

TREASURE COAST REGIONAL PLANNING COUNCIL

Report on the

Florida Power & Light Company Ten Year Power Plant Site Plan 2016-2025

July 15, 2016

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 9.9 percent from 24,170 megawatts (MW) in 2016 to 26,572 MW in 2025. 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 26.7 percent from 1,842 MW in 2016 to 2,334 MW in 2025. 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 2,989 MW of summer capacity to its system from 2016 to 2025. 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 (1,633 MW) in Okeechobee County; and
- 2024 – 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 seven preferred sites for future power generating facilities:

1. Babcock Ranch Solar Energy Center, Charlotte County
2. Citrus Solar Energy Center, DeSoto County

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

Also, FPL has identified six 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. Alachua County
2. Hendry County
3. Martin County
4. Miami-Dade County
5. Putnam County
6. Volusia County

The ten year site plan describes five 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 forecasted future demand and energy requirements.
5. The increasing cost competitiveness of utility-scale photovoltaic (PV) facilities due to the continued decline of the cost of PV modules and the recent extension of federal tax credits.

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. Natural gas is expected to be supplied by an existing pipeline as well as a future pipeline. The FPSC issued a determination of need order approving this unit on January 19, 2016. The Florida Department of Environmental Protection has recently issued a final order approving certification of this facility. Indian River County was a party to the site certification proceeding and FPL coordinated with Indian River County regarding possible

impacts to the county. The conditions of certification for the new Okeechobee Next Generation Clean Energy Center address impacts to Indian River County related to traffic, traffic impact fees, and emergency services.

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 72.6 percent (3.3 percent from coal, 1.5 percent from oil, and 67.8 percent from natural gas) of FPL's electric generation in 2016. The plan predicts fossil fuels will account for 72.6 percent (2.7 percent from coal, 0 percent from oil, and 69.9 percent from natural gas) of FPL's electric generation in 2025. During the same period, nuclear sources are predicted to change from 23.9 percent in 2016 to 23.1 percent in 2025. Solar sources are predicted to increase from 0.1 percent in 2016 to 1.0 percent in 2025.

Renewable Energy

The 10 year site plan indicates FPL is increasing its efforts to implement cost-effective renewable energy. The factors driving these efforts are: 1) the price of PV modules has declined in recent years; 2) FPL has developed a methodology with which it can assign a firm capacity benefit for meeting FPL's summer peak load to PV; and 3) FPL has concluded from its implementation and analyses of utility-scale PV and PV demand side pilot programs that utility-scale PV applications are the most economical way to utilize solar energy. FPL's efforts to increase use cost-effective renewable energy include the use of utility-scale PV facilities and distributed generation PV pilot programs, which 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. Also, FPL is projecting the addition of another approximately 300 MW of PV that will be added by the year 2021. This will result in an approximate doubling of FPL's PV generation from the 333 MW level by the end of 2016 to approximately 633 MW by 2021. A final determination of the siting of this 300 MW of additional PV has not yet been made.

Distributed Generation PV Pilot Programs. FPL has three types of distributed generation (DG) PV programs. First is the *Community-based Solar Partnership Pilot Program*, which is 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. 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 175 kW of DG PV projects under this pilot program are located 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.

The second type of DG PV program is the *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 primary objective of this program is to examine the effect of high penetration of DG PV on FPL's distribution system and to determine how best to address any problems that may be identified. FPL will site approximately 4 MW of PV facilities on circuits that experience specific loading conditions to better study impacts. PV installations at Daytona International Speedway, Daytona Kennel Club and Poker Room, and Florida International University's Engineering Center campus in West Miami-Dade County have been selected based on their interconnection with targeted circuits.

The third type of DG PV program is the *Battery Storage Pilot Program*. The purpose of this pilot program is to demonstrate and test a wide variety of battery storage grid applications. In addition, the pilot program is designed to help FPL learn how to integrate battery storage into the grid. Under this pilot program, FPL is installing a 1.5 MW battery storage system in Miami-Dade County. In addition, a battery storage system of 1.5 MW is also being installed in Monroe County for backup power and voltage support. Several smaller kilowatt-scale systems are also being installed at other locations to study distributed storage reliability applications.

Conclusion

Council is encouraged that FPL will have tripled its solar capacity by building three more 74.5 MW solar energy centers by the end of 2016. The amount of electricity generated by FPL's six solar plants will be the equivalent of 65,000 residential rooftop solar installations. FPL is preparing to build even more large scale solar projects in the next 5 years, while at the same time constructing and operating highly efficient natural gas plants that have decreased dependence on foreign oil and saved energy costs. This has resulted in FPL having the lowest rates of all electric utilities in the State of Florida and among the lowest rates in the nation.

Council recommends that FPL continue to make progress toward adopting a more balanced portfolio of fuels that includes a significant component of renewable energy sources. This is important to reduce vulnerability to fuel price increases and supply interruptions. 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 **
2016	Fort Myers 2	8	January 2016	
	Fort Myers 3A	25	June 2016	
	Martin 4	15	April 2016	
	Martin 8	(5)	March 2016	
	Port Everglades Next Generation Clean Energy Center	1,237	April 2016	
	Total of MW changes to Summer firm capacity:	1,280		22.0%
2017	Babcock Solar Energy Center (Charlotte) ***	38	December 2016	
	Citrus Solar Energy Center (DeSoto) ***	38	December 2016	
	Manatee Solar Energy Center ***	38	December 2016	
	Unspecified Short-Term Purchase	53	April 2016	
	Turkey Point Unit 1 synchronous condenser	(396)	December 2016	
	Port Everglades GTs	(412)	October 2016	
	Cedar Bay	(250)	January 2017	
	Lauderdale GT 1-12	(343)	October 2016	
	Lauderdale GT 13-22	(412)	October 2016	
	Lauderdale GTs - 5 CT	1,155	December 2016	
	Fort Myers - 2 CT	462	December 2016	
	Fort Myers 3B	25	July 2016	
	Fort Myers GT 1- 12	(486)	June 2016	
	Martin 3	27	August 2016	
	Martin 4	13	April 2016	
Martin 8	(5)	March 2016		
Manatee 3	(11)	May 2017		
	Total of MW changes to Summer firm capacity:	(465)		20.0%
2018	Unspecified Short-Term Purchase	324	April 2018	
	Sanford 4	(1)	September 2017	
	Sanford 5	(1)	July 2017	
	Turkey Point Nuclear Unit #5	(15)	January 2018	
	Total of MW changes to Summer firm capacity:	307		20.0%
2019	Turkey Point Nuclear Unit #3	20	Fall 2018	
	Turkey Point Nuclear Unit #4	20	Spring 2019	
	Okeechobee Next Generation Clean Energy Center	1,633	June 2019	
	Total of MW changes to Summer firm capacity:	1,673		24.6%
2020	SJRPP suspension of energy	(382)	4th Qtr 2019	
	Unsiltd Solar (PV)	156	June 2020	
	Total of MW changes to Summer firm capacity:	166		22.2%
2021	Eco-Gen PPA firm capacity	180	January 2021	
	Cape Next Generation Clean Energy Center	88	Spring 2021	
	Total of MW changes to Summer firm capacity:	268		23.0%
2022	Rivera Beach Next Generation Clean Energy Center	86	Spring 2022	
	Total of MW changes to Summer firm capacity:	86		22.5%
2023	---	---	---	
	Total of MW changes to Summer firm capacity:	0		21.2%
2024	Unsiltd CC	1,622	June 2024	
	Total of MW changes to Summer firm capacity:	1,622		26.5%
2025	---	---	---	
	Total of MW changes to Summer firm capacity:	0		24.7%

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

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

*** MW values shown for the PV facilities represent the firm capacity assumptions for the PV facilities.

EXHIBIT 2 Treasure Coast Region *Significant Energy Facilities*

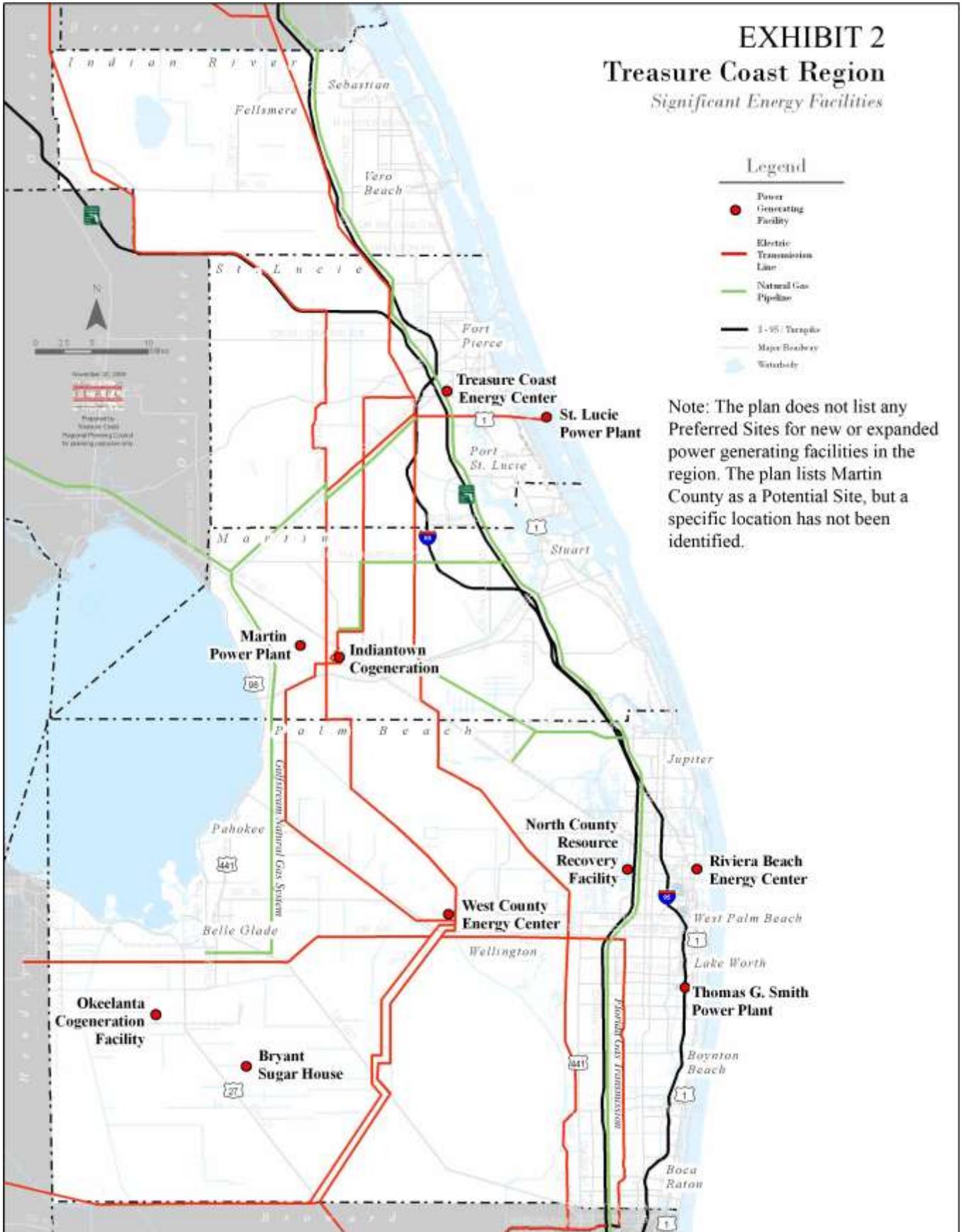


Exhibit 3

Schedule 6.1
Energy Sources % by Fuel Type

Energy Source	Units	Actual ^v				Forecasted								
		2014	2015	2016	2017	2018	2018	2019	2020	2021	2022	2023	2024	2025
(1) Actual Energy Interchange ²	%	4.2	3.9	1.1	0.7	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0
(2) Nuclear	%	23.1	22.0	23.9	23.8	23.6	24.0	23.4	23.2	23.6	23.0	22.9	23.1	
(3) Coal	%	3.9	4.3	3.3	2.3	2.2	2.6	2.4	2.6	2.8	2.7	2.9	2.7	
(4) Residual (FOG) -Total	%	0.2	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(5) Steam	%	0.2	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(6) Dispatchable (FO2) -Total	%	0.1	0.1	1.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
(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	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(9) CT	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(10) Natural Gas -Total	%	68.2	69.9	67.8	70.8	70.7	69.9	71.2	70.2	69.6	69.9	69.9	69.9	
(11) Steam	%	1.5	3.5	1.7	1.5	0.9	0.5	0.3	0.3	0.4	0.4	0.1	0.1	
(12) CC	%	66.3	65.0	65.1	64.6	64.6	64.3	70.7	69.8	69.1	69.3	69.6	69.7	
(13) CT	%	0.3	0.4	0.0	0.4	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	
(14) Solar ³	%	0.2	0.1	0.1	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	
(15) PV	%	0.1	0.1	0.1	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	
(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	%	0.1	-0.6	2.2	2.0	2.1	2.1	1.9	2.6	2.6	3.1	3.2	3.2	
		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 SURPP.

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, etc., net of Economy and other Power Sales.