TREASURE COAST REGIONAL PLANNING COUNCIL

M E M O R A N D U M

To: Council Members AGENDA ITEM 9

From: Staff

Date: June 19, 2015 Council Meeting

Subject: Florida Power & Light Company Ten Year Power Plant Site Plan 2015-2024

Introduction

Each year every electric utility in the State of Florida produces a ten year site plan that includes an estimate of future electric power generating needs, a projection of how those needs will be met, and disclosure of information pertaining to the utility's preferred and potential power plant sites. The Florida Public Service Commission (FPSC) has requested that Council review the most recent ten year site plan prepared by Florida Power & Light Company (FPL).

The attached report was prepared to summarize FPL's plans for future power generation and provide comments for transmittal to the FPSC. The report concludes that the region and all of south Florida continue to remain vulnerable to fuel price increases and supply interruptions, because of the continued heavy reliance on only two primary fuel types, natural gas and nuclear fuel. Council urges FPL and the State of Florida to continue developing new programs to: 1) reduce the reliance on fossil fuels as future energy sources; 2) increase conservation activities to offset the need to construct new power plants; and 3) increase the reliance on renewable energy sources to produce electricity.

Recommendation

Council should approve the attached report and authorize its transmittal to the Florida Public Service Commission.

Attachment

TREASURE COAST REGIONAL PLANNING COUNCIL

Report on the

Florida Power & Light Company Ten Year Power Plant Site Plan 2015-2024

June 19, 2015

Introduction

Each year every electric utility in the State of Florida produces a ten year site plan that includes an estimate of future electric power generating needs, a projection of how those needs will be met, and disclosure of information pertaining to the utility's preferred and potential power plant sites. The Florida Public Service Commission (FPSC) has requested that Council review the most recent ten year site plan prepared by Florida Power & Light Company (FPL). The purpose of this report is to summarize FPL's plans for future power generation and provide comments for transmittal to the FPSC.

Summary of the Plan

The plan indicates that total summer peak demand is expected to grow by 15.0 percent from 23,286 megawatts (MW) in 2015 to 26,771 MW in 2024. During the same period, FPL is expecting to reduce electrical use through demand side management programs, which include a number of conservation, energy efficiency, and load management initiatives. FPL's demand side management programs are expected to grow by 22.5 percent from 1,951 MW in 2015 to 2,389 MW in 2024. After FPL's demand side management efforts are factored in, FPL will still require additional capacity from conventional power plants to meet future electrical demand (Exhibit 1). FPL is proposing to add a total of about 2,767 MW of summer capacity to its system from 2015 to 2024. FPL plans to obtain additional electricity through: 1) power purchases from qualifying facilities, utilities, and other entities; 2) upgrades to existing facilities; 3) modernization of existing FPL facilities; and 4) construction of new generating units. Major additions of new generating capacity are as follows:

- 2016 – place in service the Port Everglades Next Generation Clean Energy Center (1,237 MW) in the City of Hollywood;
- 2017 – place in service five new combustion turbines to replace gas turbines at the Lauderdale site (1,155 MW) in Broward County;
- 2019 – place in service the Okeechobee Next Generation Clean Energy Center (1,622 MW) in Okeechobee County; and
- 2023 – place in service a new combined cycle power plant (1,317 MW) (not sited).

Based on the projection of future resource needs, FPL has identified the following eight preferred sites for future power generating facilities:

1. Port Everglades Plant, Broward County
2. Babcock Ranch Solar Energy Center, Charlotte County

3. Citrus Solar Energy Center, DeSoto County
4. Manatee Solar Energy Center, Manatee County
5. Lauderdale Plant Peaking Facilities, Broward County
6. Fort Myers Plant Peaking Facilities, Lee County
7. Okeechobee Site, Okeechobee County
8. Turkey Point Plant, Miami-Dade County

Also, FPL has identified 3 potential sites for new or expanded power generating facilities. The identification of potential sites does not represent a commitment by FPL to construct new power generating facilities at these sites. The potential sites include:

1. Hendry County
2. Martin County
3. Putnam Plant Site, Putnam County

The ten year site plan describes six factors that have impacted or could impact FPL's resource plan. These factors include:

1. Maintaining/enhancing fuel diversity in the FPL system.
2. Maintaining a balance between load and generating capacity in southeastern Florida, particularly in Miami-Dade and Broward counties.
3. Maintaining an appropriate balance of demand side management and supply resources to achieve system reliability.
4. The impact of federal and state energy efficiency codes and standards on FPL's projected demand and energy load forecasts.
5. The increasing cost competitiveness of utility-scale photovoltaic (PV) facilities due to the continued decline of the cost of PV modules.
6. New environmental regulations, particularly from the U.S. Environmental Protection Agency's proposed Clean Power Plan issued in June 2014.

Evaluation

One of the main purposes of preparing the ten year site plan is to disclose the general location of proposed power plant sites. The FPL ten year site plan identifies no preferred sites and one potential site for future power generating facilities in the Treasure Coast Region (Exhibit 2). The only potential site identified in the Treasure Coast Region is Martin County. The plan indicates FPL is currently evaluating potential sites in Martin County for a future PV facility. No specific locations have been selected at this time.

One preferred site, the Okeechobee site is located in northeastern Okeechobee County directly adjacent to Indian River County. The ten year site plan indicates that FPL owns 2,800 acres at this site. FPL plans to use approximately 200 acres of this land for development of a natural gas-fired combined cycle unit at this site. Natural gas is expected to be supplied by an existing pipeline as well as a future pipeline. The Florida Southeast Connection pipeline project is currently in the process of obtaining approval from the Federal Energy Regulatory Commission. The ten year site plan also indicates that the Okeechobee site is one of the most likely sites to be

used for future large-scale solar using PV generation facilities. FPL representatives have indicated that they are coordinating with Indian River County staff regarding possible impacts to the county.

A change in the 2015 ten year site plan is that FPL no longer has plans to acquire the City of Vero Beach's electric system. In early 2013, FPL came to an agreement with the City of Vero Beach to purchase the city's electric utility system. However, lack of progress among negotiating parties has resulted in uncertainty regarding whether FPL will provide electric load to the city. As a result, the 2015 ten year site plan does not include electric service to Vero Beach in its load forecast.

The ten year site plan indicates that fossil fuels will be the primary source of energy used to generate electricity by FPL during the next 10 years (Exhibit 3). The plan indicates fossil fuels will account for 70.3 percent (3.5 percent from coal, 0.1 percent from oil, and 66.7 percent from natural gas) of FPL's electric generation in 2015. The plan predicts fossil fuels will account for 74.9 percent (2.3 percent from coal, 0.1 percent from oil, and 72.5 percent from natural gas) of FPL's electric generation in 2024. During the same period, nuclear sources are predicted to change from 23.2 percent in 2015 to 21.5 percent in 2024. Solar sources are predicted to increase from 0.2 percent in 2015 to 0.5 percent in 2024.

Renewable Energy

This is the first FPL 10 year site plan to indicate that the generation of solar energy is now competitive on FPL's system at specific sites. FPL has concluded from its research programs that utility-scale PV applications are the most economical way to utilize solar energy. Their analysis suggests that utility-scale PV is at least twice as economical on an installed $/kw basis compared to distributed PV systems. Utility-scale PV facilities have become cost competitive due to the continued decline of the cost of PV modules. However, utility-scale PV is only cost effective at specific sites that have advantages at this time. In future years, other sites may become cost-effective and added to the plan, especially if PV costs continue to decline. FPL plans to pursue solar energy in three ways, including 1) utility-scale PV facilities; 2) a community-based solar partnership pilot program; and 3) a commercial and industrial partnership pilot program. These programs are described below.

Utility-scale PV Facilities. FPL is planning to add three new PV facilities by the end of 2016. These are the Babcock Ranch Solar Energy Center in Charlotte County, Citrus Solar Energy Center in DeSoto County, and Manatee Solar Energy Center in Manatee County. Each of the PV facilities will be approximately 74.5 MW. These new facilities will be in addition to the existing Martin Next Generation Solar Energy Center (75 MW) in Martin County, the DeSoto Next Generation Solar Energy Center (25 MW) in DeSoto County, and the Space Coast Next Generation Solar Energy Center (10 MW) in Brevard County. The new facilities will increase FPL's solar generation capacity from its current 110 MW to approximately 333 MW. The economics of these projects are aided by the fact that the sites are located close to existing electric infrastructure, including transmission lines and electric substations, and by the fact that bringing these solar facilities into service prior to the end of 2016 will allow the facilities to take advantage of investment tax credits that are scheduled to be reduced in 2017.

Community-based Solar Partnership Pilot Program. FPL is introducing a voluntary solar pilot program to provide customers with an additional and flexible opportunity to support development of solar power in Florida. This pilot program will provide all customers the opportunity to support the use of solar energy at a community scale and is designed for customers who do not wish, or are not able, to place solar equipment on their roof. Customers can participate in the program through voluntary contributions of $9/month starting in mid-2015. The voluntary contribution is required because the cost per MW to construct this type of distributed generation scale facility is approximately double the cost of utility scale facilities. Also, the operation and maintenance costs of these facilities are expected to be three times as much as for utility-scale PV systems.

The first 200 kW PV projects under this pilot program will be built by FPL in the first half of 2015 at locations in the City of West Palm Beach and in Broward County. Additional PV facilities under this program will be built when the projected voluntary contributions are sufficient to cover on-going program costs without increasing electric rates for all customers. The locations of additional PV facilities have not yet been determined. FPL estimates that the project could result in approximately 2 MW of community-located PV installations supported by over 10,000 customer participants by the end of the three-year pilot program.

Commercial and Industrial Partnership Pilot Program. This pilot program will be conducted in partnership with interested commercial and industrial customers over about a five year period. Limited investments will be made in PV facilities located at customer sites in selected geographic areas of FPL's service territory. The objective of this portion of the pilot program is to examine the effect of high penetration of distributed generation PV on FPL's distribution system and to determine how best to address any problems that may be identified. FPL will site approximately 5 MW of PV facilities in areas where distributed generation PV already exists to better study feeder loading impacts. PV installations at Daytona International Speedway and Florida International University's (FIU) Engineering Center campus in West Miami-Dade County have been selected based on their interconnection with targeted circuits. In addition, this pilot program will also install a battery storage facility of approximately 1 MW capacity. A multi-year research partnership agreement has been executed with FIU to assist FPL in research and development of battery storage.

Conclusion

The region and all of south Florida continue to remain vulnerable to fuel price increases and supply interruptions, because of the continued heavy reliance on only two primary fuel types, natural gas and nuclear fuel. The 2015 ten year site plan does project an increase in the generation of renewable energy, with the addition of three new solar PV facilities by the end of 2016. However, Council remains concerned that the ten year site plan does not project a significant increase in the use of renewable energy during the next decade. During the 10-year planning horizon, the use of natural gas is projected to rise from 66.7 percent to 72.5 percent, while solar is projected to rise from 0.2 percent to 0.5 percent. Council recommends that FPL adopt a more balanced portfolio of fuels that includes a significant component of renewable energy sources. Council continues to encourage the Florida Legislature to adopt a Renewable

Portfolio Standard in order to provide a mechanism to expand the use of renewable energy in Florida.

Council supports FPL's existing and proposed solar projects and encourages FPL to develop additional projects based on renewable resources. FPL should consider developing other programs to install, own, and operate PV units on the rooftops of private and public buildings. The shift to rooftop PV systems distributed throughout the area of demand could reduce reliance on large transmission lines and reduce costs associated with owning property; purchasing fuel; and permitting, constructing, and maintaining a power plant. Another advantage of this strategy is that PV systems do not require water for cooling. The incentive for owners of buildings to participate in this strategy is they could be offered a reduced rate for purchasing electricity. Also, FPL should consider expanding solar rebate programs for customers who install PV and solar water heating systems on their homes and businesses. These rebates should be coordinated with other programs, such as the Solar and Energy Loan Fund (SELF) and Property-Assessed Clean Energy (PACE) programs, to provide participants in these programs the option of receiving a rebate. SELF is a low interest rate loan program that provides financing for clean energy solutions. PACE programs allow property owners to finance energy retrofits by placing an additional tax assessment on the property in which the investment is made.

Council urges FPL and the State of Florida to continue developing new programs to: 1) reduce the reliance on fossil fuels as future energy sources; 2) increase conservation activities to offset the need to construct new power plants; and 3) increase the reliance on renewable energy sources 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. State legislators should amend the regulatory framework to provide financial incentives for the power providers and the customers to increase conservation measures and to rely to a greater extent on renewable energy sources. Also, the state should reconsider the currently used test for energy efficiency and choose a test that will maximize the potential for energy efficiency and renewable energy sources. The phasing in of PV and other locally available energy sources will help Florida achieve a sustainable future.

Attachments

EXHIBIT 1

Table ES-1: Projected Capacity & Firm Purchase Power Changes

Year *	Projected Capacity & Firm Purchase Power Changes	Summer MW	Date	Summer Reserve Margin **
2015	Turkey Point	(22)	January-15	
	Fort Myers	(5)	January-15	
	Lauderdale GT	(8)	January-15	
	Lauderdale GT	(8)	January-15	
	Port Everglades GT	(8)	January-15	
	Palm Beach SWA - additional firm capacity	70	June-15	
	Martin	(3)	June-15	
	Scherer	(9)	June-15	
	Total of MW changes to Summer firm capacity:	6		26.7%
2016	Cedar Bay -PPA retirement	(250)	October-15	
	Cedar Bay -FPL Ownership	250	October-15	
	UPS Replacement	(928)	December-15	
	Fort Myers 2	37	June-16	
	Fort Myers GTs 1 -10	(540)	June-16	
	Lauderdale GTs 1- 12	(412)	June-16	
	Martin	2	June-16	
	Port Everglades Next Generation Clean Energy Center	1,237	June-16	
	Sanford	3	June-16	
	Total of MW changes to Summer firm capacity:	(601)		21.3%
2017	Babcock Solar Energy Center (Charlotte) ***	38	September-16	
	Citrus Solar Energy Center (DeSoto) ***	38	September-16	
	Manatee Solar Energy Center ***	38	September-16	
	Lauderdale GTs 13- 22	(343)	October-16	
	Turkey Point Unit 1 synchronous condenser	(398)	October-16	
	Port Everglades GTs	(412)	December-16	
	Cedar Bay	(250)	December-16	
	Lauderdale GTs - 5 CT	1,155	December-16	
	Fort Myers GTs - 2 CT	462	December-16	
	Fort Myers 3A&B - upgraded	50	December-16	
	Martin	2	January-17	
	Sanford	1	January-17	
	Sanford	4	January-17	
	Turkey Point #5	23	June-17	
	Manatee	4	June-17	
	Total of MW changes to Summer firm capacity:	416		20.9%
2018	Unspecified Short-Term Purchase	207	May-18	
	Turkey Point Nuclear Unit #3	20	June-18	
	Turkey Point Nuclear Unit #5	3	June-18	
	Total of MW changes to Summer firm capacity:	227		20.0%
2019	Unspecified Short-Term Purchase	(207)	September-18	
	SJRPP suspension of energy	(382)	2nd Quarter	
	Turkey Point Nuclear Unit #4	20	June-19	
	Okeechobee Next Generation Clean Energy Center ****	1,622	June-19	
	Total of MW changes to Summer firm capacity:	1,053		22.8%
2020	---	---	---	
	Total of MW changes to Summer firm capacity:	0		21.3%
2021	Eco-Gen PPA firm capacity	180	January-21	
	Cape Next Generation Clean Energy Center	88	June-21	
	Total of MW changes to Summer firm capacity:	268		22.0%
2022	Riviera Beach Next Generation Clean Energy Center	86	June-22	
	Total of MW changes to Summer firm capacity:	86		20.9%
2023	Unalted CC	1,317	June-23	
	Total of MW changes to Summer firm capacity:	1,317		24.4%
2024	---	---	---	
	Total of MW changes to Summer firm capacity:	0		22.2%

* Year shown reflects when the MW change begins to be accounted for in Summer reserve margin calculations.

** Winter Reserve Margins are typically high than Summer Reserve Margin. Winter Reserve Margin are shown on Schedule 7.2 in Chapter II.

*** MW values shown represent the firm capacity assumption for each 74.5 MW nameplate (AC) PV facility.

**** The Okeechobee generating is FPL's best self-build option for 2019. During 2015 it will be evaluated versus

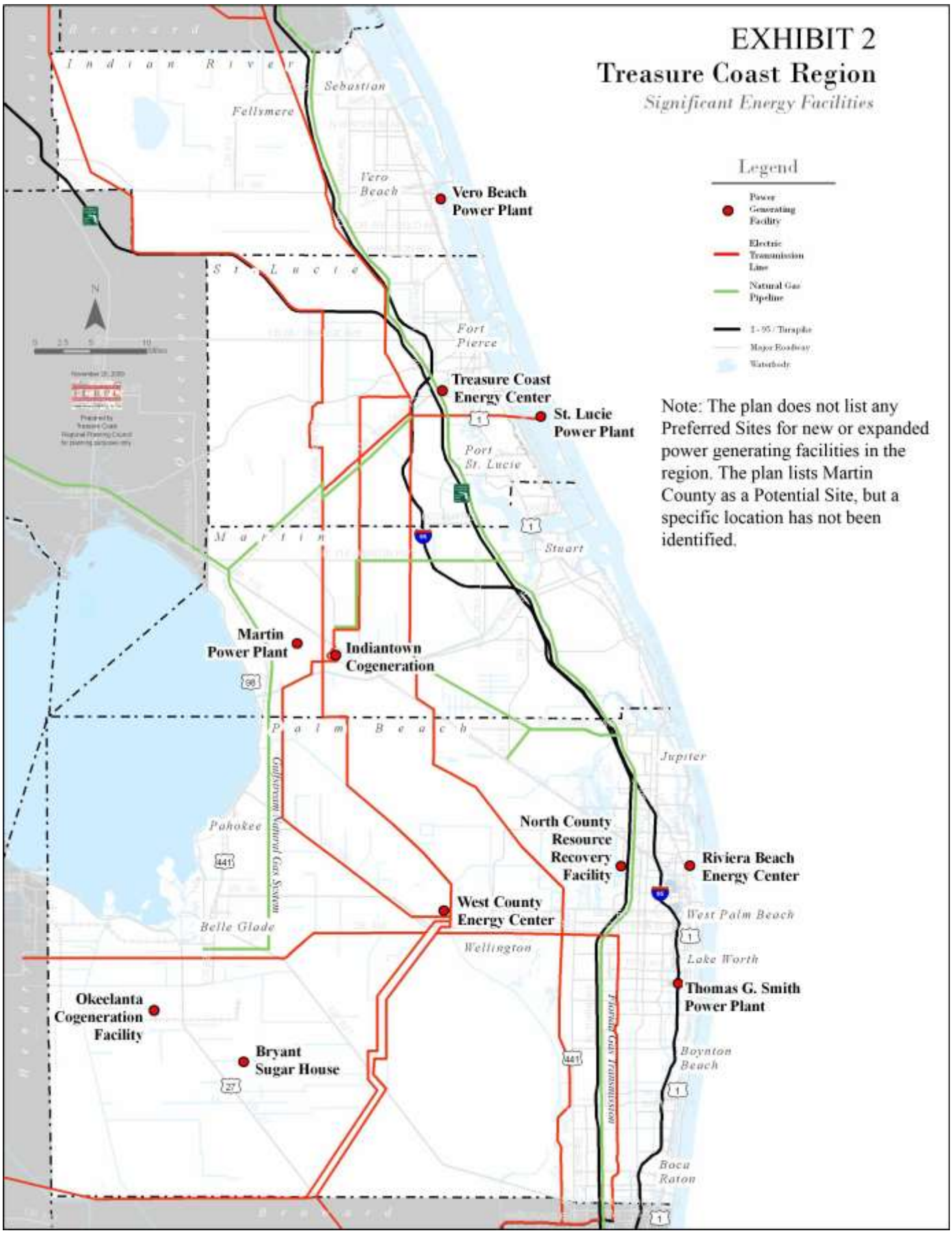
EXHIBIT 2
Treasure Coast Region
Significant Energy Facilities
Legend
Power Generating Facility
Electric Transmission Line
Natural Gas Pipeline
I-95 / Turnpike
Major Roadway
Waterbody
Note: The plan does not list any Preferred Sites for new or expanded power generating facilities in the region. The plan lists Martin County as a Potential Site, but a specific location has not been identified.
Vero Beach Power Plant
Treasure Coast Energy Center
St. Lucie Power Plant
Martin Power Plant
Indiantown Cogeneration
North County Resource Recovery Facility
Riviera Beach Energy Center
West County Energy Center
Thomas G. Smith Power Plant
Okeelanta Cogeneration Facility
Bryant Sugar House
Indian River
St. Lucie
Martin
Palm Beach
Sebastian
Fellsmere
Vero Beach
Fort Pierce
Port St. Lucie
Stuart
Jupiter
Pahokee
Belle Glade
Wellington
West Palm Beach
Lake Worth
Boynton Beach
Boca Raton
Gulfstream Natural Gas System
Florida Gas Transmission

EXHIBIT 3

Schedule 6.2
Energy Sources % by Fuel Type

	Energy Source	Units	Actual 1/ 2013	Actual 1/ 2014	Forecasted 2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
(1)	Annual Energy Interchange 2/	%	4.0	4.2	3.0	1.0	0.9	1.0	0.2	0.0	0.0	0.0	0.0	0.0
(2)	Nuclear	%	22.6	23.1	23.2	23.3	22.8	22.7	22.9	22.3	22.1	22.3	21.8	21.5
(3)	Coal	%	5.4	3.9	3.5	3.1	2.7	2.6	2.9	2.4	2.6	2.5	2.5	2.3
(4)	Residual (FO6) -Total	%	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(5)	Steam	%	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(6)	Distillate (FO2) -Total	%	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1
(7)	Steam	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(8)	CC	%	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1
(9)	CT	%	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(10)	Natural Gas -Total	%	67.4	68.2	66.7	69.2	64.0	64.1	69.5	71.7	71.7	71.3	71.9	72.5
(11)	Steam	%	2.2	1.6	1.1	1.0	0.4	0.5	0.8	0.8	0.6	0.7	0.6	0.4
(12)	CC	%	64.8	66.3	65.7	68.1	63.3	63.1	67.5	70.3	70.6	70.0	70.6	71.7
(13)	CT	%	0.4	0.3	0.0	0.1	0.4	0.5	1.1	0.6	0.5	0.6	0.7	0.4
(14)	Solar 3/	%	0.1	0.2	0.2	0.3	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
(15)	PV	%	0.1	0.1	0.1	0.2	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
(16)	Solar Thermal	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
(17)	Other 4/	%	0.4	0.1	3.2	2.8	9.0	9.0	3.9	3.0	3.0	3.1	3.1	3.1
			100	100	100	100	100	100	100	100	100	100	100	100

1/ Source: A Schedules and Actual Data for Next Generation Solar Centers Report
2/ The projected figures are based on estimated energy purchases from SJRPP, the Southern Companies (UPS contract), and other utilities.
3/ Represents output from FPL's PV and solar thermal facilities.
4/ Represents a forecast of energy expected to be purchased from Qualifying Facilities, Independent Power Producers, net of Economy and other Power Sales.