Florida Public Service Commission
2019 Ten-Year Site Plan Workshop
FRCC Presentation

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President & CEO
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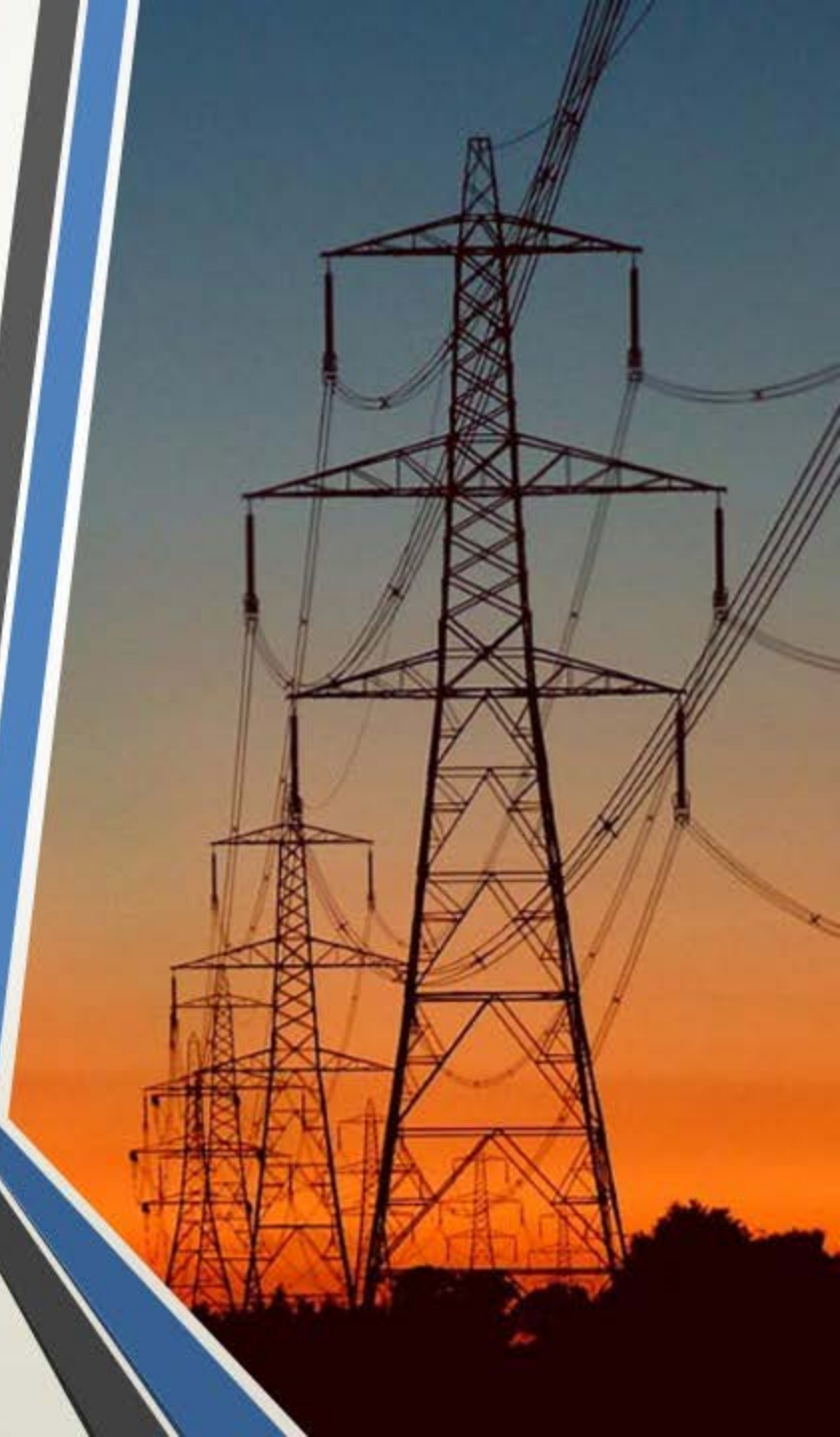

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Vision: To maintain a highly reliable and secure bulk power system for peninsular Florida

Agenda

2019 FRCC Load & Resource Plan

- Integrated Resource Planning Process
- Load Forecast and Demand-Side Management (DSM)
- Generation Additions, Reserve Margins, Fuel Mix, and Renewable Resources
- Reliability Considerations of Utility Solar Generation Additions
- Natural Gas Infrastructure in Florida

2019 Load & Resource Plan Summary

Over the next ten years

- Firm peak demand and energy sales forecasts slightly lower than 2018 TYSP; yet, continue to show growth
- Over 12,000 MW of new firm generation planned
- Planned Reserve Margins above 20%
- Energy Efficiency Codes and Standards are projected to reduce peak demand by 5.7%
- DSM continues to be a significant component of reserves
- Renewables increase from 2% to 12% (energy)

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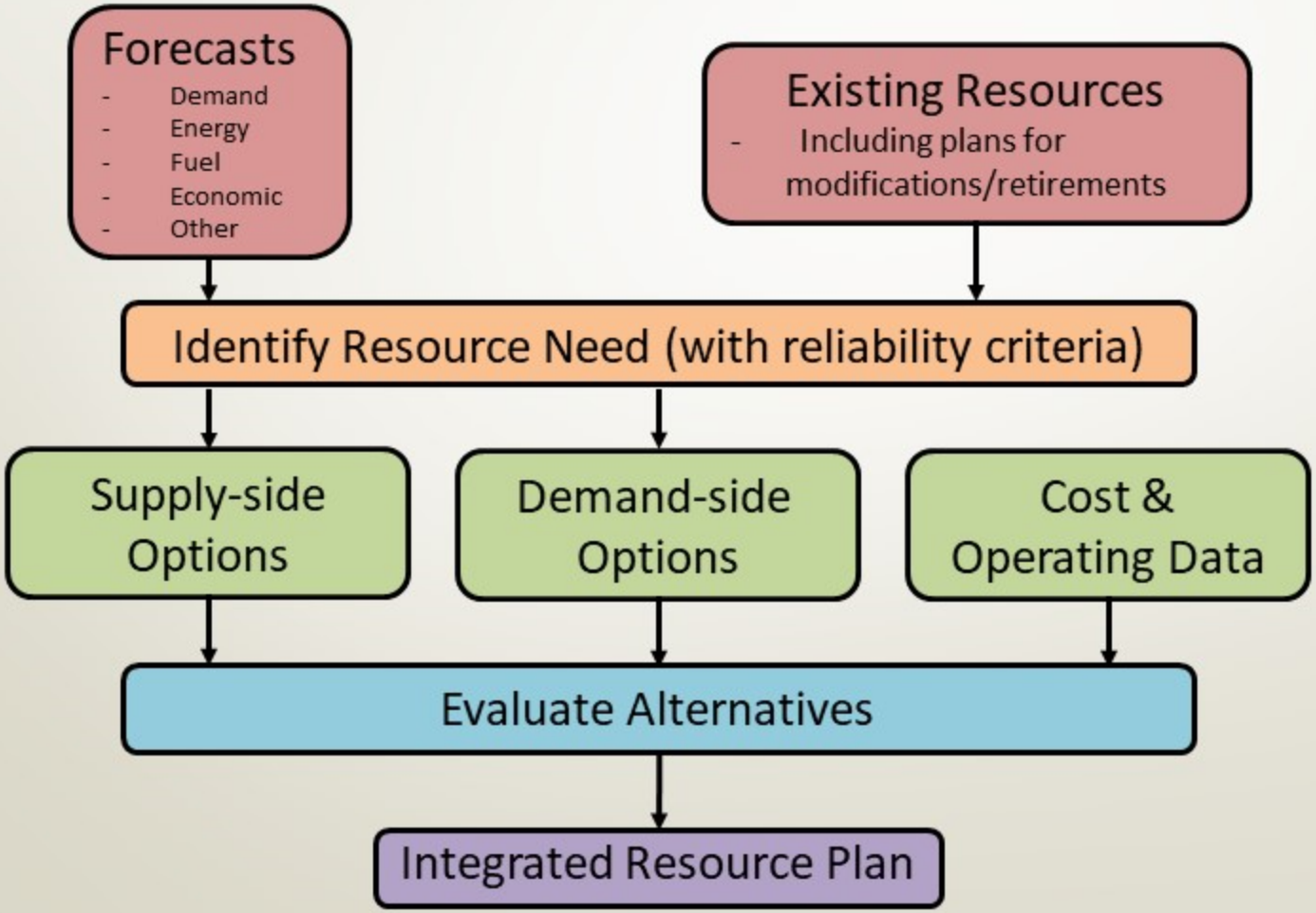
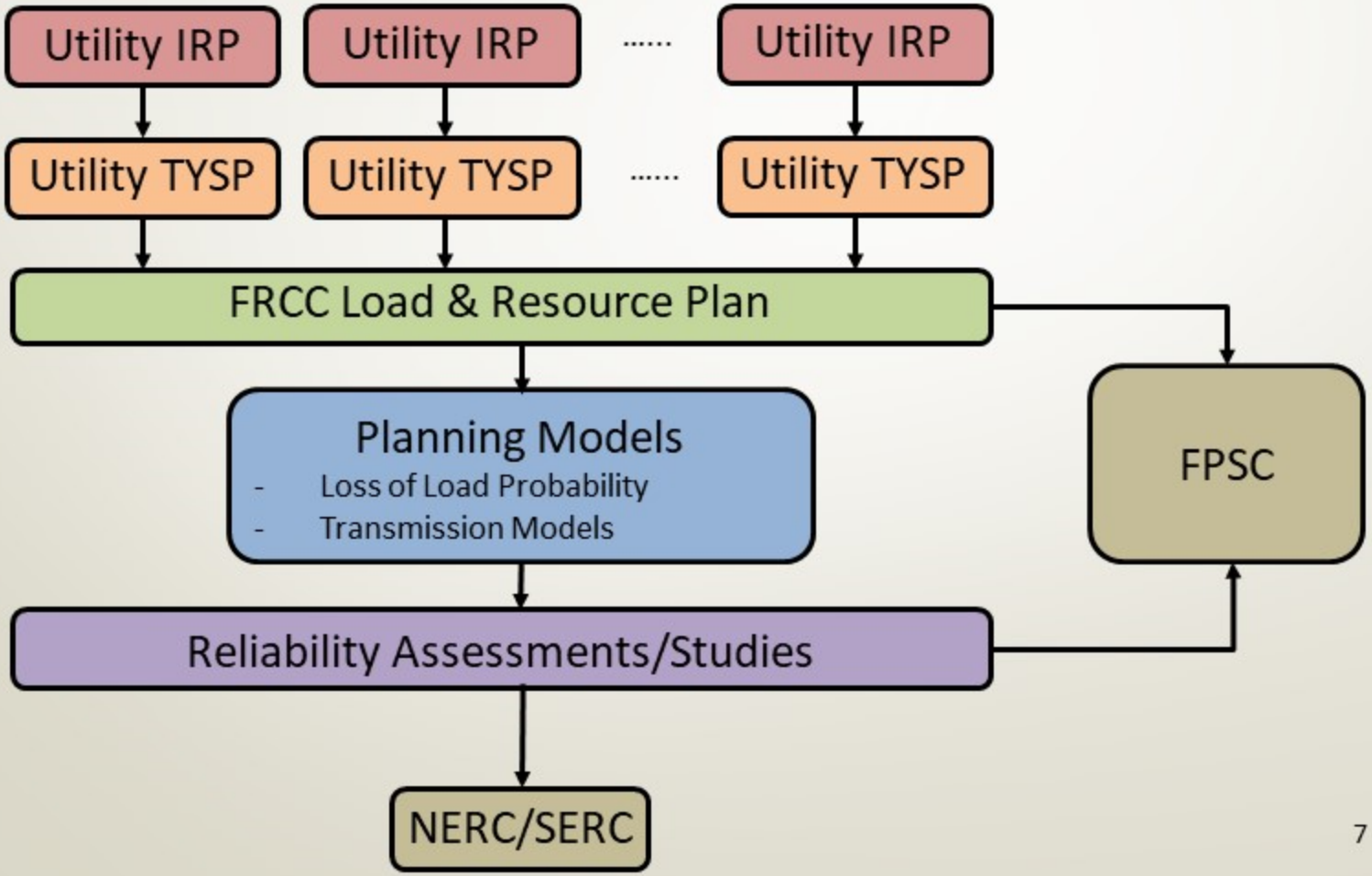
Load & Resource Plan

Methodology and Results

Utility Integrated Resource Planning (IRP) Process Overview



FRCC Planning Process Overview



Load Forecast and DSM[1/]

- Firm summer peak demand (MW) slightly lower than 2018, but grow 1.15% per year
- Forecasted energy sales (GWh) slightly lower than 2018 TYSPs; yet, grow at 0.8% per year
- Demand Response reduces firm summer peak (MW) by 6.4%
- Energy Efficiency Summer Peak reductions by 2028
  - Mandated Codes and Standards[2/]: 5.7%
  - Utility-Sponsored Energy Efficiency/Energy Conservation: 1.4%

[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

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Load Forecast Factors

Florida unemployment (actual) continues to decrease

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 500 MW by 2028

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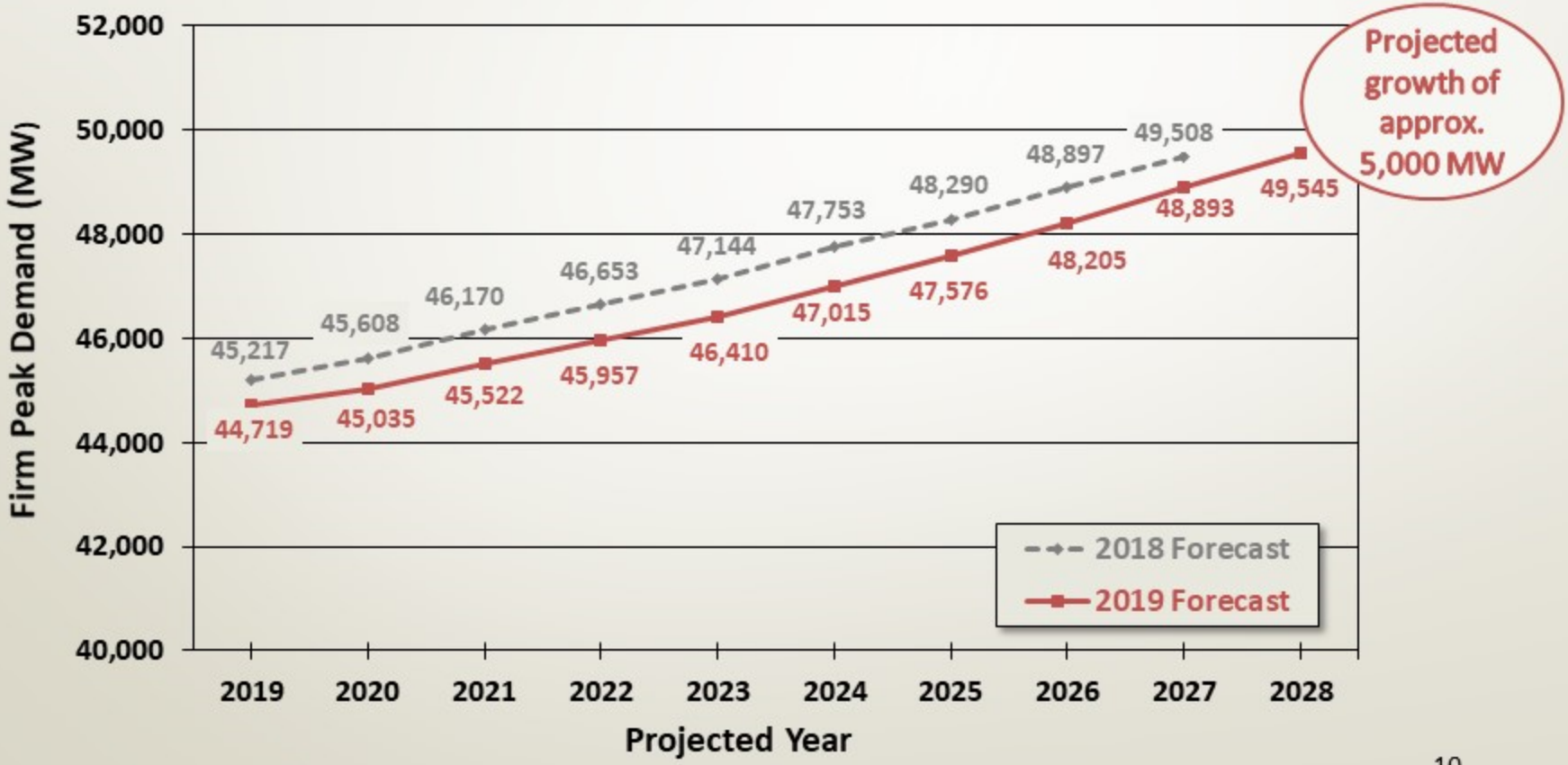
Comparison of 2018 vs. 2019 Firm Peak Demand Forecast[1/] (Summer)



[1/] Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2019-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

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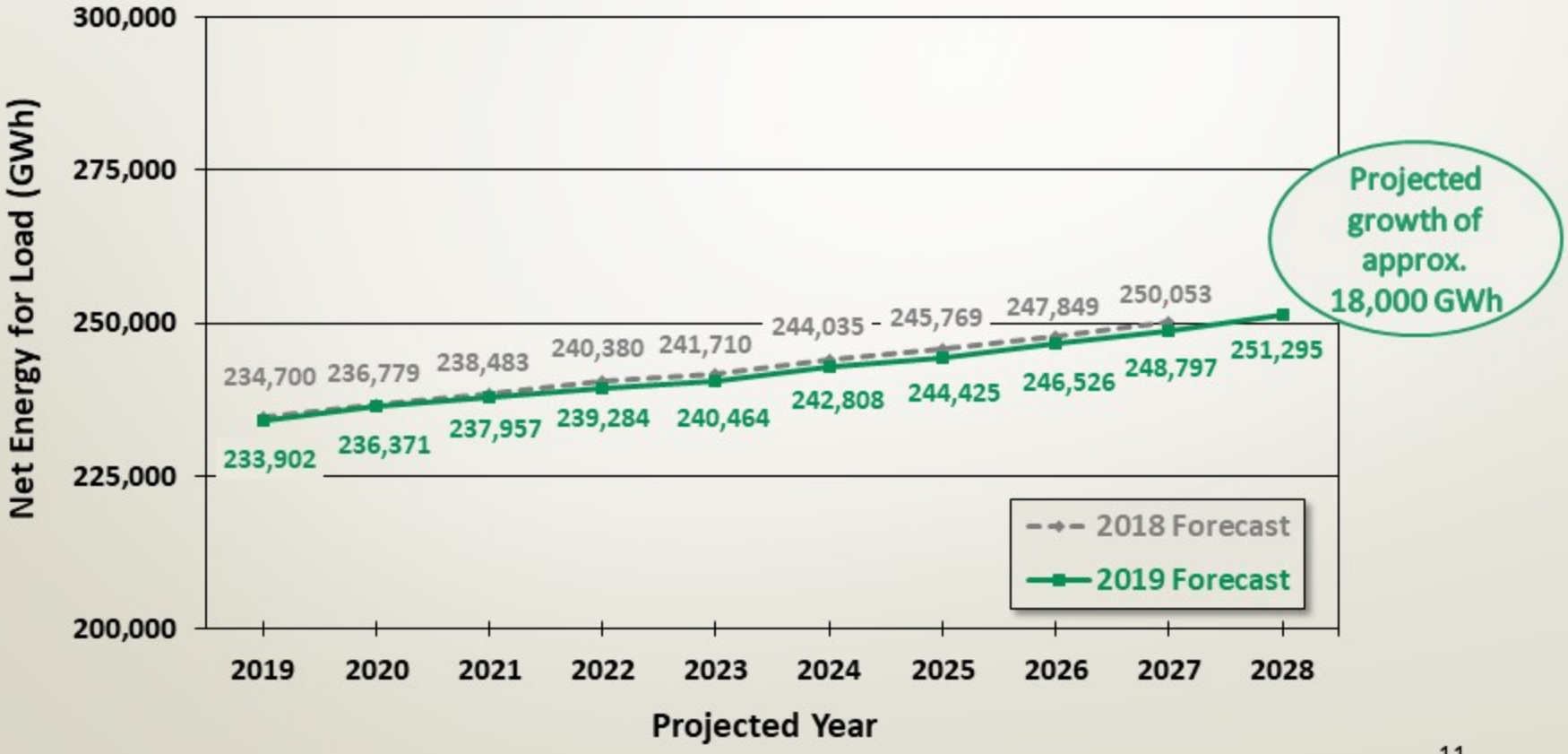
Comparison of 2018 vs. 2019 Net Energy for Load (NEL) Forecast[1/]



[1/] Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2018-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

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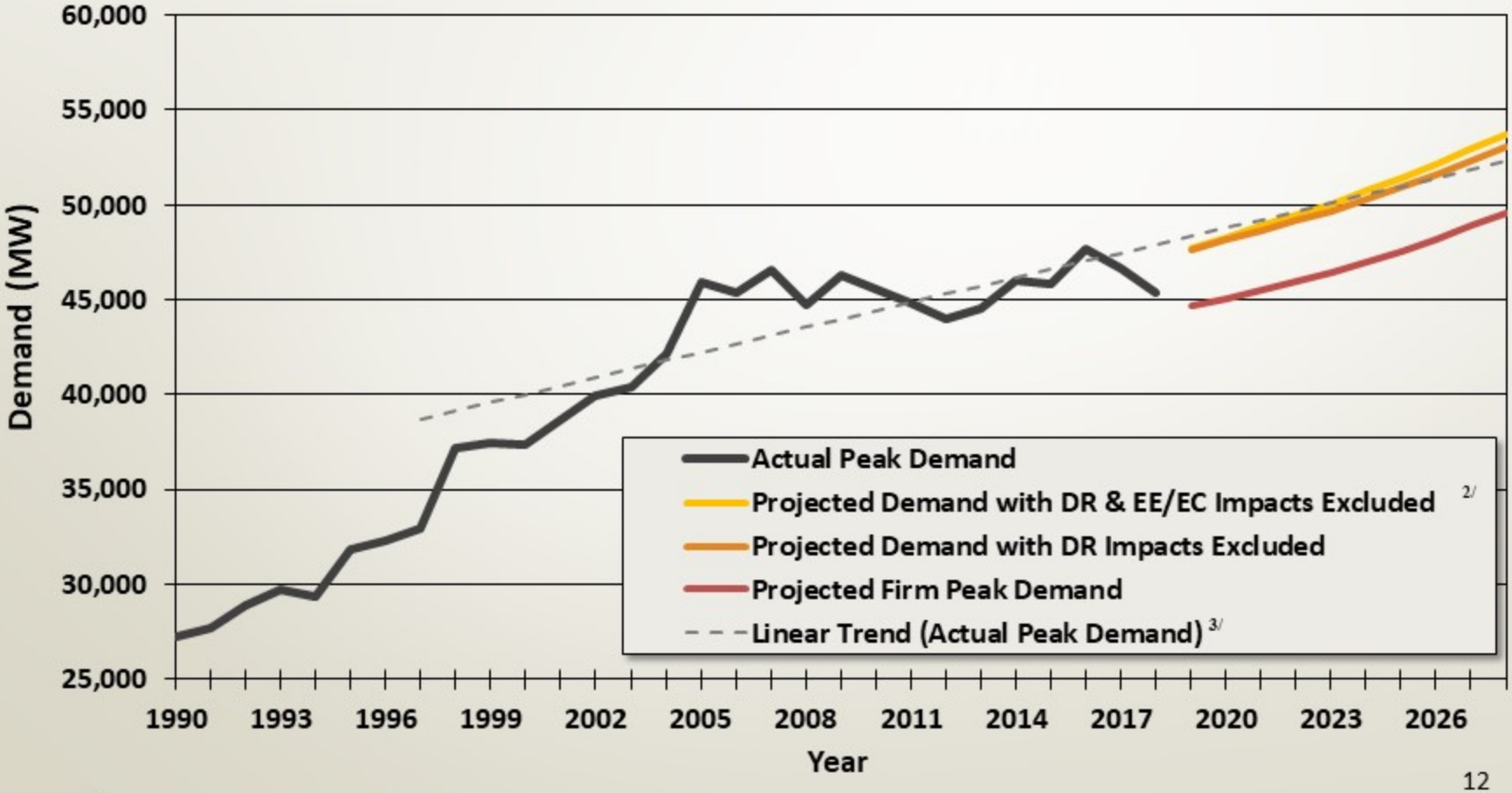
Summer Peak Demands

Actual and Forecasted[1/]



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

2/ Impacts from cumulative Demand Response (DR) and incremental (2018-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

3/ Linear trend based on actual peak demand from 1998 to 2017.

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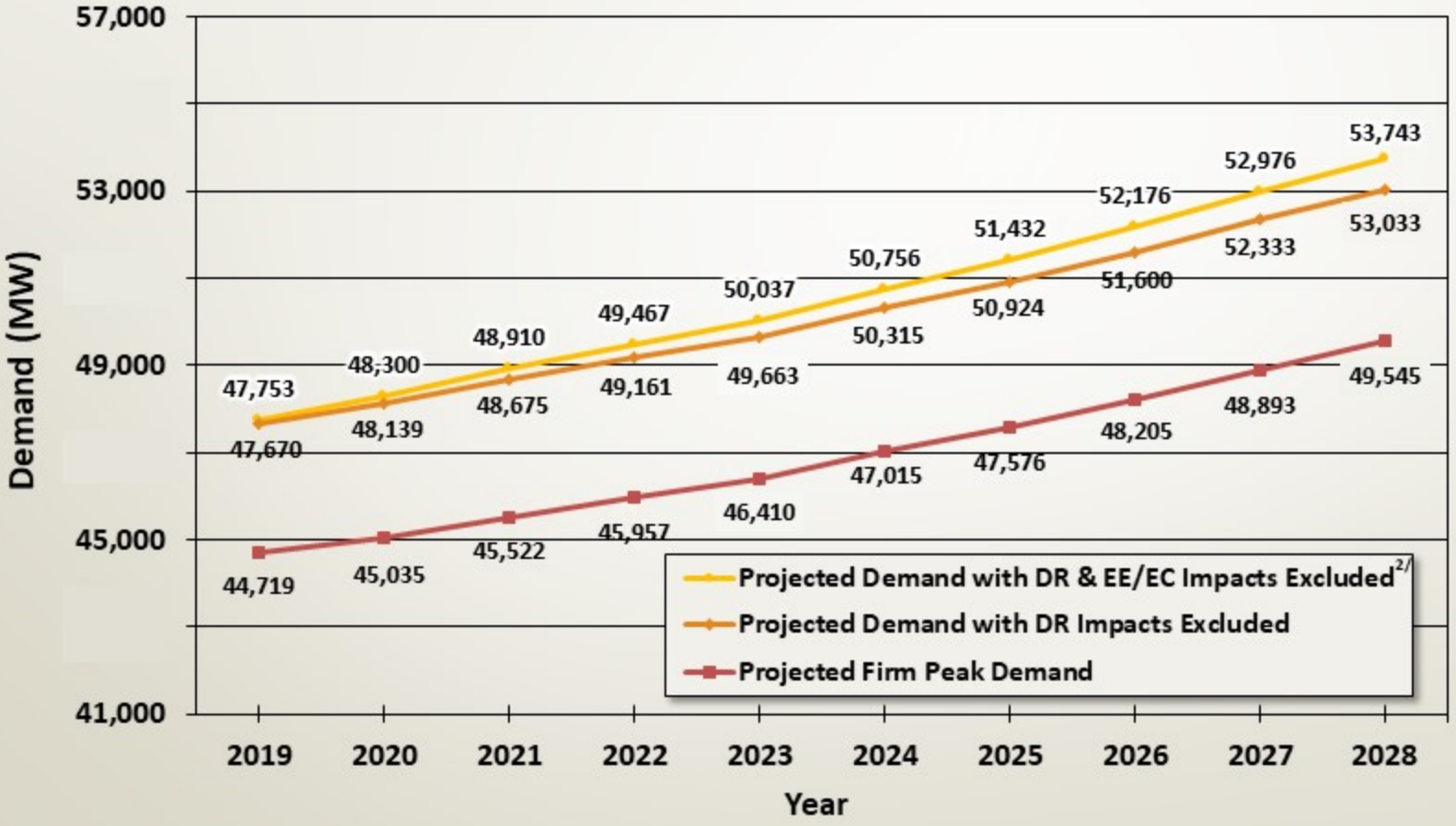
Forecasted Summer Peak Demands[1/]



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[2/] Impacts from cumulative Demand Response (DR) and incremental (2019-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

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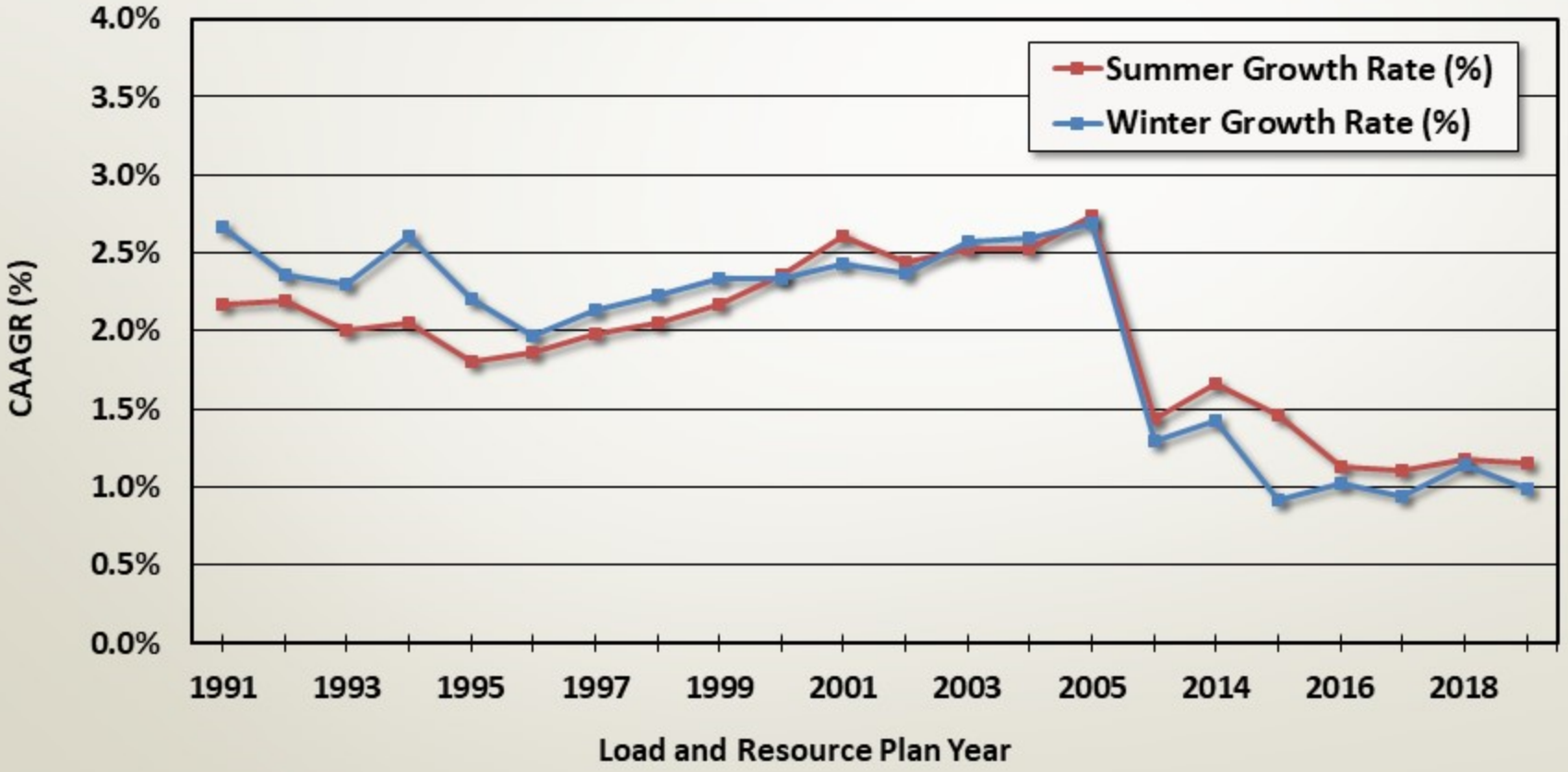
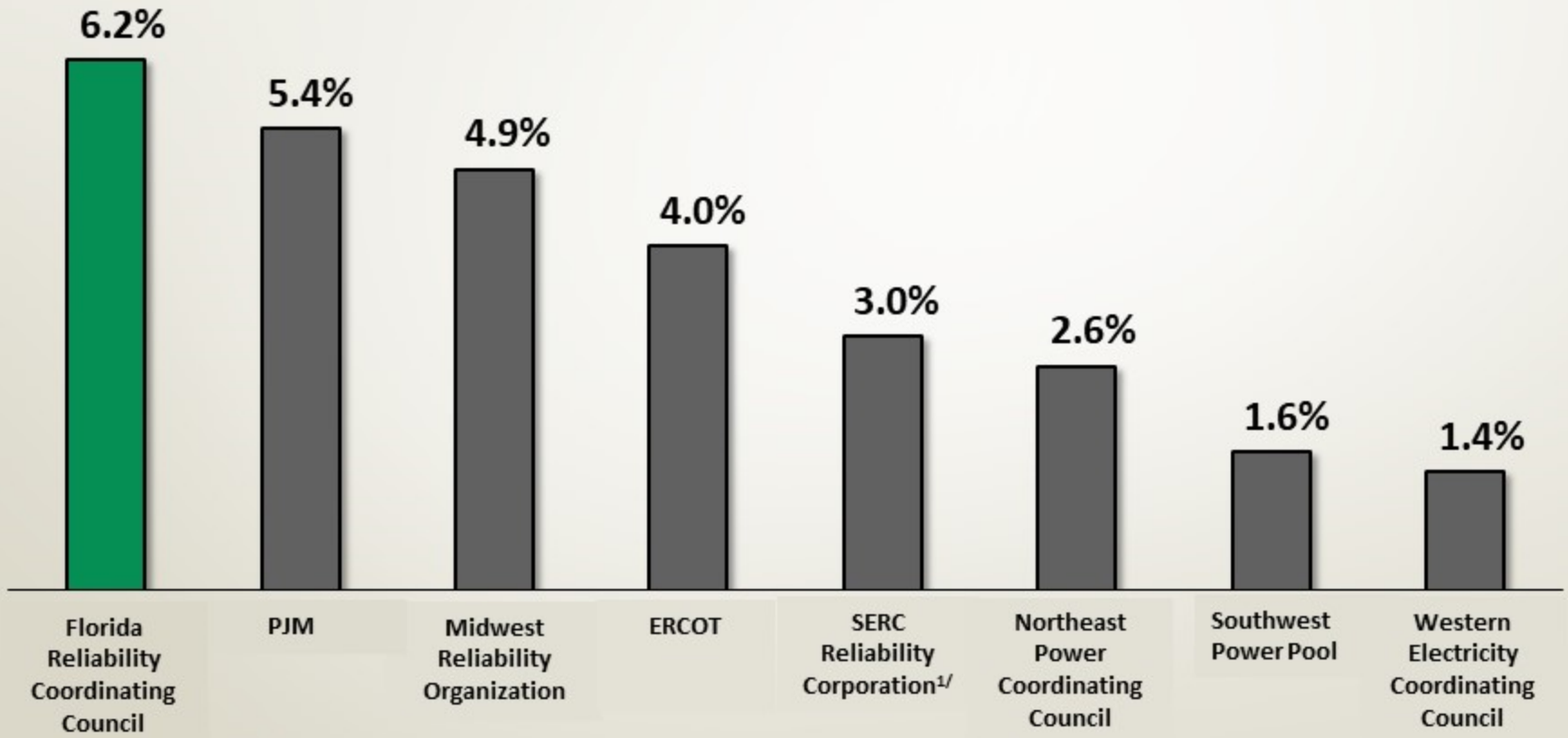
Historical Compound Average Annual Growth Rate[1/] for Firm Peak Demand (MW)



[1/]Projected growth rate from prior forecasts

Demand Response as a Percentage of Peak Demand

Summer 2019



Source: North American Electric Reliability Corporation's (NERC) 2019 Summer Reliability Assessment (https://www.nerc.com/pa/RAPA/ra/Pages/default.aspx)

1/ Excluding FRCC (FL-Peninsula) Subregion

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Generation Additions and Reserve Margins

- 12,000 MW of new generation planned over the next ten years
  - Includes approximately 4,000 MW of firm solar
- Planned Reserve Margins projected to remain above 20% over the next ten years
- DSM projected to contribute significantly to reserve margins

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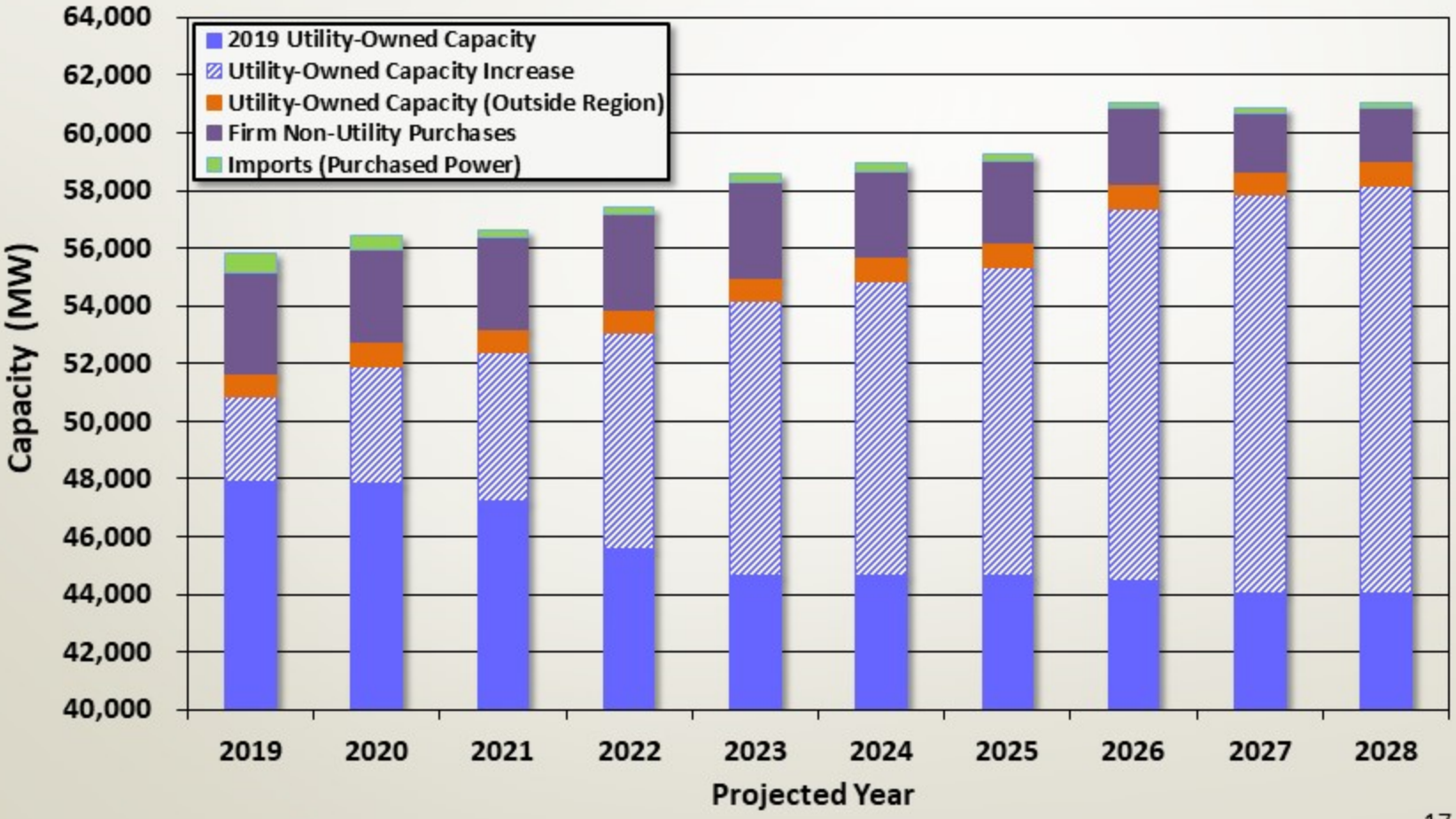
Projected Total Available Capacity (Summer)



Incremental Generation Firm Capability Changes over 10-yr Planning Horizon by Fuel Type in MW

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Turkey Point 3


St. Lucie 1 & 2

Nuclear Outlook is Stable in 10-yr Horizon

Existing[1/] Nuclear Capacity (Summer)

St. Lucie 1	981 MW
St. Lucie 2	986 MW
Turkey Point 3	837 MW
Turkey Point 4	821 MW
	3,625 MW

Planned Nuclear Capacity (Summer)

Turkey Point 4 Upgrade (10/2020)	20 MW

[1/]Existing generation as of December 31, 2018

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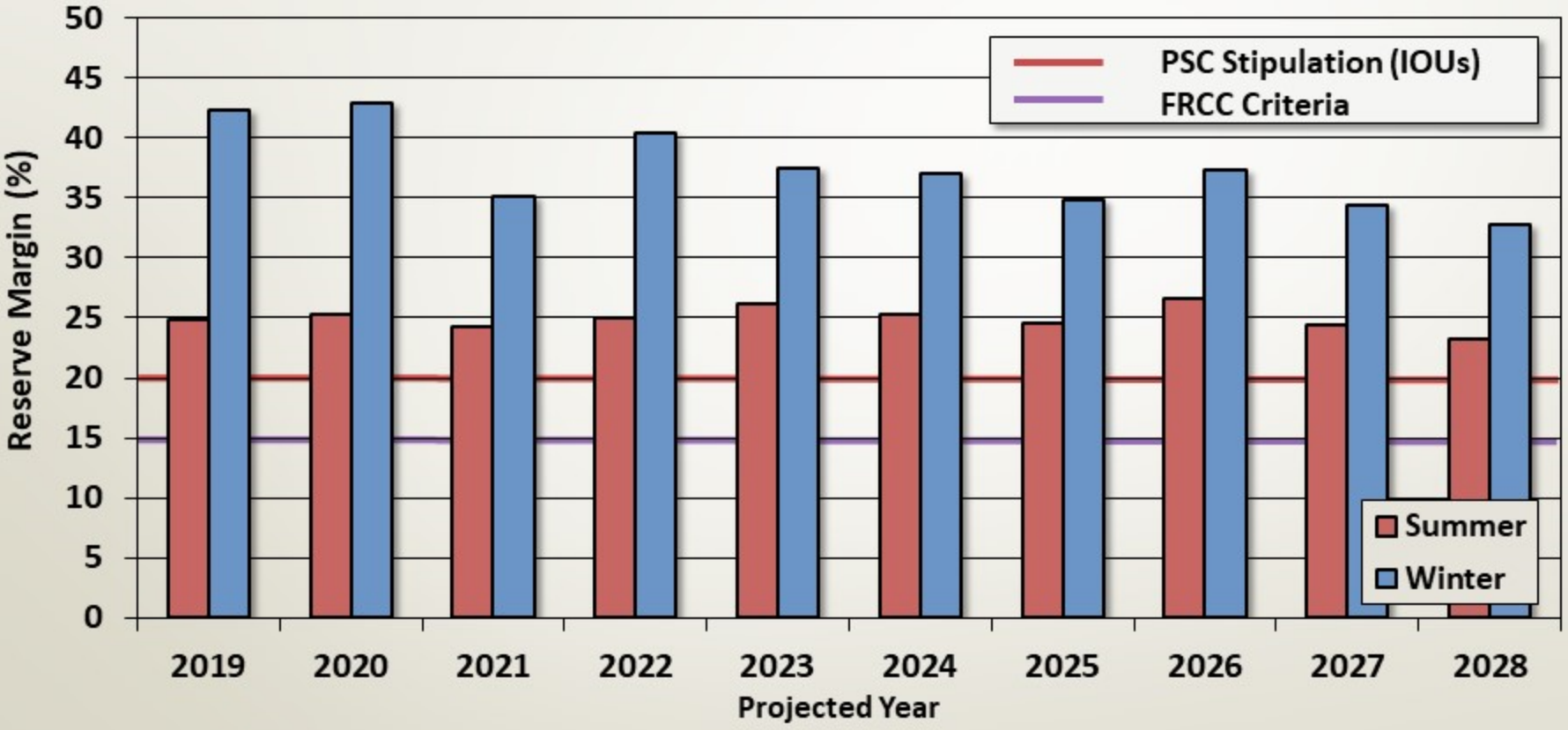
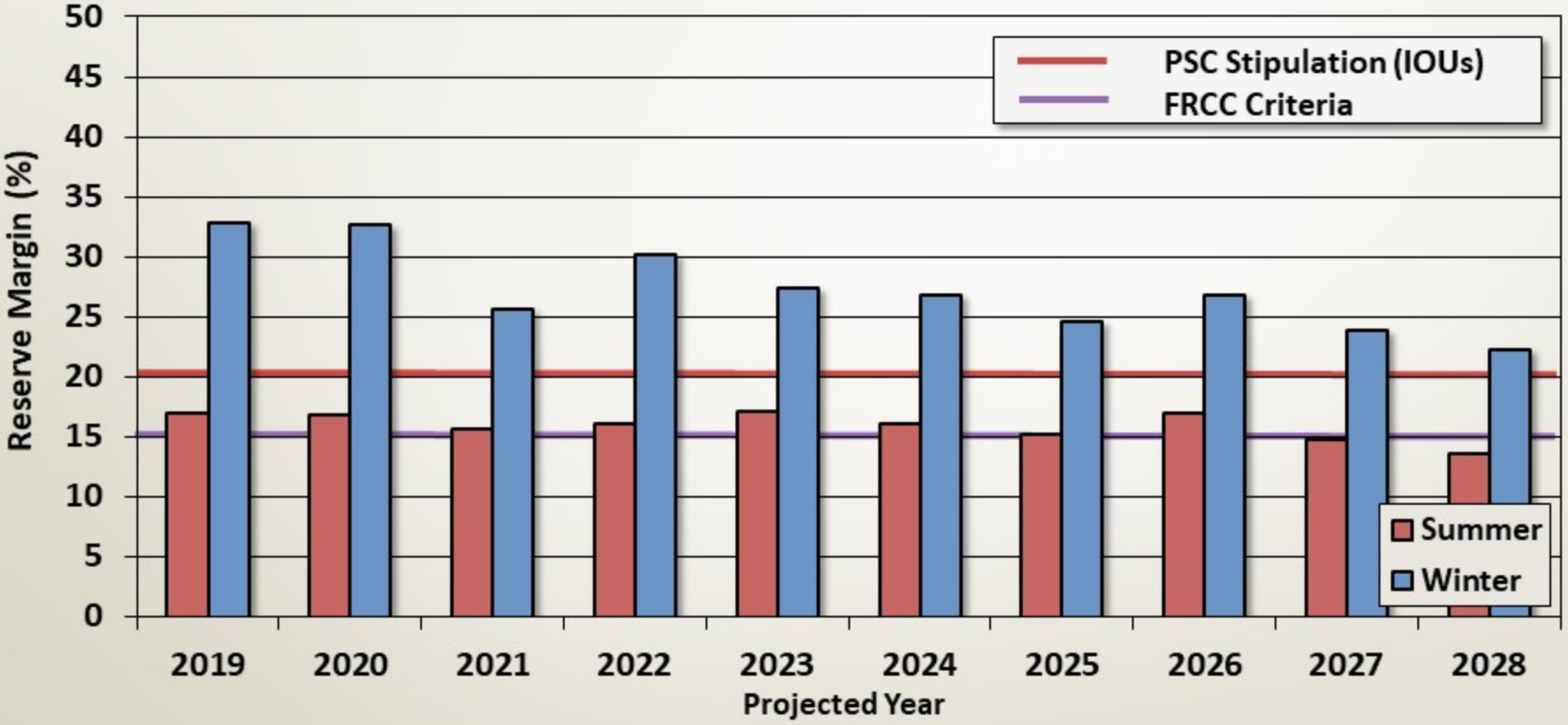
Planned Reserve Margin[1/ 2/]
(Based on Firm Load)



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

[2/] Impacts from cumulative Demand Response (DR) and incremental (2019-on) utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are included.

Planned Reserve Margin[1/] (Excluding projected DR and Utility EE/EC Impacts)[2/]



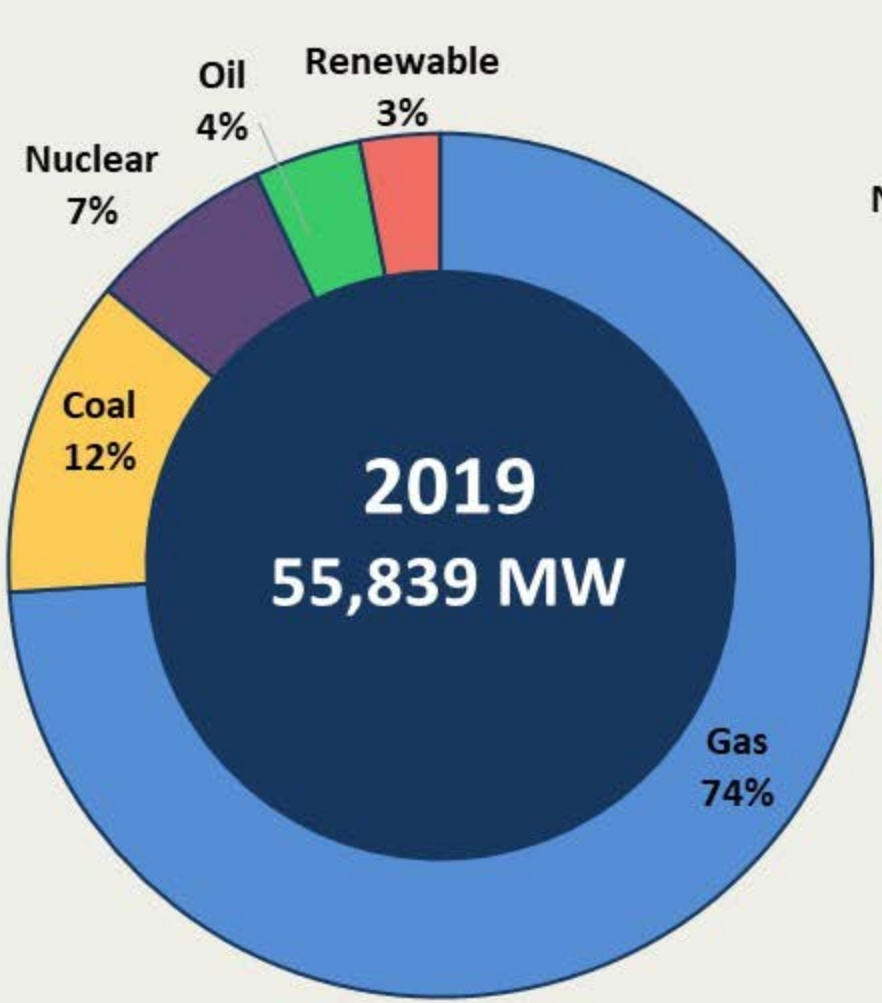
[1/] Projected impacts of Energy Efficiency codes and standards are included in all projections.

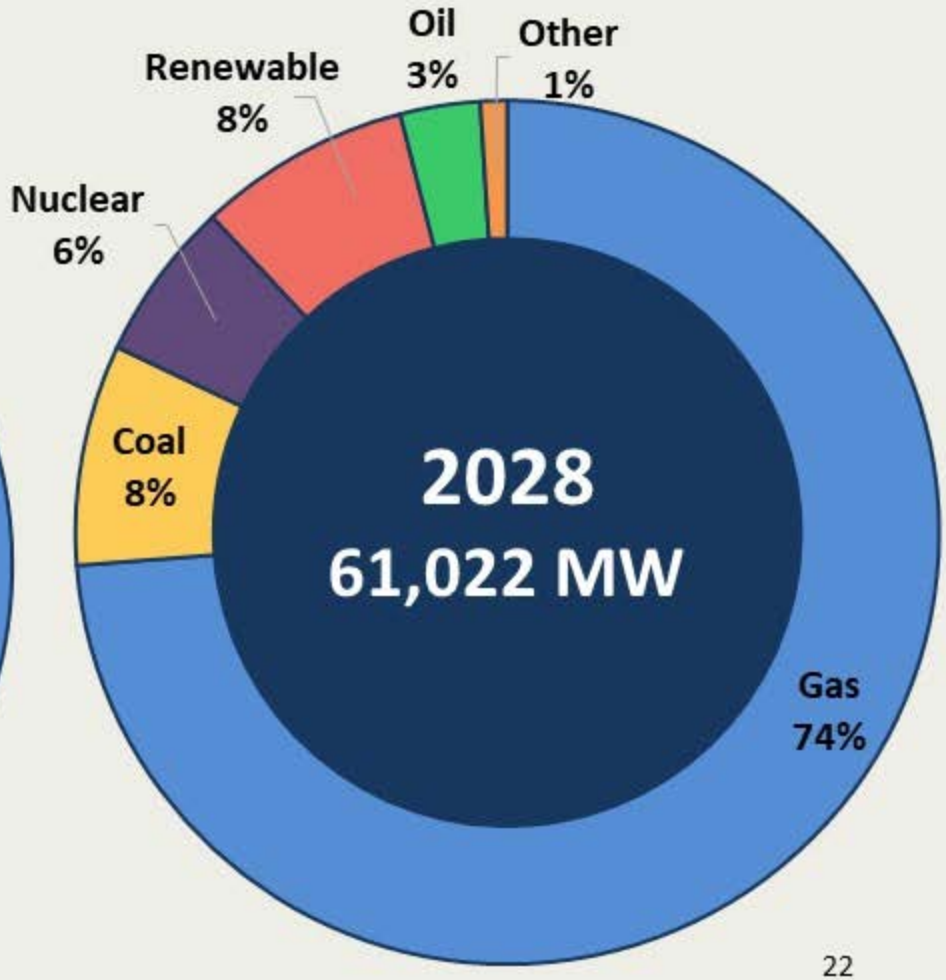
[2/] Impacts from cumulative Demand Response (DR) and incremental (2019-on) utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

[3/] PSC stipulation and FRCC criteria are based on firm load as per slide 22. The values shown on this slide are solely for illustrative purposes.

Forecasted Fuel Mix

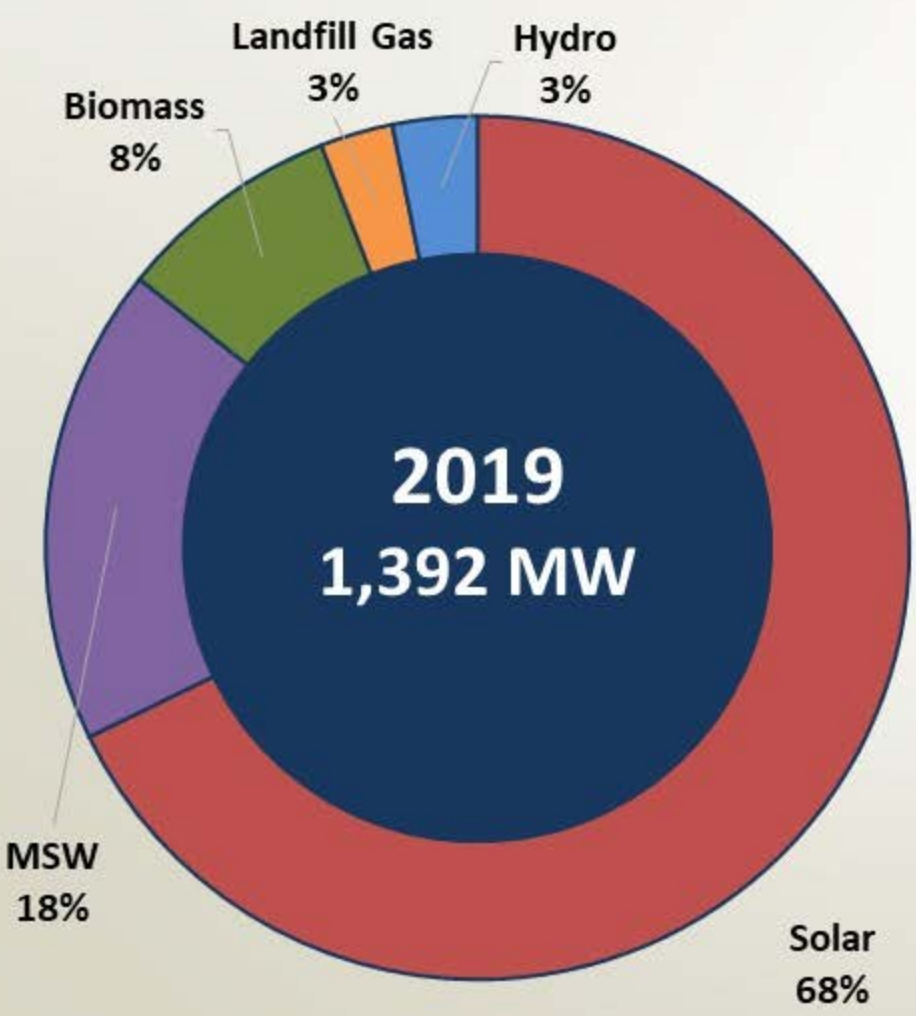
Firm Summer Capacity (MW)

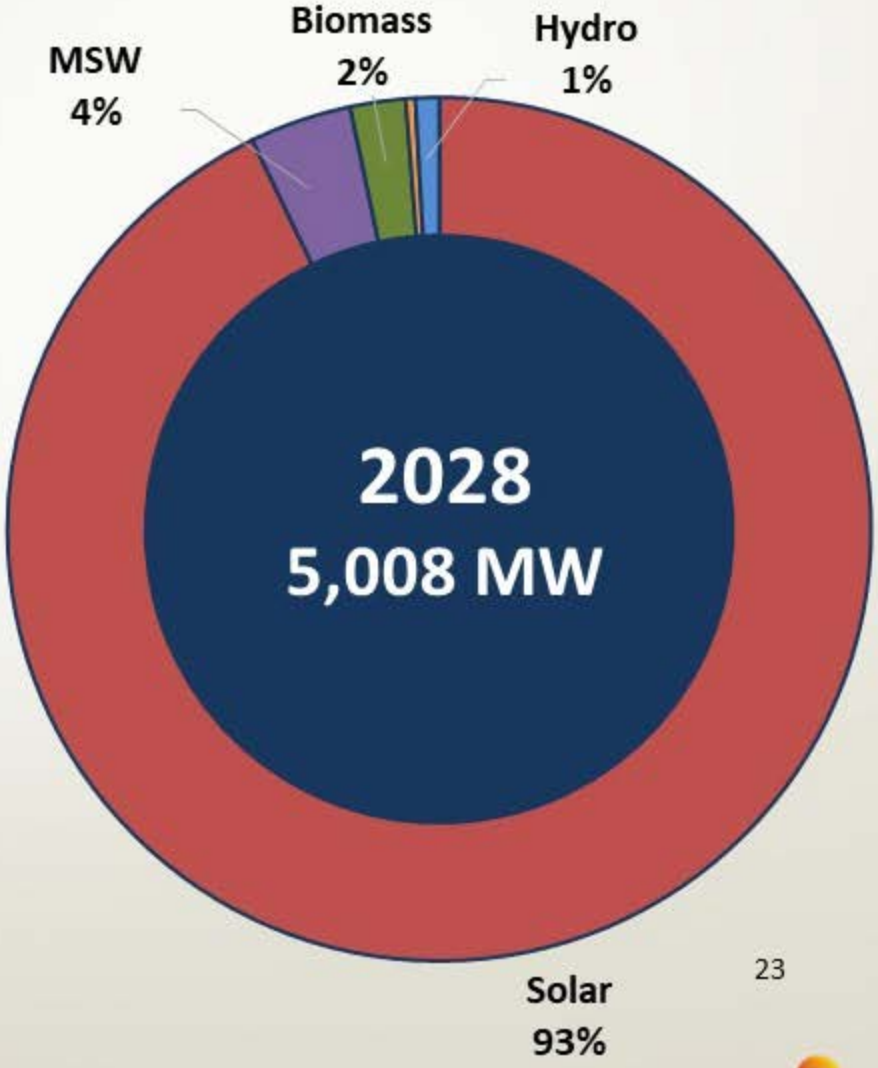




Forecasted Renewable Mix

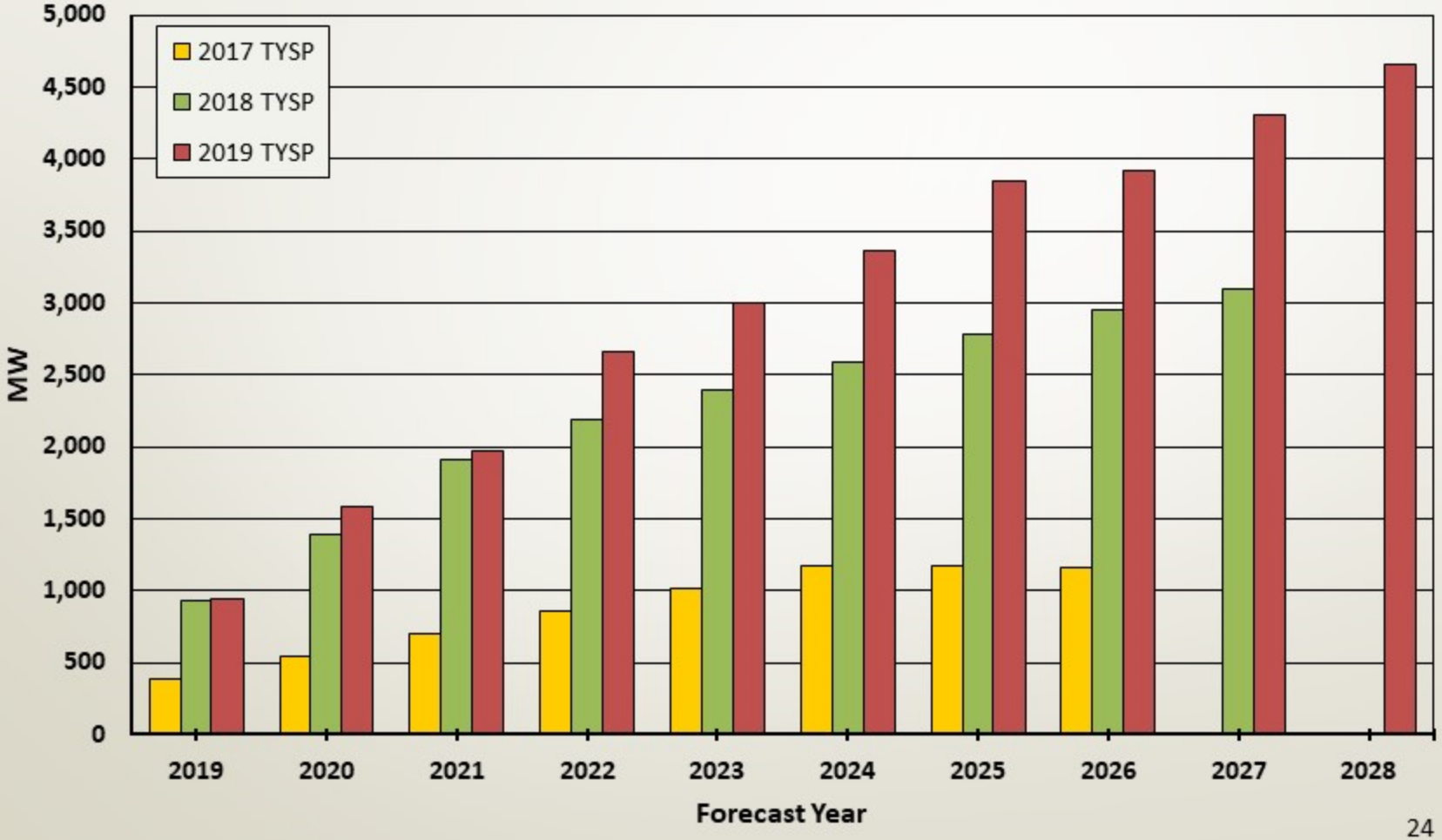
Firm Summer Capacity





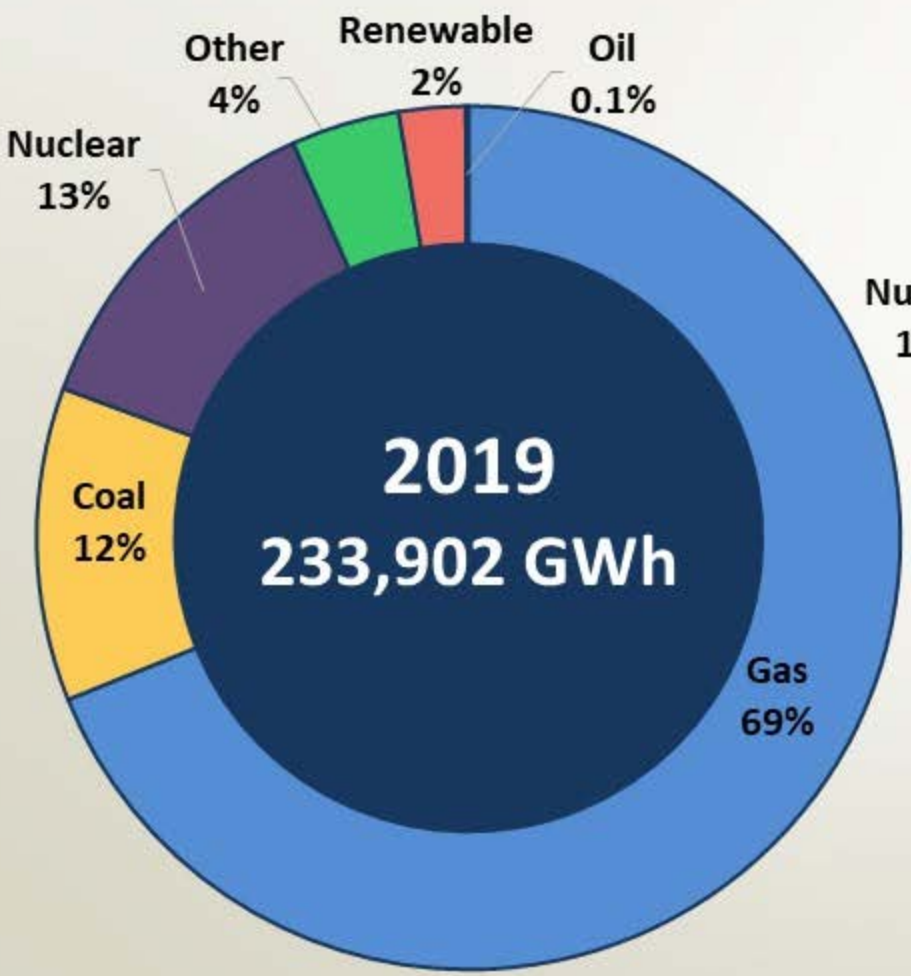
2017-2019 TYSP Forecasted Solar

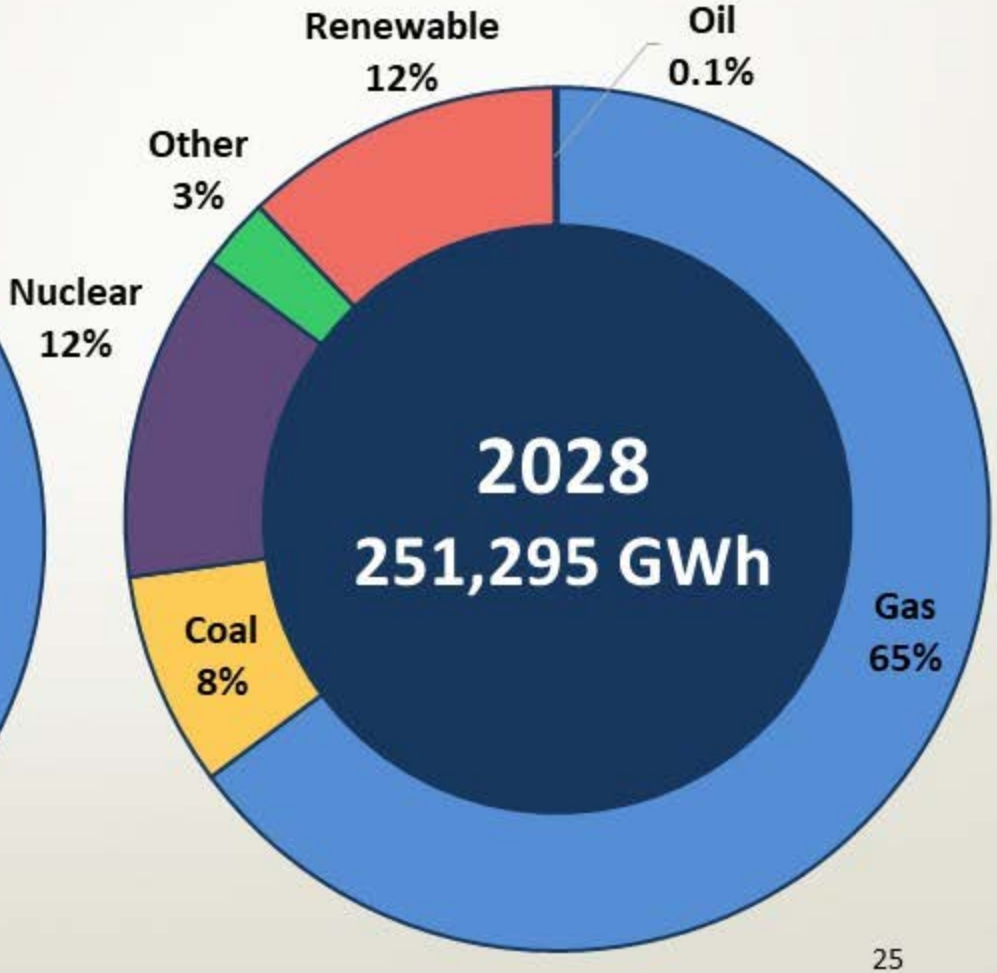
Firm Summer Capacity



Forecasted Fuel Mix

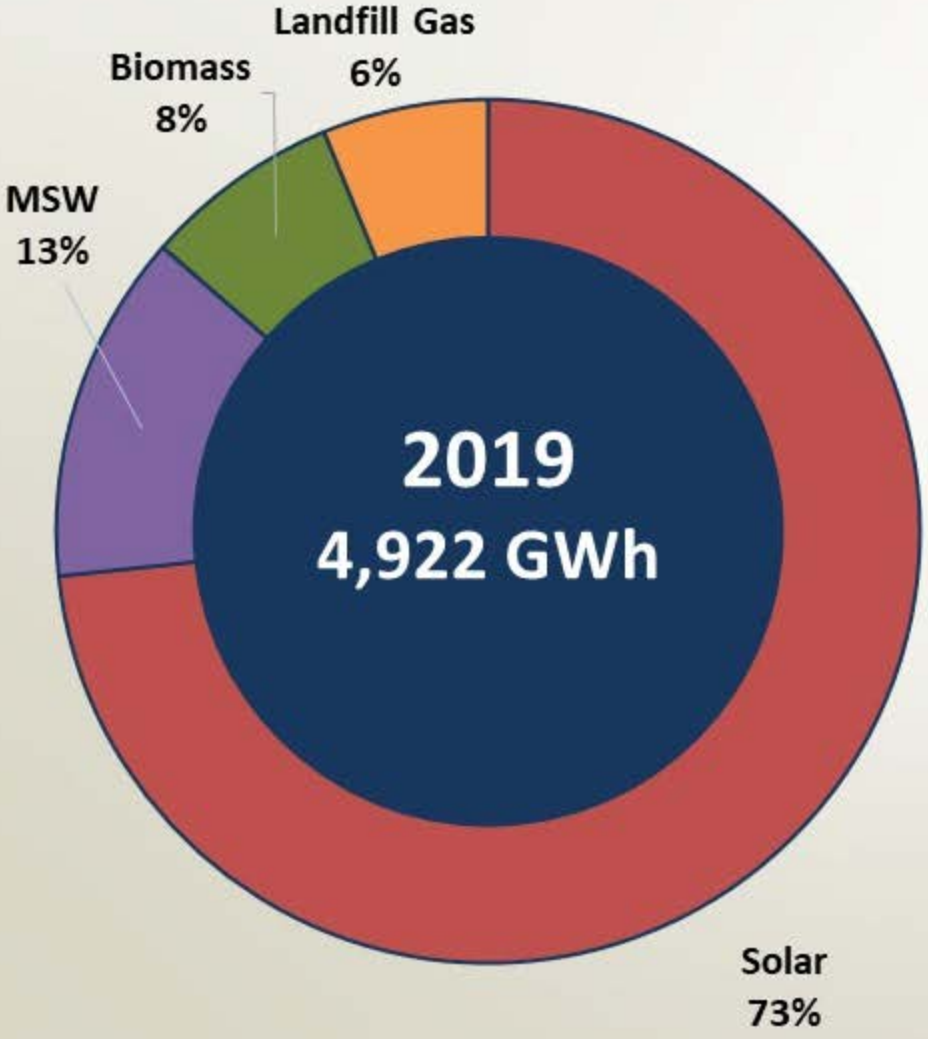
Net Energy for Load (GWh)





Forecasted Renewable Mix

Total Energy Served




Perry Solar


Babcock Ranch Battery

Reliability Considerations of Utility Solar Generation Additions

- No significant operational impacts at current levels
- Utilities are developing experience with operations, dispatch, and output forecasting
- Ability to learn from other parts of the country that have higher penetration rates

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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
- Coordinate regional response to fuel emergencies with utilities and pipelines

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Natural Gas Reliability

- Gas infrastructure on pace with generation additions
- Gas generation with alternate fuel capability remains between 64-66%
- Recent analyses on delivery and supply diversity outside of FRCC
  - Utility strategies developed
  - Extreme failure scenarios mitigated
  - Resilient infrastructure to short term outages

Conclusion

- Based on 2019 TYSPs, planned Reserve Margins above 20% for all peak periods for the next ten years
- DSM projected to contribute significantly to reserve margins
- Energy Efficiency Codes and Standards playing an increasingly large role
- Renewables increase from 2% to 12% (energy)
- Planned gas infrastructure capacity increases support planned generation

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Questions?