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July 29, 2019

VIA ELECTRONIC FILING
Mr. Adam Teitzman
Commission Clerk
Florida Public Service Commission
Betty Easley Conference Center
2540 Shumard Oak Boulevard, Room 110
Tallahassee, FL 32399-0850

Re: Docket No. 20190061-EI

Dear Mr. Teitzman:

Pursuant to Order No. PSC-2019-0272-PCO-EI, Florida Power & Light Company submits the attached testimony and exhibits of witnesses Matthew Valle, William F. Brannen, Juan E. Enjamio and Scott R. Bores in support of its Petition for approval of FPL SolarTogether Program and Tariff.

Please contact me if you or your Staff has any questions regarding this filing.

Sincerely,

s/ Maria Jose Moncada
Maria Jose Moncada

Attachments
cc: Walt Trierweiler
Stephanie Morse

:7401780

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF MATTHEW VALLE

DOCKET NO. 20190061-EI

JULY 29, 2019

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Matthew Valle. 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 the Vice President of Development at FPL.

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

A. I am responsible for leading the new generation development for the company across technologies including solar, batteries and natural gas.

Q. Please describe your educational background and professional experience.

A. Prior to my current role, I was Vice President of Development at NextEra Energy Transmission, and was responsible for the competitive development of transmission across the U.S. and Canada. Prior to joining NextEra Energy, I held the position of Principal with The Boston Consulting Group in its Dallas office from 2007 to 2011. In this role, my responsibilities included running project teams for Fortune 500 clients in the energy and technology sectors. Prior to The Boston Consulting Group, I served five years as a nuclear submarine officer in the U.S. Navy. I received a Bachelor of Science with Merit from the U.S. Naval Academy in Systems Engineering, and a Master of Business Administration from Harvard Business School.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following exhibit:

- MV-1 – STR - Tariff No. 8.932 in Legislative and Proposed Formats

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an overview of the FPL SolarTogether Program (or "the Program") including a description, objective and benefits of the Program, as well as the basic principles underlying the structure of the Program.

Q. Please summarize your testimony.

A. FPL SolarTogether is a new community solar program through which participants can voluntarily subscribe to a share of the output from newly constructed solar energy centers ("Centers") and receive a bill credit for their subscription share of the power produced. FPL is proposing this innovative program to meet the substantial demand from customers who are seeking expanded access to solar energy. Under FPL SolarTogether, FPL will build, own and operate Program-designated Centers. Phase 1 will consist of 1,490 megawatts of alternating current ("MW_{AC}") to support the substantial customer demand identified during pre-registration and the anticipated residential and small business customer demand. Participants will pay approximately 96% of the Program base revenue requirements, levelized to provide participants with a fixed cost over time, and in return receive benefits in the form of bill credits, projected at the time of filing and paid out over time.

The Program is projected to generate $139 million in net cost savings, with approximately 80% of the savings allocated to participating customers and 20% allocated to FPL's general body of customers. The basic principles underlying the structure include: Accessibility, Fair value proposition, Flexibility, Fairness, Cost-effectiveness and Transparency. If approved, FPL SolarTogether would be the largest community solar program ever created in the U.S. It would substantially increase fuel diversity, reduce greenhouse gas emissions and help elevate the state of Florida to a leadership position globally in solar energy. Enrollment is expected to begin in early 2020, subject to Program approval.

II. PROGRAM DESIGN

Q. Please describe FPL SolarTogether.

A. FPL SolarTogether is a community solar program through which participants can voluntarily subscribe to a share of new solar energy centers and receive a bill credit for their share of power produced. While no two community solar programs are the same, the design of FPL SolarTogether incorporates elements from other successful community solar programs offered throughout the U.S. Fundamentally, FPL SolarTogether is intended to address the significant desire among many FPL customers for a program such as this. Not only would this Program allow FPL to serve this strong customer demand, but it would also continue Florida's successful advancement of affordable clean

energy and establish Florida as a national leader in solar. FPL SolarTogether Phase 1 alone would double the amount of community solar currently offered in the U.S. and make it the largest community solar program in the country.

Under FPL SolarTogether, FPL will build, own and operate Program-designated Centers. Participants will pay approximately 96% of the base revenue requirements of the Program, levelized to provide participants with a fixed cost over time and, in return, receive bill benefits, projected at the time of filing, and paid out over time. The bill impact of the Program for participants is a nominal premium over FPL's standard service at the outset, and the longer a participant remains in the Program, the greater the benefit. The terms and conditions associated with FPL SolarTogether are described in Tariff STR - Sheet No. 8.932, attached as Exhibit MV-1 to my testimony.

Importantly, the Program is projected to generate $139 million cumulative present value of revenue requirements ("CPVRR") of cost savings for all customers, $28 million of which is allocated to the general body of customers. In this way, FPL SolarTogether is designed to be cost-effective for both the general body of customers and participants. The Program will allow tens of thousands of Floridians to directly support the expansion of solar power and save money on their electric bills over time.

Q. Why is FPL proposing this voluntary solar program?

A. FPL is proposing this innovative new program to meet the substantial demand from customers who are seeking expanded access to solar energy, including those who do not wish to or cannot install their own solar system through net metering. Obviously, investing in net metering is not a viable solution for everyone. Many residential and small business customers, as well as commercial, industrial and governmental ("C&I-G") customers do not have the financial ability to buy or lease a net metering system. Many have unsuitable locations for solar, either due to roof space, roof age, lack of sun exposure or other challenges. Customers who rent their properties may not be permitted to install a solar system at their home or business. In addition, over the past several years, FPL has met with numerous customers, including cities, counties, national retailers and large industrial customers that have all inquired about the availability of renewable programs to meet their organizations' sustainability and financial goals.

Q. Please describe the energy goals that customers have shared with you.

A. For some, those goals represent a policy decision to become 100% renewable by a certain date. For others, it is a means to lower their electricity bill over time. But for many of these customers, it is both. FPL SolarTogether meets these needs extremely well. While the rationale may vary by customer size and type, the common thread is that many FPL customers want a greater percentage of the energy they consume to come from renewable sources and want to enjoy both the financial and sustainability benefits associated with

solar energy.

Q. Does FPL have an understanding of whether residential and small business customers also have an interest in renewable programs of this nature?

A. Yes, the data available to FPL indicates a strong interest in a program of this nature from residential and small business customers. This is evidenced by the more than 50,000 residential customers enrolled in SolarNow, the Company's program that uses voluntary customer contributions to install solar in local communities. Also, there are currently more than 13,000 FPL customers enrolled in net metering. This speaks to a growing demand for solar programs. As previously mentioned, customers are also looking for financial and sustainability benefits, but not all customers are able to participate in net metering. After filing its petition for approval of FPL SolarTogether in March of this year, FPL began initial marketing of the Program to all customers. At the time of this filing 13,000 primarily residential customers have expressed interest in learning more and receiving Program updates.

Q. Why is FPL SolarTogether necessary to meet this demand when net metering and FPL SolarNow are already options?

A. In addition to the net metering limitations I previously mentioned, no single program can meet all customers' varying interests. According to a study by the Smart Electric Power Alliance ("SEPA"), both rooftop and community solar are necessary to satisfy the consumer demand for renewables. The study

also concluded that rooftop solar customers are motivated by energy independence and control, prefer to own solar, and like that the electricity generated goes directly to their home or business. By contrast, community solar customers often cannot afford, lack access to, or do not want net metering, and prefer a program with no maintenance or up front capital costs and less risk. SolarNow is designed for customers interested in expanding solar awareness and education, bringing solar to highly visible locations in their community. FPL SolarTogether addresses the needs of customers who cannot or do not want to own a net metering system, but are seeking a direct bill credit. In this way FPL SolarTogether, SolarNow, and net metering are programs that complement one another and offer different structures and benefits to satisfy diverse customer desires.

Q. What are the basic principles underlying the structure of FPL SolarTogether?

A. FPL's development of FPL SolarTogether was informed by evaluating many different utility-operated community solar programs that exist around the country, selecting the best elements and putting them into a structure that worked best for our customers. Those principles include:

a) Accessibility: FPL SolarTogether expands access to renewable energy programs and provides all customers the opportunity to directly participate in the expansion of new solar energy in Florida and the associated economic and sustainability benefits.

b) Fair value proposition: The bill credit mechanism provides bill savings to

participants and the benefit split between participants and the general body of customers is designed so that over the life of the Centers there is no subsidization by the general body of customers.

c) Flexibility: Participation is entirely voluntary and customers can keep their subscription as long as they remain an FPL customer. Participants may unsubscribe at any time for any reason and are not committed to a long-term contract. Participants may also increase their subscription level once a year based on Program availability and decrease their subscription level at any time.

d) Fairness: All customer classes can participate. Simple payback is the same for all participants regardless of subscription size. Finally, all participants begin earning credits at the same per kilowatt-hour rate regardless of when they first enroll.

e) Cost-effectiveness: All Centers built for the Program are cost-effective and expected to deliver cost savings for all customers and generate bill savings for participants over time.

f) Transparency: The FPL SolarTogether website will disclose the expected Program costs, risks, and benefits to participants. Additionally, the participants' bills will include clearly labeled line items identifying the Program charges and credits.

Q. How much capacity does FPL plan to install for Phase 1 of the Program?

A. In Phase 1, FPL plans to add 20 new solar energy centers between 2020 and 2021, totaling 1,490 MW_{AC}. This phase is designed to support the substantial

demand FPL identified during pre-registration, as well as the anticipated demand from residential and small business customers.

Q. Will FPL offer future phases?

A. Yes, FPL will offer future phases, subject to customer demand, a determination of cost-effectiveness, and regulatory approval. Future phases would be filed with the Florida Public Service Commission ("FPSC") for approval. The subscription costs and credit rates for future phases would reflect the costs and system benefits specific to each phase.

Q. Please describe how FPL SolarTogether works.

A. Customers will have the option to subscribe to kilowatts ("kW") of solar capacity ("Subscription Level") from the Program-dedicated, cost-effective Centers, and may elect a Subscription Level that meets their financial and renewable goals. Participants will pay a monthly charge ("Subscription Charge") for their subscribed capacity and, in turn, will receive credits on their electricity bill reflecting the energy produced by their subscribed share ("Subscription Credit"). In other words, they will receive credits representative of the actual system savings generated by their Subscription Level.

Q Please briefly describe the FPL SolarTogether Subscription Charge and Subscription Credit.

A. The Subscription Charge represents approximately 96% of the base revenue requirements associated with the Program, including the cost to operate the Centers and the Program administrative costs. For Phase 1, it is fixed at $6.76

per kilowatt subscribed per month and will not change over the next 30 years. The Subscription Credit reflects the subscription's share of energy produced by the Centers multiplied by the projected system benefits created by the Program escalated annually ("Subscription Benefit Rate"). The calculations of the Subscription Charge and Subscription Credit are described in greater detail by FPL witness Bores.

Q. Please describe the administrative costs to operate FPL SolarTogether.

A. The administrative costs to operate the Program include expenses associated with: communicating about the Program with customers and marketing it to ensure participation; developing, maintaining, and operating the Program's website and online subscription enrollment platforms; modifying the billing system; and overall Program management and oversight to ensure the Program obligations are met and customers are satisfied.

III. VALUE PROPOSITION FOR PARTICIPANTS

Q. What is the economic value proposition for participants?

A. Participants will receive benefits in the form of bill credits that are designed to grow annually, and over time, the benefits are projected to exceed the subscription costs. FPL estimates that, on a nominal basis, the total cumulative Subscription Credits earned will be greater than the total cumulative Subscription Charges paid by the seventh year of continuous enrollment, assuming output of the solar energy centers based on typical Florida weather.

Participants are expected to achieve this value, known as "simple payback," regardless of Subscription Level.

Q. Please describe how FPL arrived at a seven-year simple payback.

A. As previously mentioned, FPL had many discussions with large customers when designing this Program. Although their reasons for being interested in community solar varied, a top driver was electric bill savings. When evaluating what was a reasonable payback for participants, we considered this customer input as well as the expected payback of net metering options determined to be available to customers in 2020 and 2021 when FPL SolarTogether is expected to launch. Many customers who are used to executing long-term contracts wanted an immediate payback but were willing to accept a five to seven-year simple payback if no long term commitment was required. Other customers stated that their internal metrics usually require simple payback in less than five years.

Given the non-binding nature of the Program along with the absence of an upfront investment by the customer, FPL did not believe simple payback in fewer than seven years was warranted. FPL instead set the simple payback at seven years, the outer limit of the range of payback periods described by many customers. The seven-year payback was the basis of pre-registration pricing, and the overwhelming success verified FPL's view that seven years is appropriate for this Program.

Q. Please explain how the seven-year simple payback affects the pricing components.

A. There are four primary drivers that combine to result in a seven-year payback for participants. First, the Subscription Charge is a levelized payment made by a participant based upon the kW subscribed. Secondly, the Subscription Benefit Rate is a dollar-per-kWh credit applied to the actual energy associated with a subscription each month. Thirdly, the Subscription Benefit Rate escalates each year a participant remains in the Program. Lastly, as mentioned previously, 20% of the net benefits of the Program have been allocated to the general body of customers. Based on an iterative process, FPL evaluated different combinations of Subscription Charge, initial Subscription Benefit Rate, and annual Subscription Benefit Rate escalation rate (assuming the 20% of benefits allocated to the general body of customers) to derive the set of pricing components resulting in a seven-year simple payback.

Q. How will Program billing work for participants?

A. Participants will be billed on a monthly basis for their subscription. To enable greater transparency, the Subscription Charge and Subscription Credit will appear on the participants' bills as two separate incremental and clearly labeled line items. Participants will pay the same base bill; participation does not alter their energy usage or current electric rate structure.

Q. Will fluctuations in weather impact the Subscription Credit received by participants?

A. Yes. Daily and seasonal weather fluctuations will vary the energy output of

the Centers like they do for all solar facilities. Consequently, the Subscription Credits that participants receive on their bills will vary monthly.

IV. VALUE PROPOSITION FOR THE GENERAL BODY OF CUSTOMERS

Q. What is the economic value proposition for the general body of customers?

A. FPL SolarTogether is cost-effective and the Program is expected to have a favorable impact on the general body of customers. Both the costs and benefits are shared between the participants and the general body of customers, and Phase 1 is expected to provide a total of $139 million CPVRR in cost savings for all customers. FPL made the determination to allocate 20% of the expected total CPVRR benefit ($28 million) to the general body of customers. The remaining 80% of the expected total CPVRR benefit or $111 million is allocated to participants in FPL SolarTogether.

Q. Please discuss the factors that relate to the allocation of benefits to the general body of customers.

A. FPL designed this shared savings approach as a safeguard for the general body of customers against uncertainty in the underlying Program assumptions, primarily fuel price decreases. The economic analysis for FPL SolarTogether follows the approach used in all economic analyses filed by FPL with this Commission, and specifically the approach used to support FPL's Solar Base

Rate Adjustment, known as SoBRA. FPL has documented through various analyses and sensitivities that FPL SolarTogether is cost-effective for both participants and the general body of customers. The customer economic benefits are dependent on a number of variables including fuel and carbon pricing, timing and cost of new generation additions, system production profile, capital spend, and O&M costs.

While the level of benefits to the participants is essentially fixed, subject to the actual generation of the Centers, the benefits to the general body of customers are not similarly fixed. If fuel prices and/or CO_2 compliance costs are higher than forecasted, the general body of customers would see more than the expected $28 million in CPVRR benefit, all else equal, while the participant benefits would be unchanged. Likewise, if fuel prices and/or CO_2 compliance costs are lower than forecasted, the general body of customers would see less than the expected $28 million in CPVRR benefit, all else equal. FPL is therefore allocating 20% of the expected $139 million CPVRR net benefits to the general body of customers, far more than their proportional share. In addition, any portion of capacity not subscribed will increase the benefits of the general body of customers.

V. PROGRAM TERMS

Q. Who is eligible to enroll in FPL SolarTogether?

A. All FPL customers under a metered rate schedule will be eligible to enroll so long as their account is not delinquent.

Q. Is there a maximum capacity Subscription Level?

A. Yes. No single metered account can subscribe to capacity that represents more than 100% of its previous 12-month total energy usage (kWh). In this way, a participant is subscribing to a capacity that is expected to generate approximately what they consume in an annual period. FPL will review all enrolled accounts annually to ensure that participants are not exceeding their maximum allowable subscription and will make adjustments if needed.

Q. How will FPL ensure all customer classes can participate?

A. FPL will allocate the available capacity by customer class to support the diversity of participants and to ensure customers of all types and sizes have an opportunity to participate. Initially, 25% of Program capacity is designated for residential and small business customers and 75% of Program capacity is designated for commercial, industrial and governmental customers. For Phase 1, this is 372.5 MW_{AC} and 1,117.5 MW_{AC}, respectively. FPL will periodically reevaluate demand and, if warranted, reassign unsubscribed capacity between the groups and adjust the allocation as appropriate. This will help ensure the allocation aligns with customer demand for the Program and that customers from one group are not waitlisted while unsubscribed capacity sits unused by

the other customer group. FPL also reserves the right to implement a cap on the maximum portion of Program capacity that can be attributed to any one subscriber.

Q. How did FPL determine the 75%/25% allocation between customer classes?

A. FPL determined that establishing allocations to ensure all customer classes can participate is a best practice in community solar, but no single allocation has emerged as the best solution. Due to the substantial difference in energy usage between customer classes, a large amount of capacity is required to meet the needs of commercial, industrial and governmental customers, whereas a smaller amount of capacity is required for residential and small business customers that use comparatively less energy. Accounts taking service under a demand-rate rate structure are classified as C&I-G and non-demand rate customers are considered residential and small business.

For Phase 1, 25% of Program capacity (372.5 MW_{AC}) will enable approximately 74,500 residential and small business customers to participate, assuming a subscription of 5 kW each. A 5 kW subscription reflects estimated capacity for a typical FPL customer using 1,000 kWh per month. The remaining 1,117.5 MW_{AC}, or 75% of Phase 1 Program capacity, allocated for commercial, industrial and governmental customers aligns with the level of capacity reserved during preregistration and enables enrollment of approximately 200 customers ranging from counties to hospitals to retail

chains.

Q. When and how will customers enroll in FPL SolarTogether?

A. Upon FPSC approval of the Program, FPL plans to conduct open enrollment for residential and small business customers, in addition to any commercial, industrial and governmental customers who elected not to pre-register. At this point in time, FPL expects open enrollment will begin as early as January 13, 2020, approximately two months prior to the first anticipated FPL SolarTogether billing date.

A web-based enrollment platform will help customers determine the maximum capacity to which they can subscribe based on their usage history. The enrollment system will convert the customer's electricity usage for the preceding 12 months into an equivalent solar capacity value measured in kilowatts to establish that customer's maximum enrollment subscription. The enrollment system will also allow customers to view and select the subscription level that best suits their needs by providing a side-by-side comparison of net Program costs under different subscription levels. FPL Customer Service representatives will be trained to assist customers through the enrollment process.

Q. How will FPL enrollment subscriptions be filled and when will subscription billing start?

A. The Program is first-come, first-served, and participants' reservations, including pre-registrants', are time-stamped. Phase 1 consists of five FPL

SolarTogether Projects that comprise a total of 20 74.5-MW_{AC} solar energy centers. Participants will be assigned to one of the five Projects as they become operationally available. Billing will then begin after one full calendar month of operation. Table 1 shows a detailed breakdown of the allocation and billing start dates across the five proposed Projects.

TABLE 1

	Project Size	Comm. Operation Date (Est.)	Billing Start Date (Est.)	Subscription Credit Based on Actual Generation from	Program Capacity	Subscriptions Allocated to C&I-G	Subscriptions Allocated to Resi-SMB
ST Project 1	223.5 MW	2/1/2020	3/1/2020	ST Project 1	223.5 MW	167.625 MW	55.875 MW
ST Project 2	223.5 MW	2/1/2020	3/1/2020	ST Project 1+2	447.0 MW	335.250 MW	111.750 MW
ST Project 3	447 MW	1/1/2021	2/1/2021	ST Project 1+2+3	894 MW	670.500 MW	223.500 MW
ST Project 4	298 MW	4/1/2021	5/1/2021	ST Project 1+2+3+4	1,192 MW	894.000 MW	298.000 MW
ST Project 5	298 MW	4/1/2021	5/1/2021	ST Project 1+2+3+4+-5	1,490 MW	1,117.500 MW	372.500 MW

For example, for ST Project 1, FPL will assign 167 MW_{AC} to the commercial, industrial, and governmental customers with the earliest reservation timestamps and will assign 55 MW_{AC} to the residential and small business customers with the earliest reservation timestamps, and billing will begin on March 1, 2020.

Q. How does FPL plan to manage over-subscription?

A. Once subscriptions reach the Program limit, interested customers will be waitlisted. FPL's intent is to offer future phases based on customer demand. If demand exists and the subscription growth rates indicate demand will continue to grow, FPL plans to begin to develop the next phase.

Q. Are there any other terms and conditions of the Program?

A. FPL SolarTogether is designed to be as flexible and hassle-free as possible for customers.

a) No upfront cost. Participants simply pay for their subscription monthly.

b) No long-term contract. FPL SolarTogether is a voluntary and flexible community solar program. Participants will not be tied to a long-term commitment. Upon notice to FPL, participants may terminate their participation in the Program at any time for any reason without penalty. Termination will be effective the following billing cycle.

c) Participants may elect to have the renewable energy credits associated with their subscription retired on their behalf.

d) Participation is portable within FPL's service area. Participants who move premises within FPL's service area may remain subscribed to the Program and continue to receive the benefits of their subscription. They will be deemed to have continuous, uninterrupted enrollment for the purpose of determining their FPL SolarTogether benefits. For example, a business that closes or moves one storefront and wants to shift its subscription to another location may do so assuming they continue to meet the Program's other criteria.

e) FPL will maintain the right to terminate participation of any customer whose service account becomes delinquent.

f) Upon either voluntary or involuntary termination of participation, the customer may not re-enroll in the Program for a 12-month period, and any

new participation request is subject to subscription availability.

VI. PROGRAM DEMAND

Q. Why did FPL offer pre-registration for C&I-G customers?

A. FPL offered pre-registration for C&I-G customers in order to gauge interest and demand for FPL SolarTogether. In a SEPA study, more than half of utilities said signing up initial customers was the biggest challenge. FPL wanted to ensure the program was sized appropriately to accommodate the significant potential market size and to ensure the program would be fully subscribed. While FPL had enough information to suggest that residential and small business customers were interested in the program, it was unclear how much interest there would be from C&I-G customers. Based on inquiries over the years, FPL believed there would be interest from some C&I-G customers. The Company recognized that subscriptions from even a relatively small number of C&I-G customers could significantly impact the program's size. For example, FPL's largest customer would require 500 MW of solar in order to meet its 100% renewable goal. Thus, FPL opened a pre-registration period from November 29, 2018 through January 25, 2019.

Q. Did FPL offer pre-registration to test residential and small business customer interest?

A. No. It was not necessary to conduct pre-registration for non-demand customer classes (comprising more than 4.3 million residential and small business

customers) because no individual non-demand customer could materially impact the program's capacity in the way that a commercial, industrial, or governmental customer could as described above.

FPL is confident that interest exists among many of its non-demand customers. Today within the FPL service area there are more than 50,000 SolarNow participants and more than 13,000 customers who participate in net metering. Each of these programs has seen increased levels of interest in the last 12-18 months, indicating that there is growing market demand within this segment for different types of solar offerings. Based on this data, FPL set aside a certain amount of capacity to ensure FPL SolarTogether could accommodate initial anticipated interest.

Q. Describe the methods by which FPL offered pre-registration to C&I-G customers.

A. Prior to and during pre-registration, FPL conducted outreach via email to approximately 100,000 C&I-G accounts. FPL held five educational webinars that were attended by representatives from approximately 500 customers. Additionally, a specially designed pre-registration informational website was launched and visited by approximately 4,500 customers. Each pre-registrant was directed to an online reservation system where they were required to complete their pre-registration reservation form. FPL representatives were also available to explain the Program, answer customer specific questions and assist in the signup process. To ensure an accurate accounting of capacity

demand for the Program, FPL required that customers wishing to reserve capacity sign contracts demonstrating their commitment to enroll so long as the pricing and terms they signed up for remained substantially the same.

Q. What was the response to FPL's pre-registration?

A. More than 200 customers reserved capacity totaling approximately 1,100 MW, with many of these customers reserving a subscription equal to 75% to 100% of their accounts' annual energy usage. Based on the high level of customer interest demonstrated during pre-registration, FPL sized the initial Program at 1,490 MW_{AC}. This size accommodates nearly all of the pre-registered reservations requested while preserving 372.5 MW_{AC} of capacity for residential and small business customers.

Q. Does this conclude your direct testimony?

A. Yes.

FLORIDA POWER & LIGHT COMPANY **Original Sheet No.8.932**

FPL SOLARTOGETHER RIDER
(OPTIONAL PROGRAM)

RATE SCHEDULE: STR

AVAILABLE:

The FPL SolarTogether[SM] Rider ("FPL SolarTogether" or "the Program") is available in all territory served, subject to subscription availability. This optional program allows FPL customers to subscribe to a portion of universal solar capacity built for the benefit of the Program and receive a credit for the actual solar production associated with their subscription.

APPLICATION:

In conjunction with the otherwise applicable metered rate schedule. All rates and charges under the customers' otherwise applicable metered rate schedule shall apply.

MONTHLY SUBSCRIPTION:

The Monthly Subscription shall be equal to the sum of the ***Monthly Subscription Charge + Monthly Subscription Credit*** as follows:

Monthly Subscription	
Subscription Charge $/kW-Month	Subscription Credit ¢/kWh
See Sheet No. 8.934	See Sheet No. 8.934

LIMITATION OF SERVICE:

Any customer taking service under a metered rate schedule who has no delinquent balances with FPL is eligible to participate. Eligible customers may elect a subscription level in 1 kW units representing up to 100% of their previous 12-month total kWh usage. Increases in number of units purchased will be limited to once per year and subject to program availability.

BILLING:

Participants are subject to the minimum bill on their otherwise applicable rate schedule. The FPL SolarTogether Monthly Subscription Charge and offsetting Monthly Subscription Credit will appear as separate line items on a participant's bill during every month of enrollment, and are subject to all applicable taxes and fees.

Monthly Subscription Credit amounts may not result in a total bill less than zero ($0). Any excess credit amounts will be applied in subsequent months to ensure participant total bill amounts meet this requirement.

TERMS OF SERVICE:

Not less than one (1) billing cycle. Participants may, at any time following their first billing cycle, terminate their participation ("Voluntary Termination") or reduce the number of subscribed units purchased. Participants may be terminated from the program by FPL if the customer becomes delinquent on the customer's electric service account or for failure to satisfy eligibility requirements ("Involuntary Termination"). Upon either Voluntary or Involuntary Termination, the account is prohibited from re-enrolling for a twelve (12) month period.

(Continued on Sheet No. 8.933)

Issued by: Tiffany Cohen, Director, Rates and Tariffs
Effective:

FLORIDA POWER & LIGHT COMPANY **Original Sheet No. 8.933**

(Continued from Sheet No. 8.932)

SPECIAL PROVISIONS:

Upon customer request, if the customer moves within FPL's service territory, program participation may continue at a new service address with no impact the customer's program enrollment date subject to the limitations and terms outlined above. Notification to transfer participation must be made by the customer to the Company and the Company will have 45 days to complete the transfer.

RULES AND REGULATIONS:

Service under this rider is subject to orders of governmental bodies having jurisdiction and to the currently effective "General Rules and Regulations for Electric Service" on file with the Florida Public Service Commission. In case of conflict between any provisions of this schedule and said "General Rules and Regulations for Electric Service" the provisions of this rider shall apply. The participant subscription is neither a security nor an ownership interest in the solar asset and therefore no owned interest is to be surrendered, sold, or traded.

(Continued on Sheet No. 8.934)

Issued by: Tiffany Cohen, Director, Rates and Tariffs
Effective:

FLORIDA POWER & LIGHT COMPANY **Original Sheet No. 8.934**

(Continued from Sheet No. 8.933)

MONTHLY SUBSCRIPTION
FPL SOLARTOGETHER PARTICIPANT RATES

Phase 1		
Participant Program Year	Subscription Charge $/kW-Month	Subscription Credit ¢/kWh
1	$6.76	(3.42881)
2	$6.76	(3.47853)
3	$6.76	(3.52897)
4	$6.76	(3.58014)
5	$6.76	(3.63205)
6	$6.76	(3.68471)
7	$6.76	(3.73814)
8	$6.76	(3.79234)
9	$6.76	(3.84733)
10	$6.76	(3.90312)
11	$6.76	(3.95972)
12	$6.76	(4.01714)
13	$6.76	(4.07539)
14	$6.76	(4.13448)
15	$6.76	(4.19443)
16	$6.76	(4.25525)
17	$6.76	(4.31695)
18	$6.76	(4.37955)
19	$6.76	(4.44305)
20	$6.76	(4.50747)
21	$6.76	(4.57283)
22	$6.76	(4.63914)
23	$6.76	(4.70641)
24	$6.76	(4.77465)
25	$6.76	(4.84388)
26	$6.76	(4.91412)
27	$6.76	(4.98537)
28	$6.76	(5.05766)
29	$6.76	(5.13100)
30	$6.76	(5.20540)

Issued by: Tiffany Cohen, Director, Rates and Tariffs
Effective:

FPL SOLARTOGETHER RIDER
(OPTIONAL PROGRAM)

RATE SCHEDULE: STR

AVAILABLE:

The FPL SolarTogether^{SM} Rider ("FPL SolarTogether" or "the Program") is available in all territory served, subject to subscription availability. This optional program allows FPL customers to subscribe to a portion of universal solar capacity built for the benefit of the Program and receive a credit for the actual solar production associated with their subscription.

APPLICATION:

In conjunction with the otherwise applicable metered rate schedule. All rates and charges under the customers' otherwise applicable metered rate schedule shall apply.

MONTHLY SUBSCRIPTION:

The Monthly Subscription shall be equal to the sum of the ***Monthly Subscription Charge + Monthly Subscription Credit*** as follows:

Monthly Subscription	
Subscription Charge $/kW-Month	Subscription Credit ¢/kWh
See Sheet No. 8.934	See Sheet No. 8.934

LIMITATION OF SERVICE:

Any customer taking service under a metered rate schedule who has no delinquent balances with FPL is eligible to participate. Eligible customers may elect a subscription level in 1 kW units representing up to 100% of their previous 12-month total kWh usage. Increases in number of units purchased will be limited to once per year and subject to program availability.

BILLING:

Participants are subject to the minimum bill on their otherwise applicable rate schedule. The FPL SolarTogether Monthly Subscription Charge and offsetting Monthly Subscription Credit will appear as separate line items on a participant's bill during every month of enrollment, and are subject to all applicable taxes and fees.

Monthly Subscription Credit amounts may not result in a total bill less than zero ($0). Any excess credit amounts will be applied in subsequent months to ensure participant total bill amounts meet this requirement.

TERMS OF SERVICE:

Not less than one (1) billing cycle. Participants may, at any time following their first billing cycle, terminate their participation ("Voluntary Termination") or reduce the number of subscribed units purchased. Participants may be terminated from the program by FPL if the customer becomes delinquent on the customer's electric service account or for failure to satisfy eligibility requirements ("Involuntary Termination"). Upon either Voluntary or Involuntary Termination, the account is prohibited from re-enrolling for a twelve (12) month period.

(Continued on Sheet No. 8.933)

FLORIDA POWER & LIGHT COMPANY **Original Sheet No. 8.933**

(Continued from Sheet No. 8.932)

SPECIAL PROVISIONS:

Upon customer request, if the customer moves within FPL's service territory, program participation may continue at a new service address with no impact the customer's program enrollment date subject to the limitations and terms outlined above. Notification to transfer participation must be made by the customer to the Company and the Company will have 45 days to complete the transfer.

RULES AND REGULATIONS:

Service under this rider is subject to orders of governmental bodies having jurisdiction and to the currently effective "General Rules and Regulations for Electric Service" on file with the Florida Public Service Commission. In case of conflict between any provisions of this schedule and said "General Rules and Regulations for Electric Service" the provisions of this rider shall apply. The participant subscription is neither a security nor an ownership interest in the solar asset and therefore no owned interest is to be surrendered, sold, or traded.

(Continued on Sheet No. 8.934)

Issued by: Tiffany Cohen, Director, Rates and Tariffs
Effective:

FLORIDA POWER & LIGHT COMPANY **Original Sheet No. 8.934**

(Continued from Sheet No. 8.933)

MONTHLY SUBSCRIPTION
FPL SOLARTOGETHER PARTICIPANT RATES

Phase 1		
Participant Program Year	Subscription Charge $/kW-Month	Subscription Credit ¢/kWh
1	$6.76	(3.42881)
2	$6.76	(3.47853)
3	$6.76	(3.52897)
4	$6.76	(3.58014)
5	$6.76	(3.63205)
6	$6.76	(3.68471)
7	$6.76	(3.73814)
8	$6.76	(3.79234)
9	$6.76	(3.84733)
10	$6.76	(3.90312)
11	$6.76	(3.95972)
12	$6.76	(4.01714)
13	$6.76	(4.07539)
14	$6.76	(4.13448)
15	$6.76	(4.19443)
16	$6.76	(4.25525)
17	$6.76	(4.31695)
18	$6.76	(4.37955)
19	$6.76	(4.44305)
20	$6.76	(4.50747)
21	$6.76	(4.57283)
22	$6.76	(4.63914)
23	$6.76	(4.70641)
24	$6.76	(4.77465)
25	$6.76	(4.84388)
26	$6.76	(4.91412)
27	$6.76	(4.98537)
28	$6.76	(5.05766)
29	$6.76	(5.13100)
30	$6.76	(5.20540)

Issued by: Tiffany Cohen, Director, Rates and Tariffs
Effective:

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

TESTIMONY OF WILLIAM F. BRANNEN

DOCKET NO. 20190061-EI

JULY 29, 2019

Q. Please state your name and business address.

A. My name is William F. Brannen. My business address is NextEra Energy Resources, LLC ("NEER"), 700 Universe Boulevard, Juno Beach, Florida, 33408.

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

A. I am employed by NEER as a Senior Director for Project Engineering and Due Diligence.

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

A. I manage the development and implementation of engineering, technology selection, and execution strategies for universal solar and distributed generation projects for NextEra Energy, Inc., the parent of Florida Power & Light Company ("FPL") and NEER. I am responsible for coordinating the activities of project team members to optimize the value of projects by leveraging technology advances, market dynamics, and supplier relationships during the early stage due diligence, permitting, engineering, and execution phases of these projects. My goal is to ensure that development projects meet or exceed reliability and performance requirements while maintaining reasonable costs.

Q. Please describe your education and professional experience.

A. I earned both a Bachelor and Master of Science in Civil Engineering from the University of New Hampshire. Additionally, I hold a Master of Business Administration from Nova Southeastern University. I have been a licensed professional engineer in the State of Florida since 1981. I have worked for

FPL and NEER since 1979. During that time, I have held a variety of technical, operational, commercial, and management positions in areas related to power generation, engineering, and construction. I have experience in a wide range of power generation technologies including nuclear, combined cycle, wind and approximately 3,376 megawatts of alternating current ("MW_{AC}") of photovoltaic ("PV") and concentrated solar thermal facilities. Since 2009, I have been responsible for key aspects of the design and construction of all eighteen of FPL's universal solar energy centers. The total capacity of these centers is approximately 1,228 MW_{AC}, which is made up of one 75 MW_{AC} solar thermal facility and approximately 1,153 MW_{AC} of PV generation at 17 solar energy centers. In addition to these FPL facilities, I have served the same function for 350 MW_{AC} of solar thermal generation in California and Spain, as well as approximately 2,200 MW_{AC} of universal solar PV generation throughout North America outside of Florida.

Q. What is the purpose of your testimony?

A. The purpose of my direct testimony is two-fold. First, I describe the 20 solar energy centers ("Centers") referenced in FPL's Petition for Approval of the FPL SolarTogether Program (or "the Program") and Tariff that was filed on March 13, 2019 ("FPL's Petition"). As part of the description of the Centers, I include an overview of the technology, engineering design parameters, construction, operating characteristics, and overall costs and schedules. Second, I demonstrate that the cost of the components, engineering, and construction estimated for the five FPL SolarTogether Projects ("Projects") is

reasonable.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring Exhibits WFB-1 through WFB-4. The title to each exhibit is shown below, and they are all attached to my direct testimony.

- Exhibit WFB-1 List of FPL Universal PV Solar Energy Centers in Service
- Exhibit WFB-2 Typical Solar Energy Center Block Diagram
- Exhibit WFB-3 Specifications for FPL SolarTogether Projects 1, 2, 3, and 4
- Exhibit WFB-4 Construction Schedules for the FPL SolarTogether Projects

Q. Does FPL have experience in designing and building universal PV solar facilities?

A. Yes. FPL's extensive experience designing and building universal solar generation facilities places it among the leaders in the U.S. Since 2009, FPL has completed 17 universal solar centers totaling approximately 1,153 MW_{AC}. The existing FPL universal solar energy centers range in size from 10 MW_{AC} to 74.5 MW_{AC}. Exhibit WFB-1 provides a list of the FPL universal solar energy centers in service.

Q. Please describe FPL's track record building universal solar PV.

A. The 17 PV universal solar energy centers constructed and placed into operation by FPL were completed an average of 29 days early, at a total cost of $1.85 billion, about 4.6% or nearly $90 million below the cumulative

budget. In addition, each center was completed at or below budget.

Q. Please describe the Centers that comprise the FPL SolarTogether Program.

A. Under the proposed Program, FPL will place in service five Projects made up of 20 individual Centers totaling 1,490 MW_{AC} by April of 2021. Each Center will have a nameplate capacity of 74.5 MW_{AC} and have an individual point of interconnection to the FPL transmission system. Projects 1 and 2, which consist of three Centers each, are currently under construction and are expected to be placed into service by February 1, 2020. The six Centers that comprise Project 3 are expected to be placed into service by January 1, 2021. The last eight Centers that make up the final two Projects will be placed into service by April 1, 2021. The 20 FPL SolarTogether Centers are geographically dispersed throughout FPL's service territory. Site selection for Projects 4 and 5 is preliminary. FPL might ultimately choose different sites for those future Projects if they present risks that could adversely impact the commercial operation date.

Q. Has FPL finalized the site layouts and designs for the FPL SolarTogether Centers?

A. FPL has finalized layouts and designs for Centers that are included in Projects 1 and 2. The layouts and designs for the six Centers in Project 3 are nearing completion. For the eight Centers that comprise Projects 4 and 5, FPL has completed preliminary designs to establish costs and performance and will continue to evaluate potential optimization and improvement opportunities.

Details of the final designs for the Centers in Projects 4 and 5 will differ from the preliminary designs only to the extent such changes result in a greater benefit to FPL's customers. Both my testimony and the analysis presented in FPL witness Juan Enjamio's testimony are predicated on the current state of the designs for all 20 FPL SolarTogether Centers.

Q. Will FPL use the same type of solar panels for the FPL SolarTogether Projects as those used to construct the 2020 SoBRA Project?

A. The solar panels that will be purchased for the FPL SolarTogether Projects are similar, but not identical, to the silicon crystal panels used in the construction of two of the sites that comprise FPL's 2020 SoBRA Project. The difference between the panels used for the FPL SolarTogether Projects and those used for the 2020 SoBRA Project is that the FPL SolarTogether panels have a lower sunlight to direct current ("DC") conversion efficiency.

Q. Why will FPL use different panels for the FPL SolarTogether Projects?

A. Supply and demand market forces drove the panel selection. There was high demand for PV panels in the U.S. market during the period panels will need to be delivered to the SolarTogether sites. Major suppliers have sold out of panels with conversion efficiencies similar to those secured for the 2020 SoBRA Project during the required delivery windows. Furthermore, the panels that FPL will use for FPL SolarTogether are being secured at a lower cost than those used for the 2020 SoBRA Project, which offsets the impact of their lower conversion efficiency.

Q. Aside from the solar panels, please describe the PV generation technology that FPL plans to use.

A. The solar panels will be mounted on either fixed-tilt or tracking support structures depending on individual site characteristics. The 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 transmission interconnection voltage for each FPL SolarTogether Center. The inverters are paired with a single medium voltage transformer on a common equipment skid to form a power conversion unit ("PCU"). Exhibit WFB-2 provides a typical block diagram depicting the basic layout of major equipment components and Exhibit WFB-3 identifies the specifications for SolarTogether Projects 1, 2, 3, and 4. The specifications for Project 5 have not yet been finalized.

Q. How will the FPL SolarTogether Centers be interconnected to FPL's transmission network?

A. As noted earlier, each of the Centers has an individual point of interconnection to the FPL transmission system. New collection substations with step-up power transformers will be constructed for each site. The step-up power transformers increase the AC voltage from 34.5 kV to the voltages at the transmission point of interconnect. The interconnection voltages for the sites range from 115 kV to 230 kV. For the six Centers included in FPL

SolarTogether Projects 1 and 2, the new collection substations will be connected to the bulk transmission system by either looping existing transmission lines into a new transmission substation or utilizing existing substations. The remaining 14 Centers will be interconnected to FPL's bulk transmission system in a substantially similar manner.

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

A. Yes. The estimated capital construction cost for each of the Centers includes the projected cost for its unique interconnection configuration.

Q. Are upgrades to the existing FPL bulk transmission system required to accommodate the proposed FPL SolarTogether sites?

A. No system upgrades are anticipated. As a result, there are no costs associated with upgrading FPL's transmission system.

Q. Did or will FPL have to acquire property for the FPL SolarTogether sites?

A. Yes, FPL has acquired property or has purchase options for 19 of the 20 proposed FPL SolarTogether sites. One site that FPL anticipates using for Project 4 will be leased.

Q. Can you explain how FPL acquires and optimizes property for solar energy centers?

A. Yes. FPL identifies candidate parcels available for purchase for solar sites through a review of real estate listings and public land records. FPL screens the list of candidate parcels by using criteria that includes each property's

proximity to a transmission system interconnection point and whether the property provides sufficient acreage to accommodate the expected permitting requirements and the construction of solar sites. Because the landowners sell the parcels as a whole, FPL evaluates the features of each property – such as the presence of wetlands and flood plains, environmental constraints and cultural restrictions – and develops designs that optimize the land use for each parcel.

Q. What are the proposed construction schedules for the FPL SolarTogether Projects?

A. As I noted earlier, Projects 1 and 2 are currently under construction and are expected to be placed into service by February 1, 2020. Project 3 is expected to be placed into service by January 1, 2021, and Projects 4 and 5 are expected to be placed into service by April 1, 2021. The period necessary to complete engineering, permitting, equipment procurement, contractor selection, construction, and commissioning for each Project will range between 18 and 24 months. The construction periods include the time necessary to prepare each of the sites, construct roads and drainage systems, install the solar generating equipment, erect fencing, and build the interconnection facilities. The construction schedules support the proposed commercial in-service dates. Exhibit WFB-4 provides more details regarding the construction schedules for the five FPL SolarTogether Projects.

Q. What is the estimated construction cost for the FPL SolarTogether Projects?

A. FPL estimates the total construction cost of the Projects, including land, will be $1.79 billion or $1,202 per kW_{AC}. Costs may vary either upward or downward on an individual site basis, but FPL expects that the total cost will not exceed $1.79 billion, as stated in FPL's Petition.

Q. Are the cost estimates for equipment, engineering, and construction for the proposed solar generation reasonable?

A. Yes.

Q. What is the basis for your conclusion?

A. Beginning late in 2018 and continuing through this year, FPL solicited proposals for the supply of the PV panels, engineering, procurement and construction ("EPC") services for the sites, construction contractors for the substations, and major electrical equipment consisting of PCUs, and step-up power transformers. The scope of services for the EPC solicitations included the supply of the balance of equipment and materials. The bids from the PV panel manufacturers, the EPC contractors, the major electrical equipment suppliers, and the substation contractors were high quality and extremely competitive. More than 98% of the construction costs are the result of competitive RFP solicitations.

Q. Please describe the competitive solicitations associated with the PV panels for the FPL SolarTogether Projects.

A. Seventeen large, industry-leading suppliers responded to FPL's request for proposals for PV panels. All of these proposals satisfied the requirements, and therefore all were evaluated. Due to the volume of panels required for the Program and availability of supply in the market, FPL contracted with more than one supplier. FPL has secured panels from the lowest cost bidders for Projects 1 and 2. In addition to offering the lowest cost, these suppliers demonstrated that they have the capability to produce high-quality panels, and they provided strong financial performance security. Bid evaluations for the supply of PV panels for Projects 3, 4, and 5 are still in progress.

Q. Please describe the competitive solicitations associated with the EPC contracts for FPL SolarTogether.

A. EPC proposals for the Program's Centers were solicited from seven industry-recognized contractors. The contractors were not required to submit proposals for every FPL SolarTogether site. However, there were at least three proposals for each site.

Three of the contractors elected not to submit proposals. The bids submitted by the four remaining contractors met the requirements of the request for proposals. Accordingly, the proposals from these four contractors were evaluated. In early 2019, FPL executed contracts for Projects 1 and 2 with the lowest cost EPC contractors capable of performing the work in accordance

with each Project's schedule requirements. The bid evaluations are nearing completion for Project 3 and are still in progress for Projects 4 and 5.

Q. Please describe the competitive solicitations associated with major electrical equipment.

A. FPL solicited proposals from nine PCU suppliers. Two of the suppliers elected not to submit proposals. The proposals submitted by the seven remaining suppliers met the requirements of the request for proposals and were evaluated. FPL selected the lowest cost suppliers capable of performing the work in accordance with each Project's schedule requirements to supply the PCUs.

FPL solicited proposals for step-up power transformers from seven industry-leading manufacturers, one of which declined to submit a proposal. FPL evaluated the six qualifying proposals and selected the lowest cost bidder to supply the transformers for five of the six Centers that comprise Projects 1 and 2. A spare FPL transformer will be used at the remaining Center. The cost of the spare transformer is slightly lower than the cost of the transformers selected through the bid process. The bid evaluations are nearing completion for Project 3 and still in progress for Projects 4 and 5.

Q. Please describe the competitive solicitations associated with the substation and interconnection facilities construction contractors.

A. Proposals for the construction of the substation and interconnection facilities were solicited from 16 industry-recognized contractors. Eleven contractors

did not submit bids. The remaining five bids satisfied the requirements of the request for proposal. Not all of the contractors submitted proposals for every Center. However, in all cases, at least two contractors submitted proposals for each Center. Accordingly, these proposals were evaluated. The two lowest cost bidders capable of performing the work in accordance with each Project's schedule requirements were selected to construct the substation and interconnection facilities for Projects 1 and 2. The bid evaluations are nearing completion for Project 3 and are still in progress for Projects 4 and 5.

Q. Please identify how construction cost and schedule risks are being managed during the execution phase of the FPL SolarTogether Projects.

A. As I previously noted, more than 98% of the construction costs are the result of competitive solicitations, all of which are complete or nearing completion. Therefore, there is a high degree of certainty related to the cost to construct the Projects. Likewise, the sites designated for the 20 FPL SolarTogether Centers have been thoroughly evaluated, and permitting for 18 of the 20 sites is either complete or nearing completion. The remaining two sites are located in jurisdictions with well-established permitting processes where FPL has successful permitted generation projects. Accordingly, the risk of material delays due to permitting considerations or site conditions is minimal.

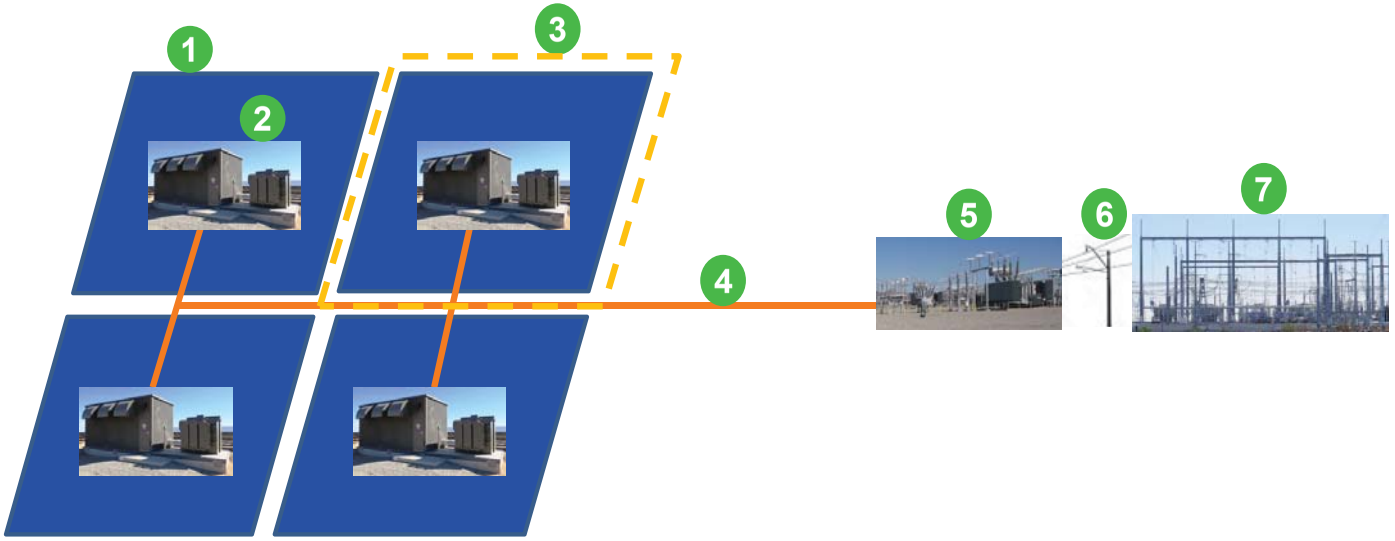
Q Does this conclude your testimony?

A. Yes.

List of FPL Universal PV Solar Centers in Service

Solar Energy Center	Capacity (MW_{AC})	In-Service Date
DeSoto	25.0	October 27, 2009
Space Coast	10.0	April 16, 2010
Babcock Ranch	74.5	December 31, 2016
Citrus	74.5	December 31, 2016
Manatee	74.5	December 31, 2016
Coral Farms	74.5	January 1, 2018
Horizon	74.5	January 1, 2018
Wildflower	74.5	January 1, 2018
Indian River	74.5	January 1, 2018
Loggerhead	74.5	March 1, 2018
Barefoot Bay	74.5	March 1, 2018
Hammock	74.5	March 1, 2018
Blue Cypress	74.5	March 1, 2018
Interstate	74.5	January 31, 2019
Miami-Dade	74.5	January 31, 2019
Pioneer Trail	74.5	January 31, 2019
Sunshine Gateway	74.5	January 1, 2019
FPL Total	**1,152.5**	

Typical Solar Energy Center Block Diagram



1. Array of PV Panels
2. Inverter/Medium Voltage Transformer
3. Inverter Block
4. AC Collection System
5. Switchyard and Power Step-up Transformer
6. Generation Tie Line
7. Interconnection Substation

Docket No. 20190061
Typical Solar Energy Center Block Diagram
Exhibit WFB-2, Page 1 of 1

Specifications for FPL SolarTogether Project 1, Site 1

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 1, Site 1	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	99.00 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	328
Number of Panels (Average)	302,006
Inverter DC Input (MW_{DC})	4.13
DC/AC Ratio	1.33
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	12,584
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 1, Site 2

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 1, Site 2	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	98.43 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	326
Number of Panels (Average)	296,205
Inverter DC Input (MW_{DC})	4.10
DC/AC Ratio	1.32
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.43/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	12,342
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	117.5 kV

Specifications for FPL SolarTogether Project 1, Site 3

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 1, Site 3	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	94.65 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	328 W
Number of Panels (Average)	288,057
Inverter DC Input (MW_{DC})	3.94
DC/AC Ratio	1.27
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.55
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	12,002
PV Panel Support Mechanism	Tracker System
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 2, Site 1

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 2, Site 1	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	95.06 MW_{DC}
PV Panel Suppliers	Trina
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	284,657
Inverter DC Input (MW_{DC})	3.97
DC/AC Ratio	1.28
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.43/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	11,861
PV Panel Support Mechanism	Tracker
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	117.5 kV

Specifications for FPL SolarTogether Project 2, Site 2

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 2, Site 2	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	114.43 MW_{DC}
PV Panel Suppliers	Trina
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	330
Number of Panels (Average)	347,700
Inverter DC Input (MW_{DC})	4.77
DC/AC Ratio	1.54
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	14,488
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	141.5 kV

Specifications for FPL SolarTogether Project 2, Site 3

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 2, Site 3	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	114.74 MW_{DC}
PV Panel Suppliers	Trina
PV Panel Technologies	72 cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	332
Number of Panels (Average)	345,360
Inverter DC Input (MW_{DC})	4.78
DC/AC Ratio	1.54
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	14,390
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	Hyundai
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 3, Site 1

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 1	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	108.04 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	322,500
Inverter DC Input (MW_{DC})	4.50
DC/AC Ratio	1.45
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	13,438
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 3, Site 2

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 2	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	93.87 MWDC
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	280,209
Inverter DC Input (MW_{DC})	3.91
DC/AC Ratio	1.26
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.43/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.51
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	11,675
PV Panel Support Mechanism	Tracker
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	117.5 kV

Specifications for FPL SolarTogether Project 3, Site 3

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 3	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	93.87 MWDC
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	280,209
Inverter DC Input (MW_{DC})	3.75
DC/AC Ratio	1.26
Number of Power Conversion Units (PCU)	25
PCU Supplier	GE
Inverter Type	LV5+ 1566
Inverter Rating (MVA/V)	3.4/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	3.43
Number of Inverters	25
Inverter Capacity Installed (MVA)	85.75 @ 35 ^{o} C
Number of Medium Voltage Transformers	25
Medium Voltage Transformer Capacity Installed (MVA)	85.75
Number of Panel Per PCU Block (Average)	11,208
PV Panel Support Mechanism	Tracker
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	117.5 kV

Specifications for FPL SolarTogether Project 3, Site 4

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 4	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	93.87 MWDC
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	280,209
Inverter DC Input (MW_{DC})	3.75
DC/AC Ratio	1.26
Number of Power Conversion Units (PCU)	25
PCU Supplier	GE
Inverter Type	LV5+ 1566
Inverter Rating (MVA/V)	3.4/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	3.43
Number of Inverters	25
Inverter Capacity Installed (MVA)	85.75 @ 35 °C
Number of Medium Voltage Transformers	25
Medium Voltage Transformer Capacity Installed (MVA)	85.75
Number of Panel Per PCU Block (Average)	11,208
PV Panel Support Mechanism	Tracker
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 3, Site 5

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 5	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	93.87 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	280,209
Inverter DC Input (MW_{DC})	3.75
DC/AC Ratio	1.26
Number of Power Conversion Units (PCU)	25
PCU Supplier	GE
Inverter Type	LV5+ 1566
Inverter Rating (MVA/V)	3.4/660
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	3.43
Number of Inverters	25
Inverter Capacity Installed (MVA)	85 @ 35 °C
Number of Medium Voltage Transformers	25
Medium Voltage Transformer Capacity Installed (MVA)	85.75@ 35 °C
Number of Panel Per PCU Block (Average)	11,208
PV Panel Support Mechanism	Tracker System
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 3, Site 6

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 3, Site 6	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	93.87 MWDC
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	280,209
Inverter DC Input (MW_{DC})	4.47
DC/AC Ratio	1.26
Number of Power Conversion Units (PCU)	21
PCU Supplier	TMEIC
Inverter Type	5 x 840KW/840KVA
Inverter Rating (MVA/V)	4.05/630
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.25
Number of Inverters	21
Inverter Capacity Installed (MVA)	85.05 @ 35 °C
Number of Medium Voltage Transformers	21
Medium Voltage Transformer Capacity Installed (MVA)	89.25
Number of Panel Per PCU Block (Average)	13,343
PV Panel Support Mechanism	Tracker
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 4, Site 1

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 4, Site 1	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	113.24 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	338,030
Inverter DC Input (MW_{DC})	5.39
DC/AC Ratio	1.52
Number of Power Conversion Units (PCU)	21
PCU Supplier	TMEIC
Inverter Type	5 x 840KW/840KVA
Inverter Rating (MVA/V)	4.05/630
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.25
Number of Inverters	21
Inverter Capacity Installed (MVA)	85.05 @ 35 °C
Number of Medium Voltage Transformers	21
Medium Voltage Transformer Capacity Installed (MVA)	89.25
Number of Panel Per PCU Block (Average)	16,097
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 4, Site 2

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 4, Site 2	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	113.24 MWDC
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	338,030
Inverter DC Input (MW_{DC})	5.39
DC/AC Ratio	1.52
Number of Power Conversion Units (PCU)	21
PCU Supplier	TMEIC
Inverter Type	5 x 840KW/840KVA
Inverter Rating (MVA/V)	4.05/630
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.25
Number of Inverters	21
Inverter Capacity Installed (MVA)	85.05 @ 35 °C
Number of Medium Voltage Transformers	21
Medium Voltage Transformer Capacity Installed (MVA)	89.25
Number of Panel Per PCU Block (Average)	16,097
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Specifications for FPL SolarTogether Project 4, Site 3

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 4, Site 3	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	98.34
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335 W
Number of Panels (Average)	293,552
Inverter DC Input (MW_{DC})	4.10
DC/AC Ratio	1.32
Number of Power Conversion Units (PCU)	24
PCU Supplier	Power Electronics
Inverter Type	HEM FS3430M
Inverter Rating (MVA/V)	3.430 MVA/660 V
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	ABB
Medium Voltage Transformer Type	3-Phase, 60 Hz, 3-Windings
Medium Voltage Transformer Rating (MVA)	3.510
Number of Inverters	24
Inverter Capacity Installed (MVA)	85.2 MVA @ 35°C
Number of Medium Voltage Transformers	24
Medium Voltage Transformer Capacity Installed (MVA)	84.24
Number of Panel Per PCU Block (Average)	12,231
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	117.5 kV

Specifications for FPL SolarTogether Project 4, Site 4

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

Specifications for FPL 74.5 MW_{AC} SolarTogether Project 4, Site 4	
Peak Alternating Current Output	74.5 MW_{AC}
Total Installed Direct Current Capacity	113.24 MW_{DC}
PV Panel Suppliers	BYD
PV Panel Technologies	144 half-cell, poly-crystalline
PV Panel Voltage (V)	1,500
Average PV Panel Power Ratings (W_{DC})	335
Number of Panels (Average)	338,030
Inverter DC Input (MW_{DC})	5.39
DC/AC Ratio	1.52
Number of Power Conversion Units (PCU)	21
PCU Supplier	TMEIC
Inverter Type	5 x 840KW/840KVA
Inverter Rating (MVA/V)	4.05/630
Medium Voltage Transformers Per PCU	1
Medium Voltage Transformer Supplier	GE Prolec
Medium Voltage Transformer Type	3-Phase, 60 Hz, 2-Windings
Medium Voltage Transformer Rating (MVA)	4.25
Number of Inverters	21
Inverter Capacity Installed (MVA)	85.05 @ 35 ^{o}C
Number of Medium Voltage Transformers	21
Medium Voltage Transformer Capacity Installed (MVA)	89.25
Number of Panel Per PCU Block (Average)	16,097
PV Panel Support Mechanism	Fixed
PV Panel Support Mechanism Material	Structural Steel Shapes
Step-up Power Transformer Supplier	SMIT
Step-up Power Transformer Type	3-Phase, 60 Hz
Step-up Power Transformer Ratings	241.5 kV

Exhibit WFB-4: Construction Schedule for SolarTogether Projects

		Project 1						Project 2					
		Site 1		Site 2		Site 3		Site 1		Site 2		Site 3	
Item	Major Activities	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish
1	PV panel contract	8/27/2018	2/1/2019	8/27/2018	2/1/2019	8/27/2018	2/1/2019	8/27/2018	2/12/2019	8/27/2018	2/12/2019	8/27/2018	2/12/2019
2	Power Conversion Unit contract	9/19/2018	6/14/2019	9/19/2018	6/14/2019	9/19/2018	6/14/2019	9/19/2018	6/14/2019	9/19/2018	6/14/2019	9/19/2018	6/14/2019
4	EPC contract	8/1/2018	1/22/2019	8/1/2018	1/22/2019	8/1/2018	1/22/2019	8/1/2018	2/22/2019	8/1/2018	2/22/2019	8/1/2018	2/22/2019
3	LNTP for EPC contracts		1/18/2019		1/18/2019		1/18/2019		2/25/2019		2/25/2019		2/25/2019
4	Contractor mobilization		5/1/2019		2/1/2019		4/1/2019		2/1/2019		5/30/2019		5/1/2019
5	Panel deliveries	7/5/2019	10/11/2019	7/5/2019	10/11/2019	7/5/2019	10/11/2019	5/31/2019	10/4/2019	7/12/2019	11/1/2019	5/31/2019	11/1/2019
6	Power Conversion Unit deliveries	8/23/2019	10/4/2019	8/30/2019	10/11/2019	8/23/2019	10/4/2019	8/23/2019	10/4/2019	8/23/2019	10/4/2019	8/30/2019	10/11/2019
7	Energization, Testing & Startup	11/1/2019	2/1/2020	11/1/2019	2/1/2020	11/1/2019	2/1/2020	11/20/2019	2/1/2020	11/20/2019	2/1/2020	11/20/2019	2/1/2020
8	Commence Commercial Operations	2/1/2020						2/1/2020					

		Project 3											
		Site 1		Site 2		Site 3		Site 4		Site 5		Site 6	
Item	Major Activities	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish
1	PV panel contract	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019
2	Power Conversion Unit contract	9/19/2018	6/28/2019	9/19/2018	6/28/2019	9/19/2018	6/28/2019	9/19/2018	6/28/2019	9/19/2018	6/28/2019	9/19/2018	5/14/2019
4	EPC contract	8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018	
3	LNTP for EPC contracts		8/1/2019		8/1/2019		8/1/2019		10/1/2019		10/1/2019		10/1/2019
4	Contractor mobilization		9/1/2019		9/1/2019		11/1/2019		11/1/2019		11/1/2019		12/1/2019
5	Panel deliveries	2/7/2020	6/5/2020	2/7/2020	5/29/2020	2/7/2020	6/5/2020	6/12/2020	10/9/2020	6/12/2020	10/9/2020	6/12/2020	10/9/2020
6	Power Conversion Unit deliveries	5/7/2020	7/5/2020	5/7/2020	7/5/2020	5/7/2020	7/5/2020	8/14/2020	9/25/2020	8/14/2020	9/25/2020	8/7/2020	9/18/2020
7	Energization, Testing & Startup	6/5/2020	1/1/2021	6/5/2020	1/1/2021	7/15/2020	1/1/2021	8/5/2020	1/1/2021	8/5/2020	1/1/2021	9/5/2020	1/1/2021
8	Commence Commercial Operations	1/1/2021											

		Project 4								Project 5							
		Site 1		Site 2		Site 3		Site 4		Site 1		Site 2		Site 3		Site 4	
Item	Major Activities	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish	Start	Finish
1	PV panel contract	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019	4/2/2019	12/31/2019
2	Power Conversion Unit contract	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019	9/19/2018	5/14/2019
4	EPC contract	8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018		8/1/2018	
3	LNTP for EPC contracts																
4	Contractor mobilization		4/1/2020		4/1/2020		8/1/2020		4/1/2020		8/1/2020		4/1/2020		8/1/2020		8/1/2020
5	Panel deliveries	7/31/2020	11/6/2020	7/31/2020	11/6/2020	10/23/2020	1/29/2021	7/31/2020	11/6/2020	10/23/2020	1/29/2021	7/31/2020	11/6/2020	10/23/2020	1/29/2021	10/23/2020	1/29/2021
6	Power Conversion Unit deliveries	8/14/2020	9/25/2020	8/7/2020	9/18/2020	12/4/2020	1/22/2021	8/14/2020	9/25/2020	12/11/2020	1/29/2021	8/14/2020	9/25/2020	12/11/2020	1/29/2021	12/11/2020	1/29/2021
7	Energization, Testing & Startup	10/1/2020	4/1/2021	10/1/2020	4/1/2021	2/1/2021	4/1/2021	10/1/2020	4/1/2021	2/1/2021	4/1/2021	10/1/2020	4/1/2021	2/1/2021	4/1/2021	2/1/2021	4/1/2021
8	Commence Commercial Operations	4/1/2021								4/1/2021							

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

TESTIMONY OF JUAN E. ENJAMIO

DOCKET NO. 20190061-EI

JULY 29, 2019

Q. Please state your name and business address.

A. My name is Juan E. Enjamio. 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 Manager of Analytics in the Finance Department.

Q. Please describe your educational background and professional experience.

A. I graduated from the University of Florida in 1979 with a Bachelor of Science degree in Electrical Engineering. I joined FPL in 1980 as a Distribution Engineer. Since my initial assignment at FPL, I have held positions as a Transmission System Planner, Power System Control Center Engineer, Bulk Power Markets Engineer, Supervisor of Transmission Planning, Supervisor of Supply and Demand Analysis, and Supervisor of Integrated Analysis – Resource Planning. In 2014, I became Manager of Analytics – Finance Department.

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

A. In my current position as Manager of Analytics, I am responsible for the management and coordination of economic analyses of alternatives to meet FPL's resource needs and maintain system reliability.

Q. Are you sponsoring an exhibit in this case?

A. Yes. I am sponsoring the following exhibits which are attached to my direct testimony:

- JE-1 Load Forecast
- JE-2 FPL Fuel Price Forecast
- JE-3 FPL Resource Plans
- JE-4 CPVRR – Costs and (Benefits)

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

A. The purpose of my testimony is to present FPL's economic analysis which shows that the FPL SolarTogether Program (or "the Program"), as described below, is cost effective. The Program consists of five FPL SolarTogether Projects ("Projects") with a total of 20 sites, with a nameplate capacity of 1,490 megawatts of alternating current ("MW_{AC}") universal solar photovoltaic ("PV") generation. Some of the Projects are estimated to enter commercial operation beginning in early 2020, with the last of the Projects estimated to come online by April 2021. My testimony covers several areas. First, I briefly describe the FPL SolarTogether Program. 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 1,490 MW_{AC} of solar PV generation is projected to be cost-effective.

Q. Please summarize your testimony.

A. FPL is proposing the construction and operation of 1,490 MW_{AC} of solar PV generation, with Phase 1 consisting of five FPL SolarTogether Projects that comprise a total of 20 74.5-MW solar energy centers ("Centers"). FPL performed an economic analysis and determined that the FPL SolarTogether

Program is projected to result in a reduction in the cumulative present value of revenue requirements ("CPVRR") to FPL customers, for a total savings of approximately $139 million. In addition, the Program is 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.

Q. Please describe the Centers proposed by FPL to support the Program.

A. The FPL SolarTogether Program consists of a total of 20 Centers, each with a nameplate capacity of 74.5 MW_{AC}. The Program is divided into five separate Projects. The first two of these Projects will each consist of three Centers with a total capacity of 223.5 MW_{AC} per Project. The third Project consists of six Centers with a total capacity of 447 MW_{AC}. The last two Projects, each consisting of four Centers, will have a total capacity of 298 MW_{AC} per Project. All together, the 20 Centers to be constructed for FPL SolarTogether will have a total nameplate capacity of 1,490 MW_{AC}. On average, these Centers will have a capacity factor of 26.2% and will generate a total of approximately 3,400,000 MWh in a year. This is enough energy to serve the annual energy needs of about 260,000 homes.

Q. What are the major system assumptions used in the economic analysis of the Projects?

A. The major assumptions used in the analysis are consistent with FPL's 2019 Ten Year Site Plan ("TYSP"), which the Company filed in April 2019:

- **Load Forecast –** The analysis uses FPL's most recent long-term load

forecast, approved as FPL's official load forecast in December 2018. This load forecast, including system peaks and net energy for load, also was used to support FPL's 2019 TYSP, 2019 Demand Side Management ("DSM") Goals filing, and 2020 Solar Base Rate Adjustment ("SoBRA") filing, and is shown in Exhibit JE-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 December 2018. This fuel forecast was utilized to support FPL's 2019 TYSP, 2019 DSM Goals filing and 2020 SoBRA filing, and is shown in Exhibit JE-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 November 2018. ICF is a consulting firm with extensive experience in forecasting the cost of complying with the regulation 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 2026, was used in preparing FPL's 2019 TYSP, 2019 DSM Goals filing and 2020 SoBRA filing. FPL has utilized ICF's CO_2 emission price forecast in preparing its resource plans since 2007, including the economic analyses presented in the need determination dockets for the Okeechobee Clean Energy Center (Docket No. 150196-EI) and Dania Beach Clean Energy Center (Docket No.

20170225-EI), previous SoBRA filings (Docket Nos. 20170001-EI, 20180001-EI and 20190001-EI), and the Nuclear Cost Recovery proceedings (Docket Nos. 150009-EI and 160009-EI).

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

A. For the purpose of this filing, and similar to the approach used for FPL's SoBRA filings, FPL developed two resource plans. In the first resource plan, called the "No ST Plan," no new solar facilities are assumed beyond the 2019 SoBRA Project. In this resource plan, future resource needs are met by batteries, combustion turbines, and combined cycle units.

The second resource plan, called the "FPL SolarTogether Plan," adds the 20 Centers constructed for the Program. As a result of adding the FPL SolarTogether Program, a 235 MW combustion turbine and 500 MW of batteries are no longer needed.

These two resource plans are shown in Exhibit JE-3.

Q. How does FPL project the energy production of the Centers proposed under the Program?

A. The projections of energy production from the solar power facilities proposed under this program were developed by NextEra Analytics LLC, a wholly owned indirect subsidiary of NextEra Energy Resources LLC. NextEra Analytics used the commercially available PVsyst software package which is

widely used in the solar industry. Key inputs into the PVsyst model were: more than 19 years of historical satellite irradiance data, available on-site preconstruction meteorological stations, equipment layout specifications such as module type, inverter type and ratio of total module capacity to the point of interconnection capacity (DC/AC ratio).

Q. How did FPL determine the firm capacity that these Centers will provide?

A. As FPL has done for its SoBRA facilities, firm capacity value for the Centers is calculated based on the expected output of a solar facility at the time of summer peak load, which typically occurs 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 applies this same methodology to all of its solar PV facilities, existing or new.

The Centers are projected to have an average summer firm capacity value of approximately 49% of their nameplate rating. Therefore, the 20 Centers, with a total nameplate capacity of 1,490 MW_{AC}, are assumed to have a total firm capacity of 735 MW_{AC} at the time of summer peak. These solar installations are assumed to have zero firm capacity value at the time of winter peak due to FPL's winter peak occurring in the early morning, when there is little or no solar generation output.

Q. Does the addition of large amounts of solar generation capacity affect the calculation of solar firm-capacity value for this Program?

A. No. Large additions of solar generation can impact the computation of the firm capacity value of new solar project. However, FPL has performed studies that show that this impact will not take place with the amount of new solar generation proposed under this Program. Solar generation at the time of the summer peak hour reduces the amount of load to be served by non-solar generation at that hour. Since solar power plants generate less energy in the hours that follow, a sufficiently large amount of solar generation will shift the peak hour to be served by non-solar generation to a later hour where there is lower solar energy generation, thereby reducing the solar firm capacity value. FPL will continue to study the firm capacity value of solar projects that are expected to be added after this Program and will adjust the firm capacity for any future projects if needed.

Q. How does the fact that solar projects have little or no winter firm capacity value impact the reliability of FPL's generation system?

A. FPL uses three reliability criteria to ensure its generation system is reliable and will meet the needs of its customers. All three of these criteria account for the fact that solar projects do not have significant firm capacity value during winter peaks.

The three criteria are:

- 20% system reserve margin at the time of both summer and winter

peak load

- 10% generation-only reserve margin ("GRM") at the time of both summer and winter peak load
- Loss-of-load probability (LOLP)

The summer reserve margin criteria (both the 20% system reserve margin and/or the GRM) have historically driven the need for new generation reserves. One factor that explains why summer reserves, not winter reserves, drive the generation resource need is that most fossil generating units have significantly higher generating capacity at the very low winter temperatures expected at the time of winter-peak loads. For example, FPL's generation fleet had a total summer peak generation capacity of 24,373 MW as of December 31, 2018. The winter peak generation capacity of the same fleet was 25,862 MW, approximately 6% higher. Another major factor is that the projected winter peaks are lower than the projected summer peaks. As a result of these two factors, FPL can add a significant amount of solar generation capacity, with essentially no winter capacity value, and still meet the annual LOLP, 20% winter reserve and 10% winter GRM criteria.

The computation of LOLP accounts for the actual firm capacity of solar generation at the time of each day's peak load. The lack of firm winter peak capacity of solar, and its impact on reliability, is already addressed in this computation.

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

A. FPL used the hourly production costing model UPLAN to forecast the system economics and compare the two previously mentioned resource plans that include or exclude the FPL SolarTogether Program. This model has been used by FPL in prior Commission proceedings, including each of its previous petitions for SoBRA approval. Each UPLAN modeling run is used to determine generation system costs, consisting primarily of fuel costs, variable O&M costs, and emissions costs for a given resource plan. The output of each of the UPLAN model runs is then imported into FPL's Fixed Cost Spreadsheet ("FCSS") Model, which adds fixed costs such as capital costs, capital replacements costs, and fixed O&M costs.

Q. Is this the same analytical process FPL used in previous economic analyses of universal solar energy centers?

A. Yes.

Q. Please provide the result of the economic analysis.

A. The CPVRR net benefit to FPL customers from the Program is projected to be approximately $139 million, as shown in Exhibit JE-4. To determine the CPVRR net benefit of the proposed solar generation, FPL subtracted the CPVRR of the "No ST Plan" from the CPVRR of the "FPL SolarTogether Plan."

Q. Will the FPL SolarTogether Program reduce FPL's use of fossil fuel?

A. Yes. The Program is expected to reduce the annual average use of natural gas

by 21,600 million cubic feet, reducing FPL's reliance on fossil fuels.

Q. What effect will these Centers have on the use of fossil fuels and the emission of greenhouse gases and other air emissions?

A. The expected reduction in the use of fossil fuels due to the operation of the Centers included in the Program are projected to reduce global warming gases, specifically CO_2, at an average rate of 1,281,000 tons per year. This reduction in CO_2 is equivalent to removing approximately 247,000 cars from the road. Sulfur dioxide and nitrogen oxide emissions are projected to be reduced by an annual average of 6 tons and 134 tons, respectively.

Q. What is your conclusion regarding the FPL SolarTogether Program?

A. As demonstrated by the economic analysis described in my testimony, the addition of the FPL SolarTogether Program is projected to result in CPVRR savings of approximately $139 million. Additionally, the FPL SolarTogether Program is projected to 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
December 2018

Year	Summer Peak MW	Winter Peak MW	Net Energy for Load MWh
2019	24,305	19,530	121,099,850
2020	24,507	19,904	122,284,248
2021	24,668	20,264	122,369,658
2022	24,837	20,255	122,330,746
2023	25,173	20,528	122,680,361
2024	25,583	20,775	123,864,043
2025	25,939	20,932	124,440,227
2026	26,380	21,150	125,429,987
2027	26,867	21,374	126,520,149
2028	27,363	21,623	127,940,788
2029	28,008	21,889	128,967,611
2030	28,691	22,153	130,367,909
2031	29,254	22,404	131,675,941
2032	29,833	22,653	133,326,250
2033	30,407	22,900	134,288,370
2034	30,974	23,145	135,498,214
2035	31,542	23,388	136,706,457
2036	32,109	23,630	138,063,532
2037	32,657	23,871	138,932,635
2038	33,228	24,110	140,133,040
2039	33,804	24,349	141,312,242
2040	34,382	24,586	142,843,906
2041	34,771	24,825	144,980,773
2042	35,161	25,063	146,449,887
2043	35,554	25,301	147,916,439
2044	35,948	25,540	149,764,613
2045	36,344	25,779	150,844,643
2046	36,741	26,018	152,304,156
2047	37,139	26,258	153,765,649
2048	37,540	26,498	155,583,773
2049	37,943	26,738	156,652,695
2050	38,347	26,978	158,122,734

FPL Fuel Price Forecast
December 2018

Year	FGT Firm Gas ($/MMBTU)	Gulfstream Firm Gas ($/MMBTU)	Sabal Trail Firm Gas ($/MMBTU)	Residual Oil ($/MMBTU)	Distillate Oil ($/MMBTU)	Scherer 4 Coal Price ($/MMBTU)
2019	3.25	3.18	3.26	10.81	13.84	2.52
2020	2.74	2.67	2.74	10.92	14.10	2.59
2021	2.71	2.64	2.72	12.27	15.61	2.65
2022	2.80	2.73	2.80	11.31	14.65	2.72
2023	3.02	2.95	3.01	10.83	14.62	2.80
2024	3.37	3.29	3.35	11.01	15.02	2.86
2025	3.68	3.60	3.65	11.64	15.54	2.93
2026	3.98	3.91	3.95	11.93	15.84	3.00
2027	4.19	4.11	4.15	12.17	16.12	3.06
2028	4.37	4.29	4.33	12.40	16.39	3.13
2029	4.54	4.46	4.49	12.65	16.71	3.19
2030	4.68	4.60	4.63	12.93	17.02	3.25
2031	4.80	4.72	4.75	13.18	17.33	3.31
2032	4.92	4.83	4.86	13.40	17.65	3.38
2033	5.02	4.94	4.97	13.64	17.98	3.45
2034	5.13	5.05	5.07	13.87	18.31	3.52
2035	5.23	5.15	5.17	14.11	18.67	3.60
2036	5.34	5.25	5.27	14.36	19.01	3.67
2037	5.44	5.35	5.37	14.62	19.35	3.75
2038	5.54	5.45	5.47	14.88	19.70	3.83
2039	5.65	5.56	5.58	15.14	20.06	3.91
2040	5.76	5.67	5.68	15.42	20.42	3.99
2041	5.82	5.73	5.75	15.49	20.45	4.08
2042	5.88	5.79	5.81	15.56	20.48	4.18
2043	5.95	5.86	5.87	15.63	20.51	4.27
2044	6.01	5.92	5.93	15.70	20.54	4.36
2045	6.08	5.99	6.00	15.78	20.57	4.46
2046	6.14	6.05	6.06	15.85	20.60	4.55
2047	6.21	6.12	6.13	15.92	20.64	4.65
2048	6.28	6.19	6.19	16.00	20.67	4.75
2049	6.35	6.26	6.26	16.07	20.70	4.85
2050	6.42	6.32	6.33	16.14	20.73	4.95

FPL Resource Plans

Year	No ST Plan	FPL SolarTogether Plan
2019	298 MW SoBRA	298 MW SoBRA
2020	300 MW 2-Hour Battery	447 MW FPL SolarTogether; 100 MW 2-Hour Battery
2021	200 MW 2-Hour Battery; 100 MW 3-Hour Battery	1,043 MW FPL SolarTogether
2022	Dania Beach Energy Center; Greenfield 704 MW CT Unit; 469 MW Manatee Battery; Manatee 1&2 retire	Dania Beach Energy Center; 469 MW Manatee Battery; Manatee 1&2 retire
2023	---	Greenfield 469 MW CT Unit
2024	Greenfield 1,886 MW CC Unit	Greenfield 1,886 MW CC Unit
2025	---	---
2026	---	---
2027	---	---
2028	Greenfield 1,886 MW CC Unit	Greenfield 1,886 MW CC Unit
2029	---	---
2030	Greenfield 704 MW CT Unit	Greenfield 704 MW CT Unit
2031	Equalizing 246 MW CC Unit	Equalizing 266 MW CC Unit

Note: MW values shown above for solar projects are nameplate AC. MW values for fossil units are based on summer MW ratings.

CPVRR - Costs and (Benefits)

	Solar Revenue Requirements				Non-Solar Generation Costs Avoided					System Costs Avoided			
Program Admin. Costs (Millions)	Generation Capital (Millions)	Transmission Interconnection (Millions)	Fixed O&M (Millions)	Land (Millions)	Generation Capital (Millions)	Fixed O&M (Millions)	Transmission Interconnection (Millions)	Capital Replacement (Millions)	Incremental Gas Transport (Millions)	System Net Fuel (Millions)	Startup + VOM (Millions)	Emission (Millions)	Total CPVRR (Millions)
$11	$1,417	$178	$96	$146	($358)	($80)	($5)	($9)	($368)	($1,050)	($26)	($91)	**($139)**

Note: Negative ( ) indicates savings to FPL customers

Docket No. 20190061
CPVRR – Costs and (Benefits)
Exhibit JE-4, Page 1 of 1

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF SCOTT R. BORES

DOCKET NO. 20190061-EI

JULY 29, 2019

Q. Please state your name and business address.

A. My name is Scott R. Bores. 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 the Senior Director of Financial Planning and Analysis.

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

A. I am responsible for FPL's corporate budgeting, financial forecast, load forecast, and analysis of financial results.

Q. Please describe your educational background and professional experience.

A. I graduated from the University of Connecticut in 2003 with a Bachelor of Science degree in Accounting. I received a Master of Business Administration from Emory University in 2011. I joined FPL in 2011 and have held several positions of increasing responsibility, including Manager of Property Accounting, Director of Property Accounting, and my current position as Senior Director of Financial Planning and Analysis. Prior to FPL, I held various accounting roles with Mirant Corporation, which was an independent power producer in Atlanta, Georgia, as well as worked for PricewaterhouseCoopers, LLP. I am a Certified Public Accountant ("CPA") licensed in the State of Georgia and a member of the American Institute of CPAs. I have previously filed testimony before the Florida Public Service Commission ("FPSC" or the "Commission"), most recently related to the

impact from the Tax Cuts and Jobs Act of 2017, Docket No. 20180046-EI.

Q. Are you sponsoring any exhibits in this case?

A. Yes. I am sponsoring the following exhibit:

- Exhibit SRB-1 Summary CPVRR Analysis for FPL SolarTogether Phase 1

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to explain the financial modeling performed to calculate the charges and credits associated with the FPL SolarTogether Program (or "the Program").

Q. Please provide an overview of the modeling performed to support the calculation of the charges and credits associated with FPL SolarTogether.

A. The financial modeling for FPL SolarTogether is consistent with that used in other dockets, most notably FPL's Solar Base Rate Adjustment ("SoBRA") filings. FPL calculated the total base revenue requirements over a 30-year period for each of the five projects proposed in Phase 1 of the Program. In addition to the traditional capital and operating costs, FPL SolarTogether requires certain administrative costs to operate, which were included in the base revenue requirements and will be discussed further in my testimony. FPL also calculated the benefits associated with building 20 solar energy centers ("Centers"), from both a base and clause perspective. These benefits, described in further detail by FPL witness Enjamio, more than offset the base revenue requirements and result in a projected $139 million cumulative present value of revenue requirements ("CPVRR") net benefit.

Q. What are the design features of FPL SolarTogether that impact the financial modeling?

A. FPL SolarTogether has several design features that impact the financial modeling of the Program. These are described in further detail by FPL witness Valle, and are an integral part of the assumptions in the financial analysis. First, FPL designed the participant pricing in the Program to achieve a 7-year simple payback. FPL witness Valle explains that this is based on feedback FPL received from customers in the early design stage of the Program. Second, FPL designed the Program to allocate 20% of the total CPVRR net benefit to the general body of customers, with the remaining 80% allocated to the Program participants. Third, despite the foregoing allocation of benefits, the Program allocates 96.4% of the total base revenue requirements to participants and the remaining 3.6% to the general body of customers. To ensure the general body of customers are allocated 20% of the net CPVRR benefit at the onset of the Program, approximately 5% of the estimated clause benefits are allocated to the general body of customers, with the remaining 95% of the total clause revenue benefits allocated to participants. These assumptions result in a net CPVRR benefit both for participants and the general body of customers and will be described in greater detail later in my testimony.

Q. Please describe the total base revenue requirements for FPL SolarTogether.

A. As demonstrated on Exhibit SRB-1, the total base revenue requirements,

including administrative costs, is $4.270 billion in nominal terms, which results in a CPVRR equivalent of $1.849 billion. This amount represents the revenue requirements associated with constructing and operating the 20 Centers proposed under the Program.

Q. What administrative costs does FPL expect to incur as part of the FPL SolarTogether Program?

A. FPL expects to incur $3.6 million in capital costs to develop a web-based platform and modify the existing billing system in order to administer and separately identify the FPL Solar Together impact on participating customer bills. In addition, FPL expects to incur additional annual program operations and maintenance ("O&M") expenses. The total CPVRR of the billing system and administrative costs over the 30-year period is approximately $11.5 million.

Q. What base system benefits are expected to arise as a result of the construction of the solar energy centers proposed for the FPL SolarTogether Program?

A. As noted on Exhibit SRB-1, FPL expects to realize $1.184 billion in nominal base system benefits, with a CPVRR equivalent of $479 million. These system benefits relate to the avoidance of generation capital and O&M, transmission interconnection costs, start-up costs, as well as variable O&M costs.

Q. What is the resulting net CPVRR for the base revenue requirements after accounting for the base system benefits?

A. The resulting net CPVRR of the base revenue requirements is $1.370 billion.

Q. How does the $1.370 billion CPVRR translate into the monthly Subscription Rate and corresponding Subscription Charge?

A. FPL SolarTogether is designed to recover 96.4% of the Program revenue requirements from the participants through a levelized Subscription Rate ("Subscription Rate"). This amounts to $1.321 billion in net CPVRR (96.4% of $1.370 billion). FPL divided the $1.321 billion by the present value of the available nameplate MW_{AC} over the 30-year period (16,289 MW_{AC}) to develop a levelized annual rate of $81.12 per kW-year. The annual rate of $81.12 per kW-year is divided by 12 to get the monthly Subscription Rate of $6.76 per kW-month. The remaining 3.6% or $48.9 million of net CPVRR (3.6% of $1.370 billion) is allocated to the general body of customers. However, as discussed further in my testimony, the general body of customers will also be allocated clause related system benefits that more than offset these costs, yielding a net CPVRR benefit of $28 million for all customers. The Subscription Rate is multiplied by the participant's subscription level resulting in the total charge ("Subscription Charge") that will appear on the participant's bill.

Q. How is FPL proposing to recover the revenue requirements of FPL SolarTogether?

A. FPL is proposing to recover the net Program base revenue requirements

through current base rates. The difference between the levelized Subscription Charges and the actual base revenue requirements each month, including the revenue requirements allocated to the general body of customers, will be reflected as base rate recoverable costs or benefits and included within FPL's earnings surveillance report. At the time of the next base rate review, both revenue related to the projected levelized Subscription Charges from participants and the projected base revenue requirements will be included for recovery via base rates.

Q. Please describe the total clause system benefits expected to arise as a result of FPL SolarTogether.

A. As depicted on Exhibit SRB-1, FPL expects to realize nominal clause system benefits of $5.185 billion, which results in a CPVRR equivalent of $1.509 billion. These benefits primarily relate to avoided fuel, emissions, and gas transportation costs.

Q. What percentage of the total CPVRR benefit is being allocated to participants in FPL SolarTogether?

A. As described earlier in my testimony, as part of the overall Program design, FPL made the determination to allocate 20% of the total CPVRR net benefit ($28 million) to the general body of customers. The remaining 80% of the total CPVRR net benefit ($111 million) will be allocated to participants in the Program.

Q. How did FPL calculate the amount of clause system benefits to be allocated to participants in FPL SolarTogether?

A. The amount of clause system benefits allocated to participants was determined based on allocating the remaining 80% of the overall CPVRR net benefit and targeting the 7-year payback. This resulted in approximately 95% or $1.432 billion of the clause system benefits being allocated to participants.

Q. How are the system benefits translated into a Benefit Rate and corresponding monthly Subscription Credit?

A. Utilizing the expected annual generation from the 20 Centers included within the system impact analysis and described further by FPL witness Enjamio, FPL calculated the dollars per kWh benefit ("Benefit Rate") that allowed for the remaining 80% of the expected total CPVRR net benefit to be allocated to participants, while allowing participants to achieve the targeted 7-year simple payback. The Benefit Rate will be multiplied by the actual generation associated with the participant's subscription level resulting in the total credit ("Subscription Credit") that will appear on the participant's bill.

Q. What is the resulting Benefit Rate being offered to FPL SolarTogether participants?

A. In the first year of enrollment, participants would receive a Benefit Rate of $0.034288 for every kWh produced by their subscribed capacity. The Benefit Rate will then escalate at 1.45% annually.

Q. Please explain how the escalation rate of 1.45% for the Benefit Rate was determined.

A. The escalation rate for the Benefit Rate was determined through an iterative process performed to ensure that the Subscription Credit allowed participating customers to achieve a targeted 7-year simple payback, based on the projected kWh output for the 20 Centers, while allocating the remaining 80% of the total Program CPVRR benefit.

Q. Do the total system savings resulting from FPL SolarTogether exceed the Subscription Credit?

A. Yes, FPL projects that the total system savings will exceed the Subscription Credit being paid to participants and lead to the expected $28 million of CPVRR net benefit for the general body of customers. The amount of the Subscription Credit being paid to participants is projected to exceed the actual system savings during the early years; however, the actual annual clause system savings are projected to be greater than the credit paid to participants over the life of the Program, as noted on Exhibit SRB-1.

Q. How is FPL requesting to recover the Subscription Credit that will be provided to FPL SolarTogether participants?

A. As all of the components of the Subscription Credit are clause-related items, FPL is requesting to include the cost of the credit within the Fuel Clause and would allocate that cost to all customers on the basis of kWh sales. Over the course of the Program's life, the clause system benefits are projected to reduce the fuel factor charged to all customers.

Q. Does this conclude your direct testimony?

A. Yes.

Docket No. 20190061
Summary CPVRR Analysis for FPL SolarTogether Phase 1
Exhibit SRB-1, Page 1 of 1

($ millions)		CPVRR	Nominal Total	2019	1 2020	2 2021	3 2022	4 2023	5 2024	6 2025	7 2026	8 2027	9 2028	10 2029	11 2030	2031-2051
Discount Factor				1.01	0.93	0.87	0.80	0.75	0.69	0.64	0.60	0.55	0.51	0.48	0.44	
Base Revenue Requirements																
FPL SolarTogether Capital, O&M		$1,837.8	$4,250.0	$3.5	$71.8	$207.2	$216.4	$205.0	$196.0	$188.0	$181.7	$176.5	$171.8	$166.5	$161.5	$2,304.2
Program Administrative Costs		11.5	20.3	2.3	2.1	1.8	1.7	1.1	0.7	0.4	0.3	0.3	0.3	0.3	0.3	8.5
Total SolarTogether Costs		1,849.2	4,270.3	5.8	73.9	209.0	218.1	206.1	196.7	188.4	182.0	176.8	172.1	166.9	161.8	2,312.8
System Impacts (Avoided Generation Capital, O&M)		(479.0)	(1,183.8)	-	(3.8)	(28.5)	(68.0)	(94.6)	(60.1)	(58.2)	(53.7)	(45.0)	(44.3)	(47.1)	(45.1)	(635.5)
Total Base RevReq's (fav) unfav		**$1,370.2**	**$3,086.6**	**$5.8**	**$70.1**	**$180.5**	**$150.1**	**$111.5**	**$136.6**	**$130.2**	**$128.3**	**$131.8**	**$127.8**	**$119.8**	**$116.8**	**$1,677.2**
Clause Revenue Requirements																
System Net Fuel		($1,050.4)	($3,318.9)	$0.0	($19.3)	($60.2)	($65.1)	($72.6)	($77.5)	($83.7)	($89.3)	($97.5)	($94.1)	($83.3)	($86.5)	($2,489.8)
Incremental Gas Transport		(367.9)	(1,352.4)	-	-	-	-	-	-	-	-	(59.6)	(59.2)	(58.9)	(58.6)	(1,116.0)
Emissions		(90.6)	(514.1)	-	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.7)	(1.2)	(2.2)	(2.3)	(3.5)	(503.9)
Short Term Purchases		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Clause RevReq's (fav) unfav		**($1,509.0)**	**($5,185.3)**	**$0.0**	**($19.3)**	**($60.2)**	**($65.2)**	**($72.6)**	**($77.5)**	**($83.7)**	**($90.1)**	**($158.3)**	**($155.6)**	**($144.6)**	**($148.6)**	**($4,109.7)**
Net Revenue Requirements (fav) unfav		**($138.7)**	**($2,098.8)**	**$5.8**	**$50.8**	**$120.3**	**$85.0**	**$38.9**	**$59.1**	**$46.5**	**$38.2**	**($26.4)**	**($27.8)**	**($24.8)**	**($31.8)**	**($2,432.5)**
Participant Subscription Charge and Credit	% of Total															
Subscription Charge (Revenue)		($1,321.3)	($3,626.1)	$0.0	($33.2)	($108.8)	($120.9)	($120.9)	($120.9)	($120.9)	($120.9)	($120.9)	($120.9)	($120.9)	($120.9)	($2,396.2)
Subscription Credits		1,432.3	4,174.0	-	32.0	105.9	118.9	120.2	121.9	123.0	124.4	125.8	127.6	128.7	130.2	2,915.2
Participant Net Distribution (Payment)	80.0%	**$111.0**	**$548.0**	**$0.0**	**($1.3)**	**($2.9)**	**($2.0)**	**($0.6)**	**$1.1**	**$2.1**	**$3.5**	**$5.0**	**$6.8**	**$7.9**	**$9.3**	**$519.0**
Non-Participant Revenue Requirements																
Base	% of Total															
Total Base RevReq's		$1,370.2	$3,086.6	$5.8	$70.1	$180.5	$150.1	$111.5	$136.6	$130.2	$128.3	$131.8	$127.8	$119.8	$116.8	$1,677.2
Participant Subscription (Revenue)	96.43%	(1,321.3)	(3,626.1)	-	(33.2)	(108.8)	(120.9)	(120.9)	(120.9)	(120.9)	(120.9)	(120.9)	(120.9)	(120.9)	(120.9)	(2,396.2)
Non-Participant Net Base RevReq's (fav) unfav	3.57%	**$48.9**	**($539.5)**	**$5.8**	**$36.8**	**$71.7**	**$29.2**	**($9.3)**	**$15.8**	**$9.3**	**$7.4**	**$11.0**	**$6.9**	**($1.1)**	**($4.1)**	**($719.0)**
Clause	% of Total															
Total Clause RevReq's (fav) unfav		(1,509.0)	(5,185.3)	-	(19.3)	(60.2)	(65.2)	(72.6)	(77.5)	(83.7)	(90.1)	(158.3)	(155.6)	(144.6)	(148.6)	(4,109.7)
Participant Credits	94.92%	1,432.3	4,174.0	-	32.0	105.9	118.9	120.2	121.9	123.0	124.4	125.8	127.6	128.7	130.2	2,915.2
Non-Participant Net Clause RevReq's (fav) unfav	5.08%	**($76.6)**	**($1,011.3)**	**$0.0**	**$12.7**	**$45.7**	**$53.7**	**$47.6**	**$44.4**	**$39.3**	**$34.3**	**($32.4)**	**($27.9)**	**($15.8)**	**($18.4)**	**($1,194.5)**
Total Non-Participant Net RevReq's (fav) unfav	20.0%	**($27.7)**	**($1,550.8)**	**$5.8**	**$49.6**	**$117.4**	**$83.0**	**$38.3**	**$60.2**	**$48.6**	**$41.7**	**($21.4)**	**($21.0)**	**($16.9)**	**($22.5)**	**($1,913.5)**