



# **Review of 2006 Ten-Year Site Plans for Florida's Electric Utilities**

Florida Public Service Commission  
Tallahassee, Florida  
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# TABLE OF CONTENTS

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LIST OF TABLES .....	ii
LIST OF FIGURES .....	iii
LIST OF UTILITIES FILING A TEN-YEAR SITE PLAN .....	iv
LIST OF ACRONYMS .....	v
1. EXECUTIVE SUMMARY .....	1
2. INTRODUCTION .....	4
Statutory Authority .....	4
Purpose.....	4
Resource Additions.....	5
3. FUEL DIVERSITY .....	7
Balanced Fuel Supply .....	7
Economics.....	10
Outlook .....	11
Conclusion .....	14
4. TRANSMISSION.....	16
Past and Present Actions.....	16
Reliability Standards.....	17
FRCC Transmission Planning Process .....	18
Studies of Regional Transmission Constraints .....	19
Proposed Transmission Lines Requiring Certification.....	23
5. GENERATION.....	24
Load and Energy Forecast .....	24
Demand-Side Management.....	25
Renewable Energy .....	30
Proposed Generating Units Requiring Certification.....	34
6. FUEL SUPPLY, PRICE, AND TRANSPORTATION.....	35
Natural Gas .....	35
Coal.....	39
Oil .....	40
Nuclear.....	40
7. STATE, REGIONAL, AND LOCAL AGENCY REVIEW .....	42

# LIST OF TABLES

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Table 1: State of Florida – Proposed Capacity Additions .....	6
Table 2: Florida Central Coordinated Study – Needed Transmission Projects .....	20
Table 3: Florida-Southern Interface Transfer Capability.....	21
Table 4: Proposed Transmission Lines Requiring Certification .....	23
Table 5: Total Retail Energy Sales – Historical Forecast Accuracy .....	24
Table 6: Projected Growth Rates of DSM Savings Compared to Demand and Energy.....	28
Table 7: Reporting Utilities – Contribution of Renewable Energy to Net Energy for Load ...	30
Table 8: State of Florida - Self-Service and Non-Firm Renewable Energy Sources .....	31
Table 9: State of Florida - Renewable Energy Sources Providing Firm Capacity .....	32
Table 10: Proposed Generating Units Requiring Certification .....	34

# LIST OF FIGURES

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Figure 1: State of Florida – Electric Utility Capacity Mix.....	6
Figure 2: Average Residential Electric Bill – 1980 to Present .....	7
Figure 3: State of Florida – Energy Generation by Fuel Type (GWh) .....	8
Figure 4: State of Florida – Energy Generation by Fuel Type – 1990, 2005, and 2015 .....	8
Figure 5: Reporting Utilities – 2006 Weighted Average Fuel Price Forecast .....	9
Figure 6: FPL - Comparison of Actual vs. Forecasted Natural Gas Prices .....	10
Figure 7: PEF - Breakeven Analysis of Coal and Natural Gas Expansion Plans.....	11
Figure 8: State of Florida – Forecasts of Energy Generation from Natural Gas and Coal .....	12
Figure 9: Florida Central Coordinated Study – Region.....	19
Figure 10: State of Florida – DSM Net Energy for Load Savings.....	26
Figure 11: State of Florida – DSM Summer Peak Demand Savings.....	27
Figure 12: State of Florida – DSM Winter Peak Demand Savings.....	27
Figure 13: State of Florida – Energy Consumption per Residential Customer .....	29
Figure 14: Natural Gas Consumption in the U.S. by Place of Origin .....	35

# **LIST OF UTILITIES FILING A TEN-YEAR SITE PLAN**

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FPL	Florida Power & Light Company
Gulf	Gulf Power Company
PEF	Progress Energy Florida
TECO	Tampa Electric Company
FMPA	Florida Municipal Power Agency
GRU	Gainesville Regional Utilities
JEA	JEA (formerly Jacksonville Electric Authority)
LAK	City of Lakeland
OUC	Orlando Utilities Commission
TAL	City of Tallahassee
SEC	Seminole Electric Cooperative

# LIST OF ACRONYMS

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CC	Combined Cycle generating unit
Commission	Florida Public Service Commission
CT	Combustion Turbine generating unit
DEP	Florida Department of Environmental Protection
DOE	United States Department of Energy
DSM	Demand-Side Management
ECCR	Energy Conservation Cost Recovery Clause
EIA	Energy Information Administration
ERO	Electric Reliability Organization
EUE	Expected Unserved Energy
FEECA	Florida Energy Efficiency and Conservation Act
FRCC	Florida Reliability Coordinating Council
IGCC	Integrated Coal Gasification Combined Cycle generating unit
LNG	Liquefied Natural Gas
LOLP	Loss of Load Probability
MSW	Municipal Solid Waste
MW	Megawatt
NEL	Net Energy for Load
NERC	North American Electric Reliability Council
PC	Pulverized Coal generating unit
PPSA	Power Plant Siting Act
RFP	Request for Proposals
RTO	Regional Transmission Organization
TLSA	Transmission Line Siting Act

# 1. EXECUTIVE SUMMARY

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## Suitability

Pursuant to Section 186.801, Florida Statutes, the Florida Public Service Commission (Commission) has reviewed the Ten-Year Site Plans filed by the eleven reporting utilities and finds them to be **suitable**. Two areas of concern discussed within this report are the need for fuel diversity and the need for coordinated transmission planning. The Commission will continue to closely monitor the progress of Florida's utilities to increase fuel diversity within the state, as well as utility efforts with regard to coordinated transmission planning.

## Areas of Concern

### *Fuel Diversity*

Maintaining a balanced fuel supply adds value in terms of supply reliability and price stability. Fuel diversity is not always a cost-savings measure, but rather a risk mitigation strategy. Maintaining a balanced mix of fuel sources allows utilities to shield ratepayers from volatile price fluctuations and enhances reliability of supply.

Chapter 3 addresses the issue of fuel diversity in Florida. A summary of this issue is as follows:

- In light of recent volatility in natural gas availability and price, the generation expansion plans of Florida's utilities need to reflect the benefits of a more balanced fuel supply. Florida's utilities plan to construct approximately twice as much new gas-fired capacity as solid fuel capacity during the planning horizon.
- A first step towards attaining fuel diversity is the pursuit of non-generating alternatives to new construction, such as energy conservation and demand-side management (DSM). During 2006, the Commission approved two new DSM programs for electric utilities, as well as modifications to 14 existing electric utility DSM programs. Both of these actions should result in greater customer participation, with corresponding demand and energy savings.
- Renewable generation is another key component of a diversified generation mix. Over the past year, the Commission approved two negotiated purchased power contracts with renewable generators totaling approximately 120 MW. The Commission also approved two Green Pricing conservation programs to further encourage the development of renewable generation.
- To protect the viability of Florida's existing renewable generation and to promote the development of new renewables, the Commission has initiated a multi-pronged approach. The Commission is pursuing rule revisions to require investor-owned utilities (IOUs) to enter into contracts for the purchase of capacity and energy from renewable generators. Though preliminary, the proposed rules require utilities to provide tariffs for a portfolio of standard offer contracts that allows renewable energy providers to choose an avoided unit type from among all of a utility's planned generating units. This is significant because the tariffs allow renewable providers to select the standard offer contract that best fits their specific operating and financial requirements.

- The Commission will hold a workshop in January 2007 to obtain information on the types of renewable resources that are viable in Florida and to discuss ways to facilitate the development of those resources. Based on the information gained from the workshop, staff will take specific recommendations to the Commission for consideration.
- Utilities should continue to increase the supply of solid fuel generation, including clean coal technologies and nuclear, in Florida. Planned coal-fired generating units in 2012 and 2013 are a reasonable step toward fuel diversity. The Commission approved two of these units in 2006 and is currently evaluating the need for a third unit.
- FPL and PEF have announced plans to evaluate nuclear units as an option to meet capacity needs outside of the ten-year planning horizon. If constructed and placed into service, these units would further diversify Florida's generation mix.
- Recent legislation encourages nuclear generation by allowing utilities to begin recovering costs while the proposed unit is still under construction. The Commission recognizes the large capital investment required and is currently pursuing rule revisions to implement the legislation.
- Utilities should continue to evaluate diversity within a fuel type, such as liquefied natural gas (LNG) and gas storage, as options to traditional sources and delivery methods for natural gas.
- Several interstate pipeline companies have proposed new projects to deliver additional natural gas to the state from diverse sources. One of these projects will be the first to deliver LNG into the state.

### ***Transmission***

The primary focus of this report is to review proposed generation additions by Florida's electric utilities. However, a strong, coordinated transmission system is essential for ensuring reliability of the electric grid.

Chapter 4 addresses the issue of coordinated transmission planning in the state. A summary of this issue is as follows:

- One of the benefits attributed to the formation of a regional transmission organization (RTO) is centralized, coordinated transmission planning. In April 2006, the Commission closed a lengthy investigation into the prudence of forming an RTO, known as GridFlorida, because it did not appear to be cost-effective. The Commission directed Peninsular Florida's utilities to coordinate their transmission planning activities through the FRCC in an effort to capture some benefits of an RTO.
- The FRCC has begun development of a coordinated transmission planning process among Peninsular Florida's electric utilities and recently completed a major assessment of transmission constraints in Central Florida. Four utilities have agreed to fund and build an estimated \$277 million worth of transmission facilities that are expected to enter service between 2008 and 2011.
- The FRCC is also evaluating power flows in Northwest Florida, transmission impacts associated with the Taylor Energy Center coal unit, and the transfer capability at the FRCC's boundary with the Southern Company.



- Until needed transmission projects are completed, utilities must use mitigation strategies such as uneconomic dispatch, voltage reduction, and line switching to address contingency overloads. While essential to the reliable operation of a transmission system under contingencies, uneconomic dispatch results in higher fuel costs that are borne by ratepayers through higher bills.
- The Commission will continue to participate in and monitor coordinated transmission planning efforts, exercising its Grid Bill authority to ensure the adequacy of Florida's transmission system if necessary.

## 2. INTRODUCTION

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### STATUTORY AUTHORITY

Section 186.801, Florida Statutes, requires that all major generating electric utilities in Florida submit a Ten-Year Site Plan to the Commission for review. Section 377.703(e), Florida Statutes, requires the Commission to analyze and provide natural gas and electricity forecasts to the Florida Department of Environmental Protection (DEP).

Each utility's Ten-Year Site Plan contains projections of the utility's electric power needs, fuel requirements, and the general location of proposed power plant sites and major transmission facilities. In accordance with the statute, the Commission performs a preliminary study of each Ten-Year Site Plan and must determine whether it is "**suitable**" or "**unsuitable**." The Commission receives comments from state, regional, and local planning agencies regarding various issues of concern. These comments are summarized in Chapter 7. The results of the Commission's study are contained in this report, the *Review of 2006 Ten-Year Site Plans*, which is forwarded to the DEP for use in subsequent power plant siting proceedings.

To fulfill the requirements of Section 186.801, Florida Statutes, the Commission has adopted Rules 25-22.070 through 25-22.072, Florida Administrative Code. Electric utilities must file an annual Ten-Year Site Plan by April 1. Utilities whose existing generating capacity is below 250 megawatts (MW) are exempt from this requirement unless the utility plans to build a new unit larger than 75 MW within the ten-year planning period.

### PURPOSE

The Commission has broad-based authority over the reliability of Florida's electric system pursuant to Chapter 366, Florida Statutes, known as the "Grid Bill." The Grid Bill gives the Commission jurisdiction over the "planning, development, and maintenance of a coordinated electric power grid throughout Florida to assure an adequate and reliable source of energy for operational and emergency purposes in Florida." This *Review of 2006 Ten-Year Site Plans* serves as a foundation for exercising the Commission's authority under the Grid Bill.

A Ten-Year Site Plan gives state, regional, and local agencies advance notice of proposed power plants and transmission facilities. Since the Ten-Year Site Plan is not a binding plan of action on electric utilities, the Commission's classification of a Ten-Year Site Plan as **suitable** or **unsuitable** has no formal effect on the utility. Such a classification does not constitute a finding or determination in docketed matters before the Commission. The Commission may address any concerns raised by a utility's Ten-Year Site Plan at a public hearing.

Because a utility's Ten-Year Site Plan is a planning document containing tentative data, it may not contain sufficient information to allow regional planning councils, water management districts, and other review agencies to evaluate site-specific issues within their jurisdictions. Each utility must provide detailed data, based on in-depth environmental assessments, during certification proceedings under the Power Plant Siting Act (PPSA), Sections 403.501 - 403.518, Florida Statutes, or the Transmission Line Siting Act (TLSA), Sections 403.52 - 406.5365, Florida Statutes.

## Information Sources

For 2006, eleven utilities filed Ten-Year Site Plans on April 3, 2006. The Commission held a public workshop on September 7, 2006 to facilitate discussion of the plans.

In addition to the individual utility filings, the Commission also relies on its supplemental data requests made to the reporting utilities, as well as other sources. The FRCC annually publishes several documents that assess the adequacy and reliability of Peninsular Florida's generating units and transmission system. The Commission used the following documents to supplement its *Review of 2006 Ten-Year Site Plans*:

- The 2006 *Regional Load and Resource Plan* contains aggregate data on demand and energy, capacity and reserves, and proposed new generating unit and transmission line additions for Peninsular Florida as well as statewide. The FRCC submitted this study on June 22, 2006.
- The 2006 *Reliability Assessment* is an aggregate study of generating unit availability, forced outage rates, load forecast methodologies, and gas pipeline availability. The FRCC submitted this study on September 7, 2006.
- The *Long Range Transmission Reliability Study* is an assessment of the adequacy of Peninsular Florida's bulk power and transmission system. The study includes both short-term (1-5 years) detailed analysis and long-term (6-10 years) evaluation of developing trends that would require transmission additions or other corrective action. The FRCC submitted an executive summary of this study on September 7, 2006.
- The *Florida Central Coordinated Study* is a regional transmission study that identifies and addresses transmission system constraints in Central Florida. The FRCC submitted an executive summary of this study on September 7, 2006.

## RESOURCE ADDITIONS

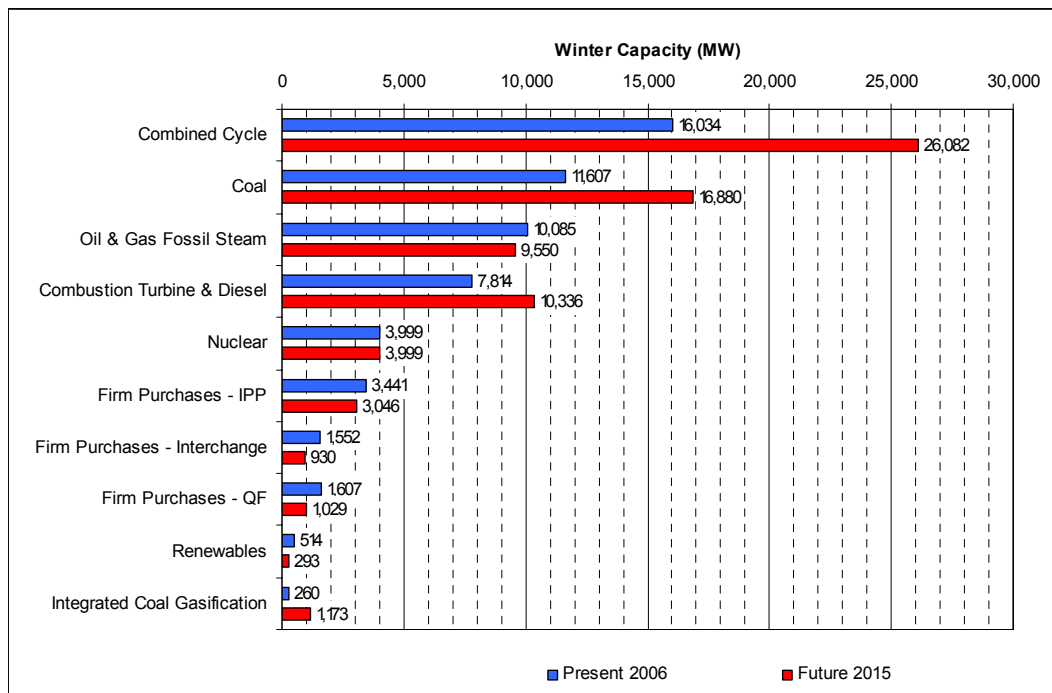
Table 1, on the next page, contains the 2006 aggregate plan of capacity additions, by generating unit type, during the ten-year planning horizon. The state's electric utilities plan to add a net capacity of 16,362 MW over the next ten years. As in past years, the state's utilities expect the majority of new capacity to come from gas-fired combined cycle units. While Florida's utilities plan to construct approximately twice as much new gas-fired capacity as solid fuel capacity during the planning horizon, coal and coal gasification should contribute a larger amount to the state's proposed capacity additions than was projected in the past. Negative values in the table reflect the retirement of fossil steam units, the expiration of firm capacity interchange contracts, and the expiration of firm capacity contracts with independent power producers, qualifying facilities, and renewable energy providers. If new contracts are signed in the future to replace those that expire, these resources will once again be included in the state's capacity mix.

Figure 1, on the next page, illustrates the present and future aggregate capacity mix. The capacity values in Figure 1 incorporate all proposed additions, changes, and retirements from Table 1.

**Table 1: State of Florida – Proposed Capacity Additions <sup>1</sup>**

UNIT TYPE	WINTER CAPACITY ADDITIONS (MW)
Combined Cycle	10,048
Coal	5,273
Integrated Coal Gasification, Combined Cycle	913
Oil and Gas Fossil Steam	-535
Combustion Turbine & Diesel	2,520
Nuclear	0
Firm Purchases - Independent Power Producers	-395
Firm Purchases – Interchange	-622
Firm Purchases - Qualifying Facilities	-620
Firm Purchases – Renewables	-220
<b>NET CAPACITY ADDITIONS</b>	<b>16,362</b>

**Figure 1: State of Florida – Electric Utility Capacity Mix**



<sup>1</sup> Negative values reflect the retirement of fossil steam units and the expiration of firm capacity purchase contracts with other utilities and with independent power producers (IPPs), qualifying facilities (QFs), and renewable generators. As the term of existing contracts for purchased power from IPPs, QFs, and renewable generators expire, it is anticipated that new contracts will be signed. Hence, the actual contribution of these types of generators in the future to the state's capacity mix is likely to be significantly greater than shown in Table 1 and Figure 1.

### 3. FUEL DIVERSITY

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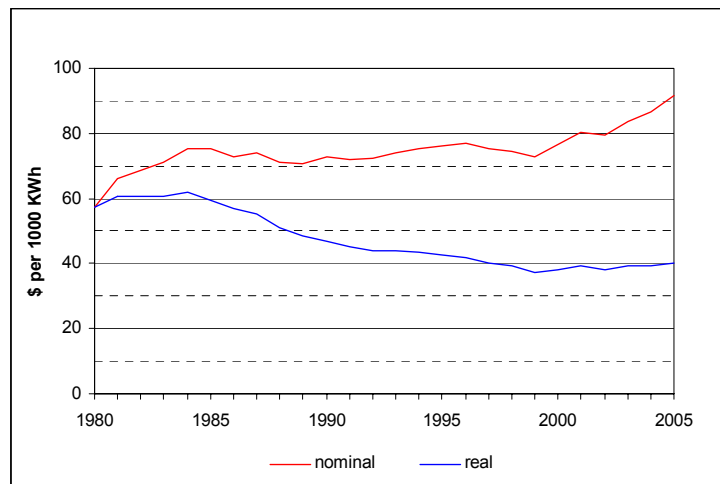
#### BALANCED FUEL SUPPLY

Maintaining a balanced fuel supply adds value in terms of supply reliability and price stability. As Florida has become more dependent on liquid and gas fuels, supply disruptions due to lightning or hurricanes can cause severe price increases and power disruptions. Having a diverse fuel mix can mitigate the impacts of such events. Fuel diversity provides a type of insurance for unforeseen events affecting fuel price and supply. Fuel diversity is not always a cost-savings measure, but rather a risk mitigation strategy. Fuel diversity provides a dampening effect on fuel price volatility caused by daily market conditions. Maintaining a balanced mix of fuel sources allows utilities to shield ratepayers from volatile price fluctuations.

Prior to the late 1970s, Florida’s utilities used oil as the primary fuel source for generating electricity. Following the dramatic increase in oil prices in the 1970s, Florida’s utilities made a concerted effort to add generating units that used solid fuels. One early response was the purchase of “coal-by-wire” from the Southern Company, which had a temporary surplus of coal-fired generation resources already constructed. The Commission supported the utilities’ efforts to maintain fuel diversity with regulatory programs such as the Oil Backout Cost Recovery Factor, which gave utilities an incentive to recover costs of converting from oil-based generation, and the Energy Broker, a computerized system which matched buyers and sellers of economy energy.

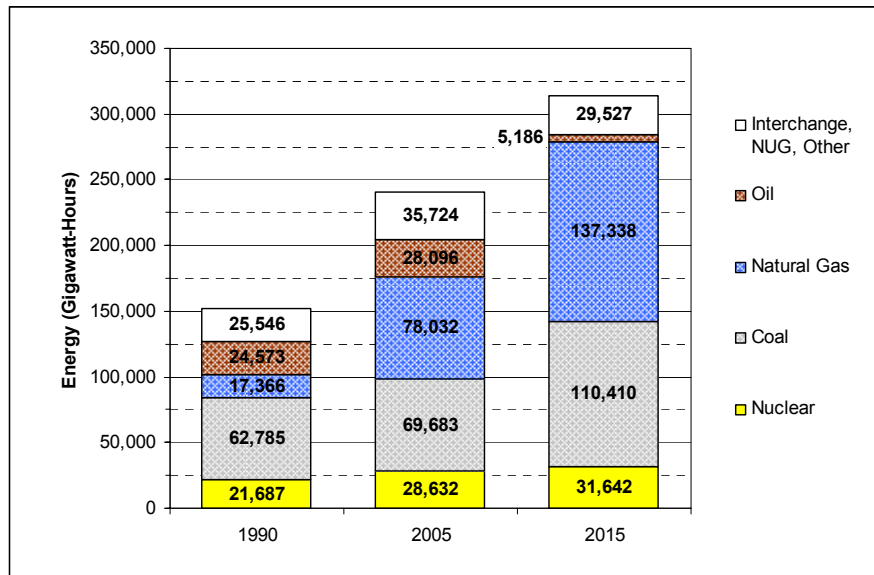
Prior to Congressional repeal of the Power Plant and Industrial Fuel Use Act in 1987, natural gas demand had declined substantially because of restrictions on usage as a boiler utility fuel. These restrictions contributed to a significant oversupply of gas, resulting in falling prices. Shortly after the repeal, a new era of highly efficient, flexible, environmentally preferred combustion turbine (CT) and combined cycle (CC) units entered the market. The addition of these technologies by Florida’s utilities fed the increasingly prominent role played by natural gas in the production of electricity. Combined with moderate fuel prices that occurred between 1980 and 2000, the balanced approach to planning used by Florida’s utilities resulted in relatively stable average electricity prices for Florida’s ratepayers during the period, with real (inflation-adjusted) prices declining as shown in Figure 2.

**Figure 2: Average Residential Electric Bill – 1980 to Present**



Due to the state's continuing increased demand for electricity, as well as relatively low natural gas prices, Florida's utilities turned to gas-fired generating units to satisfy economic and reliability needs. Between 1990 and 2005, the vast majority of new generating capacity constructed in Florida was natural gas-fired, which led to an increase in the percentage of the state's energy generated by gas. Current utility plans indicate a level of dependence on natural gas that mirrors Florida's dependence on oil during the 1970s. Natural gas-fired energy is expected to comprise 43.7% of total energy generated in the state by 2015. Figures 3 and 4 illustrate the past, current, and future generation mix by fuel type for Florida's electric utilities.

**Figure 3: State of Florida – Energy Generation by Fuel Type (GWh)**



**Figure 4: State of Florida – Energy Generation by Fuel Type – 1990, 2005, and 2015**

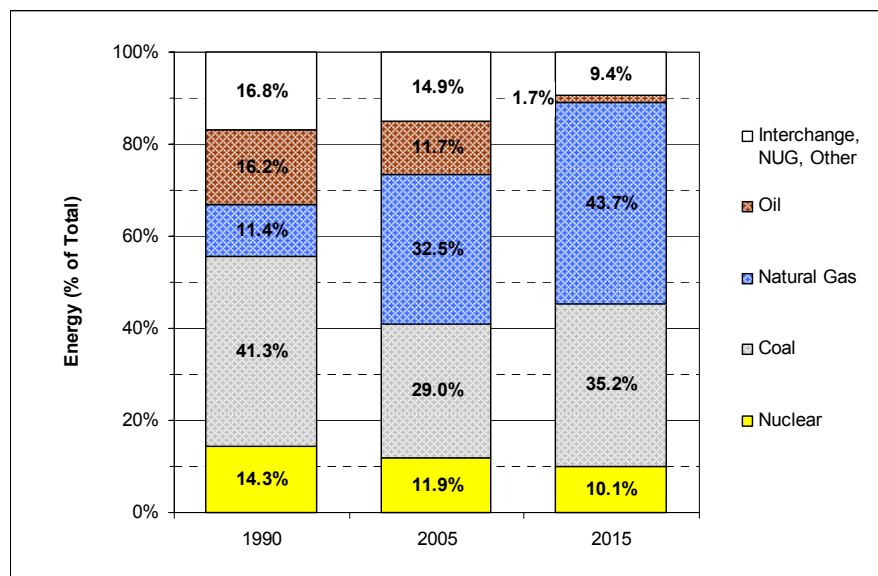
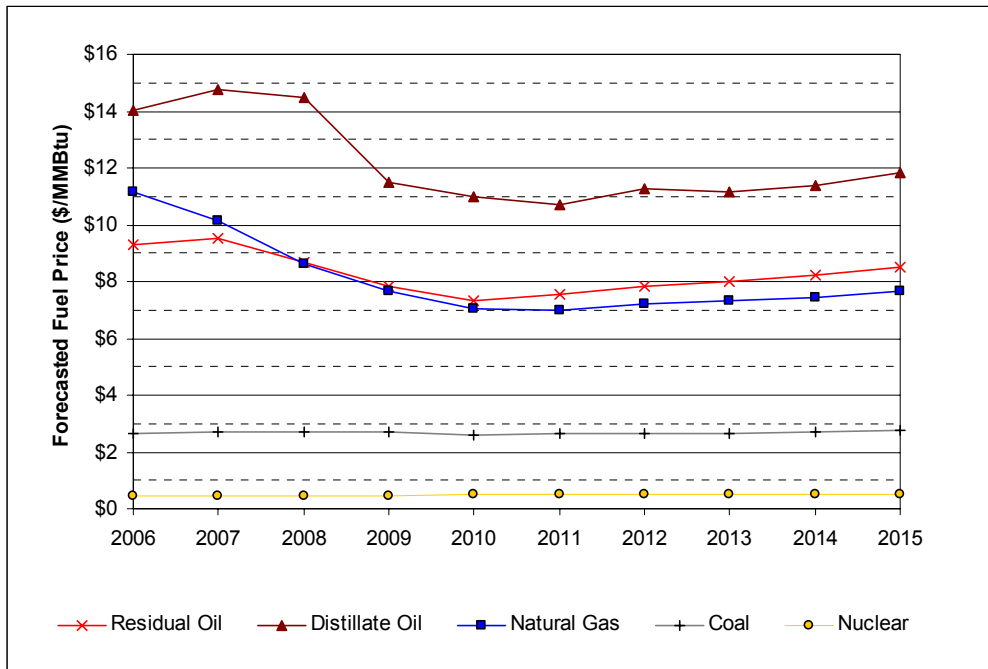


Figure 5 illustrates the weighted average forecasted fuel price for the eleven reporting utilities. The forecasted price for each fuel type is weighted by energy generation, meaning that utilities that generate large amounts of electricity for a particular fuel type will have more of an influence on the average. Prices for solid fuels such as nuclear and coal are forecasted to remain stable compared to oil and natural gas prices. Such a relationship highlights the importance of maintaining a balanced fuel supply.

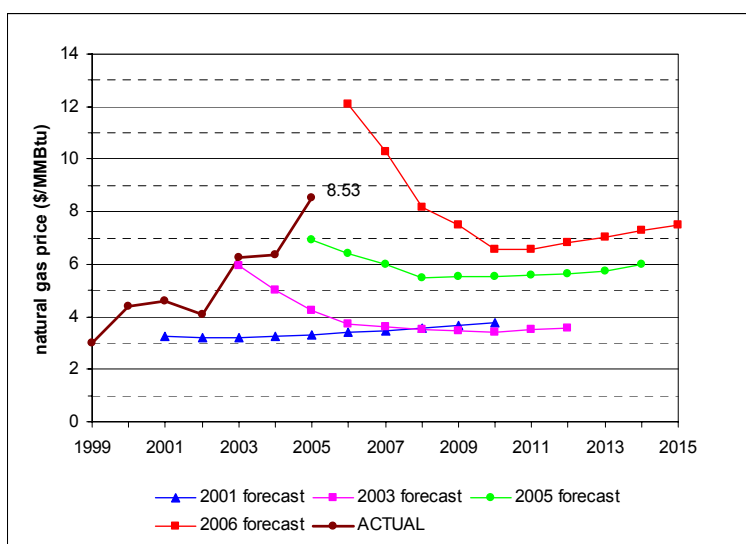
**Figure 5: Reporting Utilities – 2006 Weighted Average Fuel Price Forecast**



## ECONOMICS

Starting in 2001, natural gas prices began to increase nationwide despite electric utility forecasts of flat prices with moderate growth rates. For example, FPL’s actual cost of natural gas nearly doubled between 2001 and 2005, rising from approximately \$4.50 per MMBtu in 2001 to \$8.55 per MMBtu in 2005. Figure 6 compares past FPL natural gas price forecasts to actual prices since 2001. In 2005, hurricanes and tropical storms in the Gulf of Mexico caused short-term spikes as high as \$12 per MMBtu due to gas supply disruptions. The effects of higher, volatile gas prices on customer bills can be dramatic. Between 2003 and 2005, Florida’s IOUs experienced record fuel cost under-recoveries compared to forecasts. Under-recoveries of fuel costs totaled approximately \$670 million in 2003, \$353 million in 2004, and \$1.564 Billion in 2005. The three years of higher than predicted fuel costs alone are approximately the same as the capital cost of a new coal-fired plant.

**Figure 6: FPL - Comparison of Actual vs. Forecasted Natural Gas Prices**

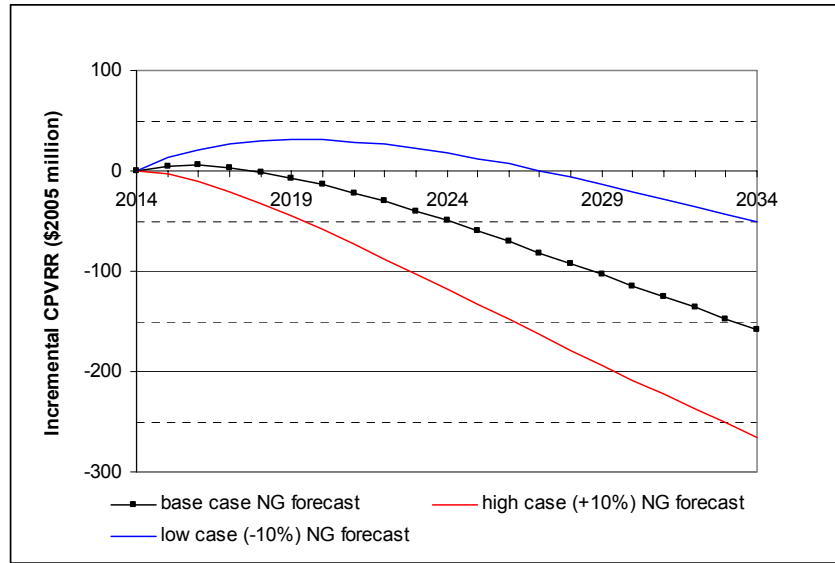


Several areas of uncertainty influence a utility’s decision to build a coal-fired power plant: capital costs, fuel price differential, competitive fuel transportation, environmental compliance costs, and licensing requirements. These areas illustrate the complexity involved in the generation planning process. The main key factor affecting a utility’s decision to build a new solid fuel plant is the number of years required for the plant to become cost-effective. Solid fuel plants have higher capital costs. As the price difference between coal and natural gas fuels widens, as has occurred in recent years, the break-even period decreases. If the fuel price differential between natural gas and coal does not materialize, the higher fixed capital costs may saddle ratepayers for 30 or more years without realizing any fuel savings. However, even long break-even periods may be desirable to obtain fuel diversity.

In response to the Commission’s supplemental data request, PEF compared the costs of two generation expansion plans, one containing only gas-fired units and one having a coal-fired unit enter service in 2014. A coal-fired plant could produce cumulative net benefits by 2018 using PEF’s base case fuel price assumptions. The cumulative net benefits of coal could occur as early as 2014, the first year of operation, using PEF’s high case natural gas price forecast. Therefore, even a small change in a utility’s fuel price forecast can have a large impact on the amount of benefits of a generating unit choice, and how soon these benefits occur. This is shown in Figure 7.



**Figure 7: PEF - Breakeven Analysis of Coal and Natural Gas Expansion Plans**



Historically, utilities having dual delivery options, such as rail and barge, for coal deliveries have experienced lower fuel costs. Fuel transportation is a large cost component for solid fuel plants, primarily because of the long distances to the source. If Florida’s utilities expect to build more solid fuel plants, infrastructure expansions in rail facilities and shipping ports may be required.

Environmental costs have increased for all types of generating plants. Coal and nuclear plants in particular have to overcome a high societal hurdle. At the national level, discussions are underway for new emission requirements for substances such as mercury and carbon dioxide. Incremental environmental costs are a risk borne by ratepayers because Florida’s IOUs may recover the costs of incremental environmental requirements through the Commission’s Environmental Cost Recovery Clause. Because of past societal stigmas of coal and nuclear plants, licensing processes may be prolonged, causing delays that could also increase costs or hinder reliability. Utilities must consider all these factors before seeking the permitting and construction of a new solid fuel plant.

## OUTLOOK

The Commission has expressed concern about Florida’s increasing reliance on natural gas-fired generation, saddling customers with fuel costs that continue to rise and experience volatile swings. For this reason, last year’s *Review of 2005 Ten-Year Site Plans* stated that utilities should not assume the automatic approval of gas-fired plants in future determination of need proceedings.

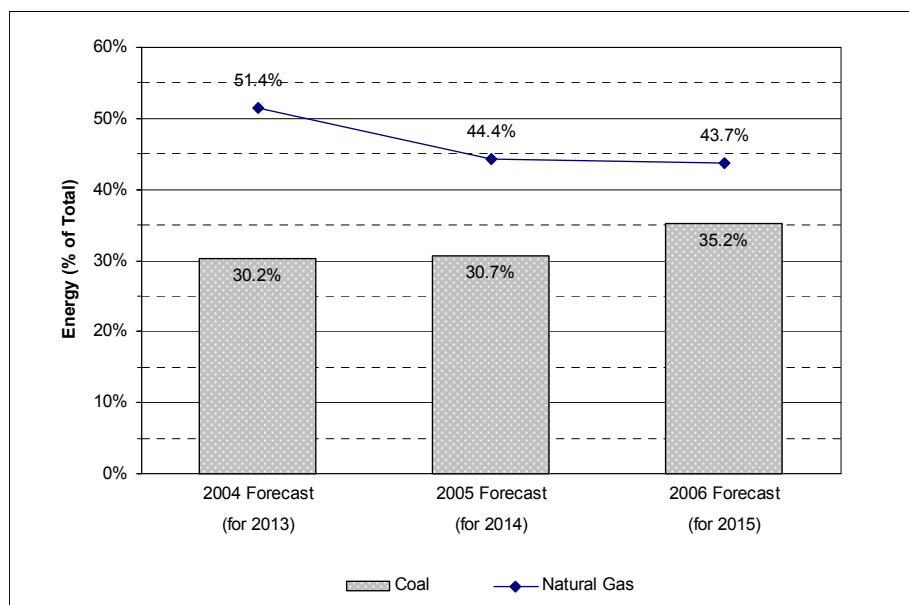
However, the return to a more conservative balanced fuel supply cannot be made overnight. Solid fuel units raise environmental concerns over the use of coal as a fuel, although these units meet or exceed stringent emissions requirements. Solid fuel units require large plant sites with access to sufficient fuel transport systems, such as rail or barge, to deliver coal to the sites. Additional issues include a site’s feasibility for multiple fuel usage, such as the ability to convert an existing gas-fired plant to coal gasification in the future if cost-effective. From a reliability perspective, solid fuel plants require long lead times of as much as seven years for regulatory approval and construction. Given that a number of solid fuel units appeared for the first time in the 2005 Ten-Year Site Plans, all

generation additions proposed prior to 2009 are natural gas-fired units that are under construction or have been certified under the PPSA.

In response to the Commission’s concerns regarding fuel diversity, Florida’s utilities have taken actions towards achieving a balanced fuel supply. The 2006 Ten-Year Site Plans contain ten proposed solid fuel units scheduled to enter service during the planning horizon. OUC’s integrated coal gasification combined cycle (IGCC) unit, scheduled to enter service in 2010, and SEC’s coal-fired unit, scheduled to enter service in 2012, were recently approved by the Commission and are awaiting PPSA certification. Both of these units are planned for existing plant sites. The Commission is currently evaluating the need for Taylor Energy Center, a coal-fired unit proposed by four municipal utilities to enter service in 2012. A hearing is scheduled for January 2007. As part of the Commission’s approval of FPL’s two gas-fired West County Energy Center units, scheduled to enter service starting in 2009, FPL agreed to an aggressive timeline to pursue solid fuel options for its system. In September 2006, the Commission granted FPL a waiver of the requirement to issue a request for proposals (RFP) for its proposed coal-fired units scheduled for 2012 and 2013. Removing the administrative hurdle of an RFP will provide FPL with the opportunity to stay on schedule to meet a June 2012 in-service date. Early in 2007, FPL plans to seek Commission approval of two new coal-fired plants in Glades County. Statewide, four additional coal-fired units and an additional IGCC unit are scheduled to enter service starting in 2012.

Reflecting the utilities’ proposed addition of solid fuel units, the 2006 Ten-Year Site Plans indicate a decreasing dependence on natural gas generation, with a corresponding increasing reliance on coal generation, compared to 2004 and 2005 projections. These trends are illustrated in Figure 8.

**Figure 8: State of Florida – Forecasts of Energy Generation from Natural Gas and Coal**



While Peninsular Florida’s utilities as a whole have reduced their expected reliance on natural gas from prior projections, current forecasts for FPL (59.0%), LAK (65.4%), and TAL (96.0%) indicate that natural gas generation will still contribute more than half of all energy generated in 2015. FPL’s plans to add the two new coal-fired units in Glades County in 2012 and 2013 are an attempt to

mitigate this trend. The balance of LAK's energy generation not fired by natural gas comes from coal-fired sources, and LAK does not need new generating units during the planning horizon. TAL is in the process of evaluating renewable and demand-side options in addition to its proposed participation in the Taylor Energy Center coal-fired plant.

FPL and PEF have announced long-term plans to investigate the addition of new nuclear units to the state's generation mix. These nuclear units do not appear in the Ten-Year Site Plans at this time because they are proposed to meet needs outside of the ten-year planning horizon. Recent legislation contained in Section 403.519(4), Florida Statutes, encourages nuclear generation by allowing utilities to begin recovering costs for a new unit while still under construction. The legislation requires the Commission to consider fuel diversity in the determination of need process and exempts utilities from the requirement to issue a request for proposals for nuclear units. While currently pursuing rule revisions to implement the legislation, the Commission has always considered fuel diversity when evaluating utility resource plans.

Utilities are also evaluating options to increase fuel source diversity within fuel types, such as LNG, alternate gas pipelines, and natural gas storage. PEF recently contracted to purchase LNG from the Elba Island terminal near Savannah, Georgia. PEF will take delivery of the LNG via the new Cypress pipeline connecting Elba Island to the Florida Gas Transmission system. As discussed in Chapter 6, several interstate pipeline companies have proposed new pipeline projects and expansions to deliver natural gas to the state from diverse sources.

In 2005, FPL and PEF attempted to extend their "coal-by-wire" purchased power agreements, totaling over 1,300 MW, with the Southern Company. The seller reduced the amount of coal-fired capacity available under the contracts to approximately 230 MW, with the remainder coming from gas-fired units. Such a drop in available coal capacity is indicative of how valuable a resource solid-fuel generation has become in recent years. Nonetheless, firm capacity and non-firm, economy energy purchases from Southern provide fuel source diversity for Florida.

Utility efforts to develop cost-effective alternatives to traditional generating resources, such as energy conservation, DSM, and renewable supply-side technologies, are also an important contribution to fuel diversity. In 2006, the Commission approved two new DSM programs and revisions to nine additional programs offered by FPL. These actions could increase statewide demand savings by over 300 MW during the planning horizon. PEF and TECO also received Commission approval for modifications to its DSM programs, while FPL and TECO have green pricing programs in which voluntary contributions fund utility purchases of clean renewable energy. PEF and TECO both recently pursued renewable energy options. PEF received Commission approval to purchase 116 MW of biomass-fired capacity and energy from a renewable energy provider, Florida Biomass, in Central Florida. TECO received Commission approval to purchase an additional 3.5 MW from the City of Tampa's solid waste facility.

In an effort to encourage renewable energy resources, the 2005 Florida Legislature enacted section 366.91, Florida Statutes. The statute requires the FEECA utilities to continuously provide a contract for purchasing capacity and energy from renewable energy resources. The Commission, in an attempt to encourage renewables beyond the requirements of the statute, directed the IOUs to file standard offer contracts for renewable energy providers based on a portfolio of generating unit types. FPL, PEF, and TECO were required to file a standard offer contract based on the first coal, combined

cycle, combustion turbine, or IGCC unit contained in each company's Ten-Year Site Plan. The Commission's approval was appealed by a group of industrial cogenerators, making the tariffs unavailable and preventing other renewable generators from taking advantage of standard offer contracts. Rather than acting on the proposed tariffs, the Commission decided first to pursue proposed revisions to its standard offer contract rules to codify the Legislature's intent to encourage renewable generation. The Commission held a hearing on the proposed rule in November 2006, and will adopt a final rule early next year. Upon final rule adoption, the Commission will again direct the IOUs to file standard offer contracts for renewable energy providers.

In 2006, the Commission gathered additional data on current renewable energy projects in Florida. As part of the Ten-Year Site Plan process, the Commission will continue its ongoing efforts to gather data on renewable energy developments in the state. In January 2007, the Commission will conduct a public workshop to investigate how to facilitate the development of additional renewable generation.

## **CONCLUSION**

The stability of retail rates enjoyed by ratepayers over the past twenty years was primarily due to stable fuel prices and to utilities maintaining a diverse and balanced fuel supply. As gas price volatility has shown, over-dependence on a single fuel can lead to unacceptable risk of rate increases if a balance is not maintained.

Recent utility plans indicated a level of dependence on natural gas that mirrors Florida's dependence on oil during the 1970's. Historically, natural gas has been plentiful and moderately priced, and forecasts nationwide predicted stable prices and sufficient supplies. However, events of the last few years indicate an entirely different future in which volatility in natural gas prices and supplies appears to be the norm. Per-capita energy use and total demand continue to grow. Energy conservation, DSM, and renewable generation cannot keep pace with Florida's continued explosive growth. Even if new interstate transmission lines could be economically constructed between Florida and the Southern Company, the primary available option for purchased power appears to be more gas-fired generation.

Following the Commission's direction, Florida's utilities have taken actions to move towards greater fuel diversity in the state's generation mix. The Ten-Year Site Plans contain ten proposed solid fuel units scheduled to enter service in 2010 and beyond. Two of these units were approved by the Commission during 2006. The Commission granted FPL a waiver of the RFP requirement for its coal units proposed for 2012 and 2013. FPL and PEF have announced long-term plans to investigate the addition of new nuclear units to the state's generation mix. Utilities are evaluating options to increase fuel source diversity within fuel types, such as LNG, alternate gas pipelines, and natural gas storage. FPL and PEF recently extended 1,300 MW of capacity purchase contracts with the Southern Company, with 230 MW coming from coal-fired capacity and the remainder from gas-fired units. Utilities have also pursued conservation, DSM, and renewable generation where cost-effective and feasible. During 2006, the Commission approved new and modified DSM programs to increase statewide demand savings. The Commission also approved two requests by utilities to purchase biomass-fired capacity and energy from renewable energy providers. Recent legislation further encourages fuel diversity and promotes renewable resources. The Commission will continue its

ongoing efforts to gather data on renewable energy developments in the state as part of the Ten-Year Site Plan process.

A return to a balanced fuel supply approach to generation planning will help mitigate volatile increases in fuel costs that are borne by ratepayers in Florida. Maintaining a diverse fuel supply will also enhance the reliability of the entire electric system in Florida. Florida's utilities should continue to pursue the benefits of a balanced fuel supply approach to utility planning.

## 4. TRANSMISSION

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While generating units supply the energy needs of all Floridians, the transmission system is the backbone that delivers the energy to end users. Utilities must coordinate their individual generation and transmission plans to ensure that needed capacity can be moved from power plant sites to load centers throughout the state. The Commission has broad authority under certain sections of Chapter 366, Florida Statutes, known as the Grid Bill, to require reliability within Florida's coordinated electric grid and to ensure the planning, development, and maintenance of adequate generation, transmission, and distribution facilities within the state. The Commission will continue to monitor coordinated planning efforts by Florida's utilities and, if necessary, will exercise its Grid Bill authority to ensure the adequacy and reliability of Florida's transmission system.

### PAST AND PRESENT ACTIONS

Prior to 1980, Peninsular Florida's transmission interconnections to the rest of the nation were limited, consisting of only a few 69 kV, 115 kV, and 230 kV ties at the Florida-Southern interface. These limited ties allowed Peninsular Florida's utilities to import a maximum of only 400 MW of capacity into the region. Practically speaking, Peninsular Florida was an "electrical island," a region susceptible to disturbances when large generating units such as nuclear units experienced forced, unplanned outages. These outages often caused Peninsular Florida's loads to exceed generation available in the region, which in turn increased the flow of electricity over the limited Florida-Southern interface. Such a scenario frequently caused Peninsular Florida to disconnect from the rest of the nation, further aggravating the problem in the state and increasing the magnitude of customer blackouts.

In response to reliability concerns caused by limitations of the Florida-Southern interface, the Commission worked with Peninsular Florida's utilities to evaluate the feasibility and cost of strengthening transmission interties between the regions. From these evaluations, FPL and JEA agreed to construct two parallel 500 kV transmission lines connecting Peninsular Florida with the Southern Company. Completed in 1982, the new 500 kV lines increased Peninsular Florida's maximum import capability to its present level of 3,600 MW. The intertie supports capacity exports of as much as 2,600 MW out of the region. The import capability normally represents approximately 7.5% of Peninsular Florida's peak demand for winter 2006.

The two 500 kV lines, along with additions to the internal Florida and Southern transmission systems, strengthen the Florida-Southern interface, reduce the incidence of separation, and allow the Florida systems to import significant amounts of low-cost coal energy. In addition, the FCG Operating Committee monitors imports on a real-time basis and determines the hour-by-hour safe import levels. Under these limits, Peninsular Florida should not separate from the Southern Company upon loss of the single largest generating unit or any single transmission line or transformer.

In the early 1990s, FPL and PEF performed studies to determine the cost-effectiveness of constructing a third 500 kV transmission line to increase the import capability of the Florida-Southern interface. However, Federal Energy Regulatory Commission (FERC) wholesale pricing policies and changing economics caused the project to be abandoned. Siting of new transmission facilities has become controversial nationwide, and right-of-way has grown more expensive to purchase. Despite these obstacles, Florida's utilities have added substantial amounts of transmission at 230 kV and lower

levels within the state over the years. Given the obstacles to obtaining additional transmission from outside the state, Florida's utilities must continue to seek out self-sustaining solutions to meet the ever growing demand for electricity in the state.

## **RELIABILITY STANDARDS**

Nationwide, electric utilities plan their bulk power systems to comply with NERC and regional reliability standards. NERC's mission is to ensure that the bulk electric system in North America is reliable, adequate and secure. Since its formation in 1968, NERC operated successfully as a self-regulatory organization, and the electric industry voluntarily complied with NERC reliability standards. However, changes in the electric industry have rendered the voluntary compliance system no longer adequate. In response to these changes, Congress required the FERC to develop a new mandatory system of reliability standards and compliance. The Energy Policy Act of 2005 authorized the creation of an electric reliability organization (ERO) with the statutory authority to enforce compliance with reliability standards among all market participants. NERC received certification as the ERO from the FERC in July 2006.

NERC works with all stakeholder segments of the electric industry, including electricity users, to develop standards for the reliable planning and operation of the bulk power systems. Fundamentally, a power system should always operate in such a way that no credible contingency could trigger cascading outages or another form of instability. Reliability standards are generally applied as follows:

- Under a single-contingency criterion, a utility's transmission system experiences no equipment overloads, voltage violations or instability following a contingency outage of the single most crucial element, whether that piece of equipment is a generator, a transmission line, or a transformer. The N-1 criterion is generally the minimum reliability standard at which electric utilities plan their bulk power systems.
- Under a multiple-contingency criterion, a utility's transmission system must withstand the simultaneous failure of two or more elements with a controlled loss of load and no cascading outages which affect neighboring utilities. The transmission system must subsequently be able to adjust such that all elements operate within their emergency ratings for the duration of the outage.

In response to Congressional actions to require mandatory reliability standards, which were supported by the Commission, the FRCC has implemented a compliance program that will monitor and enforce compliance with NERC and FRCC reliability standards. The program relies on self-assessment, periodic reporting, and on-site audits to ensure compliance. In administering the compliance program, the FRCC works closely with all owners, operators and users of the state's bulk electric system. The Commission staff attends FRCC meetings and maintains an open dialog with the FRCC on reliability matters affecting the state. The Commission will continue to work closely with the FRCC, NERC, and FERC to ensure the adequacy and reliability of Florida's electric grid.

## FRCC TRANSMISSION PLANNING PROCESS

One of the benefits attributed to the formation of a regional transmission organization (RTO) is centralized, coordinated transmission planning. In April 2006, the Commission closed a lengthy investigation into the prudence of forming an RTO, known as GridFlorida, because it did not appear to be cost-effective. The Commission directed Peninsular Florida's utilities to coordinate their transmission planning activities through the FRCC in an effort to capture some benefits of an RTO. The FRCC's transmission planning process is expected to yield a more complete transmission expansion plan from a peninsular perspective. The process will ensure that the reliability standards and criteria established by the NERC and the FRCC are met, and will utilize the specific design, operating, and planning criteria used by Peninsular Florida transmission owners. The Commission staff has actively participated in the FRCC's meetings on transmission planning. The Commission will continue to monitor coordinated planning efforts by Florida's utilities and, if necessary, will exercise its Grid Bill authority to ensure the adequacy and reliability of Florida's transmission system.

Through the FRCC's coordinated transmission planning process, Peninsular Florida's utilities recently completed a long-range transmission study for the 2005-2014 period. The long-range transmission study is a single-contingency assessment of Peninsular Florida's transmission system to ensure that it experiences no equipment overloads, voltage violations, or instability at peak demand conditions following the loss of a single transmission line, generating unit, or transformer. The process begins with the consolidation of the long-term transmission plans of all Peninsular Florida transmission owners. All transmission facilities 69 kV and above are included. The first five years of the study are a detailed evaluation and analysis of these independently developed transmission plans, while the second five years are a generalized, long-term evaluation due to the many uncertainties occurring in the latter years of the planning horizon. The FRCC normally begins its annual transmission planning studies in June of each year and completes them by March of the following year. A 2006 update of the recently completed study, comprising new data for already identified critical congestion areas, is scheduled for completion by March 2007.

The FRCC also performs sensitivity studies to test the robustness of Peninsular Florida's transmission system under various conditions. Examples of sensitivities studied are as follows:

- Weather extremes for summer and winter periods;
- Different load levels (e.g., 100%, 80%, 60%, 40%) and/or seasons of the year;
- Various generation dispatches that will test or stress the transmission system;
- Reactive supply and demand assessment (generator reactive limits, power factor); and,
- Other scenarios or system conditions, such as stability analysis.

Consistent with the FRCC transmission planning process, these sensitivity studies will not necessarily call for the construction of transmission facilities identified in the studies. However, these sensitivities will provide insight into how robust the planned transmission system is expected to be. The FRCC plans to complete the sensitivity studies by the spring of 2007 and forward the results of these studies to the Commission.

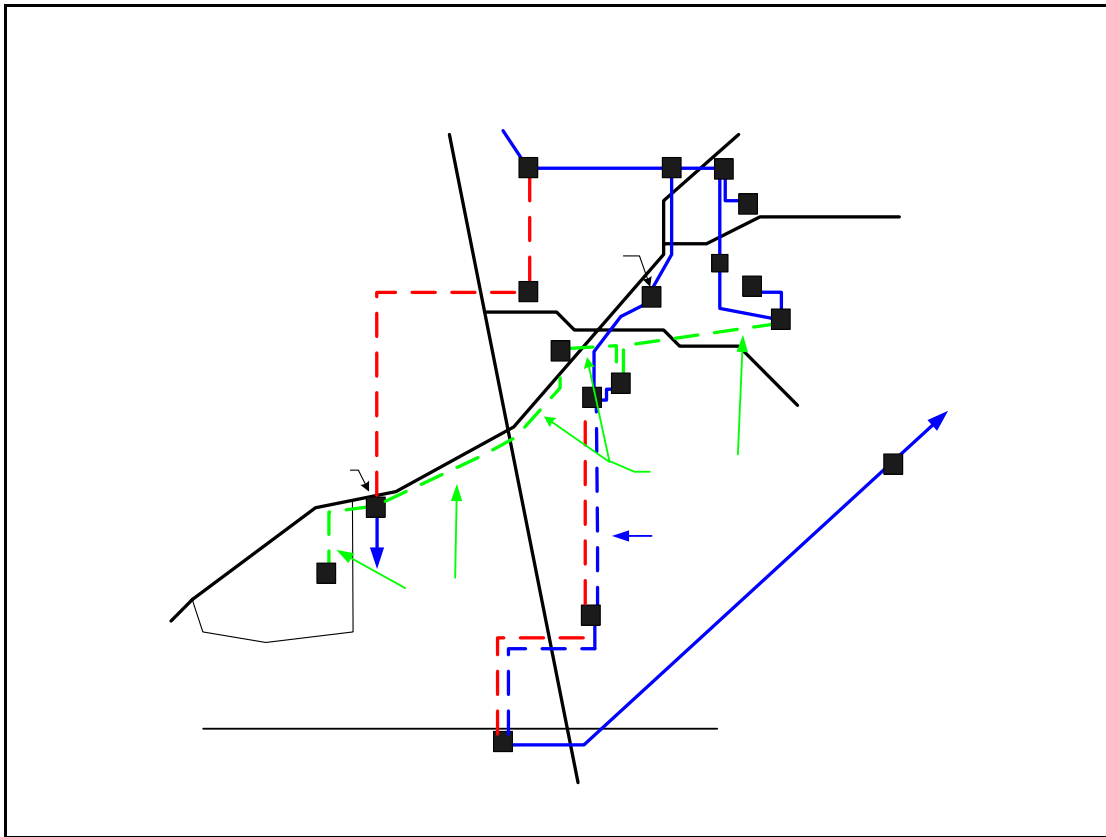


## STUDIES OF REGIONAL TRANSMISSION CONSTRAINTS

### Florida Central Coordinated Study

Utilities in central Florida have not added enough transmission capacity in the region in recent years to keep pace with sustained customer load growth in the Greater Orlando area. The result is transmission congestion that prevents the full utilization of generating capacity in the Polk County region. At the urging of the Commission, the FRCC recently completed a major planning assessment known as the *Florida Central Coordinated Study*. The assessment identified an immediate need for additional transmission transfer capability along the Interstate 4 corridor, to move electricity generated in the Polk county region to load centers in the Greater Orlando area. The region is shown in Figure 9. The need for additional transmission transfer capability, which cannot be met until 2008 at the earliest, is further exacerbated in 2011 when additional generating capacity in the Polk County area is scheduled to enter service.

**Figure 9: Florida Central Coordinated Study – Region**



The *Florida Central Coordinated Study* identified approximately \$277 million in transmission projects that would address future needs in the region. Eight of these projects are expected to be needed before 2008 but not completed until 2009 or later. Permitting activities, as well as construction activities in active transmission corridors, are expected to cause all projects to be completed by 2011. Therefore, the region's utilities anticipate continuing the use of operational strategies such as uneconomic dispatch, voltage reduction, and line switching to mitigate contingency overloads. The Commission believes that operational strategies are essential to the operation of a

transmission system under contingencies, but such actions are not appropriate to address transmission needs known through planning studies. Uneconomic dispatch results in higher fuel costs that are borne by ratepayers through higher bills.

FPL, FMPA, the Kissimmee Utility Authority (KUA)<sup>2</sup>, OUC, PEF, and TECO are responsible for the projects identified in the *Florida Central Coordinated Study*. These projects are listed in Table 2. The proposed Lake Agnes - Gifford line is the only project expected to require certification under the TLSA.

**Table 2: Florida Central Coordinated Study – Needed Transmission Projects**

LINE OWNER	TRANSMISSION LINE	PROJECT TYPE	LINE LENGTH (MILES)	NEEDED IN-SERVICE	PLANNED IN-SERVICE	EST. COST (\$M)
PEF	West Lake Wales - Dundee #2	New	13.2	Before 2008	6/2009	28.5
PEF	Dundee - Intercession City #2	New	25.9	Before 2008	6/2010	54.1
PEF	West Lake Wales - Dundee #1	Rebuild	9.7	Before 2008	6/2011	20.5
PEF	Dundee - Intercession City #1	Rebuild	20.3	Before 2008	6.2011	40.5
PEF	Avalon - Gifford	New	7.0	Before 2008	6/2008	33
FPL	Vandollah - Charlotte	Terminal	--	12/2008	12/2008	0.1
FPL	Poinsett - Holopaw	Terminal	--	12/2008	12/2008	0.1
TECO/PEF	LAKE AGNES - GIFFORD <sup>3</sup>	NEW	32.4	BEFORE 2008	6/2011	67.5
OUC	McIntosh - Lake Agnes	Reconductor	9.4	Before 2008	6/2011	6.1
FMPA/KUA	Cane Island - CI North Tap	Reconductor	6.0	6/2011	6/2010	3.0
OUC	CI North Tap - Taft	Reconductor	11.2	6/2011	6/2010	7.3
OUC/TECO	Lake Agnes - Osceola	Reconductor	21.5	Before 2008	6/2008	14.0
OUC/TECO	Osceola - CI North Tap	Reconductor	4.1	6/2011	6/2009	2.7
TOTAL COST						277.4

The Commission urges Peninsular Florida’s utilities to continue working together through the FRCC to identify and address all reliability issues caused by transmission system limitations before operational strategies are needed. The Commission commends the FRCC for its efforts in coordinating the transmission plans of Peninsular Florida’s utilities. However, the *Florida Central Coordinated Study* identified two areas in which the FRCC can improve its process: (1) formation of a cost allocation methodology for new transmission projects and (2) establishment of a uniform process for queuing transmission service requests made to utilities. The Commission will continue to monitor coordinated planning efforts by Florida’s utilities and, if necessary, will exercise its Grid Bill authority to ensure the adequacy of Florida’s transmission system.

<sup>2</sup> KUA is an all-requirements member of FMPA. KUA does not file a *Ten-Year Site Plan*.

<sup>3</sup> Lake Agnes - Gifford line will require certification under the TLSA.

## Taylor Energy Center Transmission Study

Four municipal utilities have announced a plan to jointly own, construct, and operate the Taylor Energy Center, an 800 MW coal-fired generating unit in Taylor County. The utilities petitioned the Commission for a determination of need for the Taylor Energy Center in September 2006, and a decision on the need is scheduled in February 2007. The proposed plant would be the largest generating plant in Northwest Florida, causing a considerable impact on power flows in the region. The four municipal utility owners, as well as FPL and PEF, are currently performing a coordinated, detailed analysis of several potential transmission alternatives to connect the Taylor Energy Center to the state's transmission system. The feasibility and system impact studies were completed in October 2006. The recommended alternatives will enter the annual FRCC transmission planning process and will be used to complete the North Florida Transmission Study discussed below.

## North Florida Transmission Study

Continued growth in North Florida, combined with a lack of new transmission line construction, have resulted in increased power flows across TAL's system from the Southern Company to PEF and SEC. This has been a growing concern for TAL, as the inadvertent power flows have caused imbalances which adversely affect TAL's ability to economically serve its own load. As a result, TAL, PEF, and SEC began the North Florida Transmission Study in 2005 to assess the reliability of the transmission system in the region. For any identified transmission system additions, cost allocation could be an issue, as there might be uncertainty over which utility causes any system imbalances. The North Florida Transmission Study has been put on hold pending the completion of the Taylor Energy Center Transmission Study. Upon completion of the North Florida Transmission Study, the recommended alternatives will enter the annual FRCC transmission planning process.

## Florida-Southern Interface Transfer Capability Study

Currently, Peninsular Florida's utilities use approximately two-thirds of the total Florida-Southern interface capability to import firm capacity into the FRCC region. Firm capacity exports to Southern do not occur at this time, nor are they forecasted to occur during the planning horizon. The FRCC and Southern annually perform an interregional transmission study to confirm the maximum import and export capability between the two regions and to ensure that the transmission plans of both regions jointly meet the NERC reliability standards. Based on studies performed by the FRCC and Southern, there does not appear to be any reliability constraints at the Florida-Southern interface at this time based on the current use of interface capacity. The 2006 study confirmed the total transfer capabilities between the FRCC and Southern, which are contained in Table 3.

**Table 3: Florida-Southern Interface Transfer Capability**

TRANSFER	TRANSFER CAPABILITY (MW)	
	SUMMER	WINTER <sup>4</sup>
(import) Southern to Florida	3600	3700
(export) Florida to Southern	1300	1700

<sup>4</sup> Winter import and export values are slightly higher in cooler weather

In a report required by the Energy Policy Act of 2005, the U.S. Department of Energy (DOE) identified the Florida-Southern interface as “having higher line loadings and numbers of binding hours than are reflected in available regional analyses” indicating that there was not enough transmission capacity to bring additional power generation into Florida from other southeastern states. The DOE Study<sup>5</sup> used simplified assumptions such as average retail rates and average line losses to reach its tentative conclusion that congestion existed at the Florida-Southern interface. Subsequently, the Commission had discussions with the DOE about their concerns, pointing out problems with some of the basic study assumptions regarding the availability of additional low cost power from other states and current use patterns of the transmission interface. In concluding its report, the DOE did not identify the Florida-Southern interface as a critically constrained transmission corridor.

Seminole Electric Cooperative (SEC) has also raised concerns regarding its ability to obtain firm transmission rights to import firm capacity for the benefit of its member rural electric cooperatives in peninsular Florida. SEC, which does not own transmission facilities associated with the Florida-Southern interface, alleges that transfer capability is insufficient to allow its members to purchase firm capacity and energy over the interface. In comments to the FERC, SEC has asserted that some non-firm transmission has been made available to non-owners for economy transactions, but the four owners (FPL, JEA, PEF, and TAL) of the remaining one-third of total interface capability reserve their share to cover contingencies on their systems. SEC's comments further assert that the current usage of the Florida-Southern interface capacity should be reexamined and that non-transmission owners such as SEC should be allocated firm transmission rights. To date, the FERC has not taken action on SEC's comments.

One alternative to reallocating existing uses of the Florida-Southern transmission interface is to construct additional transmission capacity. The existing transmission interface has a finite capability that can only be increased by substantial additional transmission line construction. Because of the long distances between load and generation centers in Florida and Georgia, prior studies to determine the feasibility of expanding the interstate transfer capability between Florida and Georgia have shown that such transmission line expansion would not be cost-effective. For example, FPUC recently located a source of wholesale capacity in Southern's territory that was comparably priced to in-state sources. However, when FPUC investigated the addition of a new transmission line at the interface, its cost (approximately \$20 million) was too high to render Southern's bid economical. Therefore, FPUC selected an in-state provider for its power needs.

The Commission will continue to closely monitor the actions of the DOE, the FERC, and the FRCC, and will continue to provide input into any federal and state matters pertaining to the adequacy and reliability of Florida's transmission grid. In addition, the Commission will continue to examine the feasibility of expanding Florida's transmission capacity, where cost-effective, in its oversight of the transmission planning processes of individual utilities and the state as a whole.

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<sup>5</sup> “National Electric Transmission Congestion Study,” U.S. Department of Energy, August 2006

## PROPOSED TRANSMISSION LINES REQUIRING CERTIFICATION

To require certification under Florida's TLSA, a proposed transmission line must meet the following criteria: a rating of at least 230 kV, crosses a county line, and a length of at least fifteen miles. Proposed lines in an existing corridor are exempt from TLSA requirements. The Commission determines the need for proposed transmission lines requiring TLSA certification. The Determination of Need process determines the proposed line's starting and ending points, but the proposed corridor route is determined by the DEP during the TLSA process. The TLSA process can take a year or more to complete, compared to the 90-day schedule required for the Commission to issue a final order granting a Determination of Need.

The Commission has granted a Determination of Need for three transmission lines in recent years. Two of these facilities have also received certification under the TLSA by Florida's Governor and Cabinet. Table 4 lists all proposed transmission lines in the Ten-Year Site Plans that meet the criteria for TLSA certification.

**Table 4: Proposed Transmission Lines Requiring Certification**

LINE OWNER	TRANSMISSION LINE	LINE LENGTH (MILES)	NOMINAL VOLTAGE (kV)	DATES		
				NEED APPROVED	TLSA CERTIFIED	IN-SERVICE
FPL	Collier - Orange River #3	54	230	4/2003	6/2004	12/2006
FPL	St. Johns - Pringle	26	230	5/2005	4/2006	12/2008
FPL	Manatee - Bob White	30	230	8/2006		12/2011
FPL	Eve - Sweatt	25	230			6/2012

## 5. GENERATION

### LOAD AND ENERGY FORECAST

A utility's load and energy forecast is the starting point for determining the timing and size of new capacity additions needed to reliably serve load. As such, forecast accuracy plays an essential role in a utility's determination of future needs. For nine of the eleven reporting utilities, the Commission reviewed the historical forecast accuracy of total retail energy sales for the five-year period from 2001-2005. There were insufficient historical data to analyze the historical forecast accuracy of FMPA and OUC. The Commission's analysis compared actual energy sales for each year to energy sales forecasts made three, four, and five years prior. For example, actual 2005 energy sales were compared to 2005 forecasts made in 2000, 2001, and 2002. These differences, expressed as a percentage error rate, were used to calculate two measures of a utility's historical forecast accuracy: average forecast error<sup>6</sup> and average absolute forecast error.<sup>7</sup>

Table 5 shows the historical forecast accuracy of total retail energy sales for the 2004, 2005, and 2006 Ten-Year Site Plans for the nine reporting utilities with sufficient historical data. Overall, Florida's utilities have done a better job of forecasting retail energy sales over the last three years, as the forecast errors have steadily decreased during that period.

**Table 5: Total Retail Energy Sales – Historical Forecast Accuracy**

UTILITY	FORECAST ERROR (%)	
	AVERAGE	AVERAGE ABSOLUTE
Progress Energy Florida	-0.41	0.71
Florida Power & Light Company	-1.40	1.40
Gulf Power Company	-0.27	0.62
Tampa Electric Company	-0.56	0.56
Gainesville Regional Utilities	-0.83	0.83
JEA	0.41	0.81
City of Lakeland	0.71	0.86
City of Tallahassee	0.41	0.43
Seminole Electric Cooperative	-0.67	1.66
WEIGHTED AVG (2001-2005) - 2006 TYSP	-0.29	0.88
WEIGHTED AVG (2000-2004) - 2005 TYSP	-0.41	1.02
WEIGHTED AVG (1999-2003) - 2004 TYSP	-0.72	1.40

<sup>6</sup> Average forecast error indicates a utility's tendency to over-forecast (positive values) or under-forecast (negative values).

<sup>7</sup> Average absolute forecast error accumulates the magnitude of past forecast errors, ignoring positive and negative signs.

## DEMAND-SIDE MANAGEMENT

Demand-side management (DSM) reduces customer peak demand and energy requirements, resulting in the deferral of need for new generating units. Dispatchable DSM, such as load management and interruptible service, are utility-controlled measures that allow quick reductions in system peak demand when needed. Non-dispatchable DSM, such as ceiling insulation or building efficiency measures, enables utilities and customers to realize sustained energy savings over time. Non-dispatchable DSM savings are embedded in a utility's demand and energy forecast.

Utilities have offered DSM programs since 1980 based on the requirements of the Florida Energy Efficiency and Conservation Act (FEECA). FEECA emphasizes reducing the growth rate of weather-sensitive peak demand, reducing and controlling the growth rate of electricity consumption, and reducing the consumption of expensive resources such as petroleum fuels. To meet these objectives, the Commission sets numeric conservation goals, and utilities are responsible for continuing to develop and implement DSM programs to meet these goals. The Commission's broad-based authority over electric utility conservation measures and programs is contained in Rules 25-17.001 through 25-17.015, Florida Administrative Code.

### DSM Goals and Plans

FEECA requires that all IOUs and any municipal or cooperative utility with annual energy sales of at least 2,000 GWh as of July 1, 1993 meet numeric conservation goals set by the Commission. Seven Florida utilities are subject to FEECA: PEF, FPL, Gulf, TECO, Florida Public Utilities Company (FPUC)<sup>8</sup>, JEA, and OUC.

The Commission set new numeric demand and energy goals for these seven utilities in July 2004. The new numeric goals were generally lower than the previous goals set by the Commission in 1999 for the following reasons:

- The Florida Building Code contains increased minimum energy efficiency levels, thus limiting the amount of incremental savings from utility sponsored programs;
- Many utility DSM programs have reached a saturation in participation levels; and
- The cost of new generating units had declined, which reduced the cost-effectiveness of several DSM programs. However, the Commission has seen this trend begin to reverse.

As avoided costs have been on the rise due to increasing fuel prices and overall increasing plant construction costs of all fuel types, the FEECA utilities have begun to re-evaluate the cost-effectiveness of all current DSM programs. Increased avoided cost should lead to larger numbers of cost-effective DSM programs, with higher rebate levels to encourage greater participation by utility customers. An example of this was FPL's two new DSM programs and eight modified programs, which the Commission approved in August 2006. Through greater customer participation, caused in part by higher customer incentives, FPL expects its new and revised programs to lead to additional summer peak demand savings of 454 MW, winter peak demand savings of 310 MW, and annual energy savings of 54 GWh. PEF and TECO also received Commission approval during 2006 for modifications to their DSM programs, while FPL and TECO have green pricing programs in which

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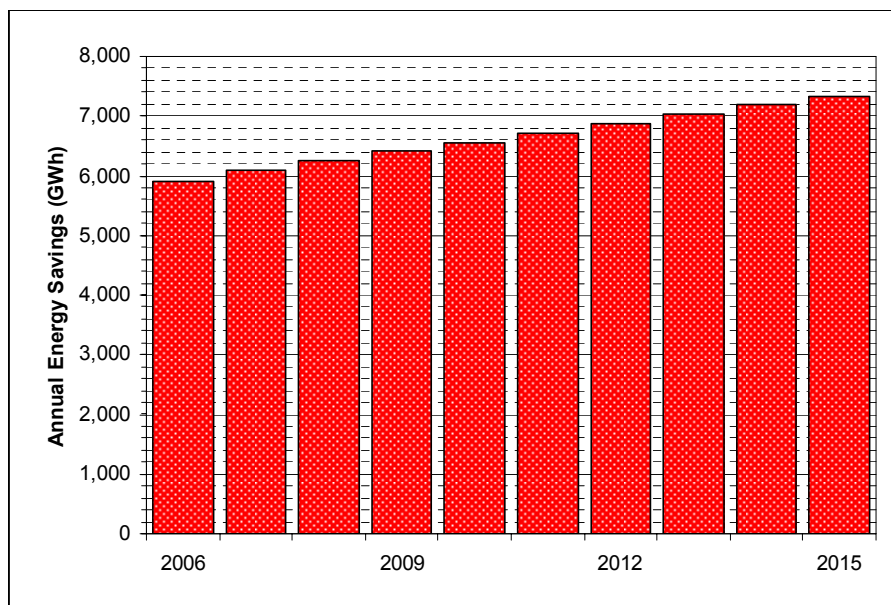
<sup>8</sup> FPUC is a non-generating, investor-owned utility subject to FEECA's requirements.

voluntary contributions fund utility purchases of clean renewable energy. PEF has a petition before the Commission to once again offer its residential load control program on a year-round basis rather than only during winter months. Overall, demand and energy savings from utility-sponsored conservation programs are expected to surpass current goals by as much as 50%. The Commission will continue to explore means of cost-effectively increasing the amount of DSM savings available from utility conservation programs.

In February of each year, the Commission publishes an annual report describing the utilities' conservation and DSM activities pursuant to FEECA<sup>9</sup>. Included in the Commission's report is a summary of all utility DSM programs, a comparison of current and previous numeric goals, and a general assessment of utility conservation activities. Overall, Florida's utilities have been successful in meeting the overall objectives of FEECA. Since enactment of FEECA, utility conservation programs have resulted in cumulative statewide peak demand savings of 4983 MW summer and 5577 MW winter, as well as annual energy savings of 5896 GWh for 2006.

Figures 10, 11, and 12, below and on the next page, illustrate the projected total amounts of annual energy consumption, summer peak demand, and winter peak demand savings from utility-sponsored DSM programs over the ten-year planning horizon.

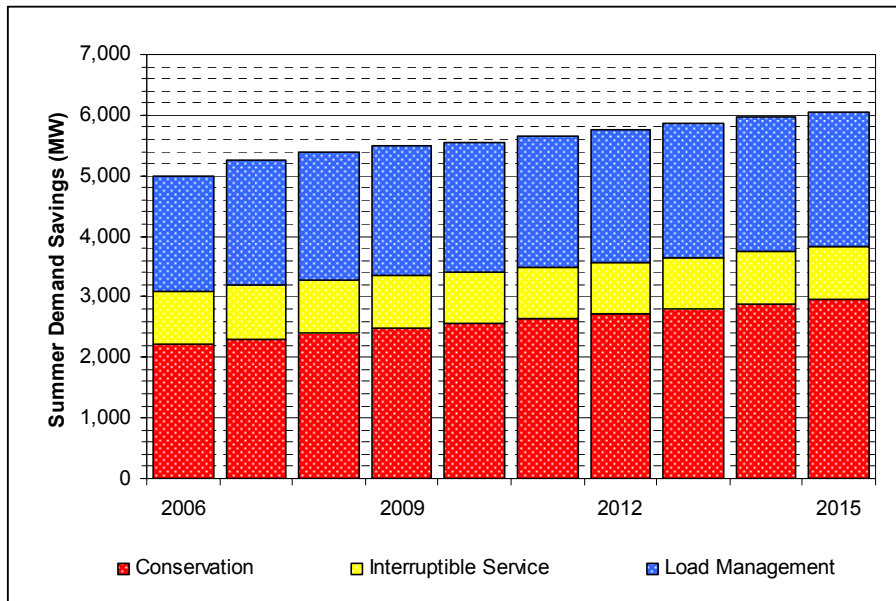
**Figure 10: State of Florida – DSM Net Energy for Load Savings**



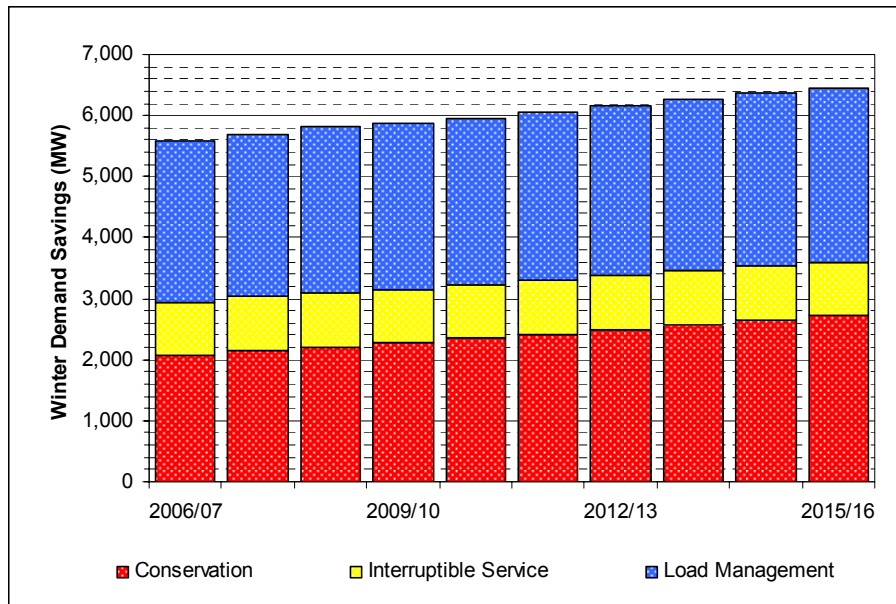
<sup>9</sup> Annual Report on Activities Pursuant to the Florida Energy Efficiency and Conservation Act, February 2006



**Figure 11: State of Florida – DSM Summer Peak Demand Savings**



**Figure 12: State of Florida – DSM Winter Peak Demand Savings**



## Energy Conservation Cost Recovery

IOUs have the opportunity to recover prudently incurred expenditures associated with Commission-approved DSM programs through the Energy Conservation Cost Recovery Clause (ECCR). Since 1981, Florida's IOUs have collected approximately \$4.15 billion through the ECCR clause, with nearly \$2.54 billion of that amount recovered in the last ten years. Annual ECCR expenditures have stabilized at just under \$250 million per year over the past six years for two primary reasons: DSM programs have reached saturation in participation levels, and DSM program cost-effectiveness declined due to the relatively lower cost of new generating units. However, the Commission has seen this trend begin to reverse. With increased avoided cost, DSM program cost-effectiveness should improve.

Florida's utilities have reduced enough peak demand to avoid the construction of approximately ten 500 MW generating plants since the enactment of FEECA. Despite these efforts, however, projections indicate that future demand and energy savings from conservation and DSM programs will not keep up with increased growth during the planning horizon. Table 6 shows the projected average annual growth rates of demand and energy savings from DSM compared to forecasts for demand and energy growth in the state.

**Table 6: Projected Growth Rates of DSM Savings Compared to Demand and Energy**

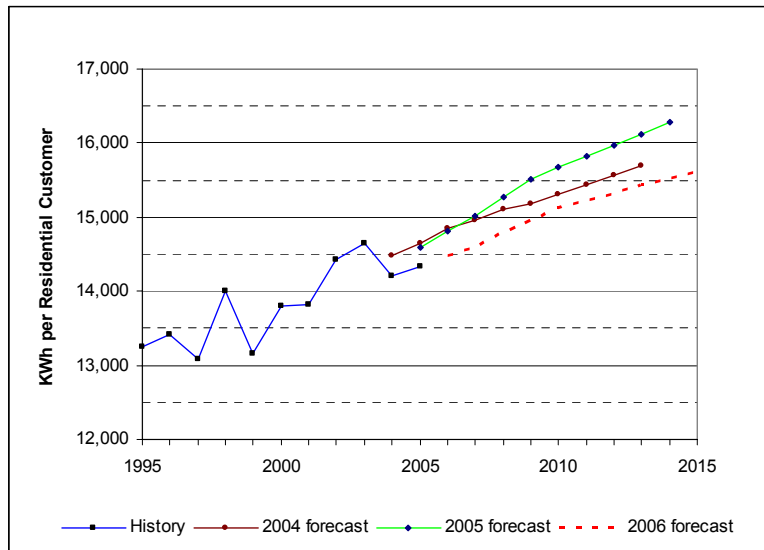
	AVERAGE ANNUAL GROWTH RATE (%)	
	DSM PROGRAM SAVINGS	DEMAND / ENERGY FORECAST
Summer Peak Demand	2.2%	2.39%
Winter Peak Demand	1.62%	2.36%
Net Energy For Load	2.47%	2.74%

For residential customers, per-capita energy consumption has steadily increased in the past ten years and is expected to continue to rise during the planning horizon. Possible reasons for these increases include the following:

- Average home size continues to increase over time.
- Today's homes have more, and larger, electricity-consuming appliances than in past years.
- Natural gas, used by many residents nationwide for heating, water heating, and cooking, is still relatively unavailable in parts of Florida.
- Per-capita income has risen since the mid-1980s, while electric rates remained stable between 1980 and 2000 as shown previously in Figure 2. As a result, electricity has been an affordable commodity.

As shown in Figure 13, statewide per-capita energy consumption usage increased at an average of 0.75% per year over the past ten years, while forecasted growth is an average of 0.84% per year over the planning horizon. The 2006 forecast of per-capita residential energy consumption is lower than comparable period forecasts made in 2004 and 2005. This reduction may be an indication that rising electricity prices are a price signal to customers to moderate their consumption of electricity.

**Figure 13: State of Florida – Energy Consumption per Residential Customer**



While Florida's utilities have been successful overall in meeting the objectives of FEECA, the Commission believes that customer choice plays a role in helping the state's utilities achieve the overall goals of FEECA. Electric customers can contribute to meeting these goals through buying smaller homes, owning energy-efficient appliances including air conditioning systems, making energy-efficiency improvements to their homes to reduce energy losses, and taking advantage of natural gas for heating, water heating, and cooking where available and cost-effective. Customer choices to reduce energy consumption will help electric utilities to defer the need for future generating units and transmission lines. As fossil fuels, plant sites, and transmission corridors become increasingly scarce in the state, it is important to utilize existing resources as long as possible by taking full advantage of DSM and energy conservation measures.

## RENEWABLE ENERGY

In Florida, renewable energy comes primarily from waste-to-energy, phosphate processes, landfill gas, and hydroelectric sources. Electric utilities and non-utility generators produce over 1,100 MW of renewable energy in Florida. Renewable energy facilities currently produce 603 MW of non-firm energy for internal use (self-service) or for sale to utilities on an as-available basis. As a result, the state's utilities do not count on this non-firm energy for reliability purposes. Renewable energy facilities also provide firm capacity benefits to the state. Florida's electric utilities currently purchase 511 MW of firm capacity from renewable energy sources.

Despite generating over 1,100 MW of energy, renewable energy facilities do not account for a large portion of Florida's energy generation. Historically, relatively high capital and operating costs as well as limited applications have hampered the development of renewable energy in the state. The percentage contribution of renewable energy to net energy for load (NEL) since 2000, for the reporting utilities, is shown in Table 7.

**Table 7: Reporting Utilities – Contribution of Renewable Energy to Net Energy for Load**

UTILITY	2000	2001	2002	2003	2004	2005
Florida Power & Light Company	1.6%	1.4%	1.5%	1.5%	1.5%	1.4%
Gulf Power Company	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%
Progress Energy Florida	3.9%	3.5%	3.4%	3.3%	3.1%	2.8%
Tampa Electric Company	1.5%	1.7%	1.9%	1.8%	1.7%	2.2%
Gainesville Regional Utilities <sup>10</sup>	---	---	---	---	0.2%	0.3%
JEA	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%
City of Lakeland	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%
Orlando Utilities Commission	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
City of Tallahassee	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%	< 1.0%
Seminole Electric Cooperative	2.8%	2.6%	2.4%	2.3%	2.4%	2.7%

<sup>10</sup> GRU only reported data for 2004 and 2005.

Table 8 is a list of all renewable energy sources in the state that provide self-service generation or as-available energy to the state's electric system.

**Table 8: State of Florida - Self-Service and Non-Firm Renewable Energy Sources**

UTILITY	FACILITY	FUEL TYPE	CAPACITY (MW)
FMPA	Metro Key West	MSW	2.5
<b>MSW Subtotal</b>			<b>2.5</b>
FPL	Tomoka Farms	Landfill Gas	3.8
TECO	City of Tampa	Landfill Gas	1.4
<b>Landfill Gas Subtotal</b>			<b>5.2</b>
PEF	Potash Corp. of Saskatchewan	Waste Heat	42.0
TECO	Cargill Millpoint	Waste Heat	41
TECO	Cargill Ridgewood	Waste Heat	57.1
TECO	CF Industries	Waste Heat	27.4
TECO	Greenbay	Waste Heat	25.1
TECO	IMC New Wales	Waste Heat	50.8
TECO	IMC South Pierce	Waste Heat	28.5
<b>Waste Heat Subtotal</b>			<b>271.9</b>
FMPA	US Sugar	Biomass	26.5
FPL	Georgia Pacific	Biomass	52.0
FPL	Okeelanta	Biomass	70.0
FPL	US Sugar Bryant	Biomass	20.0
Gulf	International Paper Company	Biomass	78.2
Gulf	Stone Container Company	Biomass	39.0
PEF	Proctor & Gamble (Buckeye)	Biomass	38.0
<b>Biomass Subtotal</b>			<b>323.7</b>
<b>TOTAL NON-FIRM ENERGY RENEWABLES</b>			<b>603.3</b>

Table 9 is a list of all renewable energy facilities that sell firm capacity to Florida's electric utilities.

**Table 9: State of Florida - Renewable Energy Sources Providing Firm Capacity**

UTILITY	FACILITY	FUEL TYPE	CAPACITY (MW)
FPL	Broward North	MSW	56.0
FPL	Broward South	MSW	54.1
FPL	Palm Beach County Solid Waste Authority	MSW	47.5
PEF	Bay County (Montenay Bay)	MSW	11.0
PEF	Dade County	MSW	43.0
PEF	Lake County (Covanta Lake)	MSW	12.8
PEF	Pasco County (Covanta Pasco)	MSW	23.0
PEF	Pinellas County	MSW	54.8
SEC	Lee County	MSW	35.0
TECO	City of Tampa (McKay Bay)	MSW	15.5
TECO	Hillsborough County	MSW	23.0
<b>MSW Subtotal</b>			<b>375.7</b>
PEF	Jefferson Power	Biomass	2.0
PEF	Ridge Generating Station	Biomass	39.6
SEC	Telogia Power	Biomass	12.0
<b>Biomass Subtotal</b>			<b>53.6</b>
PEF	Cargill Fertilizer	Waste Heat	15.0
PEF	US Agri-Chem	Waste Heat	5.6
<b>Waste Heat Subtotal</b>			<b>20.6</b>
TAL	C. H. Corn Dam	Hydro	11.0
Fed. Govt. (SEPA)	Jim Woodruff Dam	Hydro	43.5
<b>Hydro Subtotal</b>			<b>54.5</b>
SEC	<b>BioEnergy Partners</b>	<b>Landfill Gas</b>	<b>7.0</b>
<b>TOTAL FIRM CAPACITY RENEWABLES</b>			<b>511.4</b>

Several renewable capacity contracts are scheduled to expire during the planning horizon, causing the amount of firm renewable capacity purchases to decrease by 220 MW by 2015. If new contracts are signed in the future, these resources will continue to contribute firm capacity from renewable sources to the state's capacity mix.

Although Florida's utilities purchase firm capacity and energy from non-utility renewable energy providers, utility research into renewable energy has resulted in several self-generation projects which contribute capacity and energy from renewable sources. During 2006, the Commission gathered additional data on these self-generation projects as well as purchases from renewable energy providers. Florida's utilities generate approximately 16 MW of renewable capacity and energy, with 15.5 MW from turbines fueled by landfill or sewer gas, 0.4 MW from solar and photovoltaic resources, and 0.1 MW from solar water heating. The utilities also indicate that a small handful of customers own their own solar thermal and photovoltaic equipment to produce renewable energy to offset all or part of their utility service requirements. Energy production from these facilities averages approximately 2.5 KW per installation. As part of the Ten-Year Site Plan process, the Commission will continue its ongoing efforts to gather data on renewable energy developments in the state.

FPL and TECO have green pricing programs in which electric customers make voluntary contributions to fund utility purchases of clean renewable energy. Utilities also purchase environmental attributes associated with the generation of renewable energy, known as Tradable Renewable Energy Credits (TREC's).

### **Legislative and Commission Actions to Encourage Renewables**

The 2005 Florida Legislature enacted Section 366.91, Florida Statutes, which required the FEECA utilities to provide a continuously offered standard offer contract for purchasing capacity and energy from renewable energy resources. To further encourage the development of renewable generation in Florida, the 2006 Legislature enacted Section 366.92, Florida Statutes, which authorized the Commission to adopt goals, as appropriate, to increase the use of existing and new renewable energy resources in the state. The intent of both statutes is to protect the economic viability of Florida's existing renewable energy facilities and to promote further development of renewable energy resources in the state.

The Commission has initiated a multi-faceted approach to implement these statutes. In an effort to encourage renewables beyond the requirements of Section 366.91, Florida Statutes, in 2006 the Commission directed the IOUs to file standard offer contracts for renewable energy providers based on a portfolio of generating unit types. A portfolio approach for renewable energy contracts will encourage renewables to play a greater role in enhancing fuel diversity for Florida. FPL, PEF, and TECO were required to file a standard offer contract based on the first coal, combined cycle, combustion turbine, or IGCC unit contained in the Ten-Year Site Plan. The Commission's approval was appealed by a group of industrial cogenerators, making the tariffs unavailable and preventing other renewable generators from taking advantage of standard offer contracts. Rather than acting on the proposed tariffs, the Commission decided first to pursue proposed revisions to its standard offer contract rules to codify the Legislature's intent to encourage renewable generation. The Commission held a hearing on the proposed rule in November 2006, and will adopt a final rule early next year. Upon final rule adoption, the Commission will again direct the IOUs to file standard offer contracts for renewable energy providers as early as April 2007.

As part of the multi-faceted approach, the Commission will conduct a public workshop in January 2007 to investigate further promotion and development of renewable generation in the state. The workshop will provide a forum for the Commission to gather additional information regarding the types of renewable generation that can be feasibly developed in Florida and to discuss measures to encourage such development in Florida.

## PROPOSED GENERATING UNITS REQUIRING CERTIFICATION

To require certification under Florida's PPSA, a proposed generating unit addition must be at least 75 MW of steam-fired generating capacity. The Commission has granted a Determination of Need for several generating units in recent years. Many of these facilities have received certification under the PPSA by Florida's Governor and Cabinet. Table 10 lists all proposed generating units in the Ten-Year Site Plans that meet the criterion for requiring certification under the PPSA. Solid fuel units are shown in ***BOLD ITALIC CAPS***.

**Table 10: Proposed Generating Units Requiring Certification**

UTILITY	GENERATING UNIT NAME & TYPE	WINTER CAPACITY (MW)	DATES		
			NEED APPROVED	PPSA CERTIFIED	IN- SERVICE
FPL	Turkey Point CC Unit 5	1181	6/2004	2/2005	6/2007
PEF	Hines CC Unit 4	517	11/2004	6/2005	12/2007
FMPA	Treasure Coast Energy Center CC Unit 1	318	7/2005		6/2008
FPL	West County Energy Center CC Unit 1	1335	6/2006		6/2009
FPL	West County Energy Center CC Unit 2	1335	6/2006		6/2010
<b><i>OUC</i></b>	<b><i>STANTON IGCC UNIT B</i></b>	<b><i>283</i></b>	<b><i>6/2006</i></b>		<b><i>6/2010</i></b>
<b><i>SEC</i></b>	<b><i>SEMINOLE PC UNIT 3</i></b>	<b><i>750</i></b>	<b><i>7/2006</i></b>		<b><i>5/2012</i></b>
PEF	Unsited CC Unit 1	550			6/2011
<b><i>FMPA/JEA/TAL</i></b>	<b><i>TAYLOR ENERGY CENTER PC UNIT</i></b>	<b><i>819</i></b>			<b><i>6/2012</i></b>
<b><i>FPL</i></b>	<b><i>UNSITED PC UNIT 1</i></b>	<b><i>855</i></b>			<b><i>6/2012</i></b>
<b><i>TECO</i></b>	<b><i>UNSITED IGCC UNIT 1</i></b>	<b><i>630</i></b>			<b><i>1/2013</i></b>
<b><i>FPL</i></b>	<b><i>UNSITED PC UNIT 2</i></b>	<b><i>855</i></b>			<b><i>6/2013</i></b>
<b><i>GRU</i></b>	<b><i>DEERHAVEN UNIT 3 CFB</i></b>	<b><i>220</i></b>			<b><i>6/2013</i></b>
<b><i>PEF</i></b>	<b><i>UNSITED PC UNIT 1</i></b>	<b><i>750</i></b>			<b><i>6/2013</i></b>
<b><i>JEA</i></b>	<b><i>UNSITED PC UNIT 1</i></b>	<b><i>250</i></b>			<b><i>12/2013</i></b>
FMPA	Unsited CC Unit 4	318			6/2014
GULF	Unsited CC Unit A	620			6/2014
<b><i>PEF</i></b>	<b><i>UNSITED PC UNIT 2</i></b>	<b><i>750</i></b>			<b><i>6/2014</i></b>
FPL	Unsited CC Unit 5	610			6/2015
PEF	Unsited CC Unit 2	550			6/2015
TOTAL REQUIRING CERTIFICATION		13496			



## 6. FUEL SUPPLY, PRICE, AND TRANSPORTATION

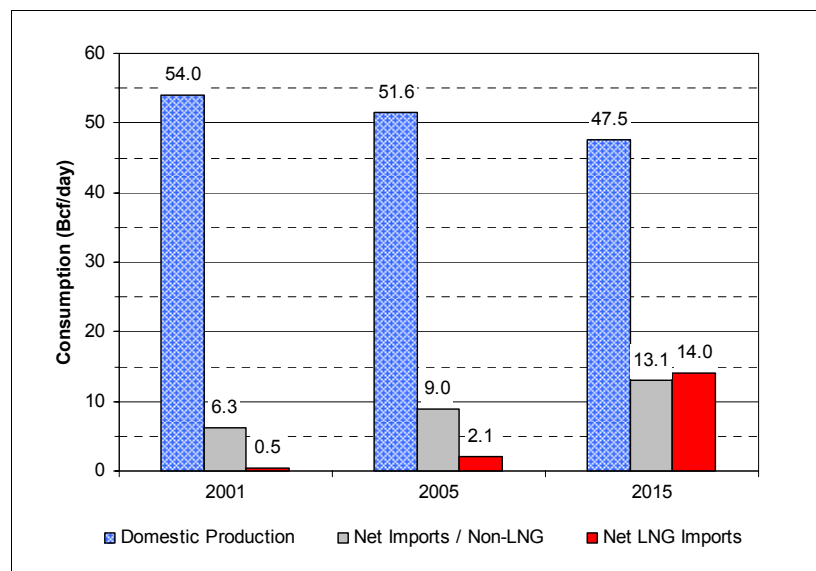
Utilities must decide which type of plant to build several years in advance: approximately four years for combined cycle, seven years for coal, and ten or more years for nuclear. As a result, the risk associated with selecting a generation technology is highly dependent on the accuracy of the long-term fuel price forecast. A utility's fuel price forecast is the foundation for determining the type of new capacity additions needed to reliably serve load.

### NATURAL GAS

#### Supply and Price

As shown in Figure 14, imported gas supplies (from Canada and Mexico) and LNG are expected to offset declines in domestic gas supplies. The reporting utilities generally forecast new gas supplies from Canada's Mackenzie Delta region in 2009 and from LNG imports in 2010 and 2011. Although domestic supply is expected to decline, new domestic sources, advances in drilling technology, and unconventional sources should slow the rate of decline. Domestic supply might also be enhanced by development of resources in the Alaska North Slope area.

Figure 14: Natural Gas Consumption in the U.S. by Place of Origin <sup>11</sup>



For this year's Ten-Year Site Plans, the reporting utilities provided forecasts of natural gas prices in nominal dollars on a delivered basis. The utilities generally forecast gas prices to decrease from current levels of around \$11 per MMBtu to approximately \$7 per MMBtu by 2011. Around that time, gas imports from Canada and LNG should become available. The expectation of increased LNG supplies depends on new re-gasification and terminal facilities entering service between 2008 and 2010. These price forecasts significantly rely on expected sizable increases in LNG imports. Any delay in delivering LNG to the state or a decrease in expected amounts of LNG deliveries will place upward pressure on natural gas prices. Starting in 2011, the utilities forecast gas prices to slightly

<sup>11</sup> Sources: FPL, The PIRA Energy Group, and internal analysis by FPL.

increase to approximately \$8 per MMBtu by the end of the planning horizon. Overall, gas prices are expected to decrease at an average annual growth rate of -4.1% during the planning horizon.

## **Transportation**

In Florida, increased dependency on natural gas could affect the reliability of electric utility generation supply, primarily from the possibility of natural gas supply or transportation disruption. The NERC established a Gas/Electricity Interdependency Task Force to determine reliability impacts and to recommend mitigating measures should reliability risks arise. The NERC task force completed a study in May 2004, concluding in part that gas pipeline reliability can substantially impact electric generation, and that electric system reliability can have an impact on gas pipeline operations. The FRCC also has a Gas/Electricity Interdependency Task Force whose scope is almost identical to that of the NERC task force. The FRCC continues to review the recommendations made by the NERC task force to determine where to specifically focus future analyses. The FRCC has recommended that Peninsular Florida has adequate pipeline capacity for reliability purposes for both current and future natural gas demand. However, with this statement the FRCC assumes that generating units having the capability to burn oil will do so at times of peak demand. Therefore, economics may be the driving factor for any future gas pipeline expansions.

Florida currently relies primarily on two gas pipeline companies, Florida Gas Transmission (FGT) and Gulfstream Natural Gas (Gulfstream), to supply natural gas to electric utilities, industrial customers, and local distribution companies. FGT operates approximately 5,000 miles of pipeline nationwide, with 3,300 miles located in Florida. FGT's system has undergone six expansions since its inception in 1959, increasing pipeline capacity from its original 0.278 Bcf/day to its current 2.2 Bcf/day. Gulfstream has a system pipeline capacity of 1.1 Bcf/day. The first phase of Gulfstream's system, which entered service in 2002, crosses the Gulf of Mexico between Pascagoula, Mississippi and Manatee County, Florida with more than 430 miles of 36" diameter pipe. The Phase II expansion, a 110-mile extension to FPL's Martin plant site in Martin County, entered service in February 2005.

Based on the forecasted requirements of electric utilities and other sectors, the Commission estimates that average pipeline demand will total 3.26 Bcf/day by 2015. Given the 3.3 Bcf/day combined pipeline capacity of FGT and Gulfstream currently, it would appear that, at a minimum, sufficient capacity exists to serve forecasted requirements through the planning horizon. However, the Commission's estimate may be understated. Forecasted gas requirements are based on 2005 gas volumes transported into the state. As customers may have contracted for much more pipeline capacity than was actually used during 2005, the Commission's forecast does not reflect peak period pipeline capacity needs. The Commission does not have jurisdiction over interstate pipelines and, therefore, does not have the authority to require FGT or Gulfstream to submit their contracts for review. In any event, electric utilities requesting Commission approval to construct gas-fired generating units must ensure that pipeline capacity will be available to transport required gas supplies.

### ***In-State Pipeline Transportation Projects***

FGT - On June 15, 2006, the FERC approved FGT's application to construct its Phase VII Expansion Project. This project involves the construction of 33 miles of 36" diameter pipeline looping and the installation of 9,800 horsepower of compression. The expansion will provide approximately 0.16 Bcf/day of additional capacity to transport natural gas from a connection with

Southern Natural Gas Company's proposed Cypress Pipeline project, discussed below. The projected in-service date is May 1, 2009.

Gulfstream - On March 26, 2006, Gulfstream announced a 23-year agreement to provide firm natural gas transportation service to FPL's proposed West County Energy Center in Palm Beach County. To provide the new service, Gulfstream will construct its Phase III expansion, a 35-mile extension of the existing 30" diameter natural gas transmission pipeline from FPL's Martin site. The FPL agreement subscribed the remaining capacity of the Gulfstream system. Gulfstream anticipates construction of Phase III to begin in early 2008 with a targeted completion of summer 2008.

On May 5, 2006 Gulfstream petitioned the FERC to initiate a pre-filing review of the Phase IV expansion, which would provide firm transportation capacity to PEF's Bartow site in Pinellas County. Phase IV includes construction of approximately 17.5 miles of 20" diameter pipeline that would connect the existing Gulfstream pipeline to the Bartow site. Phase IV would also require the installation of additional compression equipment at each end of the original pipeline segment crossing the Gulf of Mexico.

### ***Proposed Out-of-State Pipeline Transportation Projects***

During the past five years, considerable efforts have been made to extract gas from the mature basins of East Texas. Nearly 2 Tcf in estimated ultimate recoverable gas reserves have been developed to date. To bring this gas to market requires construction of new gas pipeline infrastructure. Several proposed out-of-state pipeline projects could bring additional gas supplies to the Southeast, thus easing Florida's primary reliance on Gulf of Mexico sources of natural gas.

Southeast Supply Header - Duke Energy and CenterPoint Energy plan to jointly construct a 270-mile, 36" diameter pipeline extending from the Perryville Hub, in northeast Louisiana<sup>12</sup>, to the Gulfstream system at Pascagoula, Mississippi<sup>13</sup>. Along its proposed route, the pipeline will access several major pipelines serving the eastern United States and have access to several storage facilities. The pipeline is expected to enter service in June 2008. The parties have initiated the pre-filing process with the FERC and expect to file an application by the end of the year. Southeast Supply Header has signed an agreement with FPL for firm transportation service of approximately 0.50 Bcf/day.

Columbia Gulf Transmission - Columbia Gulf plans to construct a pipeline from Perryville, Louisiana, to Pascagoula, Mississippi. Expected to enter service by the end of 2007, the project involves the conversion of an existing oil pipeline to natural gas service plus the expansion of pipeline capacity, primarily through compression. The project will provide interconnects with both FGT and Gulfstream.

Gulf South Pipeline Company - Gulf South has proposed three pipeline expansion projects that would provide access to gas supplies located in the Barnett Shale and Bossier Sands areas of east Texas. The first expansion consists of a new 42" pipeline from Carthage, Texas, to Madison, Louisiana. The second expansion consists of a new 42" pipeline from Madison, Louisiana to Jackson, Mississippi. The third expansion involves the installation of a 36" pipeline from Jackson, Mississippi, to Mobile Bay, Alabama. This third leg of the expansion would provide access to the FGT,

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<sup>12</sup> Owned by CenterPoint Energy's subsidiary, CenterPoint Energy Gas Transmission Company.

<sup>13</sup> The Gulfstream pipeline system is 50% percent owned by an affiliate of Duke Energy Gas Transmission.

Gulfstream, and Southern Natural Gas pipelines, along with access to Petal Storage, Southern Pines Storage, and Gas Storage. Gulf South has submitted pre-filing letters to the FERC for the first two expansions, and an open season occurred in April 2006 to solicit interest in the third expansion. All three expansion projects provide alternatives to Gulf of Mexico gas supplies.

## **Liquefied Natural Gas**

In an effort to diversify the supplies of natural gas obtained from the Gulf of Mexico, three companies have been pursuing opportunities to bring supplies of liquefied natural gas from offshore processing facilities to Florida. However, some reporting utilities mentioned concerns with LNG. Pipelines and LNG suppliers are proposing gas quality and interchangeability standards that differ from the standards for domestic gas. Compared to domestic gas, LNG has different characteristics based on its origin and the conversion processes. Upgrading generators to accommodate LNG will likely become necessary. LNG providers also require long-term contracts and premium adders to the market price. As a result, only one proposed LNG pipeline project (Cypress, discussed below) currently has a transportation contract with a Florida electric utility.

### ***Proposed LNG Pipeline Transportation Projects***

Cypress - Southern Natural Gas Company has received FERC approval to expand its existing interstate natural gas pipeline system from a point near Savannah, Georgia, to a point interconnecting with FGT's System near Jacksonville, Florida. The project consists of three phases. Phase I includes the initial pipeline of 165 miles of 24" diameter pipe. Phase II and III will consist of additional compression and looping. The source of natural gas will be the Elba Island LNG facility which averages approximately four shipments of LNG per month. Cypress will have the ability to flow gas bidirectional from Florida to points in Georgia. Phase I is expected to be in service in May 2007 with Phase II and III becoming operational in May 2009 and May 2010, respectively. PEF has contracted with Cypress for gas transportation capacity on the proposed line.

Calypso - On April 4, 2006, Suez Energy North America announced that its subsidiary, Calypso LNG, LLC (Calypso) is pursuing the development of a submerged buoy system off the southeast coast of Florida that would serve as an offshore delivery point for LNG<sup>14</sup>. As proposed, the deep water port would be located in federal waters, approximately 10 miles off the coast of Florida, northeast of Port Everglades. The expected average throughput capacity of the Calypso project is approximately 0.8 Bcf/day. Calypso projects commercial operations to begin in mid-2010.

Two other LNG projects, AES Ocean Express and El Paso Seafarer, have been discussed in past Commission reviews of Ten-Year Site Plans. Both projects had proposed to deliver LNG to southeastern Florida via undersea pipelines connecting to a gasification facility on Grand Bahama Island. AES Ocean Express received a Presidential Permit from the FERC, granting AES authority to construct the project. Before any construction begins, AES must first receive approval from the Bahamian government. El Paso withdrew Seafarer's certificate application at the FERC in October 2006. El Paso believes that the state's current emphasis on fuel diversity will cause demand for the Seafarer to be insufficient to move forward with permitting at the FERC at this time.

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<sup>14</sup> The Calypso project was first proposed by Tractabel Calypso Pipeline, LLC and consisted of a gasification unit on the Grand Bahama Island with a pipeline extending from the facilities to Broward County, near Port Everglades. Tractabel is now doing business as Suez.

# COAL

## Supply and Price

The reporting utilities forecasted coal prices in nominal dollars on a delivered basis. Therefore, there are differences in the forecasted prices depending on the location of the particular utility's coal plant and the mode of transportation. The forecasts use existing long-term contract prices and estimates of spot market prices.

The reporting utilities generally expect stable coal prices, minimally rising at an average annual growth rate of 0.5% during the planning horizon. Demand increases due to new coal-fired units entering commercial service normally provide upward pressure on coal prices, as do higher export levels and rising mining costs. However, ample supplies of domestic coal, and increased use of imported coal, are expected to mitigate upward price trends. Several Florida utilities import coal from Colombia and Venezuela. Current coal prices are high relative to the past five years, which in turn should provide mine operators an incentive to raise production. Increased supply from the Powder River Basin and Illinois Basin, as well as imports, are expected to moderate coal price increases over the planning horizon.

In its Annual Energy Outlook for 2006, the U.S. Energy Information Administration (EIA) expects a slight decrease in average mine mouth prices during the period 2010 to 2015. This decrease is the result of production shifting away from high-cost Central Appalachian coal. EIA notes the increase in coal generating units and generally confirms the stable, slightly increasing coal prices forecasted by the reporting utilities.

Several reporting utilities burn a mix of coal and petroleum coke (petcoke), which is a byproduct of petroleum refining. FPL is considering using petroleum coke in its planned coal units. The demand for petcoke should grow with the increase in the number of coal units constructed. However, refinery capacity is expected to heighten in the Gulf Coast area and the Caribbean Basin, which should result in more supplies. Utility forecasts suggest that petcoke prices will be stable.

## Transportation

In recent years, the Commission has observed that Florida's electric utilities have projected delivered coal prices to increase at lower rates than natural gas prices. As this forecasted gap grew, utilities have become more likely to build coal-fired units to meet incremental load. However, one factor that may limit the amount of new coal-fired generation is the high cost borne by utilities to transport coal from the mine to the generating plant. In part, the Commission can attribute these high delivery costs to the distance between Florida and the coal-producing regions of this country and the world. Additionally, rail transportation congestion is a contributor. As railroads expand tracks to alleviate the problem, transportation costs will rise since the railroads will include returns on these expansions in rates. Some reporting utilities -- GRU, OUC, and SEC -- depend entirely on rail for coal transport. TECO relies solely on waterborne transportation for the Big Bend site. Utilities that rely on both transportation modes can reduce costs. A competitive market for coal transportation and delivery, or lack thereof, will have a direct impact on the costs that utilities incur to produce coal-fired generation.

Over the planning horizon, EIA sees periodic bottlenecks for railroads transporting western coal to the Eastern U.S. Though EIA sees increasing transportation rates, it forecasts a decrease in average cost because distances will be shorter. EIA forecasts that many new coal-fired plants will be constructed closer to mines.

Under its contract with the CSX railroad, OUC has the ability to ship coal from the Port of Tampa to OUC's Stanton Energy Center. Potentially, a combination of ocean transport with short-haul rail transport can reduce delivered MMBtu costs. The Commission believes that, for utilities with generating plants at interior sites, the ability to get short-haul rail transport contracts is an important factor for reducing the costs of delivered coal over the planning horizon.

## **OIL**

### **Supply and Price**

For the planning period, OPEC countries are expected to gain market share over non-OPEC countries. By 2012, seven countries are expected to account for 50% of world crude oil production. Based on announced exploration and production projects, worldwide oil supplies should increase through 2012.

Crude oil prices should increase with the projected 3% annual global economic growth. Oil prices depend on global economic growth, other competing energy developments, and geopolitics. Platt's, an energy information service, states there will always be a geopolitical risk premium in oil prices. New supplies through 2012 may moderate price increases but, as OPEC gains market share, oil prices are expected to increase at a higher rate.

Several Florida electric utilities currently make significant use of residual (#6 or heavy) oil for generation. The companies provided price forecasts showing nominal delivered prices for residual fuel oil, typically in three categories based on sulfur content. Expected growth in refinery capacity in the Gulf Coast area and the Caribbean Basin should increase available supplies of residual fuel oil. The reporting utilities generally forecast slightly declining residual oil prices through 2010, after which time prices are expected to slightly rise. Overall, prices are expected to decline at an average annual growth rate of -0.9% during the planning horizon.

Florida electric utilities also use distillate (#2 or distillate) oil as a back-up fuel for natural gas plants that are dual-fueled and as a starter fuel for coal plants. The state's utilities do not use significant amounts of distillate oil due to its relatively high price.

## **NUCLEAR**

### **Supply and Price**

The long-term outlook for nuclear fuel supply and price is currently influenced by the following factors:

- Aging facilities for uranium milling, conversion, and enrichment
- Lack of excess capacity
- Lack of supply diversification at processing facilities

- Potential regulatory changes and increased security requirements
- Number and timing of the start-up of new nuclear plants
- Number and timing of the start-up of new mines and milling facilities
- Performance of processing plants

Traditionally, nuclear fuel prices have been very stable. However, based on the above factors, the two utility owners of nuclear units in Florida (FPL and PEF) forecast nuclear fuel prices to increase at an average annual growth rate of 2.3% during the planning horizon. The magnitude of this upward trend is practically unnoticed compared to price fluctuations apparent in some other fuels. An additional feature of industry pricing is that customers depend increasingly on long-term contracts, with terms out to five years, for uranium conversion, enrichment and fabrication.

## **Waste Disposal**

Spent nuclear fuel disposal is a primary concern for electric utilities nationwide. The U.S. DOE has been collecting a 0.1 cents/KWh fee on nuclear generation to finance the management and disposal of spent nuclear fuel. Nationwide, ratepayers pay nearly \$600 million annually into the DOE's Nuclear Waste Fund. FPL and PEF ratepayers pay a combined total of nearly \$25 million per year into the fund. However, the DOE has yet to begin accepting spent nuclear fuel, and utilities nationwide may incur significant costs to build more on-site spent fuel storage capacity. If the DOE does not remove spent nuclear fuel from on-site storage facilities, as many as 80% of the spent fuel pools nationwide could reach capacity by 2010.

The Commission is involved in resolving this issue on a number of fronts. Through direct contact with Florida's Congressional delegation and the Governor's Washington Office, as well as through our affiliations with the National Association of Regulatory Utility Commissioners (NARUC) and the Nuclear Waste Strategy Coalition, the Commission continually raises this issue on behalf of millions of Florida consumers who have paid for performance that was promised but not timely executed. Our efforts thus far have focused on: protecting the Nuclear Waste Fund to ensure that it will be used as intended (for the removal and disposal of spent nuclear fuel); ensuring that a permanent disposal facility for spent nuclear fuel is constructed and operational; and supporting litigation against the federal government for damages associated with its delayed performance per contracts signed with nuclear-generating utilities.

## 7. STATE, REGIONAL, AND LOCAL AGENCY REVIEW

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Pursuant to the requirements of Section 186.801, Florida Statutes, the Commission solicits comments from state, regional, and local planning agencies on the Ten-Year Site Plans regarding various issues of concern. These comments focus primarily on potential conflicts with natural resources and growth management policies. The following pages contain a summary of the comments received from the review agencies.

### **Florida Municipal Power Agency**

Florida Department of Environmental Protection - FMPA's Ten-Year Site Plan is adequate for planning purposes.

### **Florida Power & Light Company**

Florida Department of Environmental Protection - FPL's Ten-Year Site Plan is adequate for planning purposes.

Central Florida Regional Planning Council - Much of the Central Florida region is within the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. New permits for ground water use within the SWUCA will be difficult to obtain and cannot be assumed. Water resource allocation is now highly competitive. Projected water use and ground water withdrawals, have become a critical element in land use planning.

East Central Florida Regional Planning Council - The proposed projects in FPL's Ten-Year Site Plan are consistent with the Council's Strategic Regional Policy Plan.

South Florida Regional Planning Council - FPL's Ten-Year Site Plan is generally compatible with goals and policies of the Council's Strategic Regional Policy Plan. Consideration of ultra low sulfur diesel as an alternative backup fuel is a positive step since it will further minimize air emissions of hazardous pollutants. Additional transmission lines in the region, located in existing easements, are necessary infrastructure for the economic growth of the region, and are not a subject of concern regarding the goals and policies of the Council's Strategic Regional Policy Plan. FPL has balanced conservation measures with expansion of energy-generating facilities.

Southwest Florida Regional Planning Council - FPL's Identification of the Ft. Myers site as a potential site for expansion is regionally significant and consistent with regional goals with respect to the provision of critical power generation capabilities in the region that will assure continued economic growth and the citizens' well-being.

Treasure Coast Regional Planning Council - FPL's Ten-Year Site Plan is inconsistent with the Council's Strategic Regional Policy Plan. Regional Goal 9.1 calls for decreased vulnerability of the region to fuel price increases and supply interruptions. The Council recognizes the need for fuel diversity to accomplish this goal, but selecting coal as a fuel source for a new power plant is not consistent with Regional Strategy 9.1.1, which is to reduce the Region's reliance on fossil fuels.



The Council urges FPL and the State of Florida to continue developing new programs to: (1) reduce the reliance on coal and oil as future energy sources; (2) increase conservation activities to offset the need to construct new power plants; and (3) increase the reliance on photovoltaic systems to produce electricity. The complete costs of burning fossil fuels, such as the costs to prevent environmental pollution and costs to the health of the citizens, need to be considered in evaluating these systems. The state should amend the regulatory framework to provide financial incentives for the power producers and the customers to increase conservation measures and to rely largely on clean alternative energy resources.

South Florida Water Management District - The potential Andytown plant site, an existing substation site, is located within the footprint of the Broward County Water Preserve Area 3A/3B Seepage Management Area (SMA). The 3A/3B SMA is one of the Acceler8 projects being implemented by the State of Florida. This project is also identified in the Comprehensive Everglades Restoration Plan (CERP). It is currently being implemented through a State and Federal partnership between the U.S. Army Corps of Engineers and the District, with the District acting as the local sponsor for the project. Project purposes include moderation of fluctuating water levels within the 3A/3B SMA and Water Conservation area 3, leading to ecological restoration of this area of the historical Everglades. Consequently, the District is actively working with FPL to identify an alternate site or develop a site design that does not adversely impact the State's ability to implement this important Acceler8/CERP project.

Southwest Florida Water Management District - The Manatee site is located in the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. Salt water intrusion, lowered lake levels, and reduced stream flows are due in part from past groundwater withdrawals. FPL's Ten-Year Site Plan includes information regarding the Manatee site's use of storm water, treated wastewater, recovered service water, makeup water from the Little Manatee River, and three standby wells. Further, FPL is evaluating alternative sources for use at the site. The District appreciates FPL's efforts to recognize the importance of the use of sources other than groundwater and conserving water.

St. Johns River Water Management District - Prior to proceeding with any improvements or expansions for the eight potential plant sites, FPL should determine and evaluate the actual water demands, the water availability from local utilities, and the potential impacts. When locating sites, FPL should not only take into account the availability of water to meet the demands of the facility, but should also consider potential impacts due to facility water use, as well as the cumulative impacts of locating a facility at a given location.

## **Gainesville Regional Utilities**

Florida Department of Environmental Protection - GRU's Ten-Year Site Plan is adequate for planning purposes.

## **Gulf Power Company**

Florida Department of Environmental Protection - Gulf's Ten-Year Site Plan is adequate for planning purposes.

Apalachee Regional Planning Council - Gulf's Ten-Year Site Plan is consistent with the Council's Strategic Regional Policy Plan. The Council recommends that Gulf include a preliminary assessment of the Scholz site's hydrogeology and groundwater resources to demonstrate that the site is suitable for future plant additions.

West Florida Regional Planning Council - Gulf's Ten-Year Site Plan is consistent with the Council's Strategic Regional Policy Plan.

## **JEA**

Florida Department of Environmental Protection - JEA's Ten-Year Site Plan is adequate for planning purposes.

St. Johns River Water Management District - Has no comment on JEA's Ten-Year Site Plan.

Jacksonville-Duval County - JEA's Ten-Year Site Plan is a suitable planning document.

## **City of Lakeland**

Florida Department of Environmental Protection - LAK's Ten-Year Site Plan is adequate for planning purposes.

Central Florida Regional Planning Council - Much of the Central Florida region is within the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. New permits for ground water use within the SWUCA will be difficult to obtain and cannot be assumed. Water resource allocation is now highly competitive. Projected water use and ground water withdrawals, have become a critical element in land use planning.

Southwest Florida Water Management District - LAK does not plan any new generating units in the District.

## **Orlando Utilities Commission**

Florida Department of Environmental Protection - OUC's Ten-Year Site Plan is adequate for planning purposes.

East Central Florida Regional Planning Council - The proposed projects in OUC's Ten-Year Site Plan are consistent with the Council's Strategic Regional Policy Plan.

South Florida Water Management District - Has no comment on OUC's Ten-Year Site Plan.

St. Johns River Water Management District - Has no comment on OUC's Ten-Year Site Plan.

## **Progress Energy Florida**

Florida Department of Environmental Protection - PEF's Ten-Year Site Plan is adequate for planning purposes.

Central Florida Regional Planning Council - Much of the Central Florida region is within the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. New

permits for ground water use within the SWUCA will be difficult to obtain and cannot be assumed. Water resource allocation is now highly competitive. Projected water use and ground water withdrawals, have become a critical element in land use planning.

East Central Florida Regional Planning Council - The proposed projects in PEF's Ten-Year Site Plan are consistent with the Council's Strategic Regional Policy Plan.

Tampa Bay Regional Planning Council - Proposed changes to the Polk site will have a net positive impact on air quality and water quality in, and surrounding, the Tampa Bay region. PEF's Ten-Year Site Plan is consistent with the Council's Strategic Regional Policy Plan.

Withlacoochee Regional Planning Council - PEF's Ten-Year Site Plan is consistent with regional goals relating to energy use, air quality, economic development, and efficient movement of goods and services within and through the Withlacoochee region.

South Florida Water Management District - Has no comment on PEF's Ten-Year Site Plan.

Southwest Florida Water Management District - PEF's Ten-Year Site Plan includes no information regarding potential additional water use, future demand, or sources to meet those demands for the Bartow and Crystal River site or the unsited planned additional units. Therefore, the document does not address the essential need to plan for future water supplies to serve the needs of the planned expansions. Although PEF has not planned additional capacity for the Anclote site, the site is located in the Northern Tampa Bay Water Use Caution Area, where water resources are of great concern due to impacts resulting from historic consumptive use.

St. Johns River Water Management District - Actual water demands need to be determined and potential impacts should be evaluated prior to proceeding with any plant improvements or expansions.

Citrus County - PEF's Ten-Year Site Plan does not conflict with natural resources or growth management policies.

Volusia County - The County has no objection to PEF's Ten-Year Site Plan.

## **Seminole Electric Cooperative**

Florida Department of Environmental Protection - SEC's Ten-Year Site Plan is adequate for planning purposes.

Central Florida Regional Planning Council - Much of the Central Florida region is within the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. New permits for ground water use within the SWUCA will be difficult to obtain and cannot be assumed. Water resource allocation is now highly competitive. Projected water use and ground water withdrawals, have become a critical element in land use planning.

Southwest Florida Water Management District - The Payne Creek site is located in the SWUCA. SEC's Ten-Year Site Plan includes no information regarding potential additional water use, future demand, or sources to meet those demands for the Payne Creek site or the unsited planned

additional units. Therefore, the document does not address the essential need to plan for future water supplies to serve the needs of the planned expansions. SEC should recognize the importance of the use of sources other than groundwater and conserving water, and reflect this in future Ten-Year Site Plan filings.

St. Johns River Water Management District - Has no comment on SEC's Ten-Year Site Plan.

## **City of Tallahassee**

Florida Department of Environmental Protection - TAL's Ten-Year Site Plan is adequate for planning purposes.

Apalachee Regional Planning Council - TAL's Ten-Year Site Plan is consistent with the Council's Strategic Regional Policy Plan.

Leon County - There appears to be nothing in TAL's Ten-Year Site Plan that would be considered currently inconsistent with the Tallahassee - Leon County Comprehensive Plan.

## **Tampa Electric Company**

Florida Department of Environmental Protection - TECO's Ten-Year Site Plan is adequate for planning purposes.

Central Florida Regional Planning Council - Much of the Central Florida region is within the Southern Water Use Caution Area (SWUCA), where water resources are of great concern. New permits for ground water use within the SWUCA will be difficult to obtain and cannot be assumed. Water resource allocation is now highly competitive. Projected water use and ground water withdrawals, have become a critical element in land use planning.

Tampa Bay Regional Planning Council - The Council, Hillsborough County, and Manatee County should be notified of any future action related to proposed generating units and related transmission lines. TECO's Ten-Year Site Plan is consistent with the Council's Strategic Regional Policy Plan.

Southwest Florida Water Management District - The Polk site is located in the SWUCA. TECO's Ten-Year Site Plan includes no information regarding potential additional water use, future demand, or sources to meet those demands for the Polk site or the unsited planned additional units. Therefore, the document does not address the essential need to plan for future water supplies to serve the needs of the planned expansions. TECO should recognize the importance of the use of sources other than groundwater and conserving water, and reflect this in future Ten-Year Site Plan filings.