Florida Public Service Commission

2007 Ten-Year Site Plan Workshop

FRCC Presentation

Sarah Rogers
President and CEO

August 15, 2007

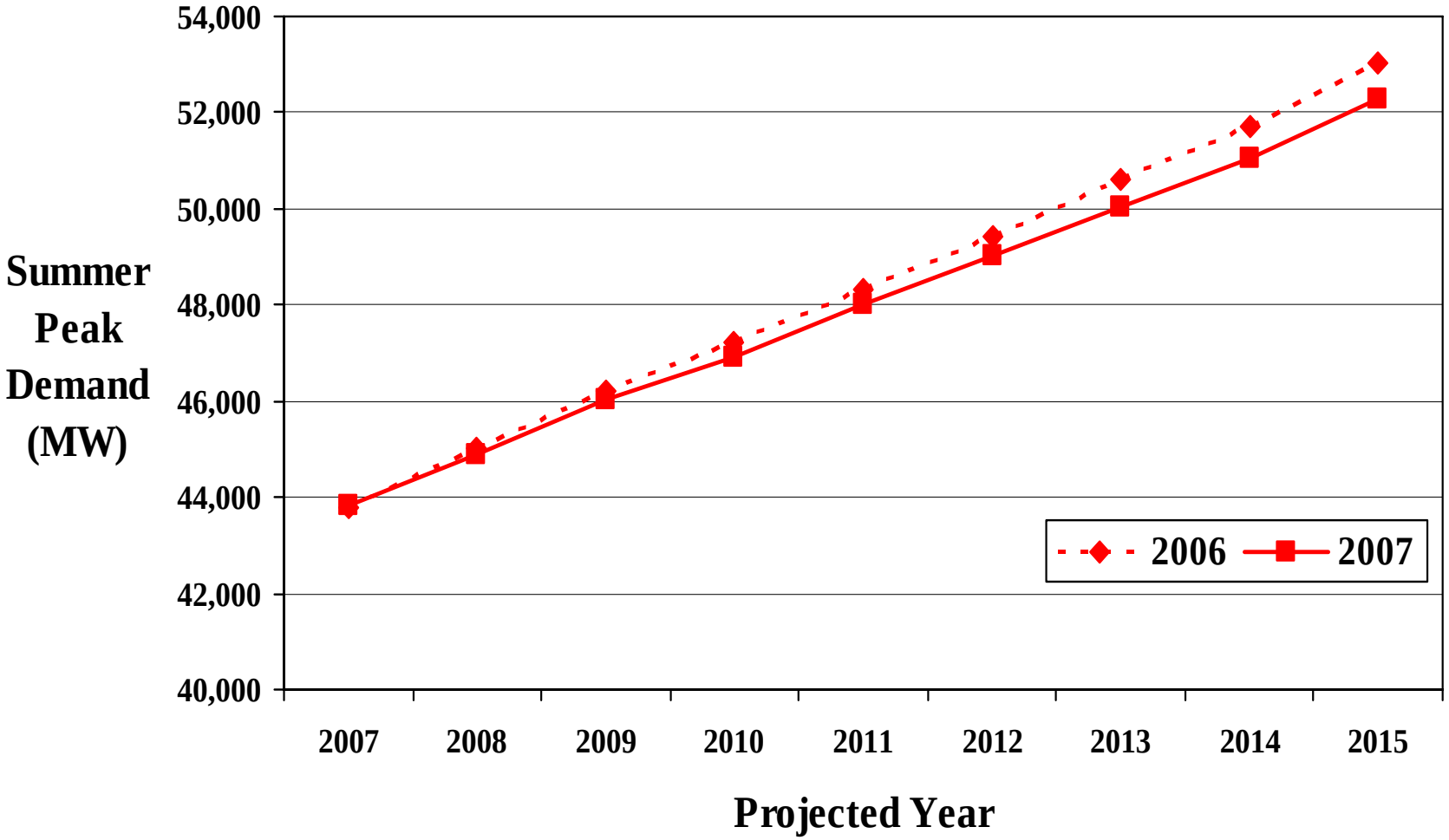
Florida Reliability Coordinating Council

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

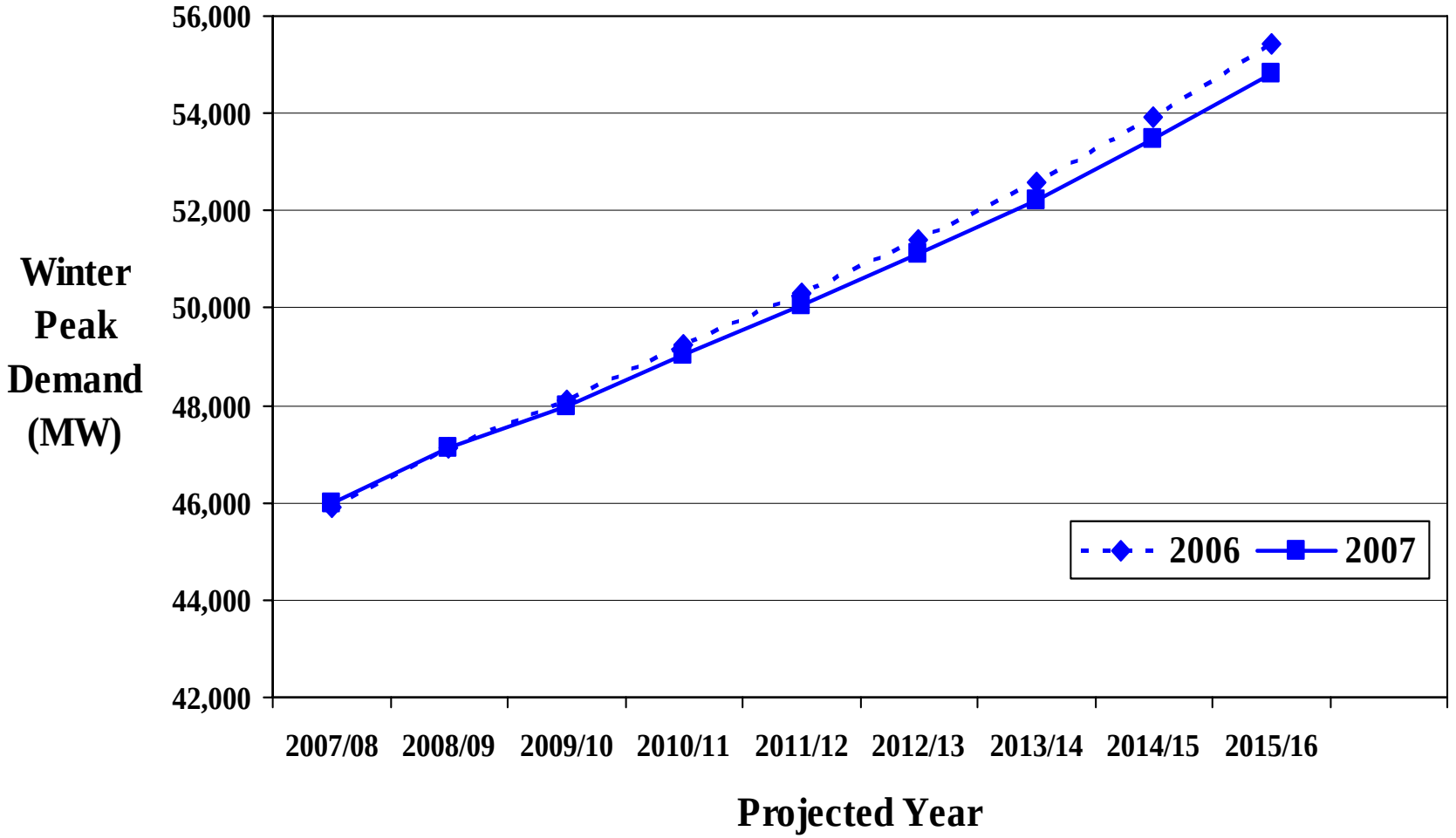
2007

FRCC Load & Resource Plan

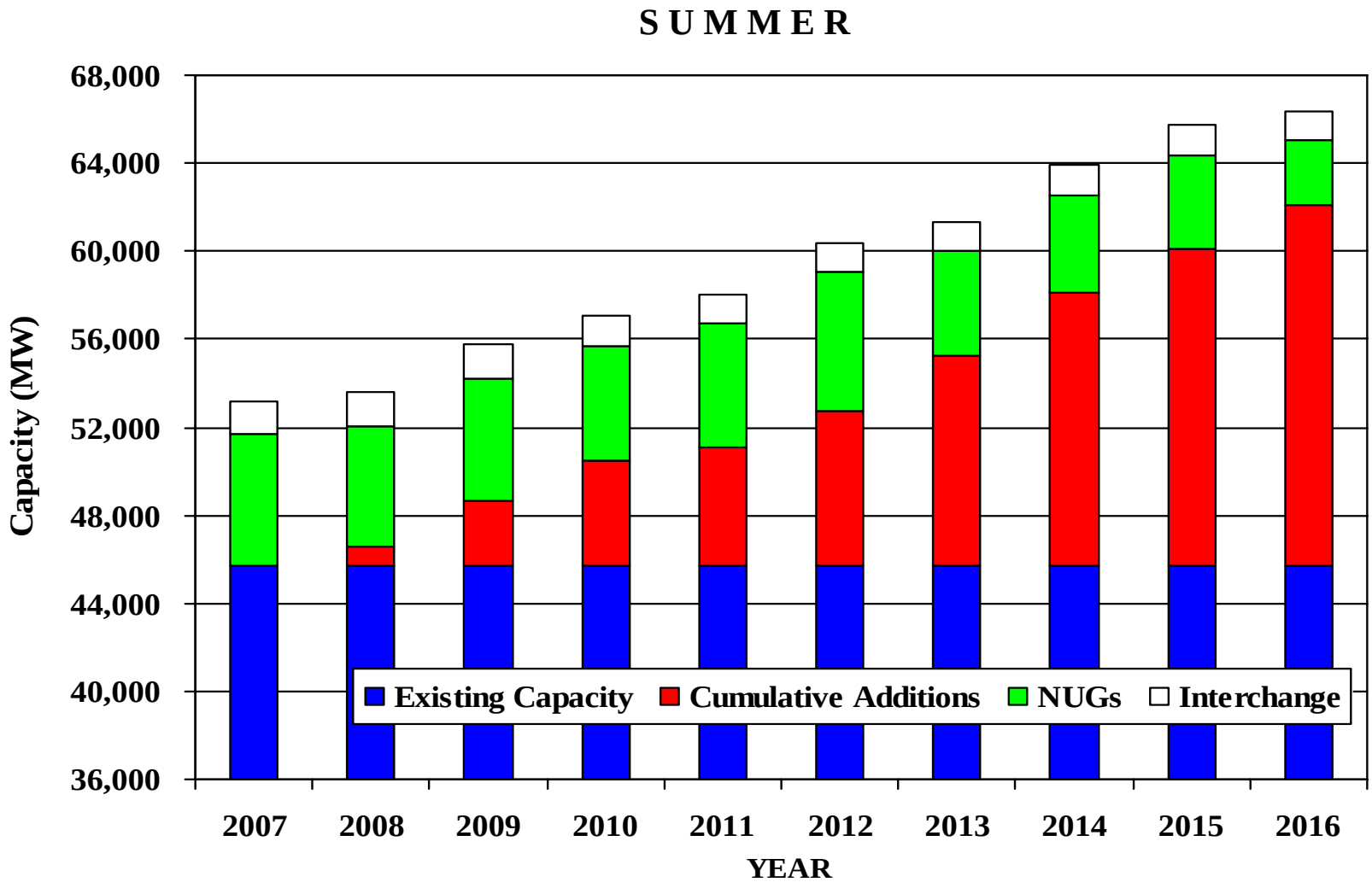
Comparison of 2006 vs. 2007
FRCC Firm Peak Demand Forecast
(Summer)



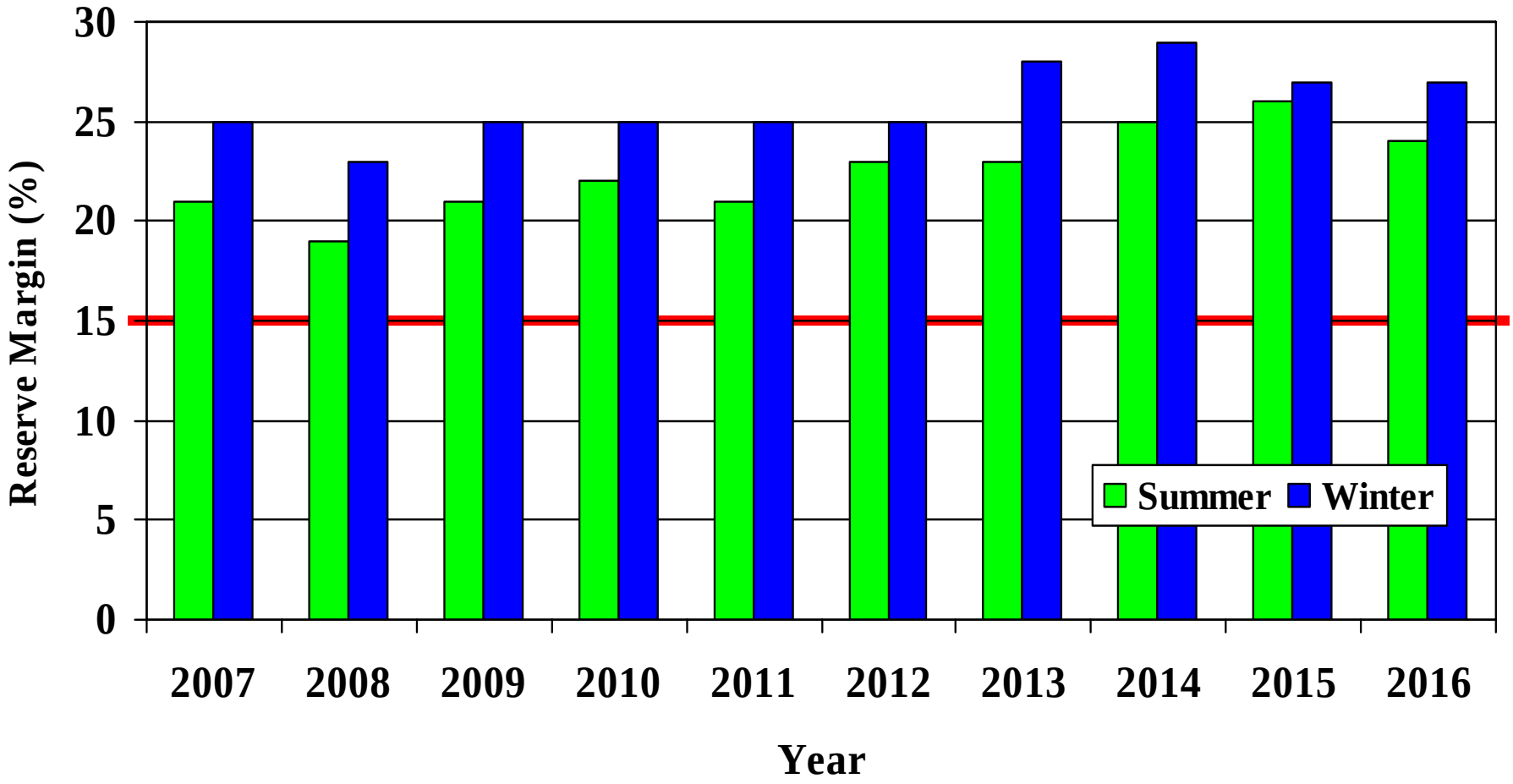
Comparison of 2006 vs. 2007
FRCC Firm Peak Demand Forecast
(Winter)



Load & Resource Plan
Total Available Capacity



Load & Resource Plan
FRCC Planned Reserve Margin



FRCC Reliability Assessment

Reserve Margin Review

- Ensure that the Regional Planning Reserve Margin meets the 15% FRCC Standard
- Planned Reserve Margin Exceeds 20% for all peak periods for next 10 years, except 19% for 2008

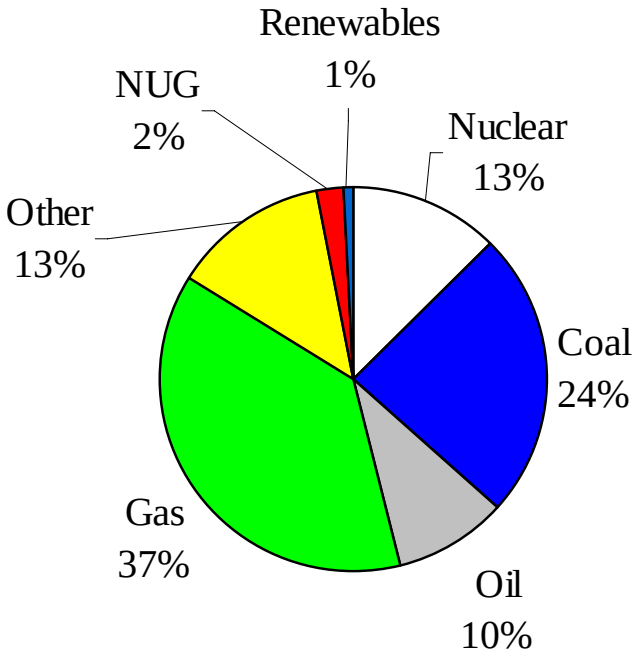
FRCC Reliability Assessment Conclusion

- The results of the resource adequacy review indicate that the FRCC Region is reliable for the next ten years from a planning perspective
- Evaluate impact of planned coal plants being changed to natural gas or other technologies

Load & Resource Plan
Fuel Mix

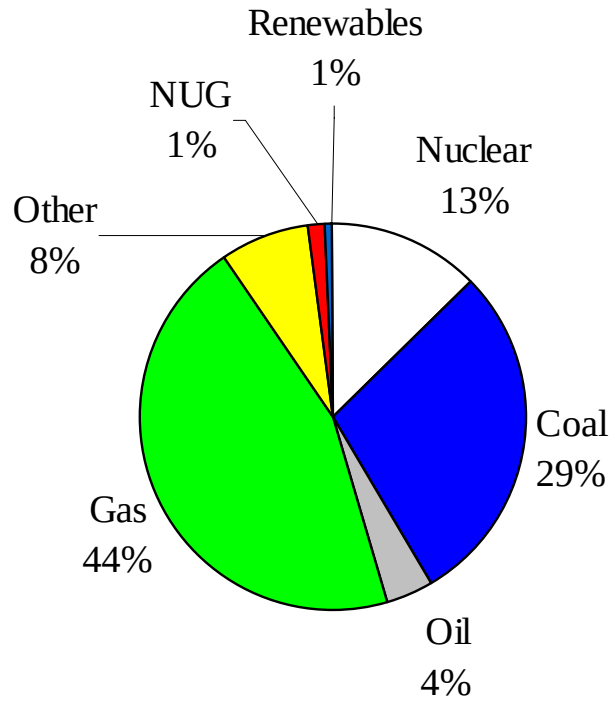
Net Energy for Load (GWH)

2007



2007 GWH
239,446

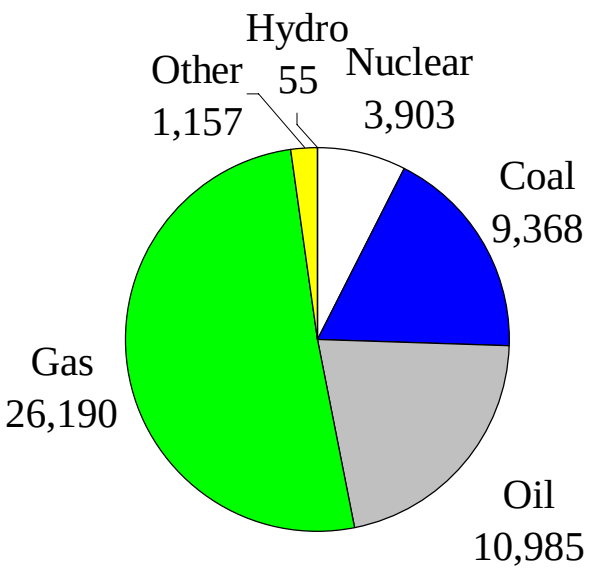
2016



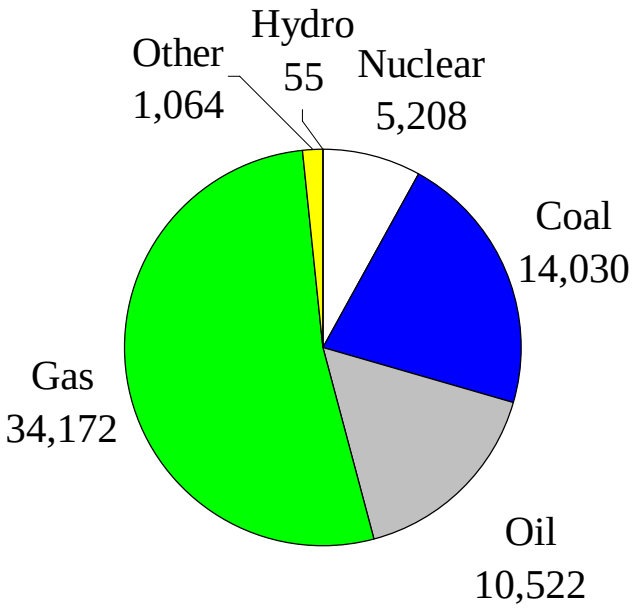
2016 GWH
308,343

Load & Resource Plan
Fuel Mix

Summer Demand (MW)



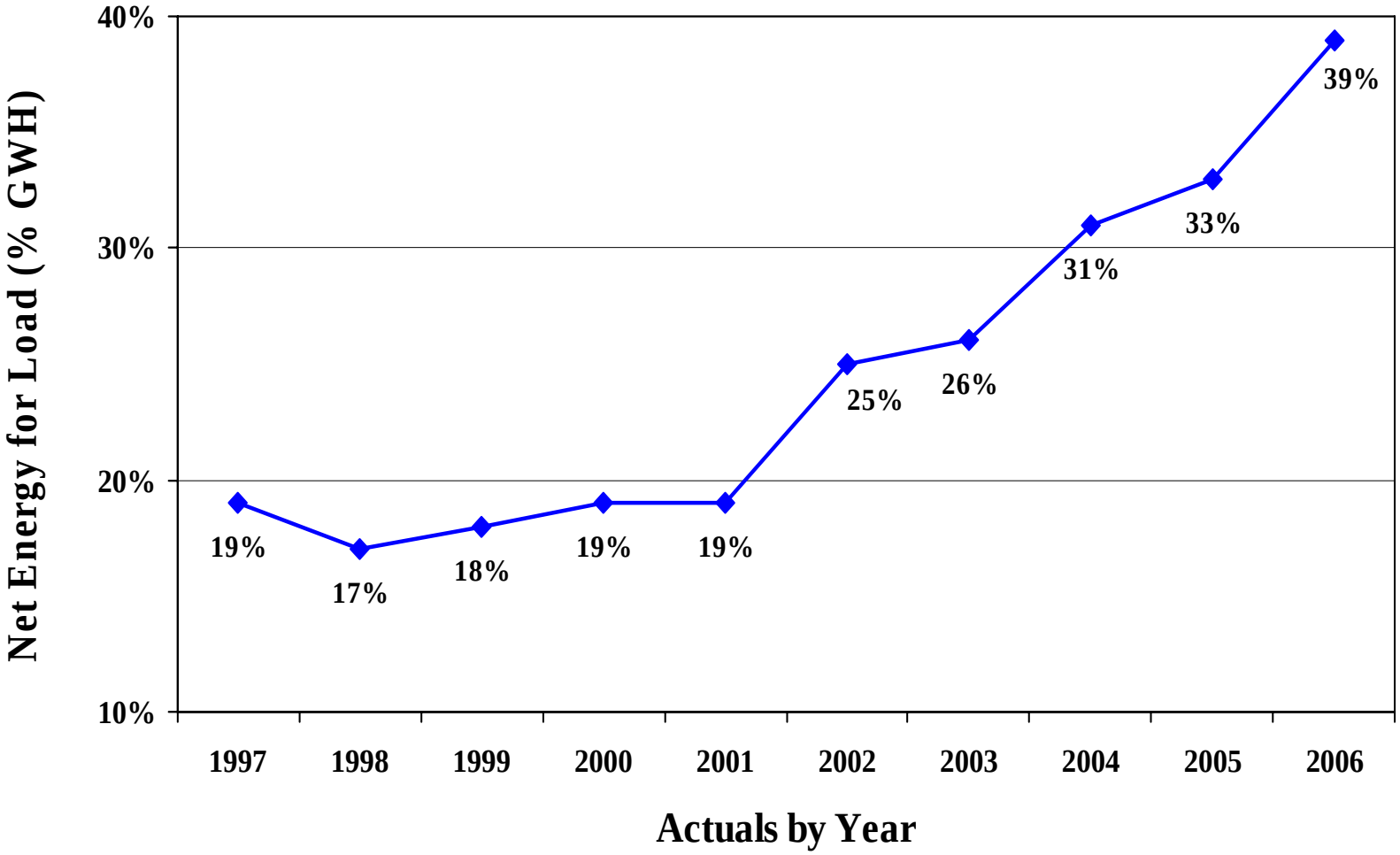
2007 MW*
51,658



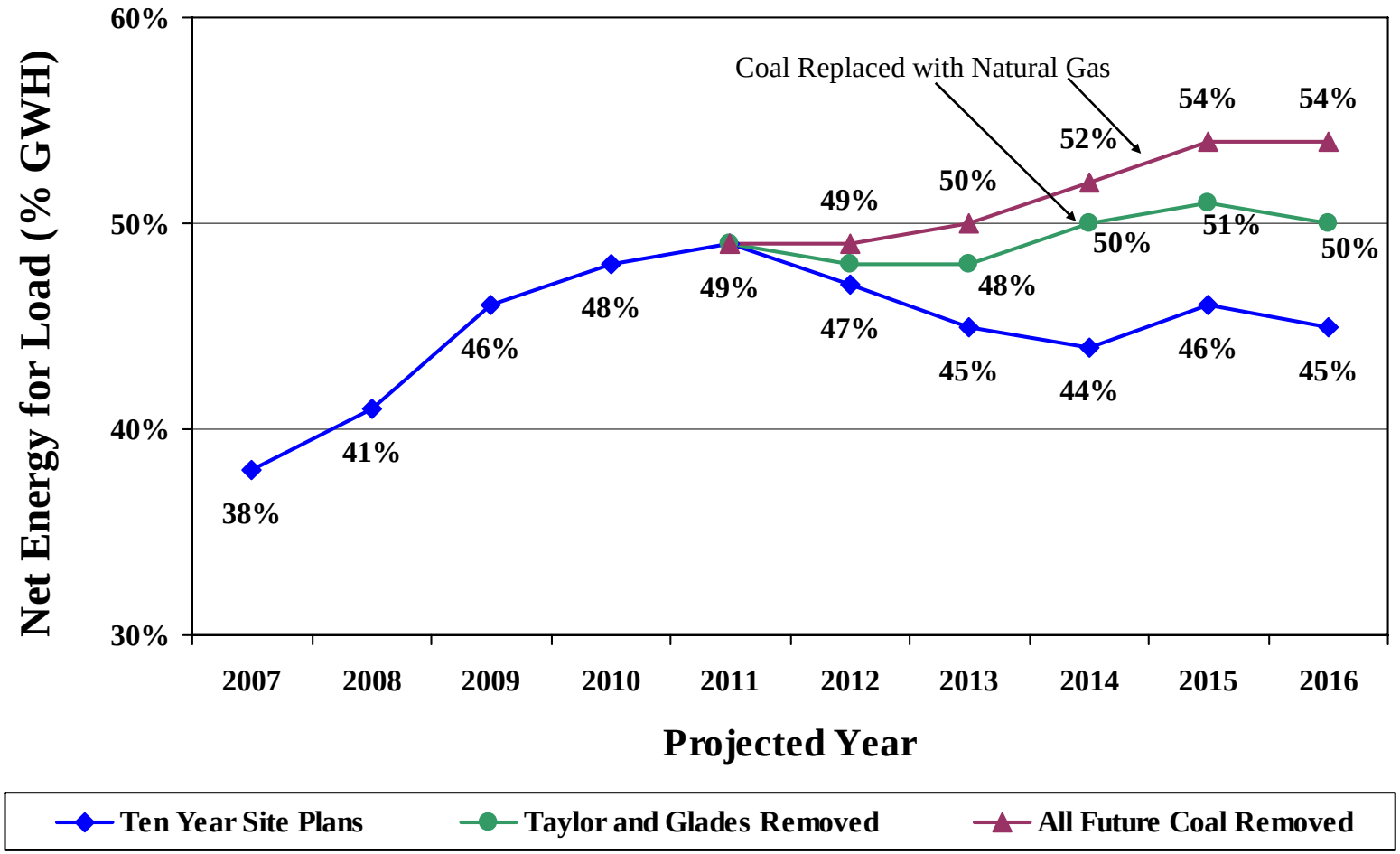
2016 MW*
65,050

* Does not include imports into FRCC

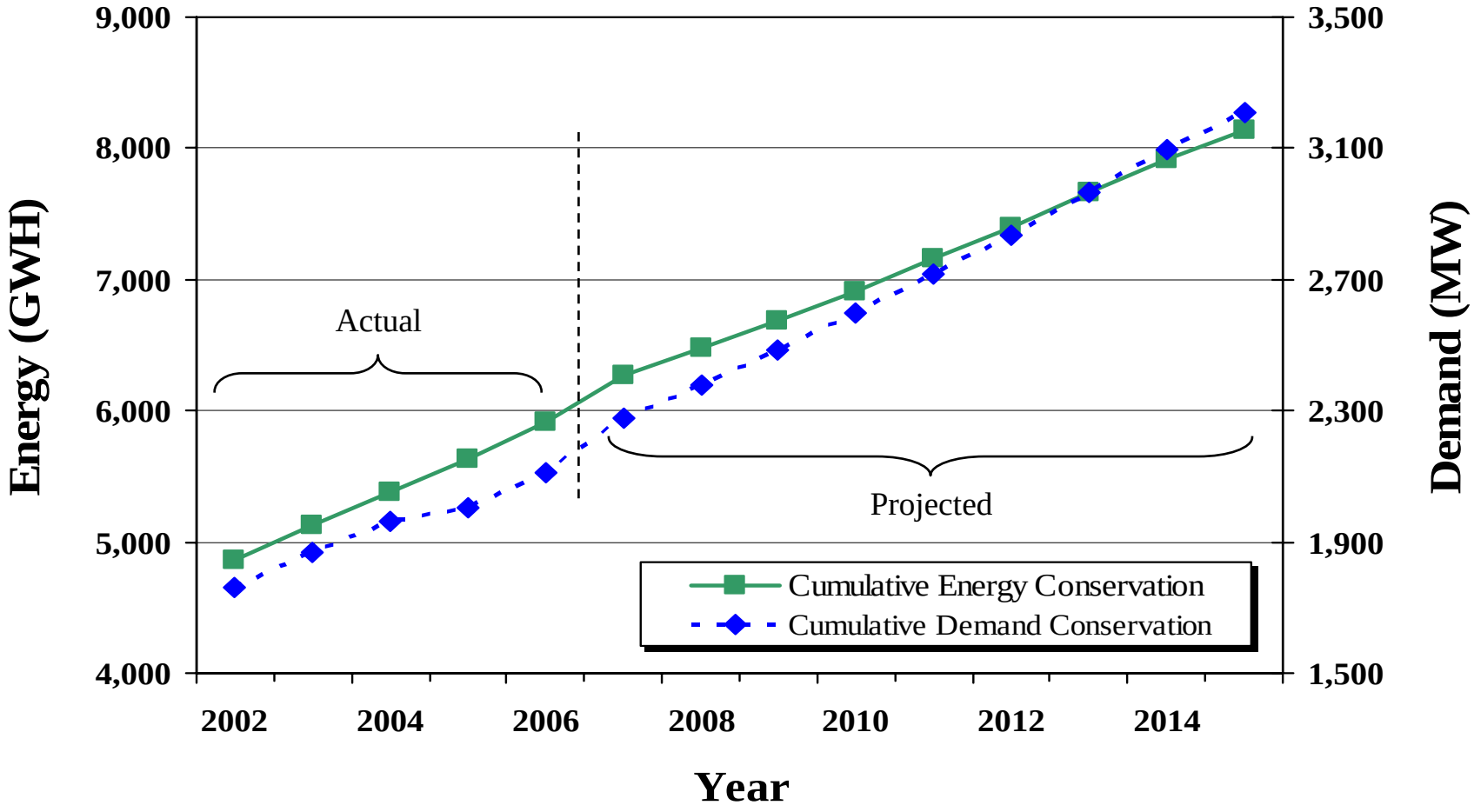
% Fueled by Natural Gas



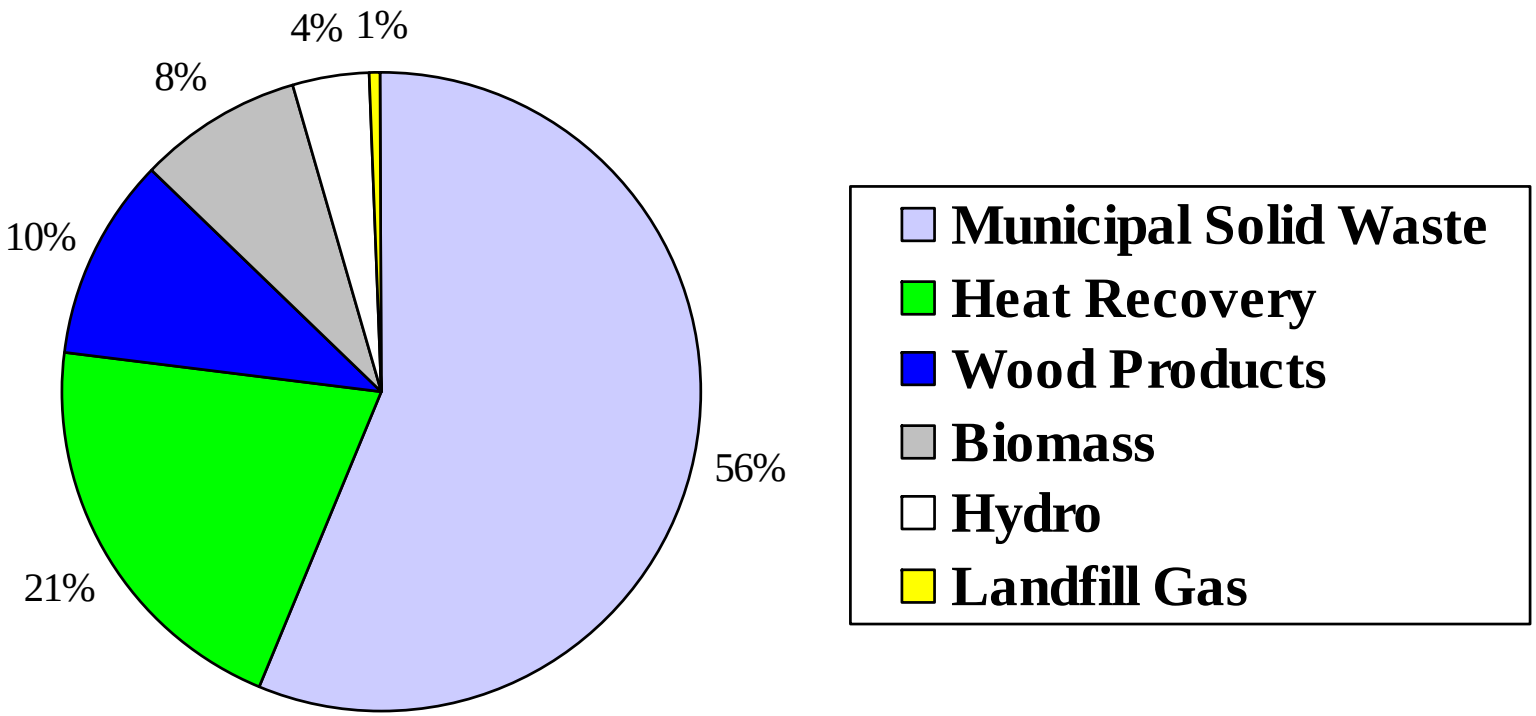
% Fueled by Natural Gas



Conservation - Cumulative Energy (GWH) & Summer Demand (MW)



Renewable Resources



2007 Total Capacity
1,441 MW

Renewables Forecast

Existing Renewable Capacity 1,441 MW

Planned (2008 – 2016)

Biomass	125 MW
Hydro	0 MW
Landfill Gas	13 MW
Municipal Solid Waste	0 MW
Heat Recovery	0 MW
Wood Products	88 MW

Coal Forecast

Existing Coal-Fired Capacity 9,368 MW

Planned

Plant Name	Owner(s)	Type	MW	Year	Status
Stanton B	OUC	IGCC	249	2010	Certificate of Need obtained
Seminole Generating Station Unit #3	SECI	BIT	750	2012	Certificate of Need obtained
Taylor Energy Center	FMPA, JEA TAL, RCI	BIT	748	2012	Cancelled
Polk	TECO	IGCC	605	2013	Docketed
Glades Power Park (I)	FPL	BIT	980	2013	Cancelled
Glades Power Park (II)	FPL	BIT	980	2014	Cancelled
Seminole unit	SECI	BIT	340	2015	Under Review

Nuclear Forecast

Existing Nuclear Capacity

Crystal River 3		838 MW
St. Lucie 1 & 2		1,679 MW
Turkey Point 3 & 4		1,386 MW
	Total	3,903 MW

Planned

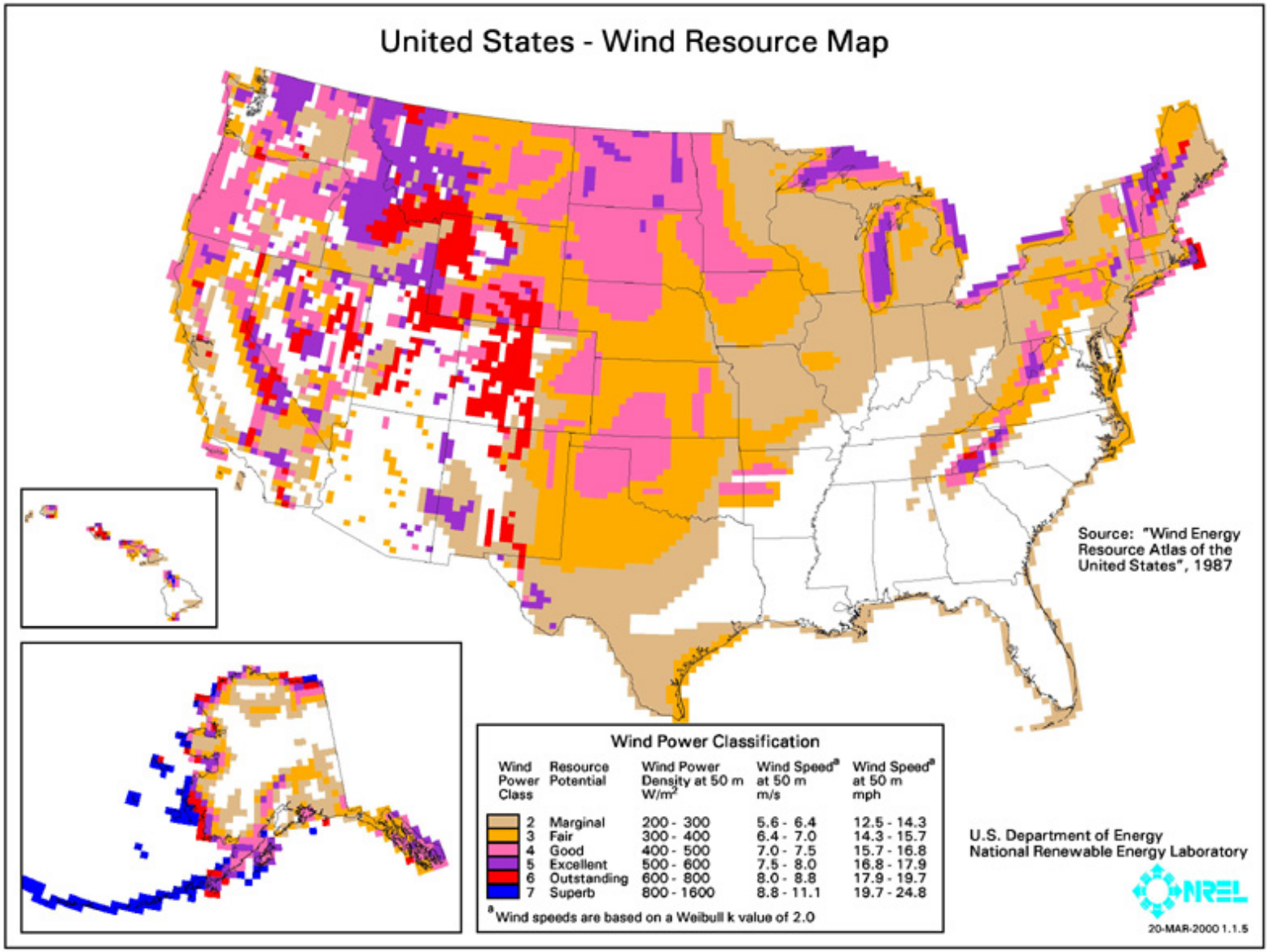
Crystal River 3 (upgrade)	40 MW	(2009)
Crystal River 3 (upgrade)	140 MW	(2011)
Progress Energy	1,125 MW	(2016)

20% Renewables NEL by 2016

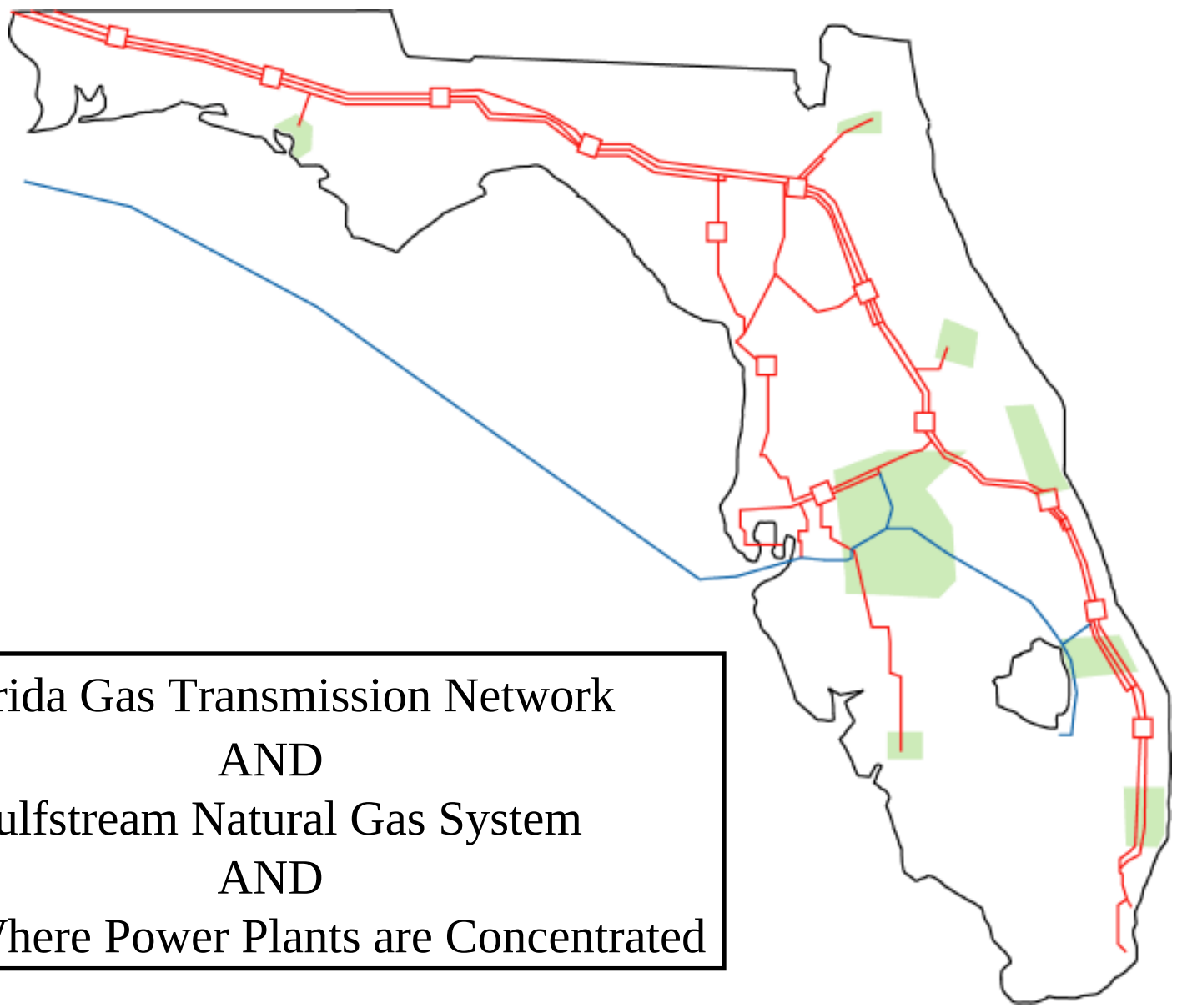
2016 NEL	308,343 GWH
20%	61,669 GWH

If renewable energy is achieved totally from large Municipal Solid Waste processing plants (100 MW at 80% capacity factor), then about 85 new MSW plants would be needed by 2016.

If renewable energy is achieved totally from windmill generator (2 MW at 15% capacity factor), then over 23,000 new windmill plants would be needed by 2016.


United States - Wind Resource Map
Source: "Wind Energy Resource Atlas of the United States", 1987
Wind Power Classification
Wind Power Class
Resource Potential
Wind Power Density at 50 m W/m²
Wind Speed[a] at 50 m m/s
Wind Speed[a] at 50 m mph
2 Marginal 200 - 300 5.6 - 6.4 12.5 - 14.3
3 Fair 300 - 400 6.4 - 7.0 14.3 - 15.7
4 Good 400 - 500 7.0 - 7.5 15.7 - 16.8
5 Excellent 500 - 600 7.5 - 8.0 16.8 - 17.9
6 Outstanding 600 - 800 8.0 - 8.8 17.9 - 19.7
7 Superb 800 - 1600 8.8 - 11.1 19.7 - 24.8
[a] Wind speeds are based on a Weibull k value of 2.0
U.S. Department of Energy
National Renewable Energy Laboratory
NREL
20-MAR-2000 1.1.5

FRCC NATURAL GAS DELIVERABILITY / ELECTRIC GENERATION INTERDEPENDENCY STUDY



Florida Gas Transmission Network
AND
Gulfstream Natural Gas System
AND
Areas Where Power Plants are Concentrated

Pipeline Capacity into FRCC

▪ FGT	2.22	BCF / Day
▪ GS	1.25	BCF / Day
▪ Cypress	0.06	BCF / Day
Total	3.54	BCF / Day

- Fully subscribed with firm gas transmission

High Level Assessment (Base Case Data Collection)

- 39,600 MW of generation can burn gas
- 28,800 MW of dual fuel capable generation
- 11,700 MW of generation with dual direct pipeline access
- 7,600 MW of generation has no alternate fuel capability or alternate pipeline access
- Point of Reference: If all 39,600 MW of generation ran at full unit output for 24 hours, the maximum natural gas consumption would be 8.5 BCF / Day.

Natural Gas Pipeline Adequacy

- Developed a gas flow model to simulate transient gas flow conditions

- Simulation provides a detailed assessment of gas pipeline contingencies that may adversely affect electric system reliability

Deliverability Analysis – Studies to Date

I. Maximum natural gas transportation capacity to West Central Florida generation

II. Impact to transportation capacity to West Central Florida for complete outage of pumping station

III. Catastrophic failure of pipeline serving West Central Florida generation

IV. Impact to transportation capacity to FRCC for complete outage of pumping station into Florida

Analysis I: Maximum Natural Gas Transportation Capacity to West Central Florida Generation

- Available capacity
  - 1.66 BCF / Day
- Firm contractual rights for generation
  - 1.44 BCF / Day
- Natural gas generation
  - 14,800 MW
- Generation with alternate fuel capability
  - 10,833 MW
- Generation minimum natural gas consumption
  - 0.58 BCF / Day *
  - 4,000 MW
- Natural gas generation affected: 0 MW

* Assuming full utilization of alternate fuel capabilities

Analysis II: Impact to Transportation Capacity to West Central Florida Generation for Complete Outage of Pumping Station

- Post-outage capacity
  - 1.45 BCF / Day
  - New equilibrium point

- 775 MW of gas-fired generation affected out of 7,634 MW running in base model (10%)

Analysis III: Catastrophic Failure of Pipeline Serving West Central Florida Generation

- Impacts to generation

  Depending on time of day, impacts may be immediate or may be delayed up to 3 hours

- Approximately 2,900 MW of gas-fired generation affected out of 7,634 MW running in base model (38%)

Analysis IV: Impact to Transportation Capacity for FRCC for Complete Outage of Pumping Station into Florida

- Impacts to generation

  Depending on time of day, impacts may be immediate or may be delayed up to 3 hours
- Approximately 900 MW of gas-fired generation affected out of 36,900 MW (~ 2%).

Redundancies Available to Mitigate Fuel Outage Risks

- Dual Fuel Capabilities
  - 39,600 MW of generation can be fueled with gas
  - 28,800 MW with dual fuel (fuel oil & gas) capability
- Dual Pipeline Interconnects
  - 11,700 MW of generation have dual pipeline connections
- Supply Alternatives
  - Natural gas storage capacity
  - Supply diversity increasing with Cypress and southeast supply header
- LNG Projects

Next Steps

- The current plans are to re-assemble the FRCC Gas Study Group in September 2007
- Review Summary Reference Document
  - Results of analysis
  - Increase the understanding of current pipeline operations and Reliability implications within FRCC
  - Refine current modeling parameters
  - Document a FRCC Study & Assessment methodology
- Determine amount of gas storage that has been contracted by member utilities
- Analyze impact of gas storage plans

FRCC Regional Transmission Planning Process

FRCC
Planning Committee

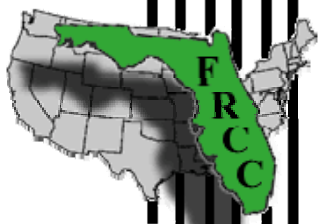
- Promotes the reliability of the bulk electric system in the FRCC region
- Assesses and encourages generation and transmission adequacy
- Provides a vehicle for ensuring that transmission planning within the FRCC will provide for the development of a robust transmission network within the FRCC Region

FRCC Transmission Planning

- In July 2005, FRCC Board of Directors approved Transmission Planning Process
  - Started with transmission owners' plans and sought comments from stakeholders
  - Transmission Working Group (TWG) and FRCC staff reviews to ensure reliable, robust transmission system
  - Members include FERC jurisdictional and non-jurisdictional entities
- Provides 10 year site plans and transmission reports to FPSC

FRCC Transmission Planning

- Revised to support objectives of FERC Order 890
- Revisions approved by FRCC Planning Committee on May 2, 2007
- Approved by Board of Directors in July, 2007



FRCC Regional Transmission Planning Process

- FRCC databank compiled
- Step 1 – Transmission Owners submit plans to FRCC and plans are posted for comments
- Step 2 – Feedback from customers and other stakeholders
- Step 3 – Review and assess plans to ensure that composite plans meet customers' needs, ensures reliability and conducts sensitivity studies

FRCC Regional Transmission Planning Process

- Step 4 – Issues preliminary regional plan
- Step 5 – Approves regional plan
- Step 6 – Dispute resolution for unresolved issues

FRCC Regional Transmission Planning Process

Key aspects of FRCC Planning

- Provides coordination between all participants
- Provides openness and transparency
- FRCC coordinates the information exchange
- Comparability is ensured throughout process

FRCC Regional Transmission Planning Process

Key aspects of FRCC Planning *(continued)*

- Dispute Resolution included
- Regional participation ensured
  - Coordinated participation for entire region
  - Inter-regional studies with SERC
  - Participation with Eastern Interconnection Reliability Assessment Group (ERAG)
- Economic Planning Studies
- Cost Allocation – agreement on high level principles and methodology

FRCC Regional Transmission Planning Process

- Meets all objectives outlined in FERC Order 890 for regional planning activities
- Consistent with all nine principles
- Supported by all transmission owners, customers and other stakeholders
- Supported by FPSC

FRCC TRANSMISSION STUDIES

- 10 Year Transmission Reliability Study
- Summer & Winter Seasonal Assessments
- Inter-regional Transmission Study

10 YEAR TRANSMISSION STUDY

RELIABILITY STANDARDS TEST

- Single Component Outages: No loss of electrical demand
- Multiple component outages: Controlled loss of electrical demand
- Extreme component outages: No wide area cascading loss of electrical demand
- 2007 – 2016 Transmission plans satisfy these tests

INTER-REGIONAL TRANSMISSION STUDY

PURPOSE : Determine the amount of reliable Import and Export capability of the FRCC-Southern transmission interface

INTER-REGIONAL TRANSMISSION STUDY RESULTS

Summer 2007

- Import to FRCC 3,600 MW
- Export from FRCC 1,500 MW

Winter 2007/08

- Import to FRCC 3,700 MW
- Export from FRCC 2,000 MW

Florida Central Coordinated Re-Study

Original FCCS Projects Included in Re-Study Base Case							
		New /		Needed	Planned		Status
From	To	Rebuild	Miles	In-Service	In-Service	Ownership	Plnd In-Svc
West Lake Wales	Dundee #2	New	13.2	Before '08	Jun, 2009	PEF	Jun, 2009
Dundee	Intercession City #2	New	25.9	Before '08	Jun, 2010	PEF	May, 2010
West Lake Wales	Dundee #1	Rebuild	9.7	Before '08	Jun, 2011	PEF	June, 2009
Dundee	Intercession City #1	Rebuild	20.3	Before '08	Jun, 2011	PEF	May, 2010
Avalon	Gifford	New	7	Before '08	Jun, 2008	PEF	Jun, 2009
Vandolah	Charlotte	Terminal	--	Dec, 2008	Dec, 2008	FPL	Dec, 2008
Poinsett	Holopaw	Terminal	--	Dec, 2008	Dec, 2008	FPL	Dec, 2008
Florida Central Coordinated Re-Study Projects							
Lake Agnes	Gifford					PEF/TEC	
Lake Agnes	PEF/TEC tie point	New	13.1	Before '08	Jun, 2011	TEC	Jun, 2011
Gifford	PEF/TEC tie point	New	19.3	Before '08	Jun, 2011	PEF	Jun, 2011
McIntosh	Lake Agnes	Re-cond	9.4	Before '08	Jun, 2011	OUC	Jun, 2011
Cane Island	CI North Tap	Re-cond	6	Jun, 2011	Jun, 2010	FMPA/KUA	Jun, 2010
CI North Tap	Taft	Re-cond	11.2	Jun, 2011	Jun, 2010	OUC	Jun, 2009
Lake Agnes	Osceola	Re-cond	21.5	Before '08	Jun, 2008	OUC/TEC	Jun, 2008
Osceola	CI North Tap	Re-cond	4.1	Jun, 2011	Jun, 2009	OUC/TEC	Jun, 2010
	Total miles	Rebuild	76.2				
	154.7	New	78.5				

FRCC Cost Sharing Task Force Update

Greg Ramon

Tampa Electric Company

Chairman

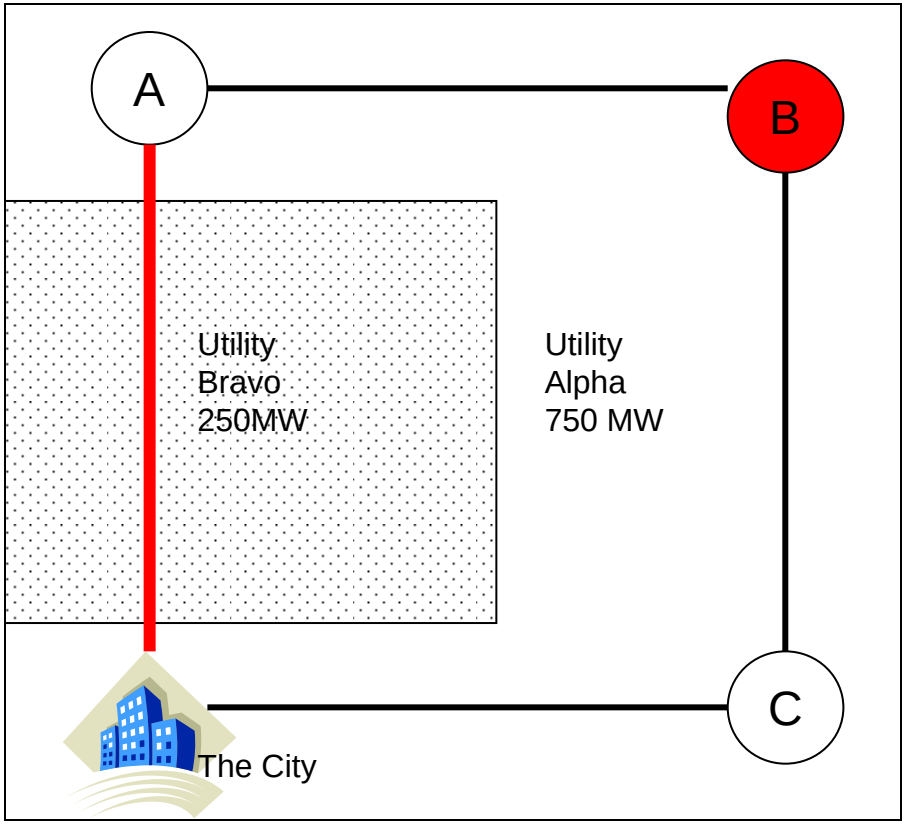
Background

- FRCC Transmission Planning Process Formation After GridFlorida
- 2006 Ten-Year Site Plan Discussions Related to Cost Allocation Methodology
- FERC Order 890 Requirements

Conceptual Framework

- Addresses third party impacts
  - Simple 3rd party impact definition
    - » Transmission expansion required on one system due to additions (e.g., generation) on another transmission system
  - A transmission owner is responsible for upgrading its respective transmission system to meet NERC and FRCC Reliability Standards, identified under the FRCC Regional Transmission Planning Process
  - The cost sharing/allocation methodology will address 3rd party impact circumstances

Third Party Impact Example



- Alpha Plans Plant at B
- Line A-City overloads
- Line A-City will be rebuilt
- Situation
  - Alpha has request
  - Bravo has overload & remedy
    - » Third Party Impact
- Cost Sharing applies!

Conceptual Framework

- Development of threshold criteria to determine whether request by an “Affected Transmission Owner” is qualified for cost sharing
- Work will continue to develop additional detail and clarification
  - Who pays & how much?
    - » Generation
    - » Load
  - Complicated issues

Time Line

- Aug 17 – FRCC Board of Directors Review
- Sept 14 – Required posting of the “strawman” framework by the transmission providers to meet FERC Order 890
- Oct & Nov – FERC Regional Technical Conferences to review planning processes
- Sept thru Nov
  - Development of additional detail & clarification
  - FRCC Board Approval
  - Regulatory Review & Approval Process
- Dec 7 – FERC Compliance Filing by Transmission Providers