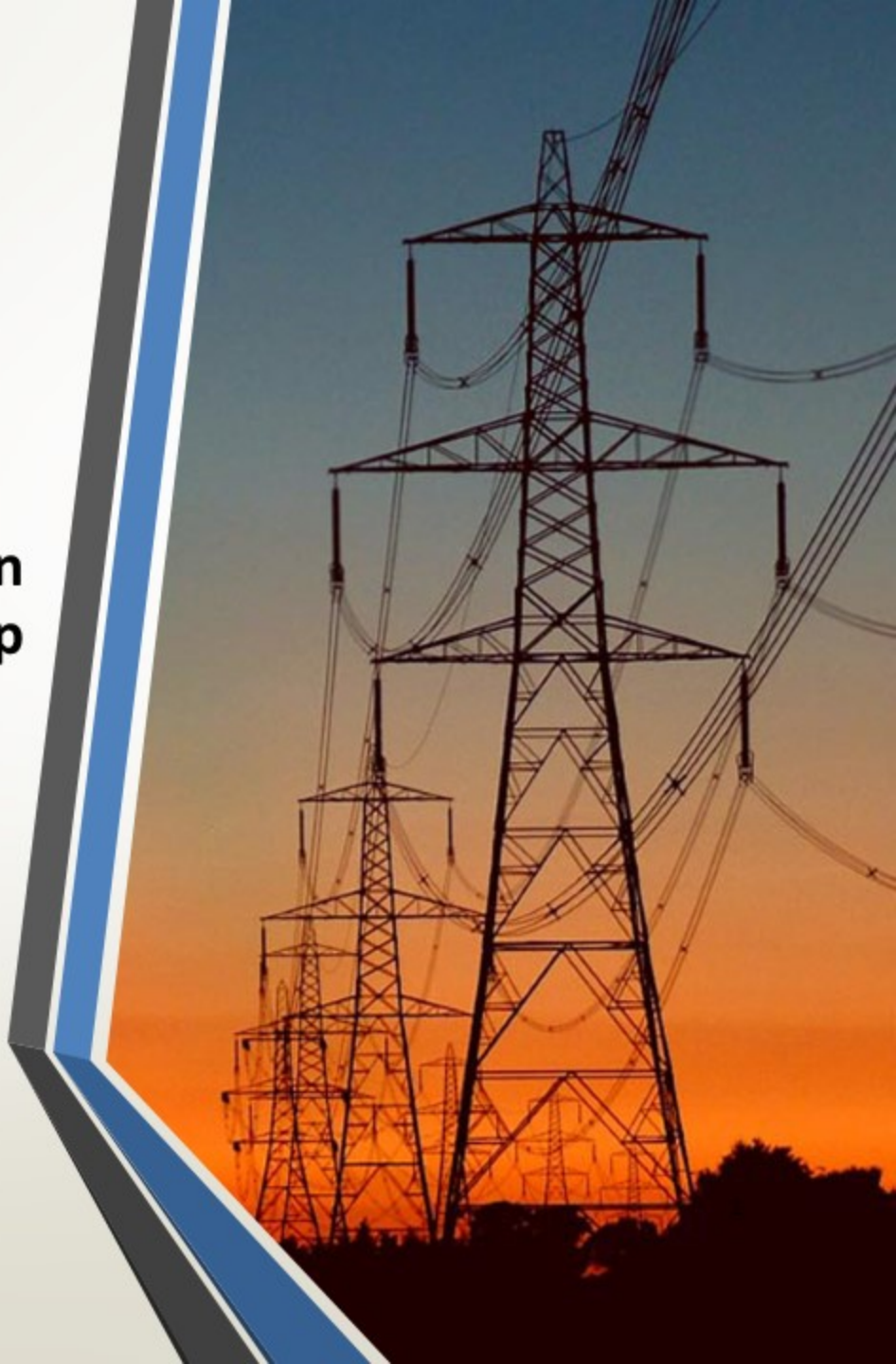




Florida Public Service Commission 2021 Ten-Year Site Plan Workshop FRCC Presentation

Stacy Dochoda
President & CEO

Florida Reliability Coordinating Council, Inc.
August 11, 2021





Vision: To be the premier organization for grid reliability and security in North America.

Mission: To coordinate a safe, reliable and secure bulk power system with our Members.

Agenda

2021 Load & Resource Plan

- Summary
- Emerging Trends, Extreme Weather, Response, and Preparedness
- Gulf Power Company Integration
- Integrated Resource Planning Process
- Load Forecast and Demand-Side Management (DSM)
- Capacity Additions and Reserve Margins
- Fuel Mix
- Reliability Considerations of Utility Solar Generation Additions
- Natural Gas Infrastructure in Florida

2021 Load & Resource Plan Summary

Over the next ten years

- Firm peak demand and energy sales forecasts grow ~1% per year, comparable to 2020 TYSP
- Over 12,150 MW of new firm generation planned
- Planned Reserve Margins above 20%
- Demand Response reduces firm summer peak (MW) by 6.1% in 2030
- Energy Efficiency Codes and Standards are projected to reduce peak demand by 3.5% in 2030
- Reserve Margin increasingly dependent upon firm Demand Response in later years
- Renewables increase from 5% to 15% (energy) 4

Emerging Trends

- Changing resource mix with more renewable resources
- Interdependencies between natural gas & electric industries
- Recent extreme weather events
- FRCC studying lessons learned from extreme weather events

Recent Extreme Weather Events & Utility Response

- August 2020 California hot weather load shedding
- February 2021 ERCOT/SPP/MISO cold weather load shedding
- Root Cause Analysis Reports / NERC – FERC Event Inquiries to come
- FRCC members initiated broad-based internal reviews of these events

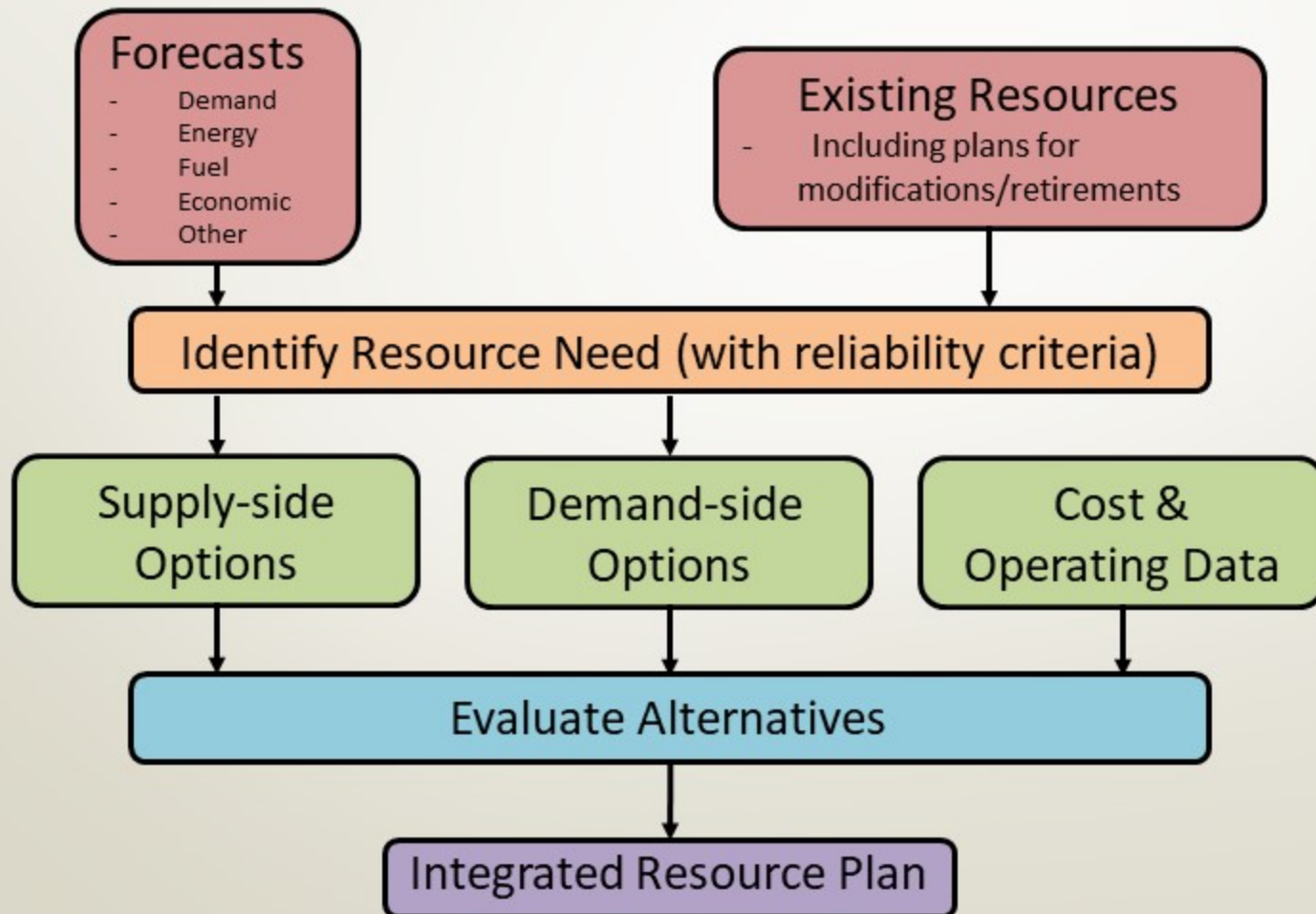
Utility Collaboration and Preparedness

- FRCC members committed to learn from other areas of the country and from each other
- FRCC continues as a robust information sharing and coordination forum
- Coordinated utility transmission planning continues to safeguard FRCC grid reliability
- FRCC Reliability Coordinator ensures real-time BPS reliability monitoring
- Member participation at FERC, NERC, NATF, NAGF, NRECA, APPA and EEI
- FRCC annual update of winter facility ratings and review list of critical customers
- Annual drill with FRCC members, FPSC staff, and natural gas operators

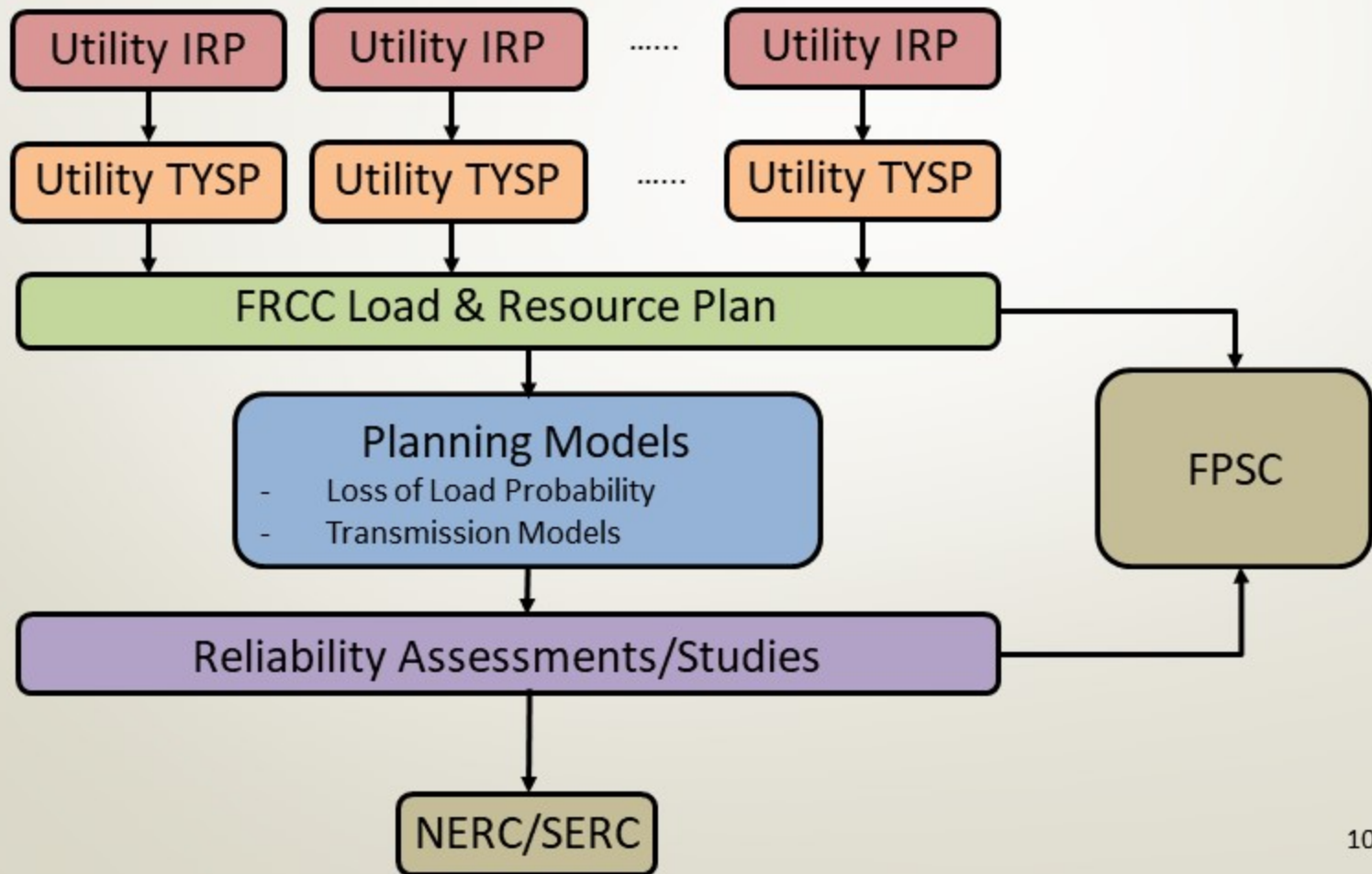
FPL IRP/Gulf Integration

- On January 1, 2019, Gulf Power Company (Gulf) became a subsidiary of NextEra Energy, Inc. which also owns FPL.
- FPL expects to integrate Gulf, creating a single electric operating system on June 30, 2022.
- Approximately 3,456 MW of total available capacity and 2,462 MW of summer peak demand is being added to the FRCC Region.

Utility Integrated Resource Planning (IRP) Process Overview



FRCC Planning Process Overview



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

- Firm summer peak demand (MW) growth increased from 2020, at 1.19% per year
- Forecasted energy sales (GWh) growth increased from 2020 TYSPs; at 0.90% per year
- Demand Response reduces firm summer peak (MW) by 6.1% in 2030
- Energy Efficiency Summer Peak reductions in 2030
 - Mandated Codes and Standards: 3.5%
 - Utility-Sponsored Energy Efficiency/Energy Conservation: 1.2%

¹ In this year's report the growth rate was calculated using 9 years of data from 2022-2030 to normalize the impact of Gulf Integration in 6/2022.

² Demand-Side Management (DSM) is made up of Demand Response (DR) and Utility-sponsored Energy Efficiency/Energy Conservation (EE/EC).

³ Projected impacts of Energy Efficiency codes and standards included in all utilities' forecasts.

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



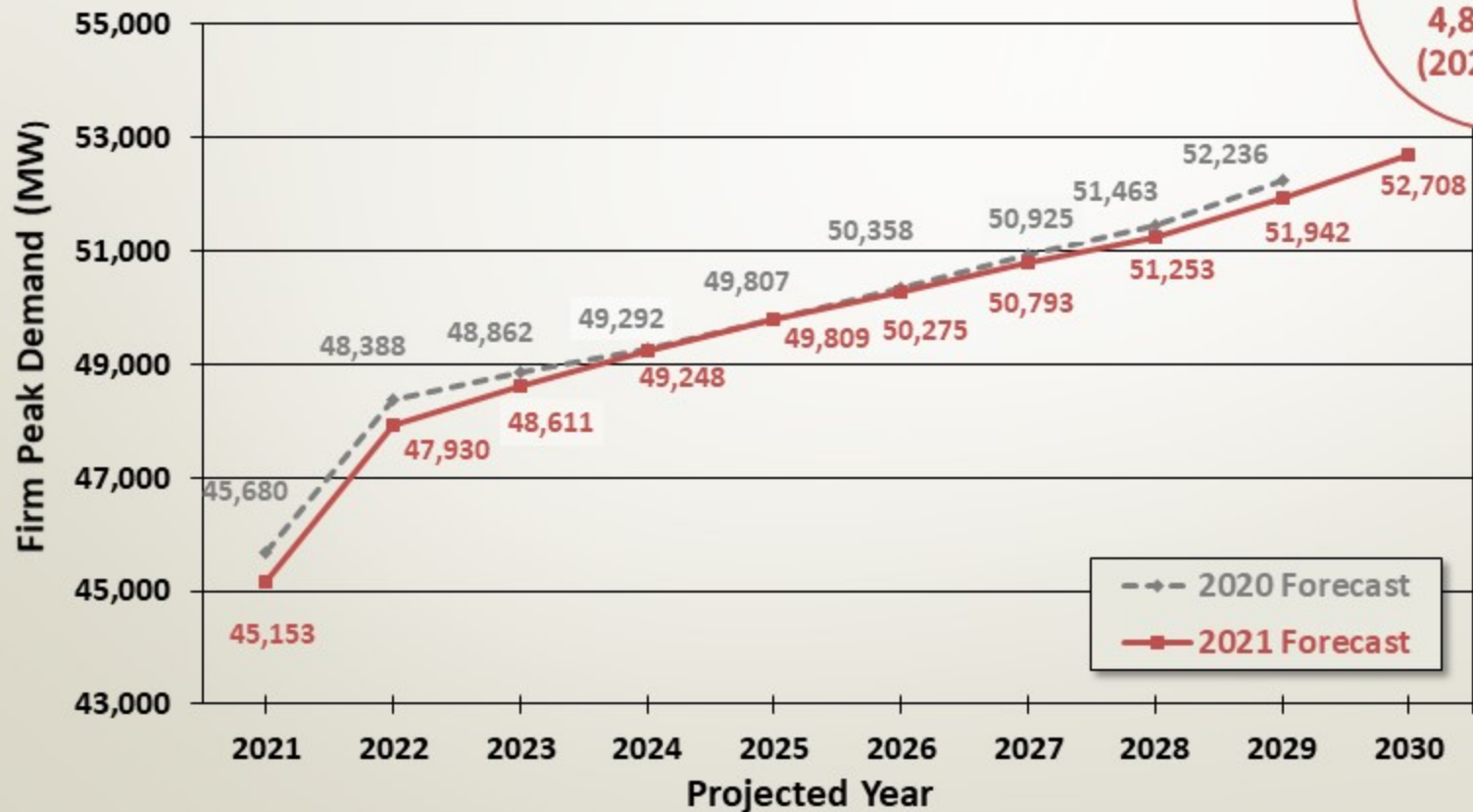
Commercial customer forecasts affected by online commerce



EV Impact Grows to over 1 GW by 2030

Comparison of 2020 vs. 2021 Firm Peak Demand Forecast^{1,2} (Summer)

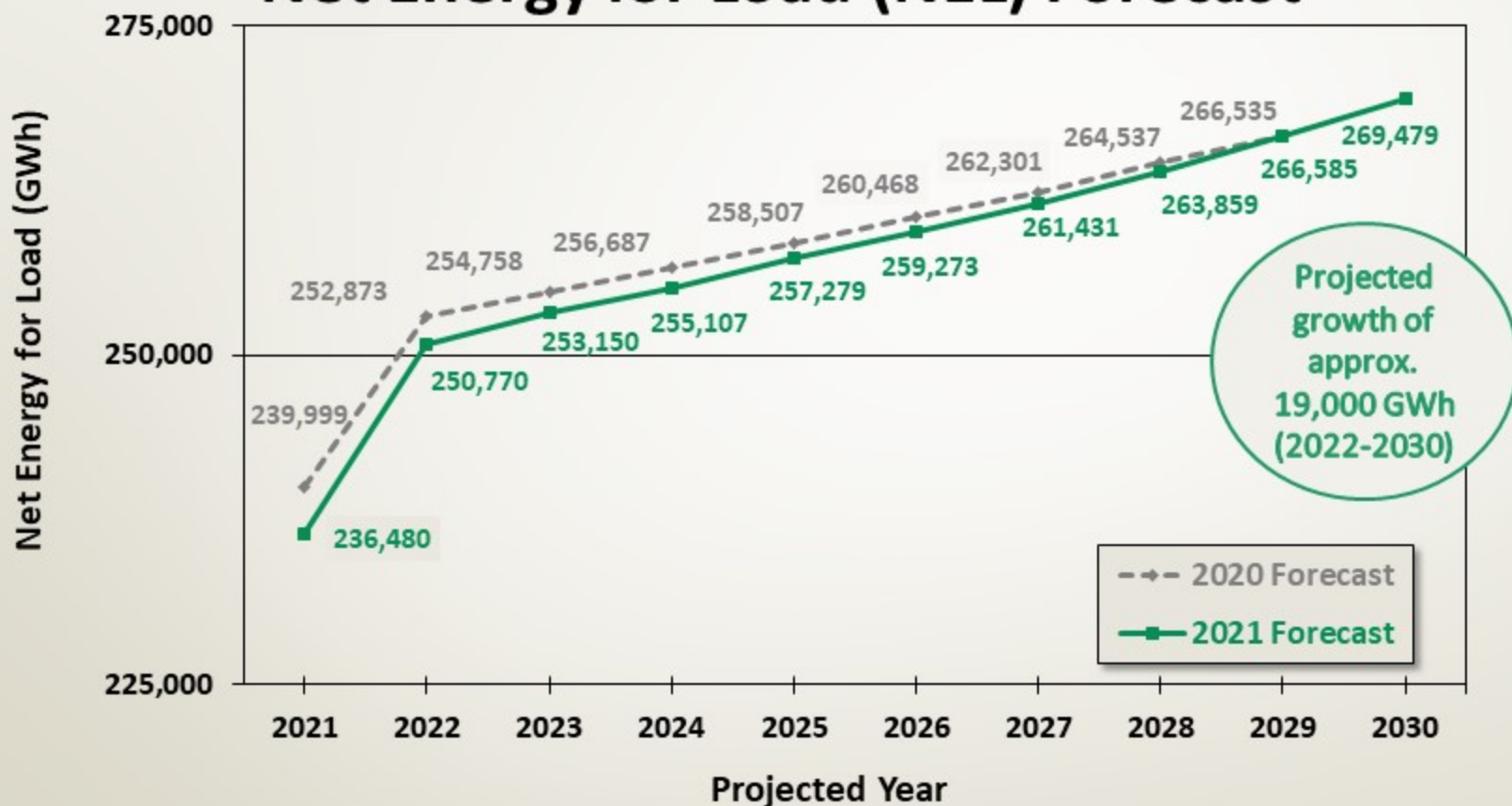
Projected growth of approx. 4,800 MW (2022-2030)



¹ Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2021-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

² As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

Comparison of 2020 vs. 2021 Net Energy for Load (NEL) Forecast^{1,2}

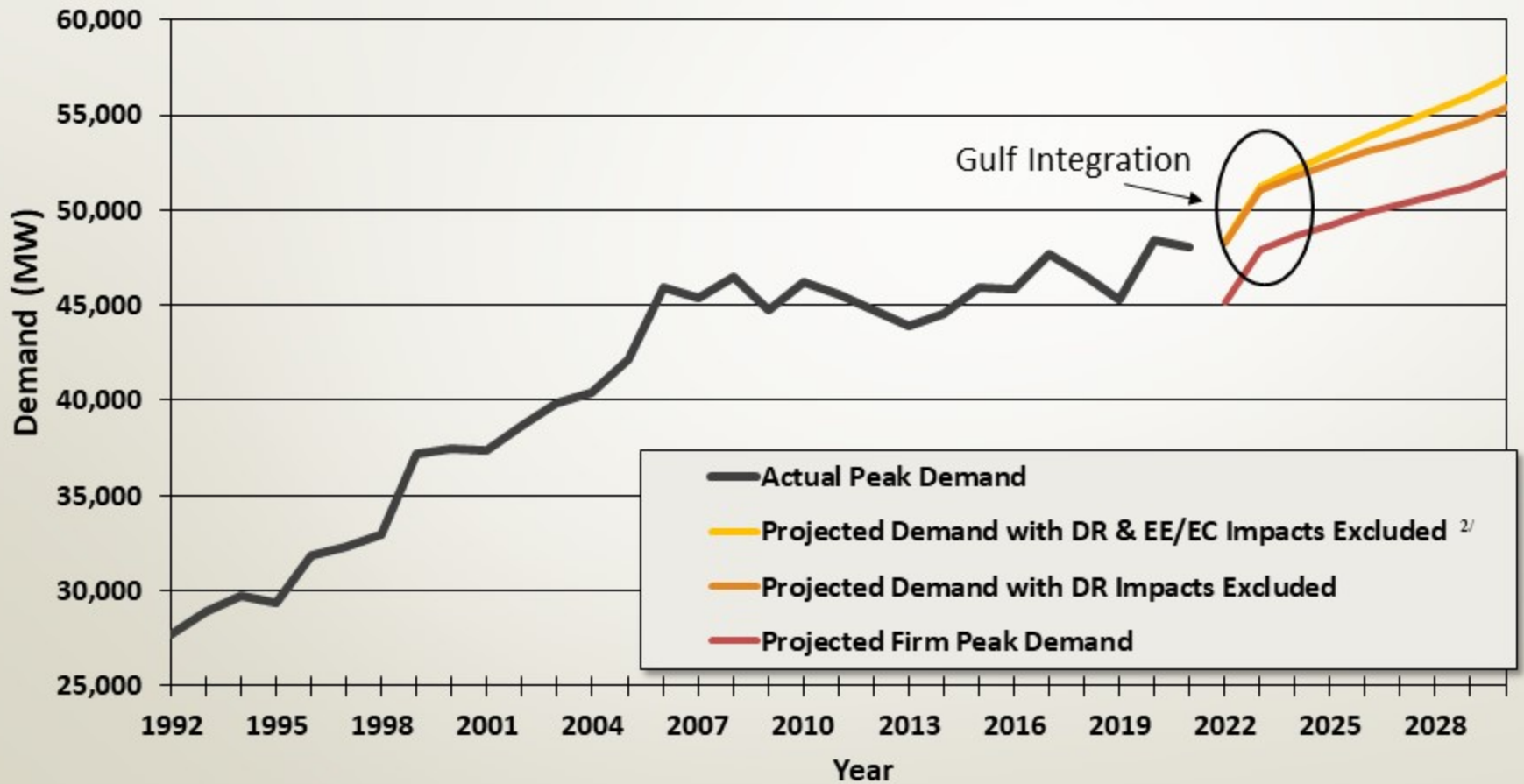


¹ Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2021-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

² As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

Summer Peak Demands

Actual and Forecasted^{1,2,3}

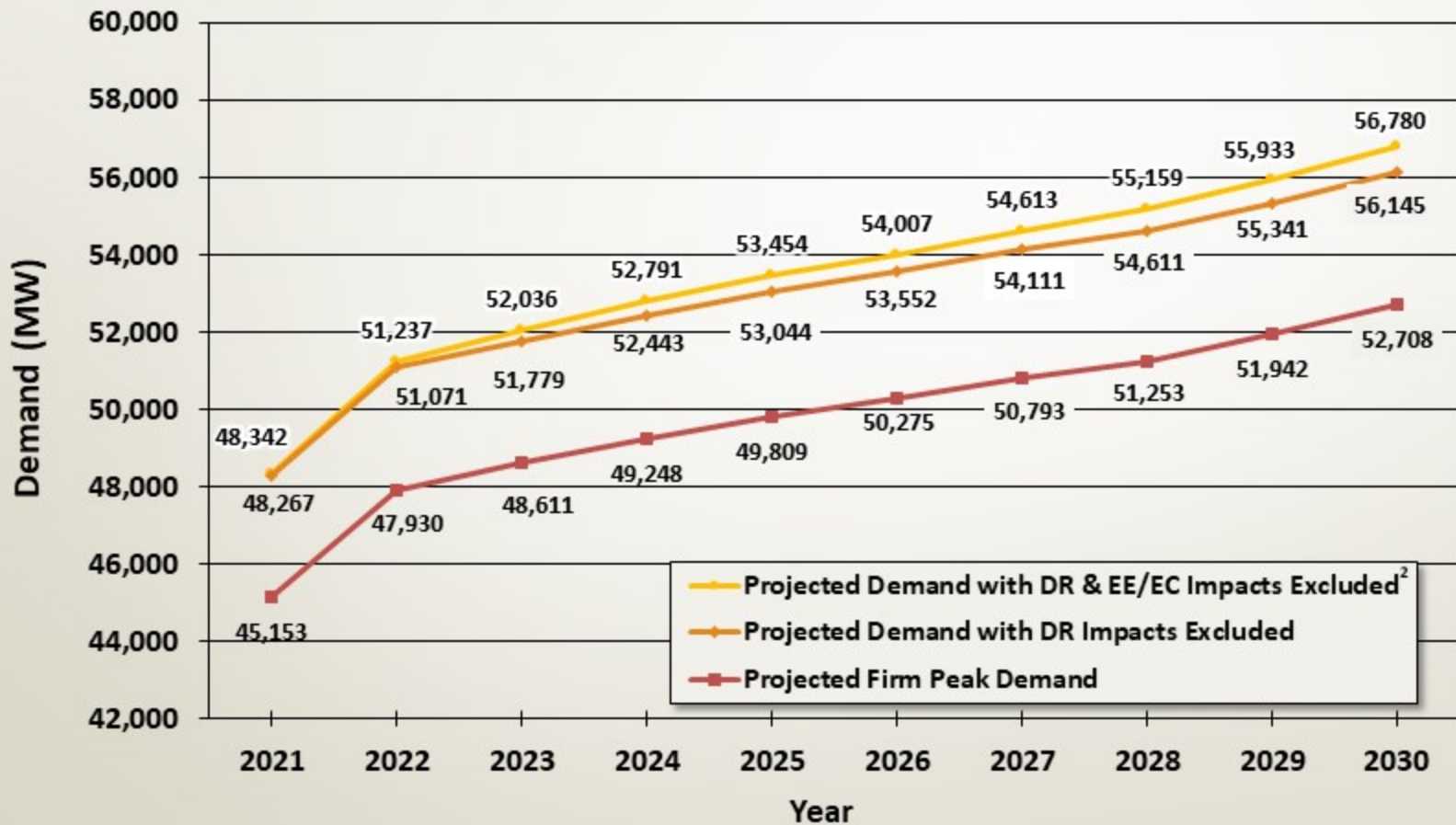


¹ Projected impacts of Energy Efficiency codes and standards are included in all projections.

² Impacts from cumulative Demand Response (DR) and incremental (2021-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

³ As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

Forecasted Summer Peak Demands^{1,3}

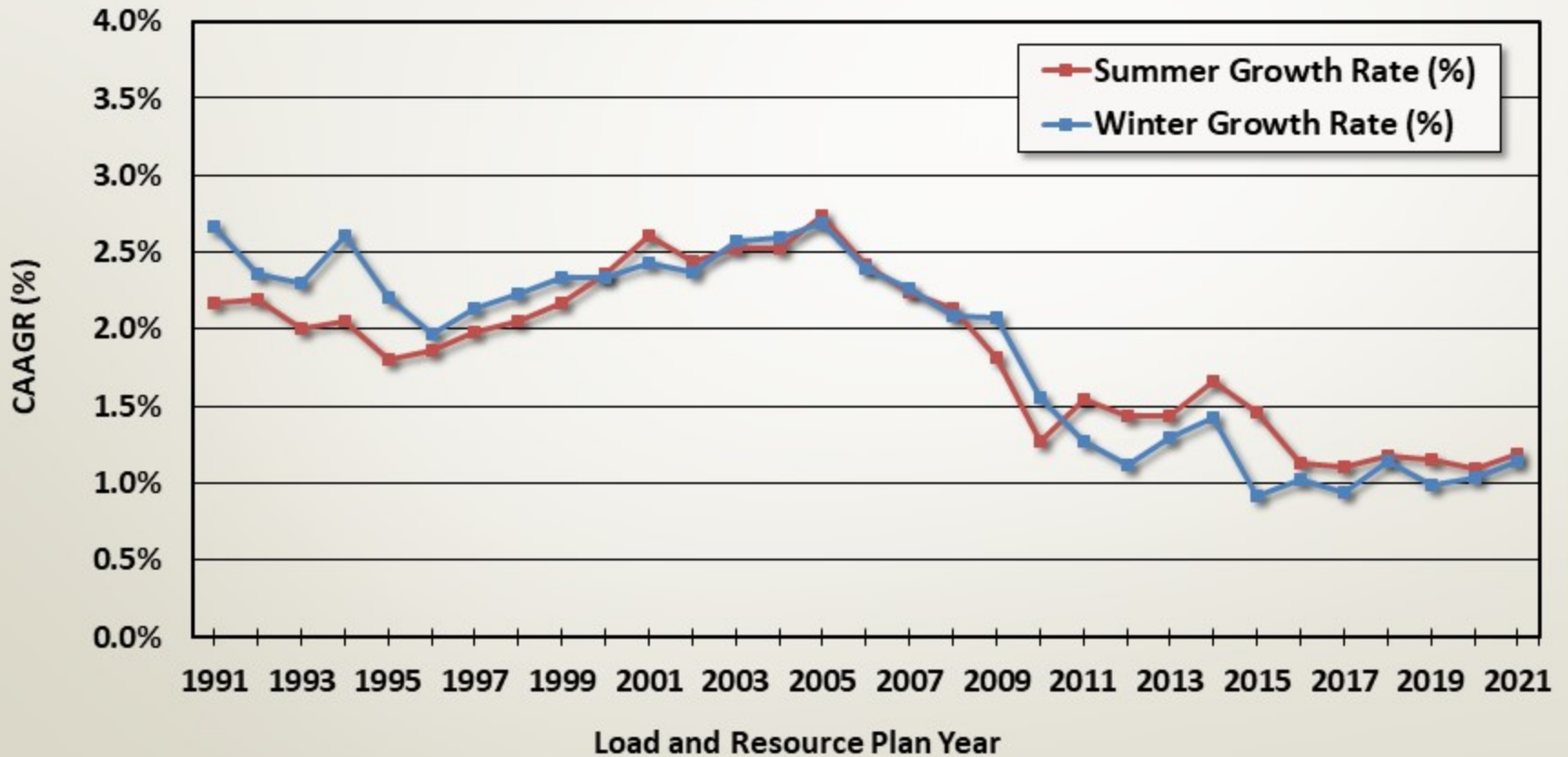


¹ Projected impacts of Energy Efficiency codes and standards are included in all projections.

² Impacts from cumulative Demand Response (DR) and incremental (2021-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

³ As of 6/1/2022 capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

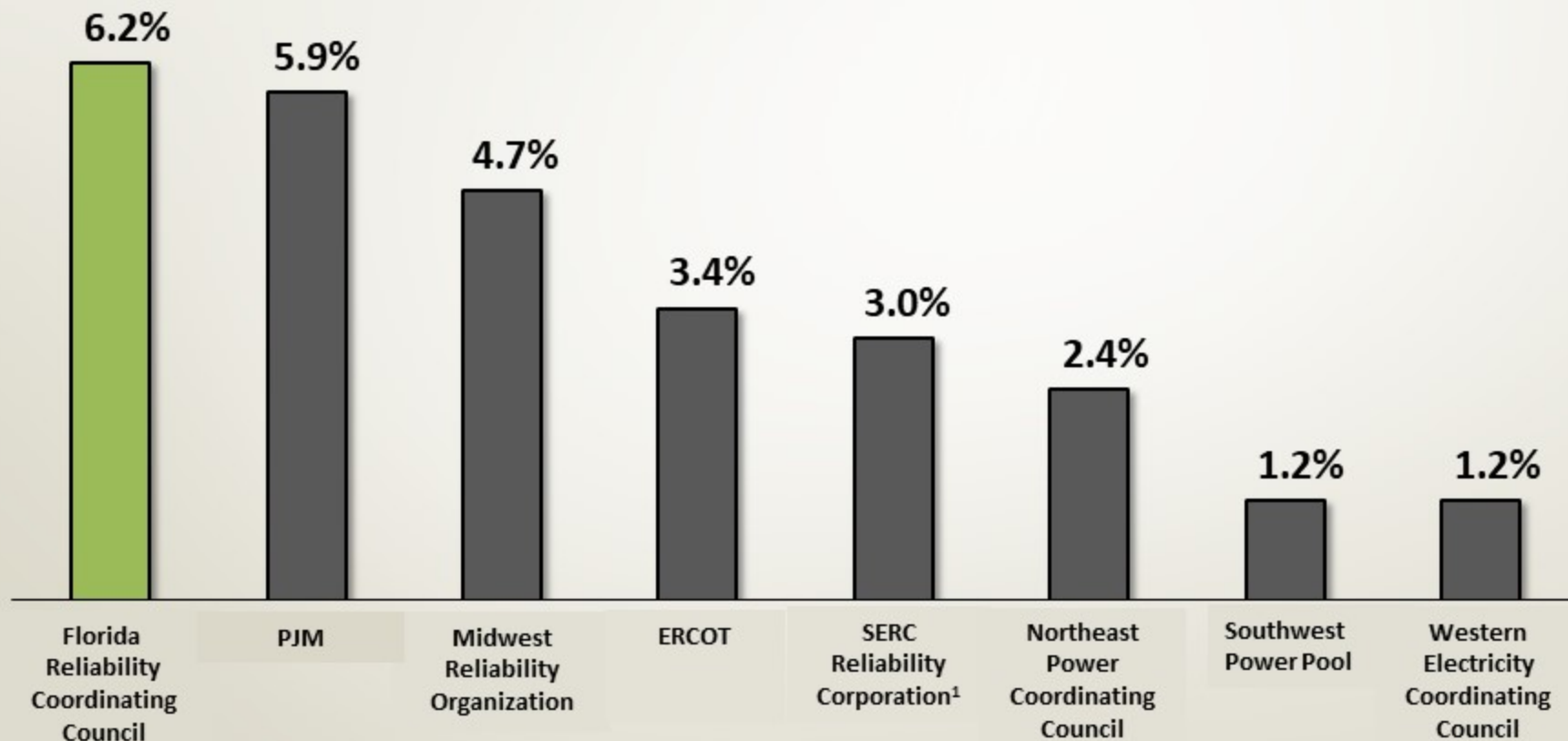
Historical Compound Average Annual Growth Rate^{1,2} for Firm Peak Demand (MW)



¹ Projected growth rate from prior forecasts

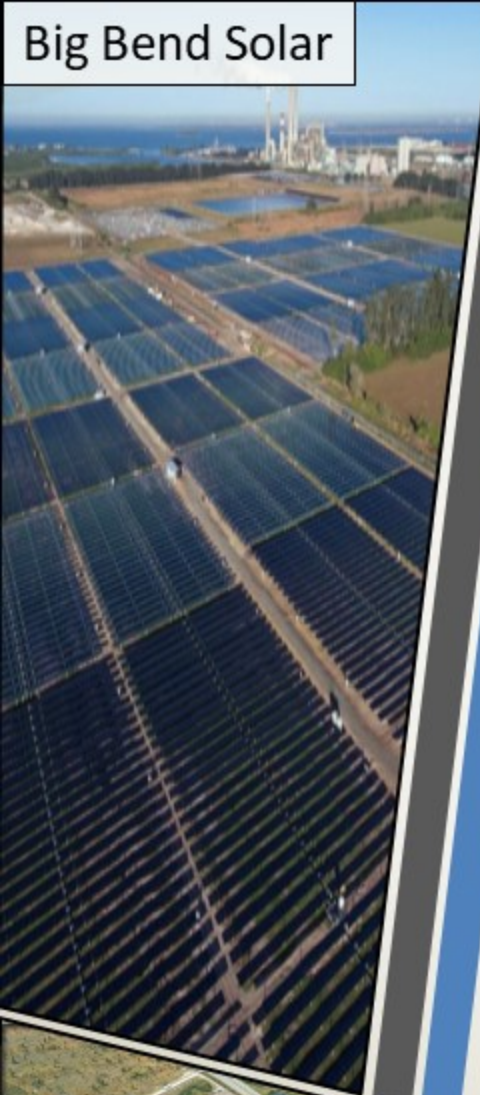
² In this year's report the growth rate was calculated using 9 years of data from 2022-2030 to normalize the impact of Gulf Integration on 6/1/2022

Demand Response as a Percentage of Peak Demand Summer 2021



Source: North American Electric Reliability Corporation's (NERC) 2021 Summer Reliability Assessment (<https://www.nerc.com/pa/RAPA/ra/Pages/default.aspx>)

¹ Excluding FRCC (FL-Peninsula) Subregion



Big Bend Solar

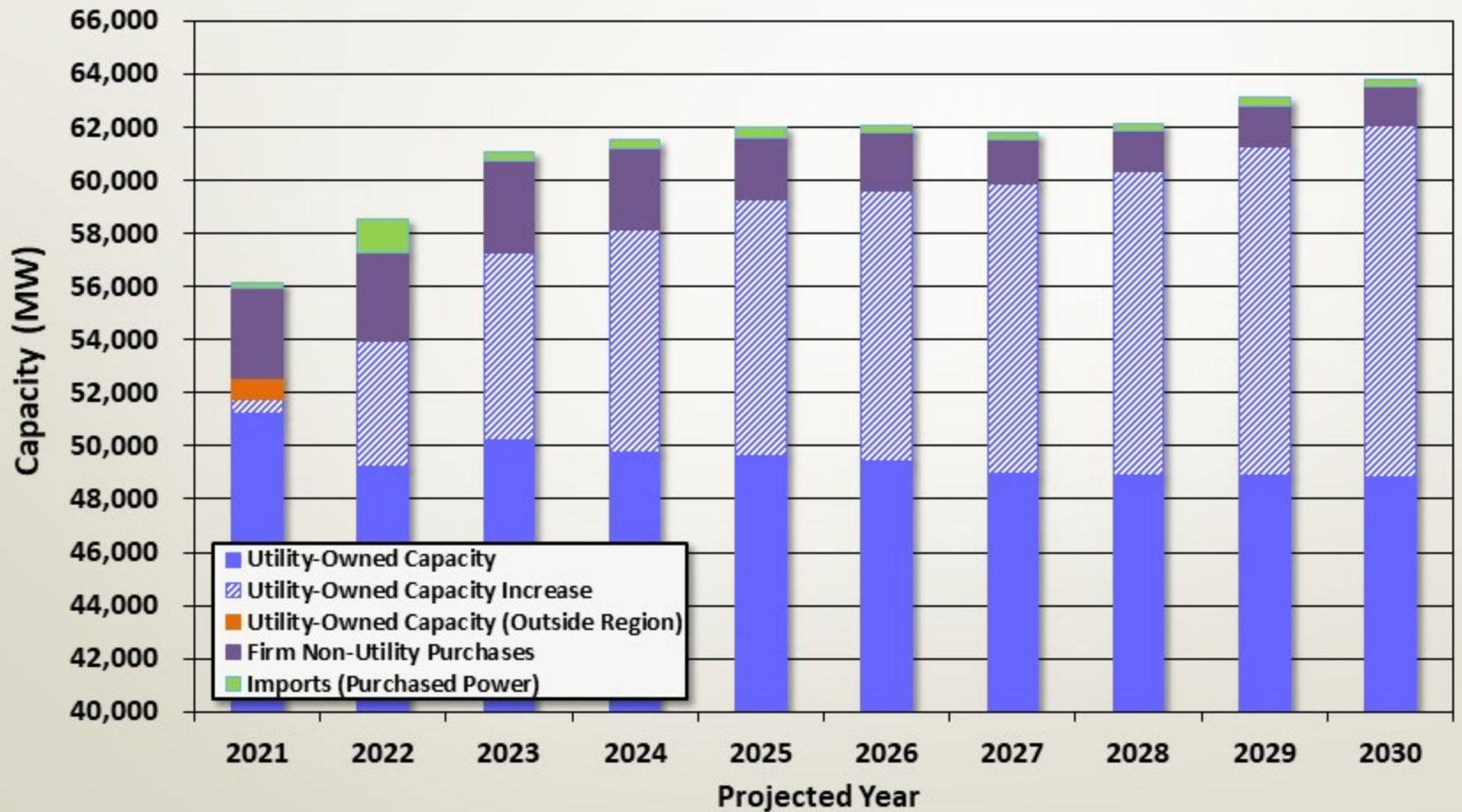


Stanton Solar

Capacity Additions and Reserve Margins

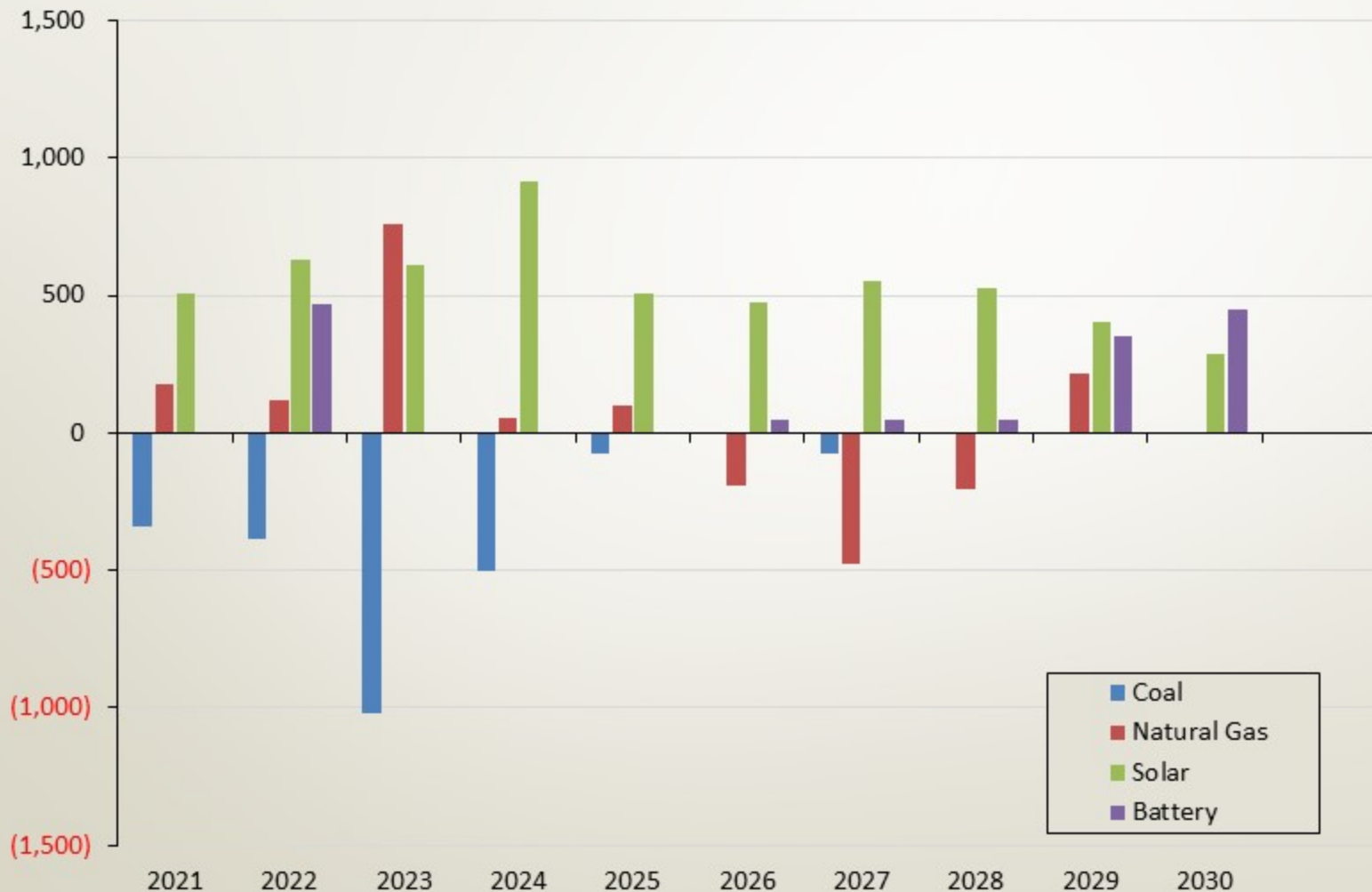
- 12,150 MW of new generation planned over the next ten years
 - Includes approximately 5,100 MW of firm solar
 - Overall summer firm capacity value from solar in FRCC region varies between 53% to 43%
 - Includes 1,400 MW of battery storage
- 4,900 MW of retirements
- Planned Reserve Margins projected to remain above 20% over the next ten years
- Reserve Margin increasingly dependent upon firm Demand Response in later years

Projected Total Available Capacity¹ (Summer)



¹ As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

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



¹ As of 6/1/2022 capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).



Nuclear Outlook is Stable in 10-yr Horizon

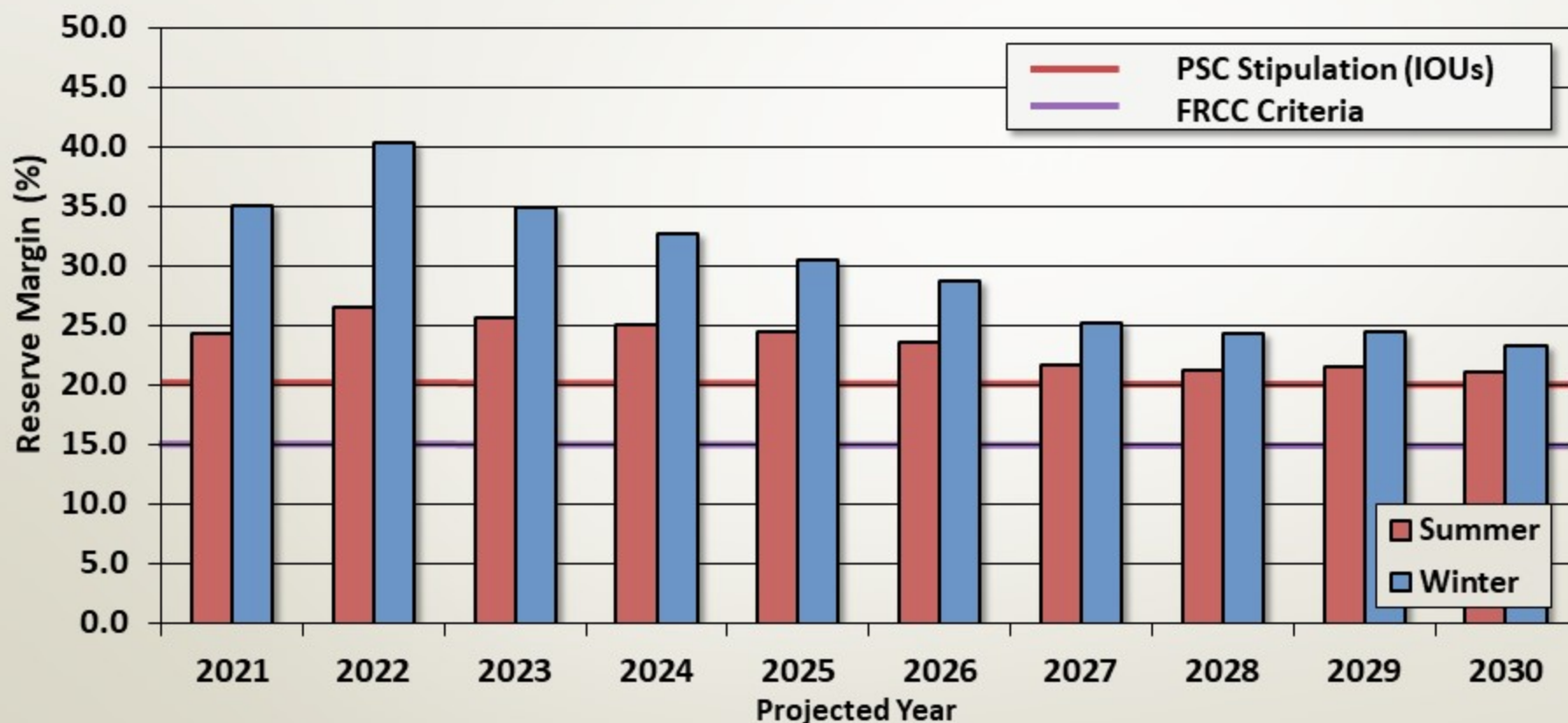
Existing¹ Nuclear Capacity (Summer)

St. Lucie 1	981 MW
St. Lucie 2	986 MW
Turkey Point 3	837 MW
Turkey Point 4	841 MW
	<hr/>
	3,645 MW



¹ Existing generation as of December 31, 2020

Planned Reserve Margin^{1,2,3} (Based on Firm Load)

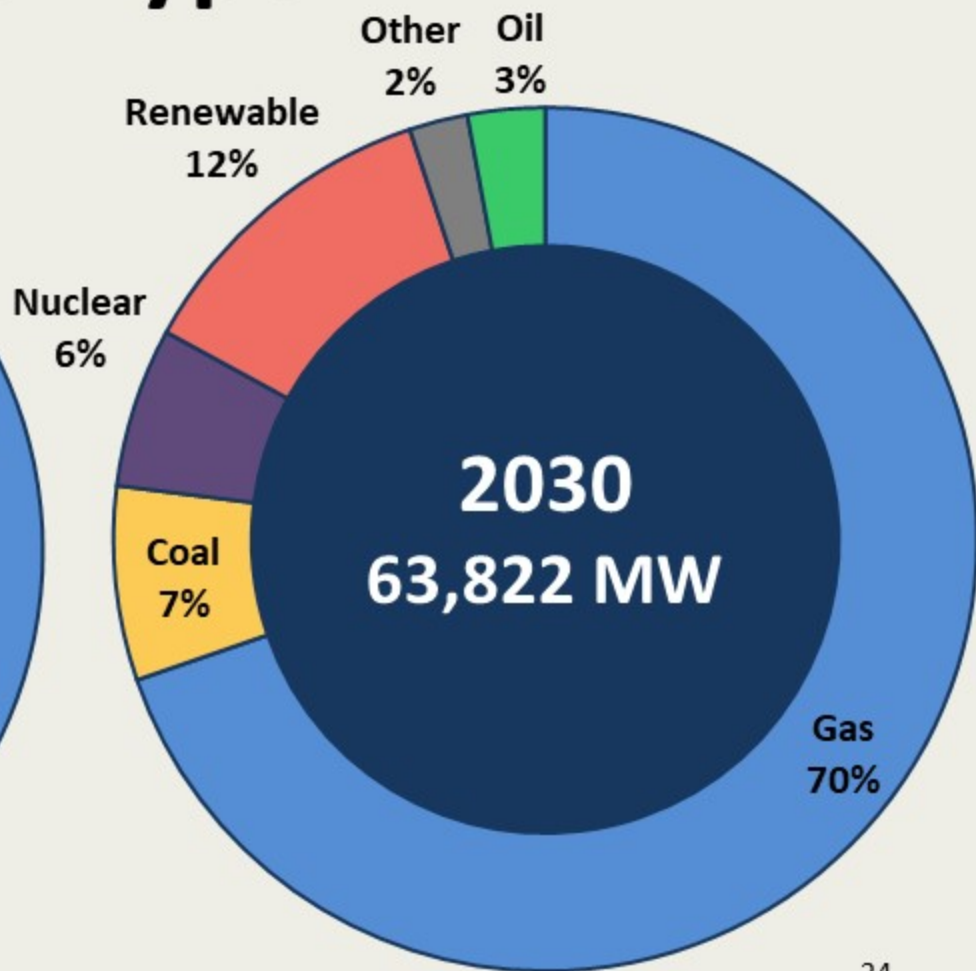
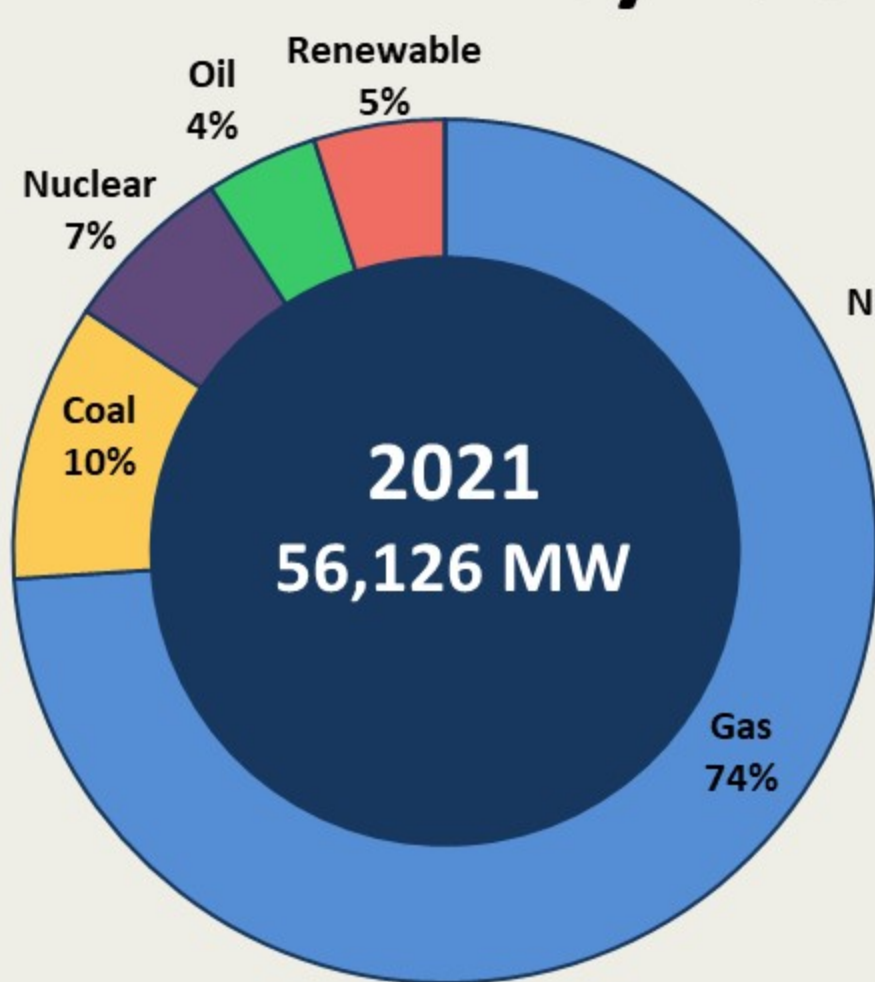


¹ Projected impacts of Energy Efficiency codes and standards are included in all projections.

² Impacts from cumulative Demand Response (DR) and incremental (2021-on) utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are included.

³ As of 6/1/2022, Reserve Margin data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

Forecasted Firm Summer Capacity by Fuel Type^{1,2}

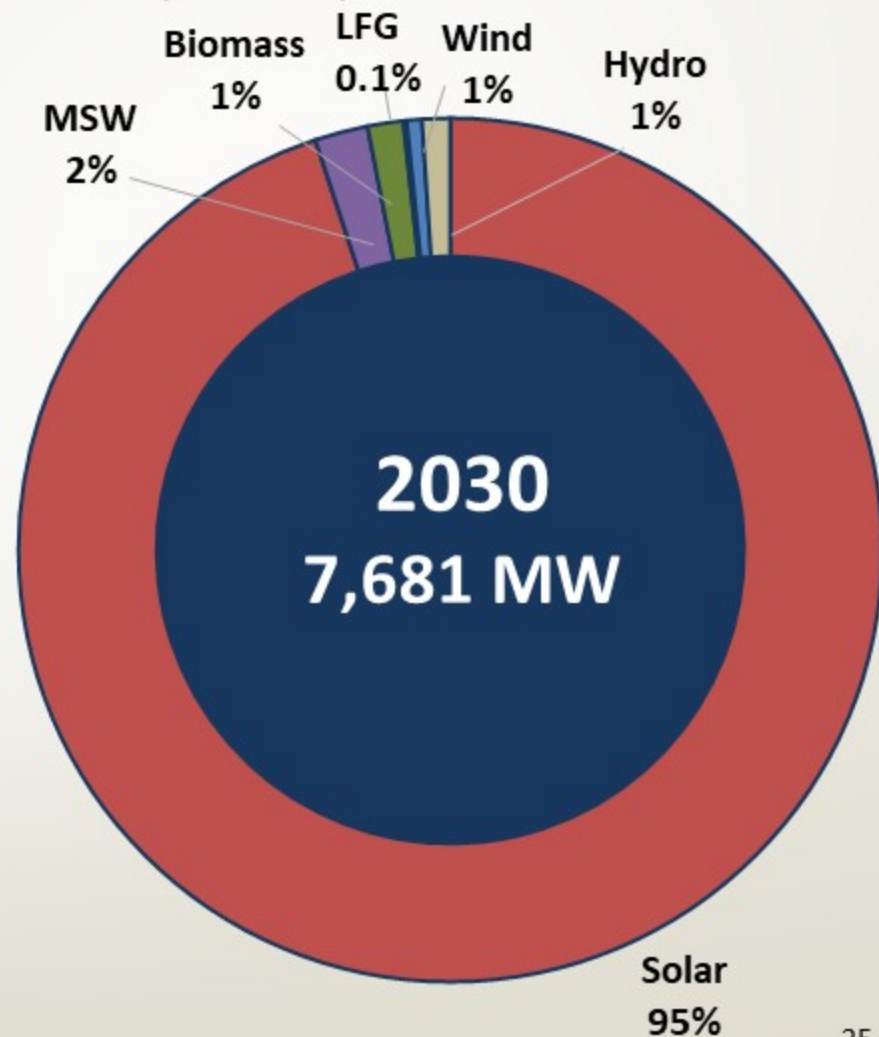
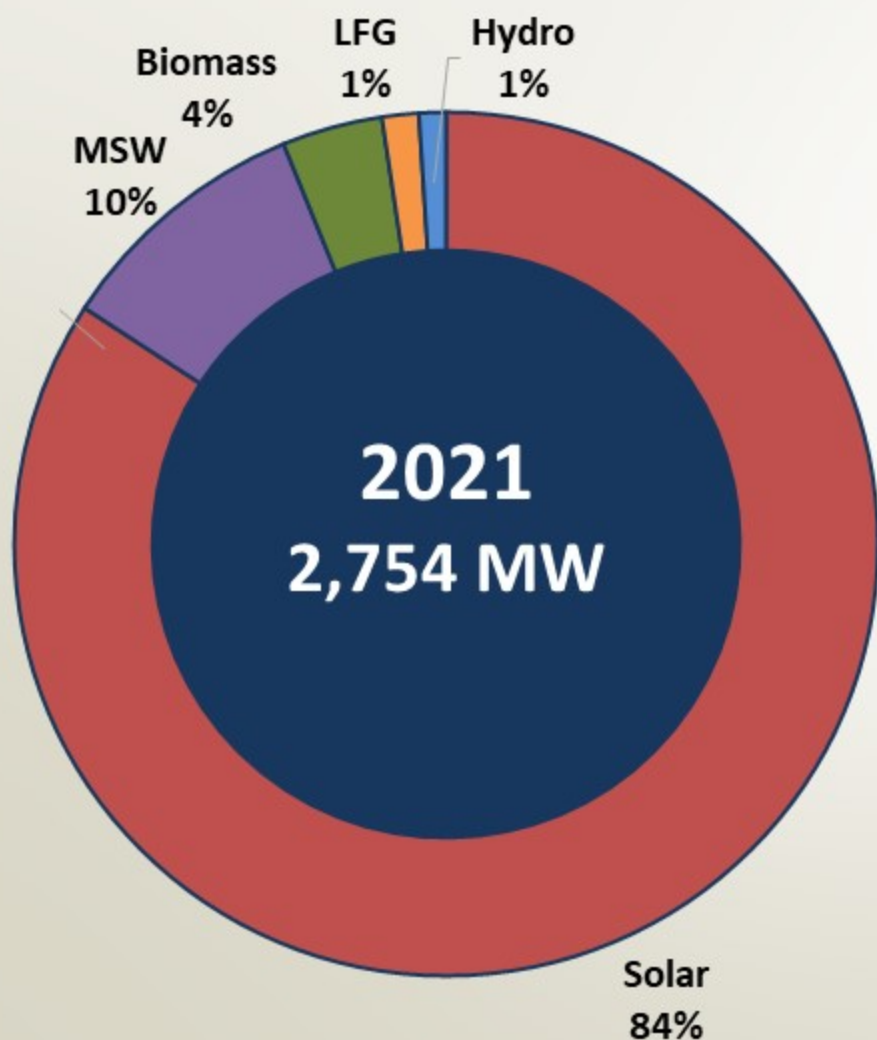


¹ As of 6/1/2022, capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

² Excludes Firm Demand Response.

Forecasted Renewable Mix

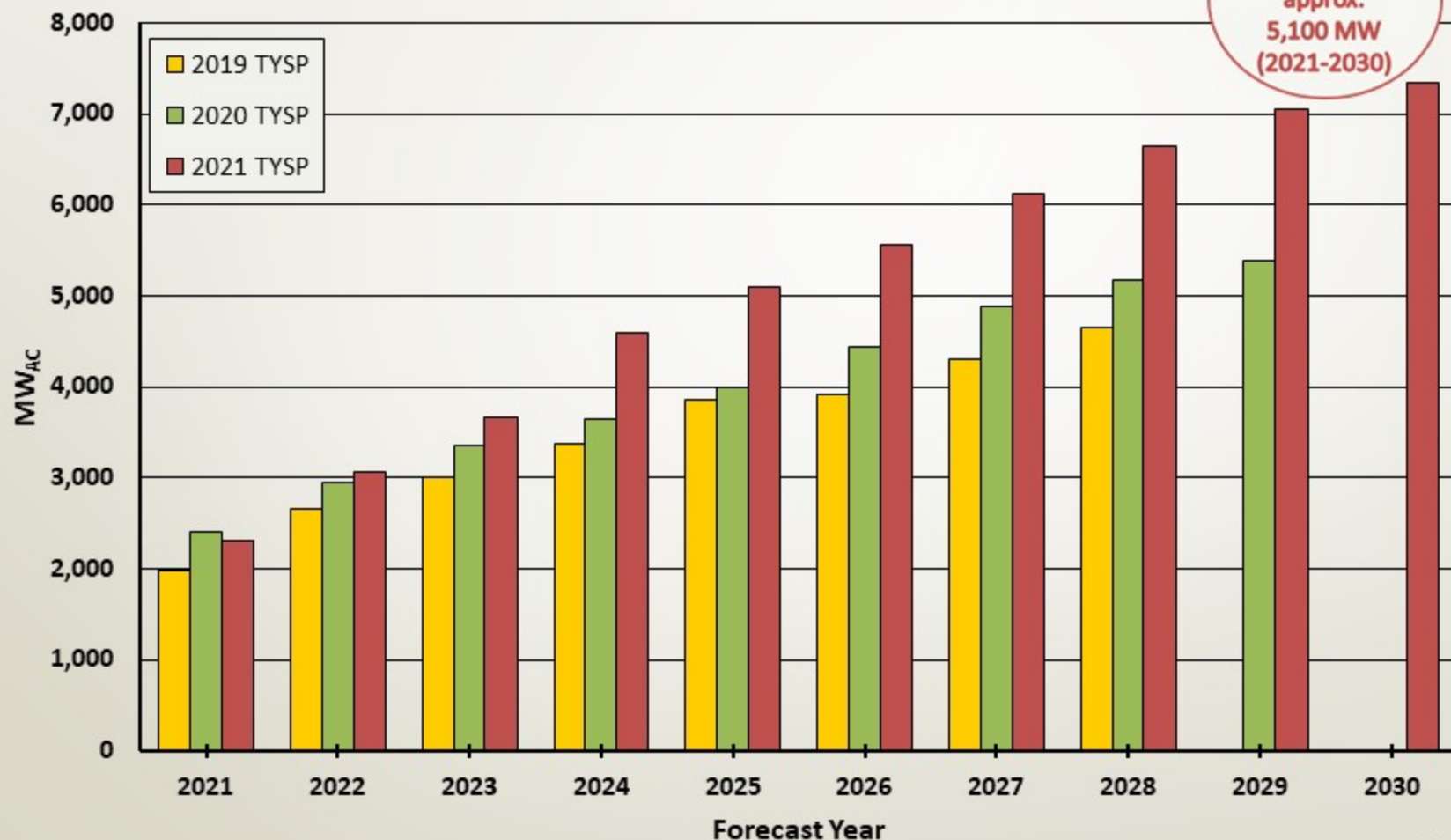
Firm Summer Capacity



¹ As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

2019-2021 TYSP Forecasted Solar¹

Firm² Summer Capacity

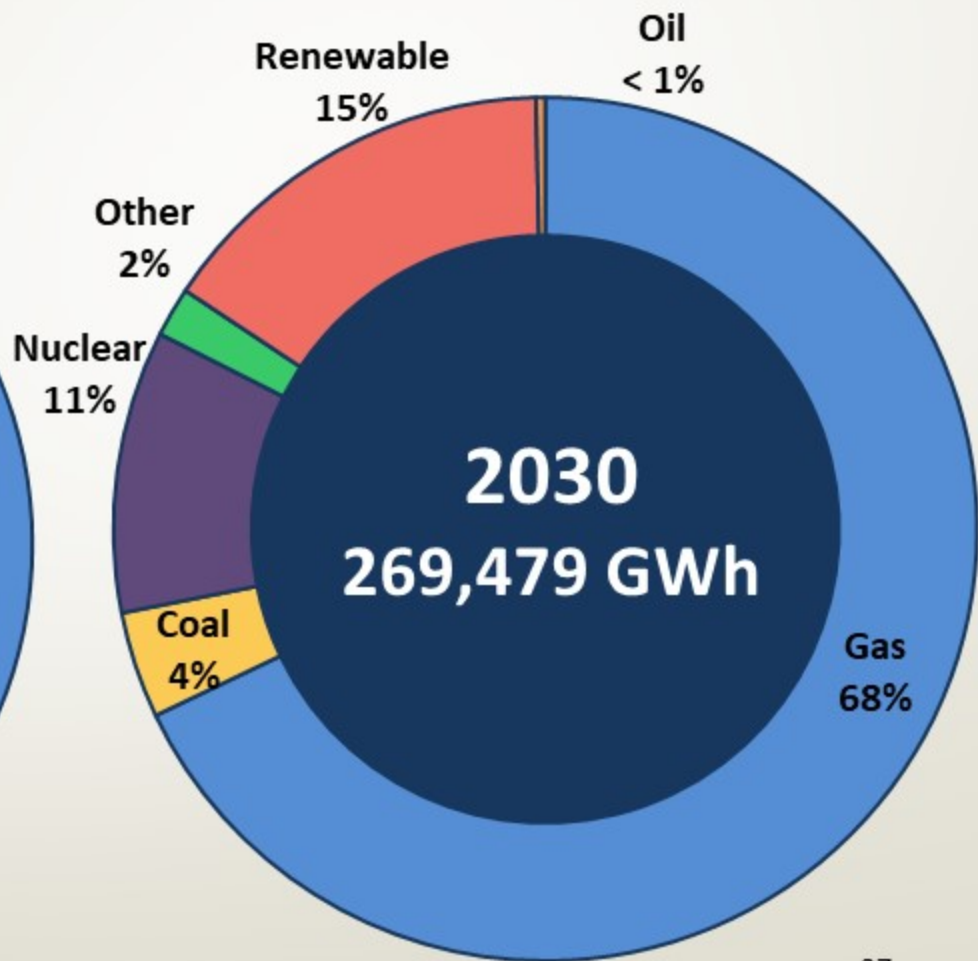
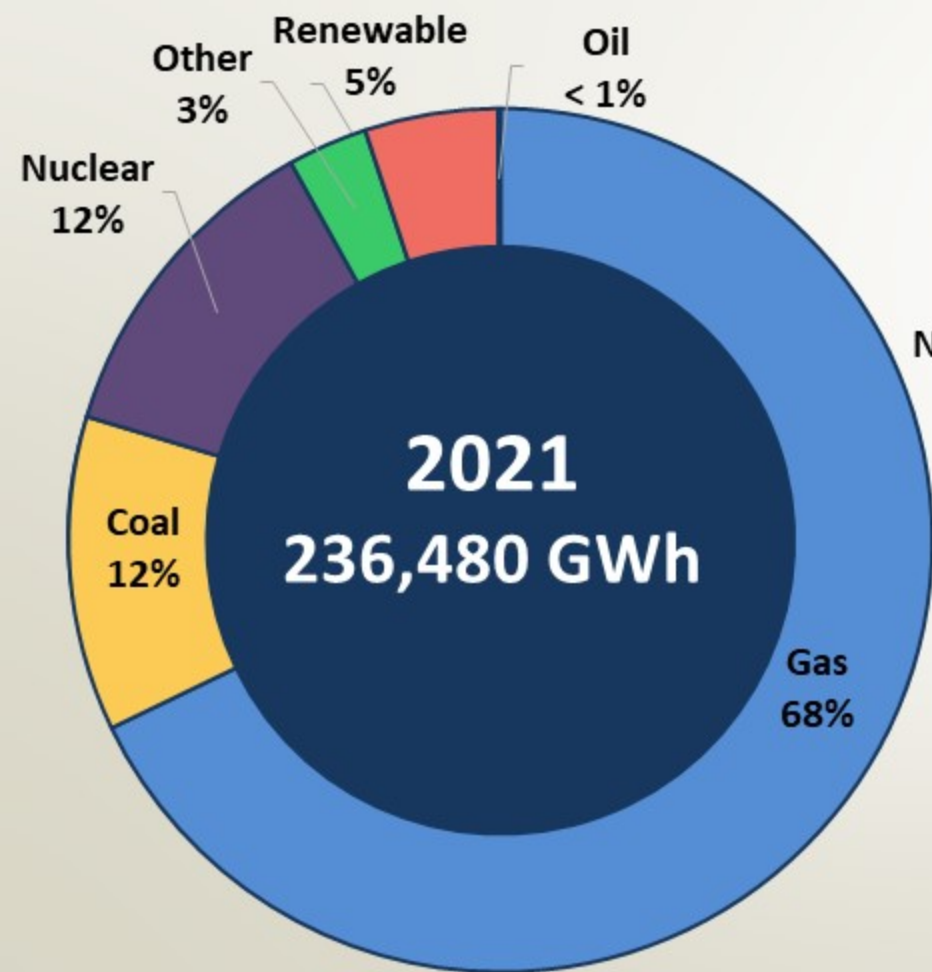


¹ As of 6/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

² Firm solar capacity means the amount of solar energy expected to be available at the time of peak.

Forecasted Fuel Mix¹

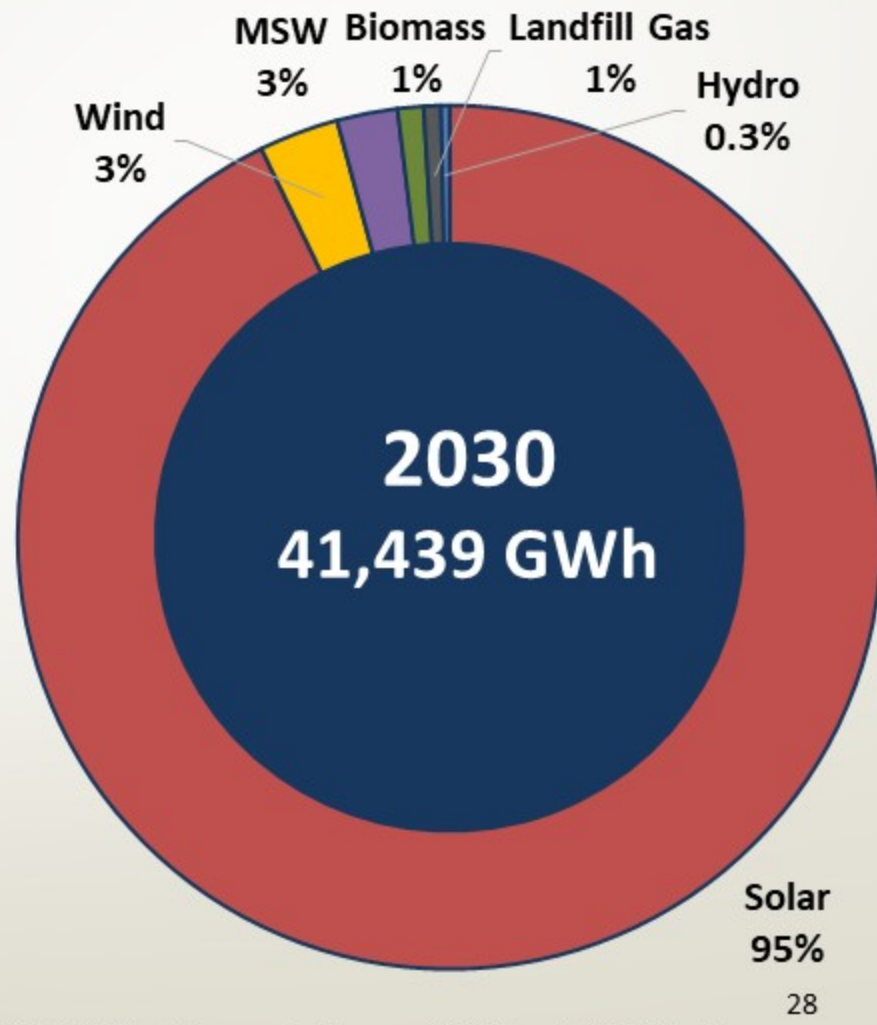
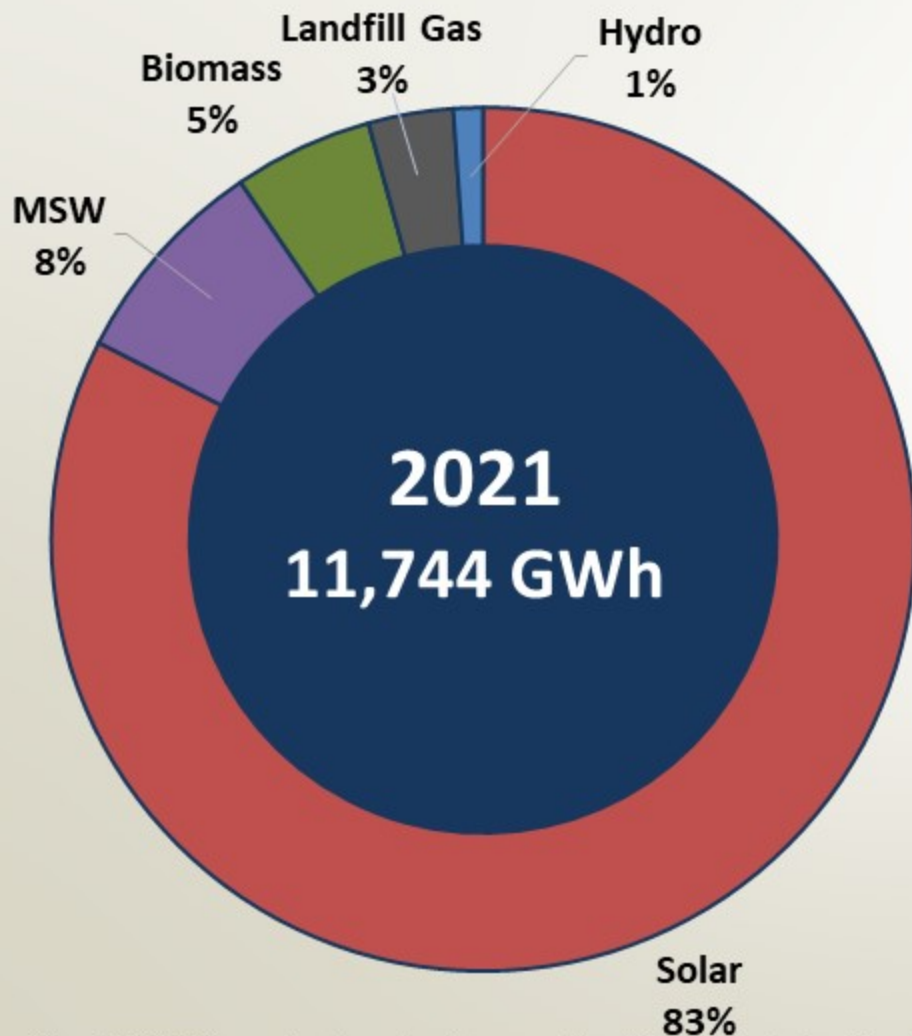
Net Energy for Load (GWh)



¹ As of 6/30/2022 capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).

Forecasted Renewable Mix¹

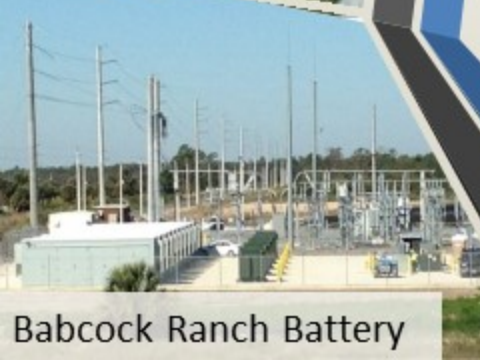
Total Energy Served



¹ As of 6/1/2022 capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2030 is for the single integrated system (FPL).



Perry Solar



Babcock Ranch Battery

Reliability Considerations of Utility Solar Generation Additions

- No significant operational impacts at current levels
- Utilities continue developing experience with operations, dispatch, and output forecasting
- Utilities are using tools and monitoring capability to manage increased solar
- Monitoring other parts of the country that have higher penetration rates
- Solar output is frequently declining over system peak, resulting in reduced capacity values for firm vs installed
- Resource Adequacy measures under review

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 57-61%

Conclusion

Based on 2021 TYSPs, planned Reserve Margins above 20% for all peak periods for the next ten years

Meeting the Reserve Margin target increasingly reliant on Demand Response in later years

Renewables increase from 5% to 15% (energy)

Gas infrastructure supports planned generation

FRCC studying lessons learned from extreme weather events

Questions?