Florida Public Service Commission
2016 Ten-Year Site Plan Workshop
FRCC Presentation

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President and CEO

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Agenda

Executive Summary

FRCC Load & Resource Plan

- Integrated Resource Planning Process
- Load Forecast, Demand Side Management (DSM), Generation Additions, and Reserve Margins
- Fuel Mix and Renewable Resources
- Clean Power Plan

FRCC Fuel Reliability

- Natural Gas Infrastructure in Florida
- Natural Gas Storage Outside Florida

Florida Reliability Coordinating Council

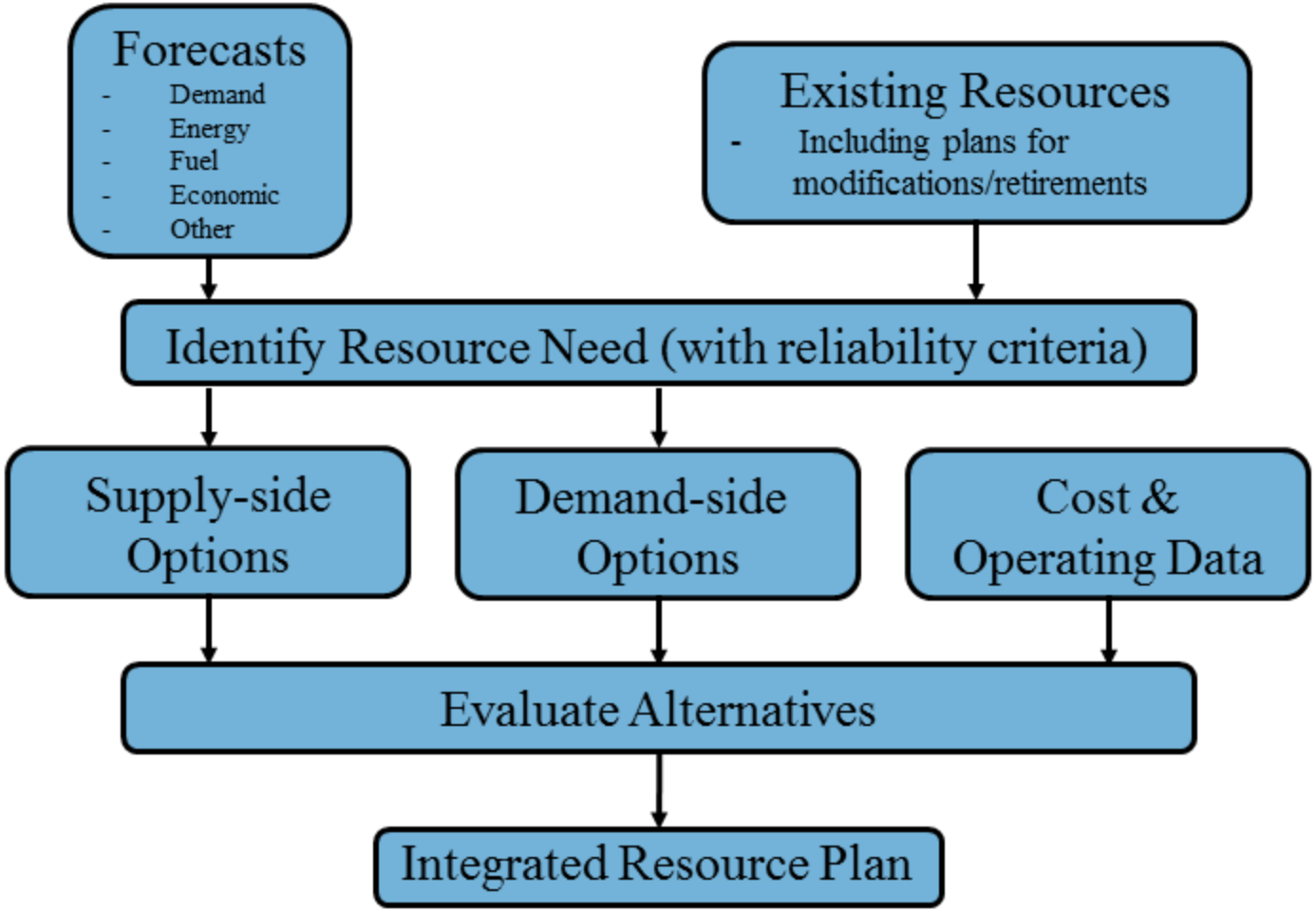
Mission: To promote and assure the reliability of the bulk power system in peninsular Florida

Executive Summary

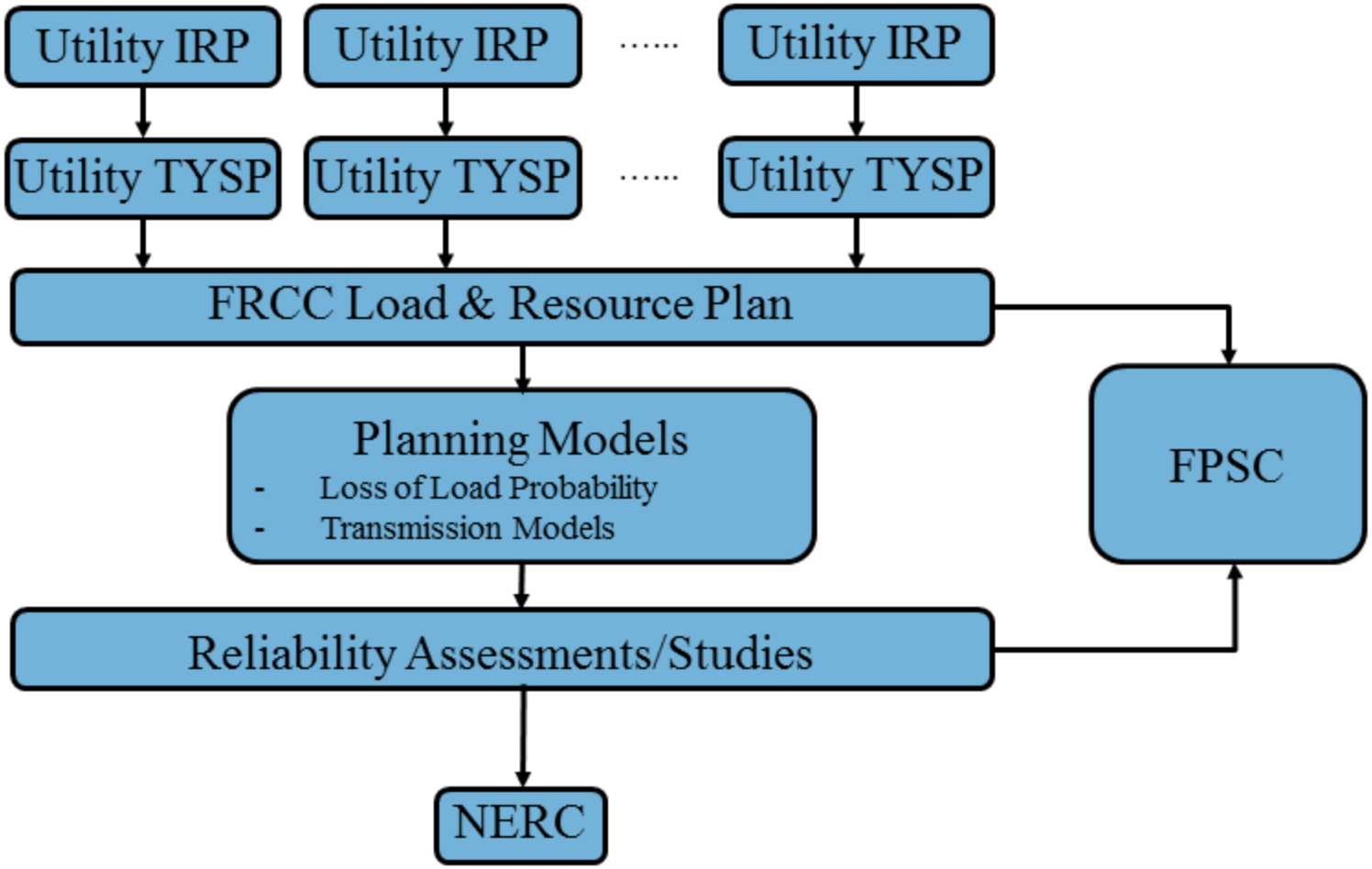
- Based on 2016 TYSPs, planned Reserve Margins > 20%
  - Demand Side Management is projected to be a significant component of projected reserves
  - Renewables projected to be 4,908 GWh (2%) of energy served by 2025
  - Gas, as a % of total energy served, is projected to remain steady at approximately 65% for the next ten years
- EPA Clean Power Plan (CPP) effects to be addressed in future TYSPs once CPP legal challenges are resolved

FRCC
Load & Resource
Plan

Utility Integrated Resource Planning (IRP) Process Overview



FRCC Planning Process Overview

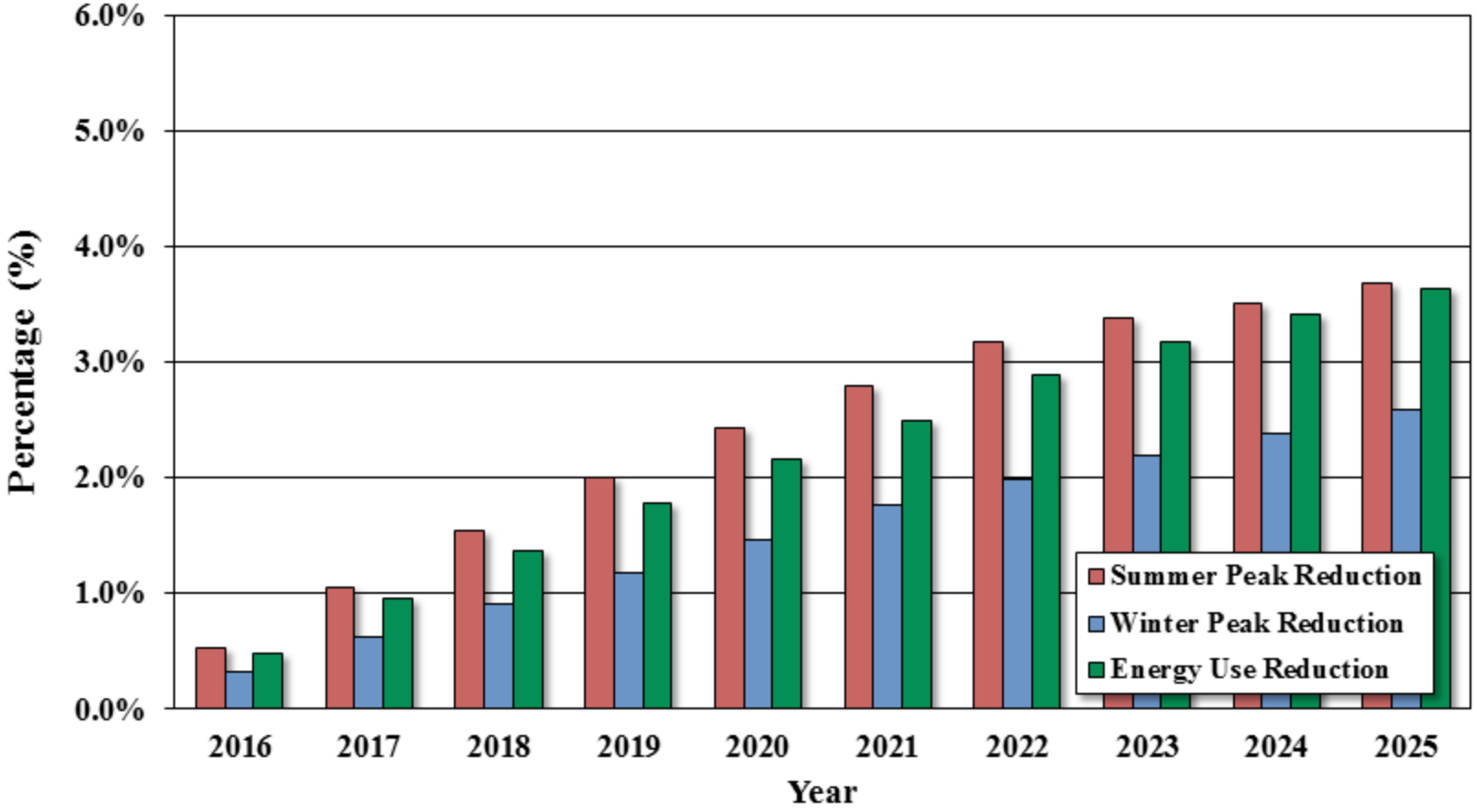


Load Forecast Factors

- Florida unemployment (actual) continues to decrease
- Population growth is projected to remain strong
- Actual employment growth remains healthy, but wage and income growth have not kept pace
- Increasing impacts from codes and standards and also from customer-owned distributed generation (solar)
- Forecasted energy sales and firm peak demands are lower in 2016 TYSPs compared to 2015 TYSPs

FRCC Load Forecast

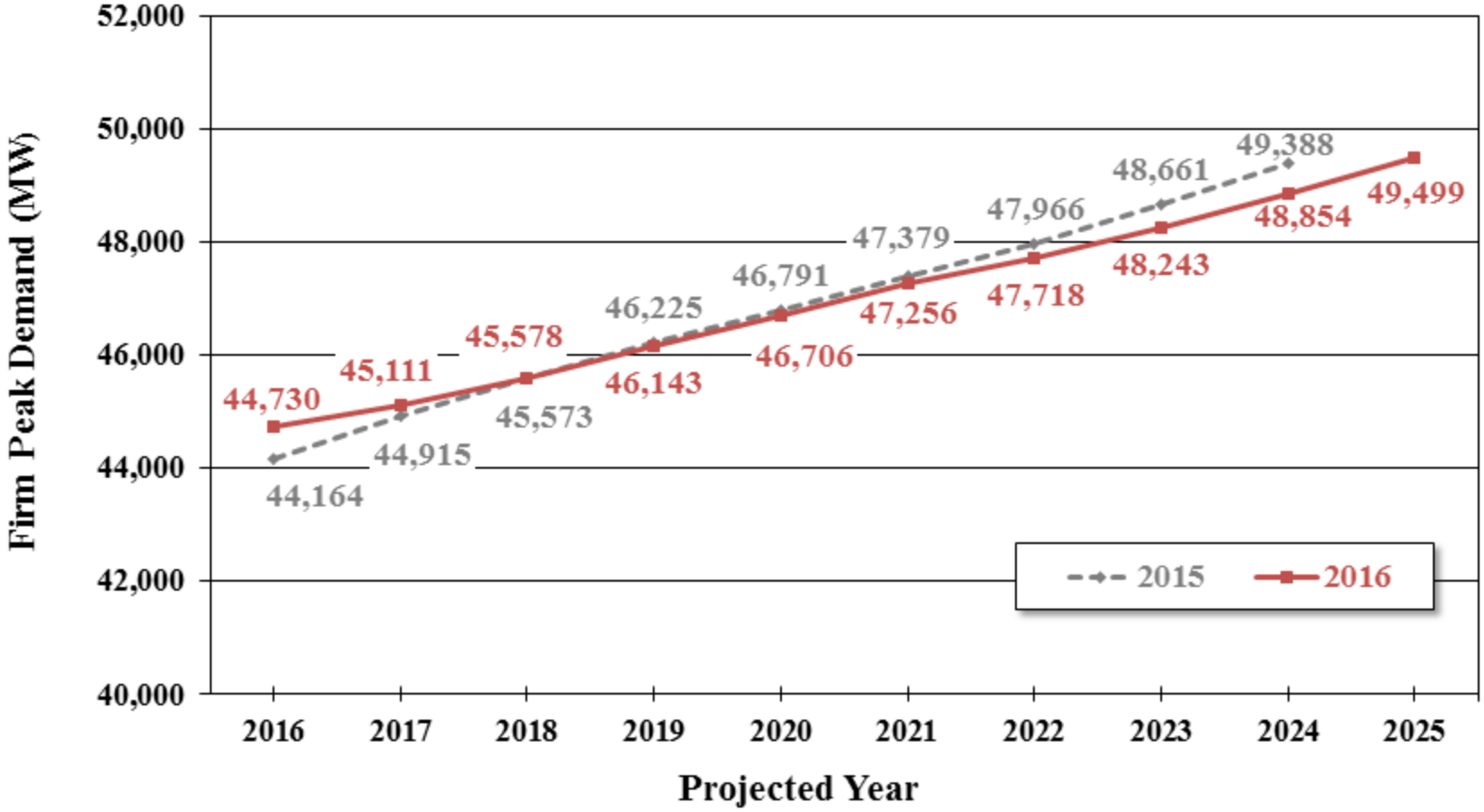
Impacts of Energy Efficiency Codes and Standards[1/ 2]



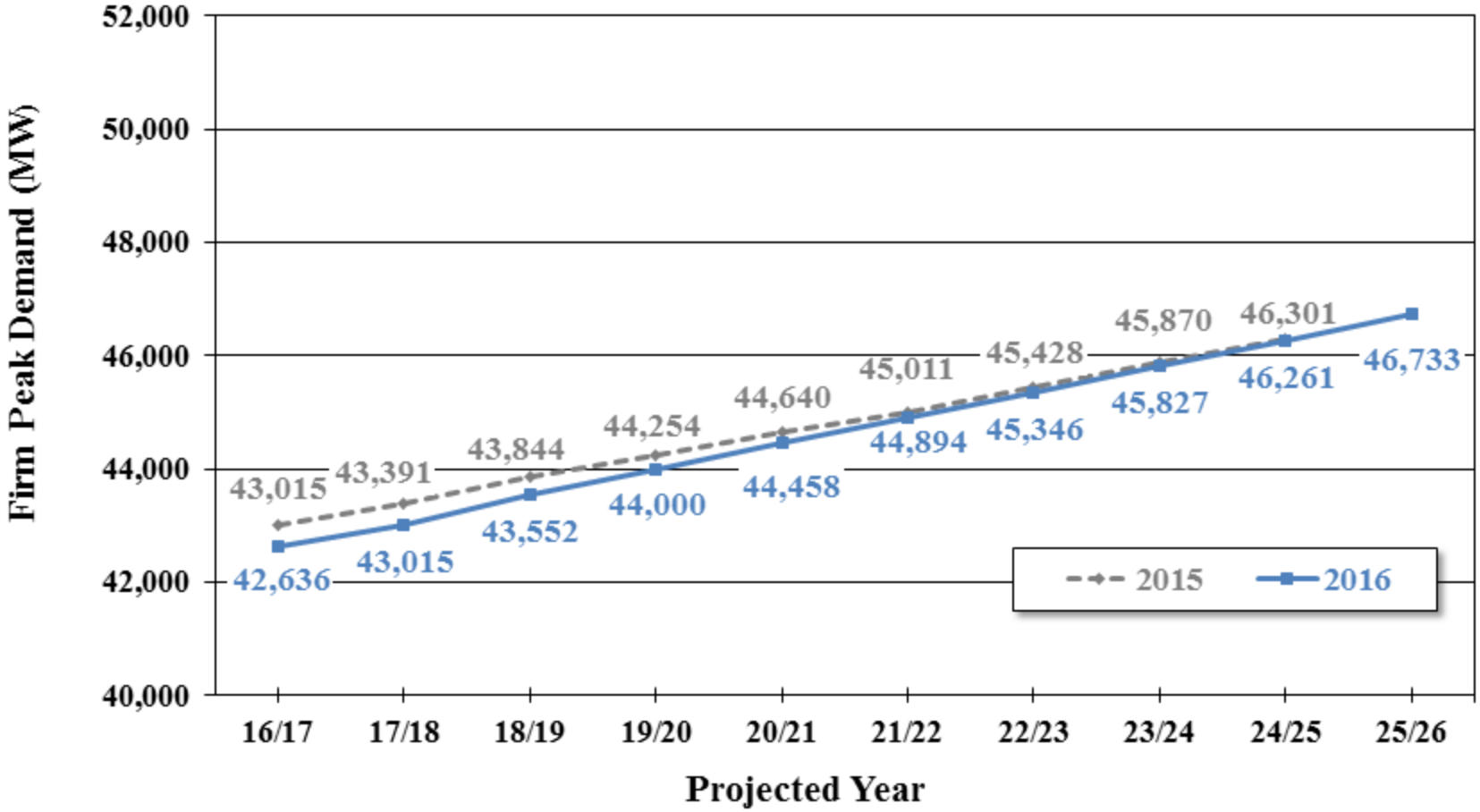
[1/] Only some utilities were able to quantify the incremental (2016-on) impacts of Energy Efficiency codes and standards. These impacts were compared against peak and NEL for all utilities and therefore understates the full impact of code and standards.

[2/] Data and charts shown after this slide include the projected impacts of Energy Efficiency codes and standards.

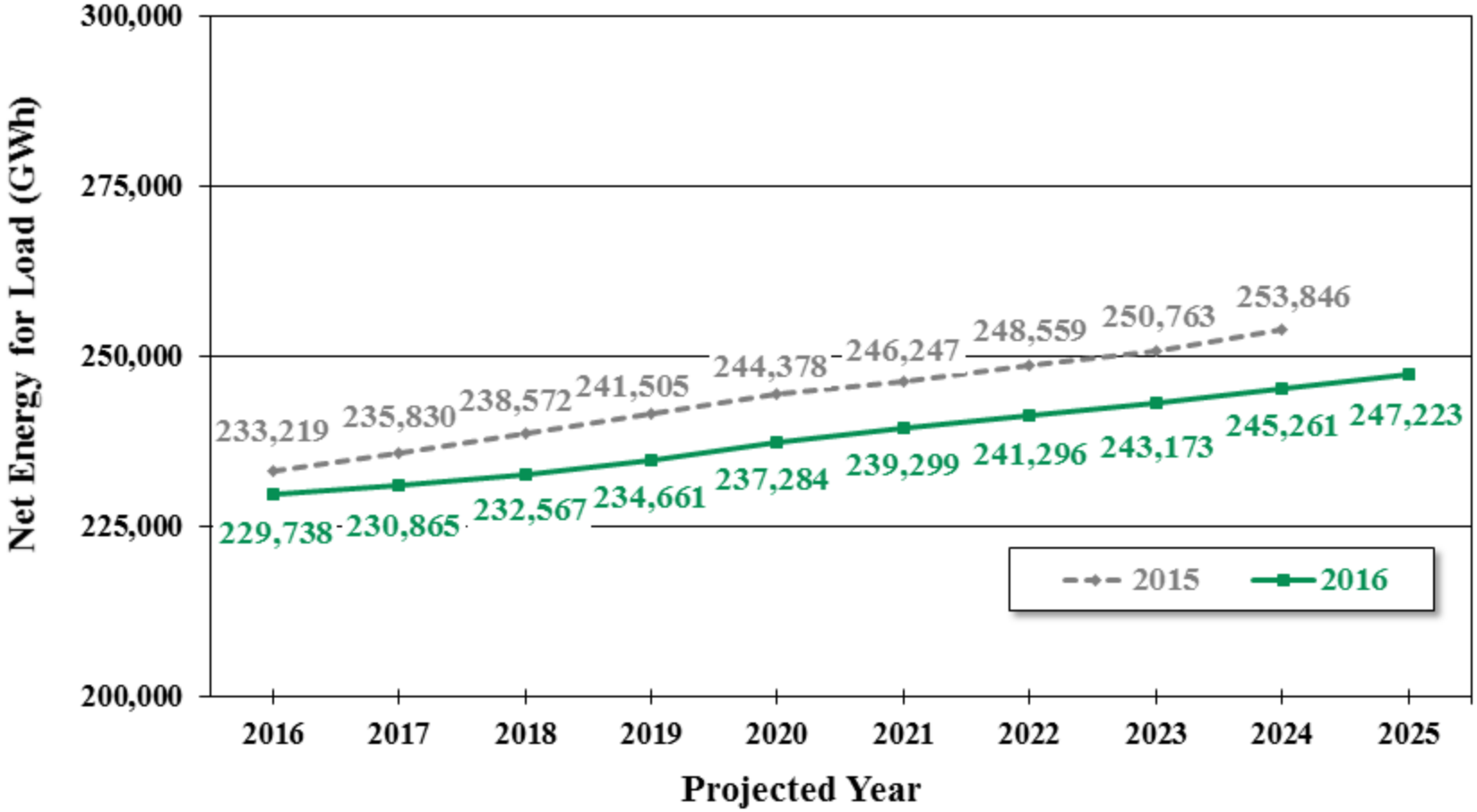
Comparison of 2015 vs. 2016
FRCC Firm Peak Demand Forecast
(Summer)



Comparison of 2015 vs. 2016
FRCC Firm Peak Demand Forecast
(Winter)

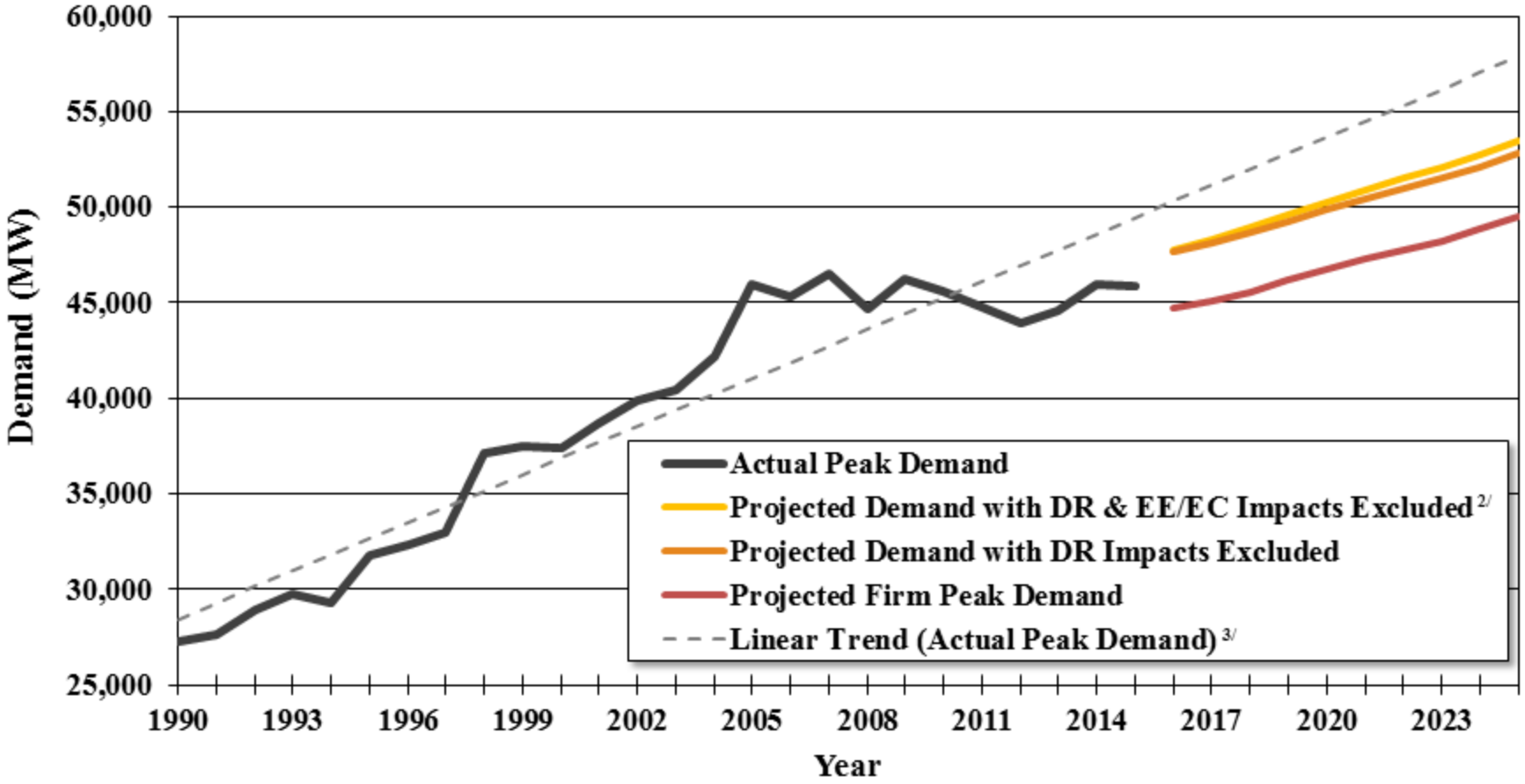


Comparison of 2015 vs. 2016
FRCC Net Energy for Load Forecast



FRCC Summer Peak Demands

Actual and Forecasted[1/]



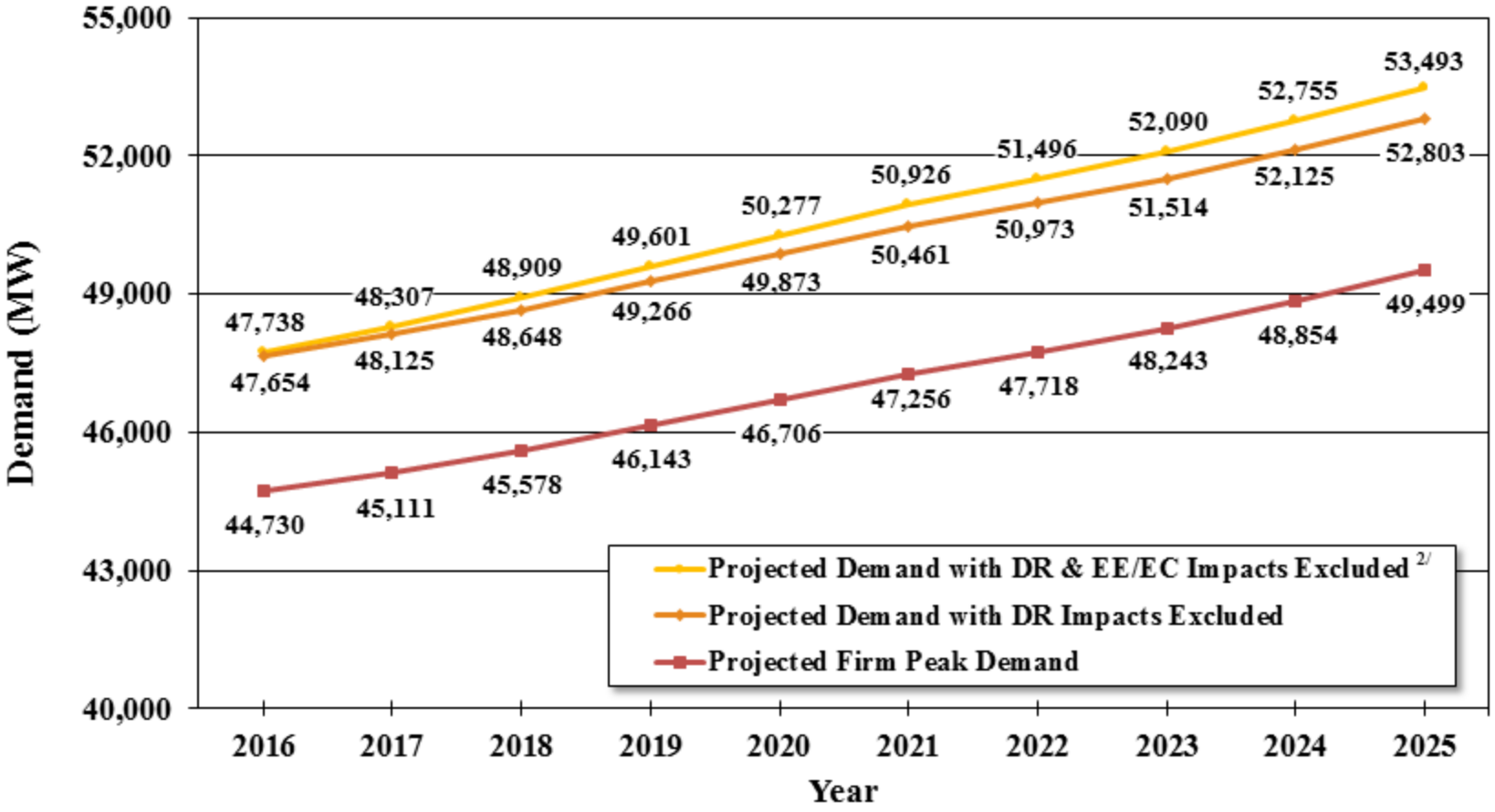
1/ Projected impacts of Energy Efficiency codes and standards are included in all projections.

2/ Impacts from cumulative Demand Response (DR) and incremental (2016-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

3/ Linear trend based on actual peak demand from 1990 to 2015.

FRCC Demand Forecast[1/]

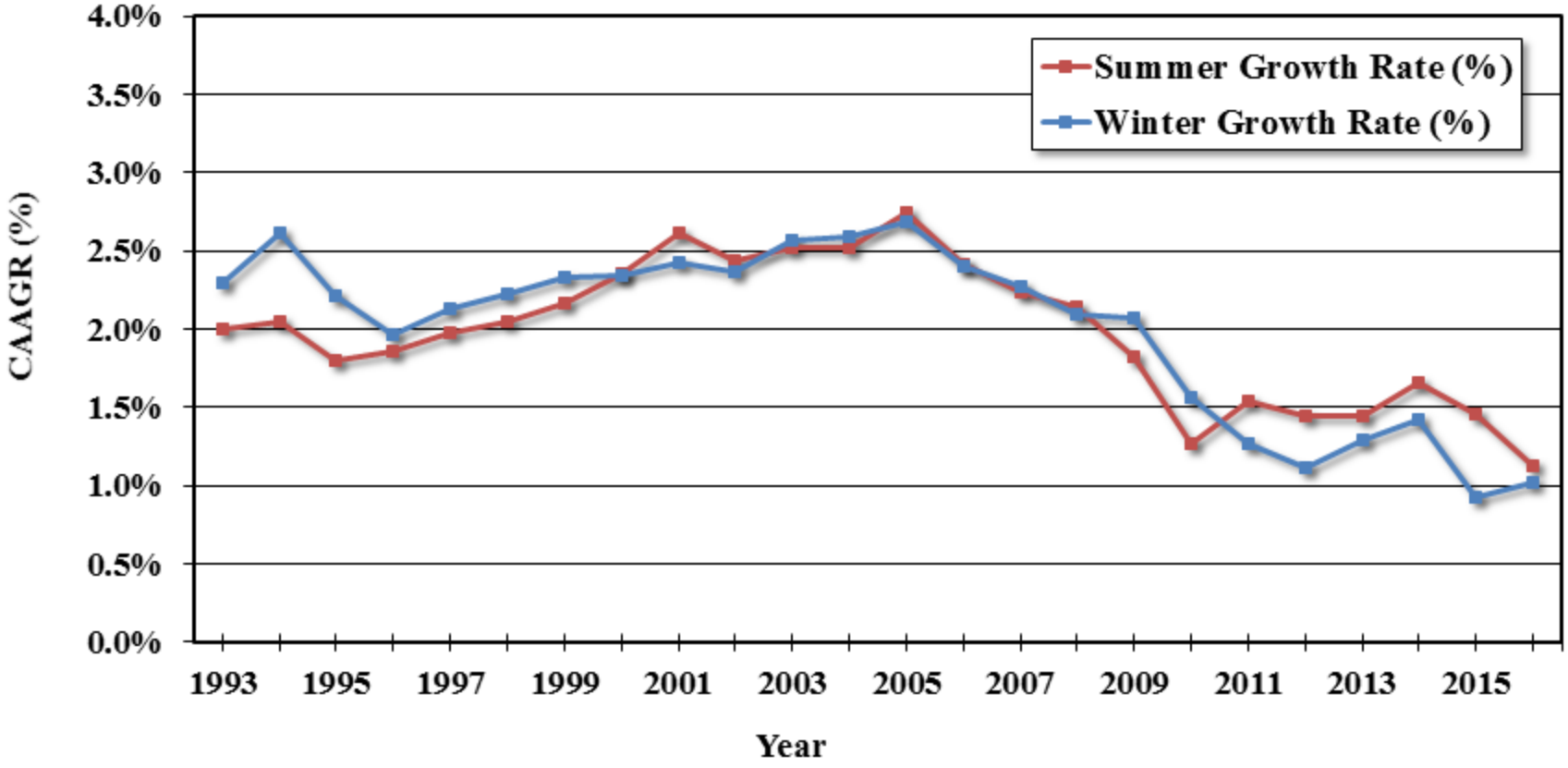
(Summer)



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

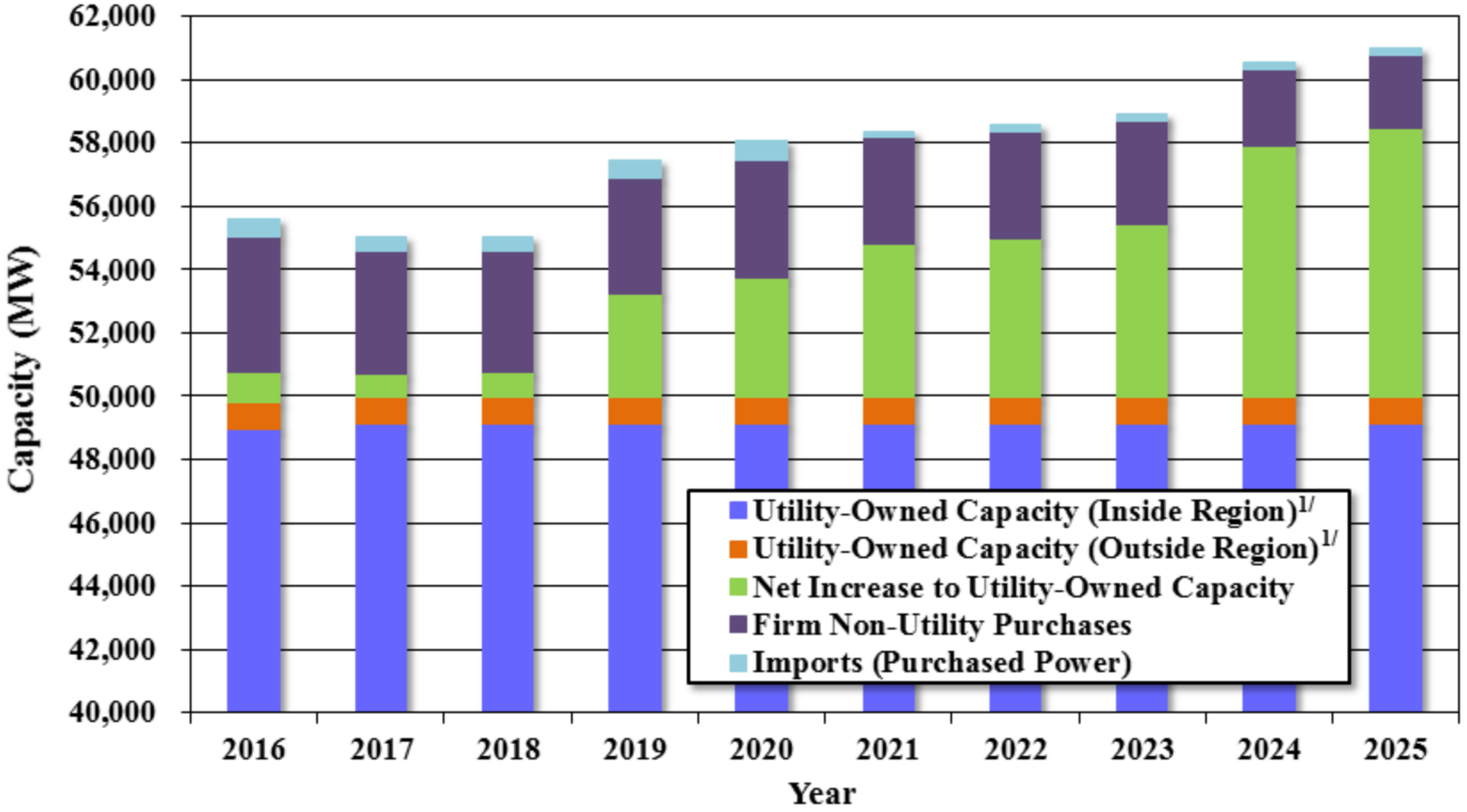
[2/] Impacts from cumulative Demand Response (DR) and incremental (2016-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

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



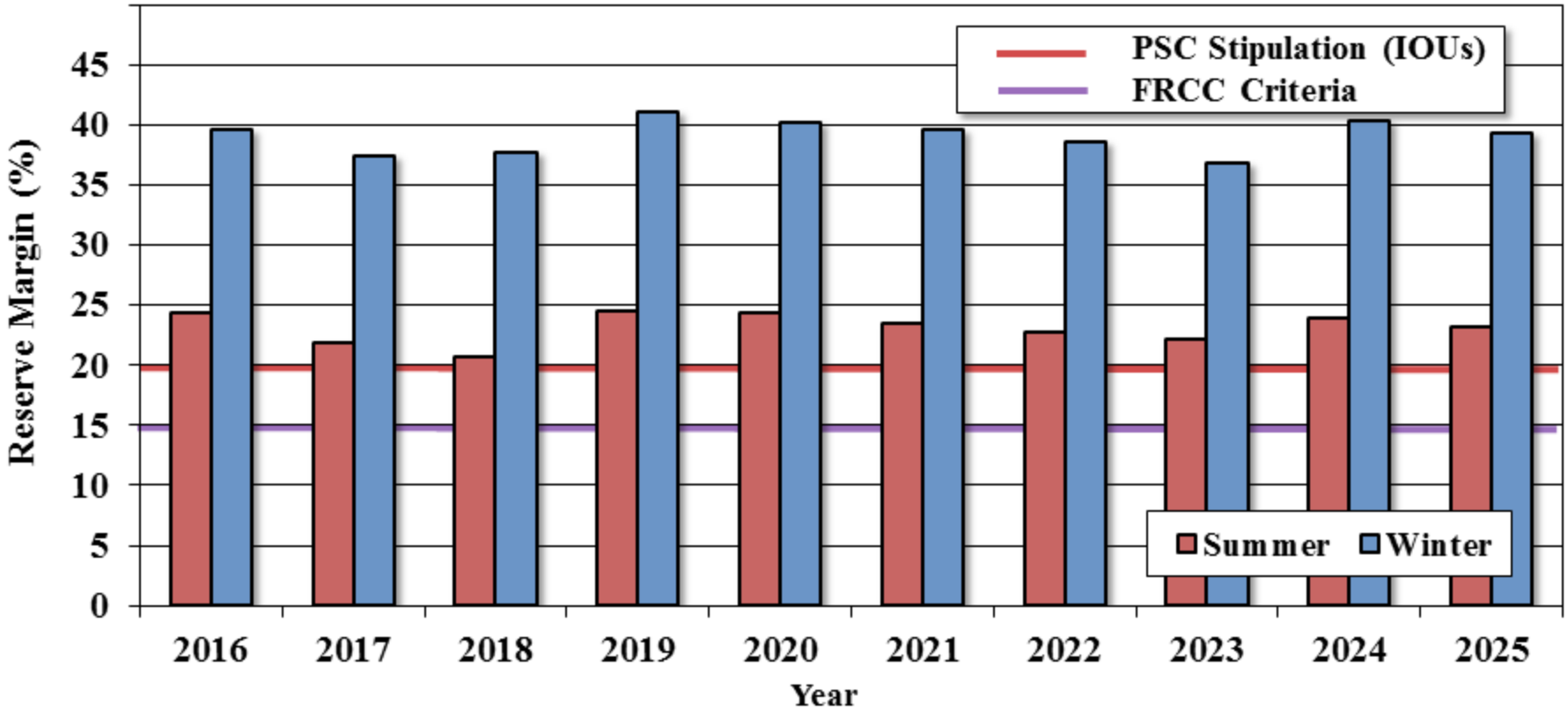
[1/]Projected growth rate from prior forecasts

Load & Resource Plan
Total Available Capacity
(Summer)

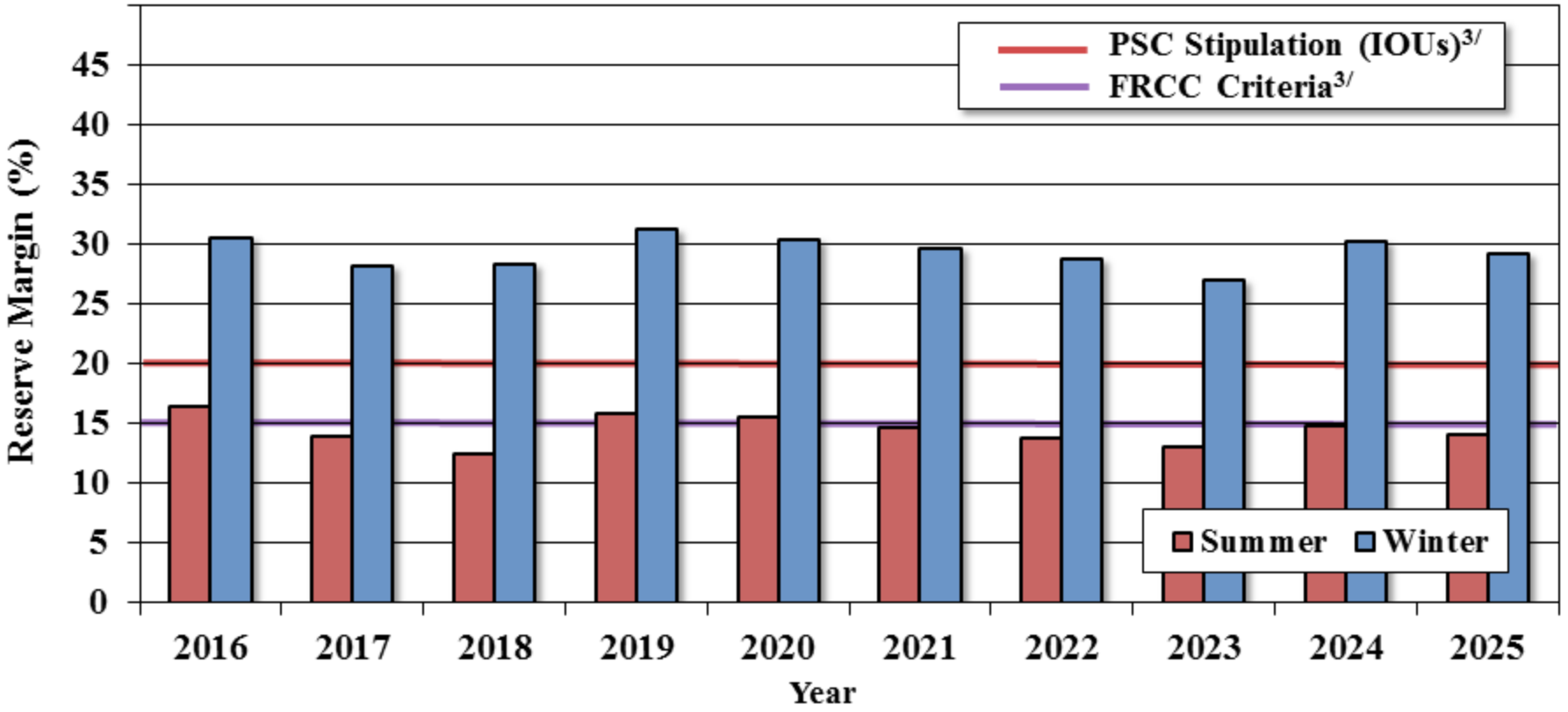


1/Existing generation as of December 31, 2015

Load & Resource Plan
FRCC Planned Reserve Margin
(Based on Firm Load)



Load & Resource Plan
FRCC Planned Reserve Margin[1/]
(Excluding projected DR and Utility EE/EC Impacts)[2/]



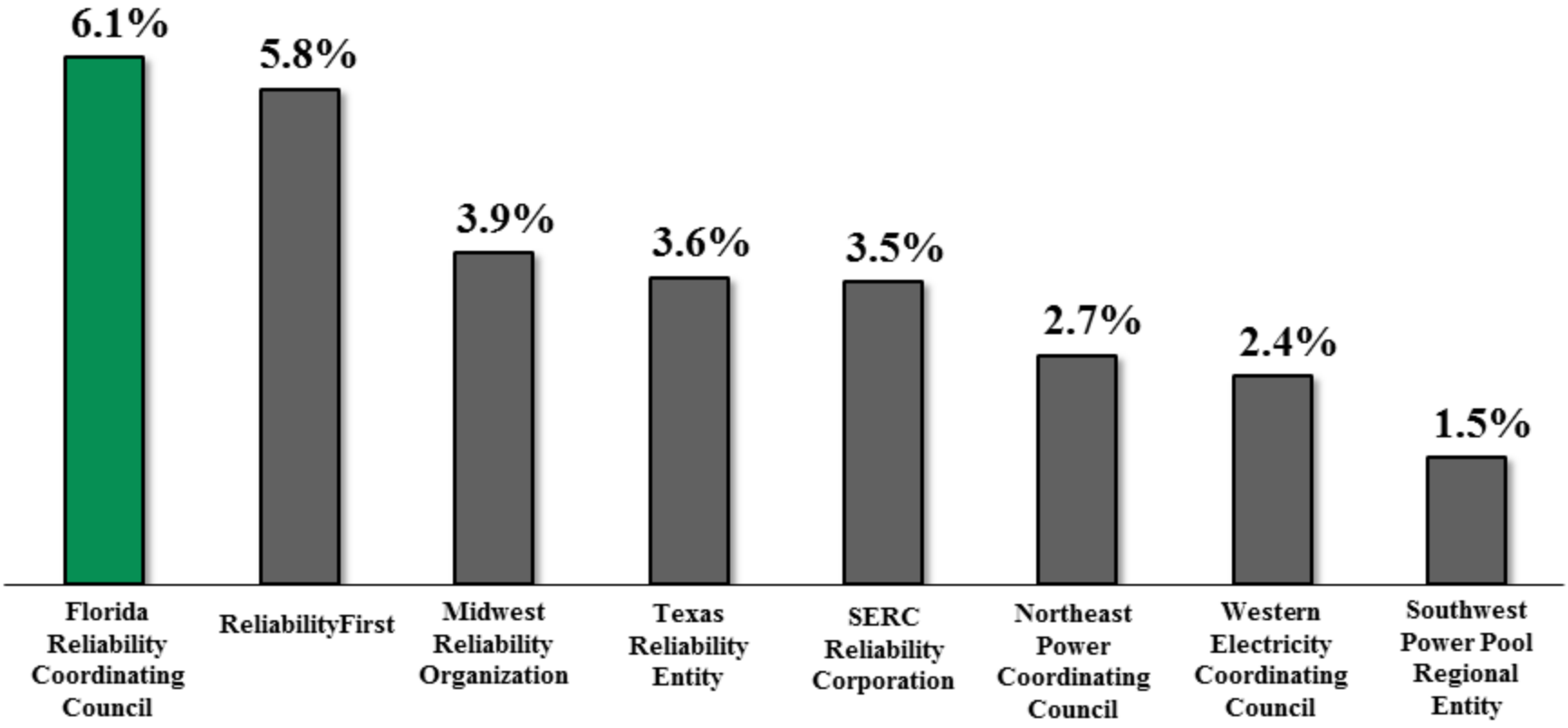
[1/] Projected impacts of Energy Efficiency codes and standards are included in all projections.

[2/] Impacts from cumulative Demand Response (DR) and incremental (2016-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 17. The values shown on this slide are solely for illustrative purposes.

Load & Resource Plan
Demand Response as a Percentage of Peak Demand

Summer 2016



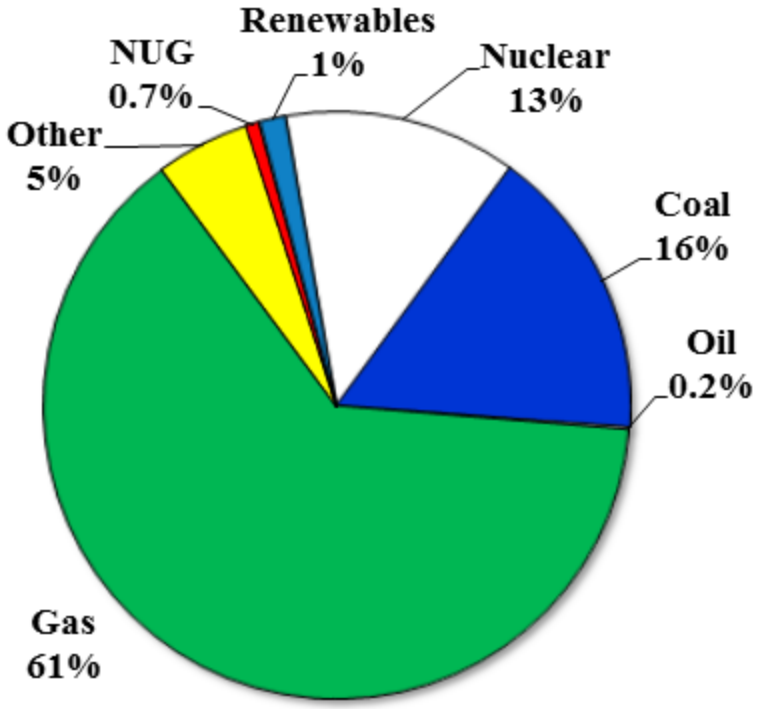
Source: NERC's 2016 Summer Reliability Assessment
(http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2016%20SRA%20Report_Final.pdf)

FRCC Reliability Assessment
Reserve Margin Review

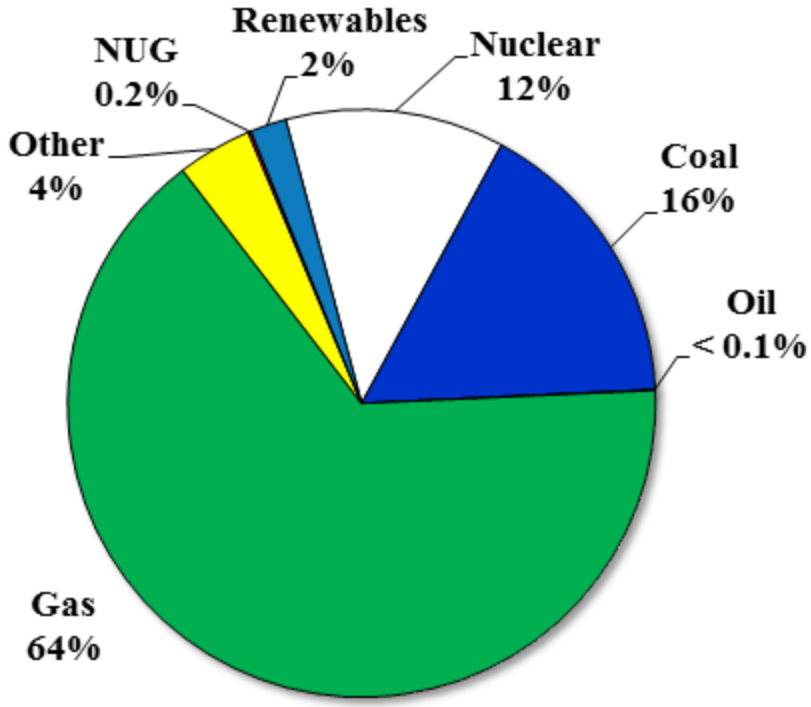
- Based on 2016 TYSPs, planned Reserve Margins > 20%
- Demand Side Management is projected to be a significant component of projected reserves
  - DR reduces firm summer peak (MW) by 6.4% on average throughout the 10-year horizon; FRCC has highest amount of DR as a percentage of peak load
  - Utility-sponsored Energy Efficiency/Energy Conservation programs reduce summer peak (MW) by 1.4% by 2025
  - Additional Energy Efficiency delivered through mandated codes and standards reduces summer peak (MW) by at least 3.7% by 2025

Fuel Mix (Energy)

Net Energy for Load (GWh)



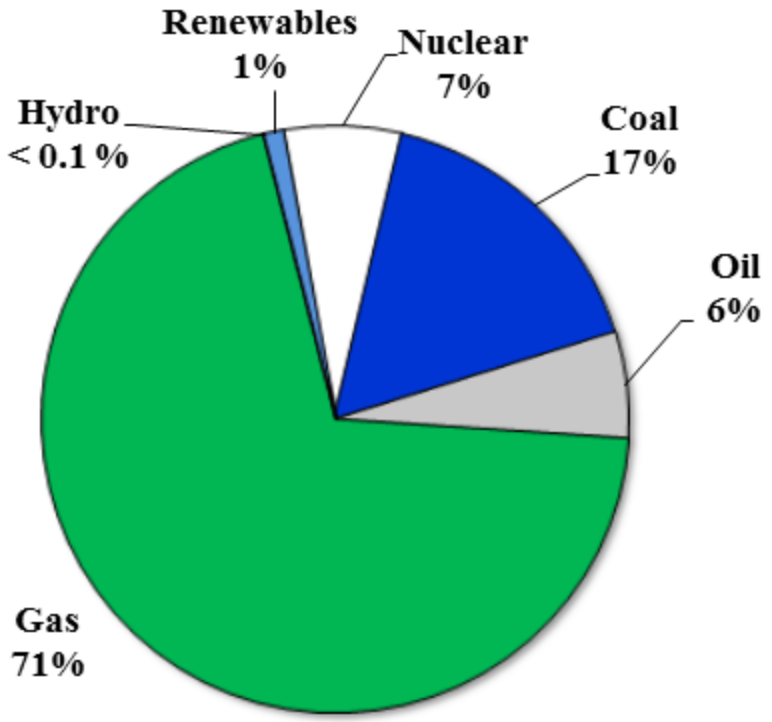
2016
229,738 GWh



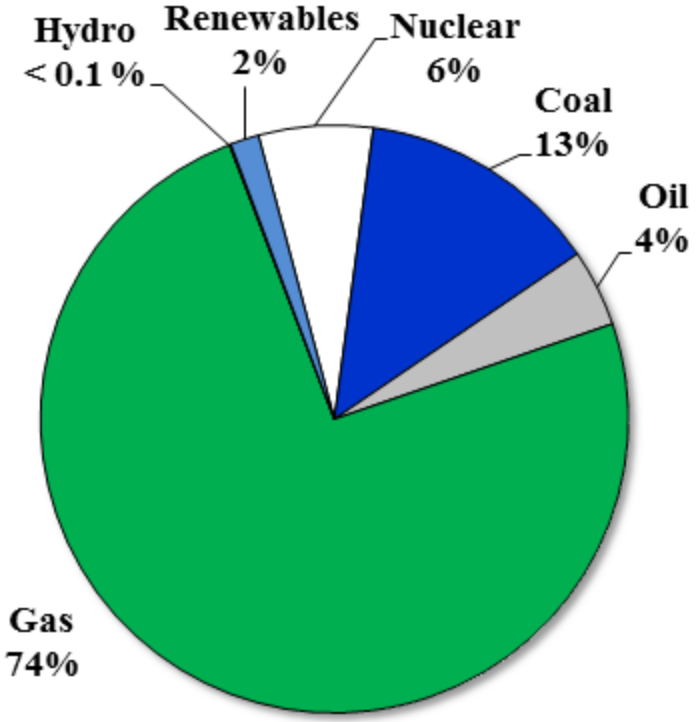
2025
247,223 GWh

Fuel Mix (Installed Capacity)

Summer Capacity[1/] (MW)



2016
55,607 MW

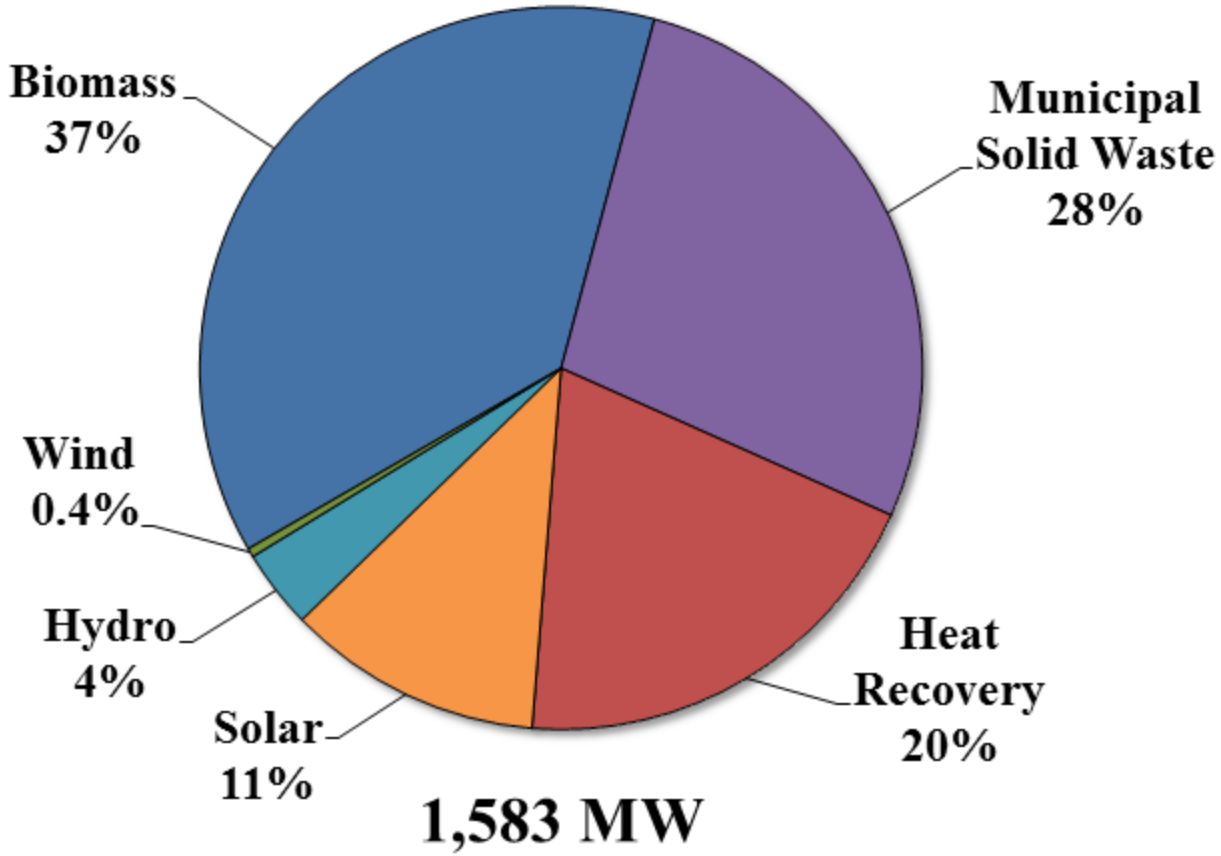


2025
60,995 MW

[1/] Only accounts for firm capacity

2016 Existing[1/] Renewable Resource Capacity

Summer Capacity[2/] (MW)



[1/] Existing capacity as of December 31, 2015

[2/] Contains non-TYSP data that includes both Firm (contracted) and Non-Firm Capacity in the FRCC region

Renewables Forecast [1/]

Existing[2/] Renewables Capacity (Summer)

Biomass	592 MW
Heat Recovery	310 MW
Hydro	56 MW
Municipal Solid Waste	434 MW
Solar (Nameplate)	181 MW
Wind	10 MW
	1,583 MW

Planned Additions (through Summer 2025)

Biomass	278 MW
Solar (Nameplate)	1,167 MW
	1,445 MW

[1/] Contains non-TYSP data that includes both Firm (contracted) and Non-Firm Capacity in the FRCC region
[2/] Existing capacity as of December 31, 2015

Nuclear Outlook

Existing[1/] Nuclear Capacity (Summer)

St. Lucie 1	981 MW
St. Lucie 2	986 MW
Turkey Point 3	811 MW
Turkey Point 4	821 MW
	3,599 MW

Planned Nuclear Capacity (Summer)

Turkey Point 3 Upgrade (9/2018)	20 MW
Turkey Point 4 Upgrade (4/2019)	20 MW
	40 MW

[1/] Existing capacity as of December 31, 2015

Clean Power Plan

- EPA promulgated the CPP final rules in October 2015
- Supreme Court issued a stay regarding the CPP final rules in February 2016
- EPA Clean Power Plan (CPP) effects to be addressed in future TYSPs once CPP legal challenges are resolved

FRCC Load & Resource Plan: Conclusion

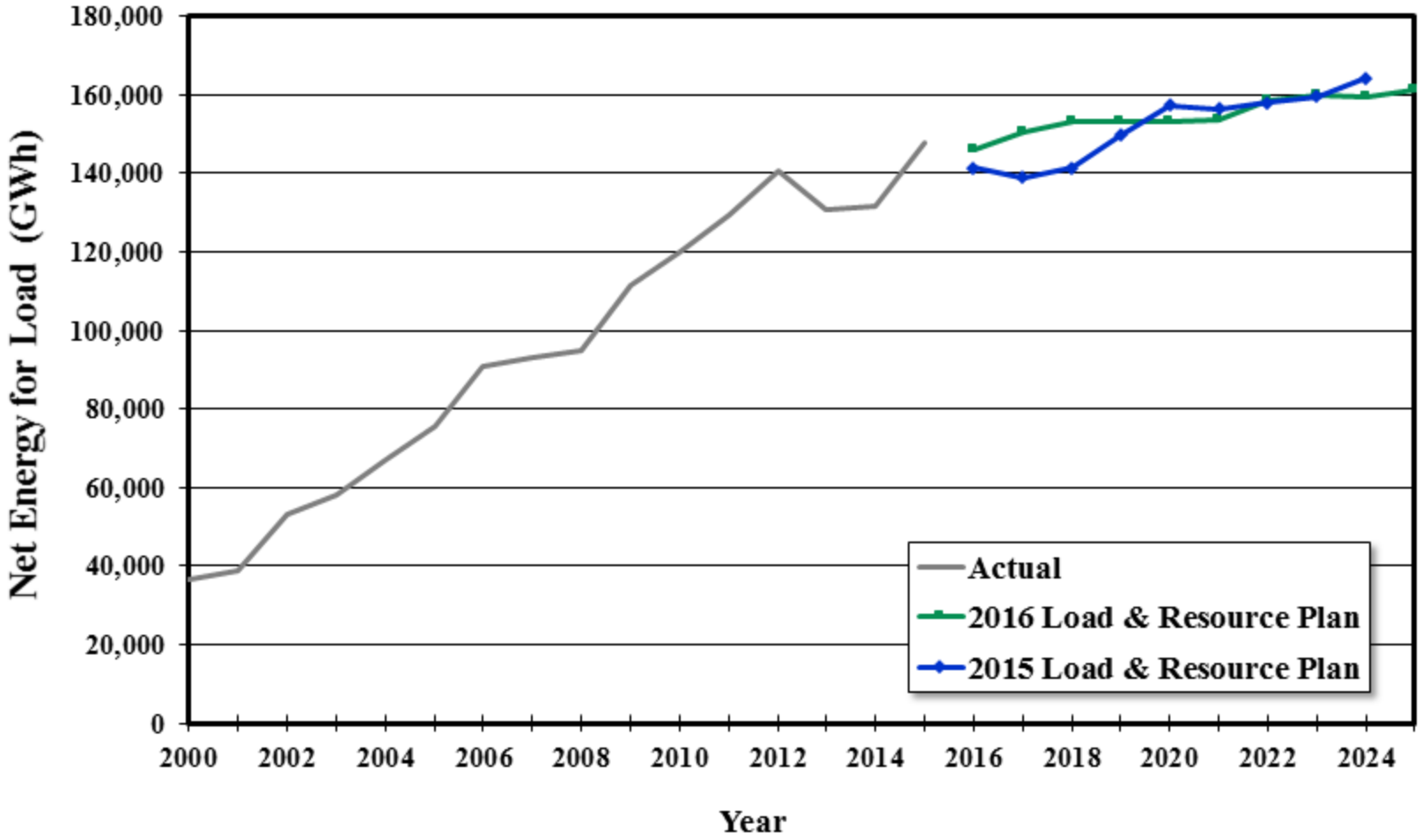
- Based on the 2016 TYSPs, the FRCC Region is projected to have adequate total planned reserves over the ten year period
- DSM, both through utility-sponsored programs and mandated codes and standards, is projected to be a significant component of projected reserves
- Gas, as a % of total energy served, is projected to remain steady at approximately 65% for the next ten years.
- Renewables are projected to provide 2% of the energy served by 2025

FRCC
Fuel
Reliability

2016 FRCC Fuel Reliability

- Fuel Reliability Working Group (FRWG)
  - Reviews existing interdependencies of fuel availability and electric reliability
  - Coordinate regional responses to fuel issues and emergencies

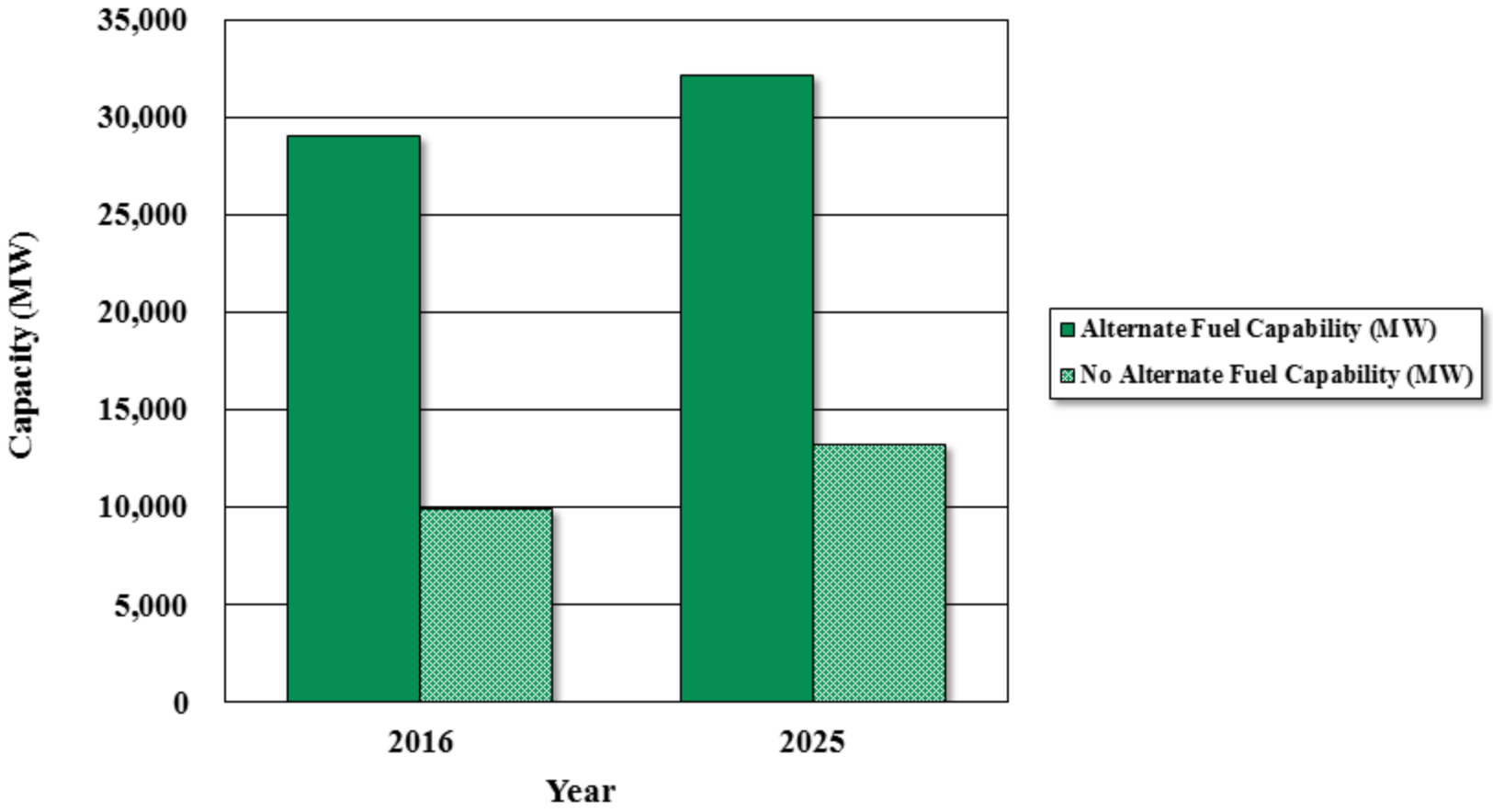
Energy Production from Natural Gas[1/]



[1/] Extended nuclear outages for uprate work resulted in higher gas usage in 2012

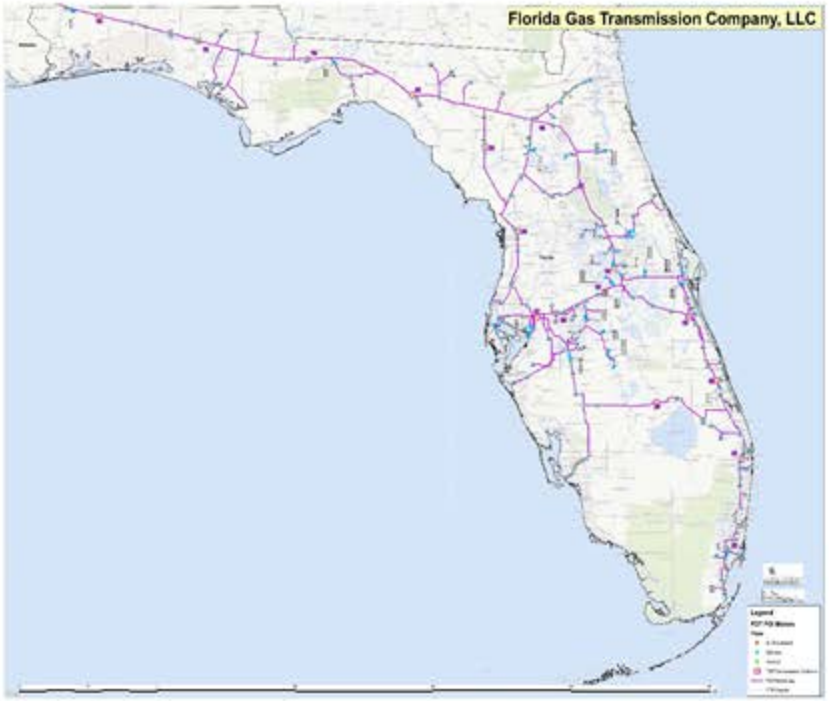
Natural Gas Alternate Fuel Capability

Summer Capacity (MW)



Existing Gas Pipelines

Florida Gas Transmission



Gulfstream

Sources: FGT Pipeline (http://fgttransfer.energytransfer.com/ipost/FGT/maps/system-map)
Gulfstream (http://wp.gulfstreamgas.com/about/32-2/)

Third Gas Pipeline[1/]

(Expected In-Service Date: Mid 2017)

Sabal Trail

Florida Southeast Connection

[1/] Sabal Trail will serve DEF's Citrus County Combined Cycle while Florida Southeast Connection will serve FPL's Martin site, Riviera Combined Cycle and their planned Okeechobee Combine Cycle.

Natural Gas Storage Outside of Florida

- Florida utilities have contracts with NG storage facilities out of state
  - Currently have rights to approximately 9.4 Bcf of NG storage which can generate a total of 930 GWh of energy
  - Able to withdraw approximately 0.93 Bcf per day which can generate 92 GWh per day
  - Important tool to manage supply disruptions

Data conversions are based on Energy Information Administration's average operating heat rate and average quality of fossil fuel receipts for natural gas units (http://www.eia.gov/tools/faqs/faq.cfm?id=667&t=2)

Natural Gas Reliability Conclusions

- Florida has existing and planned gas pipeline capacity adequate to support state electric generation
- NG storage outside of Florida provides additional redundancy against supply interruption
- Electric generation with alternate fuel capability provides operating flexibility if NG supplies become limited due to unforeseen events
- Third gas pipeline will provide an important increase in natural gas supply diversity, capacity and reliability

Conclusion

- Based on 2016 TYSPs, planned Reserve Margins exceed 20% for all peak periods for the next ten years
  - DSM, both through utility-sponsored programs and mandated codes and standards, is projected to be a significant component of projected reserves
- Gas, as a % of total energy served, is projected to remain steady at approximately 65% for the next ten years.
- EPA Clean Power Plan (CPP) effects to be addressed in future TYSPs once CPP legal challenges are resolved

Questions ?