FPL

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April 1, 2016

-VIA ELECTRONIC FILING-

Carlotta Stauffer, Director
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

RE: Florida Power & Light Company's 2016 Ten Year Power Plant Site Plan

Dear Ms. Stauffer:

Please find enclosed for electronic filing Florida Power & Light Company's 2016-2025 Ten Year Power Plant Site Plan. Per Commission Staff's request, five (5) hard copies also will be provided to your office.

If there are any questions regarding this transmittal, please contact me at (561)304-5170.

Sincerely,

<u>/s/ Kevin I.C. Donaldson</u>
Kevin I.C. Donaldson
Fla. Bar No. 0833401

Enclosure

Ten Year Power Plant Site Plan
2016 – 2025

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Ten Year Power Plant Site Plan

2016-2025

Submitted To:

Florida Public
Service Commission

April 2016

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Overview of the Document

Chapter 186, Florida Statutes, requires that each electric utility in the State of Florida with a minimum existing generating capacity of 250 megawatts (MW) must annually submit a Ten Year Power Plant Site Plan (Site Plan). This Site Plan should include an estimate of the utility's future electric power generating needs, a projection of how these estimated generating needs could be met, and disclosure of information pertaining to the utility's preferred and potential power plant sites. The information contained in this Site Plan is compiled and presented in accordance with Rules 25-22.070, 25-22.071, and 25-22.072, Florida Administrative Code (F.A.C.).

Site Plans are long-term planning documents and should be viewed in this context. A Site Plan contains uncertain forecasts and tentative planning information. Forecasts evolve, and all planning information is subject to change, at the discretion of the utility. Much of the data submitted is preliminary in nature and is presented in a general manner. Specific and detailed data will be submitted as part of the Florida site certification process, or through other proceedings and filings, at the appropriate time.

This Site Plan document is based on Florida Power & Light Company's (FPL's) integrated resource planning (IRP) analyses that were carried out in 2015 and that were on-going in the first Quarter of 2016. The forecasted information presented in this plan addresses the years 2016 through 2025.

This document is organized in the following manner:

Chapter I – Description of Existing Resources

This chapter provides an overview of FPL's current generating facilities. Also included is information on other FPL resources including purchased power, demand side management, and FPL's transmission system.

Chapter II – Forecast of Electric Power Demand

FPL's load forecasting methodology, and the resulting forecast of seasonal peaks and annual energy usage, is presented in Chapter II. Included in this discussion is the projected significant impact of federal and state energy efficiency codes and standards.

Chapter III – Projection of Incremental Resource Additions

This chapter discusses FPL's integrated resource planning (IRP) process and outlines FPL's projected resource additions, especially new power plants, based on FPL's IRP work in 2015 and early 2016. This chapter also discusses a number of factors or issues that either have changed, or may change, the resource plan presented in this Site Plan. Furthermore, this chapter discusses FPL's previous and planned demand side management (DSM) efforts, the projected significant impact of the combined effects of FPL's DSM plans and state/federal energy efficiency codes and standards, FPL's previous and planned renewable energy efforts, projected transmission planning additions, and FPL's fuel cost forecasting processes.

Chapter IV – Environmental and Land Use Information

This chapter discusses environmental information as well as Preferred and Potential site locations for additional electric generation facilities.

Chapter V – Other Planning Assumptions and Information

This chapter addresses twelve (12) "discussion items" which pertain to additional information that is included in a Site Plan filing.

FPL
List of Abbreviations
Used in FPL Forms

Reference	*Abbreviation*	*Definition*
Unit Type	CC	Combined Cycle
	CT	Combustion Turbine
	GT	Gas Turbine
	PV	Photovoltaic
	ST	Steam Unit (Fossil or Nuclear)
Fuel Type	BIT	Bituminous Coal
	FO2	#1, #2 or Kerosene Oil (Distillate)
	FO6	#4,#5,#6 Oil (Heavy)
	NG	Natural Gas
	No	None
	NUC	Uranium
	Pet	Petroleum Coke
	Solar	Solar Energy
	SUB	Sub Bituminous Coal
	ULSD	Ultra - Low Sulfur Distillate
Fuel Transportation	No	None
	PL	Pipeline
	RR	Railroad
	TK	Truck
	WA	Water
Unit/Site Status	L	Regulatory approval pending. Not under construction
	OT	Other
	P	Planned Unit
	T	Regulatory approval received but not under construction
	U	Under construction, less than or equal to 50% Complete
	V	Under construction, more than 50% Complete
Other	ESP	Electrostatic Precipitators

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Executive Summary

Florida Power & Light Company's (FPL's) 2016 Ten Year Power Plant Site Plan (Site Plan) presents FPL's current plans to augment and enhance its electric generation capability (owned or purchased) as part of its efforts to meet FPL's projected incremental resource needs for the 2016 through 2025 time period. By design, the primary focus of this document is on projected supply side additions; *i.e.*, electric generation capability and the sites for these additions. The supply side additions discussed in this document are resources projected to be needed, based on FPL's load forecast, after accounting for FPL's DSM resource additions. DSM Goals for FPL for the time period 2015 through 2024 were set in November 2014 by the Florida Public Service Commission (FPSC). Consequently, the level of DSM additions reflected in the 2016 Site Plan is consistent with these DSM Goals including an extension of that level of DSM in the year 2025. DSM is discussed in Chapters I, II, and III.

In addition, FPL's load forecast accounts for a significant amount of efficiency that results from federal and state energy efficiency codes and standards. The projected impacts of these codes and standards are directly accounted for in FPL's load forecast and are discussed later in this summary and in Chapters II and III.

There are resource planning-related similarities when comparing FPL's 2015 and 2016 Site Plans. There is also one significant resource planning-related difference between the two Site Plans. In addition, there are also a number of factors that either have influenced, or which may influence, FPL's on-going resource planning efforts. These factors could result in future changes to the resource plan presented in this document. A brief discussion of these similarities, differences, and factors is provided below. Additional information regarding these topics is presented in Chapters II and III.

I. Similarities Between the 2016 and 2015 Site Plans:

There are four (4) important resource planning-related similarities between the 2016 and 2015 Site Plans. These similarities reflect FPL's continuing effort to modernize its fleet of generating units both by adding new, highly-efficient, low-or-no emission generating units and retiring older, less efficient generating units.

Similarity # 1: FPL continues to pursue new cost-effective solar generating capacity.

As announced in FPL's 2015 Site Plan, FPL is in the process of adding three new photovoltaic (PV) facilities that will be in service by the end of 2016. Each of the PV facilities will be approximately 74.5 MW (nameplate rating, AC). As a result, FPL's solar generation capacity will triple by the end of 2016 from its current 110 MW to approximately 333 MW. The new 2016 PV installations are sited in Manatee, Charlotte, and DeSoto counties. The economics of these specific PV projects are aided by the fact that the sites are located close to existing electric infrastructure, including transmission lines and electric substations.

In this 2016 Site Plan, FPL is also projecting the addition of another approximately 300 MW of PV that will be added by the year 2021. (For planning purposes, FPL is currently showing this addition in the Summer of 2020.) 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. A final determination of the siting of this 300 MW of additional PV has not yet been made. A number of promising sites are currently under review. In addition, FPL will continue to analyze other opportunities for utilizing cost-effective solar energy.

Similarity # 2: FPL continues to pursue cost-effective new nuclear energy generating capacity.

Since June 2009, FPL has been in the process of attempting to secure federal Combined Operating Licenses for two new nuclear units, Turkey Point Units 6 & 7, that would be sited at FPL's Turkey Point site (where two other nuclear generating units exist). In 2014 the Nuclear Regulatory Commission significantly revised the Turkey Point Units 6 & 7 Combined Operating License Application (COLA) Review Schedule. A subsequent project schedule review based on the COLA schedule revision, and changes in Florida's nuclear cost recovery rule, indicated that the earliest practical dates for bringing the Turkey Point 6 & 7 units in-service are mid-2027 (Unit 6) and mid-2028 (Unit 7) which is beyond the 2016 through 2025 time period addressed in this Site Plan. Despite the projected timing of the two new nuclear units, the nuclear units remain as an important factor in FPL's resource planning and this Site Plan continues to present the Turkey Point site as a Preferred Site for the new units.

Similarity # 3: FPL continues to modernize its fleet of generating units.

In recent years, FPL has retired a number of older, less efficient generating units including: Sanford Unit 3, Cutler Units 5 & 6, Cape Canaveral Units 1 & 2, Riviera Beach Units 3 & 4, Port Everglades Units 1 – 4, and Putnam Units 1 & 2. In their place, FPL has already added new, highly fuel-efficient combined cycle (CC) natural gas-fired generation at the Cape Canaveral, Riviera Beach, and Port Everglades sites and will add another highly fuel-efficient CC unit in Okeechobee County in 2019.

In addition, an older generating unit, Turkey Point Unit 2, has been converted from generation mode to operate in synchronous condenser mode to provide voltage support for the transmission system in Southeastern Florida. Its companion unit, Turkey Point Unit 1, is also planned to begin running in synchronous condenser mode starting in 2016.

FPL is also in the process of retiring a number of its existing older gas turbine (GTs) units, including: 22 of 24 GTs at the Lauderdale site, all 12 GTs at the Port Everglades site, and 10 of 12 GTs at the Fort Myers plant site. Two of the existing GTs at the Lauderdale site, and two of the existing GTs at the Ft. Myers site, will be retained for black start capability. In conjunction with the retirement of these peaking units, FPL is adding a number of new, larger, and more fuel-efficient combustion turbines (CTs): 5 at the Lauderdale site and 2 at the Fort Myers site. Also, the two existing CTs at the Fort Myers site are undergoing capacity upgrades. At the time this Site Plan is filed, one GT, GT Unit 8 at Fort Myers, has been retired. All of the remaining GT- and CT-related changes described above are projected to be completed by the end of 2016.

Similarity # 4: Carbon dioxide (CO_2) emission reduction remains an important issue that is considered in FPL's on-going resource planning work even though uncertainty regarding CO_2 regulation still exists.

FPL's resource planning work has evaluated potential CO_2 regulation and/or legislation for a number of years. However, there has always been considerable uncertainty regarding the extent and the cost impacts of the potential regulation/legislation. The issuance of EPA's Clean Power Plan (CPP) final rules in September 2015 appeared to remove a significant portion of this uncertainty. However, the U.S. Supreme Court's decision in February 2016 to stay the CPP implementation appears likely to result in some level of delay in implementation. Furthermore, assuming that the CPP rules move forward in their current form, there is still uncertainty regarding how the state of Florida will develop and implement a State Implementation Plan (SIP) that is required by the CPP rules. Therefore, FPL's resource planning work will continue to evaluate CO_2-related issues and projected costs, but will do so – at least in the near term – in the midst of continuing uncertainty.

II. A Difference Between the 2016 and 2015 Site Plans:

This year there is only one important resource planning-related difference between the 2016 and 2015 Site Plans:

Difference: FPL does not project a significant long-term additional resource need until the years 2024 and 2025.

Forecasted lower peak load growth, plus the recently approved Okeechobee CC unit that will enter service in mid-2019, results in FPL projecting that its next significant long-term resource needs will not occur until the years 2024 and 2025. Because these resource needs are 8 and 9 years in the future, no decision regarding how to best meet those resource needs will be required for several years. Recognizing this fact, this Site Plan shows a large CC natural gas-fired unit at a greenfield site being added in 2024. The CC unit is a reasonable resource option which could address FPL's resource needs for both of these years. However, on-going resource planning analyses in subsequent years will ultimately determine what the best resource option(s) for 2024 and 2025 will be. This decision will be addressed in future Site Plans.

III. Factors Which Have Impacted, or Which Could Impact, FPL's Resource Plan:

In addition to these important similarities and difference, there are a number of factors which have impacted, or which may impact, FPL's resource plan. Five (5) such factors are summarized in the text below and these are presented in no particular order. These factors, and/or their potential impacts to the resource plan presented in this Site Plan, are further discussed in Chapters II and III.

The first and second of these factors are on-going system concerns that FPL has considered in its resource planning work for a number of years. The first factor is the objective to maintain/enhance fuel diversity in the FPL system. Diversity is sought both in terms of the types of fuel utilized by FPL and how these fuels are supplied to FPL. (Related to the fuel diversity objective, FPL also seeks to enhance the efficiency with which it uses fuel to generate electricity.) The second factor is the need to maintain a balance between load and generating capacity in Southeastern Florida, particularly in Miami-Dade and Broward counties. This balance has both reliability and economic implications for FPL's system.

The third factor is also a system concern that FPL has considered in its resource planning for several years. This concern focuses upon the desirability of maintaining an appropriate balance of DSM and supply resources from a system reliability perspective. FPL addresses this through the use of a 10% generation-only reserve margin (GRM) reliability criterion in its resource planning work to complement its other two reliability criteria: a 20% total reserve margin criterion for Summer and Winter, and an annual 0.1 day/year loss-of-load-probability (LOLP) criterion. Together, these three criteria allow FPL to address this specific concern regarding system reliability in a comprehensive manner.

The fourth factor is the significant and increasing impact that federal and state energy efficiency codes and standards are having on FPL's forecasted future demand and energy requirements. The incremental impacts of these energy efficiency codes and standards during the 2016 through 2025 time period are projected to reduce FPL's forecasted Summer peak load by more than 1,800 MW, and reduce annual energy consumption by more than 8,700 GWh, by 2025. In addition, energy efficiency codes and standards significantly reduce the potential for cost-effective energy efficiency that might otherwise have been obtained through FPL's DSM programs.

The fifth factor is the increasing cost competitiveness of utility-scale (or “universal”) PV facilities due to the projected continued decline in the cost of PV modules and the recent extension of federal tax credits. Utility-scale PV facilities are the most economical way to utilize PV technology and the declining costs of PV modules have resulted in utility scale PV becoming competitive on FPL’s system, especially at specific, highly advantaged sites. As a result, FPL’s current resource plan presented in this year’s Site Plan includes approximately 223 MW (nameplate, AC) of new PV facilities that are under construction and which will be in-service by the end of 2016. These PV additions are being made at three specific sites that offer particular cost advantages. In addition, the resource plan presented in this 2016 Site Plan shows an additional 300 MW (nameplate, AC) of PV that is projected to be in-service by the year 2021. (For planning purposes, this additional PV capacity is assumed to be in-service by mid-2020.)

Each of these factors will continue to be examined in FPL’s on-going resource planning work during the rest of 2016 and in future years.

Table ES-1 presents a current projection of major changes to specific generating units and firm capacity purchases for 2016 through 2025. Although this table does not specifically identify the impacts of projected DSM additions on FPL’s resource needs and resource plan, FPL’s projected DSM additions that are consistent with its DSM Goals have been fully accounted for in the resource plan presented in this Site Plan.

In addition, Table ES-1 shows the addition of an FPL CC in Okeechobee County in 2019. The FPSC issued a determination of need order approving this CC unit on January 19, 2016. The table also shows the addition of 300 MW of additional PV in 2020 and a greenfield CC unit in 2024 as discussed above.

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	
	Unsited Solar (PV)	156	June 2020	
	Total of MW changes to Summer firm capacity:	**156**		**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	Riviera 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	Unsited 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.

CHAPTER I

Description of Existing Resources

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I. Description of Existing Resources

FPL's service area contains approximately 27,650 square miles and has a population of approximately ten million people. FPL served an average of 4,775,382 customer accounts in thirty-five (35) counties during 2015. These customers were served by a variety of resources including: FPL-owned fossil-fuel, renewable, and nuclear generating units, non-utility owned generation, demand side management (DSM), and interchange/purchased power.

I.A. FPL-Owned Resources

The existing FPL generating resources are located at 14 generating sites distributed geographically around its service territory, plus one site in Georgia (partial FPL ownership of one unit) and two sites in Jacksonville, Florida (partial FPL ownership of two units and ownership of another unit). As of December 31, 2015, FPL's electrical generating facilities consisted of: four nuclear units, four coal units, 15 combined cycle (CC) units, five fossil steam units, 47 combustion gas turbines, two simple cycle combustion turbines, and two photovoltaic facilities[1]. The locations of these 79 generating units are shown on Figure I.A.1 and in Table I.A.1.

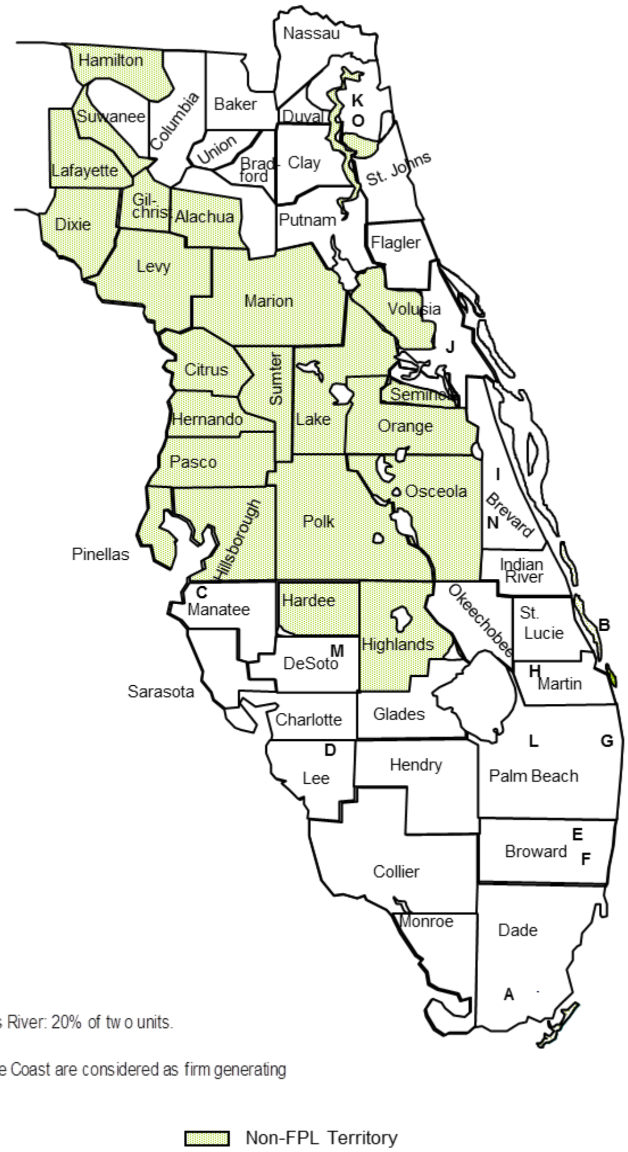
FPL's bulk transmission system, including both overhead and underground lines, is comprised of 6,897 circuit miles of transmission lines. Integration of the generation, transmission, and distribution systems is achieved through FPL's 601 substations in Florida.

The existing FPL system, including generating plants, major transmission stations, and transmission lines, is shown on Figure I.A.2.

[1] FPL also has one 75 MW solar thermal facility at its Martin plant site. This facility does not generate electricity as the other units mentioned above do. Instead, it produces steam that reduces the use of fossil fuel to produce steam for electricity generation.

FPL Generating Resources by Location

Location/ Map Key	Plant Name	Number of Units	Summer MW
A	Turkey Point	4	3,215
B	St. Lucie [1/]	2	1,821
C	Manatee	3	2,759
D	Fort Myers	3	1,784
E	Lauderdale	2	884
F	Everglades [2/]	0	0
G	Riviera	1	1,212
H	Martin	5	3,699
I	Cape Canaveral	1	1,210
J	Sanford	2	2,010
K	St. John's River Power Park [1/]	2	254
L	West County	3	3,657
M	DeSoto [3/]	1	25
N	Space Coast [3/]	1	10
O	Cedar Bay	1	250
	Scherer [4/]	1	634
	Gas Turbines	47	1,829
	Total System Generation =	**79**	**25,253**
	System Firm Generation =		**25,233**



1/ Represents FPL's ownership share: St Lucie nuclear: 100% Unit 1, 85% Unit 2: St. Johns River: 20% of two units.
2/ Will be site of new Modernization Plant.
3/ Approximately 46% of the 25 MW of PV at DeSoto and 32% of the 10 MW of PV at Space Coast are considered as firm generating capacity for Summer reserve margin purposes.
4/ The Scherer unit is located in Georgia and is not shown on this map.

Figure I.A.1: Capacity Resources by Location (as of December 31, 2015)

Table I.A.1: Capacity Resource by Unit Type (as of December 31, 2015)

Unit Type/ Plant Name	Location	Number of Units	Fuel	Summer MW
Nuclear				
St. Lucie [1/]	Hutchinson Island, FL	2	Nuclear	1,821
Turkey Point	Florida City, FL	2	Nuclear	1,632
Total Nuclear:		**4**		**3,453**
Coal Steam				
Cedar Bay	Jacksonville, FL	1	Coal	250
Scherer	Monroe County, Ga	1	Coal	634
St. John's River Power Park [2/]	Jacksonville, FL	2	Coal	254
Total Coal Steam:		**4**		**1,138**
Combined-Cycle				
Fort Myers	Fort Myers, FL	1	Gas	1,470
Manatee	Parrish, FL	1	Gas	1,141
Martin	Indiantown, FL	3	Gas	2,073
Sanford	Lake Monroe, FL	2	Gas	2,010
Cape Canaveral	Cocoa, FL	1	Gas/Oil	1,210
Lauderdale	Dania, FL	2	Gas/Oil	884
Riviera Beach	City of Riviera Beach, FL	1	Gas/Oil	1,212
Turkey Point	Florida City, FL	1	Gas/Oil	1,187
West County	Palm Beach County, FL	3	Gas/Oil	3,657
Total Combined Cycle:		**15**		**14,844**
Oil/Gas Steam				
Manatee	Parrish, FL	2	Oil/Gas	1,618
Martin	Indiantown,FL	2	Oil/Gas	1,626
Turkey Point	Florida City, FL	1	Oil/Gas	396
Total Oil/Gas Steam:		**5**		**3,640**
Gas Turbines(GT)				
Fort Myers (GT)	Fort Myers, FL	11	Oil	594
Lauderdale (GT)	Dania, FL	24	Gas/Oil	823
Port Everglades (GT)	Port Everglades, FL	12	Gas/Oil	412
Total Gas Turbines/Diesels:		**47**		**1,829**
Combustion Turbines				
Fort Myers	Fort Myers, FL	2	Gas/Oil	314
Total Combustion Turbines:		**2**		**314**
PV				
DeSoto [3/]	DeSoto, FL	1	Solar Energy	25
Space Coast [3/]	Brevard County, FL	1	Solar Energy	10
Total PV:		**2**		**35**
Total System Generation as of December 31, 2015 =		**79**		**25,253**
System Firm Generation as of December 31, 2015 =				**25,233**

1/ Total capability of St. Lucie 1 is 981/1,003 MW. FPL's share of St. Lucie 2 is 840/860. FPL's ow nership share of St. Lucie Units 1 and 2 is 100% and 85%, respectively.

2/ Capabilities show n represent FPL's output share from each of the units (approx. 92.5% and exclude the Orlando Utilities Commission (OUC) and Florida Municipal Pow er Agency (FMPA) combined portion of approximately 7.44776% per unit. Represents FPL's ow nership share: SJRPP coal: 20% of tw o units).

3/ Approximately 46% of the 25 MW of PV at DeSoto, and 32% of the 10 MW of PV at Space Coast, are considered as firm generating capacity for Summer reserve margin purposes.

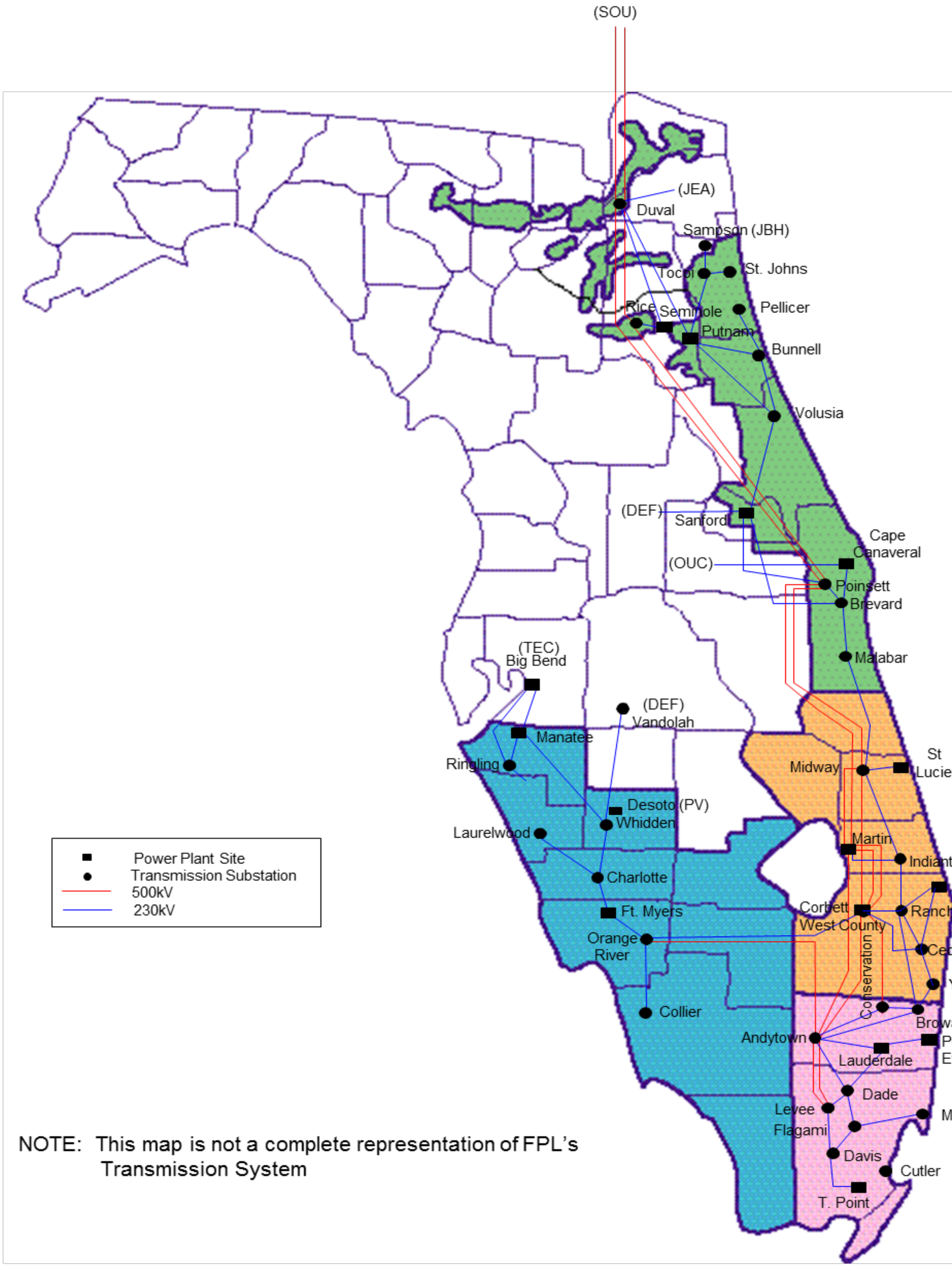


Figure I.A.2: FPL Substation and Transmission System Configuration

Description of Existing Resources

I.B Capacity and Energy Power Purchases

Firm Capacity: Purchases from Qualifying Facilities (QF)

Firm capacity power purchases are an important part of FPL's resource mix. FPL currently has seven contracts with qualifying facilities; i.e., cogeneration/small power production facilities, to purchase firm capacity and energy during the 10-year reporting period of this Site Plan. In addition, some of these facilities provided firm capacity and energy in 2015. The 2015 actual and projected future contributions from these facilities are shown in Table I.B.1, Table I.B.2, and Table I.B.3. A change from the 2015 Site Plan to this year's Site Plan is that 11 MW of firm capacity from Broward North is no longer available to FPL at the request of Broward North.

A cogeneration facility is one that simultaneously produces electrical and thermal energy, with the thermal energy (e.g., steam) used for industrial, commercial, or cooling and heating purposes. A small power production facility is one that does not exceed 80 MW (unless it is exempted from this size limitation by the Solar, Wind, Waste, and Geothermal Power Production Incentives Act of 1990) and uses solar, wind, waste, geothermal, or other renewable resources as its primary energy source.

Firm Capacity: Purchases from Utilities

FPL has a contract with the Jacksonville Electric Authority (JEA) for the purchase of 382 MW (Summer) and 389 MW (Winter) of coal-fired generation from the St. John's River Power Park (SJRPP) Units No. 1 and No. 2. However, due to Internal Revenue Service (IRS) regulations, the total amount of energy that FPL may receive from this purchase is limited. FPL currently assumes, for planning purposes, that this limit will be reached in the fourth quarter of 2019. Once this limit is reached, FPL will be unable to receive firm capacity and energy from these purchases. (However, FPL will continue to receive firm capacity and energy from its ownership portion of the SJRPP units.)

This purchase is shown in Table I.B.1, Table I.B.2, and Table I.B.3. FPL's ownership interest in the SJRPP units is reflected in FPL's installed capacity shown on Figure I.A.1, in Table I.A.1, and on Schedule 1.

Firm Capacity: Other Purchases

FPL has two other firm capacity purchase contracts with non-QF, non-utility suppliers. These contracts with the Palm Beach Solid Waste Authority were previously listed as QFs. However, the addition of a second unit in 2015 caused both units to no longer meet the statutory definition of a QF. Therefore, these contracts are listed as "Other Purchases" following the estimated in-service date of the new unit. Table I.B.2 and I.B.3 present the Summer and Winter MW, respectively, resulting from these contracts under the category heading of Other Purchases.

Non-Firm (As Available) Energy Purchases

FPL purchases non-firm (as-available) energy from several cogeneration and small power production facilities. The bottom half of Table I.B.1 shows the amount of energy purchased in 2015 from these facilities.

Table I.B.1: Purchase Power Resources by Contract (as of December 31, 2015)

Firm Capacity Purchases (MW)	Location (City or County)	Fuel	Summer MW
I. Purchase from QF's: Cogeneration/Small Power Production Facilities			
Indiantown Cogen LP	Martin	Coal (Cogen)	330
Broward South	Broward	Solid Waste	4
		Total:	334
II. Purchases from Utilities & IPP			
Palm Beach SWA - extension	Palm Beach	Solid Waste	40
Palm Beach SWA - New Unit	Palm Beach	Solid Waste	70
SJRPP	Jacksonville	Coal	382
		Total:	492
	Total Net Firm Generating Capability:		826

Non-Firm Energy Purchases (MWH)

Project	County	Fuel	Energy (MWH) Delivered to FPL in 2015
Okeelanta (known as Florida Crystals and New Hope Power Partners)*	Palm Beach	Bagasse/Wood	85,015
Broward South*	Broward	Solid Waste	54,135
Broward North*	Broward	Solid Waste	19,220
Waste Management Renewable Energy*	Broward	Landfill Gas	40,802
Waste Management - Collier County Landfill*	Broward	Landfill Gas	21,099
Tropicana	Manatee	Natural Gas	5,022
Georgia Pacific	Putnam	Paper by-product	4,129
Rothenbach Park (known as MMA Bee Ridge)*	Sarasota	PV	283
First Solar*	Dade	PV	405
Customer Owned PV & Wind	Various	PV/Wind	1,460
INEOS Bio*	Indian River	Wood	450
Miami Dade Resource Recovery*	Dade	Solid Waste	95,154

*These Non-Firm Energy Purchases are renewable and are reflected on Schedule 11.1, row 8, column 6.

Table I.B.2: FPL's Firm Purchased Power Summer MW

Summary of FPL's Firm Capacity Purchases: Summer MW (for August of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Broward South	01/01/93	12/31/26	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Broward South	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Broward South	01/01/97	12/31/26	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Indiantown Cogen L.P.	12/22/95	12/01/25	330	330	330	330	330	330	330	330	330	330
U.S.EcoGen Clay[2/]	01/01/21	12/31/49	0	0	0	0	0	60	60	60	60	60
U.S.EcoGen Okeechobee[2/]	01/01/21	12/31/49	0	0	0	0	0	60	60	60	60	60
U.S.EcoGen Martin[2/]	01/01/21	12/31/49	0	0	0	0	0	60	60	60	60	60
		QF Purchases Subtotal:	**334**	**334**	**334**	**334**	**334**	**514**	**514**	**514**	**514**	**514**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SJRPP[3/]	04/02/82	4th Qtr/2019	382	382	382	382	0	0	0	0	0	0
		Utility Purchases Subtotal:	**382**	**382**	**382**	**382**	**0**	**0**	**0**	**0**	**0**	**0**

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total of QF and Utility Purchases =	**716**	**716**	**716**	**716**	**334**	**514**	**514**	**514**	**514**	**514**

III. Other Purchases

	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Palm Beach SWA - Extension[1/]	01/01/12	04/01/34	40	40	40	40	40	40	40	40	40	40
Palm Beach SWA - Additional	01/01/15	04/01/34	70	70	70	70	70	70	70	70	70	70
Unspecified Purchases[4/]	05/01/17	09/30/17	0	53	0	0	0	0	0	0	0	0
Unspecified Purchases[4/]	05/01/18	09/30/18	0	0	324	0	0	0	0	0	0	0
		Other Purchases Subtotal:	**110**	**163**	**434**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total "Non-QF" Purchases =	**492**	**545**	**816**	**492**	**110**	**110**	**110**	**110**	**110**	**110**

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Summer Firm Capacity Purchases Total MW:	**826**	**879**	**1,150**	**826**	**444**	**624**	**624**	**624**	**624**	**624**

1/ When the second unit came into commercial service at the Palm Beach SWA, neither unit met the standards to be a small power producer, and it then became accounted for under "Other Purchases"

2/ The EcoGen units will enter service in 2019, however firm capacity will only be delivered starting in 2021.

3/ Contract end date shown for the SJRPP purchase does not represent the actual contract end date. Instead, this date represents a projection of the earliest date at which FPL's ability to receive further capacity and energy from this purchase could be suspended due to IRS regulations.

4/ These Unspecified Purchases are short-term purchases for the summer of 2017 and 2018 that are included for resource planning purposes. No decision regarding such purchases is needed at this time.

Table I.B.3: FPL's Firm Purchased Power Winter MW

Summary of FPL's Firm Capacity Purchases: Winter MW (for January of Year Shown)

I. Purchases from QF's

Cogeneration Small Power Production Facilities	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Broward South	01/01/93	12/31/26	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Broward South	01/01/95	12/31/26	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Broward South	01/01/97	12/31/26	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Indiantown Cogen L.P.	12/22/95	12/31/26	330	330	330	330	330	330	330	330	330	330
U.S.EcoGen Clay[2/]	01/01/21	12/31/26	0	0	0	0	0	60	60	60	60	60
U.S.EcoGen Okeechobee[2/]	01/01/21	12/31/26	0	0	0	0	0	60	60	60	60	60
U.S.EcoGen Martin[2/]	01/01/21	12/31/24	0	0	0	0	0	60	60	60	60	60
		QF Purchases Subtotal:	**334**	**334**	**334**	**334**	**334**	**514**	**514**	**514**	**514**	**514**

II. Purchases from Utilities

	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SJRPP[3/]	04/02/82	4^{th} Qtr/2019	389	389	389	389	0	0	0	0	0	0
		Utility Purchases Subtotal:	**389**	**389**	**389**	**389**	**0**	**0**	**0**	**0**	**0**	**0**

Total of QF and Utility Purchases =	**723**	**723**	**723**	**723**	**334**	**514**	**514**	**514**	**514**	**514**

III. Other Purchases

	Contract Start Date	Contract End Date	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Palm Beach SWA - Extension[1/]	01/01/12	04/01/34	40	40	40	40	40	40	40	40	40	40
Palm Beach SWA - Additional	06/01/15	04/01/34	70	70	70	70	70	70	70	70	70	70
		Other Purchases Subtotal:	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**	**110**

Total "Non-QF" Purchases =	**499**	**499**	**499**	**499**	**110**	**110**	**110**	**110**	**110**	**110**

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Winter Firm Capacity Purchases Total MW:	**833**	**833**	**833**	**833**	**444**	**624**	**624**	**624**	**624**	**624**

1/ When the second unit came into commercial service at the Palm Beach SWA, neither unit met the standards to be a small power producer, and it then became accounted for under "Other Purchases"
2/ The EcoGen units will enter service in 2019, however firm capacity will only be delivered starting in 2021.
3/ Contract end date shown for the SJRPP purchase does not represent the actual contract end date. Instead, this date represents a projection of the earliest date at which FPL's ability to receive further capacity and energy from this purchase could be suspended due to IRS regulations.

I.C Demand Side Management (DSM)

FPL has sought out and implemented cost-effective DSM programs since 1978. These programs include a number of conservation/energy efficiency and load management initiatives. FPL's DSM efforts through 2015 have resulted in a cumulative Summer peak reduction of 4,845 MW at the generator and an estimated cumulative energy saving of 74,717 Gigawatt-Hour (GWh) at the generator. After accounting for the 20% total reserve margin requirements, FPL's DSM efforts through 2015 have eliminated the need to construct the equivalent of approximately 15 new 400 MW generating units. New DSM Goals for FPL for the 2015 through 2024 time period were set by the FPSC in December 2014. FPL accounts for these DSM goals in its planning process and extends that annual level of DSM beyond the year 2024.

Schedule 1

Existing Generating Facilities
As of December 31, 2015

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
						Fuel		Alt. Fuel		Actual/ Expected	Gen.Max.	Net Capability [1/]	
	Unit		Unit	Fuel		Transport		Days	Commercial In-Service	Retirement	Nameplate	Winter	Summer
Plant Name	No.	Location	Type	Pri.	Alt.	Pri.	Alt.	Use	Month/Year	Month/Year	KW	MW	MW
Cape Canaveral		Brevard County											
		19/24S/36E									1,295,400	1,386	1,210
	3		CC	NG	FO2	PL	TK	Unknown	Apr-13	Unknown	1,295,400	1,386	1,210
Cedar Bay		Duval County									291,550	250	250
	1		ST	BIT	Other[4/]	RR	WA	Unknown	Jan-94	Jan-17	291,550	250	250
DeSoto [2/]		DeSoto County											
		27/36S/25E									22,500	25	25
	1		PV	Solar	Solar	N/A	N/A	Unknown	Oct-09	Unknown	22,500	25	25
Fort Myers		Lee County											
		35/43S/25E									2,779,980	2,701	2,378
	2		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,721,490	1,672	1,470
	3		CT	NG	FO2	PL	TK	Unknown	Jun-03	Unknown	376,380	352	314
	1-7, 9-12		GT	FO2	No	TK	No	Unknown	May-74	Jun-16 (1-9)	682,110	677	594
Lauderdale		Broward County											
		30/50S/42E									1,873,968	1,867	1,707
	4		CC	NG	FO2	PL	PL	Unknown	May-93	Unknown	526,250	493	442
	5		CC	NG	FO2	PL	PL	Unknown	Jun-93	Unknown	526,250	493	442
	1-12		GT	NG	FO2	PL	PL	Unknown	Aug-70	Oct-16	410,734	440	412
	13-24		GT	NG	FO2	PL	PL	Unknown	Aug-70	Oct-16	410,734	440	412
Manatee		Manatee County											
		18/33S/20E									2,951,110	2,894	2,759
	1		ST	FO6	NG	WA	PL	Unknown	Oct-76	Unknown	863,300	819	809
	2		ST	FO6	NG	WA	PL	Unknown	Dec-77	Unknown	863,300	819	809
	3		CC	NG	No	PL	No	Unknown	Jun-05	Unknown	1,224,510	1,256	1,141
Martin		Martin County											
		29/29S/38E									4,317,510	3,879	3,699
	1		ST	FO6	NG	PL	PL	Unknown	Dec-80	Unknown	934,500	829	823
	2		ST	FO6	NG	PL	PL	Unknown	Jun-81	Unknown	934,500	809	803
	3		CC	NG	No	PL	No	Unknown	Feb-94	Unknown	612,000	499	469
	4		CC	NG	No	PL	No	Unknown	Apr-94	Unknown	612,000	499	469
	8 [3/]		CC	NG	FO2	PL	TK	Unknown	Jun-05	Unknown	1,224,510	1,243	1,135
Port Everglades		City of Hollywood											
		23/50S/42E									410,734	440	412
	1-12		GT	NG	FO2	PL	PL	Unknown	Aug-71	Oct-16	410,734	440	412
Riviera Beach		City of Riviera Beach											
		33/42S/432E									1,295,400	1,360	1,212
	5		CC	NG	FO2	PL	WA	Unknown	Apr-14	Unknown	1,295,400	1,360	1,212

1/ These ratings are peak capability.

2/ Approximately 46% of the 25 MW (Nameplate, AC) PV facility at DeSoto is considered as firm generating capacity for Summer reserve margin purposes and 0% is considered as firm capacity for Winter reserve margin purposes.

3/ Martin Unit 8 is also partially fueled by a 75 MW solar thermal facility that supplies steam when adequate sunlight is available, thus reducing fossil fuel use.

4/ Cedar Bay burns fiber waste (WDS) at very low levels. Plant is also permitted to burn Petcoke and Tire Derived Fuel (TDF) but has not used those options.

Schedule 1

Existing Generating Facilities
As of December 31, 2015

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
								Alt.		Actual/			
						Fuel		Fuel	Commercial	Expected	Gen.Max.	Net Capability [1/]	
	Unit		Unit	Fuel		Transport		Days	In-Service	Retirement	Nameplate	Winter	Summer
Plant Name	No.	Location	Type	Pri.	Alt.	Pri.	Alt.	Use	Month/Year	Month/Year	KW	MW	MW
Sanford		Volusia County											
		16/19S/30E									2,377,720	2,200	2,010
	4		CC	NG	No	PL	No	Unknown	Oct-03	Unknown	1,188,860	1,100	1,005
	5		CC	NG	No	PL	No	Unknown	Jun-02	Unknown	1,188,860	1,100	1,005
Scherer [2/]		Monroe, GA									891,000	635	634
	4		ST	SUB	No	RR	No	Unknown	Jul-89	Unknown	891,000	635	634
Space Coast [3/]		Brevard County											
		13/23S/36E									10,000	10	10
	1		PV	Solar	Solar	N/A	N/A	Unknown	Apr-10	Unknown	10,000	10	10
St. Johns River		Duval County											
Power Park [4/]		12/15/28E											
		(RPC4)									1,359,180	260	254
	1		ST	BIT	Pet	RR	WA	Unknown	Mar-87	Unknown	679,590	130	127
	2		ST	BIT	Pet	RR	WA	Unknown	May-88	Unknown	679,590	130	127
St. Lucie [5/]		St. Lucie County											
		16/36S/41E									2,160,000	1,863	1,821
	1		ST	Nuc	No	TK	No	Unknown	May-76	Unknown	1,080,000	1,003	981
	2		ST	Nuc	No	TK	No	Unknown	Jun-83	Unknown	1,080,000	860	840
Turkey Point		Miami Dade County											
		27/57S/40E									3,344,410	3,330	3,215
	1		ST	FO6	NG	WA	PL	Unknown	Apr-67	Oct-16	365,500	398	396
	3		ST	Nuc	No	TK	No	Unknown	Nov-72	Unknown	877,200	839	811
	4		ST	Nuc	No	TK	No	Unknown	Jun-73	Unknown	877,200	848	821
	5		CC	NG	FO2	PL	TK	Unknown	May-07	Unknown	1,224,510	1,245	1,187
West County		Palm Beach County											
		29&32/43S/40E									4,100,400	4,065	3,657
	1		CC	NG	FO2	PL	TK	Unknown	Aug-09	Unknown	1,366,800	1,355	1,219
	2		CC	NG	FO2	PL	TK	Unknown	Nov-09	Unknown	1,366,800	1,355	1,219
	3		CC	NG	FO2	PL	TK	Unknown	May-11	Unknown	1,366,800	1,355	1,219
Total System Generating Capacity as of December 31, 2015 [6/] =												**27,165**	**25,253**
System Firm Generating Capacity as of December 31, 2015 [7/] =												**27,130**	**25,233**

1/ These ratings are peak capability.

2/ These ratings relate to FPL's 76.36% share of Plant Scherer Unit 4 operated by Georgia Power, and represent FPL's 73.923% owernership share available at point of interchange.

3/ Approximately 32% of the 10 MW (Nameplate, AC) PV facility at Space Coast is considered as firm generating capacity for Summer reserve margin purposes and 0% is considered as firm capacity for Winter reserve margin purposes.

4/ The net capability ratings represent Florida Power & Light Company's share of St. Johns River Park Units 1 and 2, excluding the Jacksonville Electric Authority (JEA) share of 80%.

5/ Total capability of St. Lucie 1 is 981/1,003 MW. FPL's share of St. Lucie 2 is 840/860.FPL's ownership share of St. Lucie Units 1 and 2 is 100% and 85%, respectively, as shown above. FPL's share of the deliverable capacity from each unit is approx. 92.5% and exclude the Orlando Utilities Commission (OUC) and Florida Municipal Power Agency (FMPA) combined portion of approximately 7.448% per unit.

6/ The Total System Generating Capacity value shown includes FPL-owned firm and non-firm generating capacity.

7/ The System Firm Generating Capacity value shown includes only firm generating capacity.

CHAPTER II

Forecast of Electric Power Demand

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II. Forecast of Electric Power Demand

II. A. Overview of the Load Forecasting Process

At FPL, long-term forecasts of sales, net energy for load (NEL), and peak loads typically are developed on an annual basis for resource planning work. FPL developed new long-term forecasts in late 2015 and early 2016 that replaced the previous long-term load forecasts used by FPL during 2015 in much of its resource planning work and which were presented in FPL's 2015 Site Plan. These new load forecasts are utilized throughout FPL's 2016 Site Plan and are a key input to the models used to develop FPL's integrated resource plan.

The following pages describe how forecasts are developed for each component of the long-term forecast including: sales, NEL, and peak loads. Consistent with past forecasts, the primary drivers to develop these forecasts include population growth, economic conditions, energy prices, weather, and energy efficiency codes and standards.

The projections for the national and Florida economies are obtained from IHS Global Insight, a leading economic forecasting firm. Population projections are also obtained from IHS Global Insight. This ensures an internal consistency between some of the key forecast drivers. These inputs are quantified and qualified using statistical models in terms of their impact on the future demand for electricity.

Weather is always a key factor that affects FPL's energy sales and peak demand. Three sets of weather variables are developed and used in FPL's forecasting models:

1. Cooling degree-hours based on 72^{o} F, winter heating degree-days based on 66^{o} F, and heating degree-days based on 45^{o} F are used to forecast energy sales.
2. The maximum temperature on the peak day and the build-up of cooling degree-hours two days prior to the peak are used to forecast Summer peaks.
3. The minimum temperature on the peak day and the square of the build-up of heating degree-hours based on 66^{o} F on the day prior to the peak day through the morning of the peak are used to forecast Winter peaks.

The cooling degree-hours and Winter heating degree-days are used to capture the changes in the electric usage of weather-sensitive appliances such as air conditioners and electric space heaters. Heating degree-days based on 45^{o} F are used to capture space heating load resulting from sustained periods of unusually cold weather that are not completely captured by heating degree-days based on 66^{o} F. A composite hourly temperature profile is derived using hourly temperatures across FPL's service territory. Miami, Ft. Myers, Daytona Beach, and West Palm Beach are the locations where temperatures are obtained. In developing the composite hourly profile, these regional temperatures are weighted by regional energy sales. The resulting composite temperature is used to derive projected cooling and heating degree-hours and heating degree-days. Similarly, composite temperature and hourly profiles of temperatures are used to calculate the weather variables used in the Summer and Winter peak models.

II. B. Comparison of FPL's Current and Previous Load Forecasts

FPL's current load forecast is moderately lower over the long-term relative to the load forecast previously presented in its 2015 Site Plan. Four primary factors drive the current load forecast: projected population growth, the performance of Florida's economy, energy prices, and energy efficiency codes and standards. The combined impact of these factors result in a lower load forecast over the long-term relative to the load forecast presented in the 2015 Site Plan.

The customer forecast is based on recent population projections as well as the actual levels of customer growth experienced historically. Population projections are derived from IHS Global Insight's June 2015 forecast. The forecasted growth rates are generally consistent with population growth rates utilized in last year's site plan. On a percentage basis, the projected rates of population growth are expected to be comparable with recent growth rates. The absolute increases in population are projected to be significant. The state's population has already surpassed 20 million people in 2015 and is expected to exceed 23 million by 2025. Overall, the state's population is expected to increase by nearly three million people between 2015 and 2025.

FPL growth in its customer accounts is expected to mirror the overall level of population growth in the state. From 2015 through 2025 the total number of customer accounts is projected to increase at an annual rate of 1.4% resulting in a cumulative increase of more than 710,000 customer accounts. By 2019, the total number of customer accounts served by FPL is expected to exceed 5 million. By 2025, the total number of FPL customer accounts is expected to reach approximately 5.5 million.

The economic projections incorporated into FPL's load forecast are provided by IHS Global Insight. Although IHS Global Insight is projecting slower income growth than was projected in FPL's 2015 Site Plan, they nonetheless are expecting positive increases in employment and income levels over the 10-year forecast horizon. Consistent with past projections, economic growth is expected to moderate somewhat over the longer term.

Estimates of savings from energy efficiency codes and standards are developed by ITRON, a leading expert in this field. These estimates include savings from federal and state energy efficiency codes and standards, including the 2005 National Energy Policy Act, the 2007 Energy Independence and Security Act, and the savings resulting from the use of compact fluorescent bulbs and light-emitting diodes (LEDs)[2]. The impact of these savings began in 2005 and their cumulative impact on the Summer peak is expected to reach 3,517 MW by 2025, the equivalent of an approximately 12% reduction in what the forecasted Summer peak load for 2025 would have been without these energy efficiency codes and standards. The cumulative impact on NEL from these savings is expected to reach 16,238 GWh over the same period while the cumulative impact on the Winter peak is expected to be 2,011 MW by 2025. This represents a decrease of approximately 11% in the forecasted NEL for 2025 and an 8% reduction in forecasted Winter peak load for 2025.

Consistent with the forecast presented in FPL's 2015 Site Plan, the total growth projected for the ten-year reporting period of this document is significant. The Summer peak is projected to increase to 26,572 MW by 2025, an increase of 3,613 MW over the 2015 actual Summer peak. Likewise, NEL is projected to reach 125,062 GWh in 2025, an increase of 2,306 GWh from the actual 2015 value.

II.C. Long-Term Sales Forecasts

Long-term forecasts of electricity sales were developed for the major revenue classes and are adjusted to match the NEL forecast. The results of these sales forecasts for the years 2016 through 2025 are presented in Schedules 2.1 - 2.3 that appear at the end of this chapter. Econometric models are developed using the statistical software package MetrixND. The methodologies used to develop energy sales forecasts for each jurisdictional revenue class and NEL forecast are outlined below.

1. Residential Sales

Residential electric usage per customer is estimated by using an econometric model. Residential sales are a function of the following variables: cooling degree-hours, heating degree-days, energy prices, and Florida real per capita income weighted by the percent of the population that is employed. The impact of weather is captured by the cooling degree-hours and winter heating degree-days. Two variables are used to capture the impact of electric prices on energy usage. One variable is based on increases in the price of electricity over

[2] Note that in addition to the fact that these energy efficiency codes and standards lower the forecasted load, these standards also lower the potential for energy efficiency gains that would otherwise be available through utility DSM programs.

time while another variable is based on decreases in the price of electricity over time. By using two different price terms, the fact that consumers may have proportionately different responses to price increases as to price decreases is captured in the model. To capture economic conditions, the model includes a composite variable based on Florida real per capita income and the percent of the state's population that is employed. Residential energy sales are forecasted by multiplying the projected residential use per customer by the projected number of residential customers.

2. Commercial Sales

The commercial sales forecast is also developed using econometric models. The commercial class is forecast using four separate models, based on customer size, including: commercial lighting accounts, small accounts (less than 20 kW of demand), medium accounts (21 kW to 499 kW of demand), and large accounts (demand of 500 kW or higher). Commercial sales are driven by economic and weather variables. Specifically, the small commercial sales model utilizes the following variables: Florida real per capita income weighted by the percent of the population that is employed, cooling degree-hours, heating degree-hours, lagged cooling degree-hours, an electric price variable based on increases in the real price of electricity over time, dummy variables for the specific months of November 2005, January 2007, and February 2015, and an autoregressive term.

The medium commercial sales model utilizes the following variables: Florida real per capita income weighted by the percent of the population that is employed, cooling degree-hours, lagged cooling degree-hours, an electric price variable based on increases in the real price of electricity over time, and autoregressive terms. The large commercial sales model utilizes the following variables: Florida real per capita income weighted by the percent of the population that is employed, cooling degree-hours, lagged cooling degree-hours, an electric price variable based on increases in the real price of electricity over time, an electric price variable based on decreases in the real price of electricity over time, and dummy variables for the month of December and for the specific months of January 2007 and November 2005. Finally, the commercial lighting sales model uses a lag of commercial lighting sales, dummy variables for August 2004 and September 2004, and autoregressive terms.

3. Industrial Sales

The industrial class is forecast using three separate models that are based on customer size. The industrial class is comprised of three distinct groups: small accounts (less than 20 kW of demand), medium accounts (21 kW to 499 kW of demand), and large accounts (demands of 500 kW or higher). The small industrial sales model utilizes the following variables: Florida housing starts, cooling degree-hours, heating degree-hours, and autoregressive terms. The medium industrial sales model utilizes the following variables: cooling degree-hours, January heating degree-days, dummy variables for the specific months of February 2005, November 2005, and February 2006, and autoregressive terms. The large industrial sales model utilizes an exponential smoothing model.

4. Railroad and Railways Sales and Street and Highway Sales

This class consists solely of Miami-Dade County's Metrorail system. The projections for railroad and railways sales are based on a historical moving average.

The forecast for street and highway sales is developed by first developing a trended use per customer value, then multiplying this value by the number of forecasted customers.

5. Other Public Authority Sales

This class consists of a sports field rate schedule, which is closed to new customers, and one government account. The forecast for this class is based on its historical usage characteristics.

6. Total Sales to Ultimate Customer

Sales forecasts by revenue class are summed to produce a total sales forecast.

7. Sales for Resale

Sales for resale (wholesale) customers are composed of municipalities and/or electric co-operatives. These customers differ from jurisdictional customers in the respect that they are not the ultimate users of the electricity they buy. Instead, they resell this electricity to their own customers. FPL's load forecast includes wholesale loads served under full and partial requirements contracts that provide other utilities all, or a portion of, their load requirements at a level of service equivalent to FPL's own native load customers. There are currently nine customers in this class: Florida Keys Electric Cooperative, Lee County Electric Cooperative, New Smyrna Beach, Wauchula, Winter Park, Blountstown, Homestead, Quincy, and Seminole Electric Cooperative[3].

Beginning in May 2011, FPL began providing service to the Florida Keys Electric Cooperative under a long-term full requirements contract. FPL previously served the Florida Keys under a

[3] FPL continues to evaluate the possibility of serving the electrical loads of other entities at the time this Site Plan is being prepared. Because these possibilities are still being evaluated, the load forecast presented in this Site Plan does not include these potential loads.

partial requirements contract. The sales to Florida Keys Electric Cooperative are based on customer-supplied information and historical coincidence factors.

Lee County contracted with FPL for FPL to supply a portion of the Lee County load through 2013, then to serve the entire Lee County load beginning in 2014. This contract began in January 2010. Forecasted NEL for Lee County is based on customer-supplied information and historical coincident factors.

FPL sales to New Smyrna Beach began in February 2014. The contract is projected to continue through December 2017.

FPL's sales to Wauchula began in October 2011. The contract is projected to continue through December 2016.

Sales to Winter Park began in January 2014. The contract is projected to continue through December 2019.

Blountstown became an FPL wholesale customer in May 2012 under a contract that is projected to continue through December 2016.

FPL sales to Homestead began in August 2015. The contract is projected to continue through December 2024.

Sales to Quincy began in January 2016. The contract is projected to continue through December 2023.

FPL sales to Seminole Electric Cooperative are based on delivery of 200 MW that began in June 2014 and continues through May 2021.

II.D. Net Energy for Load (NEL)

An econometric model is developed to produce a NEL per customer forecast. The inputs to the model include Florida real per capita income weighted by the percent of the population that is employed, and electric prices. The model also includes several weather variables including cooling degree-hours and heating degree-days by calendar month, and heating degree-days based on 45^{o} F. In addition, the model includes a variable for energy efficiency codes and standards and a variable to account for leap year. There is also an autoregressive term in the model.

Two variables are used to capture the impact of electric prices on usage. One variable is based on increases in the real price of electricity over time while another variable is based on decreases in the real price of electricity over time. The energy efficiency variable is included to capture the impacts from major energy efficiency codes and standards, including those associated with the 2005 National Energy Policy Act, the 2007 Energy Independence and Security Act, and savings resulting from the use of compact fluorescent bulbs and LEDs. The estimated impact from these codes and standards includes engineering estimates and any resulting behavioral changes. The impact of these savings began in 2005 and their cumulative impact on NEL is expected to reach 16,238 GWh by 2025. This represents an approximately 11% reduction in what the forecasted NEL for 2025 would have been absence these codes and standards. From the end of 2015, the incremental reduction through 2025 is expected to be 8,714 GWh. An additional adjustment is made for the impact of incremental distributed generation added after July 2015. The adjustment to the forecast due to distributed generation is expected to reduce the NEL forecast by 550 GWh by 2025.

The forecast was also adjusted for the additional load added after July 2015 from new plug-in electric vehicles. This resulted in an increase of approximately 1,091 GWh by the end of the ten-year reporting period. The forecast was further adjusted for the incremental load added after 2015 from FPL's economic development riders added after July 2015.This incremental load is projected to grow to 411 GWh before leveling off in 2021.

The NEL forecast is developed by first multiplying the NEL per customer forecast by the projected total number of customers and then adjusting the forecasted results for the expected changes in load resulting from plug-in electric vehicles, new wholesale contracts, distributed generation, and FPL's economic development riders. Once the NEL forecast is determined, total billed sales are computed using a historical ratio of sales to NEL. The sales by class forecasts discussed previously are then adjusted to match the total billed sales. The forecasted NEL values for 2016 through 2025 are presented in Schedule 3.3 which appears at the end of this chapter.

II.E. System Peak Forecasts

The rate of absolute growth in FPL system peak load has been a function of the size of the customer base, varying weather conditions, projected economic conditions, and energy efficiency codes and standards. FPL developed the peak forecast models to capture these behavioral relationships. In addition, FPL's peak forecast also reflects changes in load expected as a result of changes in wholesale contracts, distributed generation, FPL's economic development riders, and the expected number of plug-in electric vehicles.

The savings from energy efficiency codes and standards incorporated into the peak forecast include the impacts from the 2005 National Energy Policy Act, the 2007 Energy Independence and Security Act, and the use of compact fluorescent light bulbs and LEDs. The impact from these energy efficiency standards began in 2005 and their cumulative impact on the Summer peak is expected to reach 3,517 MW by 2025. This reduction includes engineering estimates and any resulting behavioral changes. This reduction also represents significant energy efficiency that is not funded by FPL's customers through the Energy Conservation Cost Recovery Clause.

The cumulative 2025 impact from these energy efficiency codes and standards effectively reduces FPL's Summer peak for that year by approximately 12%. From the end of 2015, the projected incremental impact on the Summer peak from these energy efficiency codes and standards is projected to be a reduction of 1,803 MW through 2025. By 2025, the Winter peak is expected to be reduced by 2,011 MW as result of the cumulative impact from these energy efficiency standards since 2005. On an incremental basis, net of the reduction already experienced through 2015, the impact on the Winter peak from these energy efficiency standards is expected to reach 1,180 MW in 2025.

The forecast also was adjusted for additional load estimated from plug-in electric vehicles which is projected to be an increase of approximately 327 MW in the Summer and 164 MW in the Winter by the end of the ten-year reporting period. The forecast was also adjusted for the incremental load resulting from FPL's economic development riders. This incremental load is projected to grow to 43 MW in the Summer peak and 32 MW in the Winter peak before leveling off in 2021. The incremental impact of distributed generation results in an expected decrease of approximately 135 MW in the Summer and a negligible reduction in the Winter by the end of the ten-year reporting period. The incremental impact from distributed generation is based on forecasted increases in rooftop photovoltaic (PV) installations not otherwise reflected in the load forecast. The ratio of the expected Summer Peak MW reduction relative to the installed nameplate MW (DC) capacity is appropriately 34% for residential PV installations and appropriately 37% for commercial PV installations. The ratio of the expected Winter Peak MW reduction to installed nameplate MW (DC) capacity is close to 0% for both residential and commercial PV installations.

The forecasting methodology of Summer, Winter, and monthly system peaks is discussed below. The forecasted values for Summer and Winter peak loads for the years 2016 through 2025 are presented at the end of this chapter in Schedules 3.1 and 3.2, and in Chapter III in Schedules 7.1 and 7.2.

1. System Summer Peak

The Summer peak forecast is developed using an econometric model. The variables included in the model are the 3-month average Consumer Price Index (CPI) for Energy , Florida real household disposable income, cooling degree-hours two days prior to the peak day, the maximum temperature on the day of the peak, a variable for energy efficiency codes and standards, and a dummy variable for the years 1990 and 2005. The model is based on the Summer peak contribution per customer which is multiplied by total customers. This product is then adjusted to account for the expected changes in loads resulting from plug-in electric vehicles, wholesale contracts, distributed generation, and FPL's economic development riders to derive FPL's system Summer peak.

2. System Winter Peak

Like the system Summer peak model, this model also is an econometric model. The model consists of two weather-related variables: the minimum temperature on the peak day and heating degree-hours for the prior day squared. The model also includes two dummy variables; one for Winter peaks occurring on weekends and one for the year 1994. Also included in the model are a variable for housing starts per capita, and an autoregressive term. The forecasted results are adjusted for the impact of energy efficiency codes and standards. The model is based on the Winter peak contribution per customer which is multiplied by the total number of customers. This product then is adjusted for the expected changes in loads resulting from plug-in electric vehicles, changes in wholesale contracts, distributed generation, and FPL's economic development riders.

3. Monthly Peak Forecasts

The forecasting process for monthly peaks consists of the following steps:

a. The forecasted annual Summer peak is assumed to occur in the month of August which historically has accounted for more annual Summer peaks than any other month.

b. The forecasted annual Winter peak is assumed to occur in the month of January which historically has accounted for more annual Winter peaks than any other month.

c. The remaining monthly peaks are forecasted based on the historical relationship between the monthly peaks and the annual Summer peak.

II.F. Hourly Load Forecast

Forecasted values for system hourly load for the period 2016 through 2025 are produced using a System Load Forecasting “shaper” program. This model uses years of historical FPL hourly system load data to develop load shapes. The model generates a projection of hourly load values based on these load shapes and the forecast of monthly peaks and energy.

II.G. Uncertainty

Uncertainty is inherent in the load forecasting process. This uncertainty can result from a number of factors, including unexpected changes in consumer behavior, structural shifts in the economy, and fluctuating weather conditions. Large weather fluctuations, in particular, can result in significant deviations between actual and forecasted peak demands. The load forecast is based on average expected or normal weather conditions. An extreme 90% probability (P90) cold weather event, however, can add an additional 3,000 MW to the Winter peak and an extreme P90 hot weather event can add an additional 700 MW to the Summer peak.

In order to address uncertainty in the forecasts of aggregate peak demand and NEL, FPL first evaluates the assumptions underlying the forecasts. FPL takes a series of steps in evaluating the input variables, including comparing projections from different sources, identifying outliers in the series, and assessing the series’ consistency with past forecasts. As needed, FPL reviews additional factors that may affect the input variables.

Uncertainty is also addressed in the modeling process. Econometric models generally are used to forecast the aggregate peak demand and NEL. During the modeling process, the relevant statistics (goodness of fit, F-statistic, P-values, mean absolute deviation (MAD), mean absolute percentage error (MAPE), etc.) are scrutinized to ensure the models adequately explain historical variation. Once a forecast is developed, it is compared with past forecasts. Deviations from past forecasts are examined in light of changes in input assumptions to ensure that the drivers underlying the forecast are well understood. Finally, forecasts of aggregate peak demand and NEL are compared with the actual values as these become available. An ongoing process of variance analyses is performed. To the extent that the variance analyses identify large unexplained deviations between the forecast and actual values, revisions to the econometric model may be considered.

The inherent uncertainty in load forecasting is addressed in different ways in regard to FPL's overall resource planning and operational planning work. In regard to FPL's resource planning work, FPL's utilization of a 20% total reserve margin criterion, a Loss-of-Load-Probability (LOLP) criterion of 0.1, and a 10% generation-only reserve margin (GRM) criterion, are designed to maintain reliable electric service for FPL's customers in light of forecasting (and other) uncertainty. In addition, banded forecasts of the projected Summer peak and net energy for load may be produced based on an analysis of past forecasting variances. In regard to operational planning, a banded forecast for the projected Summer and Winter peak days is developed based on historical weather variations. These bands are then used to develop similar bands for the monthly peaks.

II.H. DSM

The effects of FPL's DSM energy efficiency programs implementation through June 2015 are assumed to be embedded in the actual usage data for forecasting purposes. The following projected DSM MW and MWh impacts are accounted for as "line item reductions" to the forecasts as part of the IRP process: the impacts of incremental energy efficiency that FPL has implemented in the July 2015 through December 2015 time period, incremental energy efficiency that FPL plans to implement in the future based on the DSM Goals set for FPL by the FPSC in December 2014, and the cumulative and projected incremental impacts of FPL's load management programs. FPL's DSM Goals address the years 2015 through 2024. For the year 2025 that is also accounted for in this Site Plan, an additional year of DSM impact consistent with the annual impact for 2015 through 2024 is also made. After making these adjustments to the load forecast values, the resulting "firm" load forecast is then used in FPL's IRP work as shown in Chapter III in Schedules 7.1 and 7.2.

Schedule 2.1
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			**Commercial**		
Year	Population	Members per Household	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	Average No. of Customers	Average kWh Consumption Per Customer
2006	8,565,331	2.19	54,570	3,906,267	13,970	44,487	478,867	92,901
2007	8,620,225	2.17	55,138	3,981,451	13,849	45,921	493,130	93,121
2008	8,679,431	2.17	53,229	3,992,257	13,333	45,561	500,748	90,987
2009	8,747,839	2.20	53,950	3,984,490	13,540	45,025	501,055	89,860
2010	8,858,545	2.21	56,343	4,004,366	14,070	44,544	503,529	88,464
2011	8,995,696	2.23	54,642	4,026,760	13,570	45,052	508,005	88,685
2012	9,118,826	2.25	53,434	4,052,174	13,187	45,220	511,887	88,340
2013	9,242,356	2.26	53,930	4,097,172	13,163	45,341	516,500	87,786
2014	9,372,089	2.25	55,202	4,169,028	13,241	45,684	525,591	86,919
2015	9,500,977	2.25	58,846	4,227,425	13,920	47,369	532,731	88,916

Historical Values (2006 - 2015):

Col. (2) represents population only in the area served by FPL.

Col. (4) and Col. (7) represent actual energy sales including the impacts of existing conservation.
These values are at the meter.

Col. (5) and Col. (8) represent the annual average of the twelve monthly values.

Schedule 2.1
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Rural & Residential			**Commercial**		
Year	Population	Members per Household	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	Average No. of Customers	Average kWh Consumption Per Customer
2016	9,627,752	2.24	57,282	4,288,888	13,356	46,420	540,219	85,927
2017	9,756,176	2.24	57,100	4,352,668	13,118	46,424	547,025	84,866
2018	9,888,636	2.24	57,493	4,418,320	13,012	46,616	553,530	84,215
2019	10,023,483	2.24	57,889	4,484,457	12,909	46,822	559,800	83,641
2020	10,158,897	2.23	58,627	4,550,120	12,885	47,245	565,960	83,478
2021	10,294,771	2.23	59,108	4,615,323	12,807	47,485	571,990	83,018
2022	10,431,246	2.23	59,557	4,680,428	12,725	47,687	577,887	82,520
2023	10,568,102	2.23	60,033	4,745,673	12,650	47,930	583,531	82,138
2024	10,705,759	2.23	60,524	4,811,139	12,580	48,235	588,896	81,907
2025	10,844,154	2.22	61,034	4,876,523	12,516	48,454	594,162	81,550

Projected Values (2016 - 2025):

Col. (2) represents population only in the area served by FPL.

Col. (4) and Col. (7) represent forecasted energy sales that do not include the impact of incremental conservation.
These values are at the meter.

Col. (5) and Col. (8) represent the annual average of the twelve monthly values.

Schedule 2.2
History of Energy Consumption
And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads & Railways	Street & Highway Lighting	Sales to Public Authorities	Sales to Ultimate Consumers
Year	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	GWh	GWh	GWh
2006	4,036	21,211	190,277	94	422	49	103,659
2007	3,774	18,732	201,499	91	437	53	105,415
2008	3,587	13,377	268,168	81	423	37	102,919
2009	3,245	10,084	321,796	80	422	34	102,755
2010	3,130	8,910	351,318	81	431	28	104,557
2011	3,086	8,691	355,104	82	437	27	103,327
2012	3,024	8,743	345,871	81	441	25	102,226
2013	2,956	9,541	309,772	88	442	28	102,784
2014	2,941	10,415	282,398	91	446	24	104,389
2015	3,042	11,318	268,799	92	448	23	109,820

Historical Values (2006 - 2015):

Col. (10) and Col.(15) represent actual energy sales including the impacts of existing conservation. These values are at the meter.

Col. (11) represents the annual average of the twelve monthly values.

Col. (16) = Schedule 2.1 Col. (4) + Schedule 2.1 Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.2
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Industrial			Railroads & Railways	Street & Highway Lighting	Sales to Public Authorities	Sales to Ultimate Consumers
Year	GWh	Average No. of Customers	Average kWh Consumption Per Customer	GWh	GWh	GWh	GWh
2016	3,173	12,265	258,706	91	478	23	107,467
2017	3,255	13,245	245,774	91	488	23	107,382
2018	3,319	13,860	239,502	91	499	23	108,041
2019	3,368	14,088	239,089	91	509	23	108,703
2020	3,407	14,274	238,681	91	519	23	109,913
2021	3,438	14,479	237,411	91	529	23	110,674
2022	3,461	14,603	237,024	91	539	23	111,359
2023	3,479	14,609	238,145	91	549	23	112,106
2024	3,492	14,479	241,151	91	559	23	112,924
2025	3,501	14,389	243,349	91	569	23	113,673

Projected Values (2016 - 2025):

Col. (10) and Col.(15) represent forecasted energy sales that do not include the impact of incremental conservation. These values are at the meter.

Col. (11) represents the annual average of the twelve monthly values.

Col. (16) = Schedule 2.1 Col. (4) + Schedule 2.1 Col. (7) + Col. (10) + Col. (13) + Col. (14) + Col. (15).

Schedule 2.3
History of Energy Consumption
And Number of Customers by Customer Class

(1) Year	(17) Sales for Resale GWh	(18) Utility Use & Losses GWh	(19) Net Energy For Load GWh	(20) Average No. of Other Customers	(21) Total Average Number of Customers
2006	1,569	7,909	113,137	3,218	4,409,563
2007	1,499	7,401	114,315	3,276	4,496,589
2008	993	7,092	111,004	3,348	4,509,730
2009	1,155	7,394	111,303	3,439	4,499,067
2010	2,049	7,870	114,475	3,523	4,520,328
2011	2,176	6,950	112,454	3,596	4,547,051
2012	2,237	6,403	110,866	3,645	4,576,449
2013	2,158	6,713	111,655	3,722	4,626,934
2014	5,375	6,204	115,968	3,795	4,708,829
2015	6,610	6,326	122,756	3,907	4,775,382

Historical Values (2006 - 2015):

Col. (19) represents actual energy sales including the impacts of existing conservation.

Col. (19) = Schedule 2.2 Col. (16) + Col. (17) + Col. (18). Historical NEL includes the impacts of existing conservation and agrees to Col. (5) on schedule 3.3. Historical GWH, prior to 2011, are based on a fiscal year beginning 12/29 and ending 12/28. The 2011 value is based on 12/29/10 to 12/31/11. The 2012-2015 values are based on calendar year.

Col. (20) represents the annual average of the twelve monthly values.

Col. (21) = Schedule 2.1 Col. (5) + Schedule 2.1 Col. (8) + Schedule 2.2 Col. (11) + Col. (20).

Schedule 2.3
Forecast of Energy Consumption
And Number of Customers by Customer Class

(1) Year	(17) Sales for Resale GWh	(18) Utility Use & Losses GWh	(19) Net Energy For Load GWh	(20) Average No. of Other Customers	(21) Total Average Number of Customers
2016	6,524	5,730	119,721	4,019	4,845,390
2017	5,988	5,606	118,976	4,099	4,917,036
2018	6,013	5,702	119,756	4,179	4,989,889
2019	6,084	5,735	120,522	4,259	5,062,605
2020	6,156	5,814	121,884	4,339	5,134,692
2021	5,651	5,811	122,136	4,418	5,206,211
2022	5,202	5,817	122,378	4,496	5,277,415
2023	5,278	5,857	123,240	4,575	5,348,387
2024	5,354	5,894	124,172	4,651	5,419,165
2025	5,432	5,957	125,062	4,728	5,489,801

Projected Values (2016 - 2025):

Col. (19) represents forecasted energy sales that do not include the impact of incremental conservation and agrees to Col. (2) on Schedule 3.3.

Col. (19) = Schedule 2.2 Col. (16) + Col. (17) + Col. (18). These values are based on calendar year.

Col. (20) represents the annual average of the twelve monthly values.

Col. (21) = Schedule 2.1 Col. (5) + Schedule 2.1 Col. (8) + Schedule 2.2 Col. (11) + Col. (20).

Schedule 3.1
History of Summer Peak Demand (MW)

(1) Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2006	21,819	256	21,563	0	928	948	635	640	20,256
2007	21,962	261	21,701	0	952	982	716	683	20,295
2008	21,060	181	20,879	0	966	1,042	760	706	19,334
2009	22,351	249	22,102	0	981	1,097	811	732	20,558
2010	22,256	419	21,837	0	990	1,181	815	758	20,451
2011	21,619	427	21,192	0	1,000	1,281	821	781	19,798
2012	21,440	431	21,009	0	1,013	1,351	833	810	19,594
2013	21,576	396	21,180	0	1,025	1,417	833	839	19,718
2014	22,935	955	21,980	0	1,010	1,494	843	866	21,082
2015	22,959	1,303	21,656	0	878	1,523	826	873	21,255

Historical Values (2006 - 2015):

Col. (2) - Col. (4) are actual values for historical Summer peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9), and may incorporate the effects of load control if load control was operated on these peak days. Therefore, Col. (2) represents the actual Net Firm Demand.

Col. (5) - Col. (9) represent actual DSM capabilities starting from January 1988 and are annual (12-month) values except for 2015 values which are through June.

Col. (6) value for 2015 primarily reflects a short-term hardware communications issue that is projected to be resolved by the end of 2017.

Col. (10) represents a hypothetical "Net Firm Demand" as if the load control values had definitely been exercised on the peak. Col. (10) is derived by the formula: Col. (10) = Col.(2) - Col.(6) - Col.(8).

Schedule 3.1
Forecast of Summer Peak Demand (MW)

(1) August of Year	(2) Total	(3) Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management*	(7) Residential Conservation	(8) C/I Load Management*	(9) C/I Conservation	(10) Net Firm Demand
2016	24,170	1,297	22,872	0	931	37	859	16	22,327
2017	24,336	1,284	23,052	0	983	51	871	29	22,401
2018	24,606	1,248	23,358	0	1,007	63	883	43	22,611
2019	24,893	1,257	23,636	0	1,016	74	895	56	22,852
2020	25,206	1,203	24,003	0	1,025	86	907	70	23,117
2021	25,316	1,009	24,307	0	1,034	98	918	85	23,180
2022	25,540	1,015	24,525	0	1,044	111	930	100	23,355
2023	25,833	1,022	24,811	0	1,053	124	942	115	23,599
2024	26,180	1,009	25,172	0	1,062	138	954	131	23,896
2025	26,572	988	25,584	0	1,070	151	965	147	24,239

Projected Values (2016 - 2025):

Col. (2) - Col. (4) represent FPL's forecasted peak and does not include incremental conservation, cumulative load management, or incremental load management.

Col. (5) - Col. (9) represent cumulative load management, and incremental conservation and load management. All values are projected August values.

Col. (8) represents FPL's Business On Call, CDR, CILC, and Curtailable programs/rates.

Col. (10) represents a 'Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by using the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

* Res. Load Management and C/I Load Management include MW values of load management from Lee County and FKEC whose loads FPL serves.

Schedule 3.2
History of Winter Peak Demand (MW)

(1) Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management	(7) Residential Conservation	(8) C/I Load Management	(9) C/I Conservation	(10) Net Firm Demand
2006	19,683	225	19,458	0	823	600	550	240	18,311
2007	16,815	223	16,592	0	846	620	577	249	15,392
2008	18,055	163	17,892	0	868	644	636	279	16,551
2009	20,081	207	19,874	0	881	666	676	285	18,524
2010	24,346	500	23,846	0	895	687	721	291	22,730
2011	21,126	383	20,743	0	903	717	723	303	19,501
2012	17,934	382	17,552	0	856	755	722	314	16,356
2013	15,931	348	15,583	0	843	781	567	326	14,521
2014	17,500	890	16,610	0	828	805	590	337	16,083
2015	19,718	1,329	18,389	0	822	835	551	346	18,345

Historical Values (2006 - 2015):

Col. (2) - Col. (4) are actual values for historical Winter peaks. As such, they incorporate the effects of conservation (Col. 7 & Col. 9), and may incorporate the effects of load control if load control was operated on these peak days. Therefore, Col. (2) represents the actual Net Firm Demand. For year 2011, the actual peaked occurred in December of 2010.

Col. (5) - Col. (9) for 2006 through 2015 represent actual DSM capabilities starting from January 1988 and are annual (12-month) values.

Col. (10) represents a hypothetical "Net Firm Demand" as if the load control values had definitely been exercised on the peak. Col. (10) is derived by the formula: Col. (10) = Col.(2) - Col.(6) - Col.(8).

Schedule 3.2
Forecast of Winter Peak Demand (MW)

(1) January of Year	(2) Total	(3) Firm Wholesale	(4) Retail	(5) Interruptible	(6) Res. Load Management*	(7) Residential Conservation	(8) C/I Load Management*	(9) C/I Conservation	(10) Net Firm Demand
2016	20,252	1,215	19,037	0	763	18	590	6	18,875
2017	21,140	1,203	19,937	0	801	22	596	16	19,705
2018	21,358	1,162	20,195	0	836	25	601	25	19,870
2019	21,602	1,167	20,434	0	843	29	607	35	20,087
2020	21,780	1,109	20,671	0	851	34	612	45	20,238
2021	21,992	1,111	20,881	0	858	38	618	56	20,422
2022	21,980	913	21,067	0	866	43	623	67	20,381
2023	22,195	915	21,281	0	873	48	629	79	20,567
2024	22,405	897	21,507	0	880	53	634	91	20,747
2025	22,581	872	21,709	0	888	58	639	103	20,893

Projected Values (2016 - 2025):

Col. (2) - Col. (4) represent FPL's forecasted peak and does not include incremental conservation, cumulative load management, or incremental load management.

Col. (5) - Col. (9) represent cumulative load management, and incremental conservation and load management. All values are projected January values.

Col. (6) value for 2016 primarily reflects a short-term hardware communications issue that is projected to be resolved by the end of 2017.

Col. (8) represents FPL's Business On Call, CDR, CILC, and Curtailable programs/rates.

Col. (10) represents a 'Net Firm Demand" which accounts for all of the incremental conservation and assumes all of the load control is implemented on the peak. Col. (10) is derived by using the formula: Col. (10) = Col. (2) - Col. (5) - Col. (6) - Col. (7) - Col. (8) - Col. (9).

* Res. Load Management and C/I Load Management include MW values of load management from Lee County and FKEC whose loads FPL serves.

Schedule 3.3
History of Annual Net Energy for Load (GWh)
(All values are "at the generator" values except for Col (8))

(1) Year	(2) Net Energy For Load without DSM GWh	(3) Residential Conservation GWh	(4) C/I Conservation GWh	(5) Actual Net Energy For Load GWh	(6) Sales for Resale GWh	(7) Utility Use & Losses GWh	(8) Total Billed Retail Energy Sales (GWh)	(9) Load Factor(%)
2006	117,116	2,078	1,901	113,137	1,569	7,909	103,659	59.2%
2007	118,518	2,138	2,066	114,315	1,499	7,401	105,415	59.4%
2008	115,379	2,249	2,126	111,004	993	7,092	102,919	60.0%
2009	115,844	2,345	2,196	111,303	1,155	7,394	102,755	56.8%
2010	119,220	2,487	2,259	114,475	2,049	7,870	104,557	58.7%
2011	117,460	2,683	2,324	112,454	2,176	6,950	103,327	59.4%
2012	116,083	2,823	2,394	110,866	2,237	6,403	102,226	58.9%
2013	117,087	2,962	2,469	111,655	2,158	6,713	102,784	59.1%
2014	121,621	3,125	2,529	115,968	5,375	6,204	104,389	57.7%
2015	128,556	3,232	2,568	122,756	6,610	6,326	109,820	61.0%

Historical Values (2006 - 2015):

Col. (2) represents derived "Total Net Energy For Load w/o DSM". The values are calculated using the formula: Col. (2) = Col. (3) + Col. (4) + Col. (5).

Col. (3) & Col. (4) are DSM values starting in January 1988 and are annual (12-month) values. Col. (3) and Col. (4) for 2015 are "estimated actuals" and are also annual (12-month) values. The values represent the total GWh reductions experienced each year .

Col. (8) is the Total Retail Billed Sales. The values are calculated using the formula: Col. (8) = Col. (5) - Col. (6) - Col. (7). These values are at the meter.

Col. (9) is calculated using Col. (5) from this page and Col. (2), "Total", from Schedule 3.1 using the formula: Col. (9) = ((Col. (5)*1000) / ((Col. (2) * 8760)
Adjustments are made for leap years.

Schedule 3.3
Forecast of Annual Net Energy for Load (GWh)
(All values are "at the generator"values except for Col (8))

(1) Year	(2) Forecasted Net Energy For Load without DSM GWh	(3) Residential Conservation GWh	(4) C/I Conservation GWh	(5) Net Energy For Load Adjusted for DSM GWh	(6) Sales for Resale GWh	(7) Utility Use & Losses GWh	(8) Forecasted Total Billed Retail Energy Sales w/o DSM GWh	(9) Load Factor(%)
2016	119,721	57	51	119,614	6,524	5,730	107,467	56.4%
2017	118,976	80	75	118,821	5,988	5,606	107,382	55.8%
2018	119,756	103	101	119,552	6,013	5,702	108,041	55.6%
2019	120,522	127	129	120,266	6,084	5,735	108,703	55.3%
2020	121,884	152	157	121,574	6,156	5,814	109,913	55.2%
2021	122,136	178	187	121,771	5,651	5,811	110,674	55.1%
2022	122,378	205	219	121,954	5,202	5,817	111,359	54.7%
2023	123,240	232	252	122,756	5,278	5,857	112,106	54.5%
2024	124,172	260	287	123,625	5,354	5,894	112,924	54.1%
2025	125,062	289	322	124,452	5,432	5,957	113,673	53.7%

Projected Values (2016 - 2025):

Col. (2) represents Forecasted Net Energy for Load and does not include incremental DSM from 2016 - on. The Col. (2) values are extracted from Schedule 2.3, Col(19). The effects of conservation implemented prior to mid - 2015 are incorporated into the load forecast values in Col. (2).

Col. (3) & Col. (4) are forecasted values of the reduction on sales from incremental conservation from Jan 2016 - on and are mid-year (6-month) values reflecting DSM signups occurring evenly thoughout each year.

Col. (5) is the forecasted Net Energy for Load (NEL) after adjusting for impacts of incremental DSM for years 2016 - 2025 using the formula:
Col. (5) = Col. (2) - Col. (3) - Col. (4)

Col. (8) is the Total Retail Billed Sales. The values are calculated using the formula: Col. (8) = Col. (2) - Col. (6) - Col. (7).
These values are at the meter.

Col. (9) is calculated using Col. (2) from this page and Col. (2), "Total", from Schedule 3.1. Col. (9) = ((Col. (2)*1000) / ((Col. (2) * 8760)
Adjustments are made for leap years.

Schedule 4
Previous Year Actual and Two-Year Forecast of
Retail Peak Demand and Net Energy for Load (NEL) by Month

(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2015 Actual		2016 FORECAST		2017 FORECAST	
Month	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh	Total Peak Demand MW	NEL GWh
JAN	15,747	8,448	20,252	8,816	21,140	8,858
FEB	19,718	7,677	18,254	8,201	18,380	7,997
MAR	17,979	9,443	18,199	9,003	18,324	8,988
APR	21,242	10,159	19,761	9,305	19,897	9,257
MAY	21,016	10,806	21,594	10,578	21,743	10,518
JUN	22,959	11,385	23,044	11,084	23,202	11,009
JUL	22,153	11,894	23,451	11,843	23,613	11,765
AUG	22,717	12,024	24,170	12,006	24,336	11,928
SEP	22,563	11,101	22,639	11,070	22,794	10,996
OCT	20,990	10,424	21,298	10,369	21,445	10,310
NOV	20,541	9,819	18,715	8,623	18,843	8,573
DEC	18,130	9,578	17,979	8,825	18,103	8,776
Annual Values:		**122,756**		**119,721**		**118,976**

Col. (3) annual value shown is consistent with the value shown in Col.(5) of Schedule 3.3.

Cols. (4) - (7) do not include the impacts of cumulative load management, incremental utility conservation, and incremental load management.

Cols. (5) and Col. (7) annual values shown are consistent with forecasted values shown in Col.(2) of Schedule 3.3.

CHAPTER III

Projection of Incremental Resource Additions

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III. Projection of Incremental Resource Additions

III.A FPL's Resource Planning:

FPL utilizes its well established integrated resource planning (IRP) process, in whole or in part as dictated by analysis needs, to determine: when new resources are needed, what the magnitude of the needed resources are, and what type of resources should be added. The timing and type of new generating resources, the primary subjects of this document, are determined as part of the IRP process work.

This section describes FPL's basic IRP process. It also discusses some of the key assumptions, in addition to a new load forecast discussed in the previous chapter, that were used in developing the resource plan presented in this Site Plan.

Four Fundamental Steps of FPL's Resource Planning:

There are 4 fundamental steps to FPL's resource planning. These steps can be generally described as follows:

Step 1: Determine the magnitude and timing of FPL's new resource needs;

Step 2: Identify which resource options and resource plans can meet the determined magnitude and timing of FPL's resource needs (i.e., identify competing options and resource plans);

Step 3: Evaluate the competing options and resource plans in regard to system economics and non-economic factors; and,

Step 4: Select a resource plan and commit, as needed, to near-term options.

Figure III.A.1 graphically outlines the 4 steps.

Overview of FPL's IRP Process

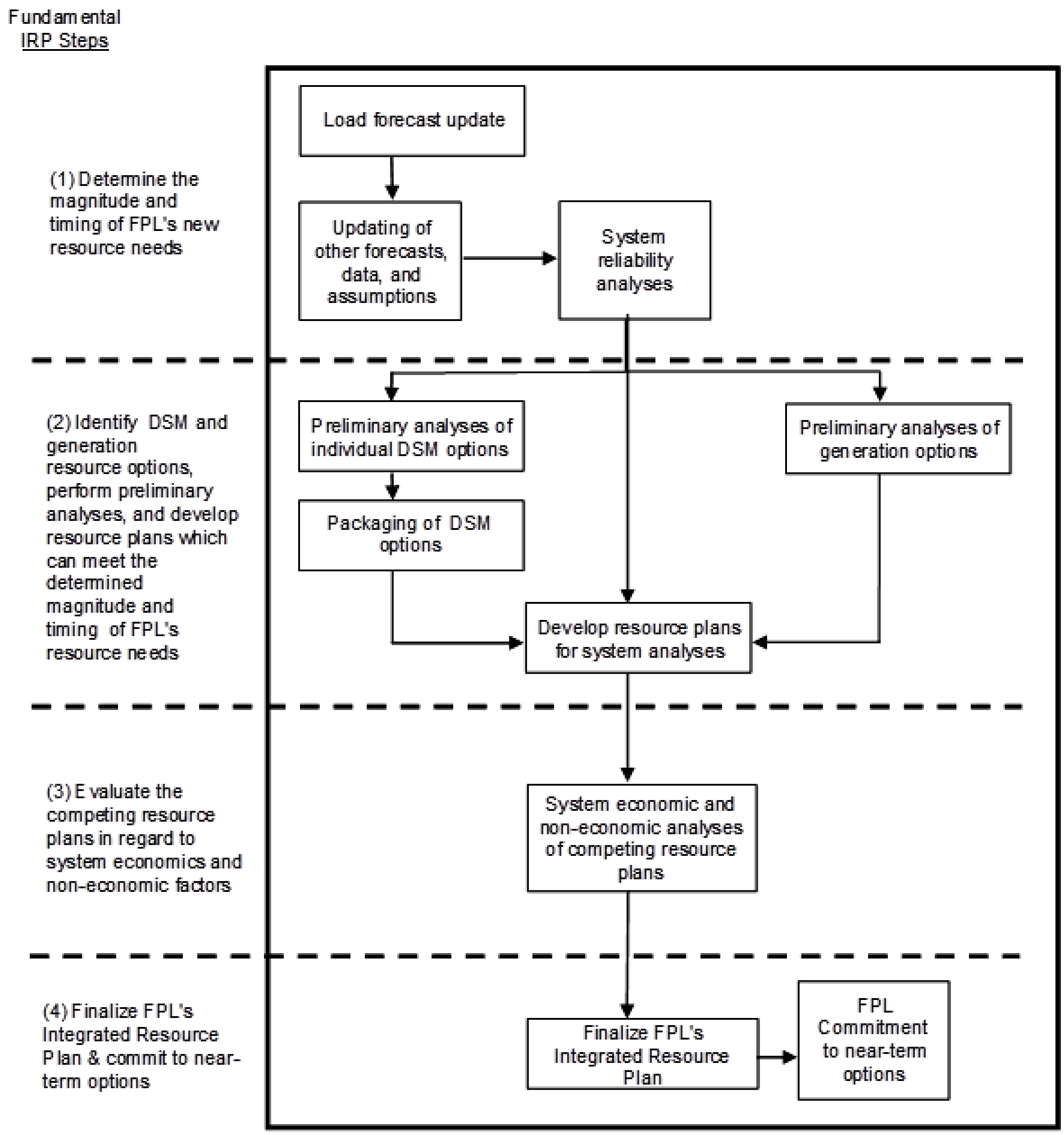

Figure III.A.1: Overview of FPL's IRP Process

Step 1: Determine the Magnitude and Timing of FPL's New Resource Needs:

The first of the four resource planning steps, determining the magnitude and timing of FPL's resource needs, is essentially a determination of the amount of capacity or megawatts (MW) of load reduction, new capacity additions, or a combination of both load reduction and new capacity additions that are needed to maintain system reliability. Also determined in this step is when the MW additions are needed to meet FPL's reliability criteria. This step is often referred to as a reliability assessment, or resource adequacy, analysis for the utility system.

Step 1 typically starts with an updated load forecast. Several databases are also updated in this first fundamental step, not only with the new information regarding forecasted loads, but also with other information that is used in many of the fundamental steps in resource planning. Examples of this new information include, but are not limited to: delivered fuel price projections, current financial and economic assumptions, current power plant capability and operating assumptions, and current demand side management (DSM) demand and energy reduction assumptions. FPL also includes key sets of projections regarding three specific types of resources: (1) FPL unit capacity changes, (2) firm capacity power purchases, and (3) DSM implementation.

Key Assumptions Regarding the Three Types of Resources:

The first set of assumptions, FPL unit capacity changes, is based on the current projection of new generating capacity additions and planned retirements of existing generating units. In FPL's 2016 Site Plan, there are four (4) such projected capacity changes through the 10-year reporting time frame of this document. These changes are listed below in general chronological order:

1) CT upgrades at existing CC plant sites:

   In the fourth quarter of 2011, FPL started upgrading the 7FA combustion turbines (CT) that are components at a number of its existing CC units. These upgrades will economically benefit FPL's customers by increasing the MW output of these CC units. 260 MW of the increased capacity from these CT upgrades are projected to be in service by the April 1, 2016 filing date of this Site Plan.

2) New Solar Facilities:

   By the end of 2016, FPL will have completed the process of adding new photovoltaic (PV) facilities at three sites. These sites are FPL's existing Manatee plant site in Manatee County, the Citrus site in DeSoto County, and the Babcock Ranch site in Charlotte County. Each of the PV facilities is projected to have a rating of approximately 74.5 MW (nameplate, AC). Therefore, the three PV facilities will have a combined total rating of approximately 223 MW (nameplate, AC). FPL's analyses of these three specific projects have led to a conclusion that approximately 52% of their nameplate (AC) rating can be accounted for as firm Summer capacity, and 0% for firm Winter capacity, in FPL's reliability analyses.

3) GT Replacement:

For economic reasons, FPL is in the process of retiring a number of its older gas turbine (GT) peaking units at its three GT sites (Lauderdale, Port Everglades, and Fort Myers) and partially replace this peaking capacity with new combustion turbine (CT) capacity at the Lauderdale and Fort Myers sites. In addition, the two existing CTs at the Fort Myers site will be upgraded which will increase their capacity. These GT- and CT-related changes are projected to be completed by the end of 2016.

4) New Combined Cycle Capacity:

FPL will be adding a new combined cycle (CC) generating unit at its Okeechobee site in mid-2019. This new generating unit was first selected as FPL's best self-build generating option. A request for proposals (RFP) was then issued to solicit capacity proposals from outside parties. However, no proposals were submitted which met the requirements of the RFP. FPL sought a determination of need from the Florida Public Service Commission (FPSC) for approval to build the Okeechobee CC unit. The FPSC issued its approval for the new unit in a final order (Order No.PSC-16-0032-FOF-EI) issued on January 19, 2016.

The second set of assumptions involves firm capacity power purchases. As discussed in last year's Site Plan, FPL terminated its then existing power purchase agreement for 250 MW of coal-fired capacity from the Cedar Bay generating facility in mid-2015 as a result of a Purchase and Sale Agreement between FPL and Cedar Bay Generating Company, L.P. that was approved by the FPSC. FPL currently owns the unit and anticipates that it will not need the unit for economic purposes after 2016 and plans to retire the unit at that time.

FPL's current projections include an additional 70 MW of waste-to-energy capacity from the Palm Beach Solid Waste Authority (SWA) that started in 2015. In addition, FPL projects that it will begin receiving a total of 180 MW of firm capacity in 2021 from biomass-based power purchase agreements with affiliates of U.S. EcoGen. Non-firm energy will be supplied by EcoGen beginning in 2019. There are only two notable changes to FPL's projections regarding firm capacity purchases. The first is that 11 MW of firm capacity from Broward North is no longer to FPL at the request of Broward North. The second change is in regard to the purchase agreement with Jacksonville Electric Authority (JEA) involving the St. Johns Regional Power Park (SJRPP). FPL currently projects that Internal Revenue Service (IRS) regulations regarding the amount of energy that FPL can receive under the SJRPP purchase agreement will result in the suspension of the delivery of capacity and energy to FPL in the fourth quarter of 2019, instead of the second quarter of 2019 which was the projection last year.[4]

In total, the projected firm capacity purchases are from a combination of utility and independent power producers. Details, including the annual total capacity values for these purchases, are presented in Chapter I in Tables I.B.1 and I.B.2. These purchased capacity amounts were incorporated in FPL's resource planning work.

The third set of assumptions involves a projection of the amount of additional DSM that FPL anticipates it will implement annually over the ten-year period of 2016 through 2025. A key aspect of FPL's IRP process is the evaluation of DSM resources. Since 1994, FPL's resource planning work has assumed that, at a minimum, the DSM MW called for in FPL's FPSC-approved DSM Plan will be achieved. FPL's current DSM Goals were established by the FPSC in December 2014. These DSM Goals address the years 2015 through 2024. The FPSC's DSM Goals Order No. PSC-14-0696-FOF-EU recognized that two important market forces currently were affecting the feasibility and cost-effectiveness of utility DSM programs. The first of these is the growing impact of federal and state energy efficiency codes and standards. As discussed in Chapter II, the projected incremental impacts of these energy efficiency codes and standards during the 2016 through 2025 time period are: a Summer peak reduction of approximately 1,803 MW, a Winter peak reduction of approximately 1,180 MW, and approximately 8,714 GWh of energy reduction. As a result, these energy efficiency codes and standards significantly reduce the potential for cost-effective utility DSM programs.

The second market force was FPL's lower generating costs with which DSM must compete. This is particularly noticeable in regard to current and projected fuel costs compared to those when Florida previously established DSM Goals in 2009. As an example, natural gas cost projections are more than 50% lower than natural gas costs projections were in 2009. Although lower generating costs, such as lower fuel costs, are very beneficial for FPL's customers, they also negatively impact the economics of utility DSM programs. Therefore, fewer DSM programs are now cost-effective. In addition, for some DSM programs to remain cost-effective, incentive payments to participating customers have to be lowered, thus reducing the attractiveness of these programs to potential participants.

[4] FPL's projected suspension date for the SJRPP purchase is based on a system reliability perspective and represents the earliest projected date at which the suspension of capacity and energy could occur.

The FPSC recognized the impact these market forces have on utility DSM programs and set the new DSM Goals accordingly. The new DSM Goals are appropriately lower than the previous DSM goals which will help ensure that the electric rate impacts to all of FPL's customers from pursuing DSM are minimized.

In August 2015, the FPSC approved FPL's DSM Plan that presents specific DSM programs designed to achieve the DSM Goals in Order No. PSC-15-0331-PAA-EG. The incremental DSM that is described in both the DSM Goals and DSM Plan orders is projected to be implemented in all of FPL's resource planning work, including the resource plan that is presented in this Site Plan. FPL's DSM efforts are further discussed later in this chapter in section III.D.

The Three Reliability Criteria Used to Determine FPL's Projected Resource Needs:

These key assumptions, plus the other updated information described above, are then applied in the first fundamental step: determining the magnitude and timing of FPL's future resource needs. This determination is accomplished by system reliability analyses. Up until 2014, FPL's reliability analyses were based on dual planning criteria of a minimum peak period total reserve margin of 20% (FPL applies this to both Summer and Winter peaks) and a maximum loss-of-load probability (LOLP) of 0.1 day per year. Both of these criteria are commonly used throughout the utility industry. Beginning in 2014, FPL began utilizing a third reliability criterion: a 10% generation-only reserve margin (GRM).

Historically, two types of methodologies, deterministic and probabilistic, have been utilized in system reliability analysis. The calculation of excess firm capacity at the annual system peaks (reserve margin) is the most common method, and this relatively simple deterministic calculation can be performed on a spreadsheet. It provides an indication of the adequacy of a generating system's capacity resources compared to its load during peak periods. However, deterministic methods do not take into account probabilistic-related elements such as the impact of individual unit failures. For example: two 50 MW units that can be counted on to run 90% of the time are more valuable in regard to utility system reliability than is one 100 MW unit that can also be counted on to run 90% of the time. Probabilistic methods also recognize the value of being part of an interconnected system with access to multiple capacity sources.

For this reason, probabilistic methodologies have been used to provide an additional perspective on the reliability of a generating system. There are a number of probabilistic methods that are in use for performing system reliability analyses. Among the most widely used is loss-of-load probability (LOLP) which FPL utilizes. Simply stated, LOLP is an index of how well a generating system may be able to meet its firm demand (i.e., a measure of how often load may exceed available resources). In contrast to reserve margin, the calculation of LOLP looks at the daily peak demands for each year, while taking into consideration such probabilistic events as the unavailability of individual generators due to scheduled maintenance or forced outages.

LOLP is expressed in terms of the projected probability that a utility will be unable to meet its entire firm load at some point during a year. The probability of not being able to meet the entire firm load is calculated for each day of the year using the daily peak hourly load. These daily probabilities are then summed to develop an annual probability value. This annual probability value is commonly expressed as “the number of days per year” that the entire system firm load could not be met. FPL’s standard for LOLP, commonly accepted throughout the industry, is a maximum of 0.1 day per year. This analysis requires a more complicated calculation methodology than does the reserve margin analysis. LOLP analyses are typically carried out using computer software models such as the Tie Line Assistance and Generation Reliability (TIGER) program used by FPL.

In 2010, FPL’s integrated resource planning work examined a then projected fundamental change in FPL’s resource plans. This change was a significant shift in the mix of generation and DSM resources in which FPL was becoming increasingly reliant on DSM resources, rather than generation resources, to maintain system reliability. As discussed in several subsequent FPL Site Plans, extensive analyses examined this shift from a system reliability perspective.

In these analyses, FPL developed a new metric: a generation-only reserve margin (GRM). This GRM metric reflects reserves that would be provided only by actual generating resources. The GRM value is calculated by setting to zero all incremental energy efficiency (EE) and load management (LM), plus all existing LM, to derive another version of a reserve margin calculation. The resulting GRM value provides an indication of how large a role generation is projected to play each year as FPL maintains its 20% Summer and Winter “total” reserve margins (which account for both generation and DSM resources).

These analyses examined the two types of resources, DSM and Supply options, from both an operational and a resource planning perspective. Based on these analyses, FPL concluded that resource plans for its system with identical total reserve margins, but different GRM values, are not equal in regard to system reliability. A resource plan with a higher GRM value is projected to result in more MW being available to system operators on adverse peak load days, and in lower LOLP values, than a resource plan with a lower GRM value, even though both resource plans have an identical total reserve margin value. Therefore, in 2014 FPL implemented a minimum GRM criterion of 10% as a third reliability criterion in its resource planning process. This criterion has to be met in all years beginning with the year 2019.

The 10% minimum Summer and Winter GRM criterion augments the other two reliability criteria used by FPL: a 20% total reserve margin criterion for Summer and Winter, and a 0.1 day/year LOLP criterion. All three reliability criteria are potentially useful in terms of identifying the timing and magnitude of the resource need because of the different perspectives the three criteria provide. In addition, the GRM criterion is particularly useful in providing direction regarding the mix of generation and DSM resources that should be added to maintain and enhance FPL's system reliability.

Step 2: Identify Resource Options and Plans That Can Meet the Determined Magnitude and Timing of FPL's Resource Needs:

The initial activities associated with this second fundamental step of resource planning generally proceed concurrently with the activities associated with Step 1. During Step 2, preliminary economic screening analyses of new capacity options that are identical, or virtually identical, in regard to certain key characteristics may be conducted to determine which new capacity options appear to be the most competitive on FPL's system. These preliminary analyses can also help identify capacity size (MW) values, projected construction/permitting schedules, and operating parameters and costs. Similarly, preliminary economic screening analyses of new DSM options and/or evaluation of existing DSM options are often conducted in this second fundamental IRP step.

FPL typically utilizes a production cost model, a Fixed Cost Spreadsheet, and/or an optimization model to perform the preliminary economic screening of generation resource options. For the preliminary economic screening analyses of DSM resource options, FPL typically uses its DSM CPF model which is an FPL spreadsheet model utilizing the FPSC's approved methodology for performing preliminary economic screening of individual DSM measures and programs. In addition, a years-to-payback screening test based on a two-year payback criterion is also used in the preliminary economic screening of individual DSM measures and programs. Then, as the focus of DSM analyses progresses from analysis of individual DSM measures to the development of DSM portfolios, FPL uses two additional models. One of these models is FPL's non-linear programming (NLP) model that is used for analyzing the potential for lowering system peak loads through additional load management/demand response capability. The other model that FPL typically utilizes is its linear programming (LP) model, which FPL uses to develop DSM portfolios.

The individual new resource options, both Supply options and DSM portfolios, emerging from these preliminary economic screening analyses are then typically "packaged" into different resource plans which are designed to meet the system reliability criteria. In other words, resource plans are created by combining individual resource options so that the timing and magnitude of FPL's projected new resource needs are met. The creation of these competing resource plans is typically carried out using spreadsheet and/or dynamic programming techniques.

At the conclusion of the second fundamental resource planning step, a number of different combinations of new resource options (i.e., resource plans) of a magnitude and timing necessary to meet FPL's resource needs are identified.

Step 3: Evaluate the Competing Options and Resource Plans in Regard to System Economics and Non-Economic Factors:

At the completion of fundamental Steps 1 & 2, the most viable new resource options have been identified and these resource options have been combined into a number of resource plans that each meet the magnitude and timing of FPL's resource needs. The stage is set for evaluating these resource options and resource plans in system economic analyses that aim to account for all of the impacts to the FPL system from the competing resource options/resource plans. In FPL's 2015 and early 2016 resource planning work, once the resource plans were developed, FPL utilized the UPLAN production cost model and a Fixed Cost Spreadsheet, and/or the EGEAS optimization model, to perform the system economic analyses of the resource plans. Other spreadsheet models may also be used to further analyze the resource plans.

The basic economic analyses of the competing resource plans focus on total system economics. The standard basis for comparing the economics of competing resource plans is their relative impact on FPL's electricity rate levels, with the objective generally being to minimize FPL's projected levelized system average electric rate (i.e., a Rate Impact Measure or RIM methodology). In analyses in which the DSM contribution has already been determined through the same IRP process and/or FPSC approval, and therefore the only competing options are new generating units and/or purchase options, comparisons of competing resource plans' impacts on electricity rates and on system revenue requirements will yield identical outcomes in regard to the relative rankings of the resource options being evaluated. Consequently, the competing options and resource plans in such cases can be evaluated on a system cumulative present value revenue requirement (CPVRR) basis.

Other factors are also included in FPL's evaluation of resource options and resource plans. Although these factors may have an economic component or impact, they are often discussed in quantitative, but non-economic, terms such as percentages, tons, etc. rather than in terms of dollars. These factors are often referred to by FPL as “system concerns” that include (but are not limited to) maintaining/enhancing fuel diversity in the FPL system, system emission levels, and maintaining a regional balance between load and generating capacity, particularly in the Southeastern Florida counties of Miami-Dade and Broward. In conducting the evaluations needed to determine which resource options and resource plans are best for FPL’s system, the non-economic evaluations are conducted with an eye to whether the system concern is positively or negatively impacted by a given resource option or resource plan. These, and other, factors are discussed later in this chapter in section III.C.

Step 4: Finalizing FPL’s Current Resource Plan

The results of the previous three fundamental steps are typically used to develop FPL’s current resource plan. The current resource plan is presented in the following section.

III.B Projected Incremental Resource Additions/Changes in the Resource Plan

FPL’s projected incremental generation capacity additions/changes for 2016 through 2025 are depicted in Table ES-1 in the Executive Summary. These capacity additions/changes include an important resource planning-related difference between the 2016 and 2015 Site Plans previously discussed in the Executive Summary and which is described below.

Although FPL’s projected DSM additions that are developed in the IRP process are not explicitly presented in this table, these DSM additions have been fully accounted for in all of FPL’s resource planning work reflected in this document. The projected MW reductions from these DSM additions are also reflected in the projected total reserve margin values shown in Table ES-1 and in Schedules 7.1 and 7.2 presented later in this chapter. DSM is further addressed later in this chapter in section III.D.

III.C Discussion of the Projected Resource Plan and Issues Impacting FPL’s Resource Planning Work

As indicated in the Executive Summary, FPL’s resource planning efforts in 2015 and early 2016 resulted in one important resource planning-related difference between the 2016 and 2015 Site Plans: the fact that FPL is not projected to have a significant long-term resource need until near the end of the 10-year reporting period of this Site Plan.

A combination of the recently approved Okeechobee combined cycle that will enter service in mid-2019, plus forecasted lower peak load growth in subsequent years, results in FPL projecting that its next significant resource needs will not occur until 2024 and 2025. Because these resource needs are 8 and 9 years in the future, no decision regarding how to best meet those resource needs will be required for several years.

In addition, there are 5 other significant factors that either influenced the current resource plan presented in this document or which may result in changes in this resource plan in the future. These other factors are discussed below (in no particular order of importance).

1. **Maintaining/Enhancing System Fuel Diversity:**

   FPL currently uses natural gas to generate approximately two-thirds of the total electricity it delivers to its customers. In the future, the percentage of FPL's electricity that is generated by natural gas is projected to remain at a high level. For this reason, and due to evolving environmental regulations, FPL is continually seeking opportunities to economically maintain and enhance the fuel diversity of its system both in regard to type of fuel and fuel delivery.

   In 2007, following express direction by the FPSC to do so, FPL sought approval from the FPSC to add two new advanced technology coal units to its system. These two new units would have been placed in-service in 2013 and 2014. However, in part due to concerns over potential greenhouse gas emission legislation/regulation, FPL was unable to obtain approval for these units. Several other considerations currently unfavorable to new coal units compared to new natural gas-fired CC units. The first of these is a significant reduction in the fuel cost difference between coal and natural gas when compared to the fuel cost difference projected in 2007 which then favored coal; i.e., the projected fuel cost advantage of coal versus natural gas has been significantly reduced. Second is the continuation of significantly higher capital costs for coal units compared to capital costs for CC units. Third is the increased fuel efficiency of new CC units compared to projected CC unit efficiencies in 2007. Fourth are existing and proposed environmental regulations, including those that address greenhouse gas emissions, which are unfavorable to new coal units when compared to new CC units. Consequently, FPL does not believe that new advanced technology coal units are currently economically, politically, or environmentally viable fuel diversity enhancement options in Florida at this time.

   Therefore, FPL has turned its attention to: adding cost-effective nuclear energy and renewable energy to enhance its fuel diversity, diversifying the sources of natural gas, diversifying the gas transportation paths used to deliver natural gas to FPL's generating units, and using natural gas more efficiently. In regard to nuclear energy, in 2008 the FPSC approved the need to increase capacity at FPL's four existing nuclear units and authorized FPL to recover project-related expenditures that were approved as a result of annual nuclear cost recovery filings. FPL successfully completed this nuclear capacity uprate project. Approximately 520 MW of additional nuclear capacity was delivered by the project which represents an increase of approximately 30% more incremental capacity than was originally forecasted when the project began. FPL's customers are already benefitting from lower fuel costs and reduced system emissions provided by this additional nuclear capacity.

FPL is continuing its work to obtain all of the licenses, permits, and approvals that are necessary to construct and operate two new nuclear units at its Turkey Point site in the future. These licenses, permits, and approvals will provide FPL with the opportunity to construct these nuclear units at Turkey Point for a time expected to be up to 20 years from the time the licenses and permits are granted, and then to operate the units for at least 40 years thereafter. However, as discussed below, a several year delay in the Nuclear Regulatory Commission's (NRC) schedule for completing its review of FPL's Combined Operating License Application (COLA) has resulted in the earliest deployment dates for the two new nuclear units, Turkey Point Units 6 & 7, moving beyond the 2016 through 2025 reporting time period of this Site Plan (i.e., in mid-2027 and mid-2028, respectively).

FPL also has been involved in activities to investigate adding and/or maintaining renewable resources as a part of its generation supply. One of these activities is a variety of discussions with the owners of existing facilities aimed at maintaining or extending current agreements. In addition, FPL considers new cost-effective renewable energy projects such as the power purchase agreements with U.S. EcoGen which will result in FPL receiving 180 MW of firm capacity from biomass facilities beginning in 2021. Non-firm energy will be supplied by EcoGen beginning in 2019.

In 2008, FPL also sought and received approval from the FPSC to add 110 MW of then new renewable facilities through three FPL-owned solar facilities: one solar thermal facility and two photovoltaic (PV) facilities. One 25 MW PV facility began commercial operation in 2009. The remaining two solar facilities, a 10 MW PV facility and a 75 MW solar thermal steam generating facility, began commercial operation in 2010. The addition of these renewable energy facilities was made possible by enabling legislation enacted by the Florida Legislature in 2008. FPL remains strongly supportive of federal and/or state legislation that enables electric utilities to add renewable energy resources and authorize the utilities to recover appropriate costs for these resources.

The capital costs for PV modules have steadily declined. FPL's on-going analyses of its existing PV facilities have led FPL to develop a methodology with which to determine appropriate firm capacity values for PV facilities for use in reserve margin calculations. This methodology has concluded, in general, that it is possible on FPL's system to develop a PV project-specific non-zero firm capacity value for the Summer peak hour, but not for FPL's Winter morning peak hour. Partly as a result of developing this methodology, FPL's 2015 Site Plan showed that FPL planned to add approximately 223 MW (nameplate, AC) of new utility-scale (or "universal") PV generation by the end of 2016. These three specific PV projects are projected to contribute a total of approximately 116 MW (or 52% of the nameplate AC value for each project) of firm Summer capacity, but no MW of firm Winter capacity. Construction on these three projects is underway as this document is being prepared and the three PV facilities are projected to be in-service by the end of 2016.

In this 2016 Site Plan FPL is now projecting the further addition of approximately 300 MW (nameplate, AC) of new PV by the year 2021 (a mid-2020 in-service date is assumed for planning purposes). This additional PV is expected to have roughly comparable firm capacity values to those of the 2016 PV projects once a specific site(s) for the 300 MW of additional PV is determined.

In regard to diversity in natural gas sourcing and delivery, in 2013 the FPSC approved FPL's contracts to bring more natural gas into FPL's service territory through a 3rd natural gas pipeline system into Florida. The process by the pipeline companies to obtain approval for the new pipeline system from the Federal Energy Regulatory Commission (FERC) has culminated in receiving a FERC certificate of approval for the pipelines on February 2, 2016. The pipeline entities subsequently accepted the certificate in early March, 2016. The new pipeline system will utilize an independent route that will result in a more reliable, more economic, and more diverse natural gas supply for FPL's customers and the State of Florida.

In regard to using natural gas more efficiently, FPL received approvals in 2008 from the FPSC to modernize the existing Cape Canaveral and Riviera Beach plant sites with new, highly efficient CC units to replace the former steam generating units on each of those sites. The Cape Canaveral modernization went into service in April 2013 and the Riviera Beach modernization went into service in April 2014. On April 9, 2012, FPL received FPSC approval to proceed with a similar modernization project at the Port Everglades site. The project has been completed and the new generating unit went into service on April 1, 2016. All three of these modernized sites have the capability of receiving water-borne delivery of Ultra-Low Sulfur Diesel (ULSD) oil as a backup fuel.

In the future, FPL will continue to identify and evaluate alternatives that may maintain or enhance system fuel diversity. In this regard, FPL is also maintaining the ability to utilize heavy oil and/or ULSD oil at existing units that have that capability. For this purpose, FPL has completed the installation of electrostatic precipitators (ESPs) at the two 800 MW steam generating units at its Manatee site and at the two 800 MW steam generating units at its Martin site. These installations will enable FPL to retain the ability to burn heavy oil, as needed, at these sites while retaining the flexibility to use natural gas when economically attractive. In addition, the new CTs that FPL plans to install at its existing Lauderdale and Fort Myers sites, which will replace older GT units that are being retired, will have the capability to burn either natural gas or ULSD oil.

2. Maintaining a Balance Between Load and Generation in Southeastern Florida:

An imbalance has existed between regionally installed generation and regional peak load in Southeastern Florida. As a result of that imbalance, a significant amount of energy required in the Southeastern Florida region during peak periods is provided by: importing energy through the transmission system from generating units located outside the region, operating less efficient generating units located in Southeastern Florida out of economic dispatch, or a combination of the two. FPL's prior planning work concluded that, as load inside the region grows, additional installed generating capacity and/or load reduction in this region, or additional installed transmission capacity capable of delivering more electricity from outside the region, would be required to address this imbalance.

Partly because of the lower transmission-related costs resulting from their location in Southeastern Florida, four recent capacity addition decisions (Turkey Point Unit 5 and WCEC Units 1, 2, & 3) were determined to be the most cost-effective options to meet FPL's capacity needs in the near-term. In addition, FPL has added increased capacity at its existing two nuclear units at Turkey Point as part of the previously mentioned nuclear capacity uprates project. The recently completed Port Everglades modernization project will also assist in addressing this imbalance. Implementing the additional generation capacity through the projects mentioned above has contributed to addressing the imbalance between generation, transmission capacity, and load in Southeastern Florida for much, if not all, of the 2016 through 2025 reporting time frame of this Site Plan. However, due to forecasted increasing load in the Southeastern Florida region, and the uncertainty of the location of the unsited CC unit shown in this Site Plan as being added in 2024, the Southeastern Florida imbalance issue will remain an important consideration in FPL's on-going resource planning work in future years.

3. **Maintaining a Balance Between Generation and DSM Resources in Regard to System Reliability:**

   There is another system concern that FPL has considered in its resource planning for several years. This concern surfaced beginning in 2010 when FPL's system was projected to become increasingly dependent upon DSM resources for system reliability in later years. FPL discussed this concern previously in its Site Plans from 2011 through 2014. As a result of this concern, FPL conducted extensive analyses of its system from both a resource planning perspective and a system operations perspective. Those analyses showed that system reliability risk increases, particularly from a system operations perspective, as dependence on DSM resources increases to a point where DSM resources account for more than half of FPL's 20% total reserve margin criterion value. As a result, in 2014 FPL implemented a new reliability criterion of a minimum 10% generation-only reserve margin (GRM) in its resource planning work to complement its other two reliability criteria: a 20% total reserve margin criterion for Summer and Winter, and an annual 0.1 day/year loss-of-load-probability (LOLP) criterion. The GRM criterion must be met each year beginning in the year 2019. Together, these three criteria allow FPL to address this specific concern regarding system reliability in a comprehensive manner.

4. **The Significant Impacts of Federal and State Energy Efficiency Codes and Standards:**

   As discussed in Chapter II, FPL's load forecast includes projected impacts from federal and state energy efficiency codes and standards. The magnitude of energy efficiency that is now projected to be delivered to FPL's customers through these codes and standards is significant. FPL currently projects a cumulative Summer peak reduction impact of 3,517 MW from these codes and standards beginning in 2005 (the year the National Energy Policy Act was enacted) and extending through the year 2025 (i.e., the last year in the 2016 through 2025 reporting time period for this Site Plan) compared to what the projected load would have been without the codes and standards. The projected incremental Summer MW impact from these codes and standards during the 2016 through 2025 reporting period of this Site Plan; i.e., from year-end 2015 through 2025, is 1,803 MW compared to what the projected load would have been without the codes and standards. In regard to energy, the impact of the codes and standards has resulted in a projected reduction of 16,238 GWh since 2005. Included in this 2005 through 2025 projection is a projected reduction of 8,714 GWh from year-end 2015 through 2025. All of these projections show the significant impact of these energy efficiency codes and standards.

In addition to lowering FPL's load forecast from what it otherwise would have been, and thus serving to lower FPL's projected load and resource needs, this projection of efficiency from the codes and standards also affects FPL's resource planning in another way. The projected impacts from the energy efficiency codes and standards also lower the potential for utility DSM programs to cost-effectively deliver energy efficiency for the appliances and equipment that are directly addressed by the codes and standards. This effect was taken into account by the FPSC when FPL's current DSM Goals were set in December 2014.

5. **The Economic Competitiveness of Utility-Scale Photovoltaics (PV)**:
A factor that is now significantly influencing FPL's resource planning is the increasing attractiveness of utility-scale PV facilities. This is due largely to the continued decline of the cost of PV modules. Because utility-scale PV facilities are approximately twice as economical on an installed $/kw basis than distributed PV, the declining costs of PV modules has resulted, for the first time, in utility-scale PV in specific locations now being cost competitive on FPL's system. In addition, FPL's analyses of the output from its existing PV facilities in DeSoto and Brevard counties have resulted in FPL establishing a methodology for determining Summer and Winter firm capacity values for utility-scale PV facilities.

As a result, FPL's resource plan that was presented last year showed that FPL plans to add approximately 223 MW (nameplate, AC) of new PV generation by the end of 2016. In this 2016 Site plan, the resource plan that is presented shows that an additional approximate 300 MW (nameplate, AC) of PV will be added by 2021. (For planning purposes, a 2020 in-service date is assumed and shown in the resource plan.) Details regarding these new PV facilities are discussed further in this chapter in section III.F.

III.D Demand Side Management (DSM)

FPL has sought and implemented cost-effective DSM programs since 1978 and DSM has been a key focus of FPL's IRP process for decades. During that time FPL's DSM programs have included many energy efficiency and load management programs and initiatives. FPL's DSM efforts through 2015 have resulted in a cumulative Summer peak reduction of 4,845 MW at the generator and an estimated cumulative energy saving of 74,717 Gigawatt-Hour (GWh) at the generator. After accounting for the 20% total reserve margin requirement, FPL's DSM efforts through 2015 have eliminated the need to construct the equivalent of approximately 15 new 400 MW power plants.

FPL consistently has been among the leading utilities nationally in DSM achievement. For example, according to the U.S. Department of Energy's 2014 data (the last year for which the DOE ranking data was available at the time this Site Plan was developed), FPL ranked No. 2 nationally in cumulative DSM load management demand reduction. FPL also achieved 2,714 MW of energy efficiency-related demand reduction for the same time period. And, importantly, FPL has achieved these significant DSM accomplishments while minimizing the DSM-based impact on electric rates for all of its customers.

In December 2014, DSM Goals for FPL for the years 2015 through 2024 were set by the FPSC (Final Order PSC-14-0696-FOF-EIU). These DSM Goals were appropriately lower than the previous DSM Goals set in 2009 for FPL due to two factors. The first factor is the significant impact of federal and state energy efficiency codes and standards. The projected impact of these codes and standards has significantly lowered FPL's projected load and resource needs. In addition, these codes and standards have removed a significant amount of potential energy efficiency that otherwise might have been addressed by utility DSM programs. The projected impacts from these codes and standards are discussed in Chapter II.

The second factor why FPL's resource plan currently shows a diminished role for utility DSM is the decline in the projected cost-effectiveness of utility DSM measures and programs. The cost-effectiveness of DSM is driven in large part by the potential benefits that the kW (demand) reduction and kWh (energy) reduction characteristics of DSM programs are projected to provide. The diminished cost-effectiveness of utility DSM programs can be illustrated by looking at potential benefits that DSM's kWh reductions can provide as an example. There are at least two reasons for projections of lower kWh reduction-based benefits and thus projections of lower DSM cost-effectiveness.

One of these is lower fuel costs. As fuel costs are lowered, the benefit that is realized by each kWh of energy reduced by DSM is also lowered. In other words, the benefit from DSM's kWh reductions has been reduced from what it had been several years ago due to lower fuel costs. Lower forecasted natural gas costs are very beneficial for FPL's customers because they result in lower fuel costs and lower electric rates. At the same time, lower fuel costs also result in lower potential fuel savings benefits from the kWh reductions of DSM measures. These lowered benefit values result in DSM being less cost-effective.

A second reason for the decline in the cost-effectiveness of utility DSM on the FPL system is the steadily increasing efficiency with which FPL generates electricity. FPL's generating system has steadily become more efficient in regard to its ability to generate electricity using less fossil fuel.

For example, FPL used 21% less fossil fuel to generate the same number of MWh in 2015 than it did in 2001. This is a very good thing for FPL's customers because it helps to significantly lower fuel costs and electric rates.

However, the improvements in generating system efficiency affect DSM cost-effectiveness in much the same way that lower forecasted fuel costs do: both lower the fuel costs of energy delivered to FPL's customers. Therefore, the improvements in generating system efficiency further reduce the potential fuel savings benefits from the kWh reduction impacts of DSM, thus further lowering potential DSM benefits and DSM cost-effectiveness.

The two reasons discussed above – lower forecasted fuel costs and greater efficiency in FPL's electricity generation – are good for FPL's customers because they will result in lower electric rates. Although beneficial for FPL's customers, these factors also contribute to lowering the cost-effectiveness of utility DSM programs. Therefore, the reduction in DSM cost-effectiveness, plus the growing impacts of energy efficiency codes and standards, led to the FPSC setting lower DSM Goals for FPL.

Although FPL's DSM Goals are appropriately lower due to these market forces, the projected cumulative effect of FPL's DSM programs from their inception through 2024 is truly significant. FPL's Summer MW Goals for the 2015 – 2024 time period are 526 MW. After accounting for the 20% total reserve margin requirements, the combination of this new Summer MW reduction value, and the Summer MW reductions from FPL's DSM programs from their inception through 2015, represent the equivalent of avoiding the need to build approximately 16 400 MW power plants. The resource plan presented in this 2016 Site Plan accounts for the DSM MW and GWh reductions set forth in FPL's DSM Goals. The MW reductions from the new DSM Goals are accounted for in Schedules 7.1 and 7.2 which appear later in this chapter. In addition, FPL also assumes that additional DSM will be added in the year 2025 at the same annual level called for in the 2015 – 2024 DSM Goals.

In August 2015 the FPSC approved FPL's DSM Plan (Order No. PSC-15-0331-PAA-EG) that describes the approach that FPL will take to meet it DSM Goals. The DSM Plan consists of 14 DSM programs and research and development efforts that are described below:

FPL DSM Programs and Research & Development Efforts

1. **Residential Home Energy Survey (HES)**

   This program educates customers on energy efficiency and encourages implementation of recommended practices and measures, even if these are not included in FPL's other DSM programs. The HES is also used to identify potential candidates for other FPL DSM programs.

2. **Residential Load Management (On Call)**

   This program allows FPL to turn off certain customer-selected appliances using FPL-installed equipment during periods of extreme demand, capacity shortages, or system emergencies.

3. **Residential Air Conditioning**

   This program encourages customers to install high-efficiency central air-conditioning systems.

4. **Residential Ceiling Insulation**

   This program encourages customers to improve the thermal efficiency of the building structure.

5. **Residential New Construction BuildSmart®**

   This program encourages builders and developers to design and construct new homes to meet ENERGY STAR® qualifications.

6. **Residential Low-Income**

   This program assists low-income customers reduce their energy costs through partnership with government and non-profit agencies, and through FPL-performed home energy retrofits.

7. **Business Energy Evaluation (BEE)**

   This program educates customers on energy efficiency and encourages implementation of recommended practices and measures, even if these are not included in FPL's other DSM programs. The BEE is also used to identify potential candidates for other FPL DSM programs

8. **Commercial/Industrial Demand Reduction (CDR)**

   This program allows FPL to control customer loads of 200 kW or greater during periods of extreme demand, capacity shortages, or system emergencies.

9. **Commercial/Industrial Load Control (CILC)**

   This program allows FPL to control customer loads of 200 kW or greater during periods of extreme demand, capacity shortages, or system emergencies. It was closed to new participants as of December 31, 2000. It is available to existing participants who had entered into a CILC agreement as of March 19, 1996.

10. **Business On Call**

    This program allows FPL to turn off customers' direct expansion central electric air-conditioning units using FPL-installed equipment during periods of extreme demand, capacity shortages, or system emergencies.

11. **Business Heating, Ventilating and Air Conditioning (HVAC)**

    This program encourages customers to install high-efficiency HVAC systems.

12. **Business Lighting**

    This program encourages customers to install high-efficiency lighting systems.

13. **Business Custom Incentive (BCI)**

    This program encourages customers to install unique high-efficiency technologies not covered by other FPL DSM programs.

14. **Conservation Research & Development (CRD) Project**

    This project consists of research studies designed to: identify new energy efficient technologies; evaluate and quantify their impacts on energy, demand, and customers; and where appropriate and cost-effective, incorporate an emerging technology into a DSM program.

III.E Transmission Plan

The transmission plan will allow for the reliable delivery of the required capacity and energy to FPL's retail and wholesale customers. The following table presents FPL's proposed future additions of 230 kV and above bulk transmission lines that must be certified under the Transmission Line Siting Act.

Table III.E.1: List of Proposed Power Lines

(1) Line Ownership	(2) Terminals (To)	(3) Terminals (From)	(4) Line Length CKT. Miles	(5) Commercial In-Service Date (Mo/Yr)	(6) Nominal Voltage (KV)	(7) Capacity (MVA)
FPL	St. Johns [1/]	Pringle	25	Dec – 18	230	759
FPL	Levee [2/]	Midway	150	Jun – 23	500	2598
FPL	Raven [3/]	Duval	45	Dec – 18	230	759

1/ Final order certifying the corridor was issued on April 21, 2006. This project is to be completed in two phases. Phase I consisted of 4 miles of new 230 kV line (Pringle to Pellicer) and was completed in May-2009. Phase II consists of 21 miles of new 230 kV line (St. Johns to Pellicer) and is scheduled to be completed by Dec-2018.

2/ Final order certifying the corridor was issued in April 1990. Construction of 114 miles is complete and in-service. Remaining 36 miles are scheduled to be completed by Jun-2023.

3/ TLSA was initiated in early January 2016 for the Raven to Duval project. One of the necessary approvals for the project, a need determination for the project, was issued by the Florida Public Service Commission in early March 2016.

In addition, there will be transmission facilities needed to connect several of FPL's projected generating capacity additions to the system transmission grid. These transmission facilities (described on the following pages) are for the PV additions in late 2016, and the new CC unit in 2019 at the Okeechobee site. At the time the 2016 Site Plan was prepared, no sites had been selected for either the 300 MW PV addition or the 2024 CC addition in the resource plan presented in this Site Plan. Therefore, no transmission information for these additions is presented.

II.E.1 Transmission Facilities for the PV Project at the Existing Manatee Plant Site

The work required to connect the approximate 74.5 MW (nameplate, AC) facility at the existing Manatee site is projected to be:

I. Substation:

1. Build a new 230 kV substation approximately 0.4 miles west of the existing FPL Manatee 230 kV substation.
2. Add one main step-up transformer (85 MVA) to connect the PV inverter array.
3. Construct a new 230 kV breaker bay at the Manatee switchyard.
4. Add relays and other protective equipment.
5. Breaker replacements: None.

II. Transmission:

1. Construct 0.4 mile 230 kV line from new substation to the Manatee switchyard.
2. No upgrades are expected to be necessary at this time.

III.E.2 Transmission Facilities for the Citrus PV Project in DeSoto County

The work required to connect the approximate 74.5 MW (nameplate, AC) Citrus PV facility in DeSoto County is projected to be:

I. Substation:

1. Construct a new 4-breaker 230 kV ring bus at the Sunshine substation.
2. Build a new 230/34.5 kV substation on the Citrus site.
3. Add one main step-up transformer (85 MVA) to connect the PV inverter array.
4. Construct a string buss to connect the Citrus PV array to the Sunshine 230 kV Substation.
5. Add relays and other protective equipment.
6. Breaker replacements: None.

II. Transmission:

1. No upgrades are expected to be necessary at this time.

III.E.3 Transmission Facilities for the Babcock Ranch PV Project in Charlotte County

The work required to connect the approximate 74.5 MW (nameplate, AC) Babcock Ranch PV facility in Charlotte County is projected to be:

I. Substation:

1. Build a new 230/34.5 kV Tuckers substation approximately 5 miles north of the planned FPL Hercules 230 kV substation.
2. Add one main step-up transformer (85 MVA) to connect the PV inverter array.
3. Add one (1) mid-breaker to complete Bay 2 at the Hercules substation.
4. Add relays and other protective equipment.
5. Breaker replacements: None.

II. Transmission:

1. Construct 5 miles of 230 kV line from the new Tuckers substation to the Hercules substation.
2. No upgrades are expected to be necessary at this time.

III.E.4 Transmission Facilities for the New Combined Cycle (CC) Unit in Okeechobee County

The work required to connect the new CC unit in Okeechobee County by Summer 2019 is projected to be:

I. Substation:

1. Build a new six breaker 500kV Okeechobee Substation switchyard on the Okeechobee generation site with a relay vault for the two generator string buses and the Martin and Poinsett line terminals.
2. Build new collector yard containing two collector busses with 4 breakers to connect the three CTs, and one ST.
3. Construct two string busses to connect the collector busses and main switchyard to Okeechobee 500kV Substation.
4. Add five main step-up transformers (5-450 MVA) one for each CT, and two for the ST (Note: at the time this Site Plan is being completed, other options were also being considered.)
5. Add relays and other protective equipment.
6. Breaker replacements:
   Poinsett Sub – Replace three 230 kV breakers.

III. Transmission:

1. No upgrades are expected to be necessary at this time.

III.F. Renewable Resources

Overview:

FPL has actively been involved in renewable energy resource development since the mid-1970s. In 2009, FPL implemented 110 MW of solar energy facilities including two PV facilities totaling 35 MW (nameplate, AC) and one 75 MW solar thermal facility. Solar energy costs, especially the cost of PV, have continued to drop to the point where PV facilities have become competitive with more conventional generation options. Consequently, FPL announced in last year's Site Plan that it would construct three new PV facilities of approximately 74.5 MW (nameplate, AC) each by the end of 2016. Those facilities are under construction at the time this 2016 Site Plan is being prepared. Once these facilities go in-service in late 2016, FPL's solar generation capability will have tripled.

In addition, in this 2016 Site Plan FPL is projecting the addition of an additional approximately 300 MW (nameplate, AC) of PV by the year 2021. (A 2020 in-service date is currently assumed for planning purposes). FPL has not yet selected the site(s) for this additional PV. FPL will continue to evaluate the economic and non-economic attributes of additional solar through its resource planning work on an on-going basis.

FPL's Renewable Energy Efforts Through 2015:

FPL has been the leading Florida utility in examining ways to effectively utilize renewable energy technologies to serve its customers. FPL has been involved since 1976 in renewable energy research and development and in facilitating the implementation of various renewable energy technologies. For purposes of discussing FPL's renewable energy efforts through 2015, those efforts will be placed into five categories. FPL's plans for new renewable energy facilities during the 2016 through 2025 time period are then discussed in a separate section.

Two of these categories are Supply-Side Efforts – Power Purchases and FPL Facilities. For each year since 2011, including 2015, the combined total energy output (GWh) from these renewable energy sources has been greater than the GWh produced from oil-fired generation. The comparable values for energy delivered by renewable and oil-fired sources for the year 2015 are presented in Schedule 11.1 at the end of this chapter.

1) **Early Research & Development Efforts:**

In the late 1970s, FPL assisted the Florida Solar Energy Center (FSEC) in demonstrating the first residential PV system east of the Mississippi River. This PV installation at FSEC's Brevard County location was in operation for more than 15 years and provided valuable information about PV performance capabilities in Florida on both a daily and annual basis. In 1984, FPL installed a second PV system at its Flagami substation in Miami. This 10-kilowatt (kW) system operated for a number of years before it was removed to make room for substation expansion. In addition, FPL maintained a thin-film PV test facility at the FPL Martin Plant Site for a number of years to test new thin-film PV technologies.

2) **Demand Side & Customer Efforts:**

In terms of utilizing renewable energy sources to meet its customers' needs, FPL initiated the first utility-sponsored conservation program in Florida designed to facilitate the implementation of solar technologies by its customers. FPL's Conservation Water Heating Program, first implemented in 1982, offered incentive payments to customers who chose solar water heaters. Before the program ended (because it was no longer cost-effective), FPL paid incentives to approximately 48,000 customers who installed solar water heaters.

In the mid-1980s, FPL introduced another renewable energy program, FPL's Passive Home Program. This program was created in order to broadly disseminate information about passive solar building design techniques that are most applicable in Florida's climate. As part of this program, three Florida architectural firms created complete construction blueprints for six passive home designs with the assistance of the FSEC and FPL. These designs and blueprints were available to customers at a low cost. During its existence, the program received a U.S. Department of Energy award for innovation and also led to a revision of the Florida Model Energy Building Code (Code). The Code was revised to incorporate one of the most significant passive design techniques highlighted in the program: radiant barrier insulation.

FPL has continued to analyze and promote the utilization of PV. These efforts have included PV research such as the 1991 research project to evaluate the feasibility of using small PV systems to directly power residential swimming pool pumps. FPL's PV efforts also included educational efforts such as FPL's Next Generation Solar Station Program. This initiative delivered teacher training and curriculum that was tied to the Sunshine Teacher Standards in Florida. The program provided teacher grants to promote and fund projects in the classrooms.

In addition, FPL assists customers who are interested in installing PV equipment at their facilities. Consistent with Florida Administrative Code Rule 25-6.065, Interconnection and Net Metering of Customer-Owned Renewable Generation, FPL works with customers to interconnect these customer-owned PV systems. Through December 2015, approximately 4,257 customer systems (predominantly residential) have been interconnected.

As part of its 2009 DSM Goals decision, the FPSC imposed a requirement for Florida's investor-owned utilities to spend up to a not-to-exceed amount of money annually to facilitate demand side solar water heater and PV applications. FPL's not-to-exceed amount of money for these applications was approximately $15.5 million per year for five years. In response to this direction, FPL received approval from the FPSC in 2011 to initiate a solar pilot portfolio consisting of three PV-based programs and three solar water heating-based programs, plus Renewable Research and Demonstration projects. FPL's analyses of the results from these programs since their inception consistently showed that none of these pilot programs was cost-effective using any of the three cost-effectiveness screening tests used by the State of Florida. As a result, consistent with the FPSC's December 2014 DSM Goals Order No. PSC-14-0696-FOF-EU, these pilot programs expired on December 31, 2015.

FPL also has been investigating fuel cell technologies through monitoring of industry trends, discussions with manufacturers, and direct field trials. From 2002 through the end of 2005, FPL conducted field trials and demonstration projects of Proton Exchange Membrane (PEM) fuel cells with the objectives of serving customer end-uses while evaluating the technical performance, reliability, economics, and relative readiness of the PEM technology. The demonstration projects were conducted in partnership with customers and included five locations. The research projects were useful to FPL in identifying specific issues that can occur in field applications and the current commercial viability of this technology. FPL will continue to monitor the progress of these technologies and conduct additional field evaluations as significant developments in fuel cell technologies occur.

3) <u>Supply Side Efforts – Power Purchases:</u>

FPL also has facilitated a number of renewable energy projects (facilities which burn bagasse, waste wood, municipal waste, etc.). Firm capacity and energy, and as-available energy, have been purchased by FPL from these types of facilities. (Please refer to Tables I.A.3, I.B.1, and I.B.2 in Chapter I).

FPL issued Renewable Requests for Proposals (RFPs) in 2007 and 2008 which solicited proposals to provide firm capacity and energy, and energy only, at or below avoided costs, from renewable generators. FPL also promptly responds to inquiries for information from prospective renewable energy suppliers either by e-mail or phone.

On April 22, 2013, in Order No. PSC-13-1064-PAA-EQ, the FPSC approved three 60 MW power purchase agreements with affiliates of U.S. EcoGen for biomass-fired renewable energy facilities. These facilities are expected to provide non-firm energy service beginning in 2019 and to provide firm energy and capacity to FPL's customers beginning in 2021.

In regard to existing contracts that have recently ended, FPL and the Solid Waste Authority of Palm Beach (SWA) agreed to extend their contract that expired March 31, 2010 for a 20-year term beginning in April 1, 2012 through April 1, 2032. However, the SWA refurbished their generating unit ahead of schedule and, as of January 2012, this unit began delivering firm capacity to FPL. In 2011, the FPSC approved a contract for an additional 70 MW between FPL and SWA from a new unit. The new unit is now delivering firm capacity and energy to FPL. At the end of December 2011, the contract between FPL and Okeelanta (New Hope) expired. However, Okeelanta continues to deliver energy to FPL as an as-available, non-firm supplier of renewable energy.

4) <u>Supply Side Efforts – FPL Facilities:</u>

With regard to solar generating facilities, FPL currently has three such facilities: (i) a 75 MW steam generation solar thermal facility in Martin County (the Martin Next Generation Solar Energy Center); (ii) a 25 MW PV electric generation facility in DeSoto County (the DeSoto Next Generation Solar Energy Center); and (iii) a 10 MW PV electric generation facility in Brevard County at NASA's Kennedy Space Center (the Space Coast Next Generation Solar Energy Center). The DeSoto County project was completed in 2009 and the other two projects were completed in 2010.

These three solar facilities were constructed in response to the Florida Legislature's House Bill 7135 which was signed into law by the Governor in June 2008. House Bill 7135 was enacted to enable the development of clean, zero greenhouse gas emitting renewable generation in the State of Florida. Specifically, the bill authorized cost recovery for the first 110 MW of eligible renewable projects that had the proper land, zoning, and transmission rights in place. FPL's three solar projects met the specified criteria and were granted approval for cost recovery in 2008. Each of the three solar facilities is discussed below.

a. <u>The Martin Next Generation Solar Energy Center:</u>

This facility began commercial operation in 2010 and provides 75 MW of solar thermal capacity in an innovative way that directly displaces fossil fuel usage on the FPL system. This facility consists of solar thermal technology which generates steam that is integrated into the existing steam cycle for the Martin Unit 8 natural gas-fired CC plant. This project is the first "hybrid" solar plant in the world and, at the time the facility came in-service, was the second largest solar facility in the world and the largest solar plant of any kind in the U.S. outside of California.

b. <u>The DeSoto Next Generation Solar Energy Center:</u>

This 25 MW (nameplate, AC) PV facility began commercial operation in 2009 which made it one of the largest PV facilities in the U.S. at that time. The facility utilizes a tracking PV array that is designed to follow the sun as it traverses across the sky.

c. <u>The Space Coast Next Generation Solar Energy Center:</u>

Located at the Kennedy Space Center, this facility is part of an innovative public/private partnership with NASA. This non-tracking, 10 MW (nameplate, AC) PV facility began commercial operation in 2010.

During 2014, FPL conducted analyses designed to develop a methodology with which to determine what firm capacity value at FPL's Summer and Winter peak hours would be appropriate to apply to these existing, and potential future, utility-scale PV facilities. (Note that the Martin solar thermal facility is a "fuel-substitute" facility, not a facility that provides additional capacity and energy. The solar thermal facility displaces the use of fossil fuel to produce steam on the FPL system when the solar thermal facility is operating.) Based on the results of these analyses, FPL has concluded that its two existing utility-scale PV facilities can be counted on to contribute certain percentages of their nameplate (AC) ratings (approximately 46% for DeSoto and 32% for Space Coast) as firm capacity at FPL's Summer peak hour (that typically occurs in the 4 p.m. to 5 p.m. hour), but contribute no firm capacity during FPL's Winter peak hour (that typically occurs in the 7 a.m. to 8 a.m. hour). Future FPL utility-scale PV facilities will be evaluated for potential firm capacity contribution on a case-by-case basis using this methodology. Their potential capacity contribution will be dependent upon a number of factors including (but not necessarily limited to) site location, technology, and design. For example, the three new PV facilities that will come into service by the end of 2016 are each projected to provide approximately 52% of their nameplate (AC) rating as firm capacity at FPL's Summer peak hour, but provide no firm capacity during FPL's Winter peak hour.

5) Ongoing Research & Development Efforts:

FPL has also developed a “Living Lab” to demonstrate FPL’s solar energy commitment to employees and visitors at its Juno Beach office facility. FPL has installed five different PV arrays (using different technologies) of rooftop PV totaling 24 kW at the Living Lab. In addition, two PV-covered parking structures with a total of approximately 90 kW of PV are in use at the FPL Juno office parking lot. Through these Living Lab projects, FPL is able to evaluate multiple solar technologies and applications for the purpose of developing a renewable business model resulting in the most cost-effective and reliable uses of solar energy for FPL’s customers. FPL plans to continue to expand the Living Lab as new technologies come to market.

FPL has also been in discussions with several private companies on multiple emerging technology initiatives, including ocean current, ocean thermal, hydrogen, fuel cell technology, biomass, biofuels, and energy storage.

FPL’s Planned Renewable Energy Efforts for 2016 Through 2025:

FPL efforts to implement cost-effective renewable energy, particularly PV, have increased. Several factors are driving these efforts and/or focusing them. First, the price of PV modules has declined in recent years, thus making PV more cost competitive. Second, as previously discussed, FPL has developed a methodology with which it can meaningfully assign a firm capacity benefit for meeting FPL’s Summer peak load to PV. Third, 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 increasing use cost-effective renewable energy in the 2016 – 2025 time period are summarized below.

1) FPL Utility-Scale PV Facilities:

In the resource plan presented in both last year’s Site Plan and this year’s Site Plan, FPL projects the addition of three separate utility-scale PV facilities by the end of 2016. Each PV facility is projected to be approximately 74.5 MW (nameplate, AC). The sites of these three PV additions are: FPL’s existing Manatee plant site, a site in DeSoto County, and a site in Charlotte County. These locations are expected to have cost advantages to support early development, including:

- Current ownership of land or low cost land purchase agreement in place;
- Proximity to existing transmission lines with sufficient injection capacity;
- Proximity to existing electric substations;
- Previously performed site development and permitting work;
- Proximity to existing FPL generating facilities allows for lower operating expenses;
- Support from the associated counties and land developers, with the potential for further cost abatements;

Each of the three 2016 PV facilities is discussed below:

a) <u>FPL Babcock Ranch Solar Energy Center</u>:

This project is an approximate 74.5 MW (nameplate, AC) PV project in Charlotte County. It is located on 440 acres of land, adjacent to the future planned Babcock Ranch Community.

b) <u>FPL Citrus Solar Energy Center</u>:

This project is an approximate 74.5 MW (nameplate, AC) PV site in DeSoto County. This new project, along with the existing DeSoto Next Generation Solar Energy Center discussed above, brings the total PV MW capability in DeSoto county to 100 MW, this making DeSoto County the top producer of solar in Florida.

c) <u>FPL Manatee Solar Energy Center</u>:

This project is an approximate 74.5 MW nameplate, AC) PV project in Manatee County. It is near the existing FPL Manatee power plants and will be located on 762 acres.

Furthermore, in this 2016 Site Plan, FPL is projecting an additional approximately 300 MW (nameplate, AC) by the year 2021. (A 2020 in-service date is assumed for planning purposes). No site(s) has yet been determined for this additional PV.

2) <u>FPL Distributed Generation (DG) PV Pilot Programs:</u>

In regard to distributed generation (DG), FPL began implementation of two DG PV pilot programs and a battery storage pilot program in 2015. The first is a voluntary, community-based, solar partnership pilot to install new solar-powered generating facilities. The program is at least partially funded by contributions from customers who volunteer to participate in the pilot and will not rely on subsidies from non-participating customers. The second program will implement approximately 5 MW of DG PV. The objective of this program is to collect grid integration data for DG PV and develop operational best practices for addressing potential problems that may be identified. The third program entails installing approximately 3 MW of battery storage systems with the objective of demonstrating the operational capabilities of batteries and learning how to integrate them into FPL's system. A brief description of these pilot programs follows.

a) <u>Voluntary, Community-Based Solar Partnership Pilot Program:</u>

The Voluntary Solar Pilot Program provides FPL customers with an additional and flexible opportunity to support development of solar power in Florida. The FPSC approved FPL's request for this three-year pilot program in Order No. PSC-14-0468-TRF-EI on August 29, 2014. This pilot program provides all customers the opportunity to support the use of solar energy at a community scale and is designed to be especially attractive 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 tariff became effective in January 2015 and the pilot program is scheduled to conclude in 2017.

These DG-scale projects differ from FPL's three utility-scale PV projects which are planned to come in-service in late 2016. These utility-scale PV projects are not projected to result in a net cost to customers over the life of these projects and, therefore, do not require additional contributions from FPL's customers. In contrast, smaller DG-scale projects have a higher cost to construct, operate, and maintain. The $/kW cost to construct DG-scale facilities (whether utility-owned and operated or otherwise) is approximately double that of the more cost-efficient utility-scale PV projects. Furthermore, the operations and maintenance costs of DG-scale projects are projected to be three times as much as for utility-scale PV. Thus a voluntary contribution is necessary for this DG-based pilot program so that net costs, and the resulting electric rates, do not increase for non-participants.

The first 170 kW (nameplate, AC) of DG PV projects are located in the City of West Palm Beach (Zoological Society of the Palm Beaches) and in Broward County (Young at Arts Museum and the Broward County Library). Additional PV facilities under this pilot program will be built when the projected voluntary contributions are sufficient to cover on-going program costs without increasing electric rates for all customers, including non-participating customers. The locations of these additional PV facilities are being determined and will be selected based on overall project costs and local participation in the program.

b) <u>C&I Solar Partnership Pilot Program:</u>

This pilot program is conducted in partnership with interested commercial and industrial (C&I) customers over an approximate 5 year period. Limited investments will be made in PV facilities located at customer sites on selected distribution circuits within FPL's service territory. There are two objectives of this pilot program.

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

c) <u>Battery Storage Pilot Program:</u>

The purpose of the Battery Storage Pilot Program is to demonstrate and test a wide variety of battery storage grid applications including peak shaving, frequency response, and backup power for FPL's system. In addition, the pilot program is designed to help FPL learn how to integrate battery storage into the grid. Under the pilot program, FPL is installing a 1.5 MW battery storage system in Miami-Dade County primarily for peak shaving and frequency response. 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.

III.G FPL's Fuel Mix and Fuel Price Forecasts

1. FPL's Fuel Mix

Until the mid-1980s, FPL relied primarily on a combination of fuel oil, natural gas, and nuclear energy to generate electricity with significant reliance on oil–fired generation. In the early 1980s, FPL began to purchase "coal-by-wire." In 1987, coal was first added to the fuel mix through FPL's partial ownership (20%) and additional purchases (30%) from the St. Johns River Power Park (SJRPP). This allowed FPL to meet its customers' energy needs with a more diversified mix of energy sources. Additional coal resources were added with the partial acquisition (76%) of Scherer Unit 4 which began serving FPL's customers in 1991.

The trend since the early 1990s has been a steady increase in the amount of natural gas that FPL uses to produce electricity due, in part, to the introduction of highly efficient and cost-effective CC generating units and the ready availability of natural gas. Recently, FPL placed into commercial operation two new gas-fired CC units at the West County Energy Center (WCEC) site in 2009. A third new CC unit was added to the WCEC site in 2011. In addition, FPL has completed the modernization of its Cape Canaveral, Riviera Beach, and Port Everglades plant sites. The new CC units at each of these three sites are providing highly efficient generation that has dramatically improved the efficiency of FPL's generation system in general and, more specifically, the efficiency with which natural gas is utilized.

In addition, FPL increased its utilization of nuclear energy through capacity uprates of its four existing nuclear units. With these uprates, more than 520 MW of additional nuclear capacity have been added to the FPL system. FPL is also pursuing plans to obtain licenses, permits, and approvals to construct and operate two new nuclear units at its existing Turkey Point site that, in total, would add approximately 2,200 MW of new nuclear generating capacity.

In regard to utilizing renewable energy, FPL has 110 MW of solar generating capacity consisting of: a 75 MW solar thermal steam generating facility at FPL's existing Martin site, a 25 MW PV facility in DeSoto County, and a 10 MW PV facility in Brevard County. The DeSoto facility was placed into commercial operation in 2009. The other two solar facilities were placed into commercial operation in 2010. As discussed in the preceding section, FPL is in the process of adding three new approximately 74.5 MW (nameplate, AC) PV facilities by the end of 2016 and is projecting approximately 300 MW (nameplate, AC) of additional PV by the year 2021. (A 2020 in-service date is assumed for planning purposes.)

FPL's future resource planning work will continue to focus on identifying and evaluating alternatives that would most cost-effectively maintain and/or enhance FPL's long-term fuel diversity. These fuel diverse alternatives may include: the purchase of power from renewable energy facilities, additional FPL-owned renewable energy facilities, obtaining additional access to diversified sources of natural gas such as liquefied natural gas (LNG) and natural gas from the Mid-Continent unconventional reserves, securing gas reserves, preserving FPL's ability to utilize fuel oil at its existing units, and increased utilization of nuclear energy. (As previously discussed, new advanced technology coal-fired generating units are not currently considered as viable options in Florida in the ten-year reporting period of this document due, in part, to current projections of relatively small differences in fuel costs between coal and natural gas, significantly higher capital costs for coal units compared to CC units, greater efficiencies of CC units, and concerns over environmental regulations that would impact coal units more negatively than CC units.) The evaluation of the feasibility and cost-effectiveness of these, and other possible fuel diversity alternatives, will be part of FPL's on-going resource planning efforts.

FPL's current use of various fuels to supply energy to customers, plus a projection of this "fuel mix" through 2025 based on the resource plan presented in this document, is presented in Schedules 5, 6.1, and 6.2 that appear later in this chapter.

2. FPL's Fossil Fuel Cost Forecasts

Fossil fuel price forecasts, and the resulting projected price differentials between fuels, are major drivers used in evaluating alternatives for meeting future resource needs. FPL's forecasts are generally consistent with other published contemporary forecasts. A January 2016 fuel cost forecast was used in the analyses whose results led to the resource plan presented in this 2016 Site Plan.

Future oil and natural gas prices, and to a lesser extent, coal prices, are inherently uncertain due to a significant number of unpredictable and uncontrollable drivers that influence the short- and long-term price of oil, natural gas, and coal. These drivers include U.S. and worldwide demand, production capacity, economic growth, environmental requirements, and politics.

The inherent uncertainty and unpredictability of these factors today and in the future clearly underscores the need to develop a set of plausible oil, natural gas, and solid fuel (coal) price scenarios that will bound a reasonable set of long-term price outcomes. In this light, FPL developed and utilized Low, Medium, and High price forecasts for fossil fuels in some of its 2015 and early 2016 resource planning work, particularly in regard to analyses conducted as part of the nuclear cost recovery filing work and for the need determination docket for the new Okeechobee CC unit.

FPL's Medium price forecast methodology is consistent for oil and natural gas. For oil and natural gas commodity prices, FPL's Medium price forecast applies the following methodology:

a. For 2016 through 2018, the methodology used the January 4, 2016 forward curve for New York Harbor 0.7% sulfur heavy oil, Ultra-Low Sulfur Diesel (ULSD) fuel oil, and Henry Hub natural gas commodity prices;
b. For the next two years (2019 and 2020), FPL used a 50/50 blend of the January 4, 2016 forward curve and the most current projections at the time from The PIRA Energy Group;

c. For the 2021 through 2035 period, FPL used the annual projections from The PIRA Energy Group; and,

d. For the period beyond 2035, FPL used the real rate of escalation from the Energy Information Administration (EIA). In addition to the development of oil and natural gas commodity prices, nominal price forecasts also were prepared for oil and natural gas transportation costs. The addition of commodity and transportation forecasts resulted in delivered price forecasts.

FPL's Medium price forecast methodology is also consistent for coal prices. Forecasted coal prices were based upon the following approach:

a. Delivered price forecasts for Central Appalachian (CAPP), Illinois Basin (IB), Powder River Basin (PRB), and South American coal were provided by JD Energy; and,

b. The coal price forecast for SJRPP and Plant Scherer assumes the continuation of the existing mine-mouth and transportation contracts until expiration, along with the purchase of spot coal, to meet generation requirements.

The development of FPL's Low and High price forecasts for oil, natural gas, and coal prices were based on the historical volatility of the 12-month forward price, one year ahead. FPL developed these forecasts to account for the uncertainty that exists within each commodity as well as across commodities. These forecasts reflect a range of reasonable forecast outcomes.

3. Natural Gas Storage

FPL was under contract through August 2014 for 2.5 billion cubic feet (Bcf) of firm natural gas storage capacity in the Bay Gas storage facility located in Alabama. The Bay Gas storage facility is interconnected with the Florida Gas Transmission (FGT) pipeline. FPL amended the transaction with Bay Gas on September 1, 2014 to increase the capacity to 4.0 Bcf of firm natural gas storage capacity. FPL has predominately utilized natural gas storage to help mitigate gas supply problems caused by severe weather and/or infrastructure problems.

Over the past several years, FPL has acquired upstream transportation capacity on several pipelines to help mitigate the risk of off-shore supply problems caused by severe weather in the Gulf of Mexico. While this transportation capacity has reduced FPL's off-shore exposure, a portion of FPL's supply portfolio remains tied to off-shore natural gas sources. Therefore, natural gas storage remains an important tool to help mitigate the risk of supply disruptions.

As FPL's reliance on natural gas has increased, its ability to manage the daily “swings” that can occur on its system due to weather and unit availability changes has become more challenging, particularly from oversupply situations. Natural gas storage is a valuable tool to help manage the daily balancing of supply and demand. From a balancing perspective, injection and withdrawal rights associated with gas storage have become an increasingly important part of the evaluation of overall gas storage requirements.

As FPL's system grows to meet customer needs, it must maintain adequate gas storage capacity to continue to help mitigate supply and/or infrastructure problems and to provide FPL the ability to manage its supply and demand on a daily basis. FPL continues to evaluate its gas storage portfolio and is likely to subscribe for additional gas storage capacity to help increase reliability, provide the necessary flexibility to respond to demand changes, and diversify the overall portfolio.

4. Securing Additional Natural Gas:

The recent trend of increasing reliance upon natural gas to produce electricity for FPL's customers is projected to continue due to FPL's growing load. The addition of highly fuel-efficient CC units at Cape Canaveral, Riviera Beach, and Port Everglades due to completed modernization projects, plus the additional CC capacity at the Okeechobee site that will come in-service in 2019, will reduce the growth in natural gas use from what it otherwise might have been due to the high fuel-efficiency levels of these new CC units. In addition, as discussed above, FPL plans to add a significant amount of new PV facilities that utilize no fossil fuel. However, these efficiency gains do not fully offset the effects of FPL's growing load. Therefore, FPL will need to secure more natural gas supply, more firm gas transportation capacity, and secure gas reserves in the future as fuel requirements dictate. The issue is how to secure these additional natural gas resources in a manner that is economical for FPL's customers and which maintains and/or enhances the reliability of natural gas supply and deliverability to FPL's generating units.

FPL has historically purchased the gas transportation capacity required for new natural gas supply from two existing natural gas pipeline companies. As more natural gas is delivered through these two pipelines, the impact of a supply disruption on either pipeline becomes more problematic. Therefore, FPL issued a Request for Proposals (RFP) in December 2012 for gas transportation capacity to meet FPL's system natural gas requirements beginning in 2017. The RFP encouraged bidders to propose new gas transportation infrastructure to meet Florida's growing need for natural gas. A third pipeline would benefit FPL and its customers by increasing the diversity of FPL's fuel supply sources, increasing the physical reliability of the pipeline delivery system, and enhancing competition among pipelines.

The RFP process was completed in June 2013, and the winning bidders were Sabal Trail Transmission, LLC (Sabal Trail) and Florida Southeast Connection, LLC (FSC). The contracts with Sabal Trail and FSC were reviewed by the FPSC and approved for cost recovery in late 2013. The order approving this cost recovery became final in January 2014. Sabal Trail and FSC have sought Federal Energy Regulatory Commission (FERC) approval for the new pipelines. FERC granted certificates of approval for the new pipelines on February 2, 2016. The certificates were accepted by the pipeline companies in early March 2016. The planned in-service date for the pipelines is May 2017.

5. Nuclear Fuel Cost Forecast

This section reviews the various steps needed to fabricate nuclear fuel for delivery to the nuclear power plants, the method used to forecast the price for each step, and other comments regarding FPL's nuclear fuel cost forecast.

a) Steps Required for Nuclear Fuel to be delivered to FPL's Plants

Four separate steps are required before nuclear fuel can be used in a commercial nuclear power reactor. These steps are summarized below.

(1) Mining: Uranium is produced in many countries such as Canada, Australia, Kazakhstan, and the United States. During the first step, uranium is mined from the ground using techniques such as open pit mining, underground mining, in-situ leaching operations, or production as a by-product from other mining operations, such as gold, copper, or phosphate rocks. The product from this first step is the raw uranium delivered as an oxide, U3O8 (sometimes referred to as yellowcake).

(2) Conversion: During the second step, the U3O8 is chemically converted into UF6 which, when heated, changes into a gaseous state. This second step further removes any chemical impurities and serves as preparation for the third step, which requires uranium to be in a gaseous state.

(3) Enrichment: The third step is called enrichment. Natural uranium contains 0.711% of uranium at an atomic mass of 235 (U-235) and 99.289% of uranium at an atomic mass of 238 (U-238). FPL's nuclear reactors use uranium with a higher percentage of up to almost five percent (5%) of U-235 atoms. Because natural uranium does not contain a sufficient amount of U-235, the third step increases the percentage amount of U-235 from 0.711% to a level specified when designing the reactor core (typically in a range from approximately 2.2% to as high as 4.95%). The output of this enrichment process is enriched uranium in the form of UF6.

(4) Fabrication: During the last step, fuel fabrication, the enriched UF6 is changed to a UO2 powder, pressed into pellets, and fed into tubes, which are sealed and bundled together into fuel assemblies. These fuel assemblies are then delivered to the plant site for insertion in a reactor.

Like other utilities, FPL has purchased raw uranium and the other components of the nuclear fuel cycle separately from numerous suppliers from different countries.

b) Price Forecasts for Each Step

(1) Mining: The impact of the earthquake and tsunami that struck the Fukushima nuclear complex in Japan in March 2011 is still being felt in the uranium market. Current demand has declined and several of the production facilities have announced delays. Factors of importance are:

- Hedge funds are still very active in the market. This causes more speculative demand that is not tied to market fundamentals and causes the market price to move up or down just based on news that might affect future demand.
- Some of the uranium inventory from the U.S. Department of Energy (DOE) is finding its way into the market periodically to fund cleanup of certain Department of Energy facilities.
- Although a limited number of new nuclear units are scheduled to start production in the U.S. during the next 5 to 10 years, other countries, more specifically China, have announced an increase in construction of new units which may cause uranium prices to trend up in the near future.

Over a 10-year horizon, FPL expects the market to be more consistent with market fundamentals. The supply picture is more stable, with laws enacted to resolve the import of Russian-enriched uranium, by allowing some imports of Russian-enriched uranium to meet about 20-25% of needs for currently operating units, but with no restriction on the first core for new units and no restrictions after 2020. New and current uranium production facilities continue to add capacity to meet demands. Actual demand tends to grow over time because of the long lead time to build nuclear units. However, FPL cannot discount the possibility of future periodic sharp increase in prices, but believes such occurrences will likely be temporary in nature.

(2) Conversion: The conversion market is also in a state of flux due to the Fukushima events. Planned production after 2018 is currently forecasted to be insufficient to meet a higher demand scenario, but it is projected to be sufficient to meet most reference case scenarios. As with additional raw uranium production, supply will expand beyond the current level once more firm commitments are made including commitments to build new nuclear units. FPL expects long term price stability for conversion services to support world demand.

(3) Enrichment: Since the Fukushima events in March 2011, the near-term price of enrichment services has declined. However, plans for construction of several new facilities that were expected to come on-line post-2011 have been delayed. Also, some of the existing high operating cost diffusion plants have shut down. As with supply for the other steps of the nuclear fuel cycle, expansion of future capacity is feasible within the lead time for constructing new nuclear units and any other projected increase in demand. Meanwhile, world supply and demand will continue to be balanced such that FPL expects adequate supply of enrichment services. The current supply/demand profile will most likely result in the price of enrichment services remaining stable for the next few years before starting to increase.

(4) Fabrication: Because the nuclear fuel fabrication process is highly regulated by the Nuclear Regulatory Commission (NRC), not all production facilities can qualify as suppliers to nuclear reactors in the U.S. Although world supply and demand is expected to show significant excess capacity for the foreseeable future, the gap is not as wide for U.S. supply and demand. The supply for the U.S. market is expected to be sufficient to meet U.S. demand for the foreseeable future.

c) Other Comments Regarding FPL's Nuclear Fuel Cost Forecast

FPL's nuclear fuel price forecasts are the result of FPL's analysis based on inputs from various nuclear fuel market expert reports and studies. The calculations for the nuclear fuel cost forecasts used in FPL's 2015 and early 2016 resource planning work were performed consistent with the method then used for FPL's Fuel Clause filings, including the assumption of refueling outages every 18 months and plant operation at current (i.e., power uprated) levels. The costs for each step to fabricate the nuclear fuel were added to come up with the total costs of the fresh fuel to be loaded at each refueling (acquisition costs). The acquisition cost for each group of fresh fuel assemblies were then amortized over the energy produced by each group of fuel assemblies. DOE notified FPL that, effective May 2014, all high level waste payments would be suspended until further notice.

Therefore, FPL is no longer including in its nuclear fuel cost forecast a 1 mill per kilowatt hour net to reflect payment to DOE for spent fuel disposal.

Schedule 5
Fuel Requirements
(for FPL only)

	Fuel Requirements	Units	Actual 1/ 2014	Actual 1/ 2015	Forecasted 2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	Nuclear	Trillion BTU	298	300	300	297	297	303	299	297	303	298	298	303
(2)	Coal	1,000 TON	2,649	3,168	2,420	1,741	1,703	1,973	1,846	2,128	2,087	2,069	2,206	2,067
(3)	Residual (FO6) - Total	1,000 BBL	409	556	824	66	50	51	24	20	26	27	16	22
(4)	Steam	1,000 BBL	409	556	824	66	50	51	24	20	26	27	16	22
(5)	Distillate (FO2) - Total	1,000 BBL	197	240	1,206	72	65	92	42	38	40	39	42	43
(6)	Steam	1,000 BBL	4	1	0	0	0	0	0	0	0	0	0	0
(7)	CC	1,000 BBL	123	100	1,142	36	39	57	23	17	24	21	25	29
(8)	CT	1,000 BBL	69	139	63	35	26	35	19	21	17	18	16	14
(9)	Natural Gas - Total	1,000 MCF	571,451	636,277	600,464	606,059	607,146	592,722	600,389	591,664	589,158	597,819	594,497	597,275
(10)	Steam	1,000 MCF	24,488	52,731	20,915	19,838	11,694	5,933	4,330	4,161	4,536	5,493	1,934	1,488
(11)	CC	1,000 MCF	542,409	577,133	579,046	581,638	592,746	585,076	594,279	586,311	582,790	590,051	591,304	594,122
(12)	CT	1,000 MCF	4,555	6,414	503	4,582	2,706	1,713	1,779	1,191	1,831	2,275	1,259	1,666

1/ Source: A Schedules.
Note: Solar contributions are provided on Schedules 6.1 and 6.2.

Schedule 6.1
Energy Sources

	Energy Sources	Units	Actual 1/ 2014	2015	Forecasted 2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	Annual Energy Interchange 2/	GWH	4,908	4,730	1,336	829	903	919	0	0	0	0	0	0
(2)	Nuclear	GWH	26,812	27,045	28,592	28,307	28,227	28,870	28,485	28,291	28,871	28,401	28,375	28,871
(3)	Coal	GWH	4,482	5,275	3,977	2,710	2,660	3,171	2,922	3,472	3,404	3,379	3,648	3,388
(4)	Residual(FO6) -Total	GWH	231	323	541	43	33	33	16	13	17	18	10	14
(5)	Steam	GWH	231	323	541	43	33	33	16	13	17	18	10	14
(6)	Distillate(FO2) -Total	GWH	128	139	1,200	53	51	75	32	28	31	29	32	35
(7)	Steam	GWH	2	1	0	0	0	0	0	0	0	0	0	0
(8)	CC	GWH	102	91	1,170	33	36	55	21	16	22	19	23	27
(9)	CT	GWH	23	47	30	20	15	20	11	12	9	10	9	8
(10)	Natural Gas -Total	GWH	79,102	85,797	81,213	83,938	84,709	84,238	86,746	85,739	85,201	86,206	86,776	87,435
(11)	Steam	GWH	1,906	4,297	1,983	1,913	1,124	557	411	396	431	527	177	139
(12)	CC	GWH	76,857	81,001	79,190	81,575	83,323	83,517	86,167	85,232	84,600	85,466	86,482	87,138
(13)	CT	GWH	340	498	40	450	261	164	168	111	170	213	117	159
(14)	Solar 3/	GWH	177	157	241	682	704	701	1,404	1,393	1,393	1,389	1,390	1,362
(15)	PV	GWH	68	68	115	580	579	577	1,279	1,271	1,268	1,264	1,264	1,257
(16)	Solar Thermal	GWH	109	90	126	102	125	124	126	122	125	125	126	105
(17)	Other 4/	GWH	127	-710	2,621	2,414	2,470	2,515	2,278	3,200	3,460	3,818	3,941	3,956
	Net Energy For Load 5/	GWH	115,968	122,756	119,721	118,976	119,756	120,522	121,884	122,136	122,378	123,240	124,172	125,062

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.
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.
5/ Net Energy For Load values for the years 2016- 2025 are also shown in Col. (19) on Schedule 2.3.

Schedule 6.2
Energy Sources % by Fuel Type

	Energy Source	Units	Actual [1/] 2014	2015	Forecasted 2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1)	Annual Energy Interchange [2/]	%	4.2	3.9	1.1	0.7	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	2.8	2.8	2.7	2.9	2.7
(4)	Residual (FO6) -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)	Distillate (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	70.6	70.7	69.9	71.2	70.2	69.6	69.9	69.9	69.9
(11)	Steam	%	1.6	3.5	1.7	1.6	0.9	0.5	0.3	0.3	0.4	0.4	0.1	0.1
(12)	CC	%	66.3	66.0	66.1	68.6	69.6	69.3	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	2.8	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 SJRPP.
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.

Schedule 7.1
Forecast of Capacity, Demand, and Scheduled Maintenance At Time Of Summer Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
August of Year	Firm Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Firm Capacity Available MW	Total Peak Demand MW	DSM MW	Firm Summer Peak Demand MW	Total Reserve Margin Before Maintenance MW	% of Peak	Scheduled Maintenance MW	Total Reserve Margin After Maintenance MW	% of Peak	Generation Only Reserve Margin After Maintenance MW	% of Peak
2016	26,513	492	100	334	27,238	24,170	1,842	22,327	4,911	22.0	0	4,911	22.0	3,068	12.7
2017	26,003	545	0	334	26,882	24,336	1,935	22,401	4,481	20.0	0	4,481	20.0	2,546	10.5
2018	25,984	816	0	334	27,134	24,606	1,995	22,611	4,522	20.0	0	4,522	20.0	2,527	10.3
2019	27,657	492	0	334	28,482	24,893	2,041	22,852	5,630	24.6	0	5,630	24.6	3,589	14.4
2020	27,812	110	0	334	28,256	25,206	2,088	23,117	5,138	22.2	0	5,138	22.2	3,050	12.1
2021	27,899	110	0	514	28,523	25,316	2,136	23,180	5,343	23.0	0	5,343	23.0	3,206	12.7
2022	27,984	110	0	514	28,608	25,540	2,185	23,355	5,252	22.5	0	5,252	22.5	3,068	12.0
2023	27,983	110	0	514	28,607	25,833	2,234	23,599	5,008	21.2	0	5,008	21.2	2,774	10.7
2024	29,605	110	0	514	30,228	26,180	2,284	23,896	6,332	26.5	0	6,332	26.5	4,048	15.5
2025	29,604	110	0	514	30,227	26,572	2,334	24,238	5,989	24.7	0	5,989	24.7	3,655	13.8

Col. (2) represents capacity additions and changes projected to be in-service by June 1st. These MW are generally considered to be available to meet summer peak loads which are forecasted to occur during August of the year indicated.
Col. (6) = Col.(2) + Col.(3) - Col(4) + Col(5).
Col.(7) reflects the 2016 load forecast without incremental DSM or cumulative load management.
Col.(8) represents cumulative load management capability, plus incremental conservation and load management, from 6/2015-on intended for use with the 2016 load forecast.
Col.(10) = Col.(6) - Col.(9)
Col.(11) = Col.(10) / Col.(9)
Col.(12) indicates the capacity of units projected to be out-of-service for planned maintenance during the summer peak period.
Col.(13) = Col.(10) - Col.(12)
Col.(14) = Col.(13) / Col.(9)
Col.(15) = Col.(6) - Col.(7) - Col.(12)
Col.(16) = Col.(15) / Col.(7)

Schedule 7.2
Forecast of Capacity, Demand, and Scheduled
Maintenance At Time Of Winter Peak

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
January of Year	Firm Installed Capacity MW	Firm Capacity Import MW	Firm Capacity Export MW	Firm QF MW	Total Firm Capacity Available MW	Total Peak Demand MW	DSM MW	Firm Winter Peak Demand MW	Total Reserve Margin Before Maintenance MW	Total Reserve Margin Before Maintenance % of Peak	Scheduled Maintenance MW	Total Reserve Margin After Maintenance MW	Total Reserve Margin After Maintenance % of Peak	Generation Only Reserve Margin After Maintenance MW	Generation Only Reserve Margin After Maintenance % of Peak
2016	27,130	499	0	334	27,962	18,129	1,377	16,752	11,210	66.9	0	11,210	66.9	9,833	54.2
2017	27,848	499	0	334	28,681	21,140	1,434	19,705	8,975	45.5	0	8,975	45.5	7,541	35.7
2018	27,963	499	0	334	28,796	21,358	1,488	19,870	8,926	44.9	0	8,926	44.9	7,438	34.8
2019	27,984	499	0	334	28,817	21,602	1,514	20,087	8,730	43.5	0	8,730	43.5	7,215	33.4
2020	29,610	110	0	334	30,054	21,780	1,542	20,238	9,816	48.5	0	9,816	48.5	8,274	38.0
2021	29,610	110	0	514	30,234	21,992	1,570	20,422	9,812	48.0	0	9,812	48.0	8,242	37.5
2022	29,678	110	0	514	30,302	21,980	1,599	20,381	9,920	48.7	0	9,920	48.7	8,322	37.9
2023	29,768	110	0	514	30,392	22,195	1,628	20,567	9,825	47.8	0	9,825	47.8	8,197	36.9
2024	29,768	110	0	514	30,392	22,405	1,658	20,747	9,645	46.5	0	9,645	46.5	7,987	35.6
2025	31,363	110	0	514	31,987	22,581	1,688	20,893	11,094	53.1	0	11,094	53.1	9,406	41.7

Col. (2) represents capacity additions and changes projected to be in-service by January 1st. These MW are generally considered to be available to meet winter peak loads which are forecasted to occur during January of the year indicated.

Col. (6) = Col.(2) + Col.(3) - Col(4) + Col(5).

Col.(7) reflects the 2016 load forecast without incremental DSM or cumulative load management. The 2016 load is an actual load value.

Col.(8) represents cumulative load management capability, plus incremental conservation and load management, from 6/2015-on intended for use with the 2016 load forecast.

Col.(10) = Col.(6) - Col.(9)

Col.(11) = Col.(10) / Col.(9)

Col.(12) indicates the capacity of units projected to be out-of-service for planned maintenance during the winter peak period.

Col.(13) = Col.(10) - Col.(12)

Col.(14) = Col.(13) / Col.(9)

Col.(15) = Col.(6) - Col.(7) - Col.(12)

Col.(16) = Col.(15) / Col.(7)

Schedule 8
Planned And Prospective Generating Facility Additions And Changes (1)

	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport		Const.	Comm.	Expected	Gen. Max.	Firm Net Capability (2)		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Start Mo./Yr.	In-Service Mo./Yr.	Retirement Mo./Yr.	Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
2016														
Fort Myers	2	Lee County	CC	NG	No	PL	No	-	Jan-16	Unknown	1,721,490	-	8	P
Fort Myers	3A	Lee County	CT	NG	FO2	PL	TK	-	Jun-16	Unknown	376,380	-	25	OT
Martin	4	Martin County	CC	NG	No	PL	No	-	Apr-16	Unknown	612,000	-	15	
Martin	8	Martin County	CC	NG	FO2	PL	TK	-	Mar-16	Unknown	1,224,510	-	(5)	OT
Port Everglades	1	City of Hollywood	GT	NG	FO2	PL	PL	-	Apr-16	Unknown	410,734	-	1,237	U
											2016 Changes/Additions Total:	**0**	**1,280**	
2017														
Babcock Solar Energy Center (4)	1	Charlotte County	PV	Solar	Solar	N/A	N/A	-	Dec-16	Unknown	-	-	38	P
Cedar Bay	1	Duval County	ST	BIT	No	RR	No	-	-	Jan-17	-	(250)	(250)	OT
Citrus Solar Energy Center (4)	1	DeSoto County	PV	Solar	Solar	N/A	N/A	-	Dec-16	Unknown	-	-	38	P
Fort Myers	2	Lee County	CC	NG	No	PL	No	-	Jan-16	Unknown	1,721,490	30	-	P
Fort Myers	3A	Lee County	CT	NG	FO2	PL	TK	-	Jun-16	Unknown	188,190	25	-	OT
Fort Myers	3B	Lee County	CT	NG	FO2	PL	TK	-	Jul-16	Unknown	188,190	25	25	OT
Ft. Myers - 2 CT	4	Lee County	CC	NG	No	PL	No	-	Dec-16	Unknown	1,721,490	446	462	P
FT. Myers GT	2-7,10-12	Lee County	GT	FO2	No	TK	No	-	-	Dec-16	744,120	(553)	(486)	P
Lauderdale 5CT	6	Broward County	CC	NG	FO2	PL	PL	-	Dec-16	Unknown	526,250	1,115	1,155	P
Lauderdale GT	1-2, 4, 6-12	Broward County	GT	NG	FO2	PL	PL	-	-	Oct-16	410,734	(367)	(343)	P
Lauderdale GT	13-22	Broward County	GT	NG	FO2	PL	PL	-	-	Oct-16	410,734	(440)	(412)	P
Manatee	3	Manatee County	CC	NG	No	PL	No	-	May-17	Unknown	1,224,510	-	(11)	OT
Manatee Solar Energy Center (4)	1	Manatee County	PV	Solar	Solar	N/A	N/A	-	Dec-16	Unknown	-	-	38	P
Martin	3	Martin County	CC	NG	No	PL	No	-	Aug-16	Unknown	612,000	35	27	
Martin	4	Martin County	CC	NG	No	PL	No	-	Apr-16	Unknown	612,000	18	13	
Martin	8	Martin County	CC	NG	FO2	PL	TK	-	Mar-16	Unknown	1,224,510	27	(5)	OT
Port Everglades	1	City of Hollywood	GT	NG	FO2	PL	PL	-	-	Unknown	410,734	1,429	-	OT
Port Everglades GT	1-12	City of Hollywood	GT	NG	FO2	PL	PL	-	Oct-16	Unknown	410,734	(440)	(412)	P
Sanford	4	Volusia County	CC	NG	No	PL	No	-	Oct-16	Unknown	1,188,860	7	-	OT
Sanford	5	Volusia County	CC	NG	No	PL	No	-	Dec-16	Unknown	1,188,860	5	-	OT
Turkey Point (3)	1	Miami Dade County	ST	FO6	NG	WA	PL	-	-	Dec-16	402,050	(398)	(396)	OT
											2017 Changes/Additions Total:	**714**	**(518)**	

(1) Schedule 8 shows only planned and prospective changes to FPL generating facilities and does not reflect changes to purchases. Changes to purchases are reflected on Tables ES-1, I.B.1 and I.B.2.

(2) The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes achieved by June. All MW additions/changes occurring after August each year will be picked up for reserve margin calculation purposes in the following year.

(3) This generating unit will serve as a synchronous condenser and will no longer be included in reserve margin calculations.

(4) Solar values reflect firm capacity only values, not nameplate ratings.

Schedule 8
Planned And Prospective Generating Facility Additions And Changes [1]

	(2)	(3)	(4)	(5)	(5)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
				Fuel		Fuel Transport		Const.	Comm.	Expected	Gen. Max.	Firm Net Capability [2]		
Plant Name	Unit No.	Location	Unit Type	Pri.	Alt.	Pri.	Alt.	Start Mo./Yr.	In-Service Mo./Yr.	Retirement Mo./Yr.	Nameplate KW	Winter MW	Summer MW	Status
ADDITIONS/ CHANGES														
2018														
Manatee	3	Manatee County	CC	NG	No	PL	No	-	May-17	Unknown	1,224,510	50	-	OT
Martin	4	Martin County	CC	NG	No	PL	No	-	Mar-17	Unknown	612,000	18	-	OT
Martin	8	Martin County	CC	NG	FO2	PL	TK	-	Feb-17	Unknown	1,224,510	26	-	OT
Sanford	4	Volusia County	CC	NG	No	PL	No	-	Sep-17	Unknown	1,188,860	6	(1)	OT
Sanford	5	Volusia County	CC	NG	No	PL	No	-	Jul-17	Unknown	1,188,860	6	(1)	OT
Turkey Point	5	Miami Dade County	CC	NG	FO2	PL	TK	-	Nov-17	Unknown	1,224,510	5	(15)	OT
											2018 Changes/Additions Total:	**111**	**(17)**	
2019														
Okeechobee Energy Center	1	Okeechobee County	CC	NG	FO2	PL	TK	Jun-17	Jun-19	Unknown	-	-	1,633	P
Turkey Point	3	Miami Dade County	ST	Nuc	No	TK	No	-	Fall 2018	Unknown	877,200	20	20	OT
Turkey Point	4	Miami Dade County	ST	Nuc	No	TK	No	-	Spring 2019	Unknown	877,200	-	20	OT
Turkey Point	5	Miami Dade County	CC	NG	FO2	PL	TK	-	Jan-18	Unknown	1,224,510	2	-	OT
											2019 Changes/Additions Total:	**22**	**1,673**	
2020														
Okeechobee Energy Center	1	Okeechobee County	CC	NG	FO2	PL	TK	Jun-17	Jun-19	Unknown	-	1,606	-	P
Turkey Point	4	Miami Dade County	ST	Nuc	No	TK	No	-	Spring 2019	Unknown	877,200	20		OT
Unsited Solar [3]									Jun-20			-	156	P
											2020 Changes/Additions Total:	**1,626**	**156**	
2021														
Cape Canaveral Energy Center	3	Brevard County	CC	NG	FO2	PL	TK	-	Spring 2021	Unknown	1,295,400	-	88	OT
Unsited Solar									Jun-20			-	-	P
											2021 Changes/Additions Total:	**0**	**88**	
2022														
Cape Canaveral Energy Center	3	Brevard County	CC	NG	FO2	PL	TK	-	Spring 2021	Unknown	1,295,400	68	-	OT
Riviera Beach Energy Center	5	City of Riviera Beach	CC	NG	FO2	PL	WA	-	Spring 2022	Unknown	1,295,400	-	86	OT
											2022 Changes/Additions Total:	**0**	**86**	
2023														
Riviera Beach Energy Center	5	City of Riviera Beach	CC	NG	FO2	PL	WA	-	Spring 2022	Unknown	1,295,400	90	-	OT
											2023 Changes/Additions Total:	**90**	**0**	
2024														
Unsited CC			CC	NG	FO2	PL	TK	-	Jun-24	Unknown	-	-	1,622	P
											2024 Changes/Additions Total:	**0**	**1,622**	
2025														
Unsited CC			CC	NG	FO2	PL	TK	-	Jun-25	Unknown	-	1,595	-	P
											2025 Changes/Additions Total:	**1,595**	**0**	

(1) Schedule 8 shows only planned and prospective changes to generating facilities and does not reflect changes to existing purchases. Those changes are reflected on Tables ES-1, I.B.1 and I.B.2.
(2) The Winter Total MW value consists of all generation additions and changes achieved by January. The Summer Total MW value consists of all generation additions and changes.
achieved by June. All MW additions/changes occurring after August each year will be picked up for reserve margin calculation purposes in the following year.
(3) Solar values reflect firm capacity only values, not nameplate ratings.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Citrus Solar Energy Center (DeSoto County)

(2) **Capacity**
a. Nameplate (AC) 74.5 MW
b. Summer Firm (AC) 38.7 MW
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2015
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel Sun
b. Alternate Fuel Sun

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** 841 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**
Planned Outage Factor (POF): Not applicable
Forced Outage Factor (FOF): Not applicable
Equivalent Availability Factor (EAF): Not applicable
Resulting Capacity Factor (%): 26% (First Full Year Operation)
Average Net Operating Heat Rate (ANOHR): Not applicable
Base Operation 75F,100%
Average Net Incremental Heat Rate (ANIHR): Not applicable
Peak Operation 75F,100%

(13) **Projected Unit Financial Data ***
Book Life (Years): 30 years
Total Installed Cost (2016 $/kW): 1,835
Direct Construction Cost ($/kW): 1,775
AFUDC Amount (2016 $/kW): 60
Escalation ($/kW): Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr): (2016 $) 5.39 (First Full Year Operation)
Variable O&M ($/MWH): (2016 $) 0.00
K Factor: 1.11

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Manatee Solar Energy Center (Manatee County)

(2) **Capacity**
a. Nameplate (AC) 74.5 MW
b. Summer Firm (AC) 38.7 MW
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2015
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel Sun
b. Alternate Fuel Sun

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** 762 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable
Forced Outage Factor (FOF):	Not applicable
Equivalent Availability Factor (EAF):	Not applicable
Resulting Capacity Factor (%):	26% (First Full Year Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable Btu/kWh
Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable Btu/kWh

(13) **Projected Unit Financial Data ***

Book Life (Years):		30 years
Total Installed Cost (2016 $/kW):		1,835
Direct Construction Cost ($/kW):		1,775
AFUDC Amount (2016 $/kW):		60
Escalation ($/kW):		Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr):	(2016 $)	5.39 (First Full Year Operation)
Variable O&M ($/MWH):	(2016 $)	0.00
K Factor:		1.11

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Babcock Solar Energy Center (Charlotte County)

(2) **Capacity**
a. Nameplate (AC) 74.5 MW
b. Summer Firm (AC) 38.7 MW
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2015
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel Sun
b. Alternate Fuel Sun

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** 443 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable
Forced Outage Factor (FOF):	Not applicable
Equivalent Availability Factor (EAF):	Not applicable
Resulting Capacity Factor (%):	26% (First Full Year Operation)
Average Net Operating Heat Rate (ANOHR):	Not applicable Btu/kWh
Base Operation 75F,100%	
Average Net Incremental Heat Rate (ANIHR):	Not applicable Btu/kWh
Peak Operation 75F,100%	

(13) **Projected Unit Financial Data ***

Book Life (Years):		30 years
Total Installed Cost (2016 $/kW):		1,835
Direct Construction Cost ($/kW):		1,775
AFUDC Amount (2016 $/kW):		60
Escalation ($/kW):		Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr):	(2016 $)	5.39 (First Full Year Operation)
Variable O&M ($/MWH):	(2016 $)	0.00
K Factor:		1.11

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Fort Myers CT (2 CTs will be added)

(2) **Capacity (for each CT)**
a. Summer 231 MW
b. Winter 223 MW

(3) **Technology Type:** Combustion Turbine

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2015
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Ultra-low sulfur distillate

(6) **Air Pollution and Control Strategy:** Dry Low NO_x Burners, Natural Gas, 0.0015% S. Distillate and Water Injection on Distillate

(7) **Cooling Method:** Water to Air Heat Exchangers

(8) **Total Site Area:** Existing Site 460 Acres

(9) **Construction Status:** U (Under Construction)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	3.0%
Forced Outage Factor (FOF):	1.0%
Equivalent Availability Factor (EAF):	96.0%
Resulting Capacity Factor (%):	Approx. 3% (First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	10,075 Btu/kWh on Gas
Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	7,644 Btu/kWh on Gas

(13) **Projected Unit Financial Data *,****

Book Life (Years):	30 years
Total Installed Cost (2016 $/kW):	501
Direct Construction Cost ($/kW):	477
AFUDC Amount (2016 $/kW):	24
Escalation ($/kW):	Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr):	2.63
Variable O&M (2016 $/MWH):	0.00
K Factor:	1.38

* $/kW values are based on Summer capacity.
** Levelized value includes Fixed O&M and Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, escalation, and AFUDC.

Schedule 9

Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Lauderdale CT (5 CTs will be added)

(2) **Capacity (for each CT)**
a. Summer 231 MW
b. Winter 223 MW

(3) **Technology Type:** Combustion Turbine

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2015
b. Commercial In-service date: 2016

(5) **Fuel**
a. Primary Fuel Natural Gas
b. Alternate Fuel Ultra-low sulfur distillate

(6) **Air Pollution and Control Strategy:** Dry Low NO_x Burners, Natural Gas, 0.0015% S. Distillate and Water Injection

(7) **Cooling Method:** Water to Air Heat Exchangers

(8) **Total Site Area:** Existing Site 392 Acres

(9) **Construction Status:** U (Under Construction)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	3.0%
Forced Outage Factor (FOF):	1.0%
Equivalent Availability Factor (EAF):	96.0%
Resulting Capacity Factor (%):	Approx. 3% (First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	10,075 Btu/kWh on Gas
Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	7,644 Btu/kWh on Gas

(13) **Projected Unit Financial Data *,****

Book Life (Years):	30 years
Total Installed Cost (2016 $/kW):	470
Direct Construction Cost ($/kW):	453
AFUDC Amount (2016 $/kW):	17
Escalation ($/kW):	Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr):	3.26
Variable O&M (2016 $/MWH):	0.00
K Factor:	1.39

* $/kW values are based on Summer capacity.
** Levelized value includes Fixed O&M and Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, escalation, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Okeechobee Clean Energy Center

(2) **Capacity**
a. Summer 1,633 MW
b. Winter 1,606 MW

(3) **Technology Type:** Combined Cycle

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2017
b. Commercial In-service date: 2019

(5) **Fuel**
a. Primary Fuel: Natural Gas
b. Alternate Fuel: Ultra Low Sulfur Distillate

(6) **Air Pollution and Control Strategy:** Dry Low Nox Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection

(7) **Cooling Method:** Mechanical Draft Cooling Towers

(8) **Total Site Area:** 2,842 Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	3.5%
Forced Outage Factor (FOF):	1.0%
Equivalent Availability Factor (EAF):	95.5%
Resulting Capacity Factor (%):	Approx. 80% (First Full Year Base Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	6,249 Btu/kWh
Average Net Incremental Heat Rate (ANOHR): Peak Operation 75F,100%	7,669 Btu/kWh

(13) **Projected Unit Financial Data *,****

Book Life (Years):	30 years
Total Installed Cost (2019 $/kW):	754
Direct Construction Cost ($/kW):	679
AFUDC Amount (2019 $/kW):	75
Escalation ($/kW):	Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr):	16.78
Variable O&M (2019 $/MWH):	0.26
K Factor:	1.45

* $/kW values are based on Summer capacity.
** Levelized value includes Fixed O&M and Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1) **Plant Name and Unit Number:** Unsited Solar

(2) **Capacity**
a. Nameplate (AC) 300 MW
b. Summer Firm (AC) 156 MW
c. Winter Firm (AC) -

(3) **Technology Type:** Photovoltaic (PV)

(4) **Anticipated Construction Timing**
a. Field construction start-date: 2019
b. Commercial In-service date: 2020

(5) **Fuel**
a. Primary Fuel Sun
b. Alternate Fuel Sun

(6) **Air Pollution and Control Strategy:** Not applicable

(7) **Cooling Method:** Not applicable

(8) **Total Site Area:** Not applicable Acres

(9) **Construction Status:** P (Planned Unit)

(10) **Certification Status:** ---

(11) **Status with Federal Agencies:** ---

(12) **Projected Unit Performance Data:**

Planned Outage Factor (POF):	Not applicable
Forced Outage Factor (FOF):	Not applicable
Equivalent Availability Factor (EAF):	Not applicable
Resulting Capacity Factor (%):	27% (First Full Year Operation)
Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%	Not applicable
Average Net Incremental Heat Rate (ANIHR): Peak Operation 75F,100%	Not applicable

(13) **Projected Unit Financial Data ***

Book Life (Years):	30 years
Total Installed Cost (2020 $/kW):	1,676
Direct Construction Cost ($/kW):	1,646
AFUDC Amount (2020 $/kW):	30
Escalation ($/kW):	Accounted for in Direct Construction Cost
Fixed O&M ($/kW-Yr): (2020 $)	4.05
Variable O&M ($/MWH): (2020 $)	0.00
K Factor:	1.21

* $/kW values are based on nameplate capacity.

Note: Total installed cost includes transmission interconnection and AFUDC.

Schedule 9
Status Report and Specifications of Proposed Generating Facilities

(1)	**Plant Name and Unit Number:**	Unsited 3x1 CC	
(2)	**Capacity**		
	a. Summer	1,622 MW	
	b. Winter	1,595 MW	
(3)	**Technology Type:**	Combined Cycle	
(4)	**Anticipated Construction Timing**		
	a. Field construction start-date:	2022	
	b. Commercial In-service date:	2024	
(5)	**Fuel**		
	a. Primary Fuel		Natural Gas
	b. Alternate Fuel		Ultra-low sulfur distillate
(6)	**Air Pollution and Control Strategy:**		Dry Low NO_x Burners, SCR, Natural Gas, 0.0015% S. Distillate and Water Injection
(7)	**Cooling Method:**		Mechanical Draft Cooling Towers
(8)	**Total Site Area:**	TBD	Acres
(9)	**Construction Status:**	P	(Planned Unit)
(10)	**Certification Status:**	---	
(11)	**Status with Federal Agencies:**	---	
(12)	**Projected Unit Performance Data:**		
	Planned Outage Factor (POF):		3.5%
	Forced Outage Factor (FOF):		1.0%
	Equivalent Availability Factor (EAF):		95.5%
	Resulting Capacity Factor (%):		Approx. 80% (First Full Year Base Operation)
	Average Net Operating Heat Rate (ANOHR): Base Operation 75F,100%		6,304 Btu/kWh
	Average Net Incremental Heat Rate (ANOHR): Peak Operation 75F,100%		7,731 Btu/kWh
(13)	**Projected Unit Financial Data *,****		
	Book Life (Years):		30 years
	Total Installed Cost (2024 $/kW):		818
	Direct Construction Cost ($/kW):		738
	AFUDC Amount (2024 $/kW):		80
	Escalation ($/kW):		Accounted for in Direct Construction Cost
	Fixed O&M (2024 $/kW-Yr):		18.99
	Variable O&M (2024 $/MWH):		0.29
	K Factor:		1.45

* $/kW values are based on Summer capacity.
** Levelized value includes Fixed O&M and Capital Replacement

Note: Total installed cost includes transmission interconnection and integration, and AFUDC.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Citrus Solar Energy Center (DeSoto)

The Citrus Solar Energy Center (DeSoto) will require one new line to connect the PV inverter array to the expanded Sunshine Substation.

(1)	Point of Origin and Termination:	Skylight – Sunshine Substation
(2)	Number of Lines:	1
(3)	Right-of-way	FPL – Owned
(4)	Line Length:	1.5 miles
(5)	Voltage:	230 kV
(6)	Anticipated Construction Timing:	Start date: 2015 End date: 2016
(7)	Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on schedule 9
(8)	Substations:	Skylight Substation and Sunshine Substation
(9)	Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Manatee Solar Energy Center (Manatee)

The Manatee Solar Energy Center will require one new line to connect the PV inverter array to the expanded Manatee Switchyard.

(1)	Point of Origin and Termination:	Helios – Manatee Switchyard
(2)	Number of Lines:	1
(3)	Right-of-way	FPL – Owned
(4)	Line Length:	1.5 miles
(5)	Voltage:	230 kV
(6)	Anticipated Construction Timing:	Start date: 2015 End date: 2016
(7)	Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on schedule 9
(8)	Substations:	Helios Substation and Manatee Switchyard
(9)	Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Babcock Solar Energy Center (Charlotte)

The Babcock Solar Energy Center (Charlotte) will require one new line to connect the PV inverter array to the planned Freeland Substation.

(1)	Point of Origin and Termination:	Tuckers – Hercules Substation
(2)	Number of Lines:	1
(3)	Right-of-way	FPL – Owned
(4)	Line Length:	5 miles
(5)	Voltage:	230 kV
(6)	Anticipated Construction Timing:	Start date: 2015 End date: 2016
(7)	Anticipated Capital Investment: (Trans. and Sub.)	Included in total installed cost on schedule 9
(8)	Substations:	Tuckers Substation and Hercules Substation
(9)	Participation with Other Utilities:	None

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Fort Myers Plant Gas Turbine Replacement and CT Upgrade

The Fort Myers Plant gas turbine replacement and CT upgrade projects do not require any “new” transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Lauderdale Plant Gas Turbine Replacement

The Lauderdale Plant Gas Turbine Replacement project does not require any “new” transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Okeechobee Next Generation Clean Energy Center

The Okeechobee Next Generation Clean Energy Center with an in-service date of 2019 does not require any "new" transmission lines.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Unsited 300 MW of PV

No site(s) has been determined for this projected generation addition by 2021. (A 2020 in-service date assumed in this document for planning purposes.) Therefore, no transmission analysis is possible.

Schedule 10
Status Report and Specifications of Proposed Transmission Lines

Unsited 3x1 CC

No site has been determined for this projected generation addition in 2024. Therefore, no transmission analysis is possible.

Schedule 11.1

Existing Firm and Non-Firm Capacity and Energy by Primary Fuel Type
Actuals for the Year 2015

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Net (MW) Capability				NEL	Fuel Mix
	Generation by Primary Fuel	**Summer (MW)**	**Summer (%)**	**Winter (MW)**	**Winter (%)**	**GWh [(2)]**	**%**
(1)	Coal	1,138	4.4%	1,145	4.1%	5,275	4.3%
(2)	Nuclear	3,453	13.2%	3,550	12.7%	27,045	22.0%
(3)	Residual	3,640	14.0%	3,674	13.1%	323	0.3%
(4)	Distillate	594	2.3%	677	2.4%	139	0.1%
(5)	Natural Gas	16,393	62.9%	18,084	64.6%	85,797	69.9%
(6)	Solar (Firm & Non-Firm)	35	0.1%	35	0.1%	68	0.1%
(7)	***FPL Existing Units Total [(1)]:***	***25,253***	***96.8%***	***27,165***	***97.0%***	***118,646***	***96.7%***
(8)	Renewables (Purchases)- Firm	114.0	0.4%	114.0	0.4%	227	0.2%
(9)	Renewables (Purchases)- Non-Firm	Not Applicable	---	Not Applicable	---	316	0.3%
(10)	***Renewable Total:***	114.0	0.4%	114.0	0.4%	543	0.44%
(11)	***Purchases Other :***	712.0	2.7%	719.0	2.6%	3,567	2.9%
(12)	***Total :***	*26,079.0*	*100.0%*	*27,998.0*	*100.0%*	*122,756*	*100.0%*

Note:

(1) FPL Existing Units Total values on row (7), columns (2) and (4), match the System Total Generating Capacity values found on Schedule 1 for Summer and Winter.

(2) Net Energy for Load GWh values on row (12), column (6), matches Schedule 6.1 value for 2015.

Schedule 11.2

Existing Non-Firm Self-Service Renewable Generation Facilities
Actuals for the Year 2015

(1)	(2)	(3)	(4)	(5)	(6) = (3)+(4)-(5)
Type of Facility	Installed Capacity DC (MW)	Renewable Projected Annual Output (MWh)	Annual Energy Purchased from FPL (MWh)	Annual Energy Sold to FPL (MWh)	Projected Annual Energy Used by Customers
Customer-Owned Renewable Generation (0 kW to 10 kW)	24.43	30,373	264,918	780	294,511
Customer-Owned Renewable Generation (> 10 kW to 100 kW)	11.03	13,679	235,212	426	248,465
Customer-Owned Renewable Generation (> 100 kW - 2 MW)	15.56	48,772	152,638	254	201,156
Totals	51	92,824	652,768	1,460	744,132

Notes:

(1) There were 4257 customers with renewable generation facilities interconnected with FPL on December 31, 2015.

(2) The Installed Capacity value is the sum of the nameplate ratings (DC MW) for all of the customer-owned renewable generation facilities connected as of December 31, 2015. Three systems do not have a DC rating. These are 3 non-solar facilities:

Tropicana - Landfill gas reciprocating generator: 1600 kW AC

Manatee Landfill gas: 1600 kW AC

Bio Mass - Palm Beach County: 750 kW AC

These AC values are included in the (> 100 kW < 2 MW) row.

(3) The Projected Annual Output value is based on NREL's PV Watts 1 program and the Installed Capacity value in column (2), adjusted for the date when each facility was installed and assuming each facility operated as planned.

(4) The Annual Energy Purchased from FPL is an actual value from FPL's metered data for 2015.

(5) The Annual Energy Sold to FPL is an actual value from FPL's metered data for 2015.

(6) The Projected Annual Energy Used by Customers is a projected value that equals:
(Renewable Projected Annual output + Annual Energy Purchased) minus the Annual Energy Sold to FPL.

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CHAPTER IV

Environmental and Land Use Information

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IV. Environmental and Land Use Information

IV.A Protection of the Environment

Clean, affordable energy is the lifeblood of Florida's growing population, expanding economy, and environmental resource restoration and management. Through FPL's commitment to environmental excellence, FPL is helping to solve Florida's energy challenges sustainably and responsibly. With one of the cleanest, most efficient power-generation fleets in the nation, FPL has reduced its use of foreign oil by 98 percent – from 40 million barrels annually in 2001 to fewer than 800,000 barrels annually in 2015. FPL is also the largest producer of solar energy in Florida. By the end of 2016, FPL will have tripled its solar energy-based generating capacity from 110 MW to approximately 333 MW (nameplate, AC). FPL is also projecting to increase that value to approximately 633 MW (nameplate, AC) by 2021. (A 2020 in-service date is assumed for planning purposes).

FPL maintains its commitment to environmental stewardship through proactive collaboration with communities and organizations working to preserve Florida's unique habitat and natural resources. The many projects and programs in which FPL is an active participant include the creation and management of the Everglades Mitigation Bank, Crocodile Management Program, preservation of the Barley Barber Swamp, and development of the Manatee Lagoon viewing and learning center at FPL's Riviera Beach Next Generation Clean Energy Center.

FPL and its parent company, NextEra Energy, Inc., have continuously been recognized as leaders among electric utilities for their commitment to the environment. That commitment is ingrained in FPL's corporate culture. FPL has one of the lowest emissions profiles among U.S. utilities and in 2015 its carbon dioxide (CO_2) emission rate was 35% lower (better) than the industry national average.

NextEra Energy in 2015 was ranked as the top "green utility" in the United States and No. 4 in the world based on carbon emissions and renewable energy capacity, according to the latest annual report from EI Energy Intelligence, an independent provider of global energy and geopolitical news, analysis, data, and research. In the world rankings, NextEra Energy trailed only Acciona (Spain), China General Nuclear (China), and Iberdrola (Spain). To evaluate their "greenness," utilities were awarded points based on three criteria: greenhouse gas emissions, measured as CO_2 emissions per megawatt hour of electricity produced; the company's renewable energy capacity (MW) in proportion to total capacity (MW); and the company's renewable energy by volume (GWh).

For the eighth year, NextEra Energy in 2015 has been named a World's Most Ethical Company® by the Ethisphere Institute. This year, only 132 companies across more than 50 industries worldwide were selected for this prestigious honor. NextEra Energy was one of only five energy and electric utility companies named to the list. Scoring is based upon a weighted scoring of company's ethics and compliance program (35% weighting), corporate citizenship and responsibility (20%), culture of ethics (20%), governance (15%), and leadership, innovation and reputation (10%).

NextEra Energy, Inc. was named on the FORTUNE "World's Most Admired Companies" 2015 list and, for the first time, is among the top 10 companies in the world in both the categories of innovativeness and community responsibility. NextEra Energy also ranked first among electric and gas utilities for innovation, social responsibility, and quality of products/services.[5] In February, 2016, NextEra Energy was named No. 1 overall among electric and gas utilities on Fortune's 2016 list of "Most Admired Companies." This is the ninth year out of the last 10 that FPL has received this honor.

NextEra Energy's Juno Beach, Florida, campus, including FPL's headquarters, has achieved the prestigious Leadership in Energy and Environmental Design (LEED) Gold certification for existing buildings. LEED is the U.S. Green Building Council's leading rating system for designating the world's greenest, most energy-efficient, and high performing buildings. Key achievements that led to the certification include heating, ventilation and air conditioning improvements, lighting upgrades, water management and recycling programs, and changes to specifications for paper, carpet, and other materials.

In 2015, FPL supported a broad base of environmental organizations with donations, event sponsorships, and memberships totaling in excess of $365,000. The organizations that were supported include, but were not limited to: the Everglades Foundation, the Conservancy of Southwest Florida, the Busch Wildlife Sanctuary, Inc., and the Loggerhead Marinelife Center, Inc.

FPL and NextEra, Inc. employees serve as board members for many organizations that focus on environmental restoration, preservation, and stewardship. A partial list of these organizations includes: Martin County Environmental Studies Center, Marine Resources Council, Grassy Waters Conservancy, Sustainable Florida, the Palm Beach County Loggerhead Marinelife Center, and the Arthur R. Marshall Foundation.

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IV.B FPL's Environmental Policy

FPL and its parent company, NextEra Energy, Inc., are committed to being an industry leader in environmental protection and stewardship, not only because it makes business sense, but because it is the right thing to do. This commitment to compliance, conservation, communication, and continuous improvement fosters a culture of environmental excellence and drives the sustainable management of our business planning, operations, and daily work.

In accordance with commitments to environmental protection and stewardship, FPL and NextEra Energy, Inc. endeavor to:

Comply

- Comply with all applicable environmental laws, regulations, and permits
- Proactively identify environmental risks and take action to mitigate those risks
- Pursue opportunities to exceed environmental standards
- Participate in the legislative and regulatory process to develop environmental laws, regulations, and policies that are technically sound and economically feasible
- Design, construct, operate, and maintain facilities in an environmentally sound and responsible manner

Conserve

- Prevent pollution, minimize waste, and conserve natural resources
- Avoid, minimize, and/or mitigate impacts to habitat and wildlife
- Promote the efficient use of energy, both within our company and in our communities

Communicate

- Invest in environmental training and awareness to achieve a corporate culture of environmental excellence
- Maintain an open dialogue with stakeholders on environmental matters and performance
- Communicate this policy to all employees and publish it on the corporate website

Continuously Improve

- Establish, monitor, and report progress toward environmental targets
- Review and update this policy on a regular basis
- Drive continuous improvement through ongoing evaluations of our environmental management system to incorporate lessons learned and best practices.

FPL's parent company, NextEra Energy, Inc. updated this policy in 2013 to reflect changing expectations and ensure that employees are doing the utmost to protect the environment. FPL complies with all environmental laws, regulations, and permit requirements. FPL designs, constructs, and operates its facilities in an environmentally sound and responsible manner. It also responds immediately and effectively to any known environmental hazards or non-compliance situations. FPL's commitment to the environment does not end there. FPL proactively pursues opportunities to perform better than current environmental standards require, including reducing waste and emission of pollutants, recycling materials, and conserving natural resources throughout its operations and day-to-day work activities. FPL also encourages the efficient use of energy, both within the Company and in communities served by FPL. These actions are just a few examples of how FPL is committed to the environment.

To ensure that FPL is adhering to its environmental commitment, it has developed rigorous environmental governance procedures and programs. These include its Environmental Assurance Program and Corporate Environmental Governance Council. Through these programs, FPL conducts periodic environmental self-evaluations to verify that its operations are in compliance with environmental laws, regulations, and permit requirements. Regular evaluations also help identify best practices and opportunities for improvement.

IV.C Environmental Management

In order to successfully implement the Environmental Policy, FPL has developed a robust Environmental Management System to direct and control the fulfillment of the organization's environmental responsibilities. A key component of the system is an Environmental Assurance Program, which is described in section IV.D below. Other components of the system include: executive management support and commitment, a dedicated environmental corporate governance program, written environmental policies and procedures, delineation of organizational responsibilities and individual accountabilities, allocation of appropriate resources for environmental compliance management (which includes reporting and corrective action when non-compliance occurs), environmental incident and/or emergency response, environmental risk assessment/management, environmental regulatory development and tracking, and environmental management information systems.

As part of its commitment to excellence and continuous improvement, FPL created an enhanced Environmental Data Management Information System (EDMIS). Environmental data management software systems are increasingly viewed as an industry best-management practice to ensure environmental compliance. FPL's top goals for this system are to: 1) improve the flow of environmental data between site operations and corporate services to ensure compliance, and 2) improve operating efficiencies. In addition, the EDMIS helps to standardize environmental data collection, thus improving external reporting to the public.

IV.D Environmental Assurance Program

FPL's Environmental Assurance Program consists of activities that are designed to evaluate environmental performance, verify compliance with corporate policy as well as legal and regulatory requirements, and communicate results to corporate management. The principal mechanism for pursuing environmental assurance is an environmental audit. An environmental audit may be defined as a management tool comprised of a systematic, documented, periodic, and objective evaluation of the performance of the organization and of the specific management systems and equipment designed to protect the environment. The primary objective of performing an environmental audit is to facilitate management control of environmental practices and assess compliance with existing environmental regulatory requirements and FPL policies. In addition to FPL facility audits, through the Environmental Assurance Program, FPL performs audits of third-party vendors used for recycling and/or disposal of waste generated by FPL operations. Vendor audits provide information used for selecting candidates or incumbent vendors for disposal and recycling needs.

FPL has also implemented a Corporate Environmental Governance System in which quarterly reviews are performed by each business unit deemed to have potential for significant environmental exposure. Quarterly reviews evaluate operations for potential environmental risks and consistency with the company's Environmental Policy. Items tracked during the quarterly reviews include processes for the identification and management of environmental risks, metrics, and indicators and progress / changes since the most recent review.

In addition to periodic environmental audits, FPL's Environmental Construction Compliance Assurance Program provides routine onsite inspections during construction and site specific environmental training to everyone anticipated to be onsite during construction. Similar to an environmental audit, these inspections are performed to ensure compliance with the requirements of environmental permits, licenses, and FPL policies.

IV.E Environmental Communication and Facilitation

FPL is involved in many efforts to enhance environmental protection through the facilitation of energy efficiency, environmental awareness, and through public education. Some of FPL's 2015 environmental outreach activities are summarized in Table IV.E.1.

Table IV.E.1: 2015 FPL Environmental Outreach Activities

Activity	Count (#)
Visitors to FPL's Energy Encounter at St. Lucie	>2,700
Visitors to Manatee Park, Ft. Myers	238,678
Number of website visits to FPL's Environmental & Corporate Responsibility Websites	>58,000
Visitors to Barley Barber Swamp (Treasured Lands Partnership)	101
Visitors to Martin Energy Center Solar & DeSoto Solar Tours	378
Environmental Brochures Distributed	>70,000
Home Energy Surveys	Field Visits: 27,795 Phone: 50,563 Online: 70,567 **Total: 148,925**

IV.F Preferred and Potential Sites

Based upon its projection of future resource needs, FPL has identified seven (7) Preferred Sites and six (6) Potential Sites for adding future generation. Some of these sites currently have existing generation at the sites and some do not. Preferred Sites are those locations where FPL has conducted significant reviews, and has either taken action, is currently committed to take action, or is likely to take action, to site new generation. Potential Sites are those sites that have attributes that would support the siting of generation and are under consideration as a location for future generation. The identification of a Potential Site does not necessarily indicate that FPL has made a definitive decision to pursue new generation (or generation expansion or modernization in the case of an existing generation site) at that location, nor does this designation indicate that the size or technology of a generating resource has been determined. The Preferred Sites and Potential Sites are discussed in separate sections below.

IV.F.1 Preferred Sites

For the 2016 Ten Year Site Plan, FPL has identified seven (7) Preferred Sites. These include a combination of existing and new sites for the development of natural gas combined cycle, combustion turbines, and/or solar generation facilities.

The 7 sites include the following (which are presented in general chronological order of when resources are projected to be added to the FPL system): Babcock Ranch Solar Energy Center, Citrus Solar Energy Center, Manatee Solar Energy Center, Lauderdale Plant Peaking Facilities, Ft Myers Plant Peaking Facilities, Okeechobee Clean Energy Center Unit 1, and Turkey Point Units 6 & 7.

In regard to the Turkey Point 6 & 7 nuclear units, FPL's Combined Operating License Application (COLA) is still pending with the Nuclear Regulatory Commission at the time this Site Plan is being prepared. Based on the COLA schedule, the earliest practical date for bringing the Turkey Point 6 & 7 units in-service is now beyond the 2016 through 2025 time period addressed in this Site Plan. Despite this, Turkey Point is discussed as a Preferred Site for the new nuclear units.

Preferred Site # 1: Babcock Ranch Solar Energy Center, Charlotte County

The Babcock Ranch Solar Energy Center, with a photovoltaic (PV) facility of approximately 74.5 MW (nameplate, AC), will be located in Charlotte County on approximately 443 acres donated by the Babcock Ranch Community Independent Special District. Construction commenced on the Babcock Ranch Solar Energy Center in Charlotte County on December 15, 2015 and Commercial Operation is projected to begin in December 2016.

a. U.S. Geological Survey (USGS) Map
See Figures at the end of this chapter.

b. Proposed Facilities Layout
See Figures at the end of this chapter.

c. Map of Site and Adjacent Areas
See Figures at the end of this chapter

d. Existing Land Uses of Site and Adjacent Areas

1. Site Agricultural production (sod and pasture)

2. Adjacent Areas Agricultural production

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site contains agriculture, pine flatwoods and freshwater marsh.

2. Listed Species

The site is located in the USFWS Panther Focus Area as well as the Core Foraging Area of known wood stork colonies.

3. Natural Resources of Regional Significance Status

The site is in the Babcock Preserve and east of the Cecil Webb Wildlife Management Area.

4. Other Significant Features

FPL is not aware of any other significant features on the site.

f. Design Features and Mitigation Options

The design includes an approximately 74.5 MW (nameplate, AC) PV facility, on-site transmission substation, and site stormwater system.

g. Local Government Future Land Use Designations

Local government designation regarding land use on this site is agricultural production and barren land.

h. Site Selection Criteria Process

The site selection criteria included system load, transmission interconnection, economics and environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.).

i. Water Resources

Existing permitted onsite water resources will be used to meet water requirements.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is approximately 750 feet of the Intermediate Aquifer System, which is itself above the Floridan Aquifer System that consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal, existing permitted supply

Panel Cleaning: Minimal and only in absence of sufficient rainfall.

l. Water Supply Sources by Type

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable and Panel Cleaning: Delivered to the site by truck or via existing permitted supply.

m. Water Conservation Strategies Under Consideration

PV does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.

n. Water Discharges and Pollution Control

Best Management Practices will be employed to prevent and control inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

PV does not require fuel and no waste products will be generated at the site.

p. Air Emissions and Control Systems

Fuel: PV energy generation does not use any type of combustion fuel. Therefore, there will be no air emissions or need for Control Systems.

Combustion Control: Not Applicable

Combustor Design: Not Applicable

q. Noise Emissions and Control Systems

PV energy generation does not emit noise and, therefore, there will be no need for noise control systems.

r. Status of Applications

USACE Section 404 Permit received: December 28, 2011

Florida Environmental Resources Permit (ERP) Modification received: July 30, 2015

Charlotte County Development Approval received: September 15, 2015

Preferred Site # 2: Citrus Solar Energy Center, DeSoto County

The Citrus Solar Energy Center, consisting of a PV facility of approximately 74.5 MW (nameplate, AC), will be located in Arcadia in Citrus County on approximately 841 acres. Construction commenced on December 15, 2015 and Commercial Operation is projected to begin in December 2016. This location is also being evaluated as a potential future site for additional PV capacity.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Proposed Facilities Layout

See Figures at the end of this chapter.

c. Map of Site and Adjacent Areas

See Figures at the end of this chapter

d. Existing Land Uses of Site and Adjacent Areas

1. Site	Agricultural production
2. Adjacent Areas	Agricultural production, forested and non-forested uplands

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site is comprised of agricultural production with some wetland areas.

2. Listed Species

Burrowing owls and gopher tortoises may be present. If these are discovered they will be relocated prior to construction under permits from the Florida Fish and Wildlife Conservation Commission (FFWCC).

3. Natural Resources of Regional Significance Status

No natural resources of regional significance status exist at or adjacent to the site.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The design includes an approximately 74.5 MW (nameplate, AC) PV facility, on-site transmission substation, and site stormwater system.

g. Local Government Future Land Use Designations

Local government future land use on this site is Electrical Generating Facility.

h. Site Selection Criteria Process

The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.).

i. Water Resources

Existing permitted onsite water resources will be used to meet water requirements.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is approximately 450 feet of the Intermediate Aquifer System, which is itself above the Floridan Aquifer System that consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal, existing permitted supply

Panel Cleaning: Minimal and only in absence of sufficient rainfall.

l. Water Supply Sources by Type

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable and Panel Cleaning: Delivered to the site by truck or via existing permitted supply.

m. Water Conservation Strategies Under Consideration

PV does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.

n. Water Discharges and Pollution Control

Best Management Practices will be employed to prevent and control inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

PV does not require fuel and no waste products will be generated at the site.

p. Air Emissions and Control Systems

Fuel: PV energy generation does not use any type of combustion fuel. Therefore, there will be no air emissions or need for Control Systems.

Combustion Control: Not Applicable

Combustor Design: Not Applicable

q. Noise Emissions and Control Systems

PV energy generation does not emit noise and, therefore, there will be no need for noise control systems.

r. Status of Applications

USACE Section 404 Permit received: June 24, 2015

Florida Environmental Resources Permit (ERP) Modification received: October 5, 2015

DeSoto County Development Approval received: November 15, 2015.

Preferred Site # 3: Manatee Solar Energy Center, Manatee County

The Manatee Solar Energy Center, consisting of a PV facility of approximately 74.5 MW (nameplate, AC), will be located in north-central Manatee County on approximately 762 acres.

Construction commenced on December 15, 2015 and Commercial Operation is projected to begin in December 2016.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Proposed Facilities Layout

See Figures at the end of this chapter.

c. Map of the Site and Adjacent Areas

See Figures at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

1. Site	Agricultural production
2. Adjacent Areas	Agricultural production, upland forested, forested uplands, power plant, transportation, communication, and utilities.

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

Site is predominately agricultural with a lack of suitable onsite habitat.

2. Listed Species

Due to the existing disturbed nature of the site and lack of suitable onsite habitat, minimal, if any, impacts will occur to listed species.

3. Natural Resources of Regional Significance Status

No natural resources of regional significance status at or adjacent to the site.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The design includes an approximately 74.5 MW (nameplate, AC) PV facility, on-site transmission substation, and site stormwater system.

g. Local Government Future Land Use Designations

Local government future land use designations include Agricultural and Planned Development / Public Interest.

h. Site Selection Criteria Process

The site selection criteria used were system load, transmission interconnection, economics, and environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.).

i. Water Resources

Existing permitted onsite water resources will be used to meet water requirements.

j. Geological Features of the Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is approximately 750 feet of the Intermediate Aquifer System, which is itself above the Floridan Aquifer System that consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal, existing permitted supply

Panel Cleaning: Minimal and only in absence of sufficient rainfall.

l. Water Supply Sources by Type

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable and Panel Cleaning: Delivered to the site by truck or via existing permitted supply.

m. Water Conservation Strategies Under Consideration

PV does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.

n. Water Discharges and Pollution Control

Best Management Practices will be employed to prevent and control inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

Solar does not require fuel and no waste products will be generated at the site.

p. Air Emissions and Control Systems

Fuel: PV energy generation does not use any type of combustion fuel. Therefore, there will be no air emissions or need for Control Systems.

Combustion Control: Not Applicable

Combustor Design: Not Applicable.

q. Noise Emissions and Control Systems

PV energy generation does not emit noise and, therefore, there will be no need for noise control systems.

r. Status of Applications

USACE Section 404 Permit received: November 9, 2015.

Florida Environmental Resources Permit (ERP) Modification received: November 12, 2015

Manatee County Development Approval received: November 20, 2015

Manatee County Rezoning Approval received: August 6, 2015

Preferred Site # 4: Lauderdale Plant Peaking Facilities, Broward County

This site is located at the existing Lauderdale Plant property and consists of approximately 392 acres, within the Cities of Dania Beach and Hollywood in Broward County. The Lauderdale Plant currently includes two combined cycle units and two banks of 12 first generation simple cycle gas turbines (GTs) that began operation in the early 1970s. At the time this Site Plan will be filed, all 24 existing GTs are operational. However, FPL will retire 22 of the 24 existing GTs by the end of 2016 and partially replace this peaking capacity with 5 new and larger combustion turbines (CTs). Construction commenced on the Lauderdale Plant Peaking Facilities in Broward County in September 2015 with Commercial Operation projected to begin in December 2016.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Proposed Facilities Layout

See Figures at the end of this chapter

c. Map of Site and Adjacent Areas

See Figures at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

1. Site	Commercial and electric power generation
2. Adjacent Areas	Low to high density urban, transportation, communication, utilities, commercial, water, and some open land.

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site is comprised of facilities related to electric power generation and approximately 14 acres of forested wetlands and upland spoil.

2. Listed Species

Due to the lack of suitable habitat and the surrounding area land use, listed species are not anticipated to utilize the site.

3. Natural Resources of Regional Significance Status

No natural resources of regional significance status exist at, or are adjacent to, the site.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The project includes five new highly efficient simple cycle CTs that will partially replace 22 GTs at the existing Lauderdale Plant (plus 12 simple cycle GTs at the Port Everglades Plant). The CTs will operate using natural gas and Ultra-Low Sulfur Distillate (ULSD).

g. Local Government Future Land Use Designations

The site is zoned General Industrial.

h. Site Selection Criteria Process

The site selection criteria included system load, transmission interconnection, economics, environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.), and to maximize opportunities at existing utility infrastructure.

i. Water Resources

The CTs will obtain water from an existing permitted onsite water resource.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, including the Biscayne Aquifer, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Below the Surficial Aquifer System is at least 600 feet of the Hawthorn formation which is itself underlain by the Floridan Aquifer System which consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: Not Applicable because no heat dissipation system is needed for simple cycle CT operation

Process: No additional water required

Potable: No additional water required

Panel Cleaning: Not Applicable

l. Water Supply Sources by Type

Cooling: Not Applicable for simple cycle CT operation

Process: As existing, Broward County Utilities

Potable: As existing, City of Hollywood

m. Water Conservation Strategies Under Consideration

No additional water resources are required.

n. Water Discharges and Pollution Control

No surface water discharges are required for operation of the proposed facilities. Best Management Practices will be employed to prevent and control inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

Natural gas will be transported via an existing pipeline. ULSD will be piped or trucked to the facility and stored in double-walled ULSD tanks.

p. Air Emissions and Control Systems

Fuel: Use of cleaner Natural Gas and Ultra-Low Sulfur Distillate (ULSD) will minimize SO_2, sulfuric acid mist (SAM), particulates, and other fuel-bound contaminants and ensure compliance with applicable emission-limiting standards.

Combustion Control / Combustor Design: Will limit formation of NOx, CO, and VOCs. Further NOx reduction will be achieved by water injection during oil firing.

q. Noise Emissions and Control Systems

Construction and operation of the CTs will not exceed the maximum permissible sound levels in Section 17-86 of the Code of City of Dania Beach.

r. Status of Applications

USACE Section 404 Permit received: June 27, 2014

Prevention of Significant Deterioration (PSD) Air Permit received: August 25, 2015

PSD-GHG Modification received: August 25, 2015

Preferred Site # 5: Ft Myers Plant Peaking Facilities, Lee County

FPL plans to retire, replace, and upgrade components of the peaking facilities at the Fort Myers Power Plant. This site consists of approximately 460 acres located in the City of Tice (Fort Myers) in Lee County, Florida. The existing Fort Myers Plant consists of one natural gas combined cycle (CC) unit, two natural gas- and oil-fired combustion turbine (CT) units, and one bank of 12 oil-fired gas turbines (GTs) which started operation in the early 1970s. FPL is adding two new, larger CTs and has retired one of the existing GTs. FPL will retire 9 more existing GTs by the end of 2016, and will upgrade the two existing CTs to produce additional generation capacity. Construction commenced on the Ft Myers Plant Peaking Facilities in October 2015 with Commercial Operation projected to begin in December 2016.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Proposed Facilities Layout

See Figures at the end of this chapter.

c. Map of Site and Adjacent Areas

See Figures at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

1. Site	Transportation, communication, electrical generating facilities, barren land, and agricultural.
2. Adjacent Areas	Low density urban, commercial, rangeland, open land, transportation, communication, and utilities.

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site is comprised of facilities related to electric power generation.

2. Listed Species

Due to the existing disturbed nature of the site, no impacts to listed species are projected to occur.

3. Natural Resources of Regional Significance Status

The Caloosahatchee and Orange Rivers are adjacent to the site.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The design includes two new highly efficient simple cycle CTs which will replace 10 existing GTs. Two existing CTs will be upgraded to produce additional capacity.

g. Local Government Future Land Use Designations

The site is zoned Industrial Light by Lee County.

h. Site Selection Criteria Process

The site selection criteria included various factors such as existing utility infrastructure, system load, transmission interconnection, economics, and environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.).

i. Water Resources

Existing permitted onsite water resources will be used to meet water requirements.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is approximately 750 feet of the Intermediate Aquifer System, which is itself above the Floridan Aquifer System that consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: Not Applicable, because no heat dissipation system is needed for simple cycle CT operation.

Process: No additional water required

Potable: No additional water required

Panel Cleaning: Not Applicable

l. Water Supply Sources by Type

Cooling: Not Applicable for simple cycle CT operation

Process: As existing, Lee County Utilities

Potable: As existing, Lee County Utilities

m. Water Conservation Strategies under Consideration

No additional water resources are required.

n. Water Discharges and Pollution Control

No surface water discharges are required for operation of the proposed facilities. Best Management Practices will be employed to prevent and control inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

Natural gas will be transported via an existing pipeline. Ultra-Low Sulfur Diesel (ULSD) will be barged or trucked to the facility and stored in existing ULSD tanks.

p. Air Emissions and Control Systems

Fuel: Use of cleaner natural gas and ULSD will minimize SO_2, sulfuric acid mist (SAM), particulates, and other fuel-bound contaminants and ensure compliance with applicable emission-limiting standards.

Combustion Control / Combustor Design: Will limit formation of NOx, CO and VOCs. Further NOx reduction will be achieved by water injection during oil firing.

q. Noise Emissions and Control Systems

Noise from the new and upgraded CTs will not exceed the maximum permissible sound levels in Lee County noise control ordinance No. 93-15 and noise is expected to be below existing noise levels. The design includes components and an enclosure which mitigate the emission of noise to the surrounding environment.

r. Status of Applications

Prevention of Significant Deterioration Air Permit received: September 10, 2015

Florida Environmental Resources Permit Modification received: August 3, 2015

Lee County Development Approval received: July 8, 2015

Preferred Site # 6: Okeechobee Site, Okeechobee County

Clean and efficient natural gas-fired combined cycle (CC) generation at the site is possible due to the proximity to existing and planned natural gas pipelines. A new natural gas CC at this site was chosen to meet a need for new resources beginning in 2019 to maintain reliable electric service. In addition, FPL currently views the Okeechobee site as a potential site to be used for future large-scale PV and gas-fired generation facilities.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter.

b. Proposed Facilities Layout

See Figures at the end of this chapter.

c. Map of Site and Adjacent Areas

See Figures at the end of this chapter.

d. Existing Land Uses of Site and Adjacent Areas

1. Site — Agricultural production (cattle and citrus)

2. Adjacent Areas — Agricultural production, conservation, and existing electrical transmission

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site is comprised of unimproved pasture, fallow citrus, pine flatwoods, mixed forested wetlands, saw palmetto prairie, and freshwater marsh.

2. Listed Species

No adverse impacts are expected due to previous development and lack of suitable onsite habitat for listed species.

3. Natural Resources of Regional Significance Status

The Okeechobee site is adjacent to the Ft. Drum Marsh Conservation Area.

4. Other Significant Features

FPL is not aware of any other significant features of the site.

f. Design Features and Mitigation Options

The design includes one new approximately 1,600 MW CC unit consisting of three CTs, three heat recovery steam generators, and a steam turbine. Future options at the site include PV and gas-fired technology. Mitigation for unavoidable impacts, if required, would occur through a combination of on- and off-site mitigation.

g. Local Government Future Land Use Designations

Local government future land use designation includes agricultural production and power generation.

h. Site Selection Criteria Process

The site selection criteria included system load, transmission interconnection, proximity of the natural gas pipelines, economics, and environmental compatibility (e.g. wetlands, wildlife, threatened and endangered species, etc.).

i. Water Resources

Water resources include groundwater from the Surficial Aquifer System and the Floridan Aquifer System.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is at least 600 feet of the Hawthorn formation which is itself underlain by the Floridan Aquifer System that consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: 9 million gallons per day (mgd) daily average, 11 mgd maximum

Process: 0.08 mgd

Potable: 0.001 mgd

Panel Cleaning: Not Applicable

l. Water Supply Sources by Type

Cooling: Floridan Aquifer System

Process: Surficial Aquifer System

Potable: Surficial Aquifer System

m. Water Conservation Strategies Under Consideration

Cooling will utilize a closed system that will cycle cooling water approximately five times prior to disposal. The heat recovery steam generator blowdown will be reused to the maximum extent practicable. Additional water conservation strategies will be identified during the project's detailed design phase.

n. Water Discharges and Pollution Control

The site will utilize a closed cycle cooling (towers) system for heat dissipation. Heat recovery steam generator blowdown will be reused to the maximum extent practicable or mixed with the cooling water flow before discharge to an Underground Injection Control system. Reverse osmosis reject water will be mixed with the plant’s cooling water flow prior to discharge to the UIC. Stormwater runoff will be collected and routed to stormwater ponds. The facility will employ Best Management Practices and Spill Prevention, Control, and Countermeasure plans to prevent and control the inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

Natural gas will be delivered via a new natural gas pipeline. Ultra-low Sulfur Diesel fuel will be delivered via truck and stored in a new above-ground storage tank.

p. Air Emissions and Control Systems

Fuel: Use of cleaner natural gas and Ultra-Low Sulfur Distillate

- Natural Gas - Dry-low NOx combustion technology and Selective Catalytic Reduction will control NOx emissions, Greenhouse gas emissions will be substantially lower than the Environmental Protection Agency's proposed new source performance standard.
- ULSD - Water injection and selective catalytic reduction will be used to reduce NOx emissions

  Combustion Control - will minimize formation of sulfur dioxide, particulate matter, nitrogen oxides (NOx), and other fuel-bound contaminate

  Combustor Design - will limit formation of carbon monoxide and volatile organic compounds

q. Noise Emissions and Control Systems

Offsite noise impacts from construction and operation are expected to be limited.

r. Status of Applications

Underground Injection Control Exploratory Well and associated Dual Zone Monitoring Well Permit received: April 14, 2015

Need Determination Request Filed: September 3, 2015

Need Determination Granted: January 19, 2016

Fl. Site Certification Application Submitted: September 25, 2015

Fl. Site Certification Anticipated: October 2016

Prevention of Significant Deterioration (PSD) Application Submitted: September 25, 2015

PSD Permit Received: March 9, 2016

USACE Section 404 Permit Application Filed: July 30, 2015, Deemed Complete August 12, 2015

USACE Section 404 Permit Anticipated: November 2017

Preferred Site # 7: Turkey Point Plant, Miami-Dade County

Turkey Point site is the location at which FPL plans to construct two new nuclear units, Turkey Point Units 6 & 7. On May 14, 2014, the Florida Power Plant Siting Board authorized the site certification, with conditions, of Turkey Point 6 & 7. Each of these two units would provide 1,100 MW of nuclear generating capacity. In 2014 the Nuclear Regulatory Commission (NRC) significantly revised the Turkey Point Units 6 & 7 Combined Operating License Application (COLA) Review Schedule. A subsequent project schedule review based on the COLA schedule revision, and changes in Florida's nuclear cost recovery rule, indicated that the earliest practical deployment dates for bringing the Turkey Point 6 & 7 units in-service are mid-2027 (Unit 6) and mid-2028 (Unit 7) which is beyond the 2016 through 2025 time period addressed in this Site Plan. Despite the projected timing of the two new nuclear units, the nuclear units remain as an important factor in FPL's resource planning work and this Site Plan continues to present the Turkey Point site as a Preferred Site for the new units.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Proposed Facilities Layout

See Figures at the end of this chapter

c. Map of Site and Adjacent Areas

See Figures at the end of this chapter

d. Existing Land Uses of Site and Adjacent Areas

1. Site	Electrical generating facilities
2. Adjacent Areas	Undeveloped, the Everglades Mitigation Bank, South Florida Water Management District Canal L-31E, Biscayne Bay, and state owned land on Card Sound

e. General Environmental Features On and In the Site Vicinity

1. Natural Environment

The site includes hypersaline mud flats, man-made active cooling canals and remnant canals, previously filled areas / roadways, mangrove heads associated with historical tidal channels, dwarf mangroves, open water / discharge canal associated with the cooling canals on the western portion of the site, wet spoil berms associated with remnant canals, and upland spoil areas.

2. Listed Species

Listed species known to occur at the site or associated linear features include the peregrine falcon, wood stork, American crocodile, roseate spoonbill, little blue heron, snowy egret, American oystercatcher, least tern, white ibis, Florida manatee, eastern indigo snake, snail kite, white-crowned pigeon, and bald eagle. Some listed flora species likely to occur include pine pink, Florida brickell-bush, Florida lantana, mullien nightshade, and Lamarck's trema. The construction and operation of Turkey Point Units 6 & 7 are not expected to adversely affect any listed species.

3. <u>Natural Resources of Regional Significance Status</u>

Significant features in the vicinity of the site include Biscayne Bay, Biscayne National Park (BNP), Biscayne Bay Aquatic Preserve, Miami-Dade County Homestead Bayfront Park, and Everglades National Park.

4. <u>Other Significant Features</u>

FPL is not aware of any other significant features of the site.

f. <u>Design Features and Mitigation Options</u>

The technology proposed is the Westinghouse AP1000 pressurized water reactor. This design is certified by the Nuclear Regulatory Commission under 10 CFR 52. The Westinghouse AP1000 consists of the reactor, steam generators, pressurizer, and steam turbine / electric generator. Condenser cooling will use six circulating water cooling towers. The structures to be constructed include the containment building, shield building, auxiliary building, turbine building, annex building, diesel generator building, and radwaste building. The plant area will also contain the Clear Sky substation (switchyard) that will connect to FPL's transmission system.

g. <u>Local Government future Land Use Designations</u>

Current future land use designations include Industrial, Utilities, Communications, and Unlimited Manufacturing with a dual designation of Mangrove Protection Area. There are also areas of the site designated Interim District.

h. <u>Site Selection Criteria Process</u>

Site selection included the following criteria: existing transmission and transportation infrastructure to support new generation, the size and seclusion of the site while being relatively close to the load center, economics, and the long-standing record of safe and secure operation of nuclear generation at the site since the early 1970s.

i. Water Resources

Water requirements will be met by reclaimed water from Miami-Dade County and a back-up supply of saltwater from the marine environment of Biscayne Bay.

j. Geological Features of Site and Adjacent Areas

The site is underlain by the Surficial Aquifer System, including the Biscayne Aquifer, made up of Pleistocene-Holocene sediments, Miami Limestone, Key Largo Limestone, Anastasia Formation, Fort Thompson Formation, Caloosahatchee Marl, and the Tamiami Formation. Beneath the Surficial Aquifer System is approximately 350 to 600 feet of the Hawthorn formation which is itself underlain by the Floridan Aquifer System which consists of Suwannee Limestone, Ocala Limestone, Avon Park Formation, Oldsmar Formation, Cedar Keys Formation and the Sub-Floridan Confining unit.

k. Projected Water Quantities for Various Uses

Cooling: 55.3 million gallons per day (mgd)

Process: 1.3 mgd

Potable: .05 mgd

Panel Cleaning: Not Applicable

l. Water Supply Sources and Type

Cooling: Miami-Dade reclaimed water and saltwater from Biscayne Bay via radial collector wells

Process: Miami-Dade Water and Sewer Department

Potable: Miami-Dade Water and Sewer Department

m. Water Conservation Strategies

Turkey Point Units 6 & 7 will use reclaimed water 24 hours per day, 365 days per year when operating and when the reclaimed water is available in sufficient quantity and quality.

n. Water Discharges and Pollution Control

Blowdown water or discharge from the cooling towers, along with other wastestreams, will be injected into the boulder zone of the Floridan Aquifer. Non-point source discharges are not an issue since there will be none at this facility. Storm water runoff will be released to the closed-loop cooling canal system.

Turkey Point Units 6 & 7 will employ Best Management Practices plans and Spill Prevention, Control, and Countermeasure plans to prevent and control the inadvertent release of pollutants.

o. Fuel Delivery, Storage, Waste Disposal, and Pollution Control

The Turkey Point Units 6 & 7 reactors will contain enriched uranium fuel assemblies. New fuel assemblies will be transported to Turkey Point for use in Units 6 & 7 by truck from a fuel fabrication facility in accordance with U.S. Department of Transportation (DOT) and NRC regulations. Spent fuel assemblies being discharged will remain in the permitted spent fuel pool while short half-life isotopes decay.

After a sufficient decay period, the fuel would be transferred to a permitted on-site independent spent fuel storage installation facility or a permitted off-site disposal facility. Packaging of the fuel for off-site shipment will comply with the applicable DOT and NRC regulations for transportation of radioactive material.

The U.S. Department of Energy (DOE) is responsible for spent fuel transportation from reactor sites to a repository under the Nuclear Waste Policy Act of 1982, as amended. FPL has executed a standard spent nuclear fuel disposal contract with DOE for fuel used in Units 6 & 7.

p. Air Emissions and Control Systems

Fuel: The units will minimize FPL system air pollutant emissions by using nuclear fuel to generate electric power.

Combustion Control / Combustor Design: Not Applicable.

Note: The diesel engines necessary to support Turkey Point Units 6 & 7 and fire pump engines will be purchased from manufacturers whose engines meet the EPA's New Source Performance Standards Subpart IIII emission limits.

q. Noise Emissions and Control Systems

Predicted noise levels associated with these projects are not expected to result in adverse noise impacts in the vicinity of the site.

r. Status of Applications

Need Determination Issued: April 2008

Fl. Site Certification Received: May 14, 2014

A COLA Application for Units 6 & 7: submitted to the NRC in June 2009. In 2014 the NRC informed FPL that their decision on the COLA was going to be delayed several years until late 2016/early 2017. As a result of this delay, and changes in Florida's nuclear cost recovery rules, the earliest practical in-service dates of Turkey Point Units 6 & 7 (June 2027 and June 2028, respectively) have moved beyond the 10-year reporting window (2016 through 2025) of this Site Plan.

Miami-Dade County Unusual Use approvals: issued in 2007 and 2013

Land Use Consistency Determination: issued in 2013.

Prevention of Significant Deterioration: issued in 2009.

Underground Injection Control exploratory well: issued in 2010, and a permit to convert the exploratory well, to an injection well and to operationally test the system: issued in 2013.

Federal Aviation Administration permits for the containment structure: originally issued in 2009, renewed in 2012, and again in 2015.

IV.F.2 Potential Sites

Six (6) sites, denoted by counties, are currently identified as Potential Sites for future generation additions to meet FPL's projected capacity and energy needs.[6] Each of these Potential Sites offer a range of considerations relative to engineering and/or costs associated with the construction and operation of feasible technologies. In addition, each Potential Site has different characteristics that would require further definition and attention. Unless otherwise noted, the water quantities discussed below are in reference to gas-fired CC generation.

Permits are presently considered to be obtainable for each of these sites. No significant environmental constraints are currently known for any of these sites. At this time, FPL considers each site to be equally viable. The Potential Sites briefly discussed below are presented in alphabetical order.

Potential Site # 1: Alachua County

FPL is currently evaluating potential sites in Alachua County for a future PV facility. No specific locations have been selected at this time.

[6] As has been described in previous FPL Site Plans, FPL also considers a number of other sites as possible sites for future generation additions. These include the remainder of FPL's existing generation sites and other greenfield sites. Specific greenfield sites may not be specifically identified as Potential Sites in order to protect the economic interests of FPL and its customers.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Existing Land Uses of Site and Adjacent Areas

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

c. Environmental Features

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

d. Water Quantities Required

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal and only in absence of sufficient rainfall

e. Supply Sources

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal, trucked in if and when needed

Potential Site # 2: Hendry County

FPL currently views Hendry County as a region likely to be used for future large-scale generation including gas-fired and/or PV generation. This includes existing FPL-owned sites as well as other potential future sites.

a. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Existing Land Uses of Site and Adjacent Areas

The existing FPL-owned sites and adjacent areas consist of agricultural and upland forest as well as the Seminole Big Cypress Reservation. Land use information is not available at the time of publication of this report on an additional location as a specific site has not been selected.

c. Environmental Features

The existing FPL-owned sites include woodland pasture that includes wetlands, upland scrub, pine and hardwoods. Environmental feature information is not available at the time of publication of this report on an additional location as a specific site has not been selected.

d. Water Quantities Required

Cooling: 9 - 12 million gallons per day (mgd) daily average

Process: 0.24 mgd

Potable: 0.001 mgd

Panel Cleaning (if the site is selected for PV generation): Minimal and only in absence of sufficient rainfall.

e. Supply Sources

Cooling: Groundwater

Process: Groundwater

Potable: Existing Supply

Potential Site # 3: Martin County

FPL is currently evaluating potential sites in Martin County for a future PV facility. No specific locations have been definitively selected at this time.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Existing Land Uses of Site and Adjacent Areas

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

c. Environmental Features

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

d. Water Quantities Required

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal and only in absence of sufficient rainfall

e. <u>Supply Sources</u>

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal, trucked in if and when needed

<u>Potential Site # 4: Miami-Dade County</u>

FPL is currently evaluating potential sites in Miami-Dade County for a future PV facility. No specific locations have been definitively selected at this time.

a. <u>U.S. Geological Survey (USGS) Map</u>

See Figures at the end of this chapter

b. <u>Existing Land Uses of Site and Adjacent Areas</u>

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

c. <u>Environmental Features</u>

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

d. <u>Water Quantities Required</u>

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal and only in absence of sufficient rainfall

e. <u>Supply Sources</u>

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal, trucked in if and when needed

Potential Site # 5: Putnam County

FPL currently views Putnam County as a region likely to be used for future large-scale generation including gas-fired and/or PV generation. This includes existing FPL-owned sites as well as other potential future sites.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Existing Land Uses of Site and Adjacent Areas

The existing FPL-owned sites and adjacent areas consist of industrial, power generation and associated facilities, mixed wetland hardwoods, residential, and hardwood. Land use information is not available at the time of publication of this report on an additional location as a specific site has not been selected.

c. Environmental Features

FPL is not aware of any other significant features on or adjacent to the site.

d. Water Quantities Required

Cooling: 9 – 12 million gallons per day (mgd) daily average

Process: 0.24 mgd

Potable: 0.001 mgd

Panel Cleaning: Minimal and only in absence of sufficient rainfall.

e. Supply Sources

Cooling: St. John's River

Process: Groundwater

Potable: Putnam County Municipal Water Supply

Potential Site # 6: Volusia County

FPL is currently evaluating potential sites in Volusia County for a future PV facility. No specific locations have been definitively selected at this time.

a. U.S. Geological Survey (USGS) Map

See Figures at the end of this chapter

b. Existing Land Uses of Site and Adjacent Areas

This information is not available at the time of publication of this report because a specific site has not been selected.

c. Environmental Features

This information is not available at the time of publication of this report because a specific site has not been definitively selected.

d. Water Quantities Required

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal and only in absence of sufficient rainfall

e. Supply Sources

Cooling: Not Applicable for PV

Process: Not Applicable for PV

Potable: Minimal

Panel Cleaning: Minimal, trucked in if and when needed

Environmental and Land Use Information: Supplemental Information

Preferred Site # 1: Babcock Ranch Solar Energy Center, Charlotte County

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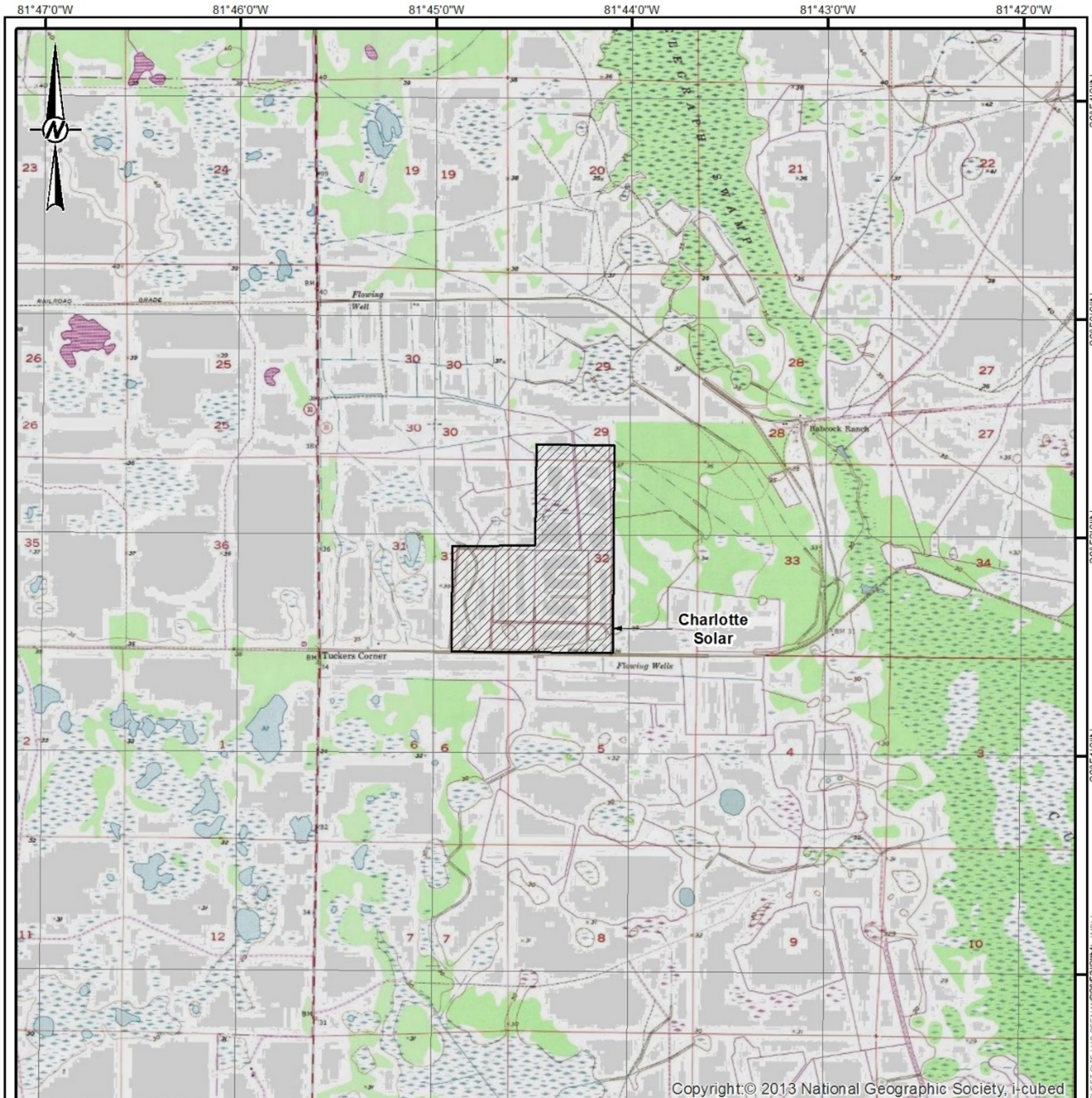
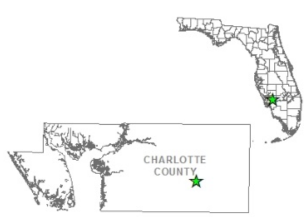


LEGEND

Charlotte Solar



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Feet

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PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
CHARLOTTE SOLAR

TITLE
USGS LOCATION MAP

CONSULTANT

FPL

YYYY-MM-DD	2016-03-10
DESIGNED	NRL
PREPARED	NRL
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
103-87722	F023	0	1

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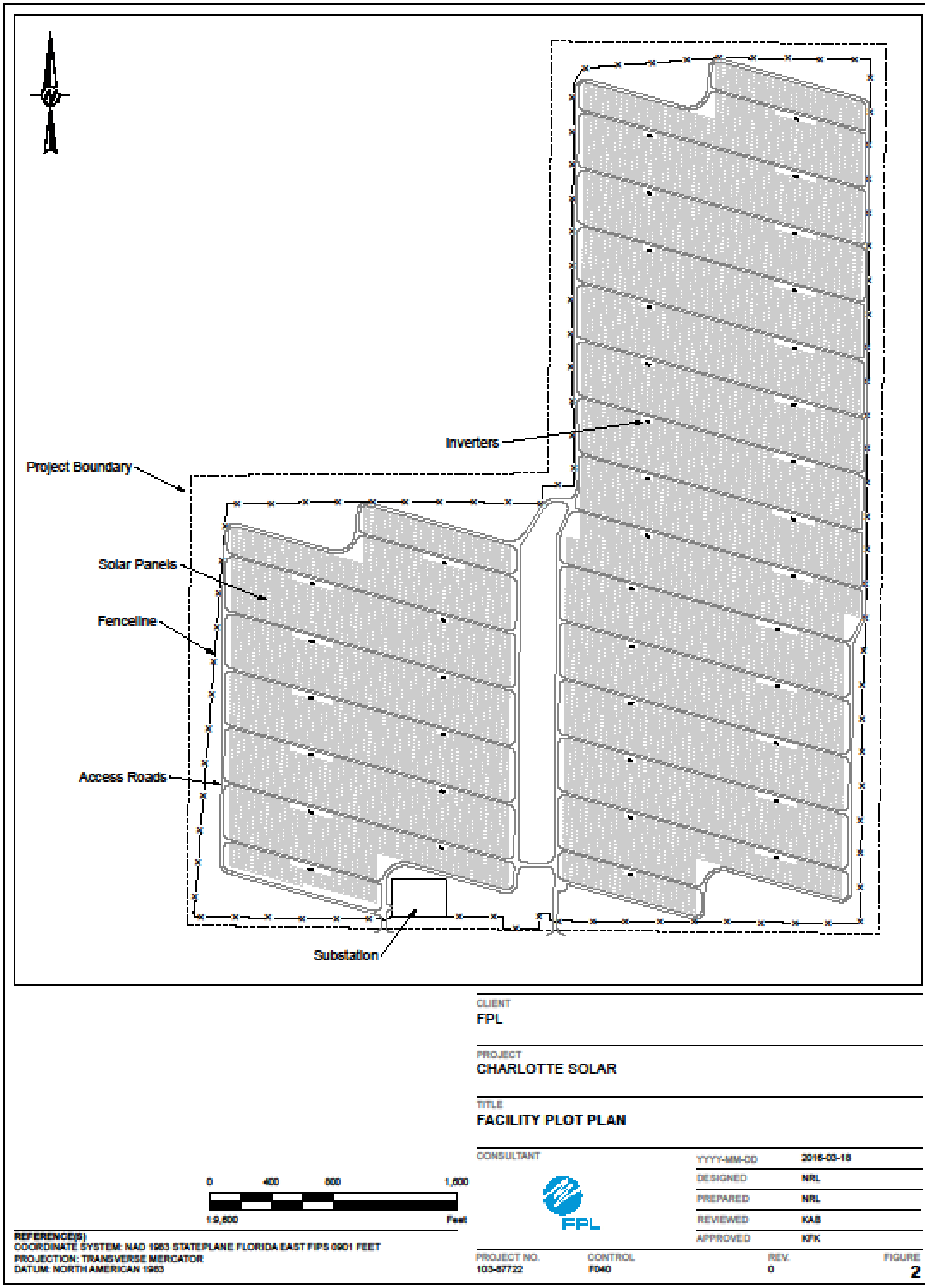
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Project Boundary
Solar Panels
Fenceline
Access Roads
Substation
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400
800
1,600
1:9,600
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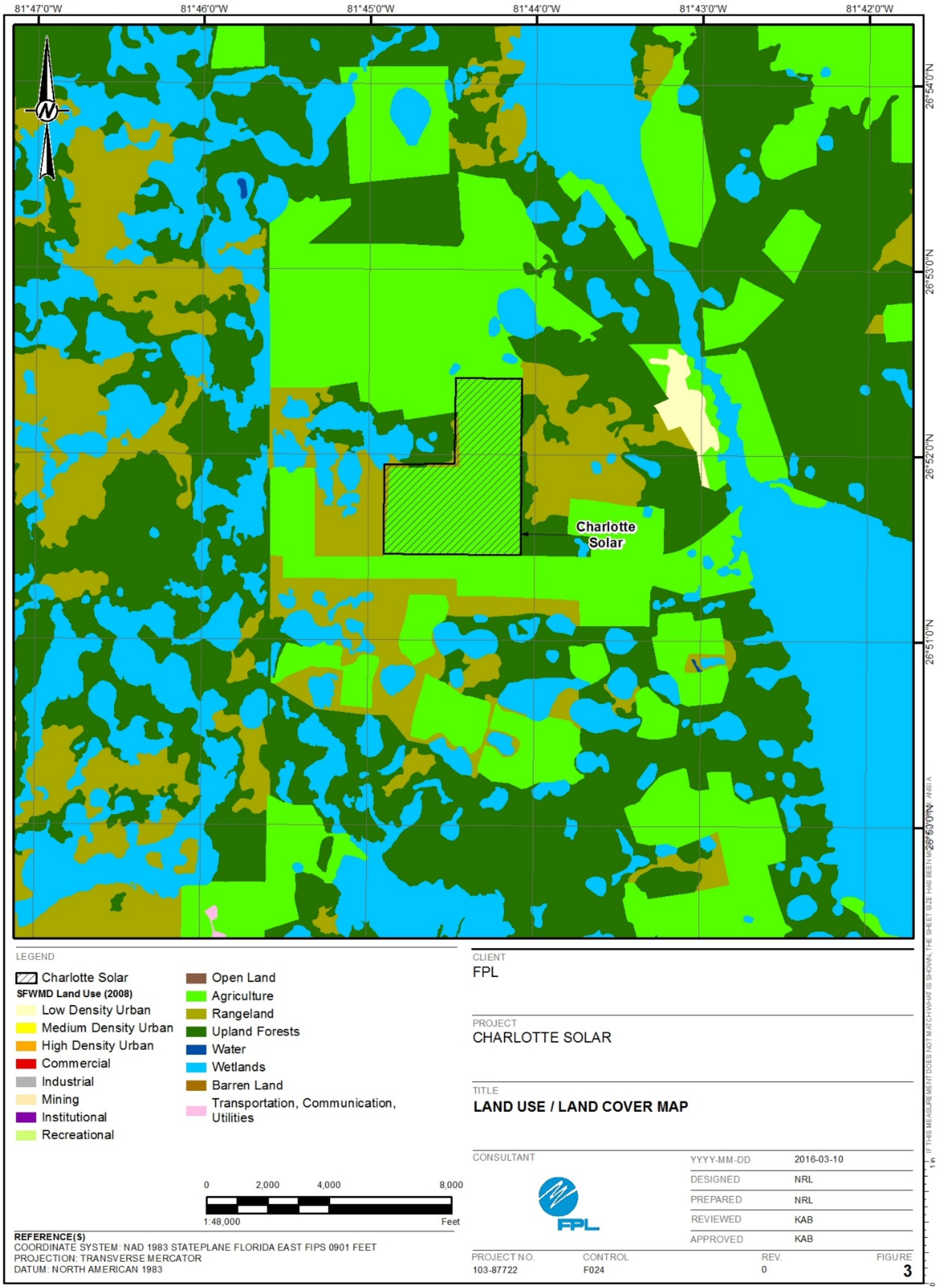
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
CHARLOTTE SOLAR
TITLE
FACILITY PLOT PLAN
CONSULTANT
YYYY-MM-DD 2016-03-18
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KFK
PROJECT NO. 103-87722
CONTROL F040
REV. 0
FIGURE 2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26°53'0"N
26°52'0"N
26°51'0"N
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N
Charlotte Solar
LEGEND
Charlotte Solar
SFWMD Land Use (2008)
Low Density Urban
Medium Density Urban
High Density Urban
Commercial
Industrial
Mining
Institutional
Recreational
Open Land
Agriculture
Rangeland
Upland Forests
Water
Wetlands
Barren Land
Transportation, Communication, Utilities
0 2,000 4,000 8,000
1:48,000 Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
CHARLOTTE SOLAR
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F024
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 2: Citrus Solar Energy Center, DeSoto County

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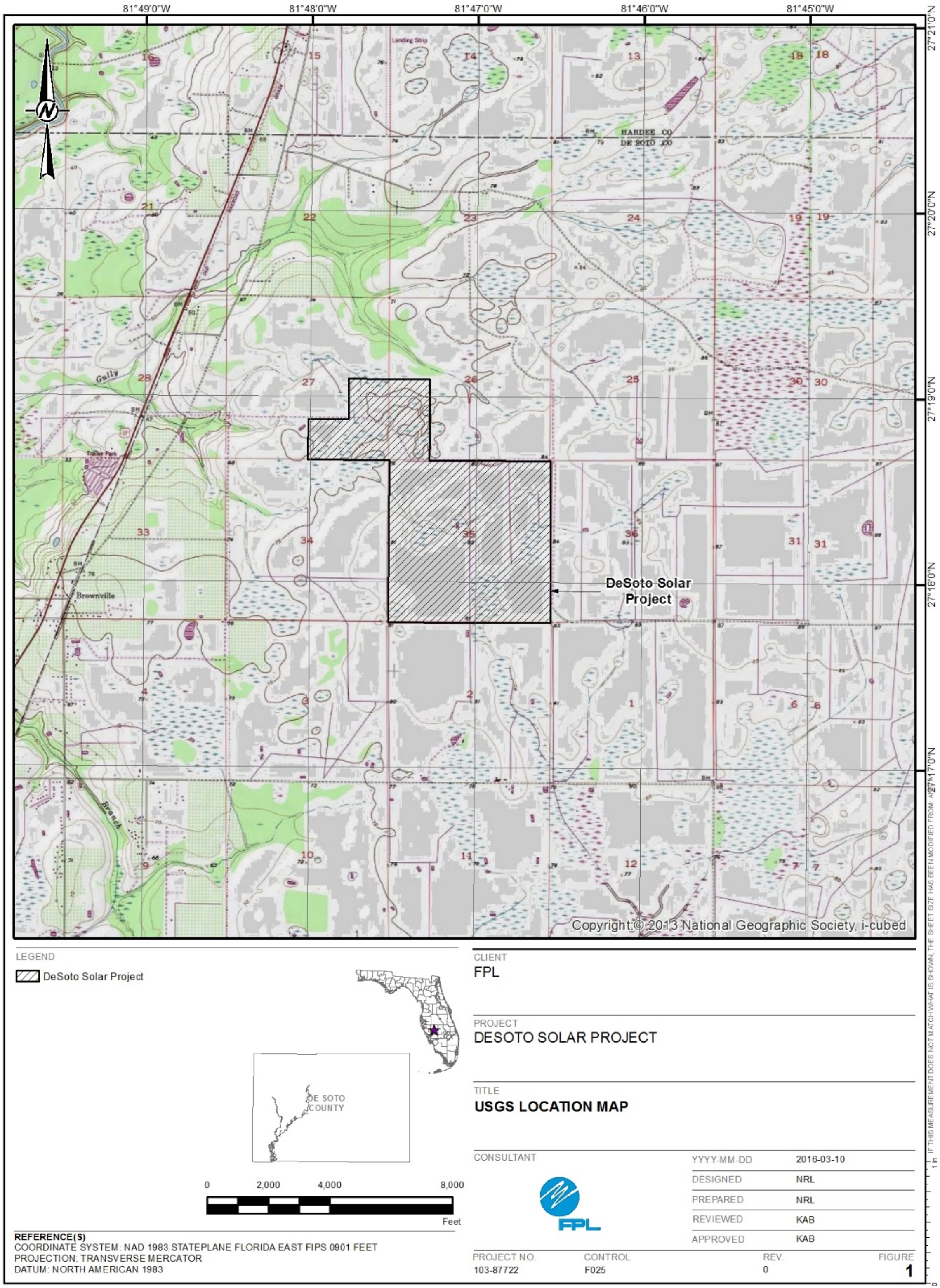

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81°45'0"W
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27°19'0"N
27°18'0"N
27°17'0"N
N
HARDEE CO
DE SOTO CO
Brownville
DeSoto Solar Project
Copyright:© 2013 National Geographic Society, i-cubed
LEGEND
DeSoto Solar Project
DE SOTO COUNTY
0 2,000 4,000 8,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
DESOTO SOLAR PROJECT
TITLE
USGS LOCATION MAP
CONSULTANT
YYYY-MM-DD 2016-03-10
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PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F025
REV. 0
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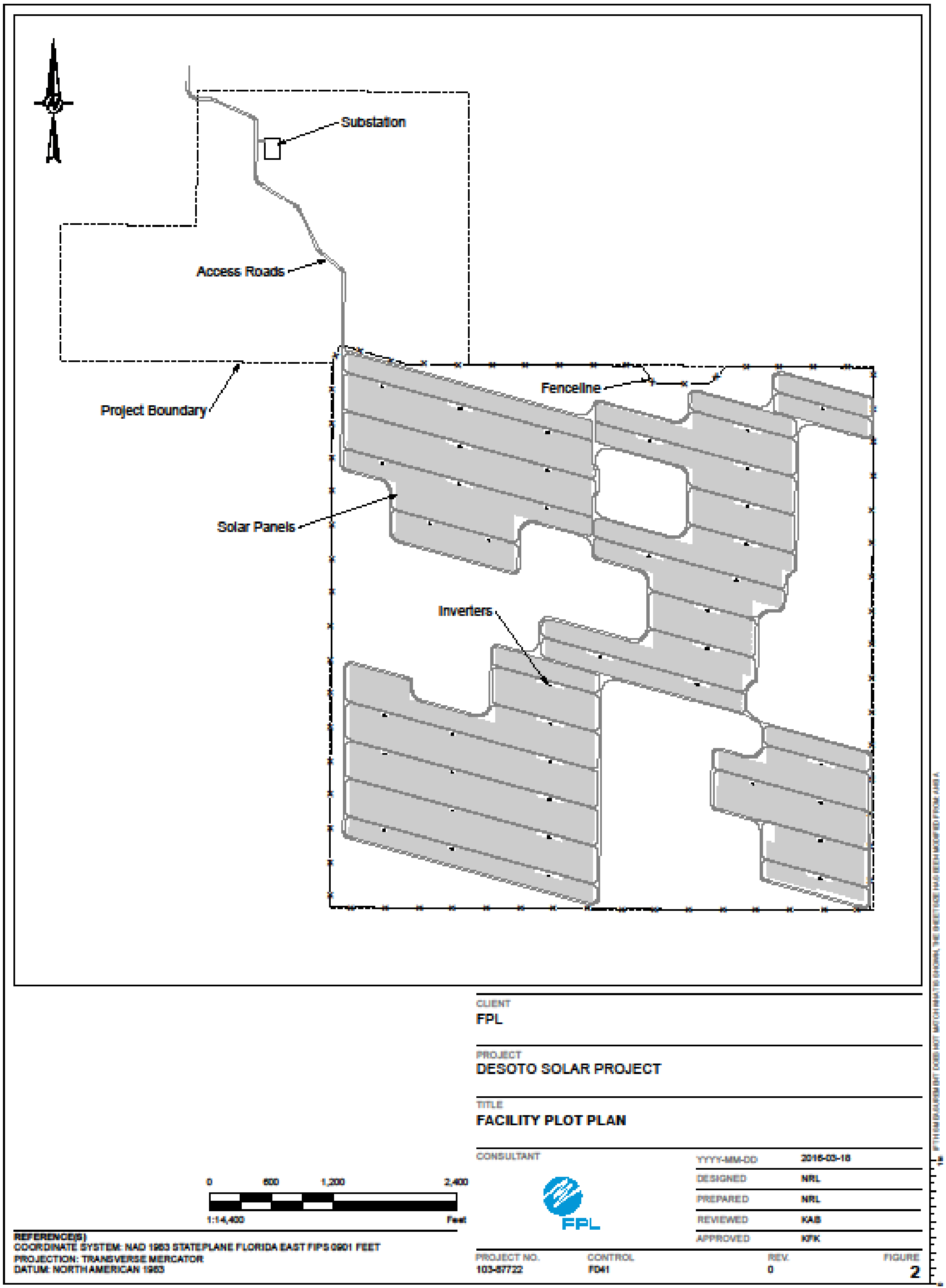
Substation
Access Roads
Project Boundary
Fenceline
Solar Panels
Inverters
0
600
1,200
2,400
1:14,400
Feet
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PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
DESOTO SOLAR PROJECT
TITLE
FACILITY PLOT PLAN
CONSULTANT
FPL
YYYY-MM-DD 2016-03-18
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PREPARED NRL
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APPROVED KFK
PROJECT NO. 103-87722
CONTROL FD41
REV. 0
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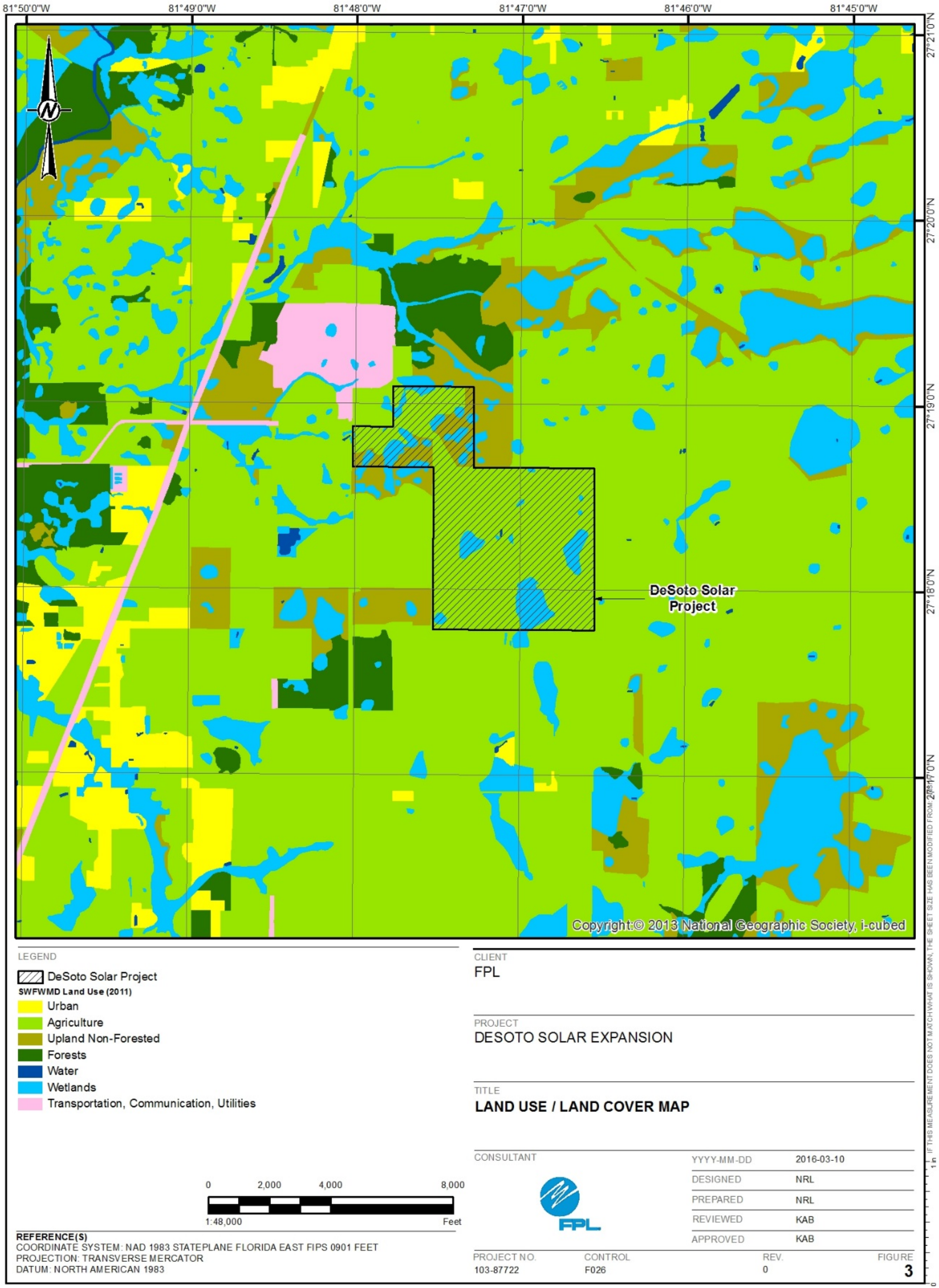
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27°20'0"N
27°19'0"N
27°18'0"N
27°17'0"N
N
DeSoto Solar Project
Copyright:© 2013 National Geographic Society, i-cubed
LEGEND
DeSoto Solar Project
SWFWMD Land Use (2011)
Urban
Agriculture
Upland Non-Forested
Forests
Water
Wetlands
Transportation, Communication, Utilities
0 2,000 4,000 8,000
1:48,000
Feet
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COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
DESOTO SOLAR EXPANSION
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F026
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 3: Manatee Solar Energy Center, Manatee County

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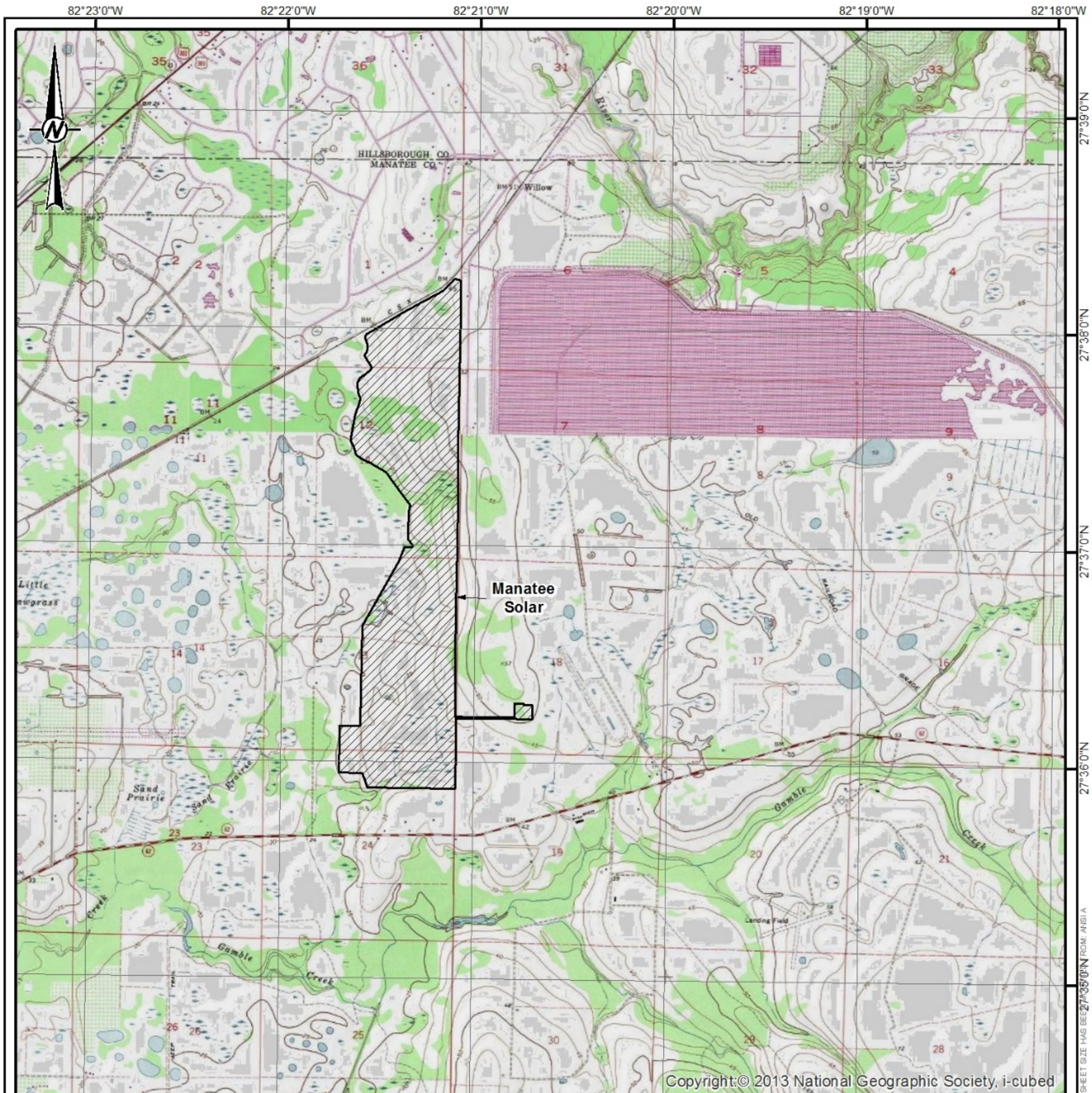

LEGEND

Manatee Solar

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REFERENCE(S)
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PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
MANATEE SOLAR

TITLE
USGS LOCATION MAP

CONSULTANT

YYYY-MM-DD	2016-03-10
DESIGNED	NRL
PREPARED	NRL
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
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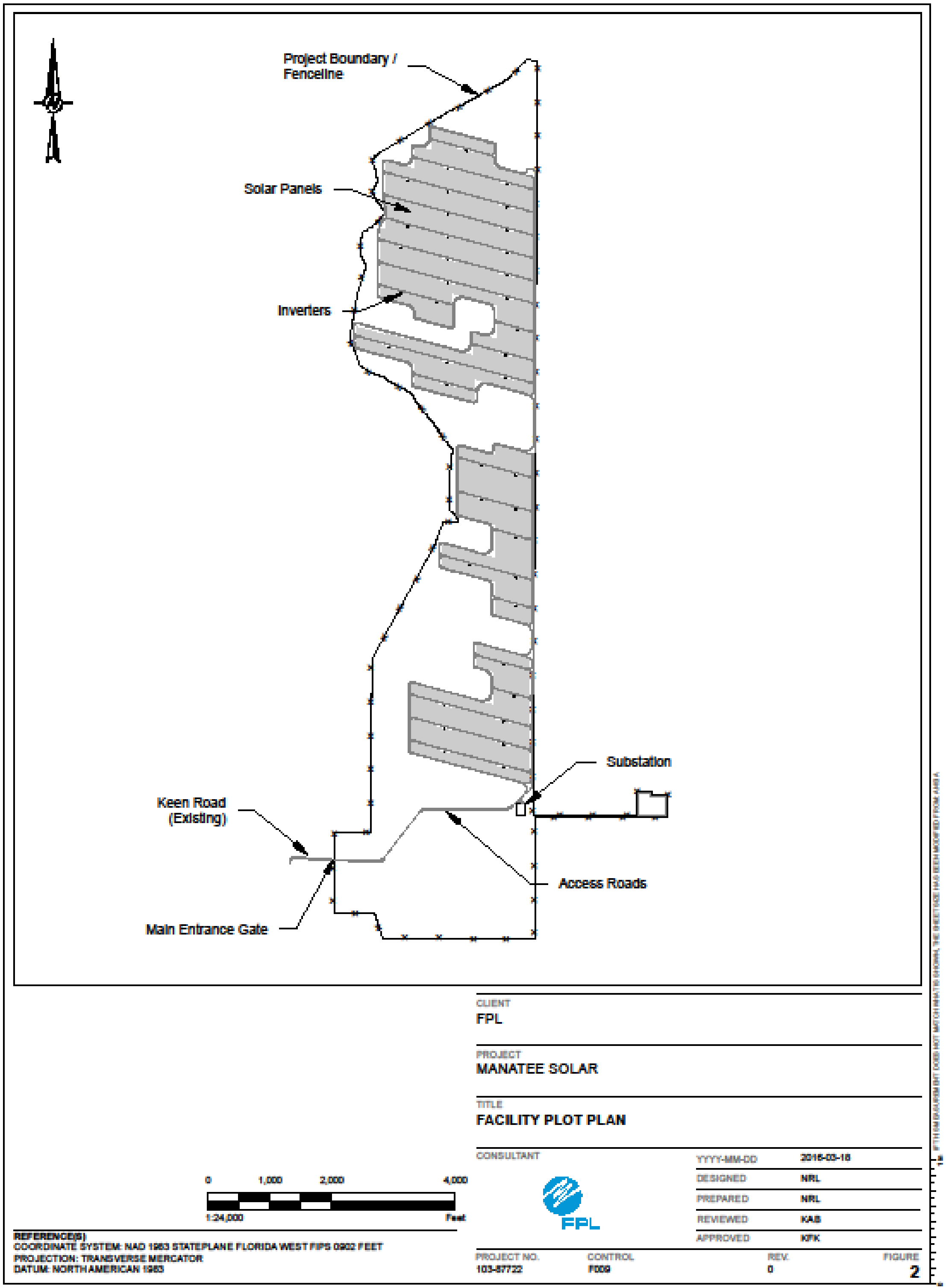

Project Boundary / Fenceline
Solar Panels
Inverters
Substation
Keen Road (Existing)
Access Roads
Main Entrance Gate
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FACILITY PLOT PLAN
CONSULTANT
FPL
YYYY-MM-DD
2016-03-18
DESIGNED
NRL
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REVIEWED
KAB
APPROVED
KFK
PROJECT NO.
103-87722
CONTROL
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REV.
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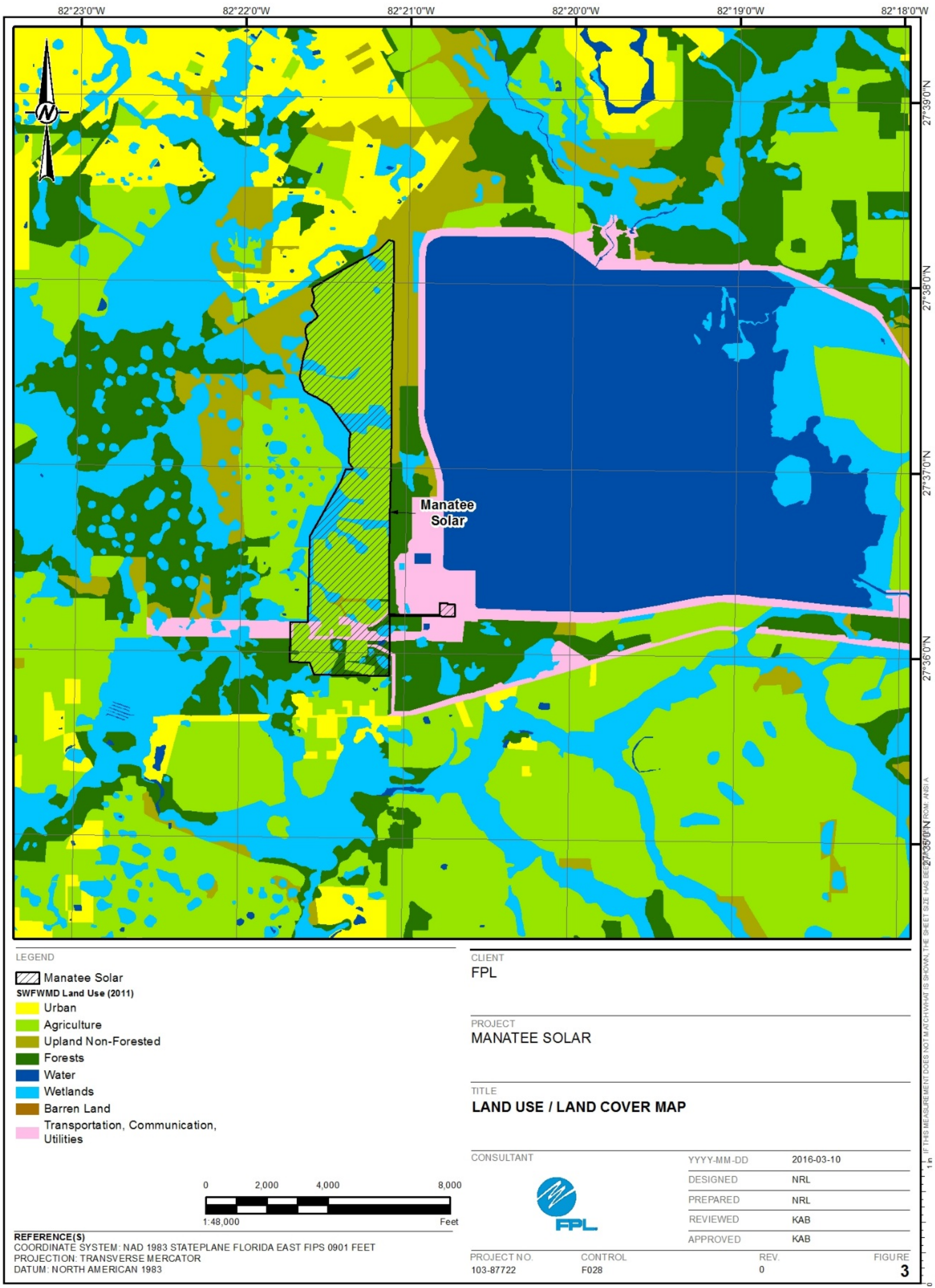
2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Manatee Solar
LEGEND
Manatee Solar
SWFWMD Land Use (2011)
Urban
Agriculture
Upland Non-Forested
Forests
Water
Wetlands
Barren Land
Transportation, Communication, Utilities
0
2,000
4,000
8,000
1:48,000
Feet
REFERENCE(S)
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DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
MANATEE SOLAR
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F028
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 4: Lauderdale Plant Peaking Facilities, Broward County

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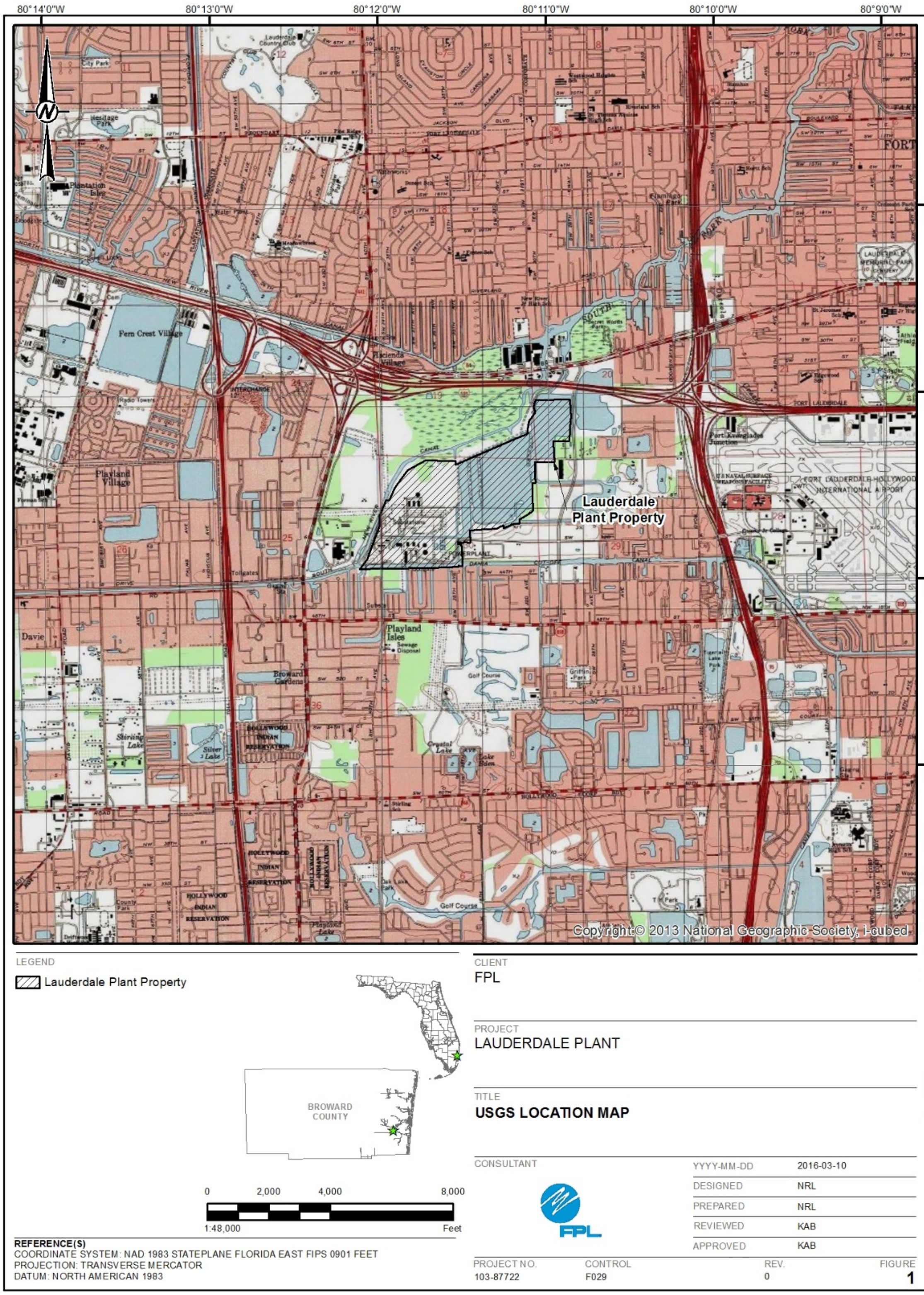

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26°5'0"N
26°4'0"N
26°3'0"N
Lauderdale Plant Property
Copyright © 2013 National Geographic Society, i-cubed
LEGEND
Lauderdale Plant Property
BROWARD COUNTY
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1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
LAUDERDALE PLANT
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
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PREPARED NRL
REVIEWED KAB
APPROVED KAB
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CONTROL F029
REV. 0
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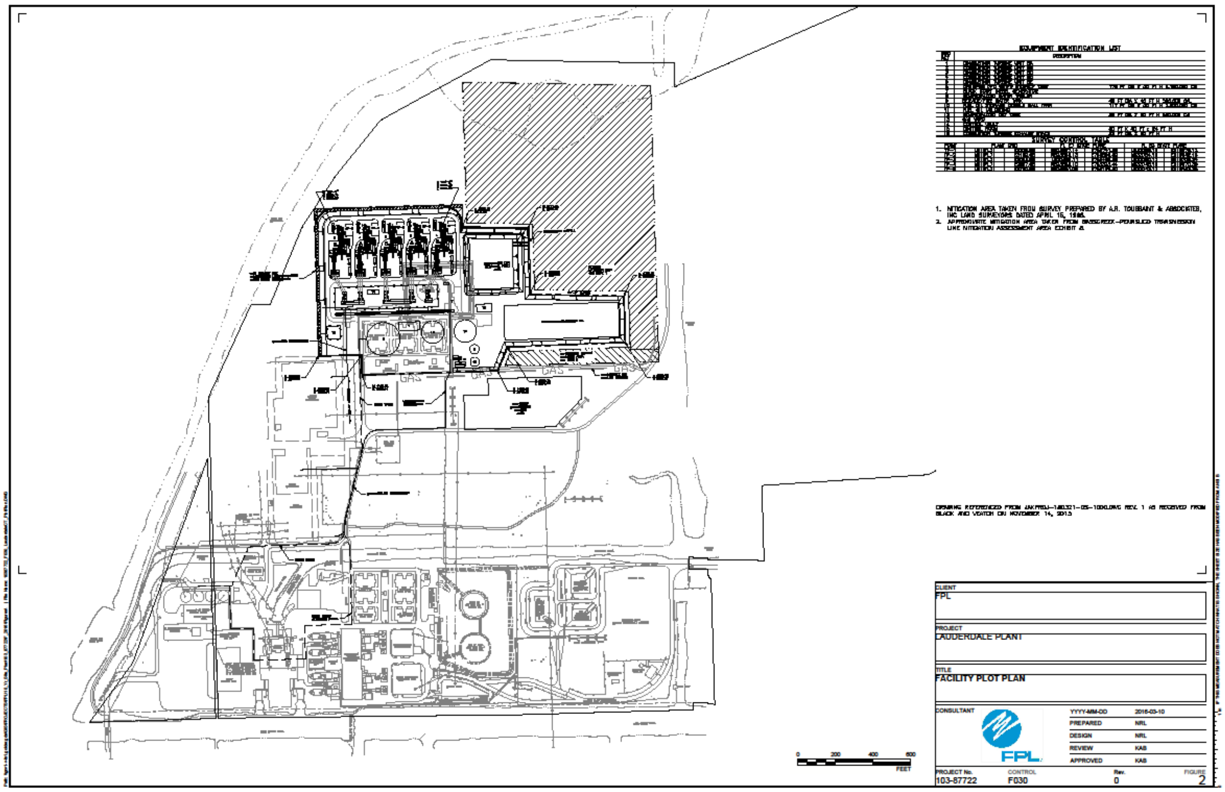
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200
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FEET
CLIENT
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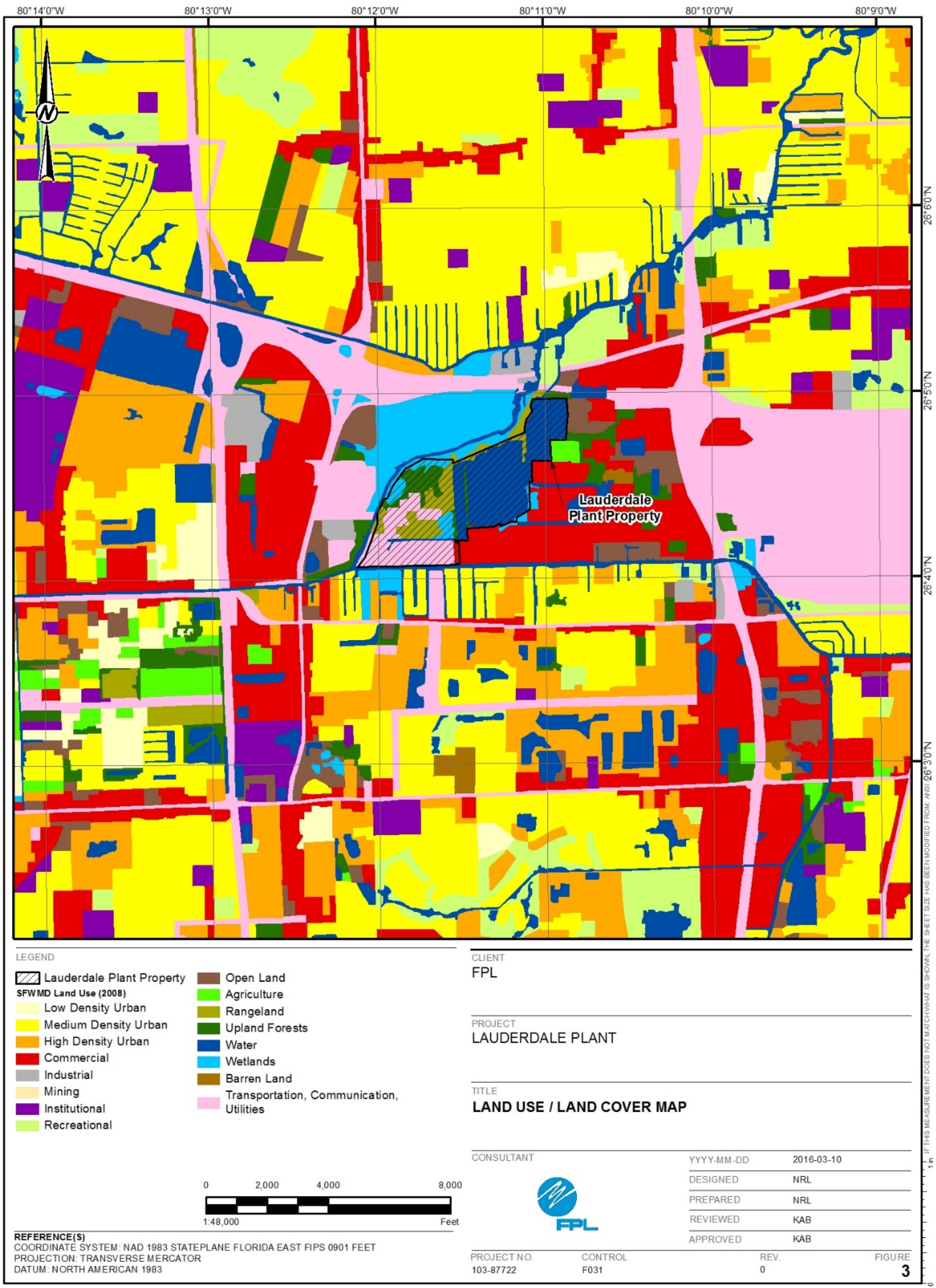
PROJECT
LAUDERDALE PLANT
TITLE
FACILITY PLOT PLAN
CONSULTANT
YYYY-MM-DD
2016-03-10
PREPARED
NRL
DESIGN
NRL
REVIEW
KAB
APPROVED
KAB
PROJECT No.
103-87722
CONTROL
F030
Rev.
0
FIGURE
2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26°5'0"N
26°4'0"N
26°3'0"N
N
Lauderdale Plant Property
LEGEND
Lauderdale Plant Property
SFWMD Land Use (2008)
Low Density Urban
Medium Density Urban
High Density Urban
Commercial
Industrial
Mining
Institutional
Recreational
Open Land
Agriculture
Rangeland
Upland Forests
Water
Wetlands
Barren Land
Transportation, Communication, Utilities
0 2,000 4,000 8,000
1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
LAUDERDALE PLANT
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F031
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 5: Ft. Myers Plant Peaking Facilities, Lee County

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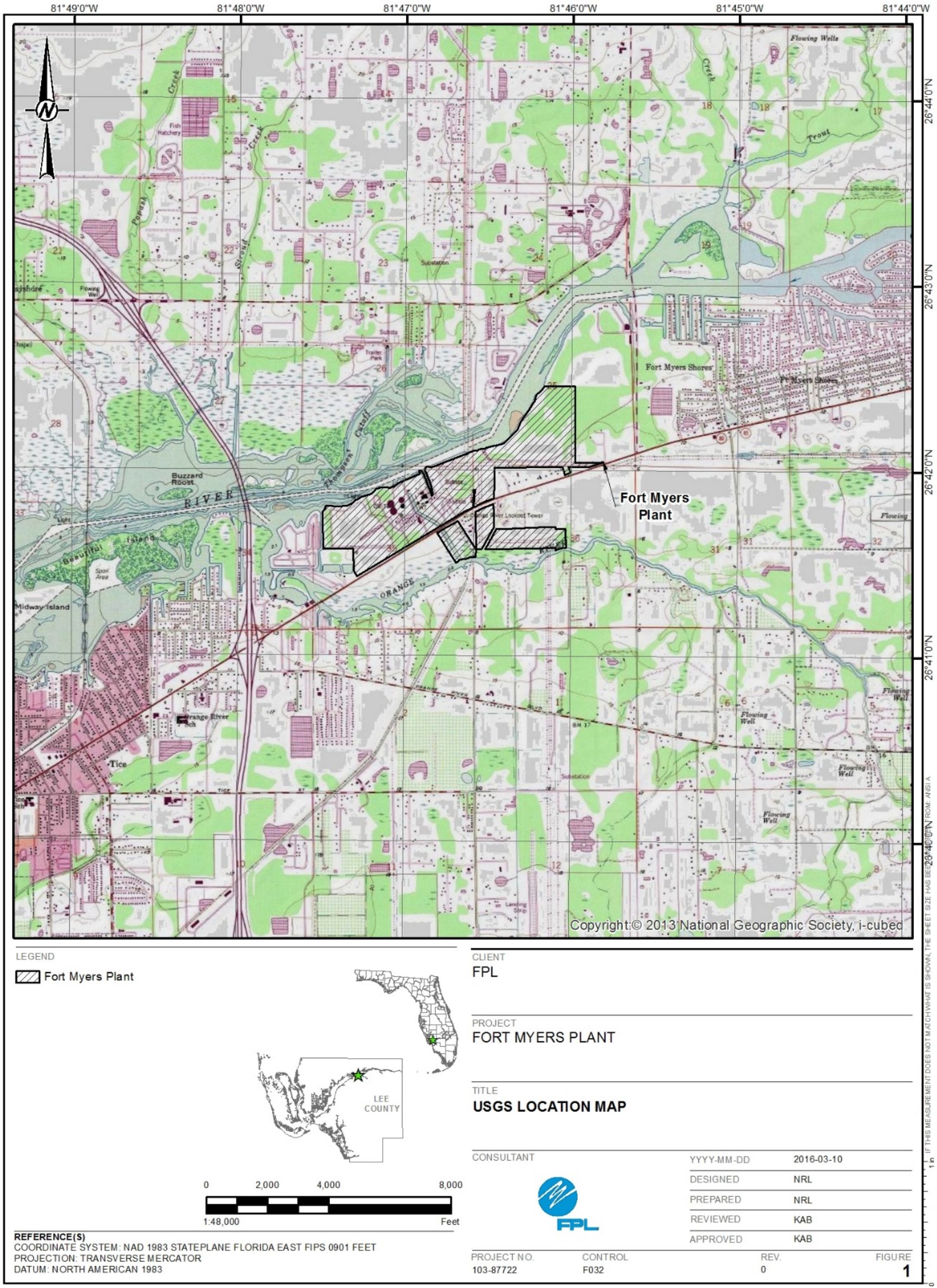
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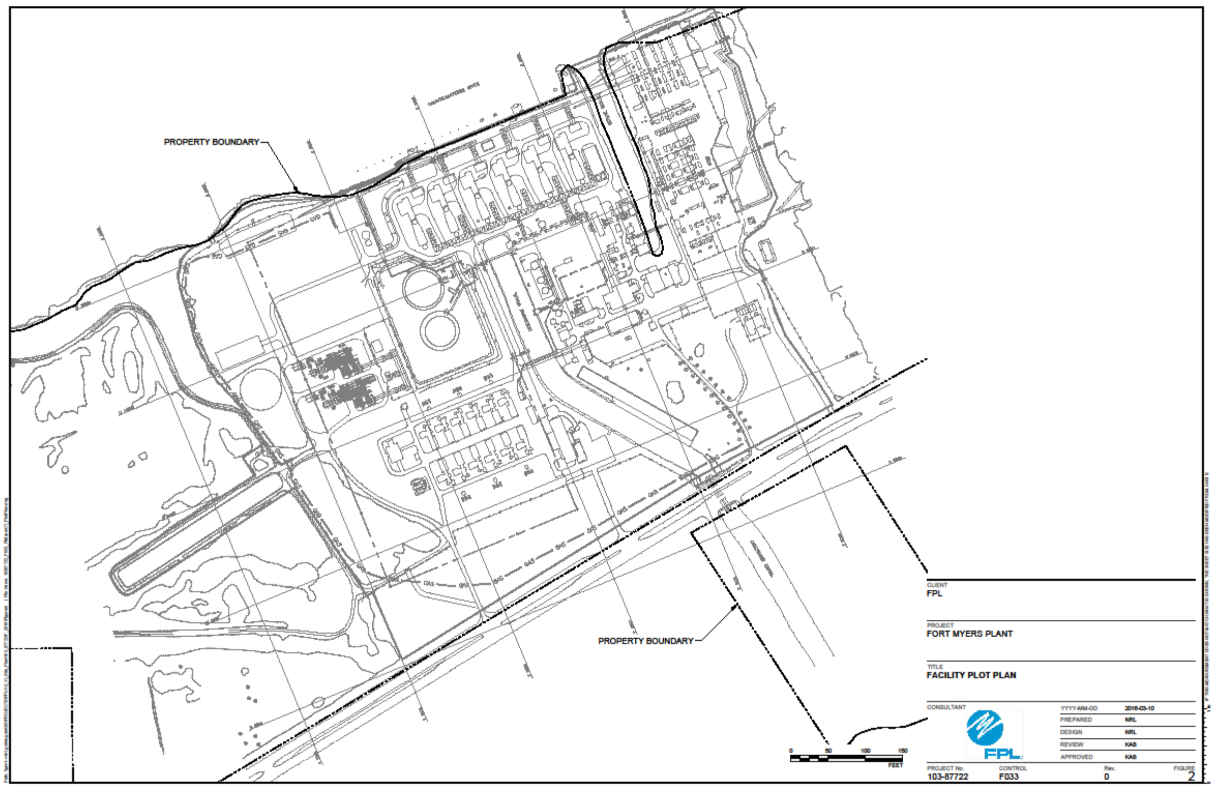
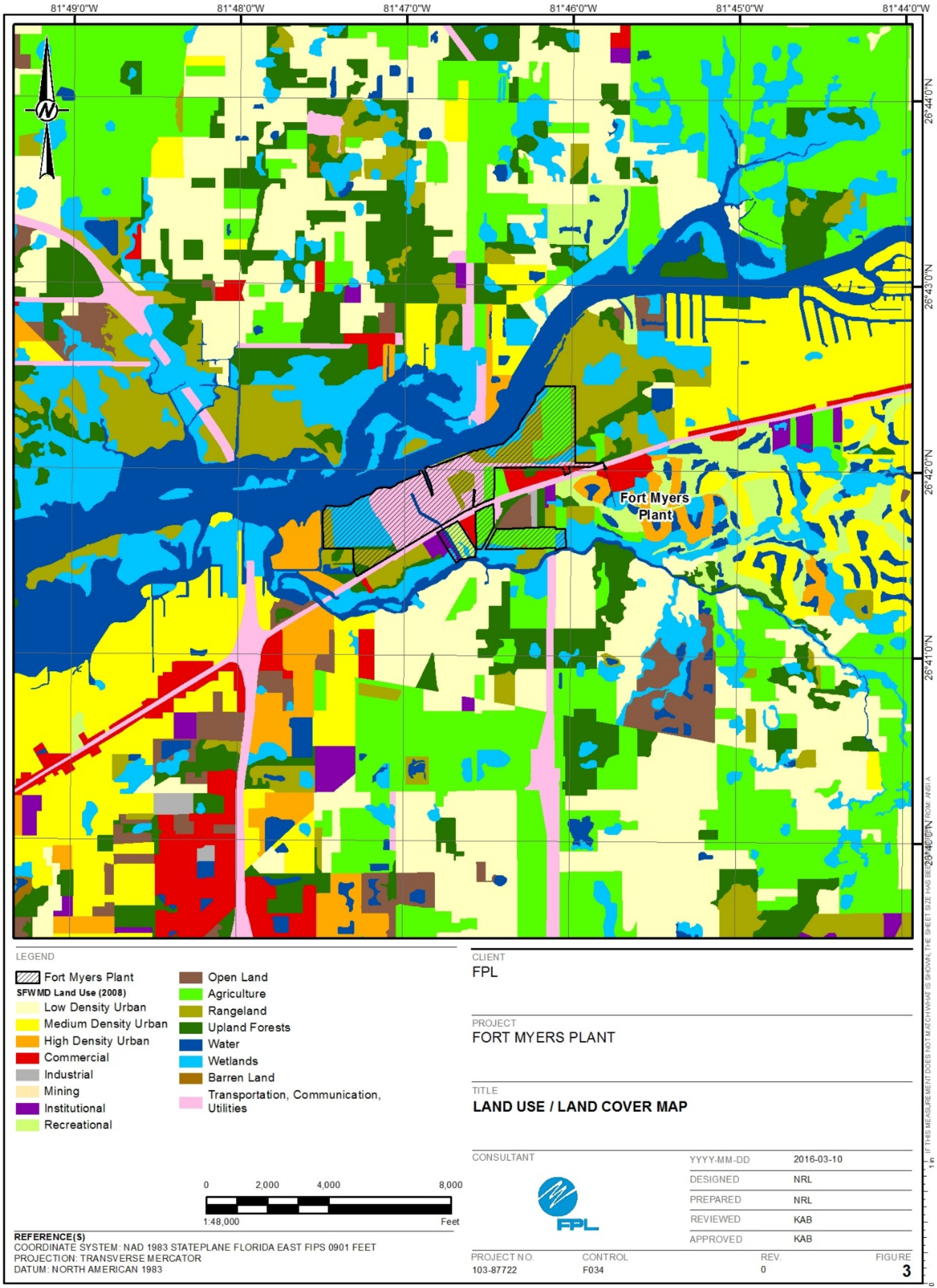
81°44'0"W
26°44'0"N
26°43'0"N
26°42'0"N
26°41'0"N
26°40'0"N
N
Fort Myers Plant
RIVER
ORANGE
Buzzard Roost
Midway Island
Fort Myers Shores
Tice
Copyright:© 2013 National Geographic Society, i-cubed
LEGEND
Fort Myers Plant
LEE COUNTY
0
2,000
4,000
8,000
1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
FORT MYERS PLANT
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F032
REV. 0
FIGURE 1


PROPERTY BOUNDARY
PROPERTY BOUNDARY
CLIENT
FPL
PROJECT
FORT MYERS PLANT
TITLE
FACILITY PLOT PLAN
CONSULTANT
YYYY-MM-DD
2016-03-10
PREPARED
NRL
DESIGN
NRL
REVIEW
KAB
APPROVED
KAB
FPL
0
50
100
150
FEET
PROJECT No.
103-87722
CONTROL
F033
Rev.
0
FIGURE
2


81°49'0"W
81°48'0"W
81°47'0"W
81°46'0"W
81°45'0"W
81°44'0"W
26°44'0"N
26°43'0"N
26°42'0"N
26°41'0"N
26°40'0"N
N
Fort Myers Plant
LEGEND
Fort Myers Plant
SFWMD Land Use (2008)
Low Density Urban
Medium Density Urban
High Density Urban
Commercial
Industrial
Mining
Institutional
Recreational
Open Land
Agriculture
Rangeland
Upland Forests
Water
Wetlands
Barren Land
Transportation, Communication, Utilities
0 2,000 4,000 8,000
1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
FORT MYERS PLANT
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F034
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 6: Okeechobee Site Okeechobee County

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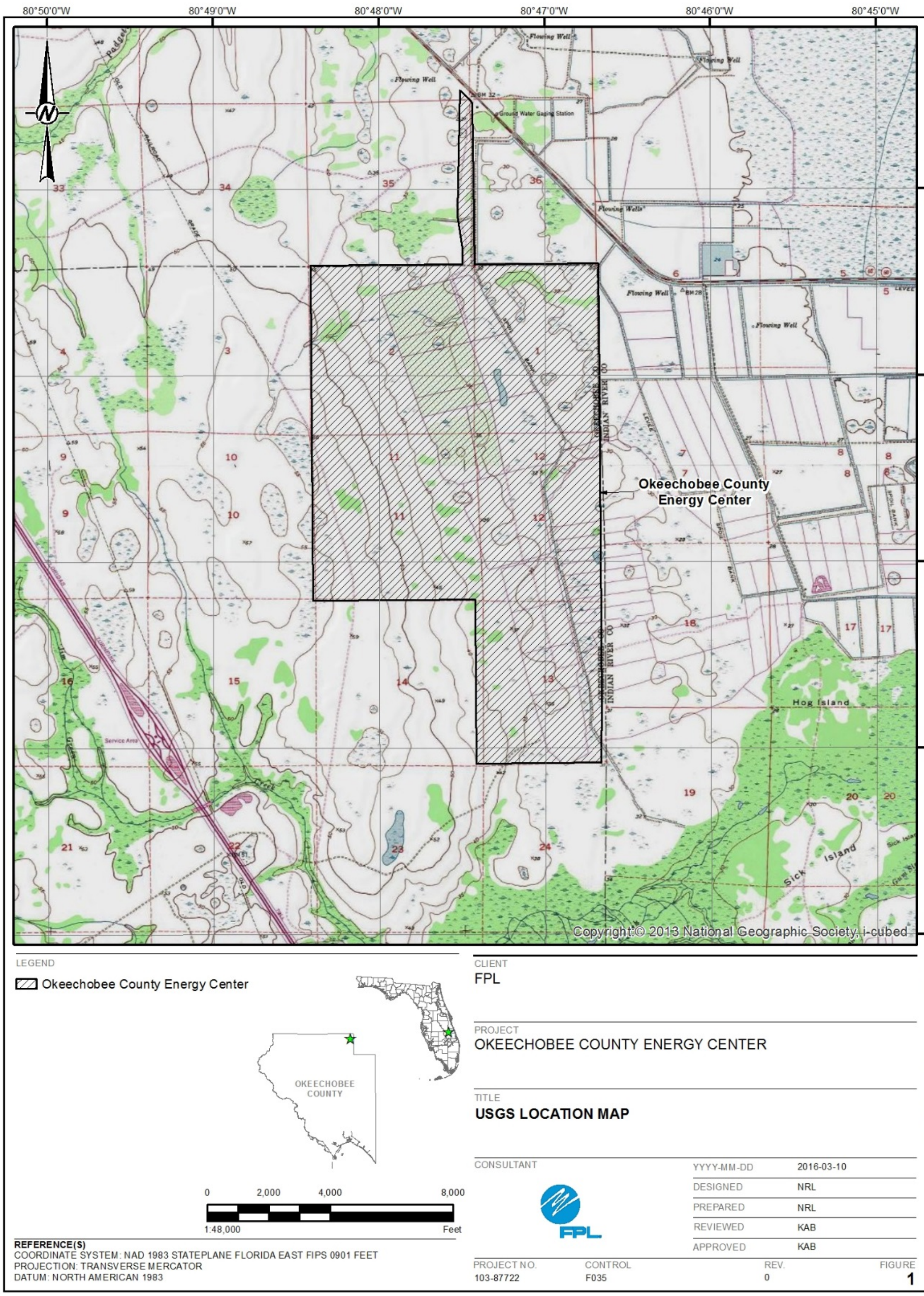
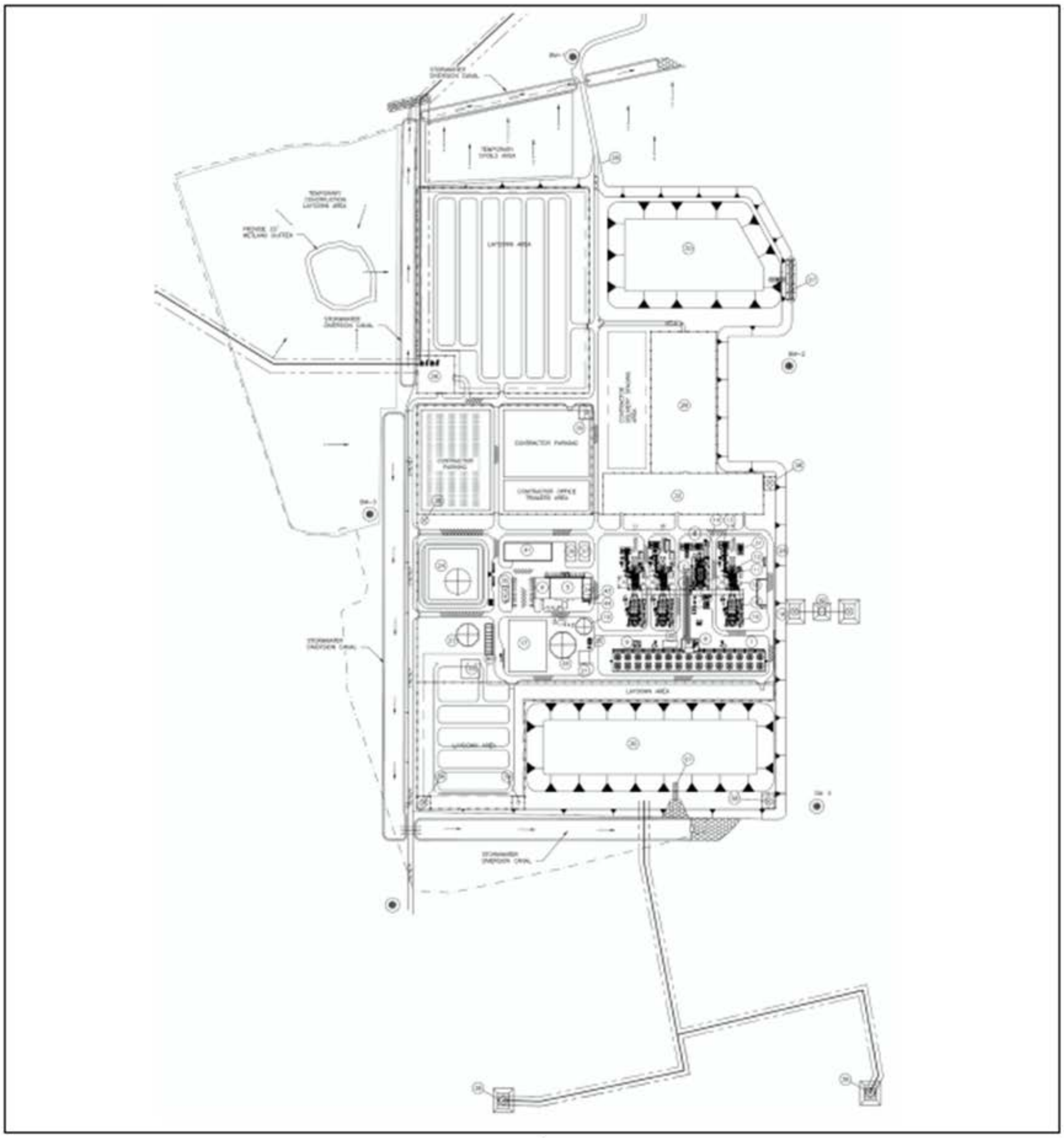

80°50'0"W
80°49'0"W
80°48'0"W
80°47'0"W
80°46'0"W
80°45'0"W
27°39'0"N
27°38'0"N
27°37'0"N
27°36'0"N
27°35'0"N
Okeechobee County
Energy Center
Hog Island
Sick Island
Copyright:© 2013 National Geographic Society, i-cubed
LEGEND
Okeechobee County Energy Center
OKEECHOBEE COUNTY
0
2,000
4,000
8,000
1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
OKEECHOBEE COUNTY ENERGY CENTER
TITLE
USGS LOCATION MAP
CONSULTANT
YYYY-MM-DD
2016-03-10
DESIGNED
NRL
PREPARED
NRL
REVIEWED
KAB
APPROVED
KAB
PROJECT NO.
103-87722
CONTROL
F035
REV.
0
FIGURE
1



CLIENT
FPL

PROJECT
OKEECHOBEE CLEAN ENERGY CENTER

TITLE
FACILITY PLOT PLAN

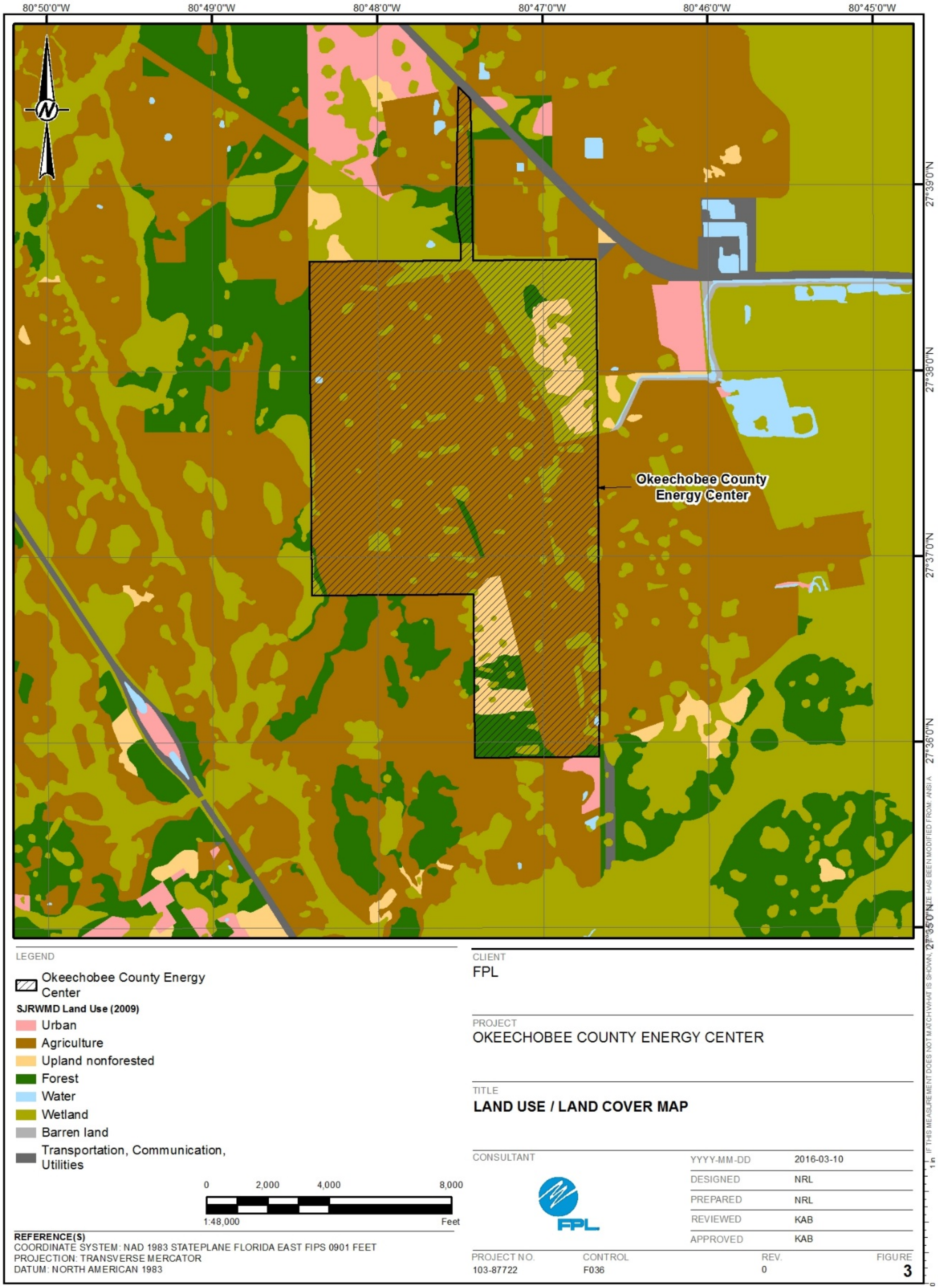
CONSULTANT

YYYY-MM-DD	2016-03-29
DESIGNED	NRL
PREPARED	NRL
REVIEWED	KAB
APPROVED	KFK

FPL

PROJECT NO.	CONTROL	REV.	FIGURE
103-87722	F010	0	2

REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983



80°50'0"W
80°49'0"W
80°48'0"W
80°47'0"W
80°46'0"W
80°45'0"W
27°39'0"N
27°38'0"N
27°37'0"N
27°36'0"N
27°35'0"N
N
Okeechobee County
Energy Center
LEGEND
Okeechobee County Energy Center
SJRWMD Land Use (2009)
Urban
Agriculture
Upland nonforested
Forest
Water
Wetland
Barren land
Transportation, Communication, Utilities
0 2,000 4,000 8,000
1:48,000
Feet
REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
OKEECHOBEE COUNTY ENERGY CENTER
TITLE
LAND USE / LAND COVER MAP
CONSULTANT
FPL
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KAB
PROJECT NO. 103-87722
CONTROL F036
REV. 0
FIGURE 3

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Environmental and Land Use Information: Supplemental Information

Preferred Site # 7: Turkey Point Plant Miami-Dade County

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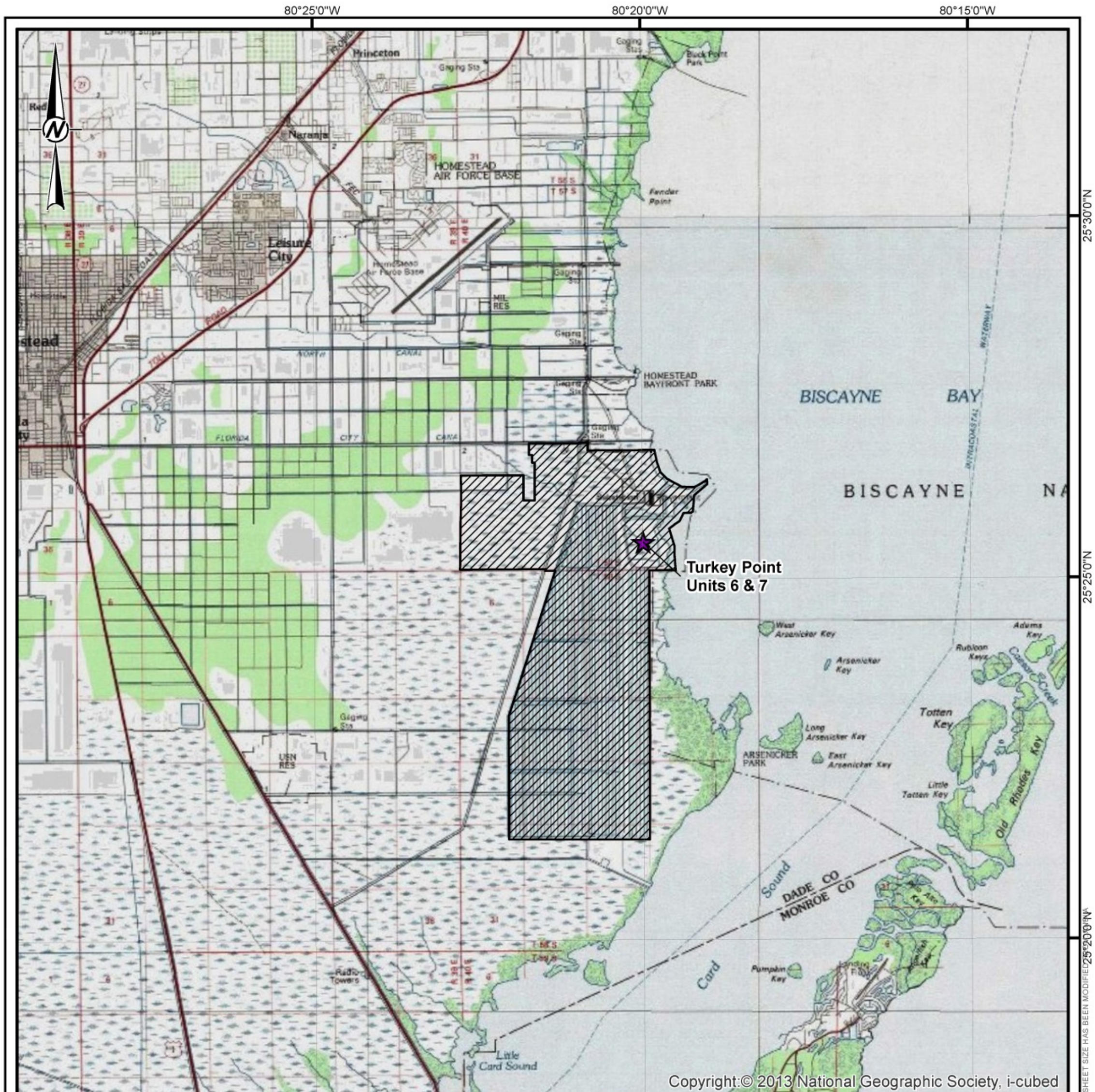


LEGEND

★ Turkey Point Units 6 & 7

▨ Turkey Point Plant Property

DADE COUNTY

0 6,000 12,000 24,000

1:144,000 Feet

REFERENCE(S)
COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA EAST FIPS 0901 FEET
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
TURKEY POINT
UNITS 6 & 7

TITLE
USGS LOCATION MAP

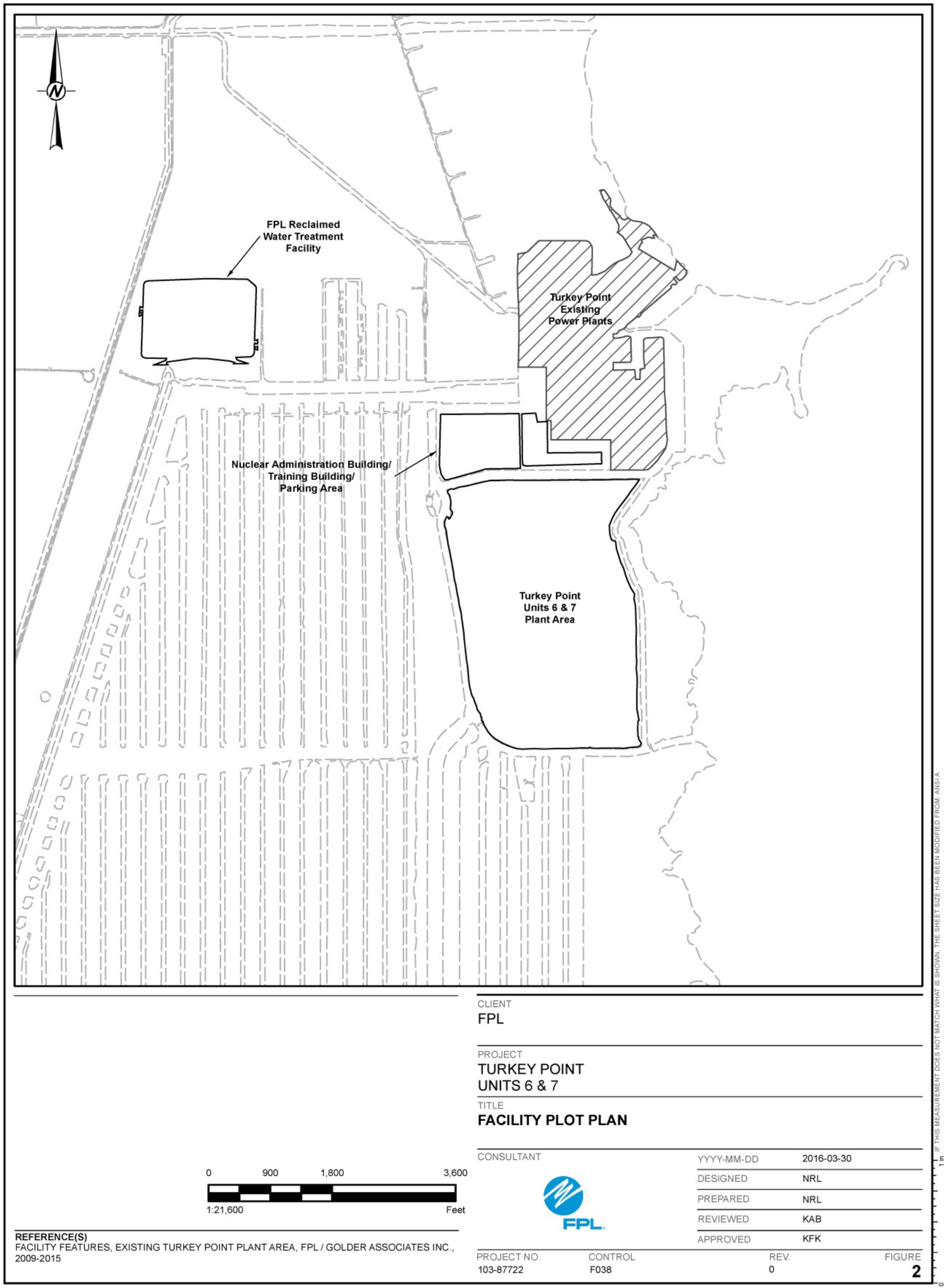
CONSULTANT

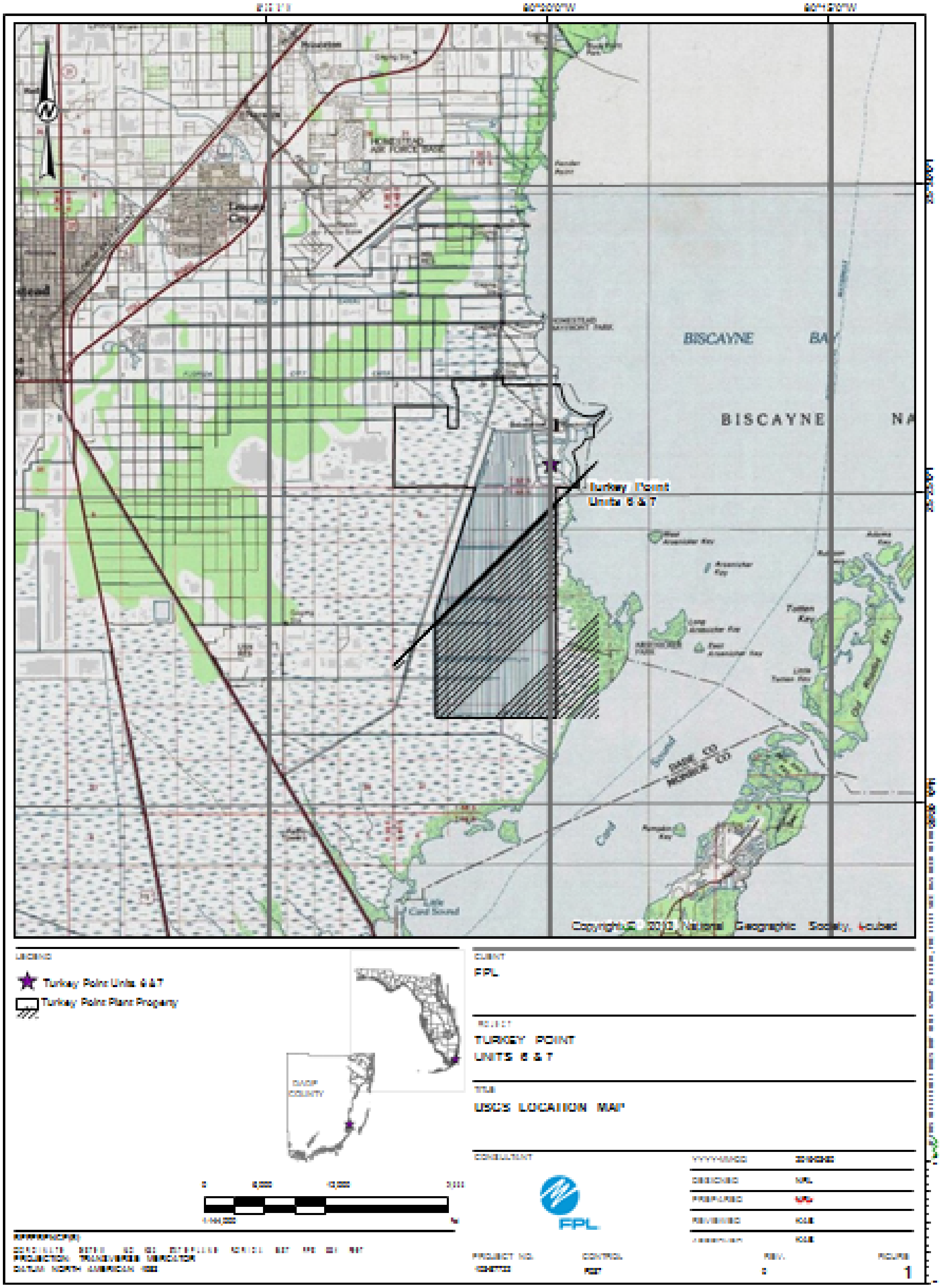
FPL

YYYY-MM-DD	2016-03-30
DESIGNED	NRL
PREPARED	NRL
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
103-87722	F037	0	1

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED


N
FPL Reclaimed Water Treatment Facility
Turkey Point Existing Power Plants
Nuclear Administration Building/ Training Building/ Parking Area
Turkey Point Units 6 & 7 Plant Area
0
900
1,800
3,600
1:21,600
Feet
REFERENCE(S)
FACILITY FEATURES, EXISTING TURKEY POINT PLANT AREA, FPL / GOLDER ASSOCIATES INC., 2009-2015
CLIENT
FPL
PROJECT
TURKEY POINT UNITS 6 & 7
TITLE
FACILITY PLOT PLAN
CONSULTANT
FPL
YYYY-MM-DD 2016-03-30
DESIGNED NRL
PREPARED NRL
REVIEWED KAB
APPROVED KFK
PROJECT NO. 103-87722
CONTROL F038
REV. 0
FIGURE 2
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



BISCAYNE BAY
BISCAYNE
Turkey Point Units 6 & 7
Copyright © 2013 National Geographic Society, i-cubed
Turkey Point Units 6 & 7
Turkey Point Plant Property
FPL
TURKEY POINT UNITS 6 & 7
USGS LOCATION MAP
FPL
1

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Environmental and Land Use Information: Supplemental Information

Potential Site # 1: Alachua County

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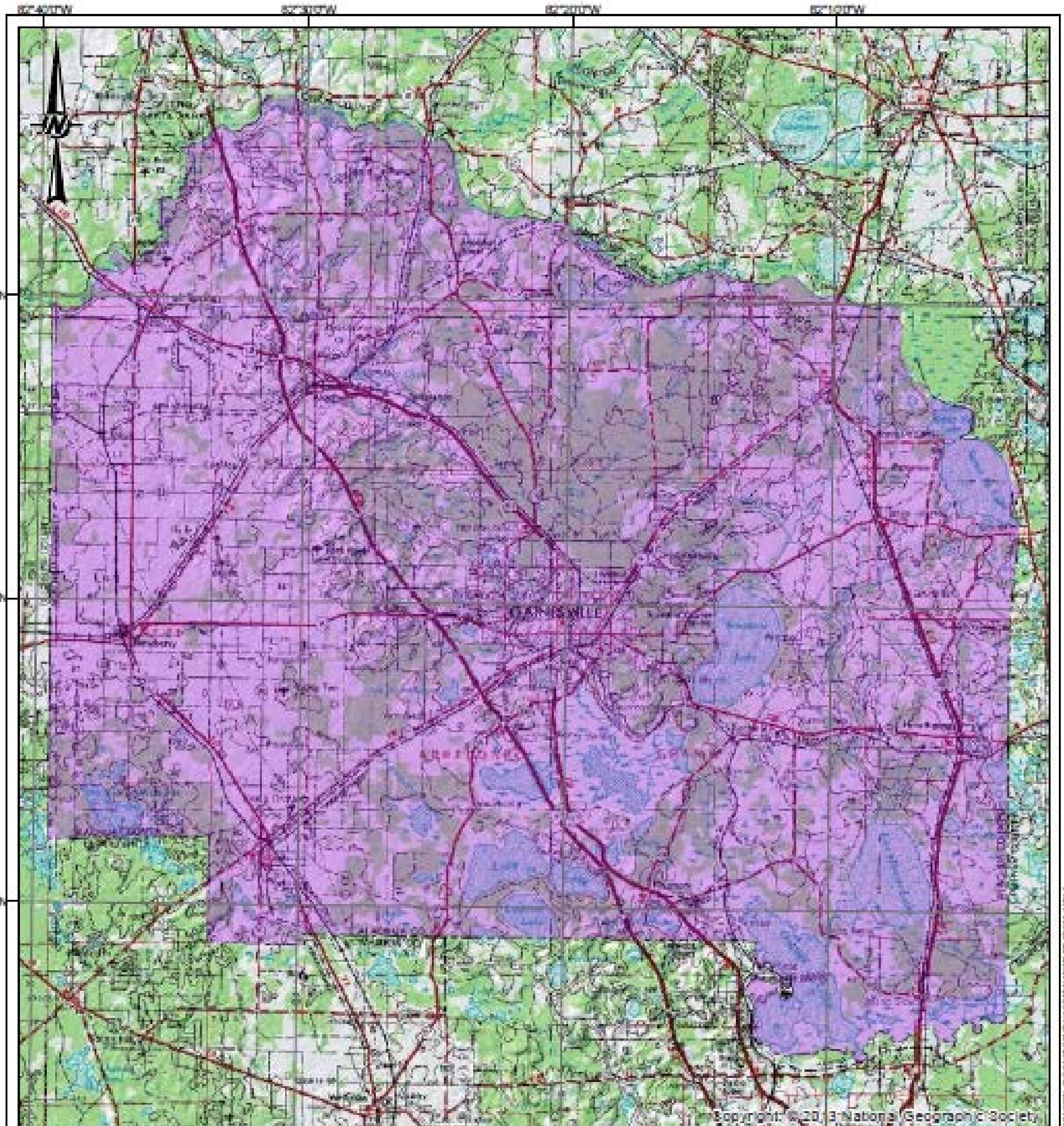
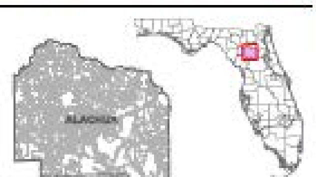


LEGEND

Alachua County



0 | 14,000 | 28,000 | 56,000
1:336,000 | Feet

REFERENCE(S)

1. ALACHUA COUNTY, FPL, 2016.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

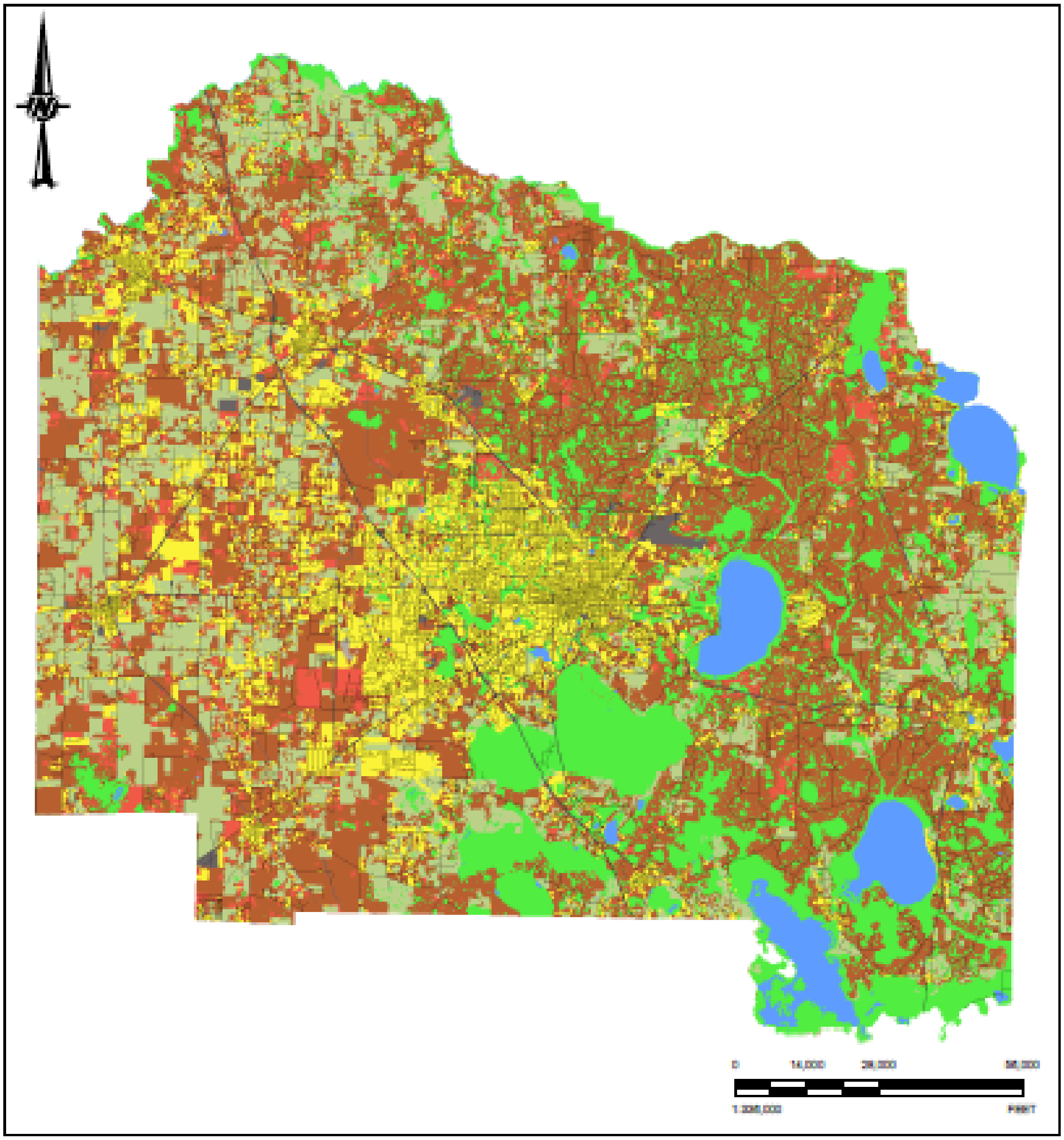
PROJECT
ALACHUA COUNTY

TITLE
USGS LOCATION MAP

CONSULTANT

YYYY-MM-DD	2016-03-10
DESIGNED	NRL
PREPARED	GFD
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
10387722	F017	0	1



LEGEND

- Roads
- 100 - URBAN AND BUILT-UP
- 200 - AGRICULTURE
- 300 - RANGELAND
- 400 - UPLAND FORESTS
- 500 - WATER
- 600 - WETLANDS
- 700 - BARREN LAND
- 800 - TRANSPORTATION, COMMUNICATION AND UTILITIES

REFERENCE(S)
1. ALACHUA COUNTY, FPL, 2016.
2. LAND USE, SJRWMD, 2009 & SRWMD, 2011.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
ALACHUA COUNTY

TITLE
LAND USE / LAND COVER

CONSULTANT

YYYY-MM-DD	2016-03-10
DESIGNED	NRL
PREPARED	GFO
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
1096772D	F018	0	2

Environmental and Land Use Information: Supplemental Information

Potential Site # 2: Hendry County

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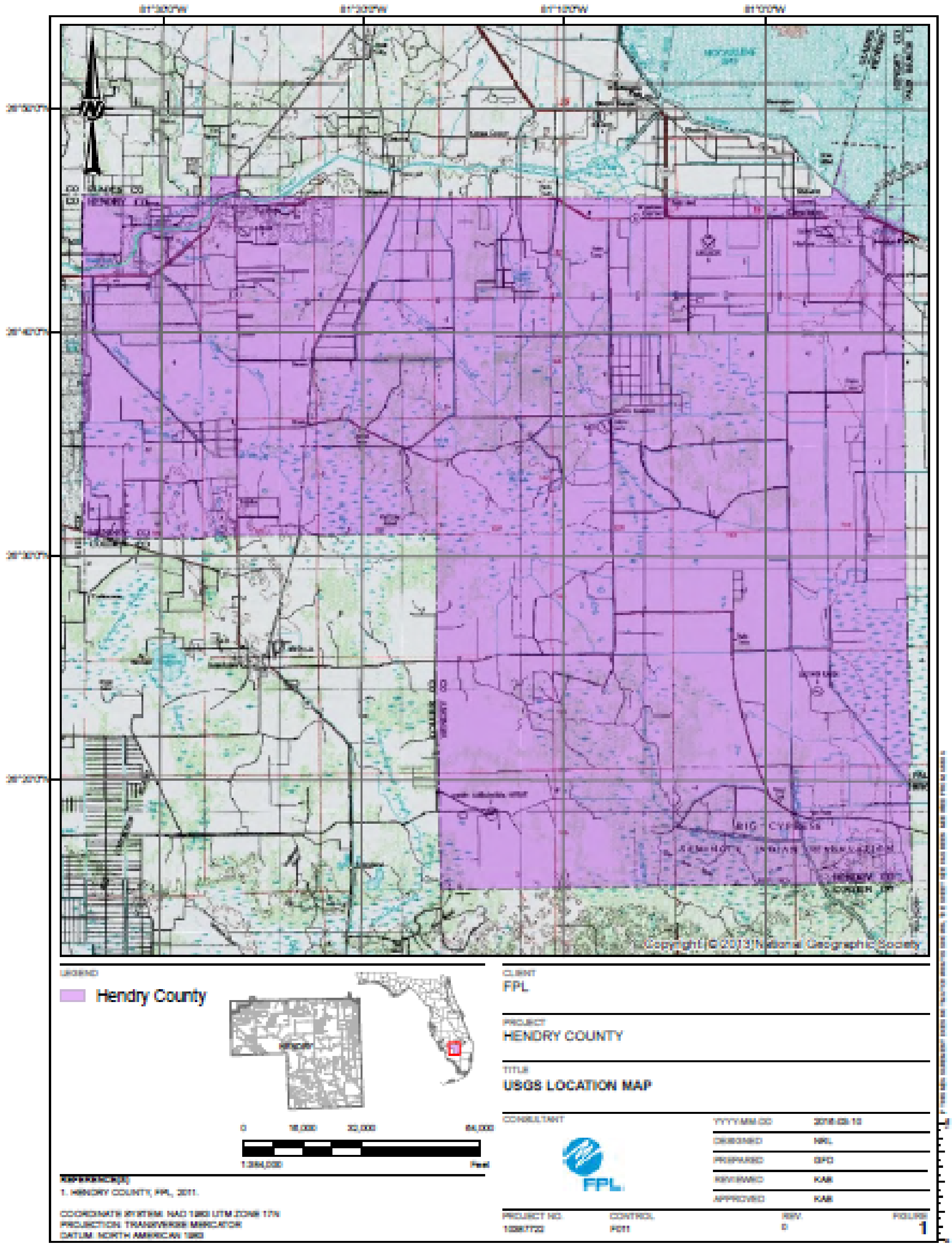
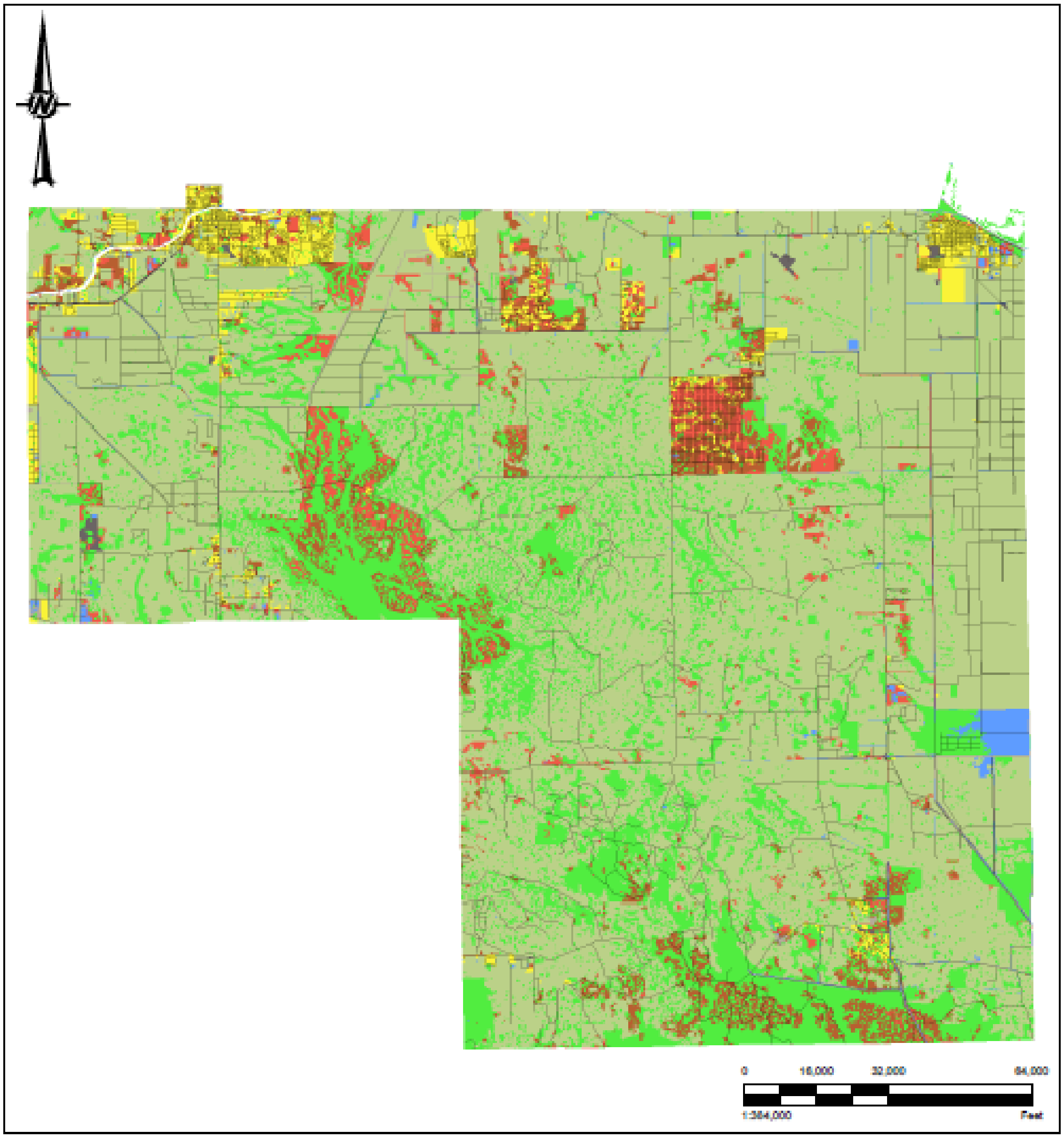

Hendry County
CLIENT
FPL
PROJECT
HENDRY COUNTY
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
BIG CYPRESS
Copyright © 2013 National Geographic Society



LEGEND

- Roads
- 100 - URBAN AND BUILT-UP
- 200 - AGRICULTURE; 200
- 300 - RANGELAND; 300
- 400 - UPLAND FORESTS; 400
- 500 - WATER; 500
- 600 - WETLANDS; 600
- 700 - BARREN LAND; 700
- 800 - TRANSPORTATION, COMMUNICATION AND UTILITIES; 800

REFERENCE(S)

1. HENDRY COUNTY, FPL, 2011.
2. LAND USE, SFWMD FLUCFCS, 2008.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
HENDRY COUNTY

TITLE
LAND USE / LAND COVER

CONSULTANT

FPL

YYYY-MM-DD	2016-03-10
DESIGNED	MRL
PREPARED	GFD
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
10367722	F012	0	2

Environmental and Land Use Information:

Supplemental Information

Potential Site # 3: Martin County

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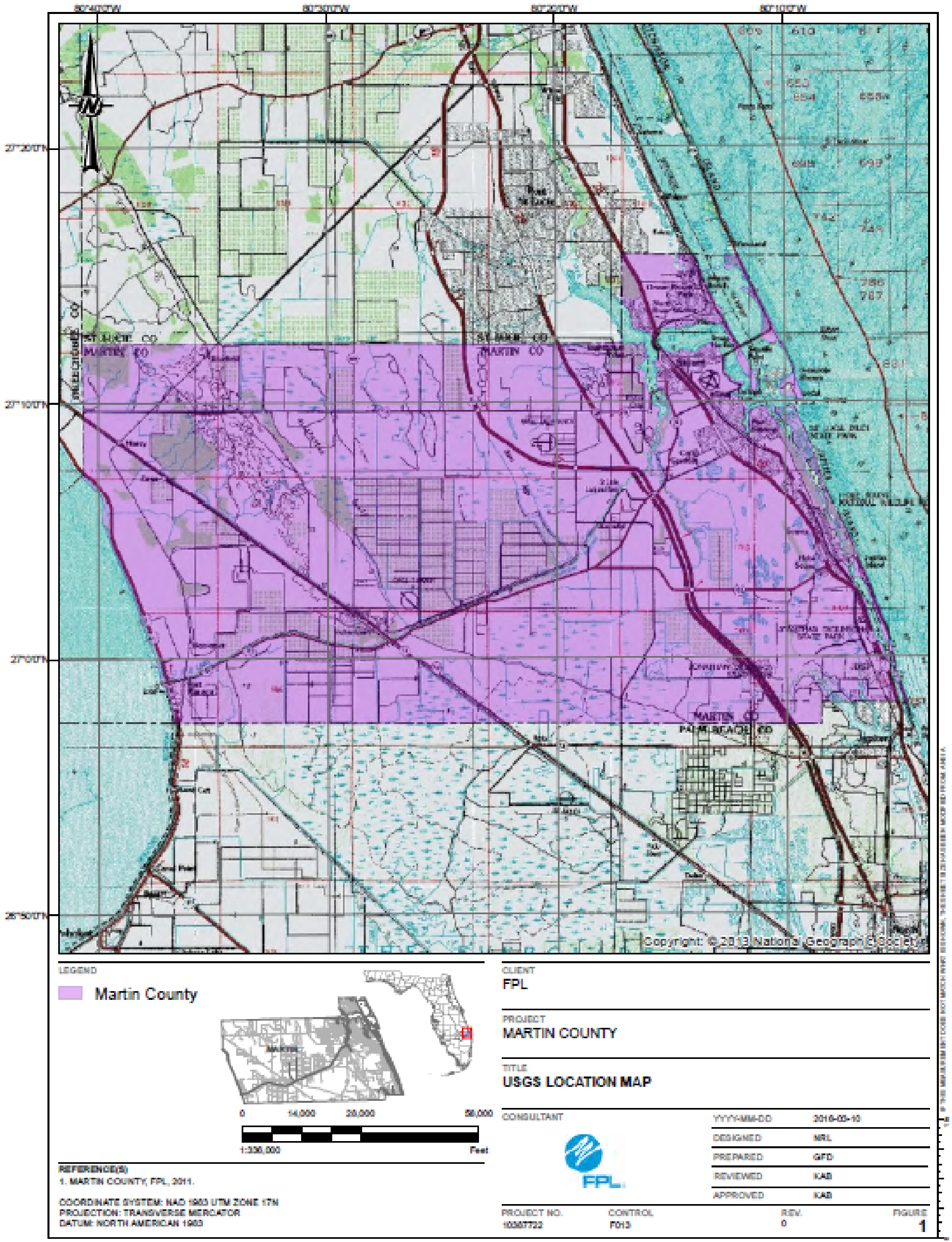
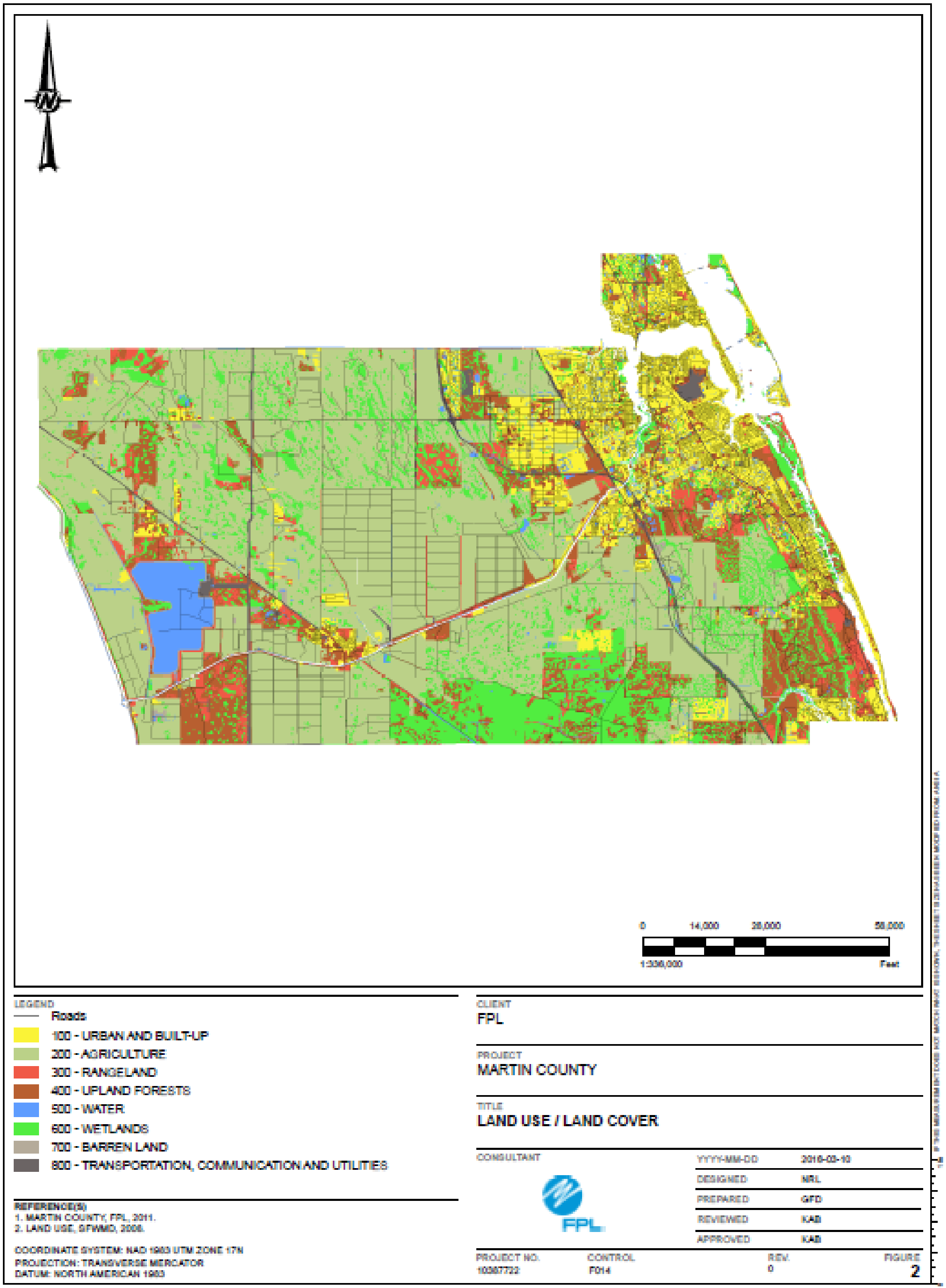

Copyright: © 2013 National Geographic Society
LEGEND
Martin County
REFERENCE(S)
1. MARTIN COUNTY, FPL, 2011.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
MARTIN COUNTY
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
YYYY-MM-DD
DESIGNED
NRL
PREPARED
GFD
REVIEWED
KAB
APPROVED
KAB
PROJECT NO.
CONTROL
F013
REV.
0
FIGURE
1


0
14,000
28,000
56,000
1:336,000
Feet
LEGEND
Roads
100 - URBAN AND BUILT-UP
200 - AGRICULTURE
300 - RANGELAND
400 - UPLAND FORESTS
500 - WATER
600 - WETLANDS
700 - BARREN LAND
800 - TRANSPORTATION, COMMUNICATION AND UTILITIES
REFERENCE(S)
1. MARTIN COUNTY, FPL, 2011.
2. LAND USE, SFWMD, 2008.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
MARTIN COUNTY
TITLE
LAND USE / LAND COVER
CONSULTANT
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED GFD
REVIEWED KAB
APPROVED KAB
PROJECT NO. 10387722
CONTROL F014
REV. 0
FIGURE 2

Environmental and Land Use Information: Supplemental Information

Potential Site # 4: Miami-Dade County

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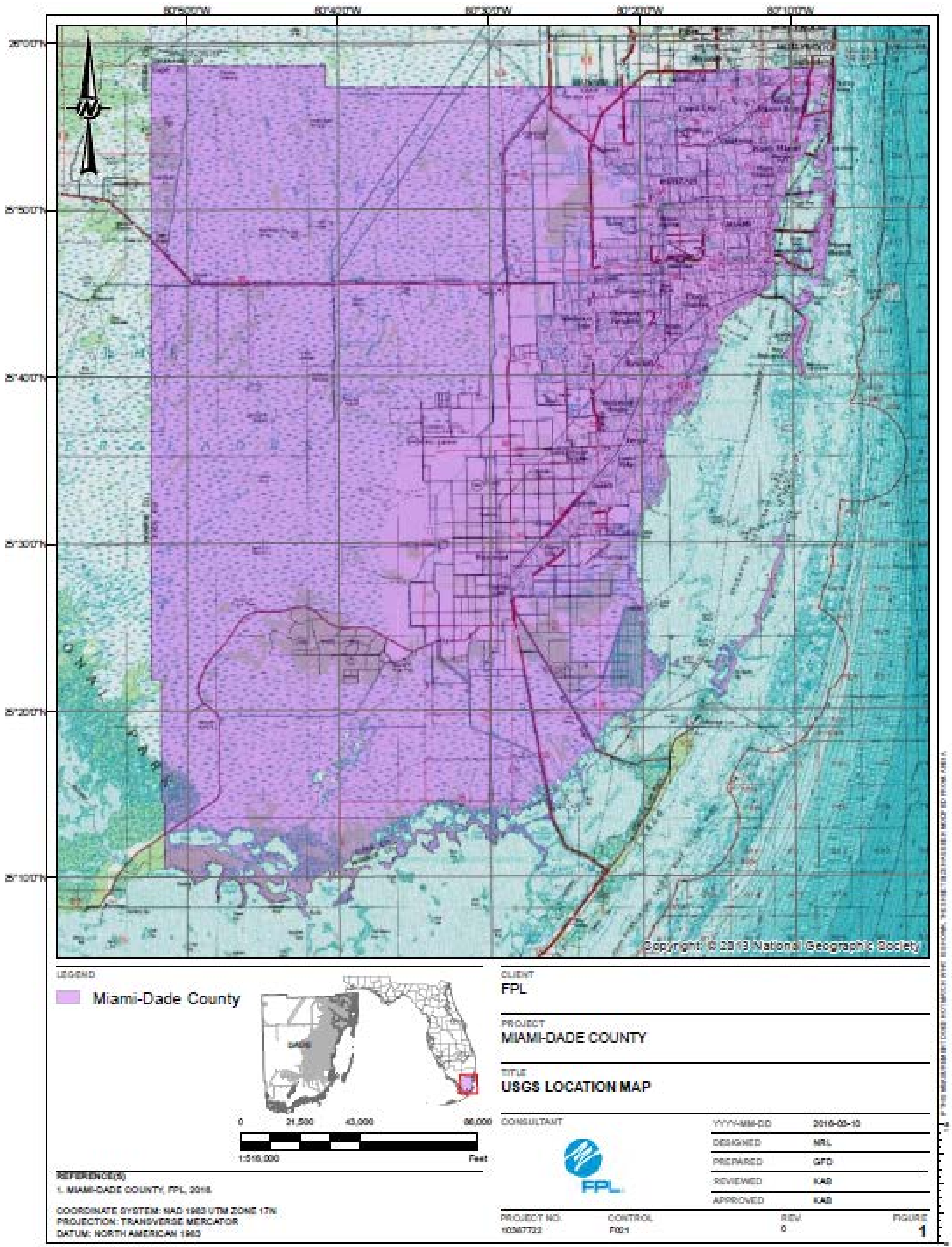
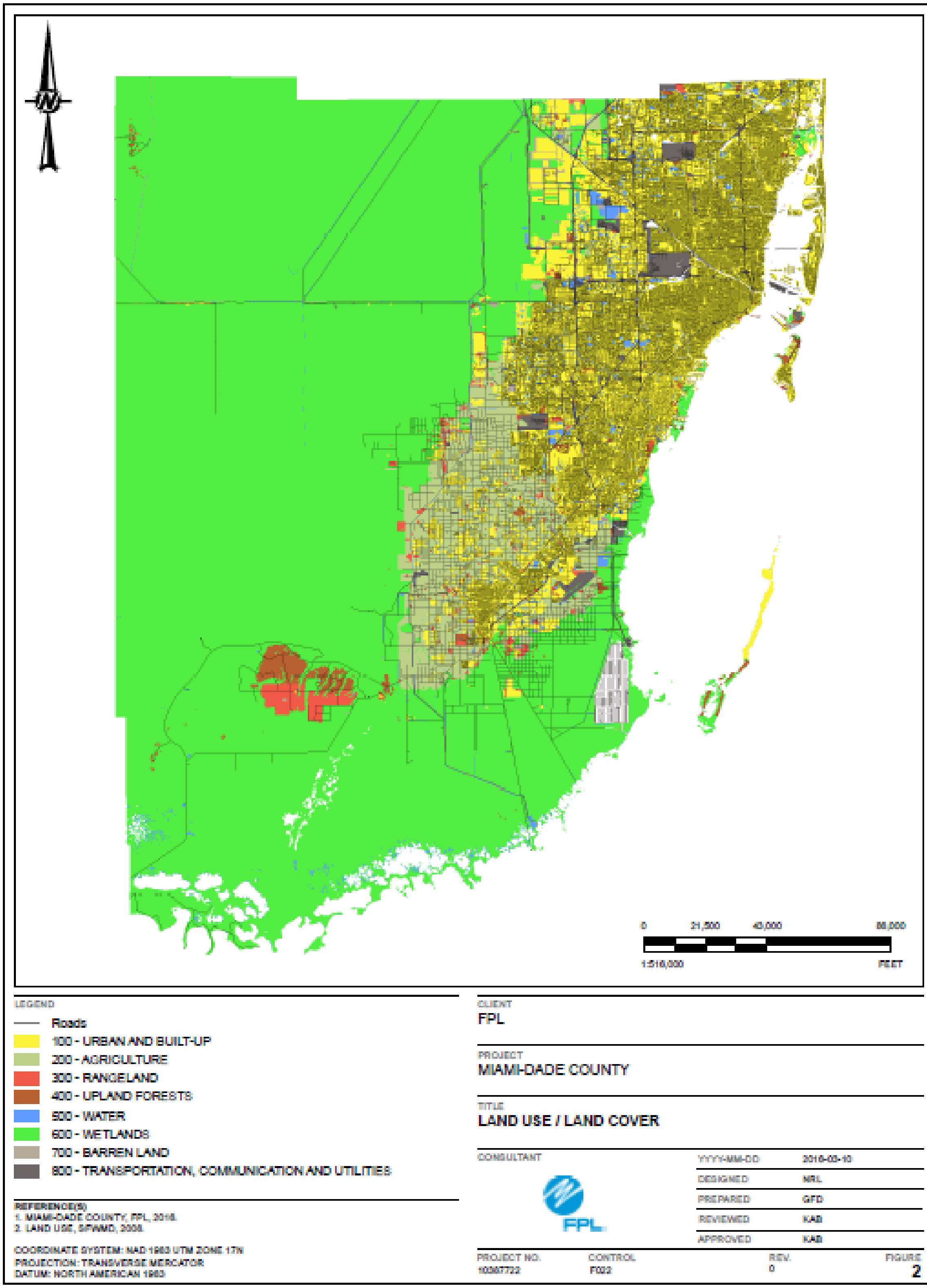


Copyright: © 2013 National Geographic Society
LEGEND
Miami-Dade County
DADE
0
21,500
43,000
1:516,000
Feet
REFERENCE(S)
1. MIAMI-DADE COUNTY, FPL, 2016.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
MIAMI-DADE COUNTY
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
YYYY-MM-DD
2016-03-10
DESIGNED
MRL
PREPARED
GFD
REVIEWED
KAB
APPROVED
KAB
PROJECT NO.
CONTROL
F021
REV.
0
FIGURE
1


0
40,000
FEET
LEGEND
Roads
100 - URBAN AND BUILT-UP
200 - AGRICULTURE
300 - RANGELAND
400 - UPLAND FORESTS
500 - WATER
600 - WETLANDS
700 - BARREN LAND
800 - TRANSPORTATION, COMMUNICATION AND UTILITIES
REFERENCE(S)
1. MIAMI-DADE COUNTY, FPL, 2016.
2. LAND USE, SFWMD, 2008.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
MIAMI-DADE COUNTY
TITLE
LAND USE / LAND COVER
CONSULTANT
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED GFD
REVIEWED KAB
APPROVED KAB
PROJECT NO.
CONTROL
REV. 0
FIGURE 2

Environmental and Land Use Information: Supplemental Information

Potential Site # 5: Putnam County

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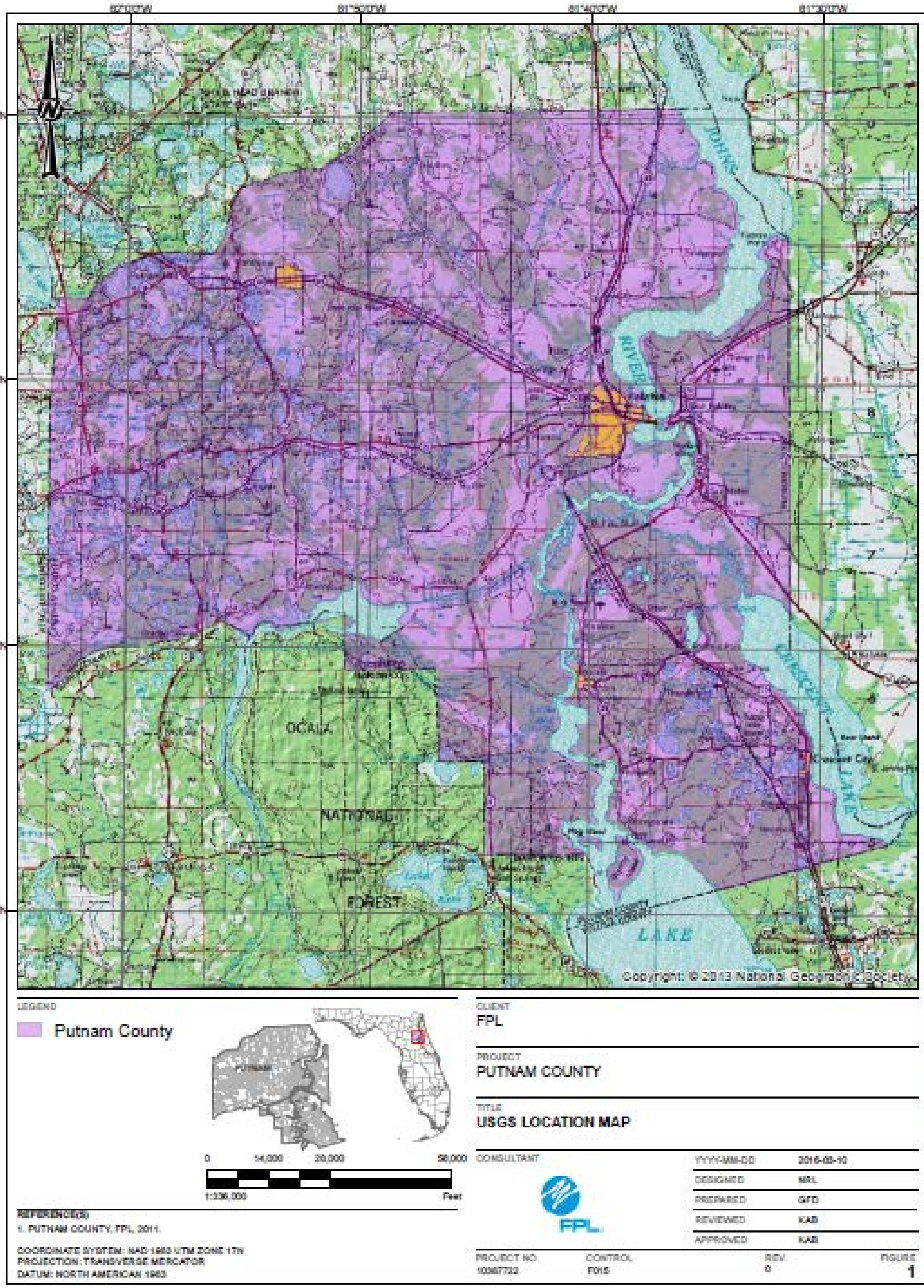
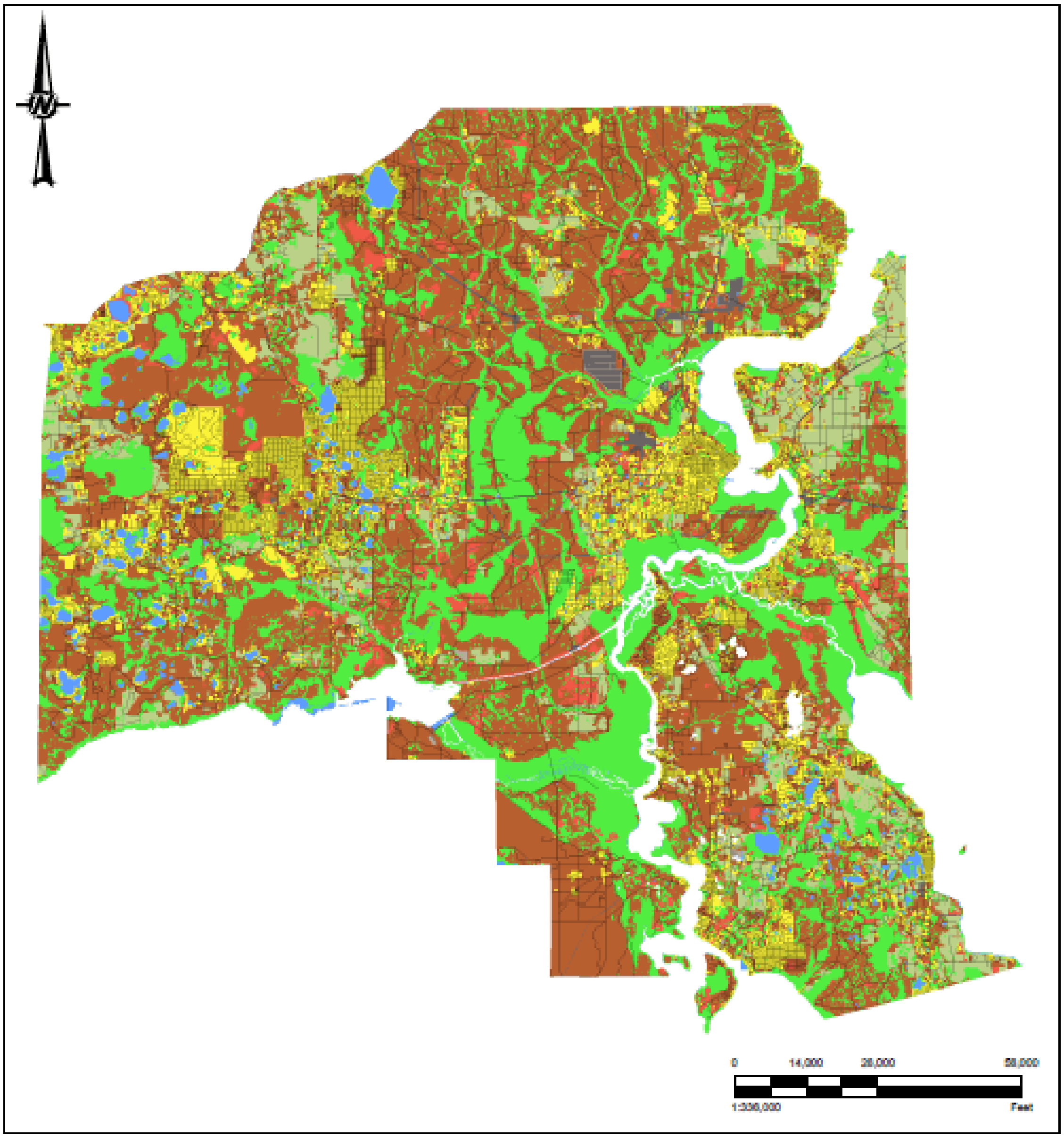


Copyright: © 2013 National Geographic Society
LEGEND
Putnam County
0
14,000
28,000
56,000
1:336,000
Feet
REFERENCE(S)
1. PUTNAM COUNTY, FPL, 2011.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
PUTNAM COUNTY
TITLE
USGS LOCATION MAP
CONSULTANT
FPL
YYYY-MM-DD
DESIGNED
MRL
PREPARED
GFD
REVIEWED
KAB
APPROVED
KAB
PROJECT NO.
CONTROL
F015
REV.
0
FIGURE
1



LEGEND

- Roads
- 100 - URBAN AND BUILT-UP
- 200 - AGRICULTURE
- 300 - RANGELAND
- 400 - UPLAND FORESTS
- 500 - WATER
- 600 - WETLANDS
- 700 - BARREN LAND
- 800 - TRANSPORTATION, COMMUNICATION AND UTILITIES

REFERENCE(S)
1. PUTNAM COUNTY, FPL, 2011.
2. LAND USE, SJRWMD, 2009.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
PUTNAM COUNTY

TITLE
LAND USE / LAND COVER

CONSULTANT

YYYY-MM-DD	2016-03-10
DESIGNED	MRL
PREPARED	GFD
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
10387722	F016	0	2

Environmental and Land Use Information: Supplemental Information

Potential Site # 6: Volusia County

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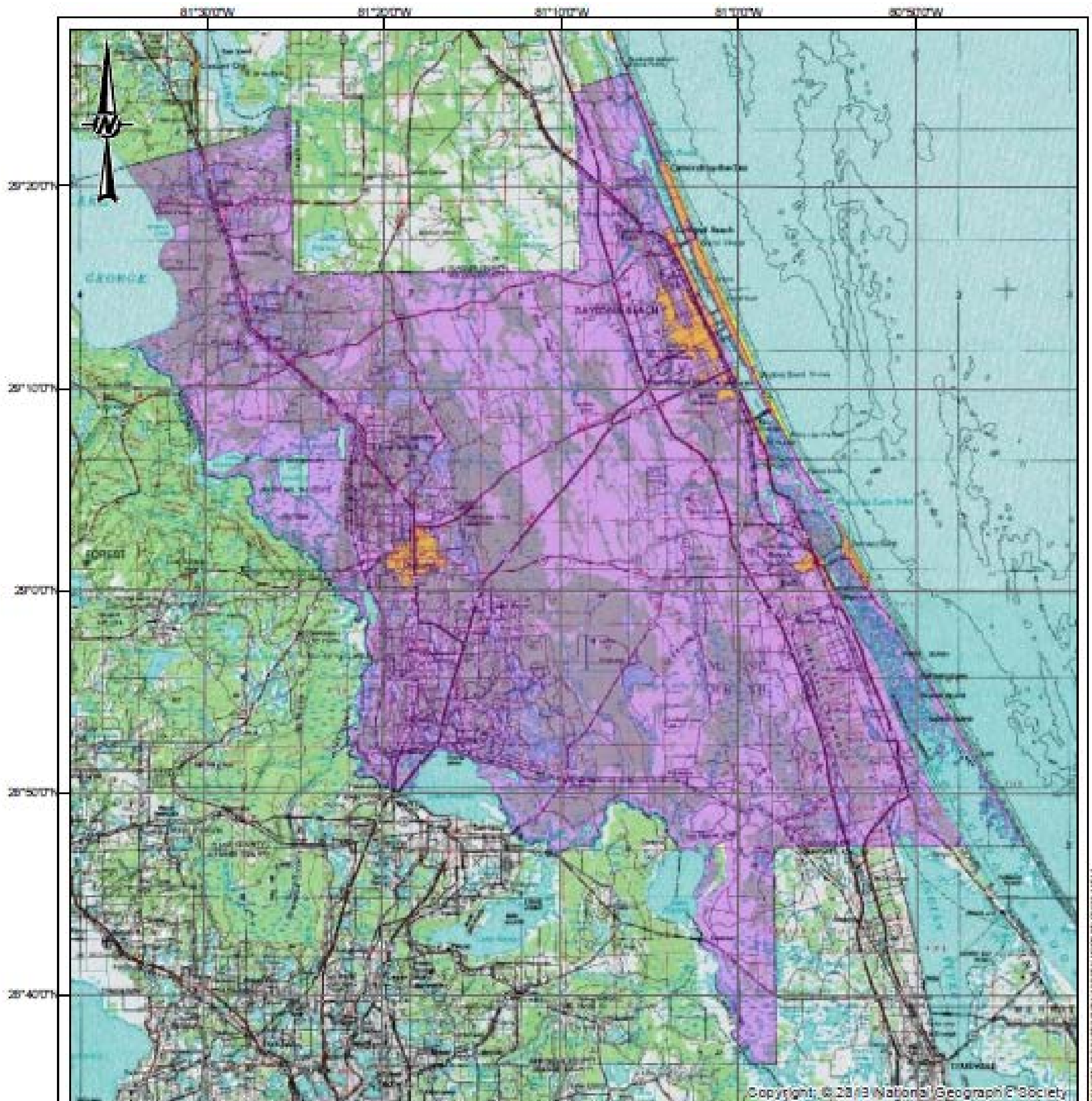
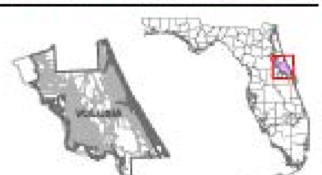


LEGEND

Volusia County



0 | 20,500 | 41,000 | 82,000

1:492,000 Feet

REFERENCE(S)

1. VOLUSIA COUNTY, FPL, 2016.

COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983

CLIENT
FPL

PROJECT
VOLUSIA COUNTY

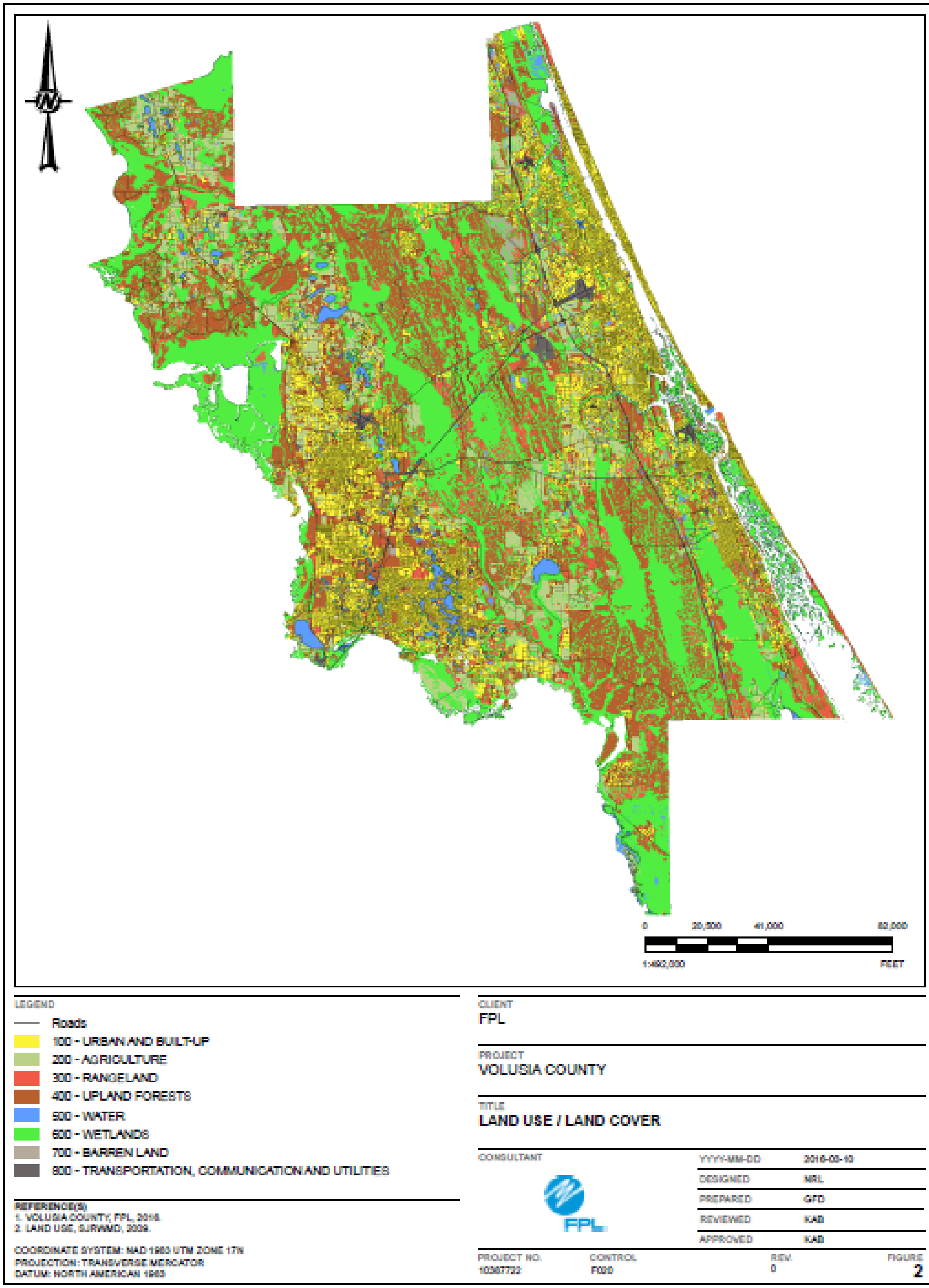
TITLE
USGS LOCATION MAP

CONSULTANT

FPL

YYYY-MM-DD	2016-03-10
DESIGNED	MRL
PREPARED	GFD
REVIEWED	KAB
APPROVED	KAB

PROJECT NO.	CONTROL	REV.	FIGURE
10367722	F019	0	1


N
0
20,500
41,000
82,000
1:492,000
FEET
LEGEND
Roads
100 - URBAN AND BUILT-UP
200 - AGRICULTURE
300 - RANGELAND
400 - UPLAND FORESTS
500 - WATER
600 - WETLANDS
700 - BARREN LAND
800 - TRANSPORTATION, COMMUNICATION AND UTILITIES
REFERENCE(S)
1. VOLUSIA COUNTY, FPL, 2016.
2. LAND USE, SJRWMD, 2009.
COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N
PROJECTION: TRANSVERSE MERCATOR
DATUM: NORTH AMERICAN 1983
CLIENT
FPL
PROJECT
VOLUSIA COUNTY
TITLE
LAND USE / LAND COVER
CONSULTANT
YYYY-MM-DD 2016-03-10
DESIGNED NRL
PREPARED GFD
REVIEWED KAB
APPROVED KAB
PROJECT NO. 10367722
CONTROL F020
REV. 0
FIGURE 2

CHAPTER V

Other Planning Assumptions & Information

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Introduction

The Florida Public Service Commission (FPSC), in Docket No. 960111-EU, specified certain information that was to be included in an electric utility's Ten Year Power Plant Site Plan filing. Among this specified information was a group of 12 items listed under a heading entitled "Other Planning Assumptions and Information." These 12 items concern specific aspects of a utility's resource planning work. The FPSC requested a discussion or a description of each of these items.

These 12 items are addressed individually below as separate "Discussion Items".

Discussion Item # 1: Describe how any transmission constraints were modeled and explain the impacts on the plan. Discuss any plans for alleviating any transmission constraints.

FPL's resource planning work considers two types of transmission limitations/constraints: external limitations and internal limitations. External limitations deal with FPL's ties to its neighboring systems. Internal limitations deal with the flow of electricity within the FPL system.

The external limitations are important because they affect the development of assumptions for the amount of external assistance that is available to the FPL system as well as the amount and price of economy energy purchases. Therefore, these external limitations are incorporated both in the reliability analysis and economic analysis aspects of resource planning. The amount of external assistance that is assumed to be available is based on the projected transfer capability to FPL from outside its system as well as historical levels of available assistance. In the loss of load probability (LOLP) portion of its reliability analyses, FPL models this amount of external assistance as an additional generator within FPL's system that provides capacity in all but the peak load months. The assumed amount and price of economy energy are based on historical values and projections from production costing models.

Internal transmission limitations are addressed by identifying potential geographic locations for potential new generating units that minimize adverse impacts to the flow of electricity within FPL's system. The internal transmission limitations are also addressed by developing the direct costs for siting potential new units at different locations, evaluating the cost impacts created by the new unit/unit location combination on the operation of existing units in the FPL system, and/or evaluating the costs of transmission additions that may be needed to address regional concerns regarding an imbalance between load and generation in a given region. Both of these site- and system-related transmission costs are developed for each different unit/unit location option or groups of options. When analyzing DSM portfolios, such as in a DSM Goals docket, FPL also examines the potential for utility DSM energy efficiency programs to avoid/defer regional transmission expenditures that would otherwise be needed to import power into that region by lowering electrical load in Southeastern Florida. In addition, transfer limits for capacity and energy that can be imported into the Southeastern Florida region (Miami-Dade and Broward Counties) of FPL's system are also developed for use in FPL's production costing analyses. (A further discussion of the Southeastern Florida region of FPL's system, and the need to maintain a regional balance between generation and transmission contributions to meet regional load, is found in Chapter III.)

FPL's annual transmission planning work determines transmission additions needed to address limitations and to maintain/enhance system reliability. FPL's planned transmission facilities to interconnect and integrate generating units in FPL's resource plans, including those transmission facilities that must be certified under the Transmission Line Siting Act, are presented in Chapter III.

Discussion Item # 2: Discuss the extent to which the overall economics of the plan were analyzed. Discuss how the plan is determined to be cost-effective. Discuss any changes in the generation expansion plan as a result of sensitivity tests to the base case load forecast.

FPL typically performs economic analyses of competing resource plans using as an economic criterion FPL's levelized system average electric rates (i.e., a Rate Impact Measure or RIM approach). In addition, for analyses in which DSM levels are not changed, and only supply options are being analyzed, FPL uses the equivalent criterion of the cumulative present value of revenue requirements (CPVRR) for its system.[7]

The load forecast that is presented in FPL's 2016 Site Plan was developed in late 2015 and early 2016. The only load forecast sensitivities analyzed during 2015/early 2016 were extreme weather sensitivities developed to analyze potential near-term operational scenarios and a higher load forecast scenario that was used to examine the projected future need for natural gas for the FPL system. These load forecast sensitivities and scenario did not result in a change in the resource plan.

[7] FPL's basic approach in its resource planning work is to base decisions on a lowest electric rate basis. However, when DSM levels are considered a "given" in the analysis (i.e., when only new generating options are considered), the lowest electric rate basis approach and the lowest system cumulative present value of revenue requirements (CPVRR) basis approach yield identical results in terms of which resource options are more economic. In such cases, FPL evaluates resource options on the simpler-to-calculate (but equivalent) lowest CPVRR basis.

Discussion Item # 3: Explain and discuss the assumptions used to derive the base case fuel forecast. Explain the extent to which the utility tested the sensitivity of the base case plan to high and low fuel price scenarios. If high and low fuel price sensitivities were performed, explain the changes made to the base case fuel price forecast to generate the sensitivities. If high and low fuel price scenarios were performed as part of the planning process, discuss the resulting changes, if any, in the generation expansion plan under the high and low fuel price scenario. If high and low fuel price sensitivities were not evaluated, describe how the base case plan is tested for sensitivity to varying fuel prices.

The basic assumptions FPL used in deriving its fuel price forecasts are discussed in Chapter III of this document. FPL used three fuel cost forecasts in analyses supporting its 2015 nuclear cost recovery filing. Also, in response to a request from the FPSC Staff, FPL used three fuel cost forecasts in sensitivity case analyses for the 2015 need determination of need filing for its Okeechobee combined cycle unit which will go into service in 2019.

A Medium fuel cost forecast is developed first. Then the Medium fuel cost forecast is adjusted, upwards (for the High fuel cost forecast) or downwards (for the Low fuel cost forecast), by multiplying the annual cost values from the Medium fuel cost forecast by a factor of (1 + the historical volatility in the 12-month forward price, one year ahead) for the High fuel cost forecast, or by a factor of (1 – the historical volatility of the 12-month forward price, one year ahead) for the Low fuel cost forecast.

The resource plan presented in this Site Plan is based, in part, on those prior analyses. In addition, FPL is now using updated forecasts for both fuel costs and environmental compliance costs. On-going resource planning analyses during 2016 will continue to examine sensitivities to both forecasts to determine potential impacts to the resource plan presented in this document. However, based on FPL's projected resource needs, no FPL decision is needed this year regarding any major resource option addition.

Discussion Item # 4: Describe how the sensitivity of the plan was tested with respect to holding the differential between oil/gas and coal constant over the planning horizon.

As described above in the answer to Discussion Item # 3, FPL used up to three fuel cost forecasts in its 2015/early 2016 resource planning analyses. While these forecasts did not represent a constant cost differential between oil/gas and coal, a variety of fuel cost differentials were represented in these forecasts.

Discussion Item # 5: Describe how generating unit performance was modeled in the planning process.

The performance of existing generating units on FPL's system was modeled using current projections for scheduled outages, unplanned outages, capacity output ratings, and heat rate information. Schedule 1 in Chapter I and Schedule 8 in Chapter III present the current and projected capacity output ratings of FPL's existing units. The values used for outages and heat rates are generally consistent with the values FPL has used in planning studies in recent years.

In regard to new unit performance, FPL utilized current projections for the capital costs, fixed and variable operating & maintenance costs, capital replacement costs, construction schedules, heat rates, and capacity ratings for all construction options in its resource planning work. A summary of this information for the new capacity options that FPL currently projects to add over the reporting horizon for this document is presented on the Schedule 9 forms in Chapter III.

Discussion Item # 6: Describe and discuss the financial assumptions used in the planning process. Discuss how the sensitivity of the plan was tested with respect to varying financial assumptions.

At the start of 2015, FPL used the following financial assumptions: (i) an incremental capital structure of 40.38% debt and 59.62% equity; (ii) a 5.14% cost of debt; (iii) a 10.5% return on equity; and (iv) an after-tax discount rate of 7.54%. In February 2015, the cost of debt changed to 5.05% and the after-tax discount rate changed to 7.51%. These financial assumptions remain valid at the time the 2016 Site Plan is being prepared. No sensitivities of these financial assumptions were used in FPL's 2015/early 2016 resource planning work.

Discussion Item # 7: Describe in detail the electric utility's Integrated Resource Planning process. Discuss whether the optimization was based on revenue requirements, rates, or total resource cost.

FPL's integrated resource planning (IRP) process is described in detail in Chapter III of this document.

The standard basis for comparing the economics of competing resource plans in FPL's basic IRP process is the impact of the plans on FPL's electricity rate levels with the objective generally being to minimize FPL's projected levelized system average electric rate (i.e., a Rate Impact Measure or RIM approach). As discussed in response to Discussion Item # 2, both the electricity rate perspective and the cumulative present value of revenue requirement (CPVRR) perspective for the system yield identical results in terms of which resource options are more economical when DSM levels are unchanged between competing resource plans. Therefore, in planning work in which DSM levels were unchanged, the equivalent, but simpler-to-calculate, CPVRR perspective was utilized.

Discussion Item # 8: Define and discuss the electric utility's generation and transmission reliability criteria.

FPL uses three system reliability criteria in its resource planning work that addresses generation, purchase, and DSM options. One criterion is a minimum 20% Summer and Winter reserve margin. Another reliability criterion is a maximum of 0.1 days per year loss-of-load-probability (LOLP). The third criterion is a minimum 10% generation-only reserve margin (GRM) criterion. These three reliability criteria are discussed in Chapter III of this document.

In regard to transmission reliability analysis work, FPL has adopted transmission planning criteria that are consistent with the planning criteria established by the Florida Reliability Coordinating Council (FRCC). The FRCC has adopted transmission planning criteria that are consistent with the Reliability Standards established by the North American Electric Reliability Council (NERC). The *NERC Reliability Standards* are available on the internet site (http://www.nerc.com/).

In addition, FPL has developed a *Facility Interconnection Requirements* (FIR) document that is available on the internet under the "Interconnection Request Information" directory at the following internet address: https://www.oatioasis.com/FPL/index.html.

Generally, FPL limits its transmission facilities to operate at no more than 100% of the applicable thermal rating. The normal and contingency voltage criteria for FPL stations are provided below:

	Normal/Contingency	
Voltage Level (kV)	**Vmin (p.u.)**	**Vmax (p.u.)**
69, 115, 138	0.95/0.95	1.05/1.07
230	0.95/0.95	1.06/1.07
500	0.95/0.95	1.07/1.09
Turkey Point (*)	1.01/1.01	1.06/1.06
St. Lucie (*)	1.00/1.00	1.06/1.06

(*) Voltage range criteria for FPL's Nuclear Power Plants

There may be isolated cases for which FPL may have determined that it is acceptable to deviate from the general criteria stated above. There are several factors that could influence these criteria, such as the overall number of potential customers that may be impacted, the probability of an outage actually occurring, and transmission system performance.

Discussion Item # 9: Discuss how the electric utility verifies the durability of energy savings for its DSM programs.

The projected impacts of FPL's DSM programs on demand and energy consumption are revised periodically. Engineering models, calibrated with current field-metered data, are updated at regular intervals. Participation trends are tracked for all of FPL's DSM programs in order to adjust impacts each year for changes in the mix of efficiency measures being installed by program participants. For its load management programs, FPL conducts periodic tests of the load management equipment to ensure that the equipment is functioning correctly. These tests, plus actual, non-test load management events, also allow FPL to gauge the MW reduction capabilities of its load management programs on an on-going basis. Based on testing during 2015, FPL has temporarily reduced its estimated residential load management MW reduction capabilities due to customer-premise equipment communications issues that FPL projects will be resolved by year-end 2017.

Discussion Item # 10: Discuss how strategic concerns are incorporated in the planning process.

The Executive Summary and Chapter III provide a discussion of a variety of system concerns/issues that influence FPL's resource planning process. Please see those chapters for a discussion of those concerns/issues.

In addition to these system concerns/issues, there are other strategic factors that FPL typically considers when choosing between resource options. These include: (1) technology risk; (2) environmental risk, and (3) site feasibility. The consideration of these factors may include both economic and non-economic aspects.

Technology risk is an assessment of the relative maturity of competing technologies. For example, a prototype technology, which has not achieved general commercial acceptance, has a higher risk than a technology in wide use and, therefore, assuming all else is equal, is less desirable.

Environmental risk is an assessment of the relative environmental acceptability of different generating technologies and their associated environmental impacts on the FPL system, including environmental compliance costs. Technologies regarded as more acceptable from an environmental perspective for FPL's resource plan are those that minimize environmental impacts for the FPL system as a whole through highly efficient fuel use, state-of-the-art environmental controls, generating technologies that do not utilize fossil fuels (such as nuclear and solar), etc.

Site feasibility assesses a wide range of economic, regulatory, and environmental factors related to successfully developing and operating the specified technology at the site in question. Projects that are more acceptable have sites with few barriers to successful development.

All of these factors play a part in FPL's planning and decision-making, including its decisions to construct capacity or purchase power.

Discussion Item # 11: Describe the procurement process the electric utility intends to utilize to acquire the additional supply-side resources identified in the electric utility's ten-year site plan.

As shown in this 2016 Site Plan, FPL's resource plan currently reflects the following major supply-side or generation resource additions: the replacement of existing GT capacity with new CT capacity, the on-going upgrading of CTs in several existing CCs throughout FPL's system, the implementation of the previously executed EcoGen PPA, the projected addition of new PV facilities, and the projected addition of new CC capacity.

CT upgrades are currently taking place at several CC units throughout the FPL system. FPL was approached by the original equipment manufacturer (OEM) of the CTs regarding the possibility of upgrading these units. Following negotiations with the OEM, and economic analyses that showed upgrading was cost-effective for FPL's customers, the decision was made to proceed with the CT upgrades. The first series of upgrades was completed in 2015. Additional upgrades are in progress with expected completion in 2018.

The EcoGen PPAs, which were approved by the Commission in Order No. PSC-13-0205-CO-EQ dated May 21, 2013, were the result of negotiations between U.S. EcoGen and FPL. In regard to the three PV facilities that will be in service by the end of 2016, the selection of equipment and installation contractors for these facilities has been done via competitive bidding.

To the extent possible, identification of projected/potential self-build generation resources beyond those units already approved by the FPSC and Governor and Siting Board or units, such as the PV projects to be completed by the end of 2016, the additional PV capacity to be added by 2021 (a mid-2020 in-service date is assumed for planning purposes), and the new CC capacity shown as a potential addition in 2024, is required of FPL in its Site Plan filings. FPL's identification of these resources represents FPL's current view of alternatives that appear to be the best, most cost-effective self-build options at present. FPL reserves the right to refine its planning analyses and to identify and evaluate other options before making decisions regarding future capacity additions. Such refined analyses have the potential to yield a variety of self-build options, some of which may not require a request for proposals (RFP). If an RFP is issued for generation resources, FPL will choose the best alternative for its customers, regardless of whether it is a third party proposal to an RFP or an FPL self-build option. If an RFP for generation resources is not required, FPL will typically utilize a competitive bidding process to select equipment suppliers and installation contractors based on its assessment of price and supplier capability to realize the best generation option for its customers.

Discussion Item # 12: Provide the transmission construction and upgrade plans for electric utility system lines that must be certified under the Transmission Line Siting Act (403.52 – 403.536, F. S.) during the planning horizon. Also, provide the rationale for any new or upgraded line.

FPL has identified the need for three new transmission lines that require certification under the Transmission Line Siting Act (as shown on Table III.E.1 in Chapter III). The first is a 230 kV line that was certified in April 2006. The new line will connect FPL's St. Johns Substation to its Pringle Substation. The line will be constructed in two phases. Phase 1 was completed in May 2009 and consisted of a new line connecting Pringle to a new Pellicer Substation. Phase 2 will connect St. Johns to Pellicer and it is scheduled to be completed by December 2018. The construction of this line is necessary to serve existing and future customers in the Flagler and St. Johns areas in a reliable and effective manner.

The second is a 500 kV line corridor that was certified in April 1990. The line(s), when fully constructed, will provide an additional connection between FPL's Midway substation and its Levee substation in Miami-Dade County. A portion of this corridor was utilized in 1994 to connect FPL's Corbett substation (located along the corridor) in Palm Beach County to its Conservation substation in western Broward County. The next phase, which is currently scheduled to be in service by 2023, will utilize a portion of the corridor from Corbett to Levee. The line will be needed to increase transfer capability into the southeastern Florida region, unless additional generation resources are developed within the region to meet local load growth.

The third is another 230 kV line which will connect FPL's Duval Substation to a new Raven 230/115 KV Substation. A determination of need for the line was granted by the Florida Public Service Commission on March 4, 2016 and the line is currently scheduled to be completed by December 2018. The construction of this line and substation are necessary to serve existing and future FPL customers in the north Florida areas in and around Columbia County in a reliable and effective manner.