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April 3, 2023

-VIA ELECTRONIC FILING-

Mr. Adam Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

Re: Docket No. 20230001-EI

Dear Mr. Teitzman:

Dear Mr. Teitzman:

Attach for electronic filing in the above referenced docket are (i) Florida Power & Light Company's ("FPL") Petition for Approval of Solar Base Rate Adjustment To Be Effective 2024; and (ii) the prepared testimony and exhibits of FPL witnesses Kelly Fagan and Andrew W. Whitley in support of the Solar Base Rate Adjustment.

Please feel free to contact me with any questions regarding this filing.

Sincerely,

s/ Maria Jose Moncada
Maria Jose Moncada

:21237779

Attachments

cc: Counsel for Parties of Record (w/ attachment)

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Fuel and purchased power cost recovery clause with generating performance incentive factor	Docket No. 20230001-EI Date: April 3, 2023

FLORIDA POWER & LIGHT COMPANY'S PETITION FOR APPROVAL OF SOLAR BASE RATE ADJUSTMENT TO BE EFFECTIVE 2024

Florida Power & Light Company ("FPL" or the "Company"), pursuant to the rate settlement approved by this Commission in Order No. PSC-2021-0446-S-EI, as amended by Order No. PSC-2021-0446A-S-EI (the "2021 Rate Settlement" or "Settlement"), requests that the Florida Public Service Commission ("Commission") find that the proposed new solar generation described herein satisfies the requirements for a solar base rate adjustment ("SoBRA"). Comprised of 12 solar energy centers scheduled to be placed in service by January 31, 2024 (the "2024 Project"), the proposed solar generation is designed to deliver high reliability and is projected to save customers $561 million.

FPL further requests that the Commission authorize FPL to implement a SoBRA upon the commercial operation date of the 2024 Project.

In support of the Petition, FPL states as follows:

1. The name and address of the Petitioner is:

Florida Power & Light Company
700 Universe Boulevard
Juno Beach, Florida 33408

Any pleading, motion, notice, order or other document required to be served upon the petitioner or filed by any party to this proceeding should be served upon the following individuals:

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2. The Commission has jurisdiction pursuant to Sections 366.04, 366.05 and 366.06, Florida Statutes.

3. FPL is a corporation organized and existing under the laws of the State of Florida and is an electric utility as defined in section 366.02(2), Florida Statutes.

4. This Petition is being filed consistent with Rule 28-106.201, Florida Administrative Code. The agency affected is the Florida Public Service Commission, located at 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399. This case does not involve reversal or modification of an agency decision or an agency's proposed action. Therefore, subparagraph (c) and portions of subparagraphs (b), (e), (f) and (g) of subsection (2) of that rule are not applicable to this Petition. In compliance with subparagraph (d), FPL states that it is not known which, if any, of the issues of material fact set forth in the body of this Petition may be disputed by any others who may plan to participate in this proceeding. The discussion below demonstrates how the petitioner's substantial interests will be affected by the agency determination.

Introduction

5. Pursuant to FPL's 2021 Rate Settlement, FPL may construct up to 894 megawatts[1] ("MW") of solar generation estimated to enter service in 2024. FPL is authorized to recover the costs of the solar generation project through a SoBRA when the solar project is placed in service so long as FPL demonstrates that (i) FPL's SoBRA recovery does not exceed the applicable cost cap, (ii) the costs are reasonable and (iii) the solar project is cost-effective.

6. As contemplated by the 2021 Rate Settlement, the Company is undertaking construction of 12 solar energy centers totaling 894 MW that will be placed into commercial operation in 2024, each one generating enough energy to serve the annual energy needs of about 13,800 homes. Accordingly, FPL files this Petition, along with the testimony and exhibits of witnesses Kelly Fagan and Andrew Whitley, to demonstrate that FPL's requested SoBRA recovery does not exceed the cost cap; that the costs of the 2024 Project are reasonable; and that adding this solar generation to FPL's system is cost-effective. FPL will include with its projection filing in this docket (scheduled to be filed September 5, 2023) testimony to support the revenue requirement calculation and the appropriate percentage increase in base rates associated with FPL's requested SoBRA recovery for the 2024 Project.

The 2024 Solar Energy Centers

Technology and Equipment

7. The 2024 Project is comprised of 12 solar energy centers estimated to enter commercial operation by January 31, 2024. The centers are sited in eight different counties, spanning from as far south as Hendry County to Okaloosa County in Northwest Florida. Collectively, these sites will generate a total of 894 MW (nameplate capacity).

[1] All units of electric generation mentioned in this Petition refer to "alternating current."

8. The 2024 Project will utilize about two million photovoltaic ("PV") panels that convert sunlight to direct current ("DC") electricity at a highly efficient conversion rate of about 20.8%. The panels for each center will be tied together electrically in groups and connected to an electronic device called a power conversion unit ("PCU"), which includes inverters that transform the DC electricity produced by the PV panels into alternating current ("AC") electricity. As described by FPL witness Fagan, the DC-to-AC ratio for the solar energy centers that comprise the 2024 Project will range from 1.20 to 1.45, depending on site and equipment characteristics unique to each center.

9. The 12 solar energy centers that comprise the 2024 Project are located sufficiently close to transmission corridors with available capacity to carry the energy generated by the centers. As a result, there are no network upgrade costs required on the transmission system for any of these solar centers.

10. FPL achieves customer benefits from each unique solar energy center by optimizing its selection of equipment and the layout available at each site. A feature common to all solar energy centers comprising the 2024 Project is the use of single-axis tracking systems, which means the structures that support the solar panels will "track" the sun's path as it moves throughout day. Recent design and manufacturing improvements in single-axis tracking technology supports higher wind loading, thus allowing for further expansion of their use. All other factors being equal, the use of tracking technology offers higher generation output, thus driving greater economic benefits by displacing more fuel and creating more production tax credits for solar generation afforded under the Inflation Reduction Act.

11. Once placed into service, the 2024 Project will benefit from FPL's proprietary monitoring and performance analysis tools that optimize plant operations and drive process

efficiencies. The 12 solar energy centers will be monitored at FPL's Fleet Performance and Diagnostics Center, which identifies potential problems earlier than traditional detection methods. The centers will be operated from FPL's Renewable Operations Control Center ("ROCC"), where daily work activities for all of FPL's existing solar generation units are managed remotely and efficiently. The ROCC allows FPL to deploy best practices effectively and perform preventative maintenance in the most efficient way possible with the goal of continuously reducing lost energy and production costs. Finally, the 12 solar energy centers will be supported by regional operations centers that are able to position staffing resources in locations that ensure a timely response to problems as they arise.

2024 Project Costs

12. Paragraphs 12(a) and 12(j) of FPL's 2021 Rate Settlement establish a ceiling on FPL's SoBRA recovery. The "Cost Cap" for SoBRA recovery is $1,250 per kW. The Settlement further provides that the Cost Cap must be reduced for any solar energy center sited on land that already is included in rate base as Plant Held for Future Use ("PHFU") as shown on the exhibit labeled MV-5 in Docket 20210015-EI. This reduced Cost Cap is referred to as the "Adjusted Cap."

13. FPL satisfies the Settlement by calculating the Cost Cap or Adjusted Cap for each of the 12 solar energy centers that comprise the 2024 Project and limiting the amount to be recovered through the SoBRA accordingly. The testimony of FPL witness Fagan sets forth the Adjusted Cap calculation per center, as well as the Project's overall average Adjusted Cap. The

average Adjusted Cap for the 2024 Project – and the limit on FPL's SoBRA recovery – is $1,178 per kW.

14. The estimated cost to construct each solar energy center, adjusted for PHFU, ranges from $1,392 per kW to $1,772 per kW. On an overall basis, the 2024 Project's average adjusted estimated cost is $1,563 per kW. Consistent with the Settlement, FPL is not requesting SoBRA recovery of the $385 per kW difference between the adjusted estimated cost and the Adjusted Cap.

SoBRA Recovery Calculation (per Paragraphs 12(a), 12(j) of Settlement)				**FPL's Construction Costs**	
	Settlement Cost Cap	**MV-5 PHFU value**	**Adjusted Cap/ SoBRA recovery amount**	**Estimated Cost**	**Estimated Cost Less MV-5 PHFU value ($72)**
2024 Project Average per kW	$1,250	$72	**$1,178**	$1,635	$1,563

15. The costs of the 2024 Project are reasonable given economic and market conditions. As explained in the testimony of FPL witness Fagan, a number of factors drove increased costs compared to what FPL had projected when the $1,250 per kW Cost Cap was established. The solar construction sector was not insulated from general inflationary pressures that have been experienced by the rest of the economy. Since 2021, inflation and higher demand for solar generation have caused sharp increases in the cost of materials and labor. In addition, three other factors specific to the solar sector drove cost increases not contemplated at the time FPL entered the 2021 Rate Settlement:

- Solar panel prices increased due to the solar market's reaction to a U.S. Department of Commerce inquiry into whether importers of panels from certain Southeast Asian countries were attempting to circumvent anti-dumping duty and countervailing duty orders on solar cells and panels manufactured in China ("Circumvention Inquiry"), which orders impose tariffs of up to 254%;

- The cost of polysilicon, the basic component in solar panel manufacturing, substantially increased in the period after FPL entered the 2021 Settlement. This increase was due to supply constraints, as well as a June 2022 importation restriction related to all goods from the Xinjiang region of China, with a heavy enforcement emphasis on imported polysilicon; and
- Advancements in single-axis tracker technology facilitated FPL's ability to employ exclusive use of these systems, which have higher capital cost compared to fixed-tilt system (but yield incremental customer benefits that exceed the capital costs).

16. The largest portion of the increase in construction cost is due to the rise in solar panel costs resulting from the Circumvention Inquiry, the increase in the price of polysilicon, and inflationary pressures, which combined to contribute $210 per kW of incremental project costs. The change to exclusive use of single-axis trackers added an additional $85 per kW. The remainder of the pricing increase is due to general inflationary pressures and higher demand for solar, which impacted the cost of construction labor and materials for the balance of the plant.

17. As it has done for all solar projects built to date, FPL employed a comprehensive procurement process to ensure the reasonableness of its construction costs, notwithstanding the increases caused largely by factors outside of FPL's control. All of the costs for surveying, engineering, equipment, materials and construction services were established through competitive bidding processes. FPL solicited proposals for the supply of solar panels from more potential bidders than it had ever previously included, and it evaluated bidders based not only on cost but also on their ability to navigate the trade and importation measures described above. Through its robust competitive bidding process, FPL also secured the lowest-cost qualified bidders for PCUs

and power step-up transformers, as well as the engineering, procurement and construction for the solar facilities, substations and interconnection facilities.

The 2024 Project is Cost-Effective

18. The 2021 Rate Settlement provides that SoBRA-eligible projects must be cost-effective, and it defines cost-effective as having a lower projected system cumulative present value revenue requirement ("CPVRR") with the project compared to the system CPVRR without it. As explained more fully by FPL witness Whitley, adding the 2024 Project's 894 MW of solar generation to FPL's fleet is projected to save customers $561 million and is therefore cost-effective.

19. To evaluate cost-effectiveness, FPL compared a resource plan that excludes the 2024 Project to a plan that includes it: the "No 2024 SoBRA Plan" and the "2024 SoBRA Plan," respectively. Both plans use the same major system assumptions, including the Company's load, fuel price and carbon dioxide ("CO_2") price forecasts, the same forecasts used in FPL's 2023 Ten Year Site Plan. The No 2024 SoBRA Plan does not include any new solar facilities beyond those already in-service as of the end of 2024 and assumes that future resource needs are met by combined cycle units and battery storage. The 2024 SoBRA Plan includes the 12 solar energy centers and reflects the $1,635 per kW estimated cost of construction (not the Adjusted Cap). The net capacity factor for the 2024 Project is 27.5%. And, because the 2024 Project is assumed to provide 46% firm nameplate capacity to satisfy reliability obligations, the 2024 SoBRA Plan defers staggered in-service dates of 1,100 MW of battery storage by one year (in-service dates from 2025 through 2027 to 2026 through 2028), defers the combined cycle one year from 2028 to 2029 and reduces the size of battery storage necessary in 2031 and 2032 by 1,100 MW.

20. FPL used the capacity expansion and hourly production cost functions of the Aurora model to forecast the system economics and develop resource plans that include or exclude the 2024 Project. The Aurora modeling runs determine the optimal resource plan and associated generation system costs, consisting of capital costs, fixed operations and maintenance ("O&M") costs, capital replacement costs, fuel costs, variable O&M costs and emissions costs. This is used to determine the CPVRR for each resource plan. To determine the CPVRR impact of the proposed 2024 Project, FPL subtracted the CPVRR of the No 2024 SoBRA Plan from the CPVRR of the 2024 SoBRA Plan.

21. Based on the economic analysis, the 2024 Project is cost-effective. FPL customers are projected to save $561 million CPVRR by adding the 12 solar energy centers to its fleet in 2024.

Additional Benefits of the 2024 Project

22. The addition of the 2024 Project also provides non-economic advantages in the form of system, environmental and community benefits.

23. *System and environmental benefits*. The solar energy from the 2024 Project is expected to reduce FPL's annual average use of natural gas by 13,680 million cubic feet. Therefore, the Project reduces FPL's reliance on natural gas and reduces customers' exposure to volatility in the natural gas market. In addition, the reduced use of fossil fuel will, in turn, decrease CO_2 emissions by an average of about 815,000 tons annually. Sulfur dioxide ("SO_2") and nitrogen oxide ("NO_x") emissions also are projected to decline by an annual average of 3 tons and 92 tons, respectively.

24. *Community benefits*. The 2024 Project will create about 2,400 jobs at the height of construction, providing an economic boost to local businesses. This construction in Florida will increase annual tax revenue for each of the counties where the sites are situated, thus contributing

to the funding of public services that benefit those communities both during construction and after the centers enter service.

Conclusion

25. As set forth in this Petition and the accompanying testimony, the 2024 Project satisfies the requirements established in the Settlement. FPL requests SoBRA recovery only up to the Settlement's prescribed Adjusted Cap, which, for the 2024 Project is $1,178 per kW. The total cost of construction of $1,635 per kW ($1,563 per kW adjusted) is reasonable, although higher than anticipated at the time FPL entered the 2021 Rate Settlement. FPL has undertaken a robust competitive bidding process for the major equipment components, as well as engineering and construction, to ensure the reasonableness of these costs. Further, adding the 2024 Project to FPL's system is estimated to save customers approximately $561 million CPVRR. It will improve FPL's fuel diversity and reduce customer exposure to fuel price volatility. Finally, it also will reduce CO_2, SO_2 and NO_x emissions, providing cleaner air for all Florida residents to enjoy for years to come.

26. Accordingly, the Commission should enter a final order determining that FPL's 2024 Project satisfies the requirements for SoBRA approval set forth in the 2021 Rate Settlement and authorizing FPL to recover the associated revenue requirements when the 2024 Project enters commercial operation. Calculation of the revenue requirements and the appropriate percentage increase in base rates associated with FPL's requested SoBRA recovery will be presented at the time of FPL's projection filing in this docket.

WHEREFORE, for the foregoing reasons and as more fully set forth in the supporting testimony and exhibits filed with and incorporated in this Petition, Florida Power & Light Company requests that the Commission authorize FPL to implement a solar base rate adjustment when the 2024 Project enters commercial service.

Respectfully submitted,

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By: *s/ Maria Jose Moncada*
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CERTIFICATE OF SERVICE
Docket No. 20230001-EI

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished by electronic service on this 3rd day of April 2023 to the following:

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By: *s/ Maria Jose Moncada*
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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

TESTIMONY OF KELLY FAGAN

DOCKET NO. 20230001-EI

APRIL 3, 2023

Q. Please state your name and business address.

A. My name is Kelly Fagan, and my business address is 700 Universe Boulevard, Juno Beach, Florida, 33408.

Q. By whom are you employed and what is your position?

A. I am employed by NextEra Energy Resources, LLC as Project Director in the Engineering & Construction division.

Q. Please summarize your educational background and professional experience.

A. In 1994, after serving in the United States Marine Corps, I transitioned into the civilian work force as an electrical apprentice, completing all four years of my apprenticeship while working in the field as construction lead and eventually an Assistant Project Manager. As a journeyman electrician I became a full Electrical Project Manager for large commercial and industrial projects across Northern Florida. In 2000 I also earned my Bachelor of Science Degree in Electrical and Computer engineering from the University of Florida. After obtaining my degree, I worked as a Lead Manufacturing Engineer for Motorola, Inc. and later served in a similar role for Sunbeam Corporation. In 2005, I

obtained my electrical contractor's license and started an electrical contracting firm that focused on commercial and industrial projects in South Florida.

I joined FPL in 2009 as the General Manager of Production Assurance and later held various roles with responsibility for fleet reliability across Florida. In 2014, I joined the Engineering and Construction Department as a Senior Project Manager. In that role, I managed the early stage engineering and construction of multiple solar sites across Florida. I was responsible for the preliminary design, permitting, approvals, procurement, and contracting of Florida solar sites. This included all aspects of the project from initial due diligence for land acquisition to final permitting for the solar arrays, as well as any associated battery storage, transmission, and substations.

In 2019, I was promoted to Senior Manager responsible for the early stage objectives for all of FPL's solar and battery storage projects. In this role, I coordinated the work of the early stage solar project team and site developers to optimize the performance and costs of FPL's solar portfolio. I assumed my current role in late 2021.

Q. What is the purpose of your testimony?

A. First, I describe the 12 universal photovoltaic ("PV") solar energy centers expected to begin commercial operation by January 31, 2024 ("2024 Project") for which FPL seeks recovery pursuant to the Solar Base Rate Adjustment Provision of the Company's 2021 Rate Settlement Agreement approved by

Order Nos. PSC-2021-0446-S-EI and PSC-2021-0446A-S-EI ("2021 Rate Settlement" or "Settlement"). I provide a description of the solar energy centers, including the technology, engineering design parameters, and overall construction schedules. Second, I demonstrate that FPL satisfies the cost requirements included in the 2021 Rate Settlement that the 2024 Project's costs not exceed the prescribed cost cap and that the estimated cost of the components, engineering, and construction for the 2024 Project is reasonable.

Q. Please summarize your testimony.

A. My testimony demonstrates that FPL has selected components and technology for the 2024 Project that will deliver high levels of efficiency and reliability to serve FPL customers. In addition, FPL has undertaken a competitive procurement process to ensure its costs are reasonable. FPL satisfies the prescribed cost caps by limiting its SoBRA recovery to the amounts required by the Settlement, even though, as I will explain, the cost to construct solar projects has increased significantly.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following exhibits:

- Exhibit KF-1 – List of FPL Solar Energy Centers in Service
- Exhibit KF-2 – FPL 2024 Solar Energy Center Maps
- Exhibit KF-3 – Typical Solar Energy Center Block Diagram
- Exhibit KF-4 – Specifications for 2024 Solar Energy Centers
- Exhibit KF-5 – Construction Schedules for the 2024 Solar Energy Centers

- Exhibit KF-6 – Capital Cost Table
- Exhibit KF-7 – Cost Increase Waterfall

I. 2024 Project Description

Q. Please describe FPL's experience in designing and building solar energy facilities.

A. FPL is leading one of the nation's largest solar programs and is currently Florida's largest generator of solar power. Since 2009, FPL has completed 63 solar energy centers totaling approximately 4,580 MW_{AC}. The existing FPL solar energy centers range in size from 10 MW_{AC} to 74.5 MW_{AC}. Exhibit KF-1 provides a list of the FPL universal PV solar energy centers currently in service. FPL completed construction of the 63 solar energy centers an average of nine days early and at a total cost that fell 2.8% or nearly $181.7 million below the cumulative budget. By the middle of 2023, FPL will place three additional solar sites into service, bringing the total to 66 solar energy centers in service with a total nameplate rating of 4,803 $MW_{AC.}$

Q. Please identify the solar energy centers that comprise the 2024 Project.

A. FPL is constructing 12 additional solar energy centers estimated to be in service by January 31, 2024. These are (i) Terrill Creek Solar Energy Center in Clay County, (ii) Silver Palm Solar Energy Center in Palm Beach County, (iii) Ibis Solar Energy Center in Brevard County, (iv) Orchard Solar Energy Center which is located on land that straddles the border between St. Lucie County and Indian River County, (v) Beautyberry Solar Energy Center in Hendry County,

(vi) Turnpike Solar Energy Center in Indian River County, (vii) Monarch Solar Energy Center in Martin County, (viii) Caloosahatchee Solar Energy Center in Hendry County, (ix) White Tail Solar Energy Center in Martin County, (x) Prairie Creek Solar Energy Center in DeSoto County, (xi) Pineapple Solar Energy Center in St. Lucie County, and (xii) Canoe Solar Energy Center in Okaloosa County. Each center will have a nameplate capacity of 74.5 MW_{AC}. Exhibit KF-2 more fully describes and depicts the solar energy centers.

Q. Has FPL finalized the site layouts and designs for the solar energy centers?

A. Not at this time. Construction drawings are not finalized. Both my testimony and the analysis presented in FPL witness Whitley's testimony are predicated on the base-line designs. FPL does not foresee material changes to the designs and layouts for these sites.

Q. Please describe the solar technology that FPL plans to use for the 2024 Project and the resulting conversion efficiencies.

A. The 2024 Project will utilize a combination of approximately two million crystalline silicon and 30,000 thin-film solar panels that convert sunlight to direct current ("DC") electricity. These panels will have an average conversion efficiency of approximately 20.8%. This simply means that 20.8% of the solar energy reaching the surface of the panels is converted into DC electrical energy. This level of conversion efficiency is an improvement over recent years and reflects the continued advancement of solar generation technology.

In addition, each of the 12 solar energy centers will use single-axis tracking configurations deployed according to prudent engineering practices. Recent design and manufacturing improvements in single-axis tracking technology support higher wind loading, thus allowing for further expansion of their use. Single-axis tracking systems allow for the solar panels to follow the movement of the sun from east to west throughout the day, maximizing the amount of energy that can be produced by each panel. All other factors being equal, the use of tracking technology offers higher generation output as well as a higher firm capacity value, which contributes to the economic benefits described in the testimony of FPL witness Whitley.

The solar panels will be linked together in groups, with each group connected to an inverter, which transforms the DC electricity produced by the PV panels into alternating current ("AC") electricity. The voltage of AC electricity coming out of each inverter is increased by a series of transformers to match the interconnection voltage for each solar energy center. The inverters are paired with a single medium voltage transformer on a common equipment skid to form a power conversion unit ("PCU"). Depending on the inverter rating, between 19 and 24 PCUs will be installed at each solar energy center to produce the 74.5 MW_{AC} of capacity. Exhibit KF-3 provides a typical block diagram depicting the basic layout of the major equipment components and Exhibit KF-4 provides the specifications for the 12 solar energy centers.

Q. Describe the DC/AC ratio for the 2024 Project.

A. The DC/AC ratio is the ratio of the total installed DC capacity of PV panels to the AC capacity of each solar energy center. The DC/AC ratios for the solar energy centers depend on site conditions and environmental features unique to each location. For the 12 centers that comprise the 2024 Project, the DC/AC ratios will range from 1.20 to 1.45.

Q. Why are the DC/AC ratios not the same for all the solar energy centers?

A. Site and equipment characteristics unique to each of the solar energy centers drive variability in the DC/AC ratios. FPL seeks to achieve the highest level of output, reliability, and customer benefit from each unique solar energy center given the selection of major components and the design optimization possibilities that are available at each location at the time of design.

Q. Please describe whether upgrades to the existing FPL bulk transmission system are required to accommodate these 12 proposed solar energy centers.

A. Whether upgrades to FPL's bulk transmission system are required depends on the available transmission capacity in the area. The 12 solar energy centers that comprise the 2024 Project are sufficiently close to transmission corridors with available capacity to carry the energy generated by the centers. As a result, no network upgrade costs are required on the transmission system for the 2024 Project.

Q. What are the proposed construction schedules and in-service dates for the 2024 Project?

A. FPL expects that the Project will be placed into service by January 31, 2024. The construction schedule includes the time necessary to obtain the required permits, procure materials and contract labor, clear and grade each of the sites, construct access pathways and drainage systems, install the solar generating equipment, erect fencing, build and energize the interconnection facilities, and test and startup each solar facility. The current construction schedules as shown in Exhibit KF-5 support the proposed commercial in-service date of January 31, 2024.

Q. As of April 3, 2023, what is the status of the certifications and permits required to begin construction for the solar energy centers?

A. Of the 12 sites that are part of the 2024 Project, ten have received all federal, state, and local permits required to begin construction. The Florida Department of Environmental Protection ("FDEP") has issued an Environmental Resource Permit ("ERP") for all 12 solar energy centers. Eight of the 12 sites also required Section 404 Authorization from the FDEP for impacts to state assumed waters, and all of these permits have been received. Finally, ten of the 12 centers have received the required county site plan approvals with the final two approvals expected by early May 2023.

Q. Please describe how FPL will manage the centers' operations and monitor their performance once each center enters commercial service.

A. The 2024 Project will benefit from monitoring and performance analysis tools that FPL developed and has continuously improved since it began operating universal solar in 2009. These proprietary tools optimize plant operations and drive process efficiencies. For example, the 12 solar energy centers will be monitored at FPL's Fleet Performance and Diagnostics Center ("FPDC"), which uses advanced technology to identify potential problems earlier than traditional detection methods, create automatic directives to investigate and resolve solar field energy losses, and allows the operating teams the opportunity to prevent or mitigate the effects of failures. FPL compares the performance of like components on similar generating units and determines how to make improvements, which often prevents problems before they would otherwise occur. The FPDC technology results in improved service reliability for FPL customers.

In addition, each of the centers that comprise the 2024 Project will be monitored and operated at FPL's Renewable Operations Control Center ("ROCC"), which was established in 2017 to serve as the centralized, remote operations center for all FPL universal solar and energy storage facilities. The ROCC provides a mechanism to efficiently manage daily work activities and ensure effective deployment of best operating practices at all of FPL's renewable energy centers. FPL also utilizes their Center of Work Excellence which centralizes work

schedules and works closely with the ROCC and FPDC to most efficiently create daily work schedules to restore equipment, execute work orders, and perform preventative maintenance in the most efficient way possible with the goal of continuously reducing lost energy and production costs.

Finally, the 12 solar energy centers will be supported by regional operations centers that FPL has staffed across its territory in DeSoto, Clay, and St. Lucie Counties. These regional operations centers support the ongoing maintenance requirements of the solar fleet and position resources in locations that ensure a timely response to any problems that arise.

II. 2024 Project Costs

Q. Please describe the cost-related requirements in the SoBRA provision that you will address.

A. FPL's 2021 Rate Settlement contains two cost-related requirements associated with solar projects for which FPL seeks recovery pursuant to the SoBRA provision. First, FPL's SoBRA recovery is capped at an average of $1,250 per kW_{AC} for the cost of the 2024 Project's components, engineering, and construction (the "Cost Cap"). In the event that the land component allocated to a solar site is already included as Plant Held for Future Use ("PHFU"), the cost of that land is subtracted from the Cost Cap, resulting in an "Adjusted Cap." Second, the Settlement requires that the cost of the 2024 Project's components, engineering, and construction be reasonable.

Q. Does the 2024 Project meet these two cost requirements?

A. Yes. FPL seeks SoBRA recovery only up to the Cost Cap and the Adjusted Cap, as applicable, for each solar site. The calculation of the associated revenue requirement and SoBRA Factor will be covered by other witnesses at the time of FPL's projection filing in this docket. In addition, the costs for the 2024 Project are reasonable, even though, as described below, costs have materially increased.

Q. Please describe the applicable Cost Cap and Adjusted Cap.

A. The Rate Settlement includes a Cost Cap of $1,250 per kW_{AC}, which is then subject to a reduction in the event the solar energy centers use land that is already included as PHFU as identified in FPL's Rate Case in the Exhibit labeled MV-5. Of the 12 solar energy centers that are part of the 2024 Project, ten utilize property identified on MV-5, and the remaining two sites will utilize property FPL acquired after the conclusion of its 2021 Rate Case. Applying the required adjustments, the average Adjusted Cap for the 2024 Project – and the amount FPL seeks to recover through the SoBRA – is $1,178 per kW_{AC}, which is $385 per kW_{AC} less than the average total adjusted estimated cost of $1,563 per kW_{AC}. Table 1 below shows the Adjusted Cap associated with the ten applicable sites, the average Adjusted Cap for the 2024 Project, as well as the total and adjusted estimated costs per site and on average for the 2024 Project.

TABLE 1: COSTS PER SITE AND TOTAL AVERAGE COSTS					
	Settlement Cost Cap ($/kW$_{AC}$)	**Less MV-5 PHFU value ($/kW$_{AC}$)**	**Adjusted Cap (SoBRA recovery amount $/kW$_{AC}$)**	**Estimated Cost ($/kW$_{AC}$)**	**Estimated Cost Less MV-5 PHFU value ($/kW$_{AC}$)**
Terrill Creek	$1,250	$76	$1,174	$1,634	$1,558
Silver Palm	$1,250	$129	$1,121	$1,637	$1,508
Ibis	$1,250	$68	$1,182	$1,557	$1,489
Orchard	$1,250	$40	$1,210	$1,576	$1,536
Beautyberry	$1,250	$209	$1,041	$1,714	$1,505
Turnpike	$1,250	$44	$1,206	$1,528	$1,484
Monarch	$1,250	$95	$1,155	$1,487	$1,392
Caloosahatchee	$1,250	$56	$1,194	$1,827	$1,772
White Tail	$1,250	$105	$1,145	$1,732	$1,627
Prairie Creek	$1,250	—	$1,250	$1,755	$1,755
Pineapple	$1,250	$40	$1,210	$1,513	$1,473
Canoe	$1,250	—	$1,250	$1,661	$1,661
Average Total	$1,250	$72	**$1,178**	$1,635	$1,563

Q. Does FPL's cost estimate include the costs associated with transmission interconnection?

A. Yes. The estimated capital cost for each of the solar energy centers includes the projected cost for the construction of its unique transmission interconnection configuration.

Q. What was the basis for the $1,250 per kW$_{AC}$ Cost Cap included in the Settlement?

A. The $1,250 per kWac Cost Cap included in the Settlement was based on an evaluation of the actual costs incurred for FPL's solar energy centers that were placed in service during late 2020 and early 2021, contracted costs for centers

expected to be placed in service in 2022, and estimated costs for centers expected to be placed in service in 2023. FPL also evaluated the forward cost estimates, available market and commodity projections, and major equipment cost curves available at that time. FPL forecasted that major solar equipment cost curves would continue to decrease consistent with industry trends as supply chains continued maturing. FPL anticipated that this equipment cost decrease would offset the expected escalation in labor and minor material costs. Based on this analysis, FPL determined that the $1,250 per kW_{AC} Cost Cap was an appropriate and achievable target for solar construction that would occur 24-36 months in the future.

Q. Please identify the factors that impacted the cost to build solar since the time FPL projected it could build these solar energy centers at or below $1,250 per kW_{AC}.

A. The primary factors that drove the increases in solar construction costs after FPL entered the Settlement are (i) increased solar panel prices due to (a) a U.S. Department of Commerce ("DOC") inquiry with respect to circumvention of anti-dumping and countervailing duties on solar cells and panels manufactured in China ("Circumvention Inquiry"), and (b) increases in the cost of polysilicon, the basic component in solar panel manufacturing; (ii) increased use of single-axis tracker technology in the 2024 Project; and (iii) general cost increases due to inflation.

Q. Please describe the Circumvention Inquiry.

A. To provide background, United States trade law currently imposes duties and trade measures on goods imported from China into the United States. One such trade measure are the anti-dumping duty and countervailing duty on PV solar cells and panels that are imported from China into the United States ("China AD/CV Duties"), which range from 0% to 254% depending on the exporter of the solar panel. In response to the China AD/CV Duties, PV solar manufacturing operations which support the United States market have predominantly moved out of China and into other southeast Asia locations.

On February 8, 2022, Auxin Solar requested that the DOC initiate an investigation into whether solar cell and panel imports from Malaysia, Vietnam, Thailand, and Cambodia were circumventing the China AD/CV Duties by undertaking only minor processing outside of China while using primarily Chinese components. The DOC initiated an investigation on April 1, 2022. A Presidential Proclamation instituting a two-year moratorium on China AD/CV Duties stemming from the Circumvention Inquiry was issued June 6, 2022, but final resolution of this matter remains outstanding. A DOC determination that the China AD/CV Duties were circumvented will result in the application of duties of up 254% on offending panels. The impact of such a determination would be widespread, as the countries associated with DOC's Circumvention Inquiry would have accounted for approximately 80% of panel imports into the United States.

Q. How has the Circumvention Inquiry impacted the cost of panels used in the 2024 Project?

A. The initiation of the DOC's investigation and the associated tariff risk caused an immediate shutdown of the solar panel supply chain, including panel production and shipments. This shutdown lasted approximately five months. The production and delivery of panel imports from Malaysia, Vietnam, Thailand, and Cambodia has now resumed. However, solar panel pricing has increased dramatically to account for the perceived risk of tariffs and other U.S. government actions on solar panel imports. Pricing for panels that will be used for the 2024 Project increased by approximately 40% compared to pricing that was anticipated at the time FPL entered the 2021 Rate Settlement.

Q. Please identify the main drivers behind the increased price of polysilicon.

A. The cost of polysilicon has increased due to two main reasons: supply constraints and trade restrictions.

Q. Please describe what you mean by "supply constraints" and explain how these constraints impacted the cost of polysilicon.

A. Since the time FPL entered the 2021 Rate Settlement, the global demand for solar panels has been increasing and, with the passage of the Inflation Reduction Act in August 2022, that demand has continued to accelerate. The polysilicon market experienced delayed capacity expansions that have constrained polysilicon suppliers from meeting this larger panel demand. As a result, from January 2021 through October 2022, the global polysilicon pricing index increased approximately 240%, from $12.41 to $42.24 per kilogram.

Q. Please describe the import restriction associated with polysilicon and how it has led to increased costs.

A. Beginning on June 21, 2022, the United States established a presumption that all goods from the Xinjiang region of China are prohibited from entering the United States. Among sectors designated as high priority for enforcement is polysilicon, the basic component in solar panel manufacturing. As a result, United States Customs and Border Protection ("CBP") began detaining panels at ports of entry to the United States in August 2022. FPL has worked closely with suppliers and CBP to clarify what documentation is required by CBP to trace solar panel raw materials back to the point of origin in order to definitively demonstrate that no materials originated in Xinjiang.

This import restriction has caused solar panel suppliers to incur high storage and detainment costs, as well as additional costs for traceability programs and documentation. As a result, panel suppliers that utilize non-Xinjiang polysilicon have seized upon this market environment as an opportunity to demand a premium price, since their proof of compliance allows for easier traceability to satisfy CBP documentation requirements and limits the risk of detention at a port.

Q. Please explain how the increased use of single-axis trackers contributed to an increase in the cost of the 2024 Project.

A. FPL initially expected to use a blend of fixed-tilt and single-axis tracking systems for the 2024 Project but by working with equipment suppliers, FPL

determined that it was feasible to deploy trackers at all 2024 Project locations and elected to make this design change. The mechanical system for single-axis trackers has higher material and installation costs than a fixed-tilt system. However, the benefits of a single-axis tracking system typically outweigh the costs, because a tracking design yields a higher net capacity factor, and more importantly, a higher firm capacity value than a fixed-tilt design. The change from a mixture of fixed and tracking sites to the exclusive use of single-axis trackers for the 2024 Project increased overall Project costs by $85 per kW_{AC}, while raising the net capacity factor of the 2024 Project to 27.5%.

Q. Please explain how general inflationary pressure combined with commodity price increases contributed to an increase in the cost of the 2024 Project.

A. General inflationary pressure impacted the costs for all solar construction which includes solar panels, steel, aluminum, single-axis tracking components, copper, and labor. In addition, the tightening of the U.S. job market following the second half of 2020 and the increase in demand for solar generation raised labor costs, which resulted in incrementally higher engineering, procurement, and construction ("EPC") contractor costs.

Q. Please summarize how the market factors you have described impacted the overall cost of the 2024 Project.

A. The largest portion of the increase is due to the rise in solar panel costs due to the Circumvention Inquiry, increases in the price of polysilicon, and inflationary pressure on the solar panels. In total, this contributed $210 per

kW_{AC} of incremental project costs. The change to exclusive use of single-axis trackers added an additional $85 per kW_{AC}. The balance of the increase in pricing, about $90 per kW_{AC}, is due to the general inflationary pressures I described. This cost increase summary is depicted visually in Exhibit KF-7.

Q. With these factors causing price increases during this period, were the costs FPL ultimately secured for construction of the 2024 Project reasonable?

A. Yes.

Q. What is the basis for your conclusion?

A. FPL utilized a robust procurement process designed to obtain the best available pricing. The costs for surveying, engineering, equipment, materials, and construction services necessary to complete the solar energy centers were established through competitive bidding processes. The balance of the costs were the result of leveraging existing agreements for engineering services, which themselves were the result of a separate competitive bidding process. Therefore, the vast majority of the 2024 Project's equipment, engineering, and construction costs were subject to competitive solicitations.

FPL followed a procurement process similar to what it employed for prior SoBRA projects approved by the Commission, this time accounting for the solar market-specific impacts from the Circumvention Inquiry as well as the polysilicon importation restrictions. FPL solicited proposals for the supply of the PV panels, PCUs, and step-up power transformers, as well as the EPC

services required to complete the proposed solar energy centers for the 2024 Project.

Q. Please describe the competitive solicitations for 2024 Project's solar panels.

A. FPL's solicitation for solar panels for the 2024 Project was expanded as compared to prior RFPs in order to include additional suppliers. FPL also requested and received more detailed information from bidders which helped to evaluate the potential impacts from the pending trade actions described above. In total, FPL requested proposals for PV panels from 21 large, industry-leading suppliers. Ten suppliers submitted bids that satisfied the requirements of the RFP, FPL evaluated each of these conforming bids, and ultimately contracted with three suppliers.

The three selected panel suppliers for the 2024 Project offered the lowest cost and highest efficiency products, offer some of the highest product quality programs in the industry, and were able to provide strong financial performance security. In addition, the suppliers selected for the 2024 Project each demonstrated their ability to navigate the current regulatory environment with minimal impacts to both cost and schedule. Finally, by timing the execution of solar panel purchase contracts for the fourth quarter of 2022, which is slightly later than in previous construction efforts, FPL was able to avoid the height of market disruptions from the Circumvention Inquiry.

Q. Please describe the competitive solicitations for 2024 Project's PCU and Step-Up Power Transformers.

A. FPL solicited proposals from four PCU suppliers. The proposals submitted by each of the four suppliers met the requirements of the RFP and were evaluated. FPL selected the lowest cost bidder to supply the PCUs for the 2024 Project.

FPL solicited proposals from seven industry-leading manufacturers of step-up power transformers. FPL evaluated six qualifying proposals and selected the lowest cost bidder to supply the transformers.

Q. Please describe the competitive solicitations for 2024 Project's construction contractors.

A. FPL solicited EPC service proposals for the construction of the solar energy centers from twelve industry-recognized contractors. Five of the twelve contractors submitted bids and FPL evaluated these proposals for completeness. FPL then identified the lowest cost bidder for each site within the 2024 Project and selected three EPC contractors to build the 2024 Project based on this method of evaluation. Contracts have been finalized with these three selected EPC contractors. The scope of services for the EPC solicitations included the supply of the balance of equipment and other materials.

FPL solicited proposals for the construction of the substation and interconnection facilities from sixteen industry-recognized contractors. Twelve of the sixteen contractors submitted bids and the proposals were evaluated.

Similarly, FPL then identified the lowest cost bidder for each site within the 2024 Project and then selected five lowest cost bidders to construct the substation and interconnection facilities at the sites.

Q. Are there other benefits associated with the 2024 Project?

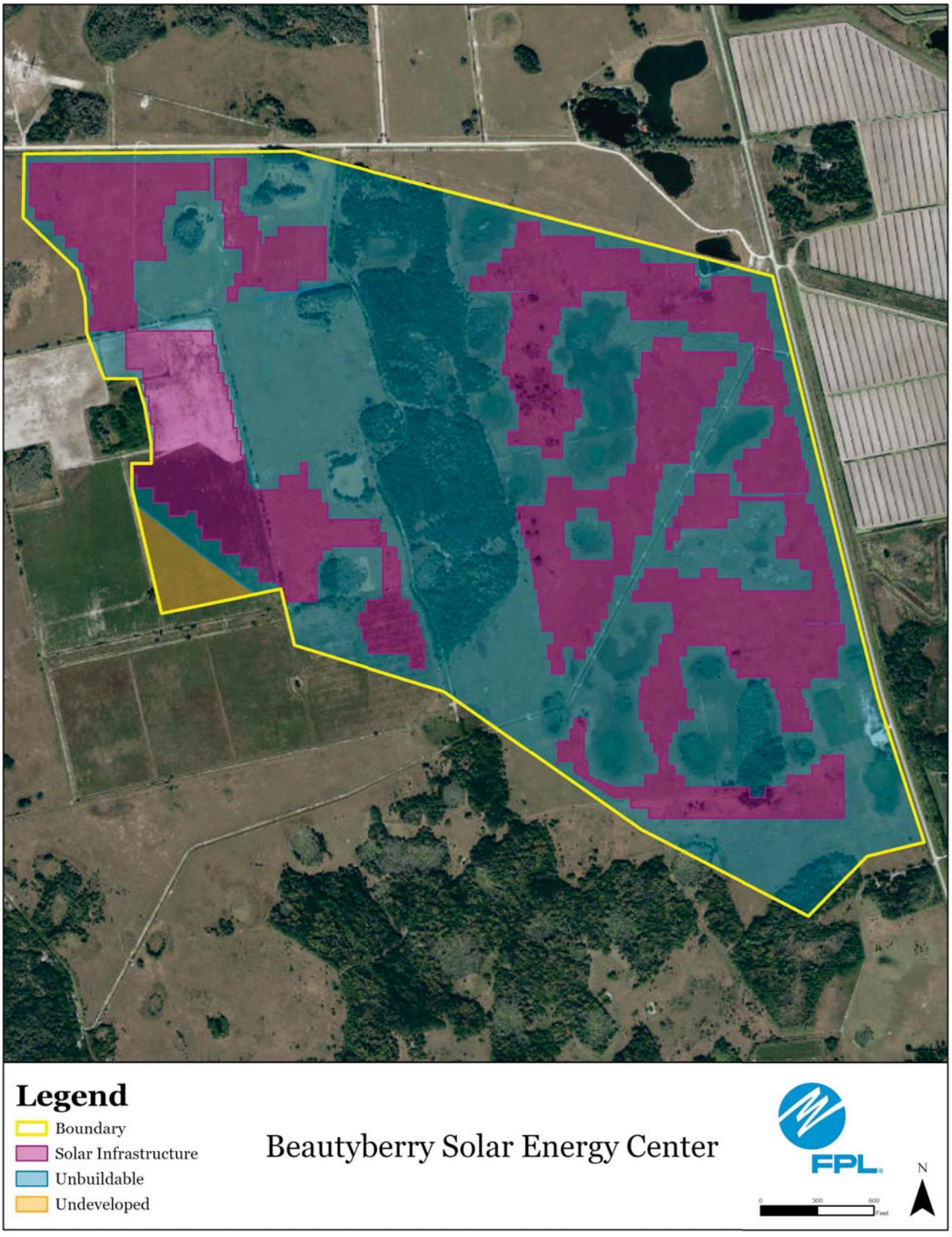
A. Yes, there are several other benefits associated with the 2024 Project. For example, approximately 200 individuals will be employed at each of the solar energy centers at the height of construction, creating about 2,400 jobs in total for the 2024 Project. The contractors building the solar energy centers are required to exercise reasonable efforts to use local labor and resources. The jobs associated with the construction of the solar energy centers will therefore provide a secondary benefit by boosting the economy of local businesses in Florida. Additionally, the local communities will benefit from increased property tax revenues following the completion of the solar energy centers. For instance, in 2022 FPL had 50 operational solar energy centers which generated over $26 million in property taxes paid to 24 counties across Florida.

Q. Does this conclude your testimony?

A. Yes.

List of FPL Universal PV Solar Centers in Service

Solar Enegy Center	In Service Date	Capacity (MW AC)
Desoto	10/27/2009	25
Space Coast	4/16/2010	10
Manatee	12/31/2016	74.5
Citrus	12/31/2016	74.5
Babcock	12/31/2016	74.5
Horizon	1/1/2018	74.5
Coral Farms	1/1/2018	74.5
Wildflower	1/1/2018	74.5
Indian River	1/1/2018	74.5
Blue Cypress	3/1/2018	74.5
Barefoot Bay	3/1/2018	74.5
Hammock	3/1/2018	74.5
Loggerhead	3/1/2018	74.5
Miami-Dade	1/31/2019	74.5
Interstate	1/31/2019	74.5
Sunshine Gateway	1/31/2019	74.5
Pioneer Trail	1/31/2019	74.5
Sweetbay	1/31/2020	74.5
Northern Preserve	1/31/2020	74.5
Cattle Ranch	1/31/2020	74.5
Twin Lakes	1/31/2020	74.5
Blue Heron	1/31/2020	74.5
Babcock Preserve	1/31/2020	74.5
Hibiscus	4/30/2020	74.5
Okeechobee	4/30/2020	74.5
Southfork	4/30/2020	74.5
Echo River	4/30/2020	74.5
Blue Indigo	4/1/2020	74.5
Lakeside	12/18/2020	74.5
Trailside	12/21/2020	74.5
Union Springs	12/31/2020	74.5
Egret	12/20/2020	74.5
Nassau	12/24/2020	74.5
Magnolia Springs	3/29/2021	74.5
Pelican	2/28/2021	74.5
Palm Bay	3/31/2021	74.5
Rodeo	3/30/2021	74.5
Sabal Palm	4/30/2021	74.5
Willow	5/28/2021	74.5
Discovery	5/30/2021	74.5
Orange Blossom	5/30/2021	74.5
Fort Drum	6/30/2021	74.5
Blue Springs	12/31/2021	74.5
Cotton Creek	12/31/2021	74.5
Ghost Orchid	1/31/2022	74.5
Sawgrass	1/31/2022	74.5
Sundew	1/31/2022	74.5
Elder Branch	1/31/2022	74.5
Grove	1/31/2022	74.5
Immokalee	1/31/2022	74.5
Everglades	1/31/2023	74.5
Pink Trail	1/31/2023	74.5
Bluefield Preserve	1/31/2023	74.5
Cavendish	1/31/2023	74.5
Anhinga	1/31/2023	74.5
Blackwater River	1/31/2023	74.5
Chipola River	1/31/2023	74.5
Flowers Creek	1/31/2023	74.5
First City	1/31/2023	74.5
Apalachee	1/31/2023	74.5
Wild Azalea	2/28/2023	74.5
Chautauqua	2/28/2023	74.5
Shirer Branch	2/28/2023	74.5
	Total Sites	63
	Total MW	4,579.5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Unbuildable
Undeveloped
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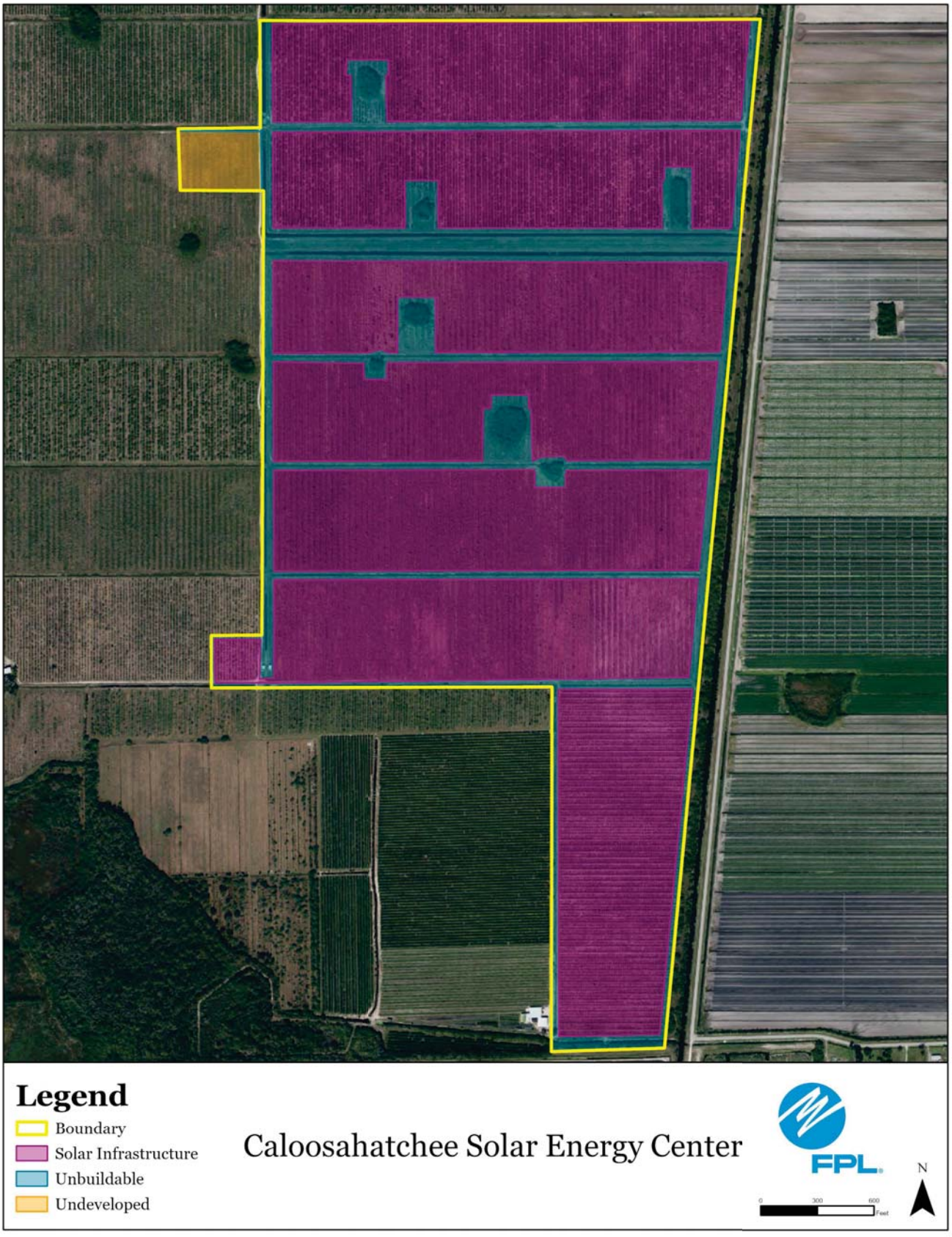
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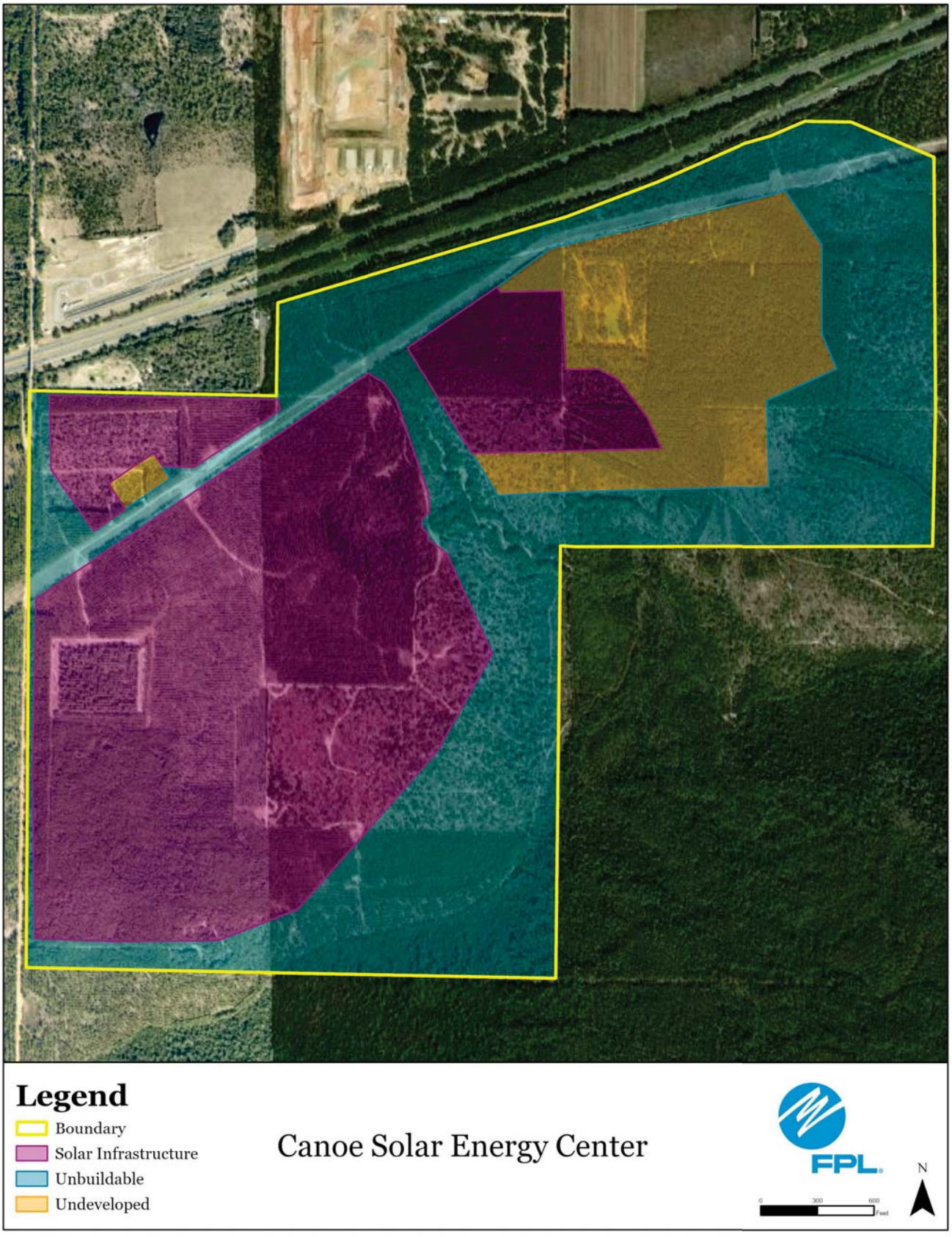
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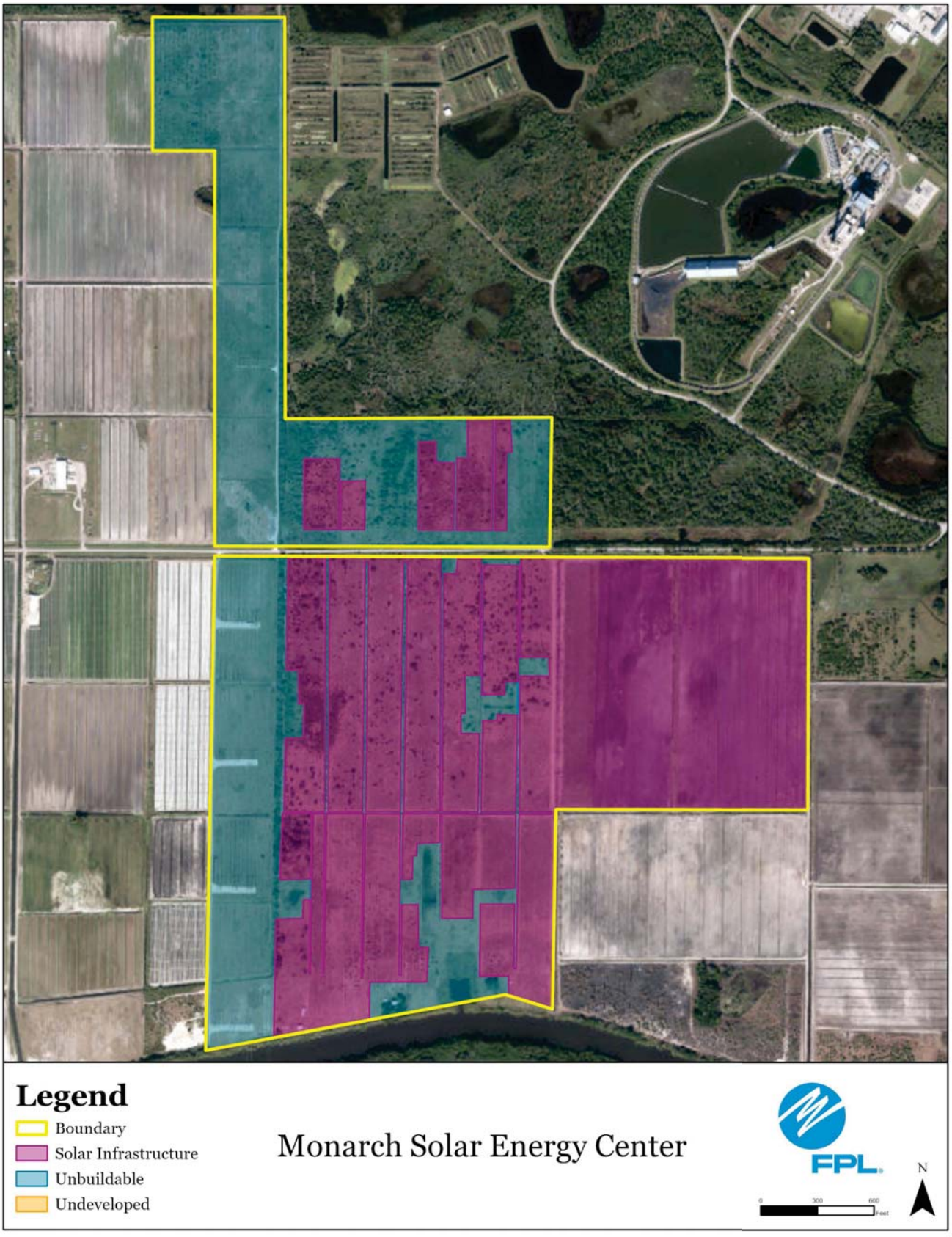
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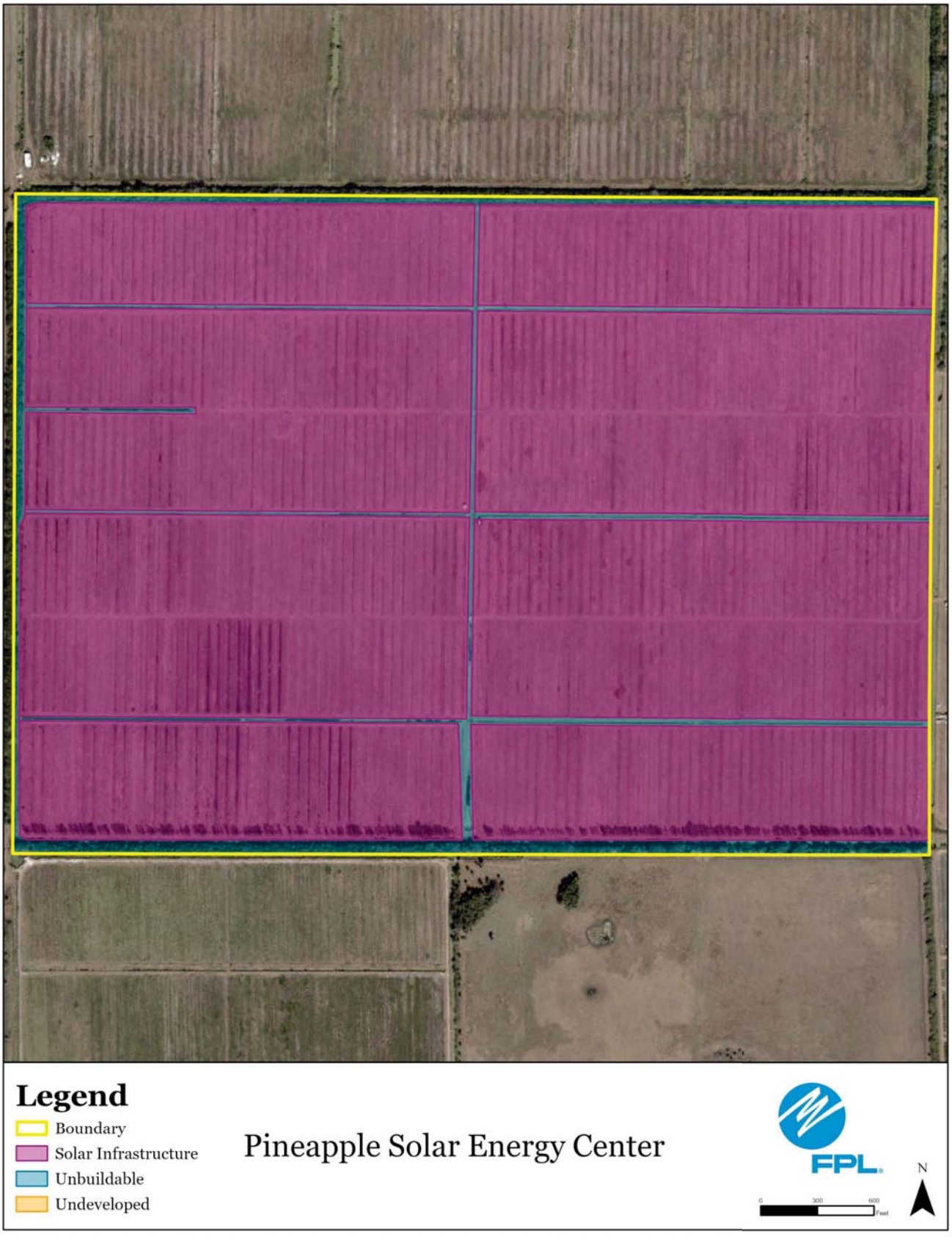
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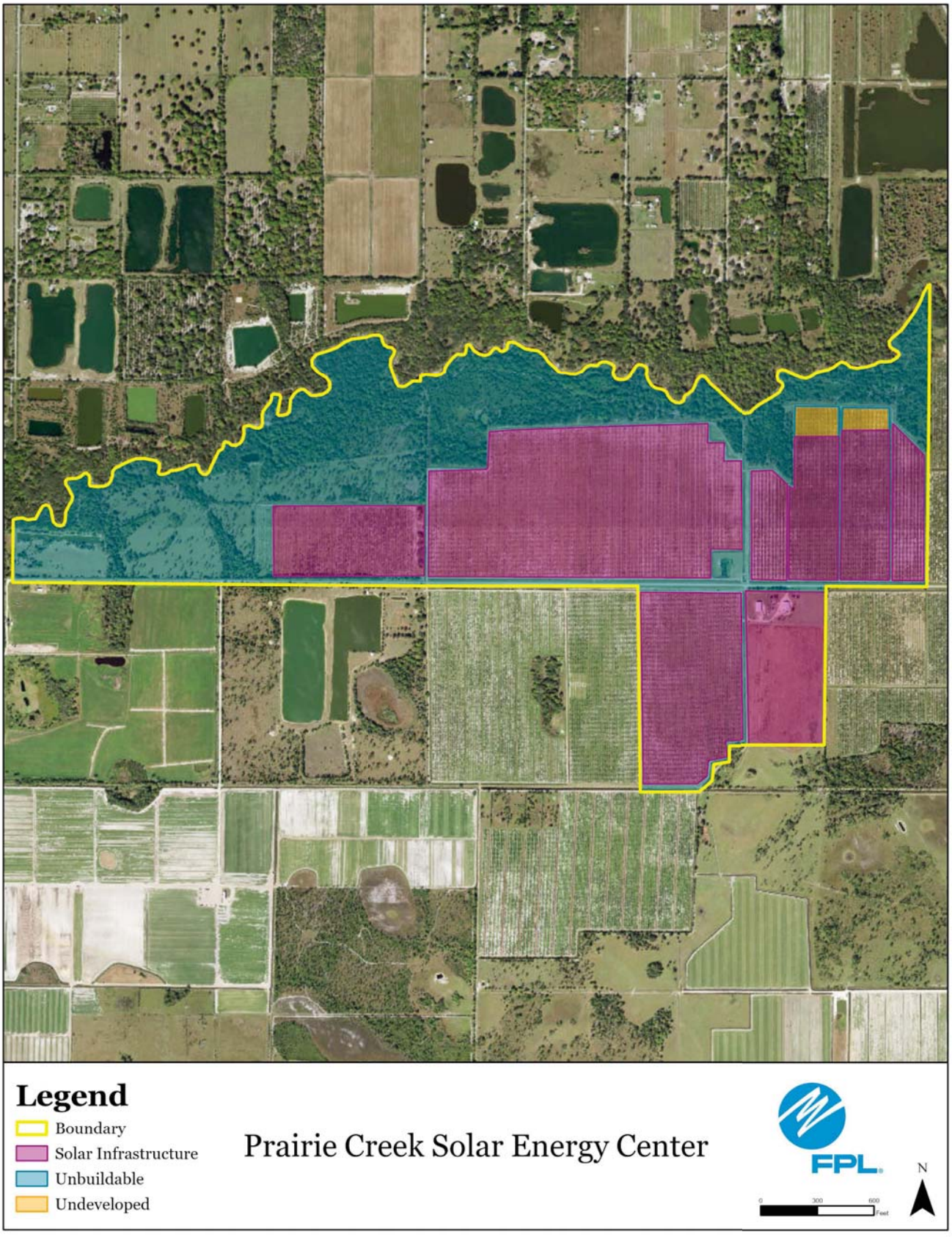
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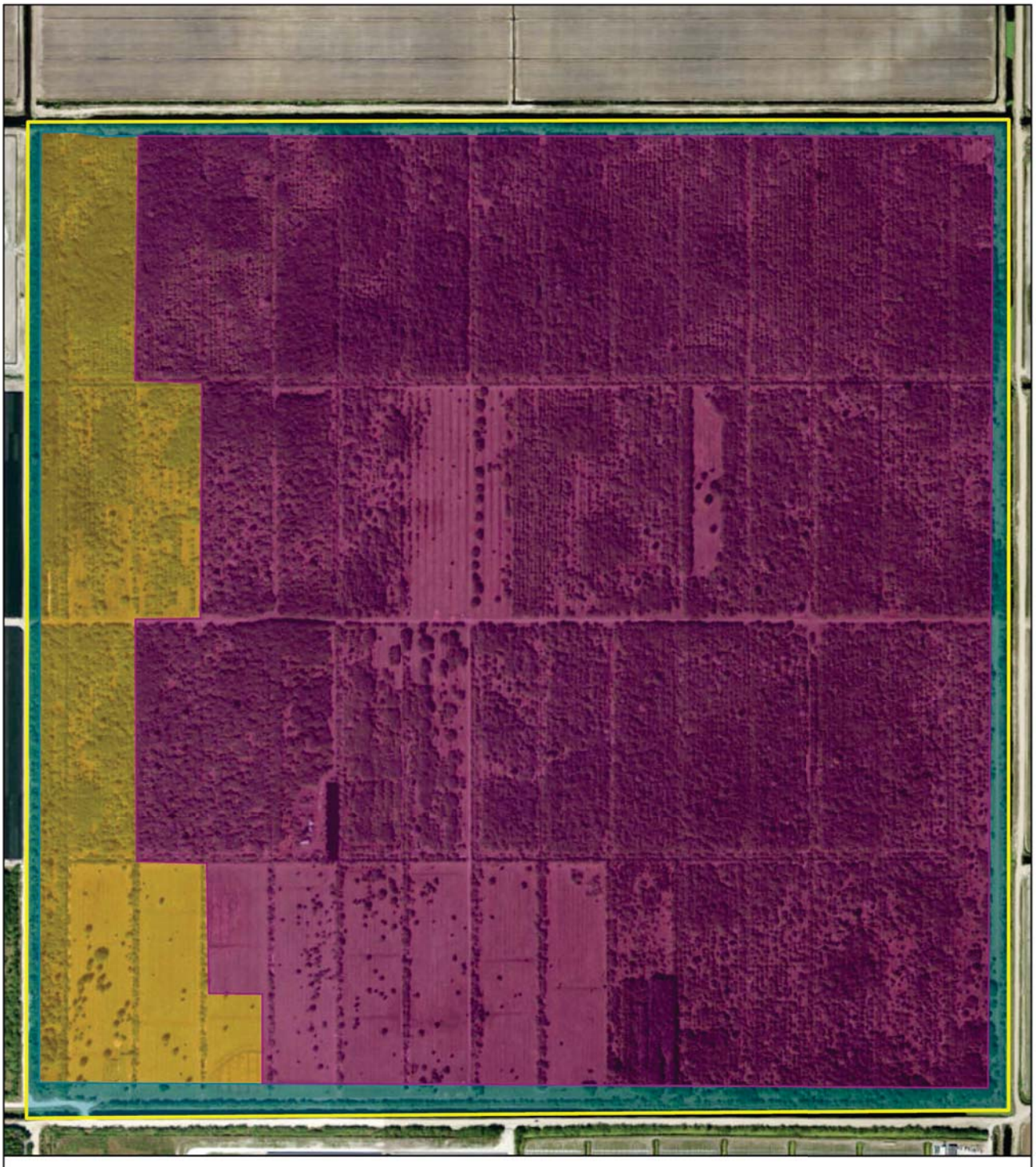
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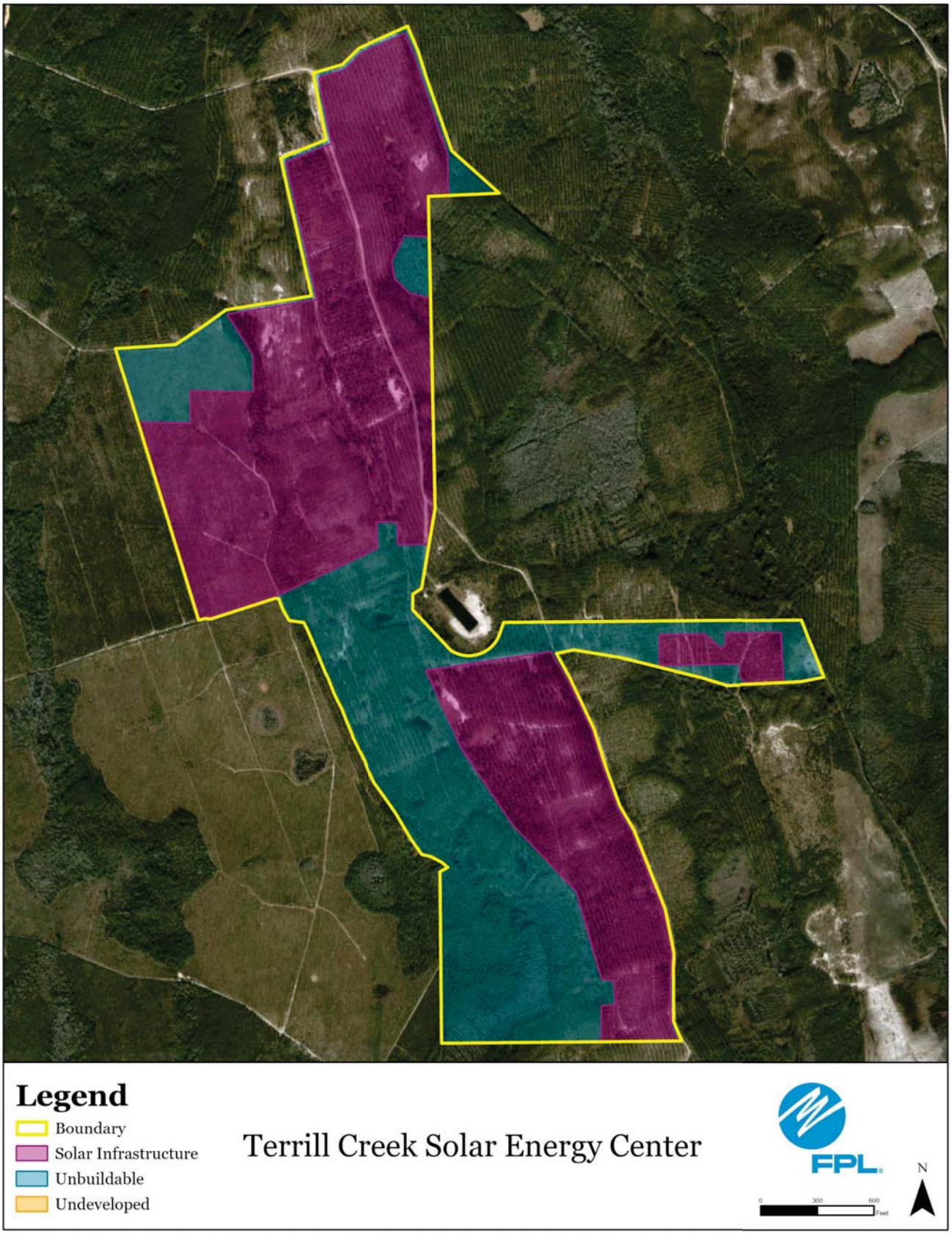
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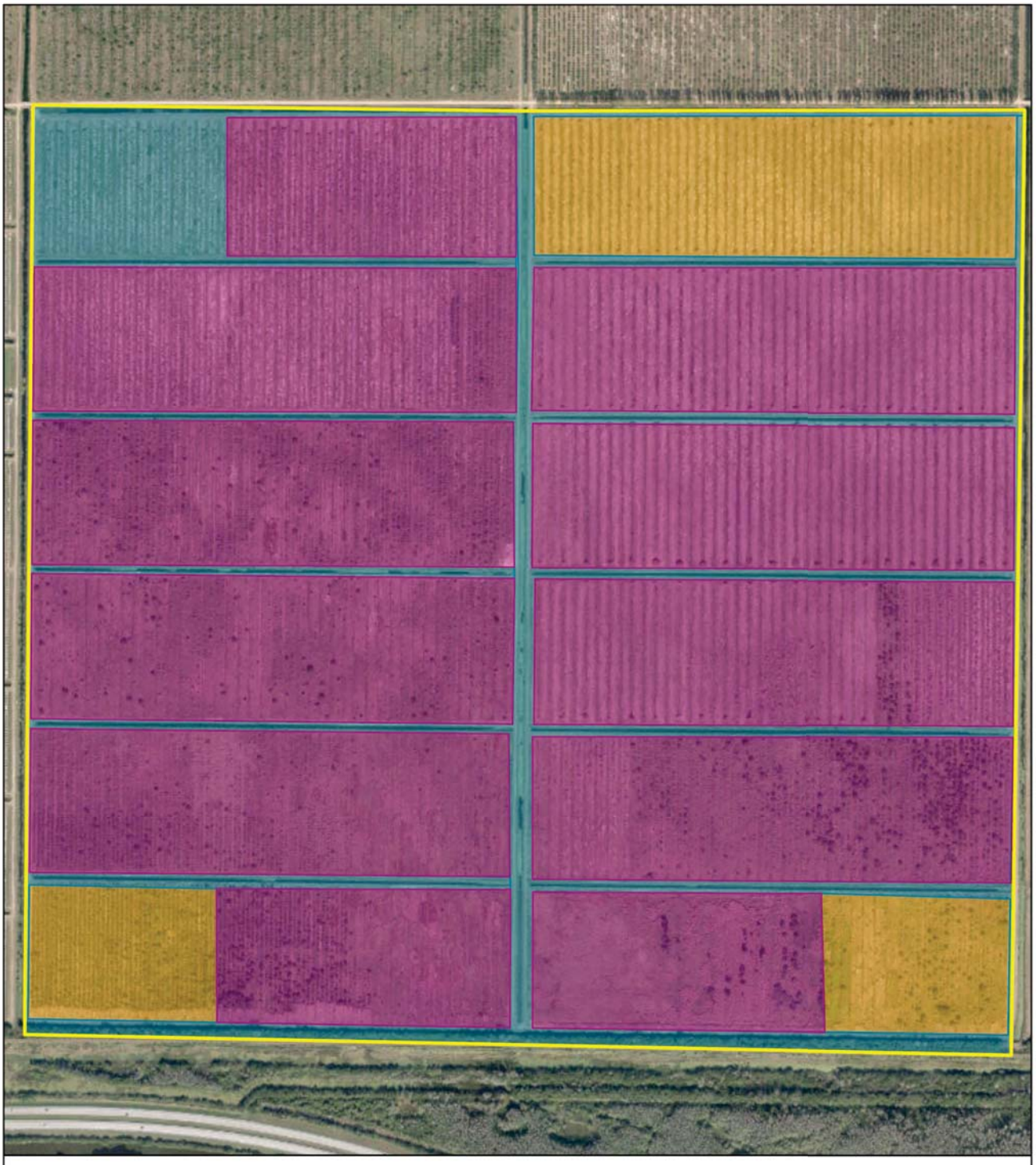
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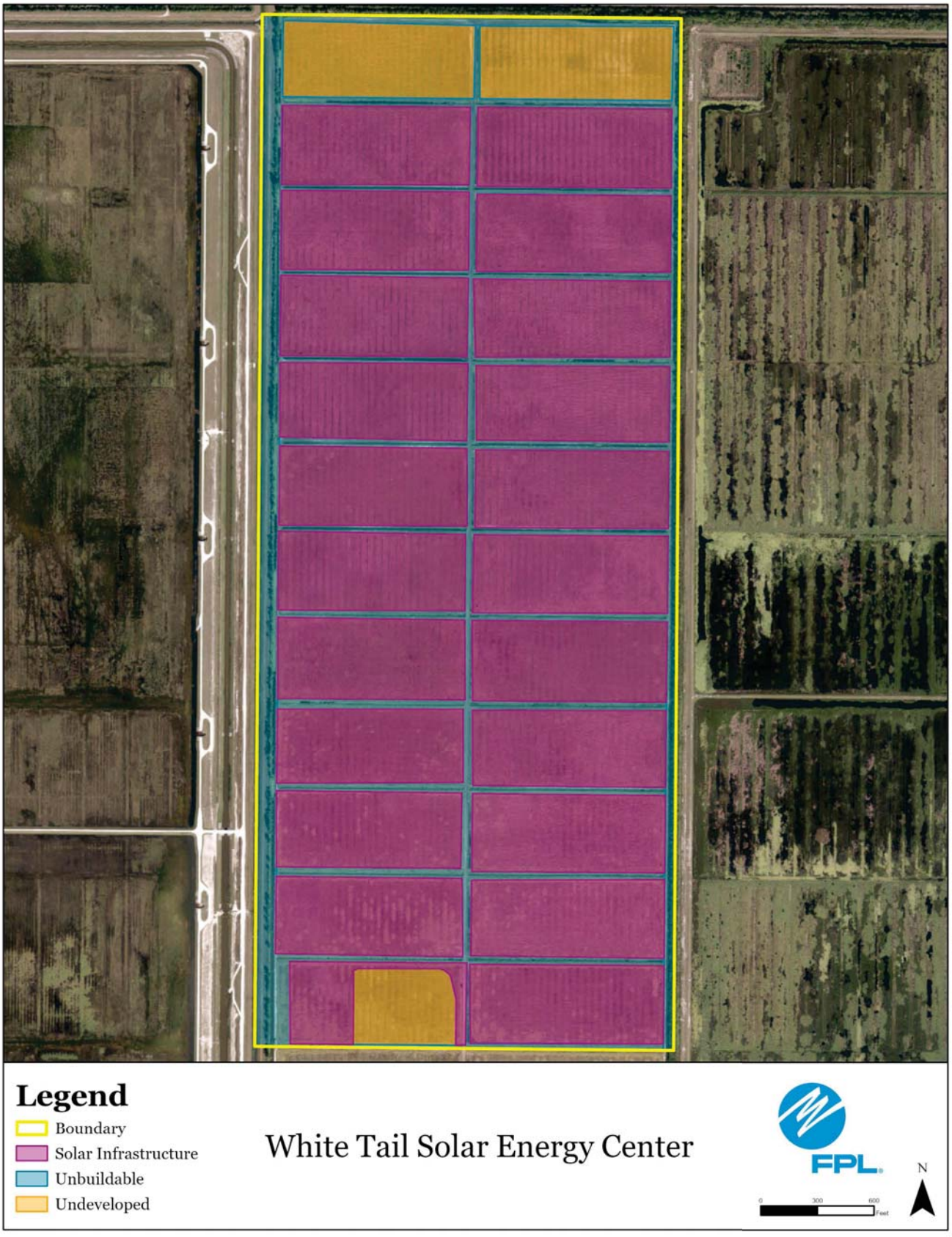
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White Tail Solar Energy Center
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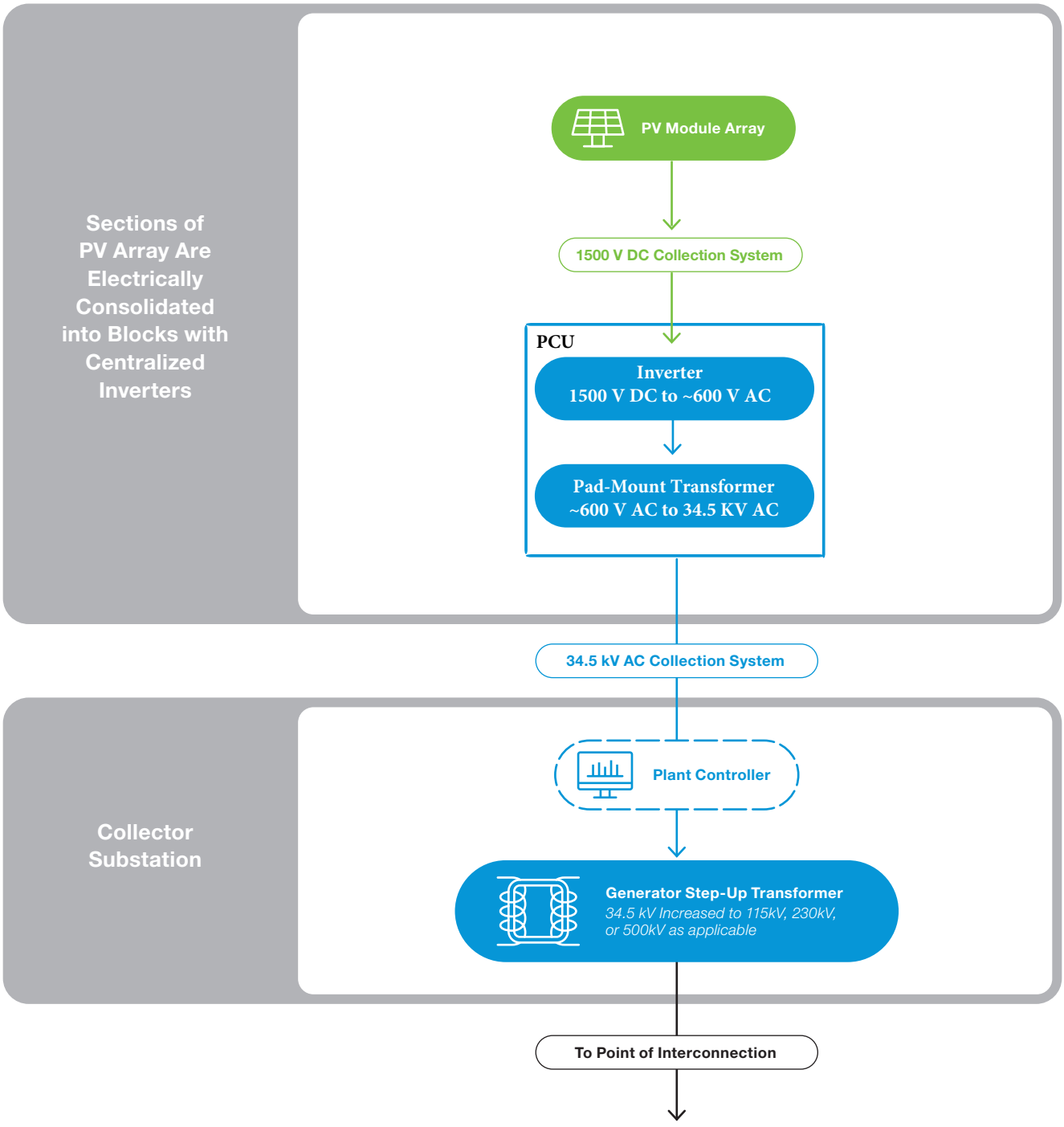
Typical Solar Energy Center Block Diagram



Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Beautyberry FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	102.81
PV Panel Suppliers	• BYD • Trina
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial (BYD) • 132-half-cell mono-crystalline silicon, bifacial (Trina)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	613
Number of Panels (Average)	167,848
Inverter DC Input (MW_{DC})	102.81
DC/AC Ratio	1.38
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	8,834
DC Input Per PUC Block (MW_{DC})	5.41
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	500 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Caloosahatchee FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	99.82
PV Panel Suppliers	• Adani • BYD
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial (Adani) • 132 half-cut mono-crystalline silicon, bifacial (BYD)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	588
Number of Panels (Average)	169,740
Inverter DC Input (MW_{DC})	99.82
DC/AC Ratio	1.34
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed (MVA)	87.02
Number of Panel Per PCU Block (Average)	8,934
DC Input Per PUC Block (MW_{DC})	5.25
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Canoe FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	101.30
PV Panel Suppliers	• Adani • Trina
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	531
Number of Panels (Average)	190,764
Inverter DC Input (MW_{DC})	101.30
DC/AC Ratio	1.36
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.55/645
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	3.63
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed	87.12
Number of Panel Per PCU Block (Average)	7,949
DC Input Per PUC Block (MW_{DC})	4.22
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Starkstrom-Gerätebau GmbH, SGB-SMIT Group
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Ibis FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	104.33
PV Panel Suppliers	• Adani • Trina
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	518
Number of Panels (Average)	201,320
Inverter DC Input (MW_{DC})	104.33
DC/AC Ratio	1.40
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	10,596
DC Input Per PUC Block (MW_{DC})	5.49
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Starkstrom-Gerätebau GmbH, SGB-SMIT Group
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Monarch FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	89.39
PV Panel Suppliers	• Adani • Sumec
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial (Adani) • 144-half-cell mono-crystalline silicon (Sumec)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	510
Number of Panels (Average)	175,334
Inverter DC Input (MW_{DC})	89.39
DC/AC Ratio	1.20
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	9,228
DC Input Per PUC Block (MW_{DC})	4.70
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Orchard FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	108.02
PV Panel Suppliers	BYD
PV Panel Technologies	132-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	655
Number of Panels (Average)	164,920
Inverter DC Input (MW_{DC})	108.02
DC/AC Ratio	1.45
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	8,680
DC Input Per PUC Block (MW_{DC})	5.69
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Pineapple FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	99.08
PV Panel Suppliers	BYD
PV Panel Technologies	132-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	650
Number of Panels (Average)	152,427
Inverter DC Input (MW_{DC})	99.08
DC/AC Ratio	1.33
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	8,022
DC Input Per PUC Block (MW_{DC})	5.21
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Prairie Creek FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	104.30
PV Panel Suppliers	BYD
PV Panel Technologies	144-half-cell mono-crystalline silicon, bifacial and 132-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	614
Number of Panels (Average)	169,880
Inverter DC Input (MW_{DC})	104.30
DC/AC Ratio	1.40
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	8,941
DC Input Per PUC Block (MW_{DC})	5.49
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Silver Palm FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	95.33
PV Panel Suppliers	• Adani • Sumec
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial (Adani) • 144-half-cell mono-crystalline silicon (Sumec)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	502
Number of Panels (Average)	189,747
Inverter DC Input (MW_{DC})	95.33
DC/AC Ratio	1.28
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	9,987
DC Input Per PUC Block (MW_{DC})	5.02
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Starkstrom-Gerätebau GmbH, SGB-SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Terrill Creek FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	102.14
PV Panel Suppliers	• BYD • Sumec
PV Panel Technologies	• 132-half-cell mono-crystalline silicon, bifacial (BYD) • 144-half-cell mono-crystalline silicon (Sumec)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	592
Number of Panels (Average)	172,623
Inverter DC Input (MW_{DC})	102.14
DC/AC Ratio	1.37
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	9,085
DC Input Per PUC Block (MW_{DC})	5.38
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Starkstrom-Gerätebau GmbH, SGB-SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for Turnpike FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	104.30
PV Panel Suppliers	Trina
PV Panel Technologies	132-half-cell mono-crystalline silicon, bifacial
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	655
Number of Panels (Average)	159,240
Inverter DC Input (MW_{DC})	104.30
DC/AC Ratio	1.40
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	8,381
DC Input Per PUC Block (MW_{DC})	5.49
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Hyundai Power Transformers USA, Inc.
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

Specifications for 2024 Solar Energy Centers

The following table sets forth the base-line specifications used to develop the estimated installed cost for the 2024 Project.

Specifications for White Tail FPL 74.5 MW_{AC} Solar Energy Center	
Peak Alternating Current Output	74.5
Total Installed Direct Current Capacity	106.51
PV Panel Suppliers	• Adani • First Solar • Trina
PV Panel Technologies	• 144-half-cell mono-crystalline silicon, bifacial (Adani) • Thin Film CdTe (First Solar) • 144-half-cell mono-crystalline silicon, bifacial (Trina)
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	501
Number of Panels (Average)	212,397
Inverter DC Input (MW_{DC})	106.51
DC/AC Ratio	1.43
Number of Power Conversion Units (PCU)	19
PCU Supplier	General Electric
Inverter Type	FLEXINVERTER 1566
Inverter Rating (MVA/V)	4.52/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	Toshiba or Sanil
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.58
Number of Inverters	19
Inverter Capacity Installed (MVA)	85.88
Number of Medium Voltage Transformers	19
Medium Voltage Transformer Capacity Installed	87.02
Number of Panel Per PCU Block (Average)	11,179
DC Input Per PUC Block (MW_{DC})	5.61
PV Panel Support Mechanism	Single-axis tracker system
PV Panel Support Mechanism Material	Structural steel shapes
Step-up Power Transformer Supplier	Starkstrom-Gerätebau GmbH, SGB-SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	230 kV, 85 MVA

2024 Project

		Terrill Creek		Silver Palm		Ibis		White Tail		Prairie Creek		Pineapple	
Item	**Major Activities**	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish
1	PV Panel Contract	10/18/2022	4/15/2023	12/8/2022	4/15/2023	12/8/2022	4/15/2023	10/19/2022	4/15/2023	10/18/2022	4/15/2023	10/18/2022	4/15/2023
2	Power Conversion Unit Contract	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022
3	EPC contract	6/15/2022	11/28/2022	6/15/2022	11/28/2022	6/15/2022	11/28/2022	6/15/2022	11/28/2022	6/15/2022	11/28/2022	6/15/2022	11/28/2022
4	LNTP for EPC Contracts	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022	11/29/2022
5	Contractor mobilization	4/3/2023	4/7/2023	4/3/2023	4/7/2023	4/3/2023	4/7/2023	1/9/2023	1/13/2023	4/3/2023	4/7/2023	4/3/2023	4/7/2023
6	Panel deliveries	9/8/2023	11/17/2023	6/30/2023	9/22/2023	6/30/2023	9/22/2023	8/11/2023	9/22/2023	5/5/2023	7/22/2023	5/5/2023	9/1/2023
7	Power Conversion Unit deliveries	10/20/2023	10/27/2023	10/6/2023	10/13/2023	10/13/2023	10/20/2023	9/22/2023	9/29/2023	10/6/2023	10/13/2023	9/29/2023	10/6/2023
8	Energization, Testing & Startup	12/14/2023	1/31/2024	11/2/22023	1/31/2024	11/14/2023	1/31/2024	11/16/2023	1/31/2024	11/7/2023	1/31/2024	11/30/2023	1/31/2024
9	Commence Commercial Operations	1/31/2024											

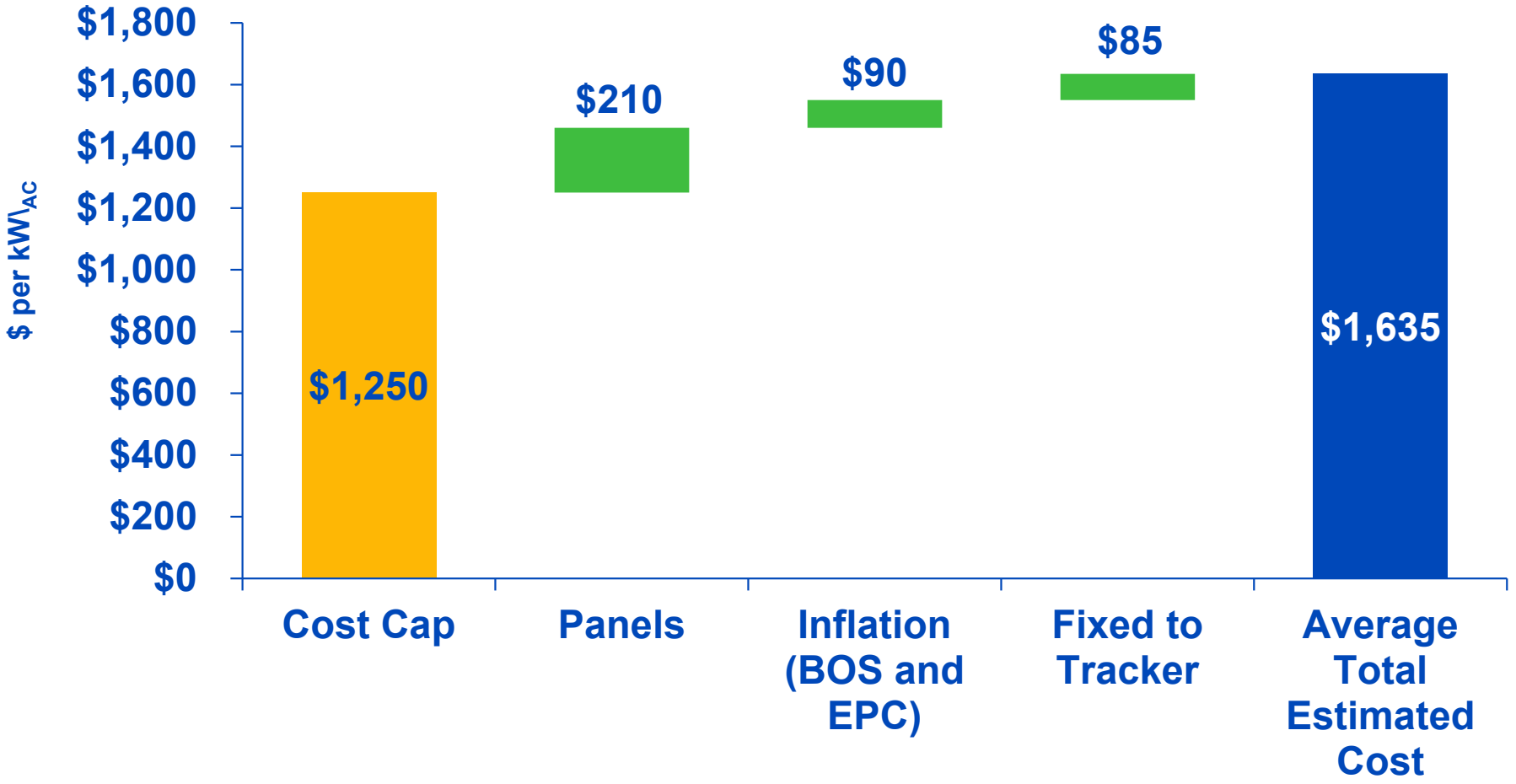
2024 Project

		Monarch		Caloosahatchee		Orchard		Beautyberry		Turnpike		Canoe	
Item	**Major Activities**	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish
1	PV Panel Contract	12/8/2022	4/15/2023	10/18/2022	4/15/2023	10/18/2022	4/15/2023	10/18/2022	4/15/2023	10/19/2022	4/15/2023	12/8/2022	4/15/2023
2	Power Conversion Unit Contract	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	10/1/2022	10/20/2022	6/1/2023	6/1/2023
3	EPC contract	6/15/2022	12/2/2022	6/15/2022	12/2/2022	6/15/2022	12/2/2022	6/15/2022	12/2/2022	6/15/2022	12/2/2022	6/15/2022	12/2/2022
4	LNTP for EPC Contracts	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022	12/3/2022
5	Contractor mobilization	4/3/2023	4/7/2023	4/3/2023	4/7/2023	4/3/2023	4/7/2023	3/20/2023	3/24/2023	4/3/2023	4/7/2023	4/3/2023	4/7/2023
6	Panel deliveries	7/28/2023	9/28/2023	7/28/2023	9/1/2023	5/5/2023	8/18/2023	7/7/2023	10/13/2023	7/7/2023	8/18/2023	9/15/2023	12/1/2023
7	Power Conversion Unit deliveries	10/20/2023	10/27/2023	10/27/2023	11/3/2023	10/27/2023	11/3/2023	8/25/2023	9/1/2023	9/1/2023	9/8/2023	9/1/2023	9/20/2023
8	Energization, Testing & Startup	11/9/2023	1/31/2024	12/14/2023	1/31/2024	12/12/2023	1/31/2024	11/28/2023	1/31/2024	10/31/2023	1/31/2024	12/5/2023	1/31/2024
9	Commence Commercial Operations	1/31/2024											

	2024												
	Terrill Creek	**Silver Palm**	**Ibis**	**Orchard**	**Beautyberry**	**Turnpike**	**Monarch**	**Caloosahatchee**	**White Tail**	**Prairie Creek**	**Pineapple**	**Canoe**	**Average**
Commercial Operation Date	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024	1/31/2024
Capital cost $													
PV Array Costs	$103,305,715	$106,230,382	$103,574,781	$108,770,463	$106,703,040	$105,169,931	$95,554,515	$101,843,241	$109,311,208	$104,239,993	$103,841,420	$106,878,713	$104,618,617
Transmission Interconnection and Integration	$7,425,000	$1,255,000	$2,525,000	$488,000	$537,000	$512,000	$3,310,000	$23,501,000	$7,056,000	$15,105,000	$1,050,000	$4,330,000	$5,591,167
Land and Easements	$6,146,031	$9,610,455	$5,035,713	$2,975,579	$15,565,000	$3,259,409	$7,061,600	$5,938,432	$7,824,425	$6,572,368	$2,966,578	$7,700,000	$6,721,299
AFUDC	$4,860,352	$4,860,352	$4,860,352	$5,173,761	$4,860,352	$4,860,352	$4,860,352	$4,860,352	$4,860,352	$4,860,352	$4,860,352	$4,860,352	$4,886,469
Total	**$121,737,098**	**$121,956,189**	**$115,995,846**	**$117,407,803**	**$127,665,392**	**$113,801,692**	**$110,786,467**	**$136,143,025**	**$129,051,985**	**$130,777,713**	**$112,718,350**	**$123,769,065**	$121,817,552
$/kWac	$1,634	$1,637	$1,557	$1,576	$1,714	$1,528	$1,487	$1,827	$1,732	$1,755	$1,513	$1,661	$1,635

Docket No. 20230001-EI
Capital Cost Table
Exhibit KF-6, Page 1 of 1

2024 Project Cost Walk



Docket No. 20230001-EI
Cost Increase Waterfall
Exhibit KF-7, Page 1 of 1

FPL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

TESTIMONY OF ANDREW W. WHITLEY

DOCKET NO. 20230001-EI

APRIL 3, 2023

Q. Please state your name and business address.

A. My name is Andrew W. Whitley. My business address is Florida Power & Light Company, 700 Universe Boulevard, Juno Beach, Florida 33408.

Q. By whom are you employed and what is your position?

A. I am employed by Florida Power & Light Company ("FPL" or the "Company") as Engineering Manager of Integrated Resource Planning in the Finance Department.

Q. Please describe your educational background and professional experience.

A. I graduated from Lehigh University in 2004 with a Bachelor of Science in Mechanical Engineering. I joined FPL in 2004 as part of FPL's Distribution Business Unit, and performed various engineering tasks related to providing new service as well as maintaining the reliability of existing services to FPL's customers. In 2007, I joined FPL's Resource Assessment and Planning group (now referred to as the Integrated Resource Planning ("IRP") group). During that time, I have been involved in a variety of resource planning projects for FPL, including FPL's Ten Year Site Plans, Solar Base Rate Adjustment ("SoBRA") filings, several need determination proceedings for new power

plants under the Florida Power Plant Siting Act, (the Okeechobee Clean Energy Center in 2015 and the Dania Beach Clean Energy Center in 2018), FPL's Rate Case filings, and the Demand-Side Management ("DSM") Goals proceedings. I became the Manager of the IRP group in 2022 and have served as the project leader for FPL's Ten Year Site Plan in 2022 and 2023.

Q. Please describe your duties and responsibilities in your current position.

A. In my current position as Engineering Manager of Integrated Resource Planning, I am responsible for the management and coordination of economic analyses of alternatives to meet FPL's resource needs and maintain system reliability. These analyses are designed to determine the magnitude and timing of resource needs for the FPL system and then develop the integrated resource plan with which those resource needs will be met. The analyses are also designed to identify ways through which to improve system economics and/or enhance system reliability for customers.

Q. Have you previously testified on resource planning issues before the Florida Public Service Commission?

A. Yes. I have testified in FPL's 2019 DSM Goals (Docket No. 20190015-EG). My testimony in that docket focused on FPL's resource planning process and how it related to the development of demand-side management portfolios. I also appeared before the Commission at its workshop on Florida utilities' 2022 Ten Year Site Plans to discuss FPL's 2022 Plan.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following exhibits:

- AWW-1 Load Forecast
- AWW-2 FPL Fuel Price Forecast
- AWW-3 FPL Resource Plans
- AWW-4 CPVRR – Costs and (Benefits)
- AWW-5 Yearly PTC Impact
- AWW-6 Avoided Natural Gas
- AWW-7 Avoided Air Emissions

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the results of the economic analysis, which shows that 894 megawatts alternating current ("MW_{AC}") of universal solar photovoltaic ("PV") generation scheduled to be placed in service in early 2024 (the "2024 Project") is cost-effective. My testimony covers several areas. First, I identify the 12 sites that make up the 2024 Project. Second, I discuss the major assumptions and the methodology used to perform the economic analysis. Third, I present the results of the economic analysis demonstrating that the addition of the 2024 Project is cost-effective. Lastly, I discuss non-economic benefits derived from the construction and operation of these facilities.

Q. Please summarize your testimony.

A. FPL is proposing the construction and operation of the 2024 Project: 894 MW_{AC} of solar PV generation, consisting of one construction project made up

of 12 universal solar energy centers which are expected to be in-service by January 31, 2024. FPL performed an economic analysis and determined that the 2024 Project will result in a reduction in the cumulative present value of revenue requirements ("CPVRR") to FPL customers, for a total savings of approximately $561 million. In addition, these centers are projected to result in a significant reduction in air emissions – primarily carbon dioxide ("CO_2") – resulting from a reduction in the projected use of fossil fuels, which will in turn lower FPL's system reliance on generation fueled by natural gas. The 2024 Project is cost-effective, as required to qualify for a SoBRA under FPL's 2021 Rate Case Settlement ("2021 Rate Settlement") approved by the Commission in Order No. PSC-2021-0446-S-EI.

Q. Please describe the 2024 Project.

A. The 2024 Project comprises 12 solar energy centers with a total nameplate capacity of 894 MW_{AC}, which will be constructed and placed in service by January 31, 2024. Each of these centers is projected to generate about 179,000 MWh per year. This is enough energy to serve the annual energy needs of about 13,800 homes. FPL witness Fagan describes each technology to be employed at each center in greater detail and demonstrates that the construction cost for the proposed solar generation is reasonable.

Q. What are the major system assumptions used in this analysis?

A. The major assumptions used in this study are the following:

- **Load Forecast –** The analysis uses FPL's most recent long-term load forecast, approved as FPL's official load forecast in September 2022.

This load forecast, including system peaks and net energy for load, is used in FPL's 2023 Ten Year Site Plan ("TYSP") and is shown in Exhibit AWW-1;

- **Fuel Price Forecast –** The analysis uses FPL's most recent long-term fuel forecast, based on FPL's standard long-term fuel forecasting methodology, approved as FPL's official fuel price forecast in September 2022. This fuel price forecast is used in FPL's 2023 TYSP and is shown in Exhibit AWW-2; and
- **CO_2 Emission Price Forecast -** The CO_2 cost projections used in this filing are based on ICF's proprietary CO_2 compliance costs forecast dated September 26, 2022. ICF is a consulting firm with extensive experience in forecasting the cost of air emissions and is recognized as one of the industry leaders in this field. This forecast, which assumes that CO_2 compliance costs will start in the year 2036, was used in preparing FPL's 2023 TYSP.

Q. Please describe the resource plans that formed the basis for FPL's cost-effectiveness analysis.

A. For purposes of this filing, FPL developed two resource plans. The first resource plan, called the "No 2024 SoBRA Plan," does not include any new solar facilities beyond those already in-service as of the end of 2024. In this plan, future resource needs are met by combined cycle units and battery storage.

The second resource plan, called the "2024 SoBRA Plan," adds the 2024 Project described above. Because each center is assumed to provide FPL approximately 46% of the nameplate capacity as firm capacity to meet the Company's reliability obligations, 1,100 MW of battery storage units were deferred one year (from 2025 through 2027 in-service dates to 2026 through 2028 in-service dates), and the combined cycle was deferred one year from 2028 to 2029. In addition, 1,900 MW of batteries in 2031 and 2032 in the "No 2024 SoBRA Plan" are reduced to 800 MW of batteries being added in 2032 in the "2024 SoBRA Plan." These two resource plans are shown in Exhibit AWW-3.

Q. What is the net capacity factor of the facilities in the 2024 Project?

A. The 2024 centers are projected to have an average yearly net capacity factor (or "NCF") of 27.5%, which is an improvement over recent years.

Q. How did FPL determine the firm capacity that solar facilities will provide?

A. Firm capacity value is based on the expected output of a solar facility at the time of summer peak load, which typically occurs annually in August from 4 p.m. to 5 p.m., and winter peak load, which typically occurs in January from 7 a.m. to 8 a.m. FPL uses a methodology to determine what firm capacity value at FPL's Summer and Winter peak hours would be appropriate to apply to PV facilities. The potential capacity contribution of PV facilities is dependent upon several factors including: site location, technology, design, and the total amount of solar that is operating on FPL's system. FPL applies this same methodology to all its solar PV facilities, existing or new.

Based on this methodology, the 2024 centers are projected to have an average summer firm capacity value of 46% of their nameplate rating. Therefore, the 12 centers with a total nameplate capacity of 894 MW_{AC} are assumed to have a firm capacity value of 409 MW_{AC} at time of summer peak. These solar installations are assumed to have a 3.8% firm capacity value at time of winter peak due to FPL's winter peak occurring in the early morning, when there is little solar generation output.

Q. Please provide an overview of the analytical process that FPL used to determine the cost-effectiveness of the 2024 Project.

A. FPL used the capacity expansion and hourly production cost functions of the Aurora model to forecast the system economics and develop resource plans that include or exclude the 2024 Project. This model has been used by FPL in prior proceedings at the Commission. Each Aurora modeling run is used to determine the optimal resource plan and associated generation system costs, consisting of capital costs, fixed operations and maintenance ("O&M") costs, capital replacement costs, fuel costs, variable O&M costs, and emissions costs for a given resource plan. The Aurora model is used to determine the CPVRR for each resource plan.

Q. Please provide the result of the economic analysis.

A. To determine the CPVRR impact of the proposed solar generation, FPL subtracted the CPVRR of the No 2024 SoBRA Plan from the CPVRR of the 2024 SoBRA Plan. As shown in Exhibit AWW-4, the CPVRR benefit to FPL customers from the 2024 Project is approximately $561 million.

Q. Does the economic analysis include the effects of Production Tax Credits ("PTCs")?

A. Yes, the economic analysis includes the effects of PTCs that were part of the Inflation Reduction Act that was passed in 2022. The calculation of the PTCs from the 2024 Project is shown in Exhibit AWW-5.

Q. FPL witness Fagan states that the 2024 Project has a higher NCF as compared to FPL's earlier solar installations. Please explain how the higher NCF impacted the economic analysis.

A. The higher NCF achieved largely by the exclusive use of single axis tracking systems results in higher levels of energy output. As FPL is able to generate more output from the solar energy centers, it results in incremental production tax credits, which in turn reduces the overall CPVRR of the 2024 SoBRA Plan and leads to greater customer savings. In addition, higher levels of energy output from using single axis tracking systems drive larger reductions in fossil fuel usage and emissions, which also reduces the overall CPVRR of the 2024 SoBRA Plan.

Q. Is the 2024 Project cost-effective even though it is over the cost cap in the 2021 Rate Settlement?

A. Yes. Although the installed cost of the 2024 Project is $1,635 per kilowatt alternating current ("kW_{AC}"), which is over the $1,250 per kW_{AC} in the 2021 Rate Settlement, the 2024 Project is projected to save customers approximately $561 million CPVRR and therefore is still significantly cost-effective for FPL's customers.

Q. Will the 2024 Project reduce FPL's use of fossil fuel?

A. Yes. As shown on Exhibit AWW-6, the energy from the 2024 Project will displace fossil fuel generation, specifically natural gas. The Project is expected to reduce the annual average use of natural gas by 13,680 million cubic feet. By adding the Project to its generation fleet, FPL reduces its reliance on natural gas and reduces exposure to fuel price volatility.

Q. What effect will these solar energy centers have with respect to greenhouse gases and other air emissions?

A. As shown in Exhibit AWW-7, reducing the use of fossil fuel results in an average annual reduction of 814,916 tons of CO_2. This reduction in CO_2 is equivalent to removing approximately 157,000 cars from the road. Sulfur dioxide and nitrogen oxide emissions are reduced by an annual average of 3 tons and 92 tons, respectively.

Q. What is your conclusion regarding the 2024 Project?

A. As demonstrated by the economic analysis described in my testimony, the addition of the 2024 Project will result in CPVRR savings of approximately $561 million. Therefore, the 2024 Project meets the SoBRA cost-effectiveness requirement established in the 2021 Rate Settlement. Additionally, the 2024 Project will reduce the use of fossil fuel, reduce air emissions, and reduce FPL's reliance on natural gas.

Q. Does this conclude your testimony?

A. Yes.

Load Forecast
September 2022

Year	Summer Peak MW	Winter Peak MW	Net Energy for Load MWh
2023	27,740	22,638	138,005,911
2024	27,991	22,942	138,849,209
2025	28,250	23,172	140,137,669
2026	28,596	23,509	141,550,141
2027	28,831	23,756	142,575,918
2028	29,169	24,098	144,333,918
2029	29,681	24,485	146,243,603
2030	30,205	24,860	148,091,923
2031	30,646	25,274	149,849,337
2032	31,147	25,735	152,232,734
2033	31,701	26,210	154,861,057
2034	32,292	26,699	157,785,313
2035	32,942	27,215	160,959,248
2036	33,636	27,756	164,329,641
2037	34,329	28,305	167,739,795
2038	35,007	28,852	171,151,828
2039	35,666	29,397	174,512,976
2040	36,311	29,938	177,296,434
2041	36,642	30,212	178,913,895
2042	36,976	30,489	180,546,869
2043	37,313	30,768	182,195,505
2044	37,653	31,049	183,859,956
2045	37,996	31,334	185,540,374
2046	38,343	31,621	187,236,913
2047	38,693	31,911	188,949,731
2048	39,047	32,204	190,678,984
2049	39,404	32,499	192,424,831
2050	39,764	32,798	194,187,432
2051	40,128	33,099	195,966,951
2052	40,495	33,403	197,763,551
2053	40,866	33,710	199,577,396
2054	41,240	34,020	201,408,654
2055	41,618	34,333	203,257,494
2056	41,999	34,649	205,124,085
2057	42,385	34,968	207,008,599
2058	42,773	35,290	208,911,210
2059	43,166	35,615	210,832,092

FPL Fuel Price Forecast
September 2022

Year	FGT Firm Gas ($/MMBTU)	Gulfstream Firm Gas ($/MMBTU)	Sabal Trail Firm Gas ($/MMBTU)	Residual Oil ($/MMBTU)	Distillate Oil ($/MMBTU)	Scherer 3 Coal Price ($/MMBTU)
2023	7.28	6.92	7.41	16.76	16.06	3.51
2024	5.91	5.74	6.07	15.75	15.05	3.40
2025	5.33	5.25	5.50	14.31	13.61	3.48
2026	5.31	5.24	5.49	13.64	12.94	3.53
2027	5.23	5.15	5.40	12.77	12.06	3.61
2028	4.78	4.71	4.96	12.86	12.16	3.68
2029	4.62	4.55	4.81	12.96	12.26	-
2030	4.47	4.40	4.66	13.10	12.39	-
2031	4.62	4.55	4.81	13.31	12.61	-
2032	4.73	4.65	4.91	13.53	12.83	-
2033	4.83	4.76	5.01	13.74	13.04	-
2034	4.93	4.86	5.11	13.93	13.22	-
2035	5.03	4.96	5.21	14.18	13.47	-
2036	5.11	5.04	5.29	14.46	13.76	-
2037	5.19	5.11	5.36	14.75	14.04	-
2038	5.24	5.16	5.41	15.05	14.35	-
2039	5.26	5.18	5.43	15.35	14.65	-
2040	5.30	5.22	5.47	15.67	14.96	-
2041	5.36	5.28	5.53	15.73	15.02	-
2042	5.44	5.37	5.61	15.79	15.08	-
2043	5.51	5.44	5.68	15.85	15.14	-
2044	5.60	5.52	5.76	15.91	15.20	-
2045	5.68	5.60	5.84	15.97	15.27	-
2046	5.75	5.67	5.91	16.03	15.33	-
2047	5.82	5.74	5.98	16.09	15.39	-
2048	5.90	5.82	6.06	16.15	15.45	-
2049	6.01	5.92	6.16	16.21	15.51	-
2050	6.09	6.01	6.24	16.28	15.57	-
2051	6.07	5.99	6.22	16.34	15.64	-
2052	6.05	5.97	6.20	16.40	15.70	-
2053	6.03	5.95	6.18	16.46	15.76	-
2054	6.01	5.93	6.16	16.53	15.82	-
2055	5.99	5.91	6.14	16.59	15.89	-
2056	5.97	5.89	6.12	16.65	15.95	-
2057	5.95	5.87	6.11	16.72	16.02	-
2058	5.93	5.85	6.09	16.78	16.08	-
2059	5.91	5.83	6.07	16.85	16.14	-

Resource Plans - Units Added

Year	No 2024 SoBRA Plan	2024 SoBRA Plan
2023	745 MW Solar 447 MW SolarTogether Extension	745 MW Solar 447 MW SolarTogether Extension
2024	745 MW SolarTogether Extension	745 MW SolarTogether Extension **894 MW SoBRA (2024 Project)**
2025	300 MW Battery	---
2026	500 MW Battery	300 MW Battery
2027	300 MW Battery	300 MW Battery
2028	3x1 Martin CC (1,991 MW)	500 MW Battery
2029	---	3x1 Martin CC (1,991 MW)
2030	---	---
2031	500 MW Battery	---
2032	1,400 MW Battery	800 MW Battery

* MW values shown above for solar projects and battery projects are nameplate AC. MW values for fossil units are based on summer MW ratings.

CPVRR - Costs and (Benefits)*

Solar Revenue Requirements			**Non-Solar (Avoided) Generation Costs**			**Avoided System Costs**			**PTC Impacts**	
Generation Capital** (Millions)	Fixed O&M (Millions)	Transmission Interconnection (Millions)	Generation Capital (Millions)	Fixed O&M + Capital Replacement (Millions)	Transmission Interconnection (Millions)	System Net Fuel (Millions)	Startup + VOM (Millions)	Emission (Millions)	PTC Impacts (Millions)	**Total CPVRR (Millions)**
$1,515	$68	$86	($702)	($113)	($2)	($803)	$90	($108)	($591)	**($561)**

* Negative ( ) indicates savings to FPL customers
** Based on the total installed cost of the 2024 Project, $1,635/kW

Yearly PTC Impact for the 2024 Project

Year	2024 Project Generation (MWh)	PTC Forecast* ($/MWh)	Total PTC Impact Nominal ($M)
2024	2,020,976	38.85	78.51
2025	2,146,294	38.85	83.37
2026	2,139,648	40.18	85.98
2027	2,133,291	41.52	88.58
2028	2,132,228	41.52	88.54
2029	2,120,577	42.86	90.90
2030	2,114,220	44.20	93.46
2031	2,107,864	44.20	93.17
2032	2,106,737	45.54	95.95
2033	2,095,150	46.88	98.23

*PTC forecast values represent impact to customers after adjusting for taxes

Avoided Natural Gas

Year	Avoided Natural Gas MMCF
2024	13,815
2025	14,131
2026	14,384
2027	14,754
2028	2,992
2029	14,270
2030	14,507
2031	14,306
2032	14,535
2033	14,547
2034	14,011
2035	14,098
2036	14,246
2037	13,716
2038	14,118
2039	13,790
2040	13,920
2041	13,867
2042	14,044
2043	14,027
2044	13,420
2045	13,728
2046	13,583
2047	13,975
2048	13,866
2049	13,780
2050	13,981
2051	13,854
2052	13,693
2053	13,373
2054	13,813
2055	14,012
2056	14,029
2057	14,178
2058	13,644
2059	13,481
Average =	**13,680**

Avoided Air Emissions

Year	Avoided CO_2 Short Tons	Avoided SO_2 Short Tons	Avoided NO_x Short Tons
2024	852,250	4	161
2025	877,740	8	131
2026	856,460	3	93
2027	893,180	9	123
2028	171,920	1	(272)
2029	848,250	5	111
2030	862,490	5	108
2031	850,290	5	90
2032	863,070	2	61
2033	864,100	3	76
2034	831,360	0	124
2035	837,950	5	55
2036	845,960	2	78
2037	814,800	3	118
2038	838,060	1	60
2039	818,750	2	68
2040	827,040	3	66
2041	824,330	5	58
2042	834,470	4	70
2043	833,590	4	86
2044	796,330	0	140
2045	814,960	1	89
2046	806,730	3	80
2047	829,720	2	127
2048	823,810	3	79
2049	817,910	1	90
2050	830,680	3	136
2051	822,360	1	110
2052	813,170	2	116
2053	794,360	3	116
2054	820,040	1	101
2055	832,850	5	202
2056	833,940	5	70
2057	842,080	3	192
2058	810,900	4	48
2059	801,090	4	152
Average =	**814,916**	**3**	**92**