

satellite monitoring technology to broaden its inspection capabilities and increase the frequency of onsite observations.

FPL has also implemented a Corporate Environmental Governance System in which quarterly reviews are performed of each business unit deemed to have potential for significant environmental exposure. Quarterly reviews evaluate operations for potential environmental risks and consistency with the 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.

IV.G Preferred and Potential Sites

Based upon projection of future resource needs and analyses of viable resource options, 37 Preferred Sites and 23 Potential Sites have been identified for adding future generation. Some of these sites currently have existing generation. Preferred Sites are those locations where significant reviews have taken place and action has either been taken, action is committed, or it is likely that action will be taken to site new generation. Potential Sites are those with 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 a definitive decision to pursue new generation (or generation expansion or modernization in the case of an existing generation site) at that location has been made, nor does this designation necessarily 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.G.1 Preferred Sites

For the 2022 Ten Year Site Plan, 37 Preferred Sites have been identified. These include a combination of existing and new sites for the development of solar generation facilities, natural gas-fueled combined cycle units, battery storage, and nuclear generation. Sites for a number of solar additions in 2022 through 2024 have been selected, and these sites are described in this section. Potential sites for possible 2025 and beyond solar additions, plus other types of generation, are discussed later in the Potential Site section.

These 37 Preferred Sites are listed in Table IV.G.1 below, and information regarding each site is presented in the Appendix which is located at the end of this TYSP document. The sites are presented in general chronological order of when resources are projected to be added to the FPL system. The topographical features of each site, land use, and facility layout figures are provided in maps that also appear in the Appendix at the end of this TYSP document.

Table IV.G.1: List of FPL Preferred Sites

Site Name	County	Technology
Dania Beach Clean Energy Center	Broward	CC
Everglades Solar Energy Center	Miami-Dade	Solar
Pink Trail Solar Energy Center	St. Lucie	Solar
Bluefield Preserve Solar Energy Center	St. Lucie	Solar
Cavendish Solar Energy Center	Okeechobee	Solar
Anhinga Solar Energy Center	Clay	Solar
Blackwater River Solar Energy Center	Santa Rosa	Solar
Chipola River Solar Energy Center	Calhoun	Solar
Flowers Creek Solar Energy Center	Calhoun	Solar
First City Solar Energy Center	Escambia	Solar
Apalachee Solar Energy Center	Jackson	Solar
Wild Azalea Solar Energy Center	Gadsden	Solar
Chautauqua Solar Energy Center	Walton	Solar
Shirer Branch Solar Energy Center	Calhoun	Solar
Saw Palmetto Solar Energy Center	Bay	Solar
Cypress Pond Solar Energy Center	Washington	Solar
Etonia Creek Solar Energy Center	Putnam	Solar
Terrill Creek Solar Energy Center	Clay	Solar
Silver Palm Solar Energy Center	Palm Beach	Solar
Ibis Solar Energy Center	Brevard	Solar
Woodyard Solar Energy Center	Hendry	Solar
Beautyberry Solar Energy Center	Hendry	Solar
Turnpike Solar Energy Center	Indian River	Solar
Monarch Solar Energy Center	Martin	Solar
Caloosahatchee Solar Energy Center	Hendry	Solar
White Tail Solar Energy Center	Martin	Solar
Prairie Creek Solar Energy Center	DeSoto	Solar
Pineapple Solar Energy Center	St. Lucie	Solar
Canoe Solar Energy Center	Okaloosa	Solar
Sparkleberry Solar Energy Center	Escambia	Solar
Sambucus Solar Energy Center	Manatee	Solar
Three Creeks Solar Energy Center	Manatee	Solar
Thomas Creek Solar Energy Center	Nassau	Solar
Big Juniper Creek Solar Energy Center	Santa Rosa	Solar
Wild Quail Solar Energy Center	Walton	Solar
Pecan Tree Solar Energy Center	Walton	Solar
Turkey Point Units 6 & 7	Miami-Dade	Nuclear

IV.G.2 Potential Sites

There are 22 Potential Sites that have currently been identified for future generation and storage additions to meet projected capacity and energy needs. Each of these Potential Sites offers 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 universal solar PV generation rather than for gas-fueled 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. These Potential Sites are listed in Table IV.G.2 below and are briefly discussed in the Appendix located at the end of this TYSP document.

Table IV.G.2: List of FPL Potential Sites

Name	County	Technology
Hawthorne Creek Solar Energy Center	Desoto	Solar
Nature Trail Solar Energy Center	Baker	Solar
Fawn Solar Energy Center	Martin	Solar
Holopaw Solar Energy Center	Palm Beach	Solar
Crystal Mine Solar Energy Center	Okeechobee	Solar
Buttonwood Solar Energy Center	St. Lucie	Solar
Orchard Solar Energy Center	St. Lucie/ Indian River	Solar
Hog Bay Solar Energy Center	DeSoto	Solar
Green Pasture Solar Energy Center	Charlotte	Solar
Fox Trail Solar Energy Center	Brevard	Solar
Hendry Solar Energy Center	Hendry	Solar
Honeybell Solar Energy Center	Okeechobee	Solar
Big Water Solar Energy Center	Okeechobee	Solar
Hendry Isles Solar Energy Center	Hendry	Solar
Rayland Solar Energy Center	Nassau	Solar
New River Solar Energy Center	Union	Solar
Georges Lakes Solar Energy Center	Putnam	Solar
Cedar Trail Solar Energy Center	Baker	Solar
Fourmile Creek Solar Energy Center	Calhoun	Solar
Swallowtail Solar Energy Center	Walton	Solar
Hardwood Hammock Solar Energy Center	Walton	Solar
Iron Rock Solar Energy Center	Escambia	Solar

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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 to be included in an electric utility's Ten Year Power Plant Site Plan filing. This specified information includes 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 involve FPL's, and the former Gulf Power's (now FPL's Northwest Florida region), ties to its neighboring electric systems. (FPL, and the Northwest Florida region are already legally merged into a single electric utility entity. They are scheduled to be electrically connected starting in mid-2022.) Internal limitations involve 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 and FPL Northwest Florida areas, 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 the FPL and FPL Northwest Florida areas from outside entities as well as historical levels of available assistance. In the loss of load probability (LOLP) portion of its reliability analyses, FPL's resource planning group models the amount of external assistance as an additional generator(s) within the 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 in economic analyses by identifying potential geographic locations for potential new generating units that minimize adverse impacts to the flow of electricity within the system. The internal transmission limitations are also addressed by: 1) developing the direct costs for siting potential new units at different locations, 2) evaluating the cost impacts created by the new unit/unit location combination on the operation of existing generating units in the system, and/or 3) evaluating the costs of transmission and/or generation additions that may be needed to address regional concerns regarding an imbalance between load and generation in a given region. Costs for these site, region, and

system factors are developed for use in economic analyses. These factors are also considered in both system and regional reliability analyses. When analyzing DSM portfolios, such as for a DSM Goals docket, the potential to avoid or defer regional transmission additions that might otherwise be needed is typically analyzed. In addition, transfer limits for capacity and energy that can be imported into the Southeastern Florida region of FPL's area (Miami-Dade and Broward Counties), or transferred between FPL and FPL Northwest Florida service areas once the two service areas are interconnected by the North Florida Resiliency Connection transmission line project (now under construction), are also developed, as applicable, for use in reliability analyses and production costing analyses. (The need to maintain a regional balance between generation and transmission in Southeastern Florida is also discussed in the Executive Summary and in Chapter III.)

Annual transmission planning work determines transmission additions needed to address limitations and maintain/enhance system and regional reliability. Planned transmission facilities to interconnect and integrate generating units in the resource plan, 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's resource planning group typically performs economic analyses of competing resource plans using levelized system average electric rates (*i.e.*, a Rate Impact Measure or RIM approach) as an economic criterion. In addition, for analyses in which DSM levels are not changed and only supply options are analyzed, the equivalent criterion of the cumulative present value of revenue requirements (CPVRR) may also be used.²⁰

After much analysis, FPL developed a hybrid-type peak load forecast that consists of extreme temperatures and electric load for the month of January only, with a business as usual P50 peak forecast for the other 11 months. FPL used this forecast to develop the "Recommended" resource plan presented in the document. A "Business as Usual" resource plan, which uses the P50 peak forecast for all 12 months, is also presented in this document.

²⁰ 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, resource options can be evaluated 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 scenarios. 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 used to derive fuel price forecasts are discussed in Chapter III of this document. FPL's resource planning group may use a single fuel cost forecast, or multiple fuel cost forecasts (Low, Medium, and High), in its analyses as appropriate.

In cases where multiple fuel cost forecasts are used, a Medium fuel cost forecast is developed first. Then the approach has been to adjust the Medium fuel cost forecast upward (for the High fuel cost forecast) or downward (for the Low fuel cost forecast) by multiplying the annual cost values from the Medium fuel cost forecast by a factor of $(1 + \text{the historical volatility of the 12-month forward price, one year ahead})$ for the High fuel cost forecast, or by a factor of $(1 - \text{the historical volatility of the 12-month forward price, one year ahead})$ for the Low fuel cost forecast.

The resource plan presented in this Site Plan is based on an updated fuel cost forecast developed in October 2021. Based on the facts that this fuel cost forecast is projecting natural gas prices that are already low by historical standards, and that the resource plan consists predominantly of solar additions, there was not a need to utilize different fuel cost forecasts to test the resource plan.

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.

In its 2021 and early 2022 resource planning work, a forecast scenario in which the differential between oil/gas and coal was held constant was not utilized. This is, in part, because FPL is currently using, and is projected to use, very little oil or coal. These trends are shown on Schedules 5, 6.1, and 6.2 in Chapter III.

Discussion Item # 5: Describe how generating unit performance was modeled in the planning process.

The performance of existing generating units is 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 the existing generating units. The values used for outages and heat rates are generally consistent with the values that have been used in planning studies in recent years.

For new unit performance, FPL utilized current projections for the capital costs, fixed and variable operating and maintenance costs, capital replacement costs, construction schedules, heat rates (as appropriate), 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.

The financial assumptions used in the resource planning analyses that led to the resource plan that is presented in this 2022 Ten Year Site Plan were: an incremental capital structure of 40.40% debt and 59.60% equity; (ii) a 3.51% cost of debt; (iii) a 10.60% return on equity; and (iv) an after-tax discount rate of 7.38%. No other financial assumptions were used in the 2021/early 2022 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 electricity rate levels, with the objective generally being to minimize the 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, FPL's resource planning group utilizes the equivalent, but simpler-to-calculate CPVRR perspective.

Discussion Item # 8: Define and discuss the electric utility's generation and transmission reliability criteria.

FPL's resource planning group uses three system reliability criteria in its resource planning work that address various resource options including: utility generation, power purchases, and DSM options. One criterion is a minimum 20% Summer and Winter total 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). These three reliability criteria are discussed in Chapter III of this document.

As discussed in Chapter II, FPL assumed an extreme Winter peak load forecast at a level much higher than its normal P50 Winter load forecast for purposes of planning for extreme Winter peaks. For FPL's Recommended resource plan (which plans for this extreme Winter load), FPL adds resources to meet this peak load exactly, without any additional reserves. For FPL's Business as Usual resource plan, a P50 Winter load forecast and a 20% minimum reserve margin criterion continue to be used for Winter planning. Because of the additional resources added in the Recommended resource plan to meet the higher forecasted load, this resource plan also meets a 20% minimum reserve margin criterion if applied to a P50 Winter load forecast.

For transmission reliability analysis, transmission planning criteria have been adopted that are consistent with those established by the Florida Reliability Coordinating Council (FRCC) and the SERC Reliability Corporation (SERC). The FRCC and SERC have adopted transmission planning criteria that are consistent with the Reliability Standards established by the North American Electric Reliability Corporation (NERC). The *NERC Reliability Standards* are available on the NERC internet site (<http://www.nerc.com/>).

In addition, *Facility Interconnection Requirements* (FIR) documents for both FPL and Gulf systems/areas have been developed. The document for FPL is available on FPL's Open Access Same-time Information System (OASIS) website, <https://www.oatiaoasis.com/FPL/index.html>, under the "Interconnection Request Information" directory. The document for Gulf is available on Gulf's Open Access Same-time Information System (OASIS) website, <https://www.oatiaoasis.com/gulf/index.html>, also under the "Interconnection Request Information" directory. Furthermore, all new transmission facilities within the FPL and Gulf service territories that are used to meet FPL and Gulf load are planned to comply with Extreme Wind Loading Criteria as implemented in FPL and Gulf Design Guidelines.

FPL's transmission planning group generally limits planned flows on its transmission facilities to no more than 100% of the applicable thermal rating. There may be isolated cases for which it is acceptable to deviate from the general criteria stated below. 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, transmission system performance, and other factors.

The normal and contingency voltage criteria for FPL stations are provided below:

Normal/Contingency²¹

<u>Voltage Level (kV)</u>	<u>Vmin (p.u.)</u>	<u>Vmax (p.u.)</u>
69, 115, 138	0.95/0.95	1.05/1.07
161	0.95/0.95	1.05/1.10
230	0.95/0.95	1.06/1.07
500	0.95/0.95	1.07/1.10
Turkey Point (*)	1.013/1.013	1.06/1.06
St. Lucie (*)	1.00/1.00	1.06/1.06

(*) Voltage range criteria for FPL's Nuclear Power Plants

For approximately the first half of 2022, FPL's Northwest Florida service area (the former Gulf Power service area) will adopt the Southern Company Voltage Schedule Procedures as provided in the link below to the Southern Company OASIS document:

- [Voltage Schedule Procedures](#)

[https://www.oasis.oati.com/woa/docs/SOCO/SOCOdocs/BPO-01_Voltage_Schedules\).pdf](https://www.oasis.oati.com/woa/docs/SOCO/SOCOdocs/BPO-01_Voltage_Schedules).pdf)

Discussion Item # 9: Discuss how the electric utility verifies the durability of energy savings for its DSM programs.

FPL periodically revises the projected impacts of its DSM programs on demand and energy consumption. 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 its load management equipment to ensure it is functioning

²¹ Immediately following a contingency, steady-state voltages may deviate from the normal voltage range if there are known automatic or manual operating actions to adjust the voltage to within the contingency voltage range. However, the steady-state voltage must never exceed voltage System Operating Limits (SOLs), which have a lower limit of 0.90pu and a higher limit of 1.10pu for all transmission facilities, excluding nuclear plant switchyards for which the SOLs are equal to the normal/contingency limits.

correctly. These tests, plus actual load management events, also allow FPL to gauge the MW reduction capabilities of its load management programs on an ongoing basis.

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's resource planning group typically considers when choosing among 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 that 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 utility system, including projected environmental compliance costs. Technologies regarded as more acceptable from an environmental perspective for a prospective resource plan are those that minimize environmental impacts for the utility system as a whole through highly efficient fuel use, state-of-the-art environmental controls, and generating technologies that do not utilize fossil fuels (such as nuclear and solar).

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 fewer barriers to successful development.

All of these factors play a part in resource planning and decision-making, including 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 2022 Site Plan, the current resource plan reflects the following major supply-side or generation resource additions in FPL's area: combustion turbine (CT) component upgrades at various existing CCs, addition of new PV facilities, addition of new battery storage facilities, and the addition of new

CC capacity at the Dania Beach Energy Center Unit 7 through the modernization of FPL's existing Lauderdale plant site.

CT upgrades are planned to take place at various CC units throughout the FPL area that address either Summer or Winter capacity. The original equipment manufacturers (OEM) of the CTs approached FPL regarding the possibility of upgrading these units. Following negotiations with the OEMs and economic analyses that showed upgrading was cost-effective for customers, FPL decided to proceed with the CT upgrades and the supporting balance of plant modifications.

For new solar facilities for FPL, the selection of equipment and installation contractors has been, and will continue to be, done via competitive bidding. FPL's Engineering & Construction (E&C) group seek bids from multiple suppliers for major components such as PV panels, inverters, and step-up transformers. Where possible, this group aggregates and executes component purchases as a portfolio to achieve cost synergies. However, this must be balanced against rapid technology changes and potential future cost reductions. Therefore, any bundling of purchases over the planned construction horizon is strategically managed. The remaining balance-of-system (BOS) purchases, such as racking and cabling, as well as engineering and construction services, are typically bid out to multiple contractors to determine the best value.

The selection of equipment and installation contractors for the projected battery storage facilities is being done in a manner similar to that described above for the projected solar facilities.

The modernization project at FPL's existing Lauderdale site received an FPSC waiver from the Bid Rule due to attributes specific to modernization projects (such as the ability to use existing gas and/or transmission infrastructure, ability to use land at an existing plant site, no incremental water requirements, etc.). In addition to these attributes, the Lauderdale modernization project, which will result in the addition of a new combined cycle unit (FPL Dania Beach Clean Energy Center Unit 7) is also projected to result in significant economic benefits for FPL's customers. Additionally, the new unit is projected to lower natural gas usage in the FPL system, and lower system emissions of SO₂, NO_x, and CO₂ compared to continuing to operate the existing Lauderdale generating units. The waiver from the Bid Rule was granted in Consummating Order No. PSC-2017-0431-CO-EI. On March 19, 2018, the FPSC issued a final order granting an affirmative need determination for the planned new Dania Beach Unit 7 (Order No. PSC-2018-0150-FOF-EI). FPL utilized 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 two 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 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 June 2030, will utilize the remaining portion of the corridor from Corbett to Levee. The line is needed to increase transmission import capability into the Southeastern Florida region.

The second is another 230 kV line which will connect FPL's Whidden Substation to a new Sweatt 230 kV Substation. A determination of need for the line will be filed with the Florida Public Service Commission in April 2022, and a Final order certifying the corridor for the project will be issued afterwards. The project is scheduled to be completed by December 2025. The construction of this line and substation is necessary to serve existing and future FPL customers in the west Florida area in and around Okeechobee, Highlands, Desoto, Collier, Lee, Sarasota, and Manatee Counties in a reliable and effective manner.

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Appendix

Preferred and Potential Solar Site Descriptions and Maps

Appendix A

***Site Descriptions, Environmental, and Land Use Information:
Supplemental Information***

***Relationship of Regional Hydrogeologic Units
to Major Stratigraphic Units
and
Florida Regions***

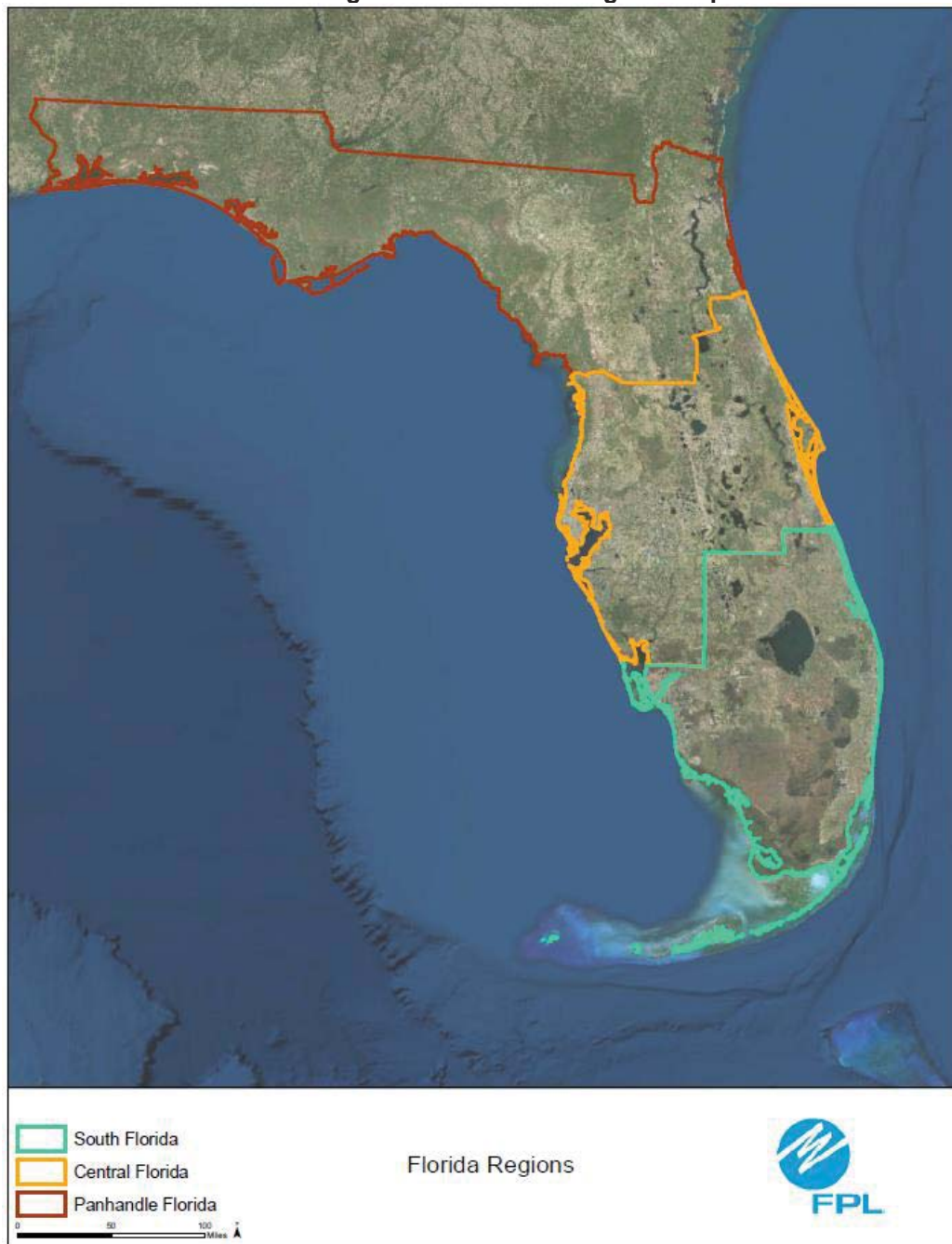
Figure A.A.1: Relationship of Regional Hydrogeologic Units to Major Stratigraphic Units

Relationship of Regional Hydrogeologic Units to Major Stratigraphic Units

		Panhandle Florida		North Florida		South Florida	
System	Series	Stratigraphic Unit	Hydrogeologic Unit	Stratigraphic Unit	Hydrogeologic Unit	Stratigraphic Unit	Hydrogeologic Unit
Quaternary	Holocene	Undifferentiated terrace marine and fluvial deposits	Surficial aquifer system (Sand and Gravel aquifer)	Undifferentiated terrace marine and fluvial deposits	Surficial aquifer system	Terrace Deposits Miami Limestone Key Largo Limestone Anastasia Formation Fort Thompson Formation Caloosahatchee Marl	Surficial aquifer system (Biscayne aquifer)
	Pleistocene						
Tertiary	Pliocene	Citronelle Formation Undifferentiated coarse sand and gravel	Intermediate confining unit	Miccosukee Formation Alachua Formation	Intermediate aquifer system or intermediate confining unit	Tamiami Formation	Intermediate aquifer system or intermediate confining unit
	Miocene	Alum Bluff Group Pensacola Clay Intracoastal Formation Hawthorn Group Chipola Formation Bruce Creek Limestone St. Marks Formation Chattahoochee Formation		Hawthorn Group St. Marks Formation		Hawthorn Group	
		Chickasawhay Limestone Suwannee Limestone Marianna Limestone Bucatunna Clay		Suwannee Limestone		Suwannee Limestone	
	Oligocene	Ocala Limestone Lisbon Formation Tallahatta Formation Undifferentiated older Rocks	Floridan aquifer system	Ocala Limestone Avon Park Formation Oldsmar Formation	Floridan aquifer system	Ocala Limestone Avon Park Formation Oldsmar Formation	Floridan aquifer system
	Eocene	Undifferentiated		Cedar Keys Formation		Cedar Keys Formation	
	Paleocene	Undifferentiated	Sub-Floridan confining unit	Undifferentiated	Sub-Floridan confining unit		Sub-Floridan confining unit
Cretaceous and older		Undifferentiated					

Note: This information is referred to in subsection k, Geological Features of Site and Adjacent Areas, for each of the Preferred Sites.

Figure A.A.2: Florida Regions Map



Note:

This information is referred to in subsection k, Geological Features of Site and Adjacent Areas, for each of the Preferred Sites.

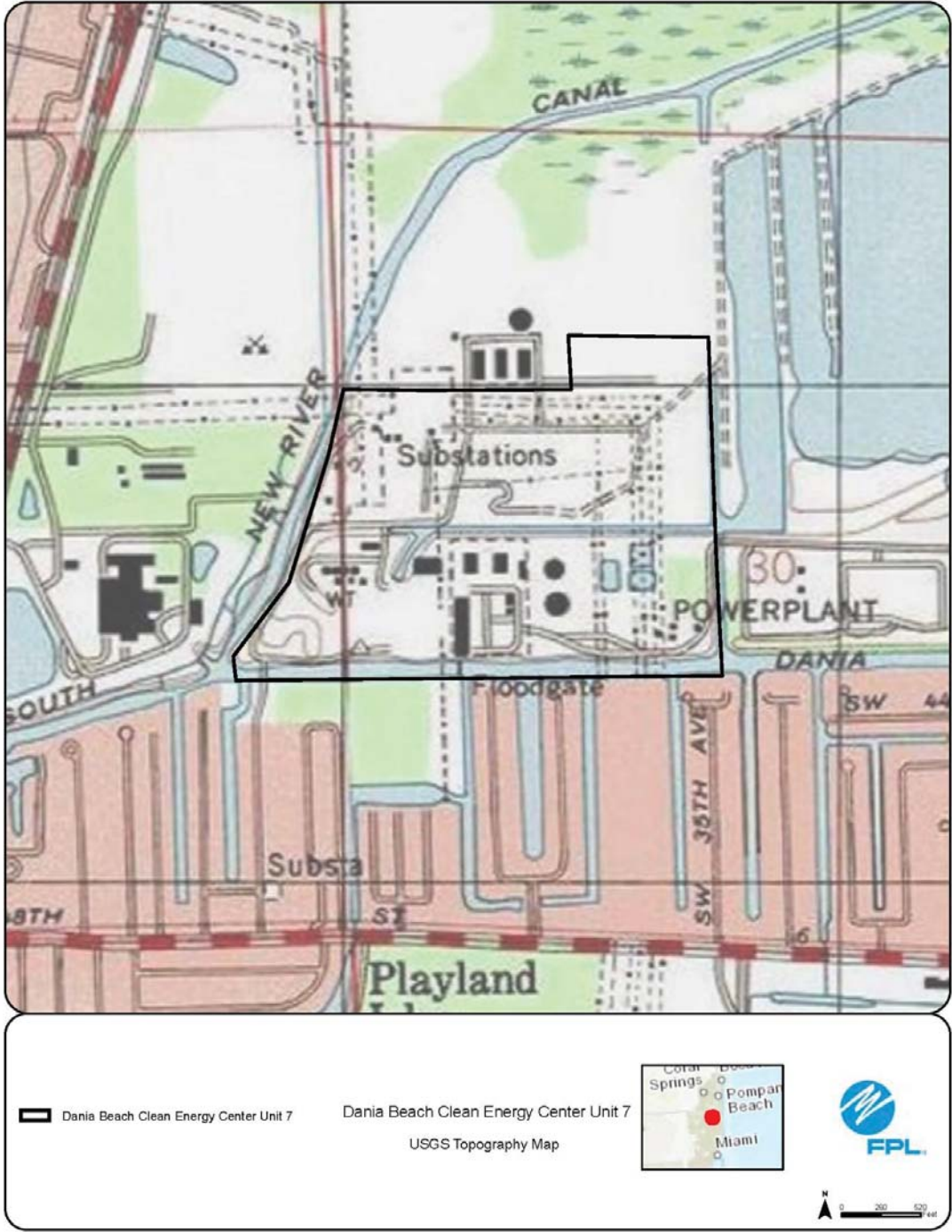
Appendix B Preferred Sites

Below are the descriptions regarding each of the 37 Preferred Sites listed in Table IV.G.1. Following the descriptions are maps showing the topographical features, land use, and facility layout of each site.

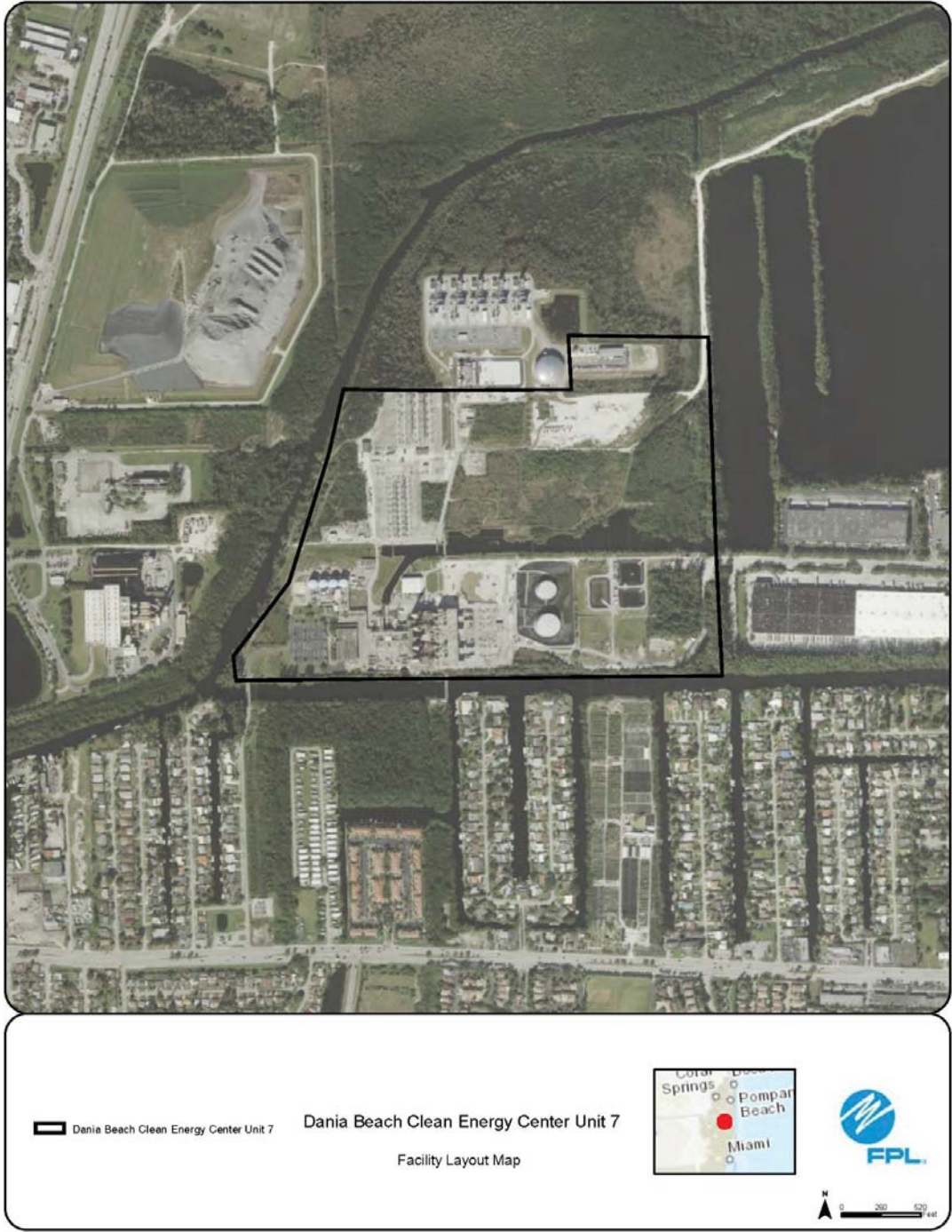
***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #1: Dania Beach Clean Energy Center Unit 7,
Broward County***

Preferred Site		Dania Beach Clean Energy Center Unit 7
County		Broward
Facility Acreage	134	
COD	Q2 2022	
For PV facilities: tracking or fixed	N/A	
Reference Maps		
a. USGS Map	See Figures in the following pages	
b. Proposed Facilities Layout		
c. Map of Site and Adjacent Areas		
d. Land Use Map of site and Adjacent Areas		
Existing Land Uses		
e. Site	Electrical generating facilities	
Adjacent Areas	Low to high density urban, transportation, communication, utilities, commercial, water, and conservation	
General Environment Features On and In the Site Vicinity		
1. Natural Environment	Site is comprised of facilities related to power generation.	
2. Listed Species	Listed species known to occur within the cooling pond at the site include the West Indian manatee. No adverse impacts are anticipated to listed species due to previous development.	
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.	
g. Design Features and Mitigation Options	The project includes dismantlement of existing Units 4 & 5 (completed) and replacement with one new approximately 1,163 MW combined cycle unit consisting of two combustion turbines (CTs), two heat recovery steam generators (HRSGs), and a steam turbine. The CTs will operate using natural gas and Ultra-Low Sulfur Distillate.	
h. Local Government Future Land Use Designations	The site is zoned General Industrial.	
i. Site Selection Criteria Factors	The Lauderdale Plant has been selected as a preferred site for a site modernization due to consideration of various factors including system load and economics. Environmental issues were not a deciding factor since this site does not exhibit significant environmental sensitivity or other environmental issues. However, there are environmental benefits of replacing the existing, outdated combined cycle units with a new highly efficient combined cycle unit, including a significant reduction in system air emissions. In addition, the modernization project at this existing site will not require a new gas pipeline and will make use of the existing transmission facilities and water supply.	
j. Water Resources	Condenser cooling for the steam cycle portion of the new combined cycle unit and auxiliary cooling will come from the existing cooling water intake system. Process and potable water for the new unit will come from the existing water supply sources (Broward County and City of Hollywood).	
k. Geological Features of Site and Adjacent Areas	See Figure in the following pages. The site is located in the South Florida region.	
l. Project Water Quantities for Various Uses	Cooling: No additional water required. Process: No additional water required. Potable: No additional water required. Panel Cleaning: Not Applicable	
m. Water Supply Sources by Type	Cooling: As existing, Dania Cut-Off Canal Process: As existing, Broward County Utilities Potable: As existing, City of Hollywood	
n. Water Conservation Strategies Under Consideration	No additional water resources are required beyond current usage.	
o. Water Discharges and Pollution Control	Continued discharge to the existing cooling pond is anticipated. No increase in water discharge is expected. Best Management Practices will be employed to prevent and control inadvertent release of pollutants.	
p. Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Natural gas will be transported via an existing pipeline. ULSD will be trucked to the facility and stored in existing ULSD tanks.	
q. 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	
r. Noise Emissions and Control Systems	Noise from the operation of the new unit will be within allowable levels.	
s. Status of Applications	Need Determination Issued: March 19, 2018 FL Site Certification received: December 13, 2018 PSD Permit received: December 4, 2017 USACE Section 404 Permit received: January 7, 2019 IWW received: December 3, 2018	



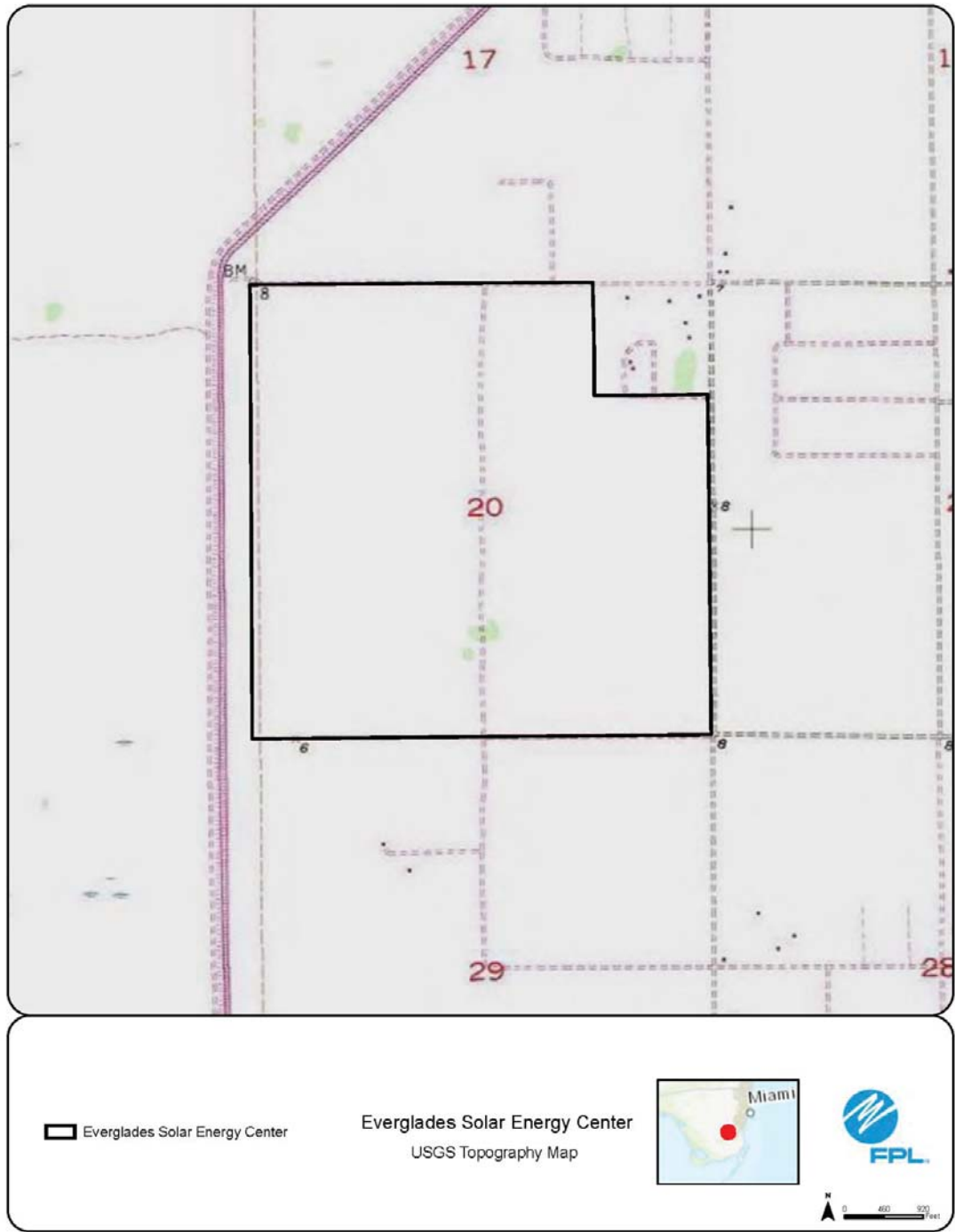


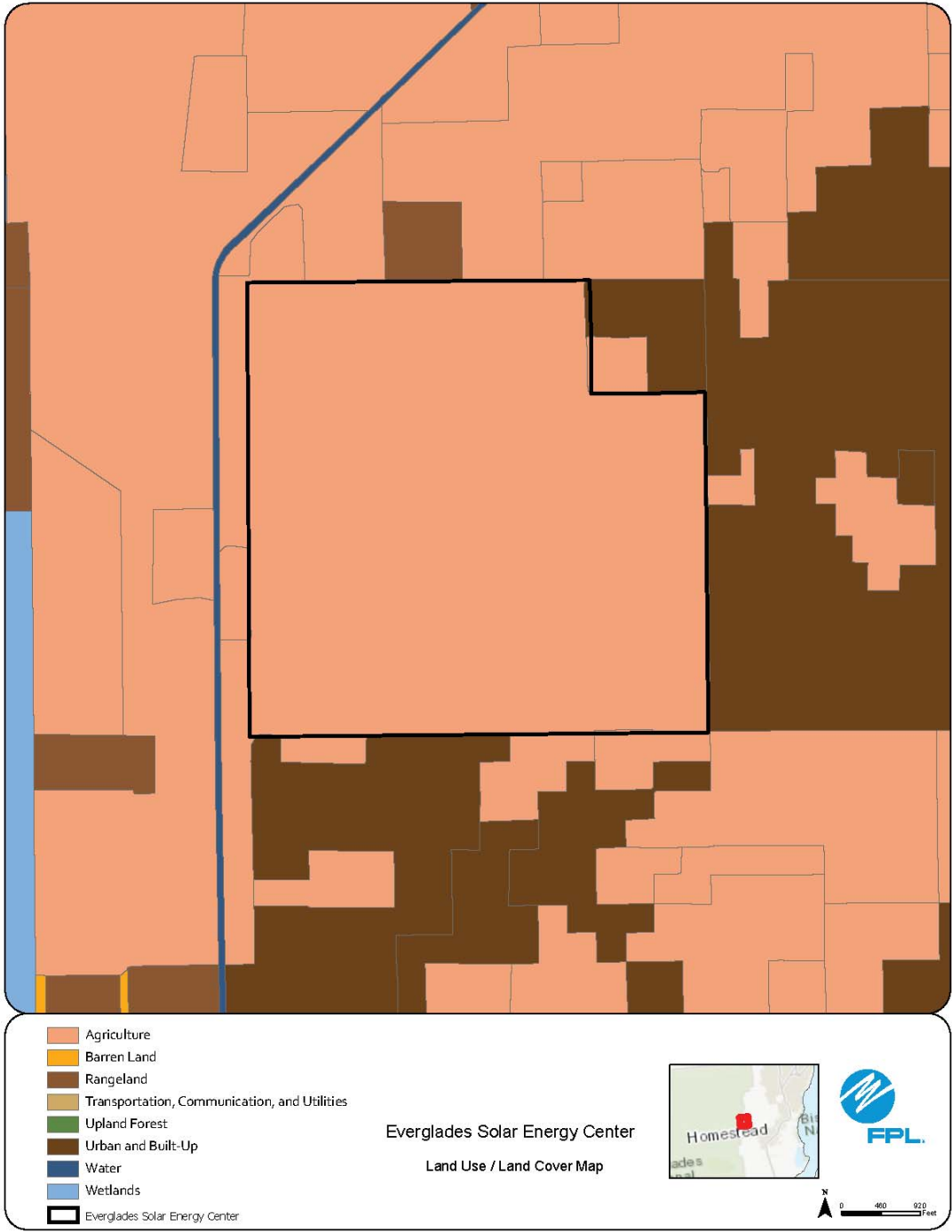


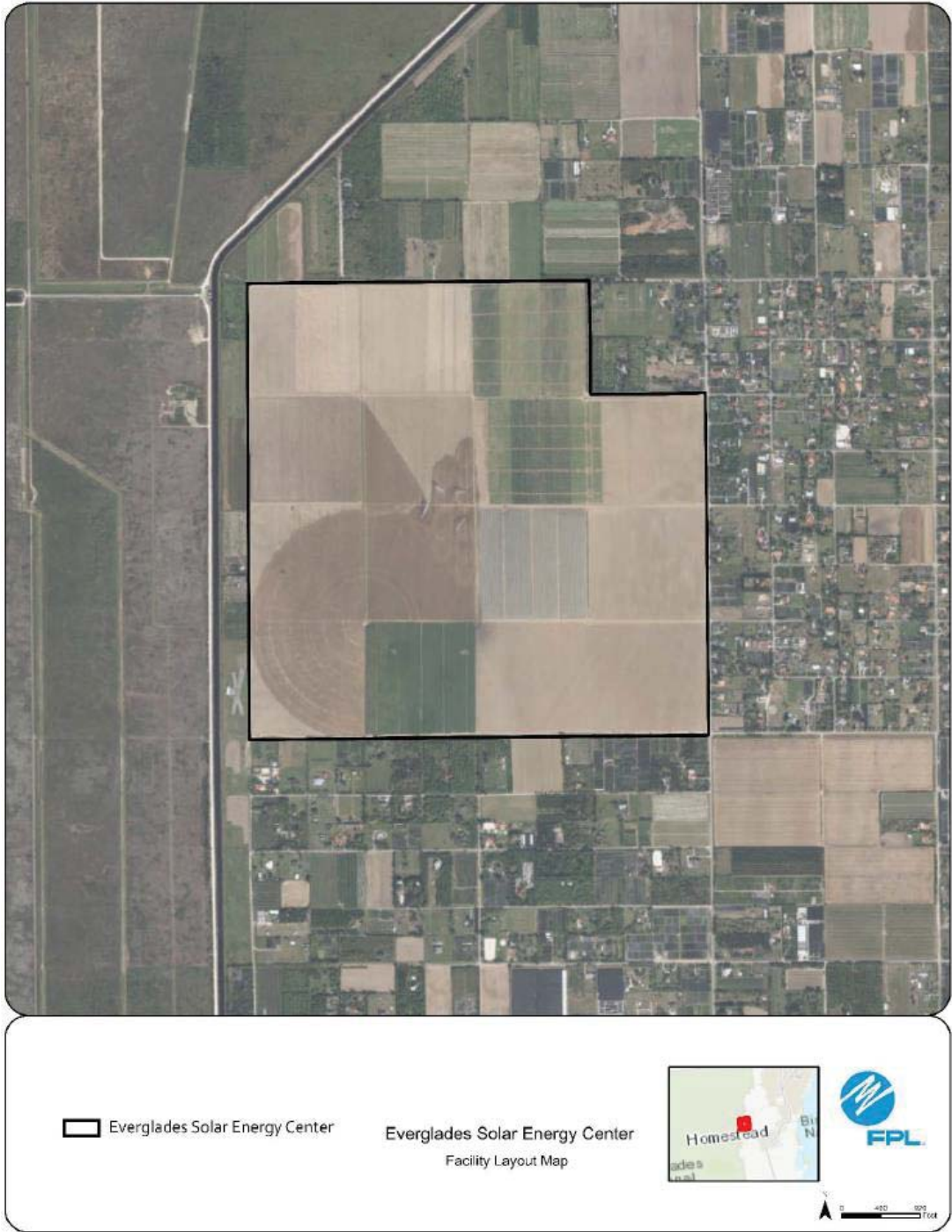
***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #2: Everglades Solar Energy Center,
Miami-Dade County***

	Preferred Site	Everglades Solar Energy Center
	County	Miami-Dade
	Facility Acreage	388
	COD	1/31/2023
	For PV facilities: tracking or fixed	Fixed
	Reference Maps	
a.	USGS Map	See Figures in the following pages
b.	Proposed Facilities Layout	
c.	Map of Site and Adjacent Areas	
d.	Land Use Map of site and Adjacent Areas	
e.	Existing Land Uses	
	Site	Agricultural land
	Adjacent Areas	Agricultural land
f.	General Environment Features On and In the Site Vicinity	
1.	Natural Environment	Site is agricultural land with no significant environmental features on or nearby this site.
2.	Listed Species	No adverse impacts to listed species are anticipated.
3.	Natural Resources of Regional Significance Status	No natural resources of regional significance on or adjacent to site
4.	Other Significant Features	FPL is not aware of other significant features on site
g.	Design Features and Mitigation Options	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	Local Government Future Land Use Designations	Solar power generation is allowed within existing Agricultural land use designation.
i.	Site Selection Criteria Factors	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	Water Resources	Existing onsite water resources will be used to meet water requirements.
k.	Geological Features of Site and Adjacent Areas	See Figure in the following pages. Site is located in the South Florida region.
l.	Project Water Quantities for Various Uses	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	Water Supply Sources by Type	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	Water Conservation Strategies Under Consideration	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	Water Discharges and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
p.	Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
q.	Air Emissions and Control Systems	Fuel - PV Solar 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
r.	Noise Emissions and Control Systems	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s.	Status of Applications	USACE 404 Permit received: TBD FDEP Environmental Resources Permit (ERP) received: December 9, 2021



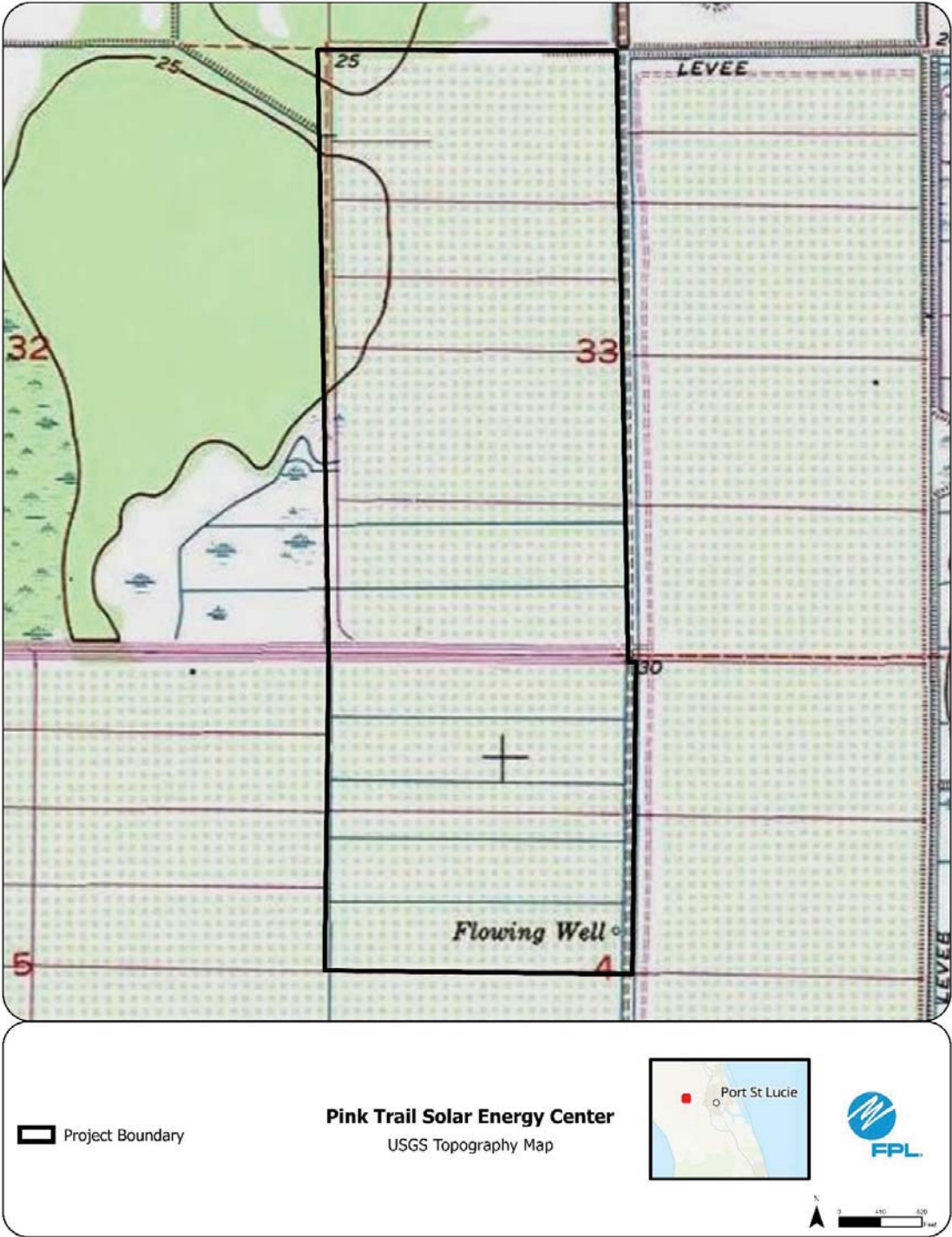


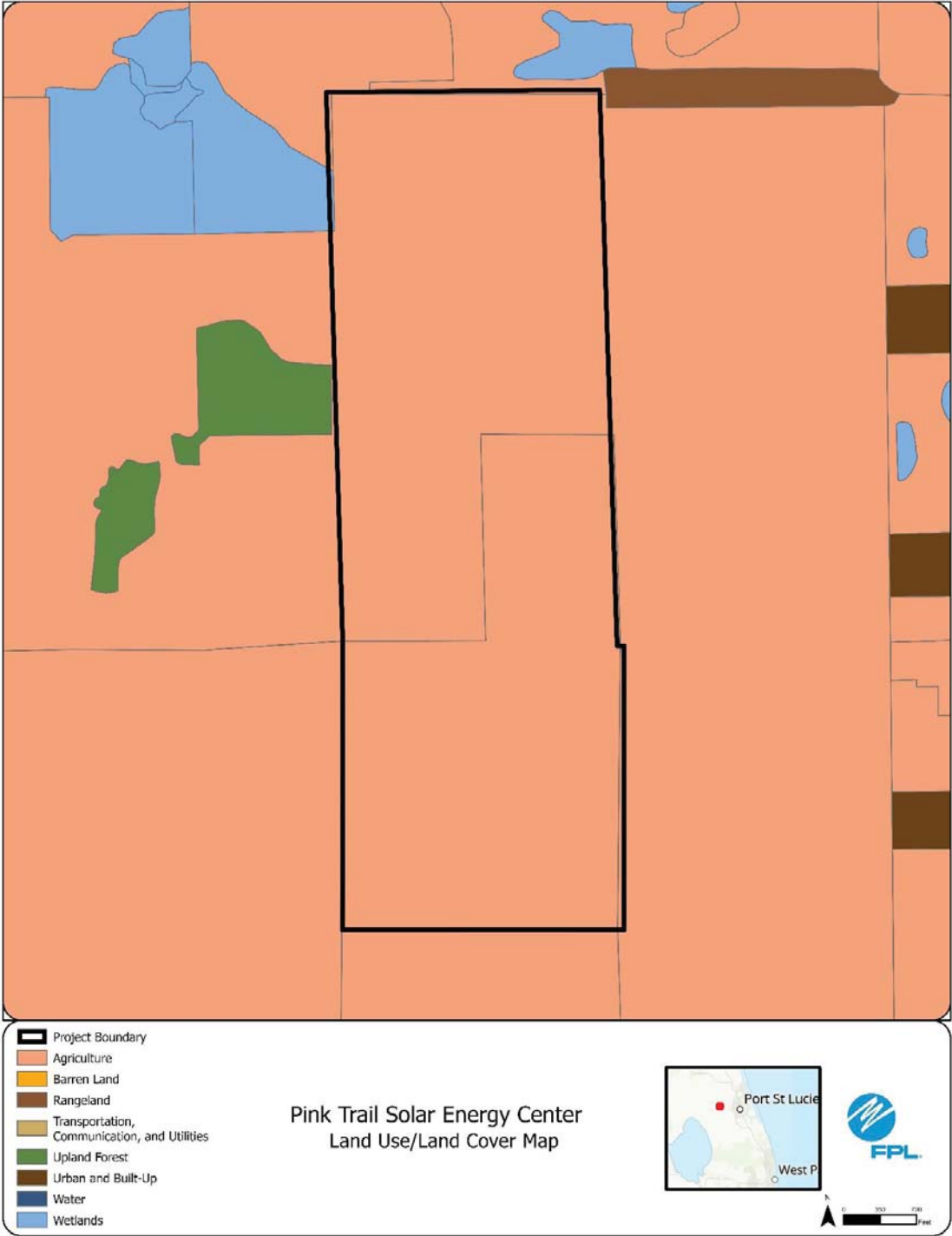


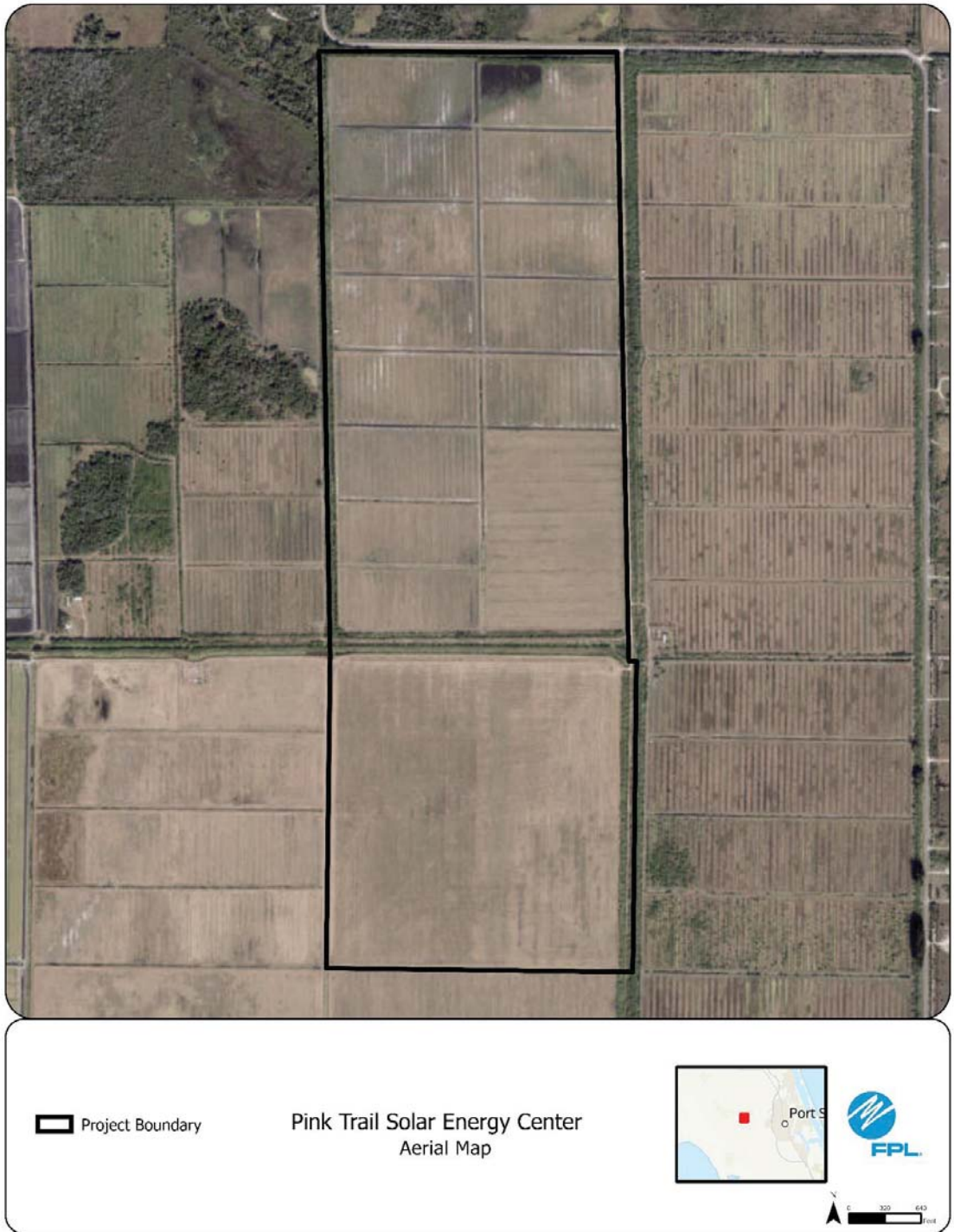
***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #3: Pink Trail Solar Energy Center,
St. Lucie County***

	Preferred Site	Pink Trail Solar Energy Center
	County	St. Lucie
	Facility Acreage	438
	COD	1/31/2023
	For PV facilities: tracking or fixed	Fixed
	Reference Maps	
a.	USGS Map	See Figures in the following pages
b.	Proposed Facilities Layout	
c.	Map of Site and Adjacent Areas	
d.	Land Use Map of site and Adjacent Areas	
e.	Existing Land Uses	
	Site	Agricultural land
	Adjacent Areas	Agricultural land
f.	General Environment Features On and In the Site Vicinity	
1.	Natural Environment	The site is predominantly comprised of improved pasture and drainage ditches.
2.	Listed Species	No adverse impacts to listed species are anticipated.
3.	Natural Resources of Regional Significance Status	Teague Hammock Preserve and Paleo Hammock Preserve is located adjacent to the site to the Northwest.
4.	Other Significant Features	Prehistoric human remains located in Northwest corner of site.
g.	Design Features and Mitigation Options	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	Local Government Future Land Use Designations	Solar power generation is allowed within existing Agricultural land use designation.
i.	Site Selection Criteria Factors	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	Water Resources	Existing onsite water resources will be used to meet water requirements.
k.	Geological Features of Site and Adjacent Areas	See Figure in the following pages. Site is located in the South Florida region.
l.	Project Water Quantities for Various Uses	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	Water Supply Sources by Type	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	Water Conservation Strategies Under Consideration	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	Water Discharges and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
p.	Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
q.	Air Emissions and Control Systems	Fuel - PV Solar 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
r.	Noise Emissions and Control Systems	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s.	Status of Applications	USACE 404 Permit received: GP received 1/7/2022 FDEP Environmental Resources Permit (ERP) received: TBD



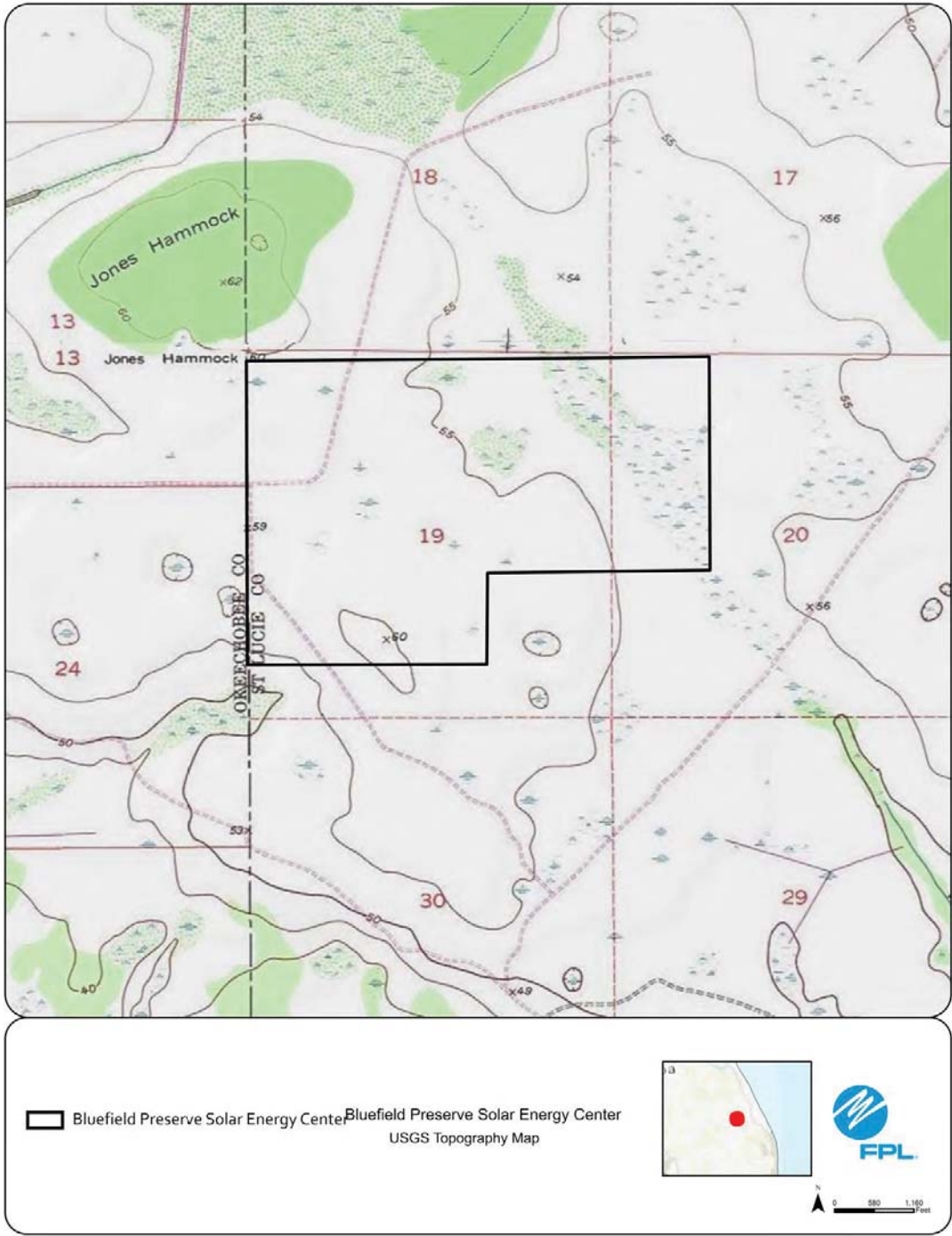


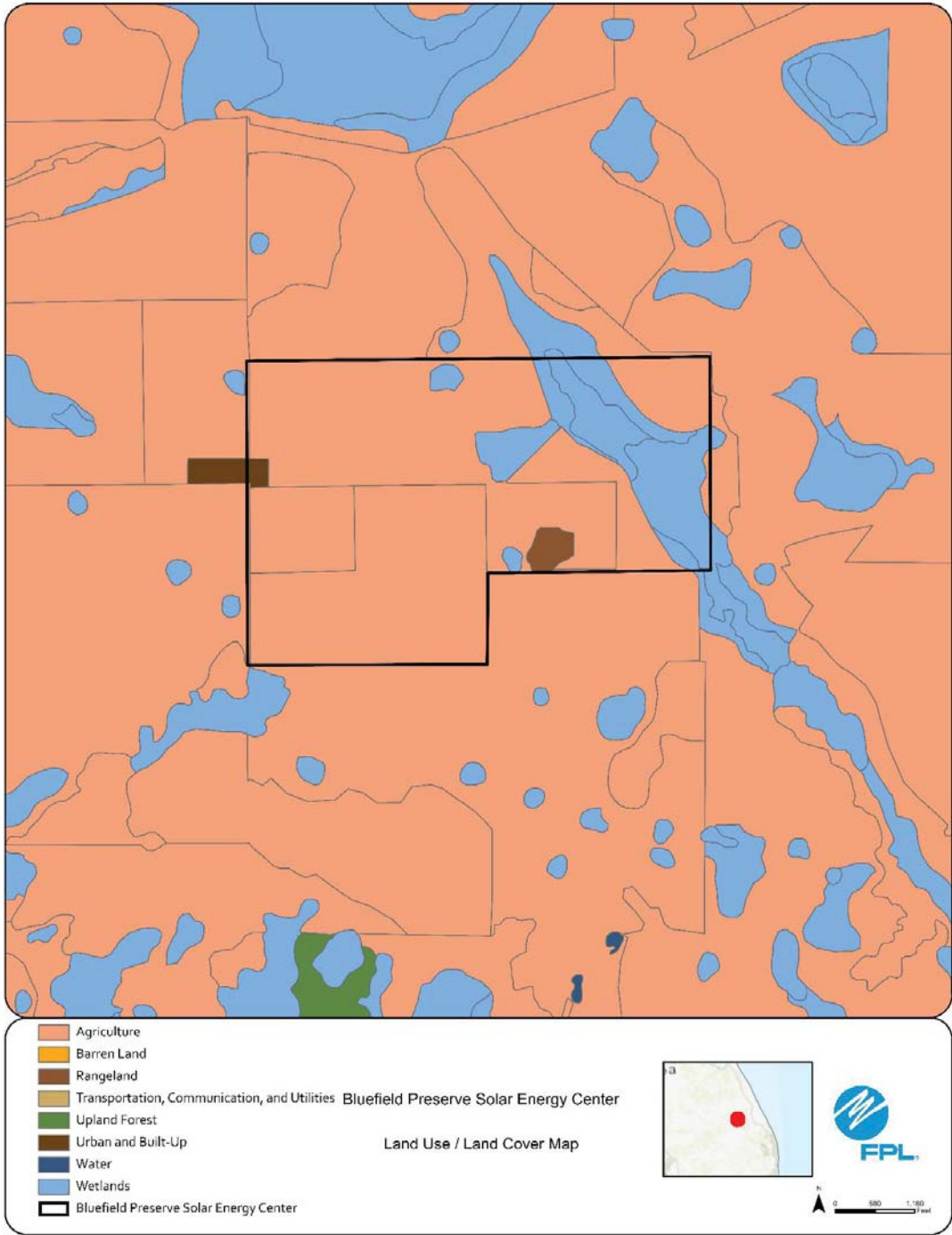


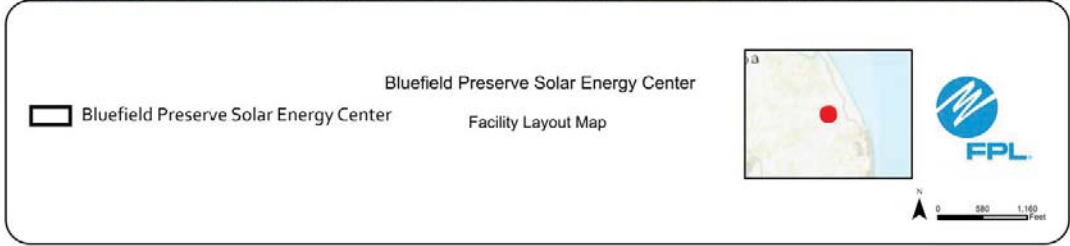
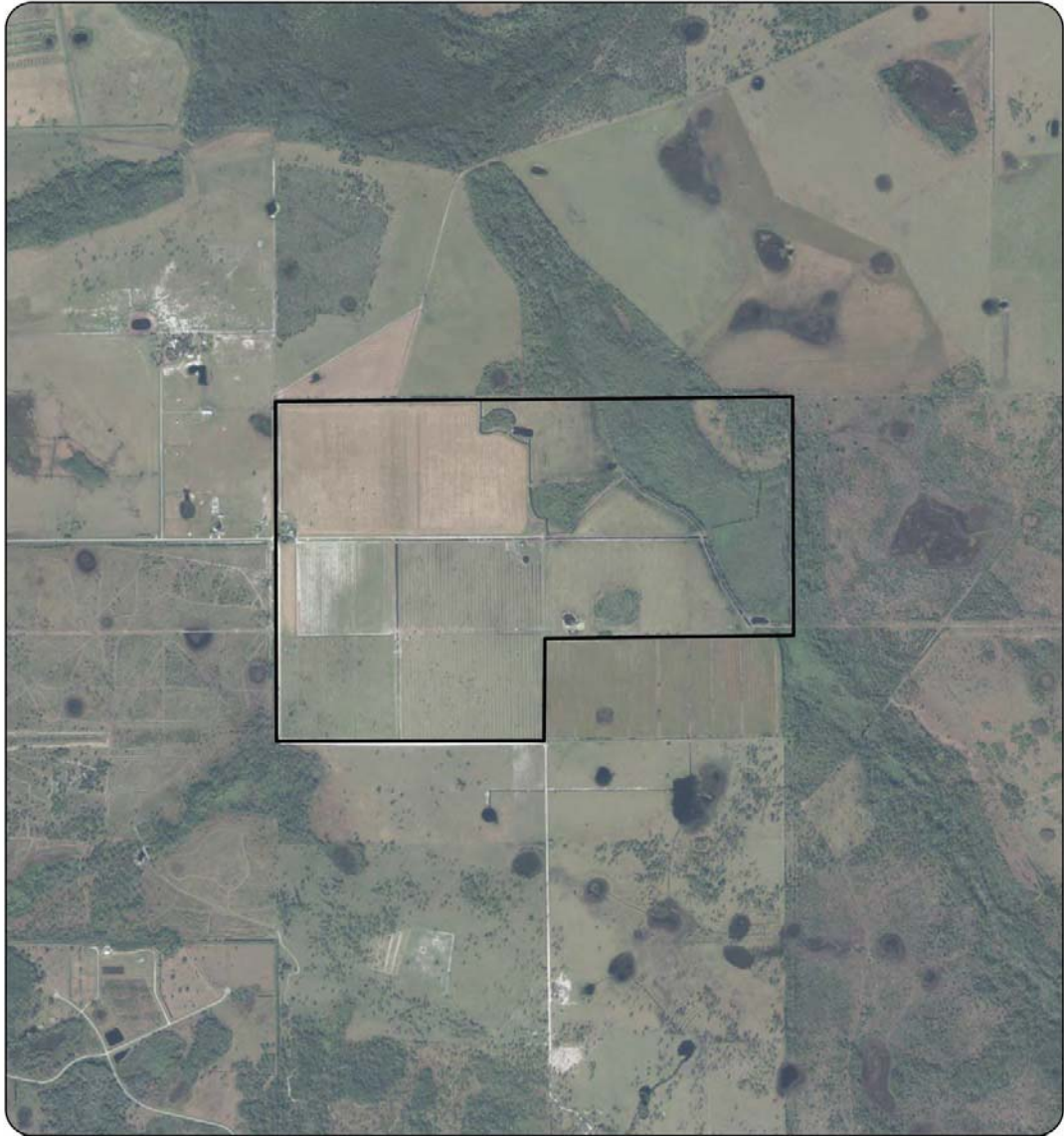
***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #4: Bluefield Preserve Solar Energy Center,
St. Lucie County***

	Preferred Site	Bluefield Preserve Solar Energy Center
	County	St. Lucie
	Facility Acreage	440
	COO	1/31/2023
	For PV facilities: tracking or	Fixed
	Reference Maps	
a.	USGS Map	See Figures in the following pages
b.	Proposed Facilities Layout	
c.	Map of Site and Adjacent Areas	
d.	Land Use Map of site and Adjacent Areas	
e.	Existing Land Uses	
	Site	Agricultural lands
	Adjacent Areas	Agricultural lands, mitigation bank
f.	General Environment Features On and In the Site Vicinity	
1.	Natural Environment	The site is predominantly comprised of improved pasture, wetland hardwood forests and drainage ditches.
2.	Listed Species	Minimal, if any, impacts will occur to listed species. Prior to project commencement a gopher tortoise sweep will be conducted, primarily within the pine flatwood preserve area. It is anticipated that any burrows can be preserved in place without impact, and a FWC permit will not be required.
3.	Natural Resources of Regional Significance Status	Bluefield Ranch Mitigation Bank is located adjacent to the site to the east.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	Design Features and Mitigation Options	The design includes an approximately 74.5 MW solar fixed panel PV facility, on-site transmission substation, and site stormwater system. The project design has avoided all wetland impacts, so no compensatory mitigation is required.
h.	Local Government Future Land Use Designations	Solar power generation is allowed within existing Agricultural land use designation.
i.	Site Selection Criteria Factors	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	Water Resources	Existing onsite water resources will be used to meet water requirements.
k.	Geological Features of Site and Adjacent Areas	See Figure in the following pages. Site is located in the South Florida region.
l.	Project Water Quantities for Various Uses	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	Water Supply Sources by Type	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	Water Conservation Strategies Under Consideration	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	Water Discharges and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
p.	Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Fuel - PV Solar 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.	Air Emissions and Control Systems	Fuel - PV Solar 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
r.	Noise Emissions and Control Systems	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s.	Status of Applications	State 404 No Permit Required (NPR) received: Pending FDEP Environmental Resources Permit (ERP) received: 11/16/2021



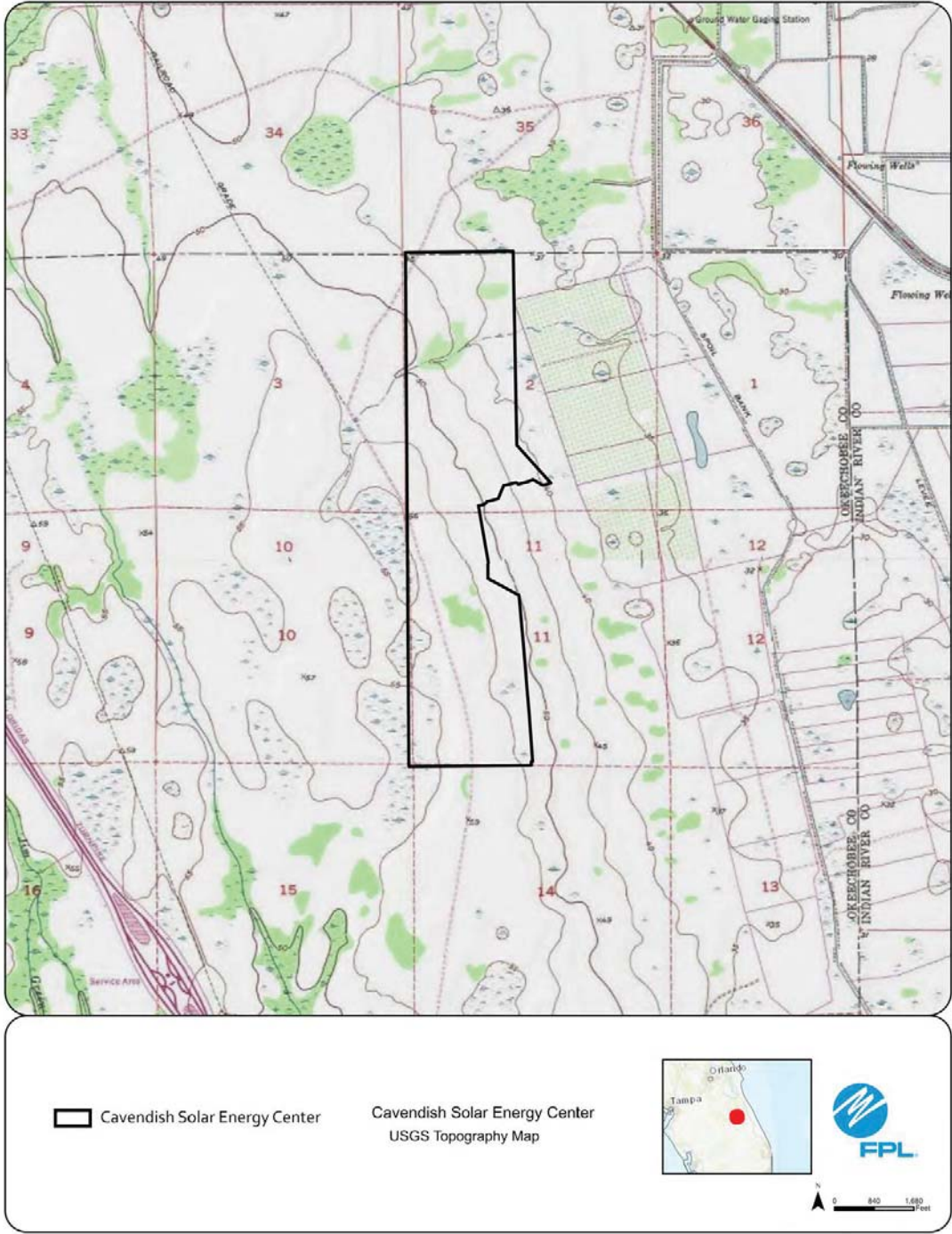


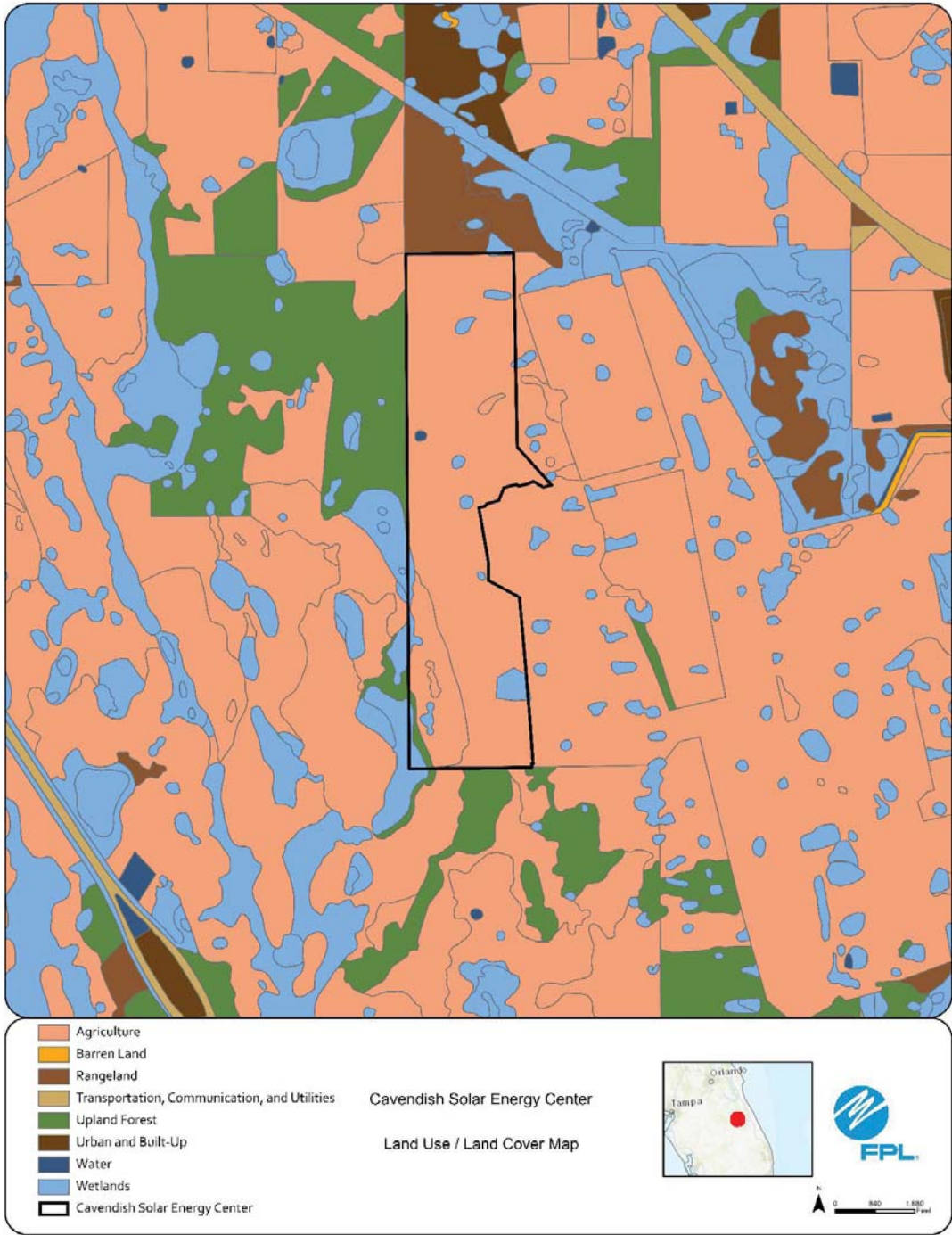


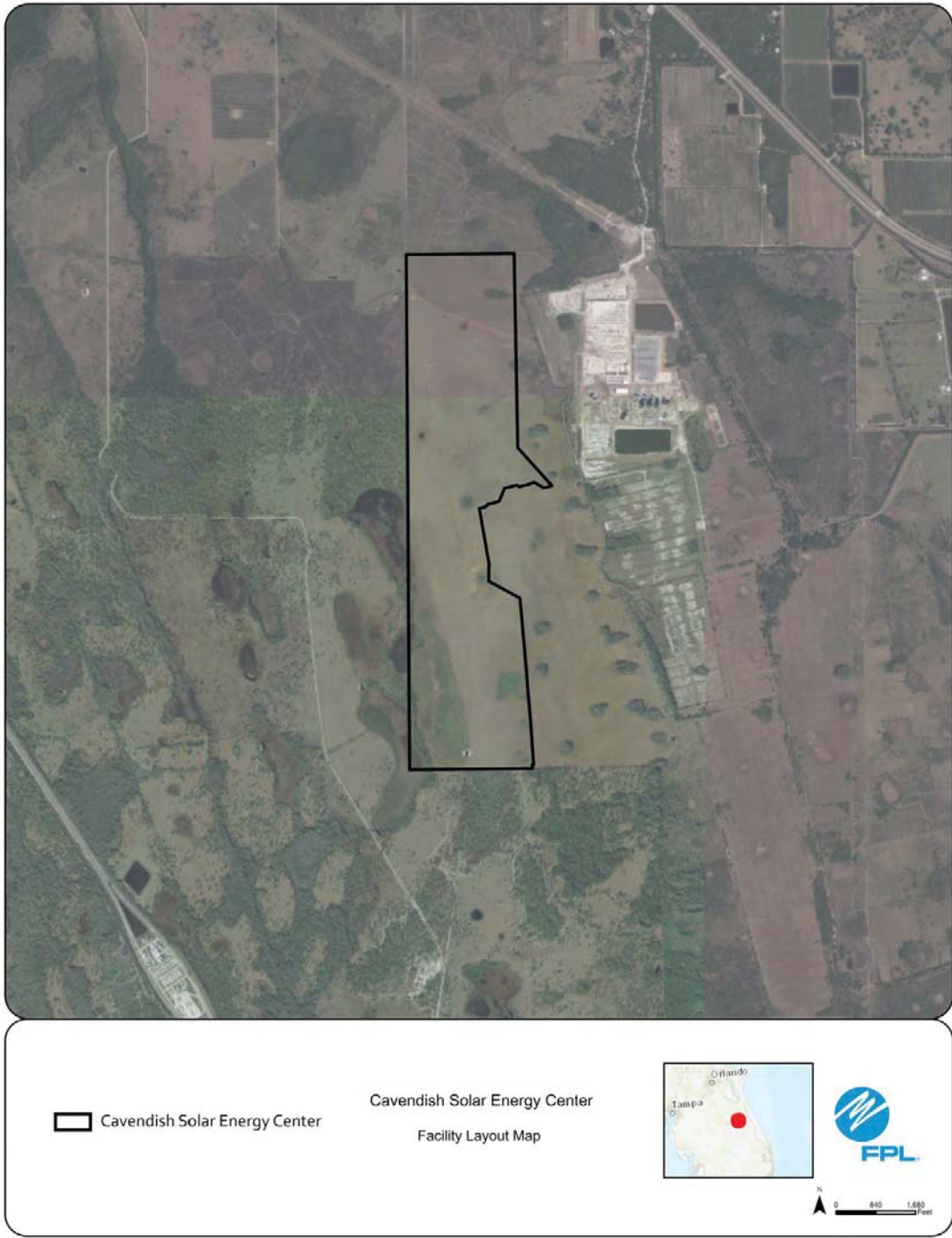
***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #5: Cavendish Solar Energy Center,
Okeechobee County***

	Preferred Site	Cavendish Solar Energy Center
	County	Okeechobee
	Facility Acreage	930
	COD	1/31/2023
	For PV facilities: tracking or	Tracking
	Reference Maps	
a.	USGS Map	See Figures in the following pages
b.	Proposed Facilities Layout	
c.	Map of Site and Adjacent Areas	
d.	Land Use Map of site and Adjacent Areas	
e.	Existing Land Uses	
	Site	Pastureland and fallow crop land
	Adjacent Areas	Pastureland, conservation, and existing electrical utility
f.	General Environment Features On and In the Site Vicinity	
1.	Natural Environment	The site is comprised of pastureland with some pine Flatwoods, mixed forested wetlands, saw palmetto prairie, and freshwater marsh.
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	The Cavendish Solar site is near the Ft. Drum Marsh Conservation Area.
4.	Other Significant Features	FPL is not aware of any other significant features of the site.
g.	Design Features and Mitigation Options	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	Local Government Future Land Use Designations	Local government future land use designation includes agricultural production and power generation.
i.	Site Selection Criteria Factors	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	Water Resources	Existing onsite water resources will be used to meet water requirements.
k.	Geological Features of Site and Adjacent Areas	See Figure in the following pages. Site is located in the South Florida region.
l.	Project Water Quantities for Various Uses	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	Water Supply Sources by Type	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	Water Conservation Strategies Under Consideration	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	Water Discharges and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
p.	Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
q.	Air Emissions and Control Systems	Fuel - PV Solar 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
r.	Noise Emissions and Control Systems	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s.	Status of Applications	USACE 404 Permit received: N/A FDEP Environmental Resources Permit (ERP) received: October 1, 2021







***Site Description, Environmental, and Land Use Information:
Supplemental Information***

***Preferred Site #6: Anhinga Solar Energy Center,
Clay County***

	Preferred Site	Anhinga Solar Energy Center
	County	Clay
	Facility Acreage	494
	COD	1/31/2023
	For PV facilities: tracking or	Tracking
	Reference Maps	
a.	USGS Map	See Figures in the following pages
b.	Proposed Facilities Layout	
c.	Map of Site and Adjacent Areas	
d.	Land Use Map of site and Adjacent Areas	
e.	Existing Land Uses	
	Site	Pine Plantation
	Adjacent Areas	Solar Energy Center, Pine Plantation, and Small residential.
f.	General Environment Features On and In the Site Vicinity	
1.	Natural Environment	This site is mostly comprised of coniferous pine plantation with mixed hardwood wetlands and a burrow pit onsite.
2.	Listed Species	No adverse impacts to listed species are anticipated.
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.
g.	Design Features and Mitigation Options	The design includes an approximately 74.5 MW solar tracking panel PV facility, on-site transmission substation, and site stormwater system. Mitigation for unavoidable impacts, if required, may occur through a combination of on- and off-site mitigation.
h.	Local Government Future Land Use Designations	Local government future land use for this site is Agriculture.
i.	Site Selection Criteria Factors	The site selection criteria included system load, transmission interconnection, economics, and environmental compatibility (e.g., wetlands, wildlife, threatened and endangered species, etc.).
j.	Water Resources	Existing onsite water resources will be used to meet water requirements.
k.	Geological Features of Site and Adjacent Areas	See Figure in the following pages. Site is located in the Panhandle Florida region.
l.	Project Water Quantities for Various Uses	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable: Minimal, existing permitted supply Panel Cleaning: Minimal and only in absence of sufficient rainfall.
m.	Water Supply Sources by Type	Cooling: Not Applicable for Solar Process: Not Applicable for Solar Potable and Panel Cleaning: Delivered to Site by Truck or via existing permitted supply.
n.	Water Conservation Strategies Under Consideration	Solar (PV) does not require a permanent water source. Additional water conservation strategies include selection and planting of low-to-no irrigation grass or groundcover.
o.	Water Discharges and Pollution Control	Solar does not require fuel and no waste products will be generated at the site.
p.	Fuel Delivery, Storage, Waste Disposal, and Pollution Control	Fuel - PV Solar 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.	Air Emissions and Control Systems	Fuel - PV Solar 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
r.	Noise Emissions and Control Systems	PV Solar energy generation does not emit noise therefore there will be no need for noise control systems.
s.	Status of Applications	USACE 404 Permit received: TBD FDEP Environmental Resources Permit (ERP) received: TBD

