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

2020 Load & Resource Plan

- Summary
- Gulf Power Company Integration
- Integrated Resource Planning Process
- Load Forecast and Demand-Side Management (DSM)
- Generation Additions (including batteries), Reserve Margins, Fuel Mix, and Renewable Resources
- Reliability Considerations of Utility Solar Generation Additions
- Natural Gas Infrastructure in Florida
- COVID-19 Impacts
2020 Load & Resource Plan Summary

Over the next ten years

- Firm peak demand and energy sales forecasts are comparable to 2019 TYSP; continue to show growth
- 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 2029
- Energy Efficiency Codes and Standards are projected to reduce peak demand by 5.1% in 2029
- Reserve Margin increasingly dependent upon firm Demand Response in later years
- Renewables increase from 4% to 13% (energy)
- Utilities’ Ten-Year Site Plans filed 4/1 and did not consider impacts of COVID-19
FPL IRP/Gulf Integration

- On January 1, 2019, Gulf Power Company (Gulf) became a subsidiary of NextEra Energy, Inc. which also owns FPL.
- In previous Load and Resource Plans, Gulf’s data was only shown within the State section of the report.
- FPL expects to integrate Gulf, creating a single electric operating system on January 1, 2022.
- Approximately 2,350 MW of existing generation is being added to the FRCC Region.
- Gulf Power loads have been added to 2019 forecasts to better compare 2019 to 2020 data.
Utility Integrated Resource Planning (IRP) Process Overview

**Forecasts**
- Demand
- Energy
- Fuel
- Economic
- Other

**Existing Resources**
- Including plans for modifications/retirements

**Identify Resource Need (with reliability criteria)**

**Supply-side Options**

**Demand-side Options**

**Cost & Operating Data**

**Evaluate Alternatives**

**Integrated Resource Plan**
FRCC Planning Process Overview

- Utility IRP
- Utility TYSP

FRCC Load & Resource Plan

Planning Models
- Loss of Load Probability
- Transmission Models

Reliability Assessments/Studies

NERC/SERC

FPSC
Load Forecast and DSM\textsuperscript{1,2,3}

- Firm summer peak demand (MW) growth similar to 2019, at 1.10% per year
- Forecasted energy sales (GWh) growth similar to 2019 TYSPs; at 0.75% per year
- Demand Response reduces firm summer peak (MW) by 6.1% in 2029
- Energy Efficiency Summer Peak reductions in 2029
  - Mandated Codes and Standards: 5.1%
  - Utility-Sponsored Energy Efficiency/Energy Conservation: 1.4%

\textsuperscript{1} In this year’s report the growth rate was calculated using 8 years of data from 2022-2029 to normalize the impact of Gulf Integration on 1/1/2022.
\textsuperscript{2} Demand-Side Management (DSM) is made up of Demand Response (DR) and Utility-sponsored Energy Efficiency/Energy Conservation (EE/EC).
\textsuperscript{3} Projected impacts of Energy Efficiency codes and standards included in all utilities’ forecasts.
Load Forecast Factors*

- Florida unemployment (actual) has continued 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 2029

*Utilities’ TYSP filed 4/1 and did not consider impacts of COVID-19
Comparison of 2019 vs. 2020
Firm Peak Demand Forecast\(^1,2\)
(Summer)

![Graph showing projected growth of firm peak demand from 2020 to 2029.]

\(^1\) Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2020-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

\(^2\) For the Years 2022 and beyond, the 2019 forecast includes legacy Gulf Power load projected in Gulf Power’s most recent independent Ten-Year Site Plan filing to foster a better understanding of overall year-over-year growth.
Comparison of 2019 vs. 2020
Net Energy for Load (NEL) Forecast

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Projected growth of approx.
14,000 GWh
(2022-2029)

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1 Firm Peak Demand includes impacts of DSM (cumulative Demand Response and incremental (2020-on) utility-sponsored Energy Efficiency/Energy Conservation) as well as Energy Efficiency Codes and Standards.

2 For the Years 2022 and beyond, the 2019 forecast includes legacy Gulf Power load projected in Gulf Power’s most recent independent Ten-Year Site Plan filing to foster a better understanding of overall year-over-year growth.
**Summer Peak Demands**

**Actual and Forecasted**

The graph illustrates the actual and forecasted summer peak demands from 1991 to 2027. The lines represent the following:

- **Black line**: Actual Peak Demand
- **Orange line**: Projected Demand with DR & EE/EC Impacts Excluded
- **Red line**: Projected Firm Peak Demand
- **Gold line**: Projected Demand with DR Impacts Excluded

**Legend**

- Actual Peak Demand
- Projected Demand with DR & EE/EC Impacts Excluded
- Projected Demand with DR Impacts Excluded
- Projected Firm Peak Demand

**Footnotes**

1. Projected impacts of Energy Efficiency codes and standards are included in all projections.
2. Impacts from cumulative Demand Response (DR) and incremental (2020-on) utility-sponsored. Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.

3. As of 1/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 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 (2020-on) utility-sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are excluded.
3. As of 1/1/2022 capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 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 8 years of data from 2022-2029 to normalize the impact of Gulf Integration on 1/1/2022
Demand Response as a Percentage of Peak Demand
Summer 2020


1 Excluding FRCC (FL-Peninsula) Subregion
Capacity Additions and Reserve Margins

- 12,150 MW of new generation planned over the next ten years
  - Includes approximately 4,500 MW of firm solar
  - Average firm capacity value from solar in FRCC region is 42%
  - Includes 1,400 MW of battery storage
- 5,100 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 Capacity\(^1\)
(Summer)

\(^1\) As of 1/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
Incremental Firm Capability Changes over 10-yr Planning Horizon by Fuel Type in MW

1 As of 1/1/2022 capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
Nuclear Outlook is Stable in 10-yr Horizon

Existing\(^1\) Nuclear Capacity (Summer)

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Lucie 1</td>
<td>981</td>
</tr>
<tr>
<td>St. Lucie 2</td>
<td>986</td>
</tr>
<tr>
<td>Turkey Point 3</td>
<td>837</td>
</tr>
<tr>
<td>Turkey Point 4</td>
<td>821</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,625</strong></td>
</tr>
</tbody>
</table>

Planned Nuclear Capacity (Summer)

- Turkey Point 4 Upgrade (11/2020) 20 MW

\(^1\) Existing generation as of December 31, 2019
Planned Reserve Margin\textsuperscript{1,2,3}
(Based on Firm Load)

\begin{itemize}
\item \textsuperscript{1} Projected impacts of Energy Efficiency codes and standards are included in all projections.
\item \textsuperscript{2} Impacts from cumulative Demand Response (DR) and incremental (2020-on) utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs are included.
\item \textsuperscript{3} As of 1/1/2022, Reserve Margin data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
\end{itemize}
Forecasted Firm Summer Capacity by Fuel Type

2020: 56,365 MW
- Gas: 74%
- Nuclear: 7%
- Coal: 11%
- Renewable: 3%
- Oil: 4%

2029: 63,425 MW
- Gas: 71%
- Nuclear: 6%
- Coal: 8%
- Renewable: 12%
- Oil: 3%
- Other: 0.1%

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1 As of 1/1/2022, capacity, demand and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
2 Excludes Firm Demand Response.
Forecasted Renewable Mix

Firm Summer Capacity

- **2020**: 2,112 MW
  - Solar: 79%
  - MSW: 13%
  - Biomass: 5%
  - LFG: 2%
  - Hydro: 2%

- **2029**: 6,177 MW
  - Solar: 93%
  - MSW: 3%
  - Biomass: 2%
  - LFG: 0.3%
  - Wind: 1%
  - Hydro: 0.7%

*As of 1/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).*
2018-2020 TYSP Forecasted Solar¹

Firm Summer Capacity

¹ As of 1/1/2022, capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
Forecasted Fuel Mix

Net Energy for Load (GWh)

2020
239,741 GWh

2029
266,535 GWh

1 As of 1/1/2022 capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
Forecasted Renewable Mix\(^1\)

Total Energy Served

- **2020**
  - Solar: 73%
  - MSW: 13%
  - Biomass Landfill Gas: 8% (4%)
  - Total: 8,525 GWh

- **2029**
  - Solar: 95%
  - MSW: 3%
  - Biomass Landfill Gas: 1% (1%)
  - Total: 35,293 GWh

\(^1\) As of 1/1/2022 capacity, demand, and energy data will include the integration of Gulf into FPL. The data presented for years 2022 through 2029 is for the single integrated system (FPL).
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
- Member utilities assign varying firm capacity values to utility solar
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 64-66%
Conclusion

Based on 2020 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 4% to 13% (energy)

Gas infrastructure supports planned generation
Questions?