Agenda

Executive Summary

FRCC Load & Resource Plan
- Load Forecast, Generation Additions, Reserve Margins, Fuel Mix
- Renewable Resources and Demand Side Management (DSM)

FRCC Fuel Reliability
- Natural Gas Energy Production in Florida
- Natural Gas Infrastructure in Florida

FRCC Transmission Planning
- FRCC Regional Transmission Planning Process
- Crystal River Unit Retirements
- Status of FERC Order 1000
Florida Reliability Coordinating Council

The purpose of the Florida Reliability Coordinating Council is to promote and enhance the reliability and adequacy of the bulk electricity supply in Florida, now and into the future.
Executive Summary

- Planned Reserve Margins > 20% (although resource mix is changing towards greater dependency upon Demand Side Management resources)
- Demand Response\(^1\) reduces load (MW) at peak by 7% throughout the 10-year horizon
- Utility-sponsored Energy Efficiency/Energy Conservation programs reduce load (MW) at peak by 2.8% by 2022
- Additional Energy Efficiency delivered through mandated codes and standards accounted for in load forecast reduces load (MW) at peak by at least 3.7% by 2022
- Renewables are 3,150 GWh (1.2%) of energy served by 2022

\(^1\)Demand Response = Load Control + Interruptible programs; i.e. dispatchable DSM
Executive Summary

(Continued)

- Energy production from natural gas expected to increase 13.2% by 2022
- 96% of the gas pipeline capacity into Florida is subscribed
- Impact of EPA regulations:
  - RICE\(^1\) rule projected to negatively impact Commercial/Industrial Demand Response projections
  - Prospective 2015 retirements at Crystal River due to MATS\(^2\) would have transmission impacts
  - Mitigation plans are being developed

\(^1\)RICE: Reciprocating Internal Combustion Engine
\(^2\)MATS: Mercury and Air Toxics Standard
FRCC
Load & Resource Plan
Load Forecast Factors

- Florida unemployment (actual) continues to decrease
- Population continues to pick up momentum
- Florida’s Gross State Product (GSP) levels lower than expected in 2011-12; new projections show slightly slower recovery
- Forecasted energy sales and peak demands are lower in 2013 TYSP compared to 2012 TYSP
Comparison of 2012 vs. 2013
FRCC Firm Peak Demand Forecast
(Summer)
Comparison of 2012 vs. 2013
FRCC Firm Peak Demand Forecast
(Winter)
Comparison of 2012 vs. 2013
FRCC Net Energy for Load Forecast

![Graph showing net energy for load forecast from 2012 to 2021. The graph compares the projected net energy for both years, with data points indicating an increasing trend.]
FRCC Region
Compound Average Annual Growth Rate\(^1\) for Load (MW)

1/ Projected growth rate from prior forecasts
FRCC Summer Peak Demands
Actual and Forecasted

![Graph showing the trend of FRCC Summer Peak Demands (Actual and Forecasted) from 1990 to 2020.]
Load & Resource Plan

Total Available Capacity

(Summer)

Existing generation as of December 31, 2012

1/Existing generation as of December 31, 2012
FRCC Demand Forecast
(Summer)

1/DR: Demand Response
2/Utility sponsored Energy Efficiency/Energy Conservation (EE/EC) programs only
Load & Resource Plan

Generation-Only Reserve Margin

FRCC Criteria

1/ Excludes projected cumulative DR and incremental utility EE/EC programs
Load & Resource Plan
Demand Response as a Percentage of Peak Demand

**Summer 2013**

<table>
<thead>
<tr>
<th>Area</th>
<th>Demand Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISO</td>
<td>8.4%</td>
</tr>
<tr>
<td>FRCC</td>
<td>6.9%</td>
</tr>
<tr>
<td>PJM</td>
<td>6.8%</td>
</tr>
<tr>
<td>NPCC'</td>
<td>3.9%</td>
</tr>
<tr>
<td>SERC'</td>
<td>3.8%</td>
</tr>
<tr>
<td>WECC'</td>
<td>2.8%</td>
</tr>
<tr>
<td>SPP</td>
<td>2.6%</td>
</tr>
<tr>
<td>ERCOT</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

FRCC Reliability Assessment
Reserve Margin Review

- Planned Reserve Margins expected to be greater than 20% (but are projected to be increasingly dependent upon all types of DSM)
- FRCC has second highest amount of Demand Response as a percentage of a region’s peak load
Fuel Mix (Energy)

Net Energy for Load (GWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Energy (GWh)</th>
<th>Gas</th>
<th>Coal</th>
<th>Nuclear</th>
<th>Renewables</th>
<th>Other</th>
<th>NUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>225,384 GWh</td>
<td>59%</td>
<td>20%</td>
<td>13%</td>
<td>~1%</td>
<td>6%</td>
<td>~1%</td>
</tr>
<tr>
<td>2022</td>
<td>255,242 GWh</td>
<td>59%</td>
<td>19%</td>
<td>13%</td>
<td>~1%</td>
<td>~1%</td>
<td>~1%</td>
</tr>
</tbody>
</table>

13.2% increase from Gas
(16,302 GWh)
Fuel Mix (Capacity)

Summer Capacity\(^{1/}\) (MW)

- **2013**
  - Gas: 61%
  - Coal: 17%
  - Nuclear: 7%
  - Renewables: 1%
  - Oil: 14%
  - Total: 53,535 MW

- **2022**
  - Gas: 62%
  - Coal: 14%
  - Nuclear: 8%
  - Renewables: 2%
  - Oil: 14%
  - Total: 59,792 MW

\(^{1/}\)Only accounts for firm capacity
2013 Existing Renewable Resource Capacity

Summer Capacity\(^{1/}\) (MW)

- Municipal Solid Waste: 33%
- Heat Recovery: 21%
- Solar: 13%
- Biomass: 28%
- Hydro: 4%

1,380 MW

\(^{1/}\) Contains non-TYSP data that includes both Firm and Non-Firm Capacity
Renewables Forecast

Existing Renewables Capacity $^{1/}$ 1,380 MW

Planned Additions (through 2022) $^{1/}$

- Biomass 481 MW
- Municipal Solid Waste 125 MW
- Solar PV $^{2/}$ 333 MW
- Solar Projects (other) 31 MW
- TOTAL ~ 970 MW

$^{1/}$ Contains non-TYSP data that includes both Firm and Non-Firm Capacity
$^{2/}$ DEF: 310 MW; GRU: 21 MW; TAL: 2 MW
# Nuclear Outlook

## Existing¹/ Nuclear Capacity (Summer)

<table>
<thead>
<tr>
<th>Plant</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>989</td>
</tr>
<tr>
<td>Turkey Point 3</td>
<td>808</td>
</tr>
<tr>
<td>Turkey Point 4</td>
<td>693</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,471</strong></td>
</tr>
</tbody>
</table>

## Planned

<table>
<thead>
<tr>
<th>Plant</th>
<th>Capacity (MW)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey Point 4</td>
<td>120</td>
<td>3/2013</td>
</tr>
<tr>
<td>Turkey Point 6</td>
<td>1,100</td>
<td>6/2022</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,220</strong></td>
<td></td>
</tr>
</tbody>
</table>

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¹/ Existing capacity as of December 31, 2012
²/ Approximate MWs
FRCC Load & Resource Assessment

Conclusion

- The FRCC Region has adequate total planned generation resources over the ten year period
- Greater dependence upon DSM resources and additional analyses will be performed
FRCC Fuel Reliability
2013 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
Extended nuclear outages for uprate work resulted in higher gas usage in 2012.
## Ten Largest States for NG Consumption (2011 Data)

<table>
<thead>
<tr>
<th>State</th>
<th>Total Annual Natural Gas Consumption (Bcf)</th>
<th>Annual NG Consumption for Electric Generation (Bcf)</th>
<th>Total Annual Marketed Natural Gas Production (Bcf)</th>
<th>Total Miles of Natural Gas Pipeline</th>
<th>Total Storage Capacity (Bcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>3,646</td>
<td>1,555</td>
<td>7,113</td>
<td>58,588</td>
<td>812</td>
</tr>
<tr>
<td>California</td>
<td>2,153</td>
<td>651</td>
<td>250</td>
<td>11,770</td>
<td>571</td>
</tr>
<tr>
<td>Louisiana</td>
<td>1,398</td>
<td>462</td>
<td>3,029</td>
<td>18,900</td>
<td>690</td>
</tr>
<tr>
<td><strong>Florida</strong></td>
<td><strong>1,218</strong></td>
<td><strong>1,050</strong></td>
<td><strong>15</strong></td>
<td><strong>4,971</strong></td>
<td>0</td>
</tr>
<tr>
<td>New York</td>
<td>1,217</td>
<td>427</td>
<td>31</td>
<td>5,018</td>
<td>246</td>
</tr>
<tr>
<td>Illinois</td>
<td>987</td>
<td>50</td>
<td>2</td>
<td>11,911</td>
<td>997</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>963</td>
<td>304</td>
<td>1,311</td>
<td>8,680</td>
<td>777</td>
</tr>
<tr>
<td>Ohio</td>
<td>820</td>
<td>93</td>
<td>79</td>
<td>7,670</td>
<td>580</td>
</tr>
<tr>
<td>Michigan</td>
<td>776</td>
<td>100</td>
<td>138</td>
<td>9,722</td>
<td>1,075</td>
</tr>
<tr>
<td>New Jersey</td>
<td>661</td>
<td>188</td>
<td>0</td>
<td>1,520</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total US</strong></td>
<td><strong>24,385</strong></td>
<td><strong>7,884</strong></td>
<td><strong>24,036</strong></td>
<td><strong>305,954</strong></td>
<td><strong>8,849</strong></td>
</tr>
<tr>
<td><strong>Florida as % of Total</strong></td>
<td><strong>5.0%</strong></td>
<td><strong>13.3%</strong></td>
<td><strong>0.06%</strong></td>
<td><strong>1.6%</strong></td>
<td><strong>0%</strong></td>
</tr>
</tbody>
</table>

FRCC entities maintain liquid fuel storage capability to provide service for an average of 4.8 days before replenishing.
### Pipeline Delivery Capacity to State of Florida
Contracted on a Firm Transportation Basis to Electric Generation Customers

<table>
<thead>
<tr>
<th>Pipeline</th>
<th>Delivery Capacity (MMcf/d)</th>
<th>Approximate Delivery Capacity in Florida Held by Generators (MMcf/d)</th>
<th>Approximate Percentage of Capacity Held by Electric Generators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida Gas Transmission</td>
<td>3,075</td>
<td>2,721</td>
<td>88%</td>
</tr>
<tr>
<td>Gulfstream Natural Gas</td>
<td>1,300</td>
<td>1,255</td>
<td>97%</td>
</tr>
<tr>
<td>Southern Natural Gas Company</td>
<td>121</td>
<td>65</td>
<td>54%</td>
</tr>
<tr>
<td>Gulf South Pipeline Company</td>
<td>190</td>
<td>15</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Total Capacity into State of Florida</strong></td>
<td><strong>4,686</strong></td>
<td><strong>4,056</strong></td>
<td><strong>87%</strong></td>
</tr>
</tbody>
</table>

The two major existing pipelines are more than 96% subscribed. Recently proposed 3rd gas pipeline by 2017 would enhance gas delivery reliability.
Fuel Reliability Conclusions

- Florida has greater natural gas demand than all but four states and greater natural gas demand to support generation than all states but Texas
- Florida has minimal in-state production, no in-state storage and less miles of pipeline within the state than all but one of the ten largest gas consuming states
Fuel Reliability Conclusions
(continued)

- Electric generation with dual fuel capability provides operating flexibility when NG supplies become limited due to unforeseen events
- A disruption to one of the two major pipelines, lasting more than a few days could exceed liquid fuel supply capability
- FRCC to review long term gas transportation adequacy with its entities
FRCC
Transmission Planning
FRCC Regional Transmission Planning Process

- Promote the reliability of the Bulk Electric System through coordination of transmission planning activities within the FRCC Region
- Assess transmission adequacy and resource deliverability
Crystal River Unit Retirements

- 2012 FRCC Long Range Study w/ CR 1, 2, and 3 online beyond 2015 showed FRCC grid reliable and secure for TY horizon
- Subsequent FRCC evaluation of the retirement of CR3 and the potential 2015 retirements of CR 1 and 2 indentified:
  - Transmission reliability issues impacting multiple entities starting in 2015 w/ no transmission alternatives available for 2015
  - MATS compliance options under evaluation that would allow CR 1 and 2 to run for a limited period of time and resolve transmission issues
  - Other transmission and generation alternatives under evaluation for 2016 and beyond
Status of Compliance with FERC Order 1000

- FERC jurisdictional entities have the obligation
- Expand FERC Order 890 with regard to regional and inter-regional planning and cost allocation
- Develop regional planning and cost allocation provisions
  - 10/11/2012 Initial Compliance filing
  - 6/20/2013 FERC issues order
  - 8/29/2013 Florida sponsors requested 90 day extension
  - 10/18/2013 Conforming Compliance filing
- Develop inter-regional transmission coordination procedure and address cost allocation for multi-regional projects
  - 7/10/2013 Compliance filing
  - Pending FERC Order
Conclusion

- Planned Reserve Margin exceeds 20% for all peak periods for the next ten years (although resource mix is changing towards greater dependence upon DSM resources)
- Energy production from natural gas expected to increase 13.2% by 2022
- Current pipeline capacity is 96% subscribed
- FRCC to review long term gas transportation adequacy with its entities
Conclusion
(continued)

- Impact of EPA regulations:
  - RICE rule projected to negatively impact Demand Response projections for Commercial/Industrial participants
  - Prospective 2015 retirements at Crystal River due to MATS would have transmission impacts
  - Mitigation plans are being developed
Questions ?