DUKE ENERGY FLORIDA

Dianne M. Triplett
Deputy General Counsel

March 25, 2019

VIA ELECTRONIC FILING

Adam Teitzman, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: *Duke Energy Florida, LLC's Petition for Limited Proceeding to Approve Second Solar Base Rate Adjustment*; Docket No. _____

Dear Mr. Teitzman:

Enclosed for filing on behalf of Duke Energy Florida, LLC ("DEF") is DEF's Petition for Limited Proceeding to Approve Second Solar Base Rate Adjustment, along with the following:

- Direct Testimony of Matthew G. Stout with Exhibit No. ___(MGS-1), redacted Exhibit No. ___(MGS-2), Exhibit No. ___(MGS-3), redacted Exhibit No. __(MGS-4), Exhibit No. ___(MGS-5), redacted Exhibit No. ___(MGS-6) and Exhibit No. ___(MGS-7);
- Direct Testimony of Benjamin M. H. Borsch with Exhibit No. ___(BMHB-1), Exhibit No. ___(BMHB-2), Exhibit No. ___(BMHB-3) and Exhibit No. ___(BMHB-4); and
- Direct Testimony of Thomas G. Foster with Exhibit No. ___(TGF-1).

Thank you for your assistance in this matter. Please feel free to call me at (727) 820-4692 should you have any questions concerning this filing.

Sincerely,

s/ Dianne M. Triplett

Dianne M. Triplett

DMT/mw
Enclosures

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Duke Energy Florida, LLC's Petition for a limited proceeding to approve second solar base rate adjustment	Docket No. Filed: March 25, 2019

DUKE ENERGY FLORIDA, LLC'S PETITION FOR A LIMITED PROCEEDING TO APPROVE SECOND SOLAR BASE RATE ADJUSTMENT

Duke Energy Florida, LLC ("DEF"), pursuant to Sections 366.076(1) and 366.06(3), Florida Statutes ("F.S."), Rule 28-106.201, Florida Administrative Code ("F.A.C."), and the 2017 Second Revised and Restated Settlement Agreement approved by the Florida Public Service Commission ("Commission") in Order No. PSC-2017-0451-AS-EU[1] (the "2017 Settlement"), hereby petitions the Florida Public Service Commission ("FPSC" or the "Commission") for a limited proceeding to approve DEF's second solar base rate adjustment. Specifically, pursuant to Paragraph 15 of the 2017 Settlement, DEF is authorized to request approval from the Commission, for cost recovery, up to 700 MW of solar generation during the term of the 2017 Settlement, and specifically up to 350 MW in 2019.

DEF presents three solar projects, the Trenton Solar Power Plant ("Trenton Project"), the Lake Placid Solar Power Plant ("Lake Placid Project"), and DEF's existing DeBary Generating Station ("DeBary Project") for approval in this second group of projects filed pursuant to Paragraph 15. The Trenton Project and Lake Placid Project are expected to go into service in late 2019, and the DeBary Project will come into service in the first quarter of 2020. As explained further below and in the supporting testimony filed with this Petition, DEF's

[1] Docket No. 20170183-EI, issued on November 20, 2017.

solar projects meet the requirements set forth in the 2017 Settlement; namely, they are under the $1,650/kWac cap, they are cost effective, and their costs meet the reasonableness requirements set forth in the Paragraph 15(a). Accordingly, DEF respectively requests that its solar projects be approved for rate recovery. At this time, DEF is not including tariff sheets to reflect the rate increase for the Trenton Project, Lake Placid Project or the DeBary Project, but as explained below, it will file tariff sheets later to reflect the Trenton Project, the Lake Placid Project, and the multi-year rate increase authorized by Paragraph 12(b) and 12(c) of the 2017 Settlement, and DEF will file another set of tariff sheets to reflect the DeBary Project.

In support of this Petition, DEF states:

Introduction

1. DEF is a Florida limited liability company with headquarters at 299 1st Avenue North, St. Petersburg, Florida 33701. DEF is an investor-owned utility operating under the jurisdiction of this Commission pursuant to the provisions of Chapter 366, Florida Statutes, and is a wholly-owned subsidiary of Duke Energy Corporation. DEF provides generation, transmission, and distribution service to approximately 1.8 million retail customers in Florida.

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

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106 E. College Avenue, Ste. 800
Tallahassee, FL 32301
(850) 521-1428 / (850) 521-1437 (fax)

3. This Petition is being filed consistent with Rule 28-106.201, Florida Administrative Code. The agency affected is the Florida Public Service Commission, located

at 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399. This case does not involve reversal or modification of an agency decision or an agency's proposed action. Therefore, subparagraph (c) and portions of subparagraphs (b), (e), (f), and (g) of subsection (2) of that rule are not applicable to this Petition. In compliance with subparagraph (d), DEF states that it is not known at this time which, if any, of the issues of material fact set forth in the body of this Petition may be disputed by any others who may plan to participate in this proceeding.

2017 Settlement Requirements and DEF's Proposed Solar Facilities

4. Paragraph 15(a) of the 2017 Settlement authorizes the Company to seek Commission approval of up to 700 MW of solar projects during the term of the 2017 Settlement Agreement, provided that no rate adjustment for solar projects be implemented in 2018. The cost of the solar projects subject to Paragraph 15(a) of the 2017 Settlement shall be reasonable and cost effective, and the average cost of all projects submitted in a particular filing shall not exceed $1,650 per kilowatt alternating current ("kWac").

5. For projects not subject to the Power Plant Siting Act (i.e. less than 75 MW), Paragraph 15(c) of the 2017 Settlement obligates DEF to file a separate proceeding for approval of the solar projects and determination of the following issues: (a) the reasonableness and cost effectiveness of the solar generation projects (i.e., will the projects lower the projected system cumulative present value revenue requirement "CPVRR" as compared to such CPVRR without the solar projects); (b) the amount of revenue requirements; (c) and whether, when considering all relevant factors, DEF needs the solar project(s). DEF has filed this Petition for the purpose of resolving these three issues.

6. As explained further in the testimony of Matthew G. Stout, filed simultaneously with and incorporated by reference into this Petition, DEF is proposing three new solar

facilities for approval in this second group. The Trenton Project, is a 74.9 MW facility located in Gilchrist County, Florida and the Lake Placid Project is a 45.0 MW facility located in Highlands County, Florida. They are expected to go into commercial service in December 2019 at a cost of approximately $100,000,000 or $1,337/kWac and approximately $61,000,000 or $1,347/kWac, respectively. The DeBary Project, is a 74.5 MW facility located at the DeBary Generating Station in Volusia County, Florida is expected to come online by the first quarter of 2020. The DeBary Project is projected to cost approximately $91,000,000 or $1,224/kWac. The total MW for the second group of DEF's solar generation base rate adjustment is 194.4 MW.

7. The weighted average cost for the facilities in this filing is $1,296/kWac, which is below the $1,650/kWac cap set forth in the 2017 Settlement. Mr. Stout explains in his testimony the process the Company undertook to ensure that the project costs are reasonable. He also explains how DEF met the requirements in Paragraph 15(a) of the 2017 Settlement, that the selection of contractors and the procurement of equipment were obtained using a reasonable competitive solicitation process. Mr. Stout further explains how DEF considered buying out existing potential projects.

8. As explained in the testimony of Benjamin M. H. Borsch, filed simultaneously with and incorporated by reference into this Petition, the proposed solar projects in DEF's second group are cost-effective and needed. Specifically, the projects, when considered together, will lower DEF's CPVRR when compared to the CPVRR without the projects. Mr. Borsch also explains the benefits of fuel diversity and other attributes that contribute to the Company's need for the facilities.

9. The 2017 Settlement, specifically Paragraphs 15(e) and (f) contain detailed requirements as to the calculation of revenue requirements to implement the solar base rate adjustment. DEF's request complies with these requirements, as demonstrated in the testimony of Thomas G. Foster, filed simultaneously with and incorporated by reference into this Petition. Applying the 2017 Settlement, DEF requests approval of approximately $32 million in total annual revenue requirements associated with this second group of solar projects.

Effective Date of Requested Changes

10. The solar projects in the second group have differing commercial in-service dates. The revenue requirement for the Trenton Project is $12.8 million. This would result in an estimated residential base rate impact of approximately $0.37 on a 1,000 kWh bill. The revenue requirement for the Lake Placid Project is $7.8 million. This would result in an estimated residential base rate impact of approximately $0.22 on a 1,000 kWh bill. DEF would request that it be allowed to increase base rates, for the Trenton and Lake Placid Projects, by the above-referenced amounts with the first billing cycle of January 2020, so that rates will increase after the December 2019 in-service date for the Trenton and Lake Placid Projects. DEF is not filing tariff sheets with this Petition. DEF will be filing tariff sheets later in 2019 to reflect both the rate increase for the Trenton and Lake Placid Projects and the multi-year rate increase authorized by Paragraph 12(b) and 12(c) of the 2017 Settlement. DEF will also file a rate exhibit, in September 2019, that utilizes the sales forecast in DEF's Capacity Cost Recovery (CCR) Clause projection filing. This exhibit will include the rates to be effective January 2020 for the Lake Placid and Trenton Projects, as well as the multi-year increase, and the rates to be effective April 2020 for the DeBary Project and the Columbia

Project (which was included in DEF's first solar base rate adjustment filing in Docket No. 20180149). DEF will file a set of tariff sheets to reflect the DeBary and Columbia Projects, with an effective date of April 1, 2020, after the rates go into effect for the Lake Placid and Trenton Projects. DEF is combining these rate increases into one tariff sheet filing to smooth the rate impact to customers and avoid the potential confusion of competing/multiple tariff sheets.

11. The revenue requirement for the Lake Placid Project is $7.8 million. The revenue requirement for the Trenton Project is $12.8 million. Because DEF cannot file its tariff sheets with this filing, as explained above, DEF requests that the Commission either approve those tariff sheets in conjunction with its approval of this second group of solar projects, or give its Staff authority to administratively approve the tariff sheets after the Commission has approved the second group of solar projects.

12. The revenue requirement for the DeBary Project is $11.4 million. This would result in an estimated residential base rate impact of approximately $0.33 on a 1,000 kWh bill. The DeBary Project will not become commercially in-service until first quarter 2020. DEF requests that the Commission give its Staff authority to administratively approve those tariffs at a later date, before the expected in-service date.

Conclusion

WHEREFORE, DEF respectfully requests that the Commission enter an order approving the revenue requirements associated with the second group of its solar projects, as presented in this filing, and provide its Staff authority to administratively approve the tariff sheets for the Lake Placid and Trenton Projects, and the DeBary Project, at the appropriate

time.

Respectfully submitted,

s/Dianne M. Triplett

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IN RE: DUKE ENERGY FLORIDA, LLC'S PETITION FOR A LIMITED PROCEEDING TO APPROVE SECOND SOLAR BASE RATE ADJUSTMENT

FPSC DOCKET NO. _____

DIRECT TESTIMONY OF MATTHEW G. STOUT

MARCH 25, 2019

Q. Please state your name and business address.

A. My name is Matthew G. Stout. My business address is Mail Code ST-14A, 400 South Tryon Street, Charlotte, NC 28202.

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

A. I am employed by Duke Energy as a Managing Director of Business Development for Wind and Solar Development.

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

A. I am responsible for the development of new solar facilities in Florida on behalf of Duke Energy Florida, LLC ("DEF" or the "Company"). I lead a team that conducts solar development activities including project siting, land acquisition, resource assessment, permitting, obtaining interconnection rights, project layout and design and arranging contracts for engineering, procurement and construction services, as well as originating, structuring, and executing transactions to acquire rights to existing solar development projects.

Q. Please describe your educational background and professional experience.

A. I received a BA degree in Economics from Connecticut College in 1998. I began my career as a management consultant for PricewaterhouseCoopers and later worked as an investment banking associate for Morgan Joseph. In 2007, I earned an MBA from the Ross School of Business and an MS in Environmental Policy from the School of Natural Resources at the University of Michigan with a focus on renewable energy. During graduate school, I managed business development at STM Power, Inc., a start-up manufacturer of renewable power generation equipment. Upon finishing graduate school, I joined Catamount Energy Corporation, a renewable energy development company, where I helped site new wind energy facilities across the United Sates. I joined Duke Energy in 2008 and have had several positions focused on renewable energy development, including Manager of Business Development for Solar and Wind, Managing Director of Project Acquisitions, and most recently Managing Director of Wind and Solar Development for the regulated utilities. In total, I have over 20 years of professional work experience, including 12 years of renewable energy business development.

Q. What is the purpose of your testimony?

A. My testimony is provided to support DEF's request for cost recovery approval of the second group of its solar power plants or projects authorized under the approved 2017 Second Revised and Restated Stipulation and Settlement Agreement ("2017 Settlement"), under Docket Number 20170183-EI. My testimony describes the solar power plants that DEF plans to build to serve its customers and includes an overview

of the process DEF has used to ensure that the project costs meet the requirements of the 2017 Settlement. My testimony supports the reasonableness of the proposed project costs.

Q. Are you presenting exhibits in this proceeding?

A. Yes. They consist of the following exhibits:

Exhibit No. ___ (MGS-1) Trenton Solar Power Plant Site Plan;

Exhibit No. ___ (MGS-2) Trenton Solar Power Plant Costs;

Exhibit No. ___ (MGS-3) Lake Placid Solar Power Plant Site Plan;

Exhibit No. ___ (MGS-4) Lake Placid Solar Power Plant Costs;

Exhibit No. ___ (MGS-5) DeBary Solar Power Plant Site Plan;

Exhibit No. ___ (MGS-6) DeBary Solar Power Plant Costs; and

Exhibit No. ___ (MGS-7) Cost Comparison to Other Utilities.

These exhibits are true and accurate.

Q. Did DEF use the same methodology for selecting and evaluating potential projects as was used to select the Hamilton and Columbia projects?

A. Yes, DEF used the same methodology to select and evaluate potential projects as was used to select the Hamilton and Columbia projects. I discuss the specific process DEF used to select the Trenton, Lake Placid and DeBary sites for development later in my testimony.

Q. What solar projects is DEF proposing for approval in this filing?

A. DEF is proposing the following projects: (a) the Trenton Solar Power Plant ("Trenton Project"), (b) the Lake Placid Solar Power Plant ("Lake Placid Project"), and (c) the DeBary Solar Power Plant ("DeBary Project"). DEF notes that it will be making another filing in 2020 to present additional future projects.

Q. Please describe the Trenton Project.

A. The Trenton Project is a 74.9 MWac / 102.5 MWdc solar single-axis tracking PV project, yielding an expected capacity factor of approximately 29%, located in Gilchrist County, Florida. The project will use a mixture of 365-watt and 370-watt modules, procured from REC America and a mixture of 380-watt and 385-watt modules, procured from JA Solar (both leading, Tier I manufacturers) and the single-axis racking system will be procured from Array Technologies, Inc. Inverters will be sourced from Toshiba Mitsubishi Electric Industries Corporation (TMEIC), a 50-50 joint venture between Toshiba and Mitsubishi Electric. TMEIC is a $2.0B company, as measured by sales. The facility will be constructed on approximately 580 acres that are under a long-term lease. The site is a former agricultural/cattle grazing land as well as pine timber and is relatively flat with minimal sloping that will allow for the use of a tracking system. The point of interconnection is the existing Trenton 69kV Substation. M.A. Mortenson Company ("Mortenson") was selected to perform final facility engineering, design and construction. Mortenson has constructed over 3,700 MW of solar energy facilities. Expertise in energy modeling tools combined with self-perform capabilities enable the company to focus on delivering the lowest cost of energy over the life cycle of projects. DEF selected Mortenson to design and

build the 74.9 MWac Hamilton Solar Power Plant which was placed in-service December 2018. DEF acquired the company that held the early stage development assets of the Trenton Project from Southeast Solar and Power, LLC, the original developer of the project. Southeast Solar and Power, LLC was responsible for the site control, interconnection queue position and a limited amount of environmental and permitting work. DEF acquired the project on September 14, 2018 and continued to complete all development activities. The project is expected to start construction in May 2019 with an expected placed in-service date in December 2019. My Exhibit No. __ (MGS-1) shows the location of the Trenton Project and the general site plan.

Q. What is the projected installed cost for the Trenton Project?

A. The projected cost of the Trenton Project is $100,166,120 or $1,337/kWac. My Exhibit No. __ (MGS-2) shows the categories that make up the total installed cost.

Q. Will the Trenton Project qualify for the statewide property tax exemption?

A. Yes.

Q. Please describe the Lake Placid Project.

A. The Lake Placid Project is a 45.0 MWac / 58.9 MWdc single-axis tracking solar PV project, yielding an expected capacity factor of approximately 29%, and located in Highlands County, Florida. The project will use a mixture of 340-watt and 345-watt modules, procured from Seraphim Energy Group (a leading, Tier I manufacturer) and the single-axis racking system will be procured from Array Technologies, Inc.

Inverters will be sourced from SMA Solar Technology ("SMA"), a leading inverter solutions provider who is represented in all important photovoltaics markets in twenty-one countries. The facility will be constructed on approximately 380 acres that are under a long-term lease. The site is a former citrus grove and is relatively flat with minimal sloping that will allow for the use of a tracking system. The point of interconnection is the existing Lake Placid North 69kV Substation. Overland Contracting Inc., a subsidiary of Black & Veatch ("B&V") was selected to perform final facility engineering, design and construction. B&V has been actively engaged in the EPC and solar industry since 1973 and executed 223 MW solar PV EPC projects in Florida in the last two years with 1.5+ GW in design engineering services on solar PV projects. DEF acquired the early stage development assets of the project from EDF Renewables, the original developer of the project through an Asset Purchase Agreement ("APA"). EDF was responsible for all development and permitting activities, DEF acquired the project following the completion of development activities in March 2019. The project is expected to start construction in May 2019 with an expected placed in-service date in December 2019. My Exhibit No. __ (MGS-3) shows the location of the Lake Placid Project and the general site plan.

Q. What is the projected installed cost for the Lake Placid Project?

A. The projected cost of the Lake Placid Project is $60,609,369 or $1,347/kWac. My Exhibit No. __ (MGS-4) shows the categories that make up the total installed cost.

Q. Will the Lake Placid Project qualify for the statewide property tax exemption?

A. Yes.

Q. Please describe the DeBary Project.

A. The DeBary Project is a 74.5 MWac / 102.5 MWdc solar photovoltaic ("PV") facility located in Volusia County, Florida. The project will utilize solar modules mounted to a fixed-tilt racking system, yielding an expected capacity factor of approximately 24%. The project will use a mixture of 360-watt and 365-watt modules, procured from Hanwha Q Cells America, Inc. (a top five ranked manufacturer by global shipping volume) and the fixed racking system will be procured from Sol Components, a CEMCO affiliate. CEMCO is recognized as one of the largest manufacturers of steel framing in the U.S. As with the Trenton Project, inverters will be sourced from TMEIC. The facility will be constructed upon 445 acres of company owned property, adjacent to an existing power plant. The site is primarily undeveloped timber land and due to the topography and geographic layout, a fixed-tilt racking system is best suited. Fixed tilt systems cost less to install and produce a lower energy output compared to single-axis tracking systems. The point of interconnection is the Highbanks 115kV Substation located on-site. Moss & Associates, LLC ("Moss") was selected to perform final facility engineering, design and construction. Moss is a proven reliable Engineering, Procurement, and Construction ("EPC") partner, based in Florida, having constructed over 1,800 MW of solar energy facilities. The project anticipates to achieve placed in service by

March 2020. My Exhibit No. __ (MGS-5) shows the location of the DeBary Project and the general site plan.

Q. What is the projected installed cost for the DeBary Project?

A. The projected cost of the DeBary Project is $91,203,912 or $1,224/kWac. My Exhibit No. __ (MGS-6) shows the categories that make up the total installed cost.

Q. Will the DeBary Project qualify for the statewide property tax exemption?

A. Yes.

Q. Please describe the process DEF used to select the Trenton, Lake Placid and DeBary sites for development.

A. Building on the work DEF described in its request for approval of the first group of solar projects in Docket 20180149, DEF continued a comprehensive review of greenfield sites (including sites that it already owns) and projects already in development in DEF's service territory. DEF identified projects already in the interconnection queue with favorable queue positions. DEF is willing to purchase solar projects in various stages of completion from third-party developers but projects must meet our standards of development and construction and fit into our strategic build plan. The primary factors when considering the purchase of a third-party developed site are interconnection queue position for transmission connection to the grid and expected grid upgrades, environmental impacts, constructability of the site, development status and schedule, overall cost, quality/type of materials (such as

panel, inverter and racking, manufacturers), project location, zoning entitlements, experience and competencies of developer, and construction schedule. The Trenton Project and the Lake Placid Project were selected from among over 60 projects that have been reviewed for acquisition of existing projects in DEF's service territory. The projects were identified from publicly available information. Additional project details were submitted to DEF by the project developers upon execution of a confidentiality agreement. Projects that met first round screening criteria were asked to negotiate proposals for the sale of the development assets to DEF. DEF developed a shortlist of proposals to advance into further negotiations, including those for the Trenton Project and the Lake Placid Project. The DeBary Project is a greenfield project on company owned land that was identified and developed by DEF. Additional projects for future development remain under consideration and new projects are frequently presented by third party developers to my team for review.

The Trenton Project was acquired from a third-party developer due to its senior queue position, agricultural land with transmission access, and mid stage development status. DEF acquired the early stage development assets of the project from Southeast Solar and Power, LLC while it was still being developed. DEF completed the remaining development tasks, including permitting, design, final interconnection rights, and contracting for engineering, procurement, and construction services.

DEF selected the Lake Placid Project due to its senior queue position, land holding with transmission access, and mid stage development status. DEF entered into an APA to acquire the early stage development assets of the project from EDF

Renewables. Once all project development milestones were achieved, in March 2019, the parties closed on the agreement. The project has completed all site investigation studies, received all zoning and permitting approvals and has executed a Large Generator Interconnection Agreement ("LGIA").

The DeBary site was selected due to favorable characteristics including large land holding, access to transmission and constructability of the project area. The project is located within the City of DeBary jurisdiction and received City Council approval on the necessary zoning amendment on March 6, 2019. All site investigation studies are complete and an LGIA has been executed. The project avoids all wetlands and floodplains within the project area. A Habitat Conservation Plan was filed with the U.S. Fish and Wildlife Services for limited impacts to Florida Scrub-jay habitat and to the eastern indigo snake, both federally protected species. The project will need a Final Site Plan approval from the City of DeBary prior to the start of construction.

Q. Please describe the process DEF used to contract for the construction of the Trenton, Lake Placid and DeBary Projects.

A. DEF conducted separate competitive RFP (Request For Proposals) process to select the EPC contractor for each project. DEF administered each RFP to ensure a fair and transparent process was used for all communication, evaluation and selection. After qualification of EPC contractors, four high quality EPC contractors were invited to provide bids to provide engineering, design, procurement and construction services for the Trenton Project, five high quality EPC contractors were invited to bid for the

Lake Placid Project, and four high quality EPC contractors were invited to bid for the DeBary Project. Bidders were provided with all relevant site investigation and design criteria documents applicable to the project. Bidders were instructed to comply with all company design and construction policies. Bids were evaluated on bidder experience, price, schedule, design, risk and ability to deliver the project in a safe, reliable and cost-effective manner.

As a result of these evaluations, for the Trenton Project, Mortenson was selected as the most cost-effective and highest value supplier, and the parties executed an EPC Agreement.

As a result of these evaluations, for the Lake Placid Project, B&V was selected as the most cost-effective and highest value supplier, and the parties executed an EPC Agreement.

As a result of these evaluations, for the DeBary Project, Moss was selected as the most cost-effective and highest value supplier, and the parties executed an EPC Agreement.

Q. Why did DEF enter long-term leases for the Trenton Project and Lake Placid Project, rather than purchasing the property?

A. More generally, when there is an option to purchase versus enter into a long-term lease, DEF evaluates the net present value ("NPV") of the costs of each option over the life of the project and chooses the least cost option on a present value basis. With respect to the Trenton Project and the Lake Placid Project, the developers had already signed long term leases with the landowners with rents priced in line with the current

market (at terms that match or exceed the useful life of the facilities), so DEF had no ability to purchase those properties. Given the overall value of these projects to DEF's customers, DEF believes it is prudent to move forward with long term leases for these projects. DEF already owned the land on which the DeBary Project will be constructed, so no new lands were purchased or leased for the project.

Q. What is the weighted average cost for the three projects described above?

A. The weighted average cost for the three projects is $1,296/kWac.

Q. Your costs are different from recent costs filed by other utilities in Florida. Can you explain the reasonableness of the differences?

A. Yes. As required by Paragraph 15(a) of the 2017 Settlement, DEF has reviewed publicly available information from Florida Power & Light Company's ("FPL") solar base rate adjustment filing in their 2017, 2018, and 2019 fuel docket and Tampa Electric Company's ("Tampa Electric") solar base rate adjustment filing in Docket Number 20170260-EI and Docket Number 20180133-EI. My Exhibit No. __ (MGS-7) shows how the Trenton Project, Lake Placid and DeBary Project compare to costs filed by other utilities, where such information was publicly available to DEF. Generally, the costs for Trenton Project, Lake Placid Project and DeBary Project are lower than those filed by other utilities in Florida. DEF also notes that, as explained above, it competitively solicited all aspects of the projects and therefore its costs are reasonable, cost effective, and at market.

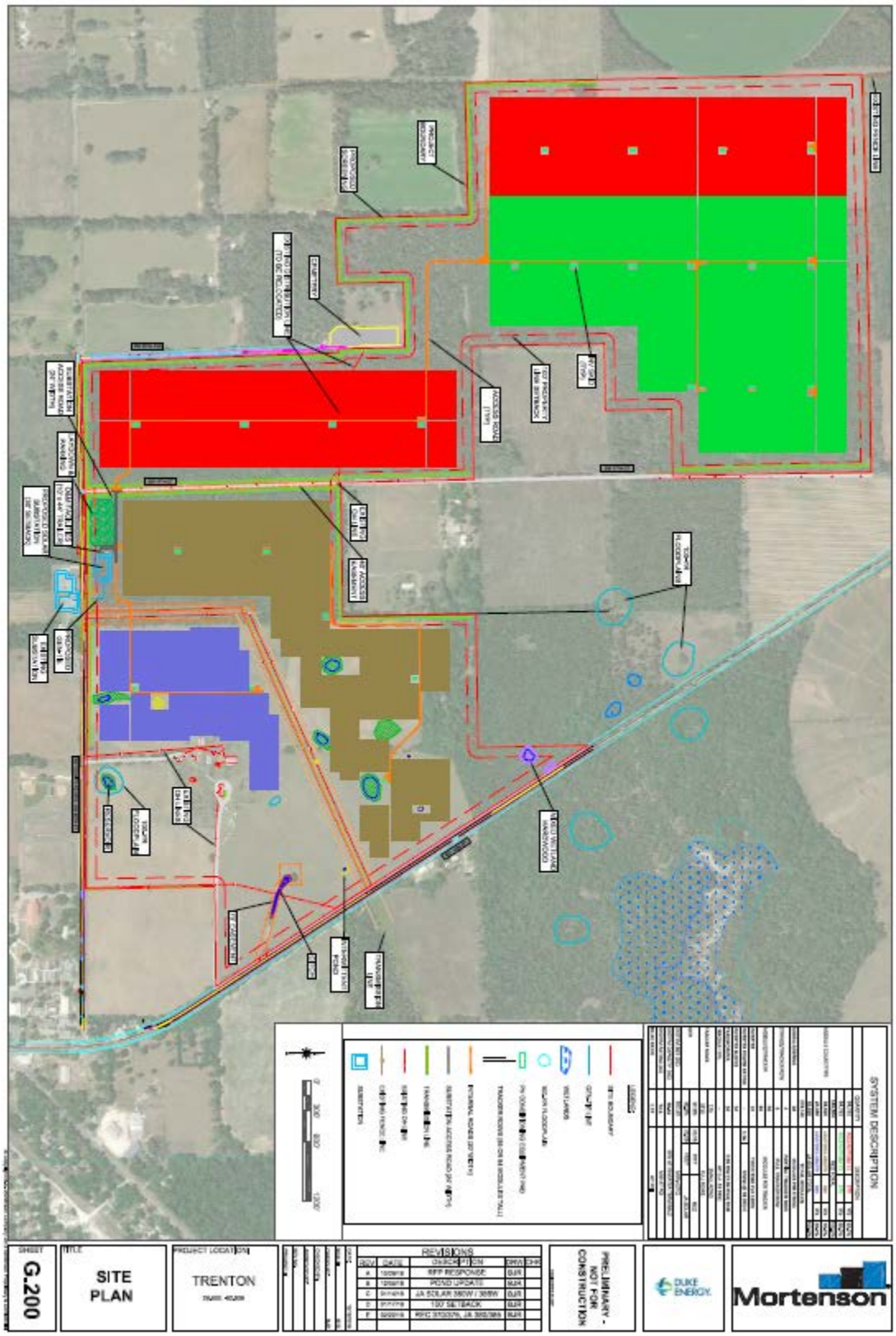
Q. Are the projected costs for the solar projects described in your testimony eligible for cost recovery under the 2017 Settlement?

A. Yes. As demonstrated above, DEF utilized a reasonable competitive process to select its contractors and to procure equipment and material. Its costs are reasonable and within the strict $1,650/kWac cap set forth in the 2017 Settlement. DEF reasonably considered buying out projects in various stages of development. Mr. Borsch will demonstrate the cost effectiveness of, and the need for, these solar projects, as required by the 2017 Settlement.

Q. Does that conclude your testimony?

A. Yes.

Trenton Solar Power Plant Site Plan



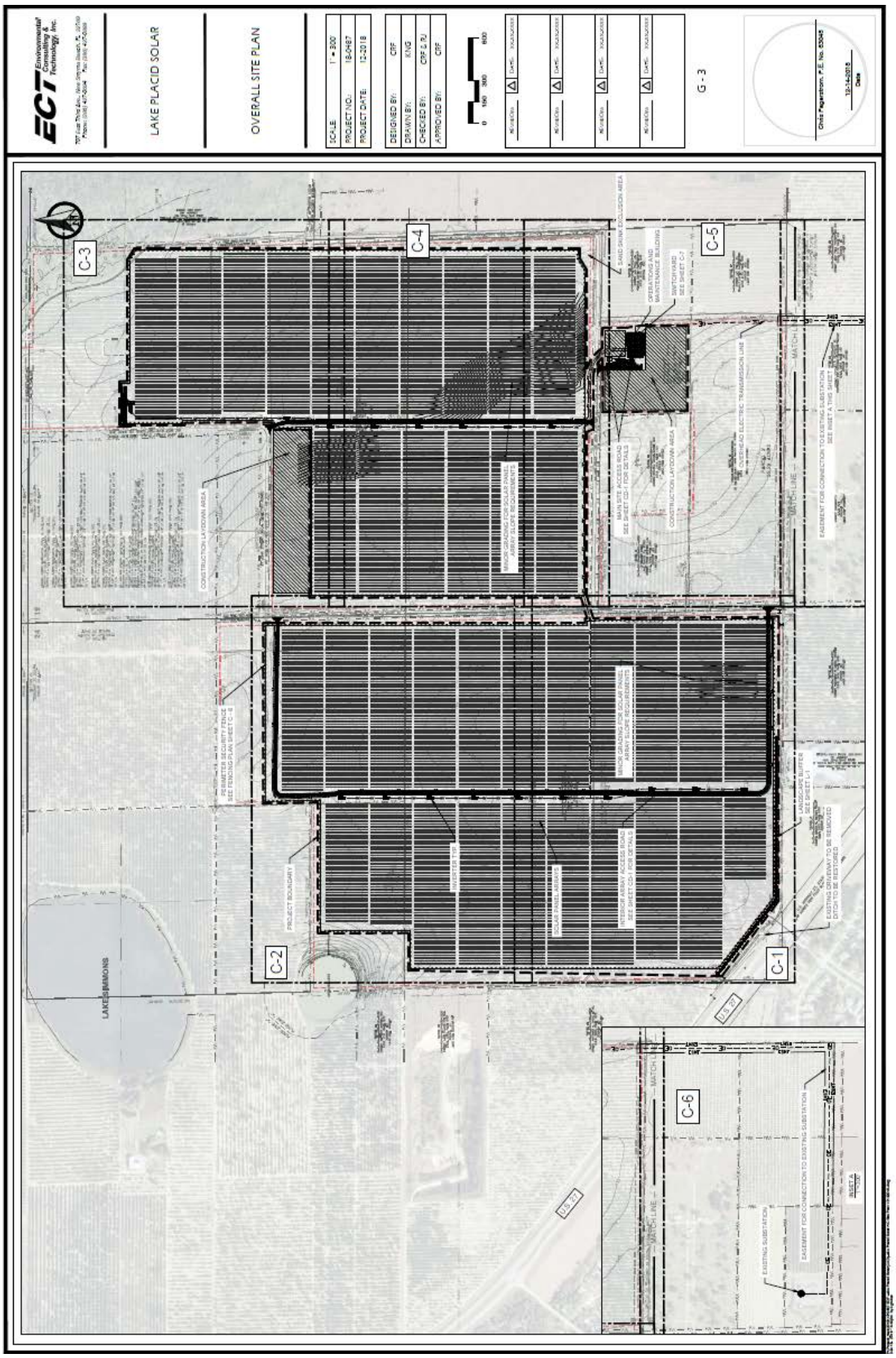
REDACTED

Trenton Solar Project Estimated Installed Cost by Category

Estimated Costs ($MM)	
Project Output (MW-ac)	74.9
[redacted]	
Construction Management	1.1
Development and Permitting[3]	5.8
Transmission Interconnect[4]	0.1
Land[5]	0.0
Total Installed Cost	$100.2
AFDUC	0.0
Total with AFDUC	$100.2
Total ($kW-ac)	1337

1. Includes equipment such as solar panels and project transformer, and any other equipment that was not included in EPC contract.
2. Includes remaining equipment such as racking, posts, inverters, and collection cables and EPC services.
3. Includes items such as lease rental payments during construction, legal fees, development costs, development fees, and title insurance.
4. Interconnection Customer charges identified in the Large Generator Interconnection Agreement.
5. Project occupies land leased to Duke Energy Florida

Lake Placid Solar Power Plant Site Plan



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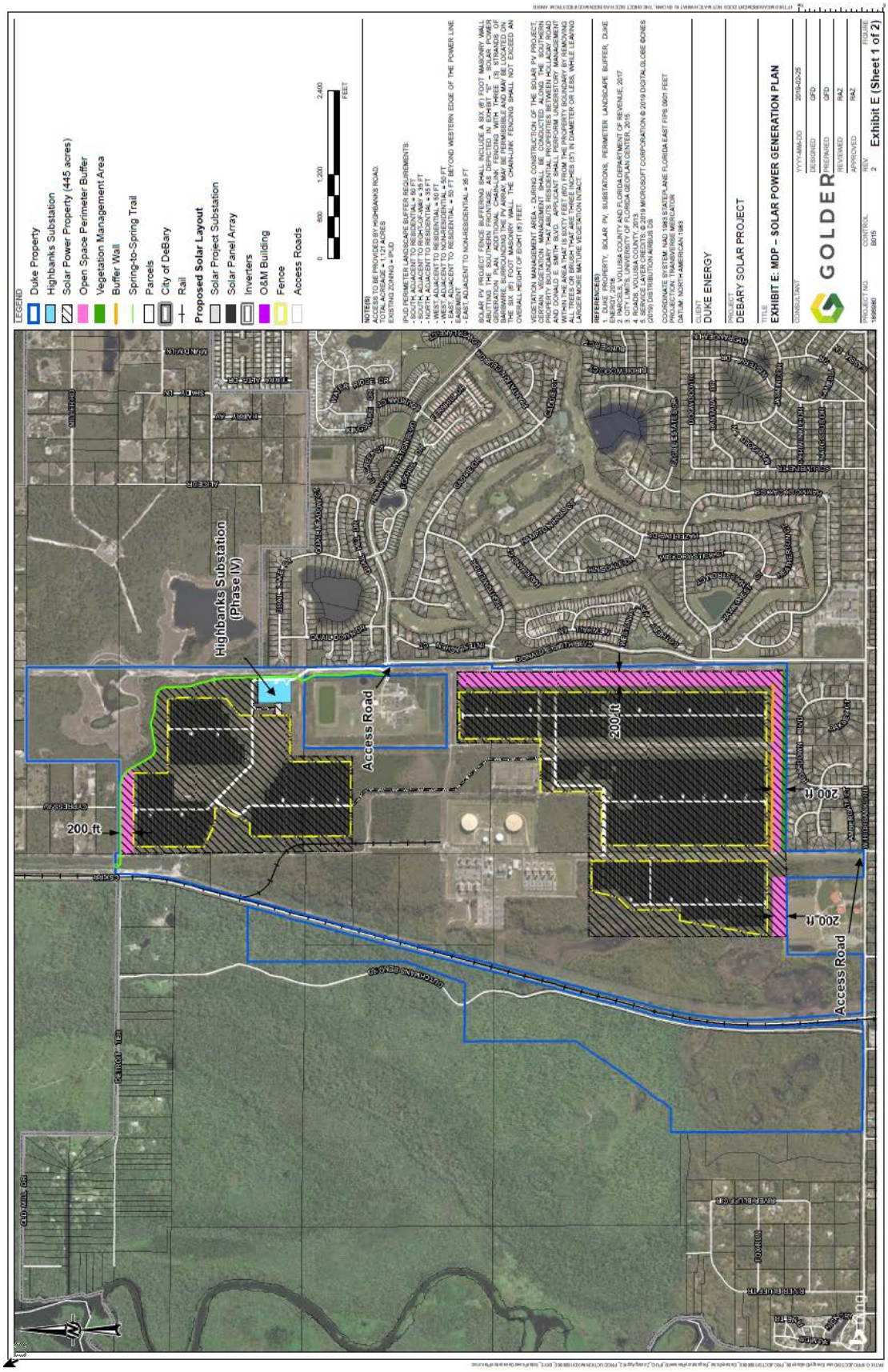
Duke Energy Florida
Witness: Matthew Stout
Exhibit No. ___(MGS-4)
Page 1 of 1

Lake Placid Solar Project Estimated Installed Cost by Category

Estimated Costs ($MM)	
Project Output (MW-ac)	45.0
[redacted]	
Construction Management	1.1
Development and Permitting[3]	4.6
Transmission Interconnect[4]	0.1
Land[5]	0.0
Total Installed Cost	$60.6
AFDUC	0.0
Total with AFDUC	$60.6
Total ($kW-ac)	1347

1. Includes equipment such as solar panels and project transformer, and any other equipment that was not included in EPC contract.
2. Includes remaining equipment such as racking, posts, inverters, and collection cables and EPC services.
3. Includes items such as lease rental payments during construction, legal fees, development costs, development fees, and title insurance.
4. Interconnection Customer charges identified in the Large Generator Interconnection Agreement.
5. Project occupies land leased to Duke Energy Florida

DeBary Solar Power Plant Site Plan

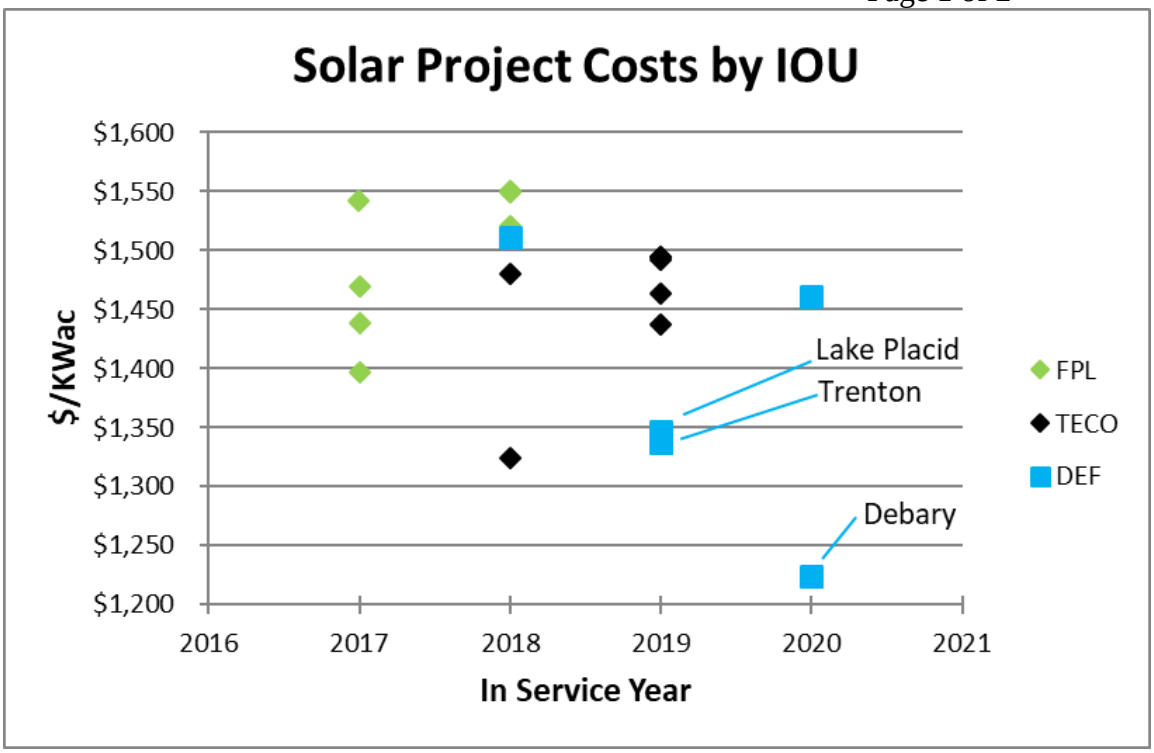


REDACTED

DeBary Solar Project Estimated Installed Cost by Category

Estimated Costs ($MM)	
Project Output (MW-ac)	74.5
[redacted]	
Construction Management	1.2
Development and Permitting[3]	4.4
Transmission Interconnect[4]	0.1
Land[5]	0.0
Total Installed Cost	$88.1
AFDUC	3.1
Total with AFDUC	$91.2
Total ($kW-ac)	1224

1. Includes equipment such as solar panels and project transformer, and any other equipment that was not included in EPC contract.
2. Includes remaining equipment such as racking, posts, inverters, and collection cables and EPC services.
3. Includes items such as lease rental payments during construction, legal fees, development costs, development fees, and title insurance.
4. Interconnection Customer charges identified in the Large Generator Interconnection Agreement.
5. Project occupies on land owned by Duke Energy Florida.


Solar Project Costs by IOU
$1,600
$1,550
$1,500
$1,450
$1,400
$1,350
$1,300
$1,250
$1,200
$/KWac
2016
2017
2018
2019
2020
2021
In Service Year
Lake Placid
Trenton
Debary
FPL
TECO
DEF

IOU	Filing Year	Project	In Service Year	$/kWac[1]
FPL	2017	Coral Farms	2017	$1,438
	2017	Horizon	2017	$1,470
	2017	Wildflower	2017	$1,397
	2017	Indian River	2017	$1,541
	2018	Loggerhead	2018	$1,513
	2018	Barefoot Bay	2018	$1,551
	2018	Hammock	2018	$1,521
	2018	Blue Cypress	2018	$1,549
TECO	2017	Payne Creek	2018	$1,324
	2017	Balm	2018	$1,480
	2018	Lithia Sola	2019	$1,494
	2018	Grange Hall	2019	$1,437
	2018	Peace Creek	2019	$1,492
	2018	Bonnie Mine	2019	$1,464
	2018	Lake Hancock	2019	$1,494
DEF	2018	Hamilton	2018	$1,511
	2018	Colombia	2020	$1,461
	2019	Trenton	2019	$1,337
	2019	Lake Placid	2019	$1,347
	2019	DeBary	2020	$1,224

[1] $/kWac is not a perfect metric due to the fact that not all utilities report what costs are included in this figure and each project will have a different system design (DC and AC sizing). A higher DC to AC ratio will result in higher costs on a $KW/ac basis but will produce more energy over the life of the project. In addition, installed costs for FPL's 2019 projects were not individually reported.

IN RE: DUKE ENERGY FLORIDA, LLC'S PETITION FOR A LIMITED PROCEEDING TO APPROVE SECOND SOLAR BASE RATE ADJUSTMENT

FPSC DOCKET NO. _____

DIRECT TESTIMONY OF BENJAMIN M. H. BORSCH

MARCH 25, 2019

Q. Please state your name and business address.

A. My name is Benjamin M. H. Borsch. My business address is Duke Energy Florida, LLC, 299 1st Avenue North, St. Petersburg, Florida 33701.

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

A. I am employed by Duke Energy Florida, LLC ("DEF" or the "Company") as the Director, IRP & Analytics.

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

A. I am responsible for resource planning for DEF. I am responsible for directing the resource planning process in an integrated approach in order to find the most cost-effective alternatives to meet the Company's obligation to serve its customers in Florida. I oversee the completion of the Company's Ten-Year Site Plan ("TYSP") filed each April.

Q. Please describe your educational background and professional experience.

A. I received a Bachelor's of Science and Engineering degree in Chemical Engineering from Princeton University in 1984. I joined Progress Energy in 2008 supporting the project management and construction department in the development of power plant projects. In 2009, I became Manager of Generation Resource Planning for Progress Energy Florida, and following the 2012 merger with Duke Energy Corporation, I accepted my current position. Prior to joining Progress Energy, I was employed for more than five years by Calpine Corporation where I was Manager (later Director) of Environmental Health and Safety for Calpine's Southeastern Region. In this capacity, I supported development and operations and oversaw permitting and compliance for several gas-fired power plant projects in nine states. I was also employed for more than eight years as an environmental consultant with projects including development, permitting, and compliance of power plants and transmission facilities. I am a professional engineer licensed in Florida and North Carolina.

Q. Please give an overview of the Company's presentation in this filing.

A. The Company is presenting testimony from three witnesses. My testimony will focus on the Company's demonstration of cost effectiveness for the proposed projects and their compliance with the terms set forth in DEF's 2017 Second Revised and Restated Settlement (the "2017 Settlement"). Two other witnesses will be presenting testimony. The testimony of Mr. Matthew G. Stout focuses on the characteristics of the solar projects presented for approval in this filing. It also provides details as to the Company's competitive solicitation processes, as well as the costs for the solar

projects. The testimony of Mr. Thomas G. Foster presents the revenue requirements for the solar projects.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the results of the economic analysis which shows that DEF's proposed three solar projects presented in this filing are cost effective and consistent with the terms of the 2017 Settlement. My testimony covers several areas. First, I discuss details of the three specific solar projects covered by this filing. Second, I discuss the major assumptions and methodology used to perform the economic analysis. Third, I present the results of the economic analysis, demonstrating that the addition of the proposed solar projects is cost effective and consistent with the terms of the 2017 Settlement.

Q. Are you presenting exhibits in this proceeding?

A. Yes. They consist of the following exhibits which are attached to my testimony:

Exhibit No. __ (BMHB-1), "Solar Power Plant Assumptions;"

Exhibit No. __ (BMHB-2), "Load Forecast;"

Exhibit No. __ (BMHB-3), "Fuel Forecasts;" and

Exhibit No. __ (BMHB-4), "Cost Effectiveness (CPVRR) Analysis Results."

These exhibits are true and accurate.

Q. Please summarize your testimony.

A. In the 2017 Settlement, DEF is authorized to request cost recovery up to 700 MW of solar generation over the course of the 2017 Settlement period including one year following the expiration of the Term of the 2017 Settlement subject to the demonstration of cost effectiveness and other provisions. In this filing, DEF is proposing the construction and operation of 194.4 MW_{ac} of solar PV generation, consisting of three separate projects, two projects coming in service in late 2019 with capacities of 74.9 and 45.0 MW_{ac} and a third project with a capacity of 74.5 MW_{ac} and an in-service date in early 2020. DEF performed an economic analysis and determined that these projects result in a reduction in the Cumulative Present Value Revenue Requirements ("CPVRR") to DEF customers for a total savings of approximately $105 million.

Q. Please describe the solar projects DEF is presenting for approval.

A. In this filing, DEF proposes three solar facilities. The first is a 74.9 MW facility in Gilchrist County, called the Trenton Solar Power Plant ("Trenton Project") which will come into service in late 2019. Next is a 45.0 MW facility located in Highlands County called the Lake Placid Solar Power Plant ("Lake Placid Project"), and the third is a 74.5 MW facility located at DEF's existing DeBary Generating Station in Volusia County which will be called the DeBary Solar Power Plant ("DeBary Project") and which will come into service in early 2020. Collectively, these projects will generate approximately 460,000 MWhs per year. Key data regarding these projects are provided in Exhibit No. __ (BMHB-1). The projects are described in greater detail in Mr. Stout's testimony.

Q. What will these proposed solar projects cost?

A. DEF anticipates that the Trenton, Lake Placid and DeBary Projects will cost approximately $100 million, $60 million, and $90 million respectively. These costs translate to a per kW cost of $1,337/$kW_{ac}$ for Trenton, $1,347//$kW_{ac}$ for Lake Placid and $1,224/$kW_{ac}$ for DeBary. This results in a weighted average per kW cost of $1,296/$kW_{ac}$. The costs are described in more detail in Mr. Stout's testimony.

Q. What does the 2017 Settlement require DEF to demonstrate to obtain cost recovery for the solar projects?

A. DEF must demonstrate that the projected solar projects in each filing meet several required elements. The first demonstrates that the costs are reasonable and beneath a threshold cost of $1,650/$kW_{ac}$ for the weighted average construction cost of the projects in an individual filing. These elements are met, as described above and in Mr. Stout's testimony. DEF must also calculate the annual revenue requirements, as explained in Mr. Foster's testimony. Finally, the solar projects must be limited to certain total MW size through one year following the Term of the 2017 Settlement, be cost effective on DEF's system, and DEF must demonstrate a need for the solar projects. The remainder of my testimony will focus on these last three requirements.

Q. Do the proposed solar projects meet the MW limitations set forth in the 2017 Settlement?

A. Yes. Paragraph 15(a) of the 2017 Settlement states that DEF may install up to 700 MW of solar generation over the term of the 2017 Settlement. Paragraph 15(d)

provides cost recovery limitations on those projects such that the installations can be spread across the term in a particular manner, at a rate of up to 175 MW per year except that unused portions of the total may carryover from year to year. Thus, up to a cumulative total of 175 MW may come online by the end of 2018, a cumulative total of up to 350 MW may come online by the end of 2019, a cumulative total of up to 525 MW may come online by the end of 2020, and the full 700 MW of solar projects may come online by the end of 2021 or within one year following the Term of the 2017 Settlement. The solar projects proposed here contribute 119.9 MW in 2019 and 74.5 MW added to the previously proposed 74.9 MW in 2020, a total of 149.4 MW in 2020, so DEF is within the limitations set forth in the 2017 Settlement. The table below compares the limitations laid out in the settlement to the projects proposed by DEF in this filing and in our July 2018 filing.

DEF Proposed Solar MW				
Filing	2018 MW	2019 MW	2020 MW	2021 MW
July 2018	74.9		74.9	
March 2019		119.9	74.5	
Total	74.9	119.9	149.4	
Cumulative Total	74.9	194.8	344.2	
Limitation	175	350	525	700

Q. Why is DEF proposing projects in different years, and one in 2020 in this filing?

A. In accordance with the terms of the 2017 Settlement, DEF has considered solar projects available both through DEF greenfield project development and through the acquisition of projects proposed by other developers. In this filing, DEF is proposing two projects acquired from other developers with various stages of project

development already underway and a third greenfield project developed on DEF owned property. In the cases of the first two projects proposed for 2019 in-service dates, DEF was able to acquire projects with advanced positions in the transmission interconnection queue and which DEF believes have good community acceptance and a straightforward path to receiving the necessary permits. In the case of the DeBary Project, DEF accepted a later in-service date in order to complete local permitting required for the site in order to take advantage of the opportunity to utilize property already owned by the company.

Q. Are the proposed solar projects cost effective?

A. Yes. As explained below, DEF analyzed the total system cost of the DEF system with the projects as compared to the total DEF system costs without the projects, and found that the solar projects as proposed reduce the total system cost and are thus cost effective for DEF's customers.

Q. How did DEF evaluate the cost effectiveness of the solar projects?

A. DEF calculated the cost effectiveness in the same manner that it performs cost effectiveness evaluations of numerous projects including the development of the Ten-Year Site Plan. DEF calculates the total system cost projected over the life of the solar projects for a scenario with the solar projects and compares it to the total system cost calculated for a scenario without the solar projects. Lower total system costs for the scenario with the solar projects represents savings to DEF's customers. As with our Ten-Year Site Plan, this analysis is performed using the Planning and Risk suite

of modeling tools to evaluate the production cost results. Project specific capital costs come from the project development teams and revenue requirements are then developed. Finally, project specific solar performance projections are developed using the PVSyst model and provided to the production cost model. This data becomes inputs to derive the system costs for the two cases developed with and without the solar projects in service.

In addition to the reference case assuming the base case fuel price projection and a carbon emission cost beginning in 2025, DEF also performed sensitivities based on low and high fuel price projections. Results of these differential CPVRR analyses, the difference between with and without the solar projects are shown below and in Exhibit No. __ (BMBH-4). The fuel price forecasts are shown in Exhibit No. __ (BMHB-3) attached to this testimony.

Q. Please describe the major assumptions used in developing the CPVRR analyses.

A. Load Forecast – The analysis uses DEF's most recent official load forecast developed in the fall of 2018, which will be presented as the base case load forecast in the DEF 2019 Ten-Year Site Plan ("TYSP") filed with the commission in April 2019. This load forecast is attached as Exhibit No. __ (BMHB-2).

- Fuel Price Forecast – The reference case analyses use DEF's most recent published fuel price forecast also utilized in DEF's 2019 TYSP. The base case fuel price forecast was developed using short-term and long-term spot market price projections from industry-recognized sources. The base cost for coal is based on the existing contracts and spot market coal prices and transportation arrangements between DEF and its various suppliers. For the longer term, the

prices are based on spot market forecasts reflective of expected market conditions. Oil and natural gas prices are estimated based on current and expected contracts and spot purchase arrangements as well as near-term and long-term market forecasts. Oil and natural gas commodity prices are driven primarily by open market forces of supply and demand. Natural gas firm transportation cost is determined primarily by pipeline tariff rates. For the low and high fuel price scenarios, DEF developed ranges of natural gas and coal prices around the reference forecast based on the range of prices seen in the Energy Information Administration's high price (Low Oil and Gas Resource and Technology Case) and low price (High Oil and Gas Resource and Technology Case) forecasts.

- CO_2 Emissions Price Forecast – The CO_2 allowance price projections used in this filing are also DEF's latest projections used in the development of the 2019 TYSP. DEF's price projections are a proxy for regulations consistent with a goal to reduce CO_2 emissions 40% by 2030.

Q. What are the results of DEF's cost effectiveness evaluation for these projects?

A. DEF has found that the projects are cost effective for its customers. The total system costs calculated over the project lives when including the projects in the DEF resource plan are lower when compared to the total system costs excluding the projects. The net results of this analysis (system costs with the projects minus system costs without the projects) are summarized in the table below and in Exhibit No. __ (BMHB-4).

CPVRR Net Cost / (Savings) of Proposed Solar Projects
$ Millions (2019)

Low Fuel Sensitivity	Base Case Fuel	High Fuel Sensitivity
(65)	(105)	(205)

Q. What benefits do the proposed solar facilities bring to DEF's system and customers?

A. The primary purpose of the proposed DEF solar projects is to provide customers with cost-effective, clean, renewable energy. These large scale solar projects and additional future projects to be filed under the 2017 Settlement will diversify DEF's fuel mix with dependable energy, and provide firm summer capacity, helping to meet DEF's needs for future capacity and satisfy DEF's need for future generation capacity.

Q. Given all these benefits, does DEF have a need for these solar projects?

A. Yes. DEF has a need for cost-effective clean generation that will diversify its fuel mix, and defer the need for future gas-fired generation.

Q. Should the Commission approve DEF's request for approval of this first group of solar projects?

A. Yes. As demonstrated above, these solar projects are cost effective and will provide DEF's customers with additional 194.4 MW of clean, reliable, renewable energy to meet its needs.

Q. Does that conclude your testimony?

A. Yes.

Solar Power Plant Assumptions					
Solar Energy Centers	In-service date	Name Plate Capacity (Mwac)	Projected 1st Year Net Capacity Factor	Capital Cost ($M)	Capital Cost ($/Kwac)
Trenton	Dec-19	74.9	28.6%	$100.17	$ 1,337
Lake Placid	Dec-19	45.0	28.6%	$60.61	$ 1,347
DeBary	Mar-20	74.5	24.5%	$91.20	$ 1,224

Load Forecast			
Year	Summer Firm Peak MW	Winter Firm Peak MW	Net Energy for Load Mwh
2019	9,019	9,023	43,205,985
2020	8,953	9,239	43,619,762
2021	9,026	8,611	43,948,753
2022	9,082	8,958	44,518,946
2023	8,836	8,696	44,466,377
2024	8,907	8,768	44,812,808
2025	8,766	8,583	44,731,864
2026	8,839	8,633	45,057,379
2027	8,920	8,688	45,405,099
2028	9,027	8,741	45,916,074
2029	9,129	8,788	46,350,968
2030	9,212	8,852	46,744,066
2031	9,255	8,860	46,132,672
2032	9,361	8,961	46,659,740
2033	9,449	8,991	47,027,594
2034	9,558	9,063	47,520,278
2035	9,669	9,138	48,026,523
2036	9,391	8,848	48,605,287
2037	9,497	8,894	49,057,272
2038	9,606	8,968	49,554,273
2039	9,717	9,040	50,044,837
2040	9,836	9,147	50,613,122
2041	9,950	9,188	51,066,883
2042	10,071	9,262	51,582,651
2043	10,200	9,354	52,143,914

Fuel Forecasts

Fuel Mid Price Forecast (2019 TYSP)			
Year	Natural Gas Base Cost Regular Supply Z3	CRN Coal	Distillate Oil
	$/MMBTU		
2019	2.91	2.44	15.79
2020	2.72	2.45	15.89
2021	2.65	2.51	16.17
2022	2.65	2.57	16.31
2023	2.70	2.59	15.72
2024	2.99	2.76	15.26
2025	3.44	2.86	14.93
2026	3.95	2.97	15.02
2027	4.34	3.09	15.37
2028	4.65	3.13	15.79
2029	5.12	3.17	16.49
2030	5.68	3.25	17.00
2031	5.91	3.66	17.32
2032	6.21	3.76	17.64
2033	6.53	3.86	17.98
2034	6.74	3.95	18.34
2035	6.41	3.98	18.68
2036	6.44	4.06	19.15
2037	6.81	4.14	19.63
2038	7.33	4.25	20.12
2039	7.83	4.36	20.62
2040	8.07	4.47	21.14
2041	8.27	4.59	21.67
2042	8.48	4.70	22.21
2043	8.69	4.82	22.76
2044	8.91	4.94	23.33
2045	9.13	5.06	23.92
2046	9.36	5.19	24.52
2047	9.59	5.32	25.13
2048	9.83	5.45	25.76
2049	10.08	5.59	26.40
2050	10.33	5.73	27.06

Fuel High Price Forecast (2019 TYSP)			
Year	Natural Gas Base Cost Regular Supply Z3	CRN Coal	Distillate Oil
	$/MMBTU		
2019	2.91	2.44	15.79
2020	2.72	2.45	15.89
2021	2.82	2.51	16.17
2022	3.52	2.57	16.31
2023	4.74	2.59	15.72
2024	5.89	2.76	15.26
2025	6.42	2.88	14.93
2026	6.84	2.99	15.02
2027	6.88	3.12	15.37
2028	6.89	3.14	15.79
2029	7.42	3.20	16.49
2030	8.17	3.28	17.00
2031	8.50	3.70	17.32
2032	8.97	3.80	17.64
2033	9.47	3.90	17.98
2034	9.94	4.01	18.34
2035	9.58	4.03	18.68
2036	9.65	4.12	19.15
2037	10.26	4.21	19.63
2038	11.04	4.31	20.12
2039	11.75	4.42	20.62
2040	12.16	4.55	21.14
2041	12.46	4.67	21.67
2042	12.77	4.78	22.21
2043	13.09	4.90	22.76
2044	13.42	5.03	23.33
2045	13.75	5.15	23.92
2046	14.10	5.28	24.52
2047	14.45	5.41	25.13
2048	14.81	5.55	25.76
2049	15.18	5.69	26.40
2050	15.56	5.83	27.06

Fuel Low Price Forecast (2019 TYSP)			
Year	Natural Gas Base Cost Regular Supply Z3	CRN Coal	Distillate Oil
	$/MMBTU		
2019	2.91	2.44	15.79
2020	2.72	2.45	15.89
2021	2.65	2.51	16.17
2022	2.65	2.57	16.31
2023	2.70	2.59	15.72
2024	2.85	2.76	15.26
2025	3.09	2.86	14.93
2026	3.40	2.95	15.02
2027	3.61	3.07	15.37
2028	3.76	3.06	15.79
2029	4.03	3.11	16.49
2030	4.43	3.17	17.00
2031	4.60	3.58	17.32
2032	4.78	3.66	17.64
2033	4.95	3.75	17.98
2034	5.05	3.84	18.34
2035	4.78	3.85	18.68
2036	4.71	3.92	19.15
2037	4.92	3.99	19.63
2038	5.24	4.08	20.12
2039	5.59	4.16	20.62
2040	5.73	4.28	21.14
2041	5.88	4.38	21.67
2042	6.02	4.49	22.21
2043	6.17	4.60	22.76
2044	6.33	4.72	23.33
2045	6.49	4.84	23.92
2046	6.65	4.96	24.52
2047	6.81	5.08	25.13
2048	6.98	5.21	25.76
2049	7.16	5.34	26.40
2050	7.34	5.47	27.06

Cost Effectiveness (CPVRR) Analysis Results			
CPVRR Through Year 2050 2019$M	**Tranche 2 Cases - Tranche 1 Cases**		
	Low Fuel Prices	**Mid Fuel Prices**	**High Fuel Prices**
Lake Placid	127	127	127
Trenton	79	79	79
DeBary	110	110	110
Conventional Generation	(119)	(119)	(119)
Fuel Cost	(188)	(227)	(329)
Variable Costs	(22)	(22)	(22)
Environmental Costs without Carbon	(1)	(1)	(0)
Total Solar Savings before CO2 Costs	**(15)**	**(54)**	**(156)**
CO2 Cost	(50)	(51)	(49)
CPVRR (Savings)	**(65)**	**(105)**	**(205)**

IN RE: DUKE ENERGY FLORIDA, LLC'S PETITION FOR A LIMITED PROCEEDING TO APPROVE SECOND SOLAR BASE RATE ADJUSTMENT

FPSC DOCKET NO. _____

DIRECT TESTIMONY OF THOMAS G. FOSTER

MARCH 25, 2019

Q. Please state your name and business address.

A. My name is Thomas G. Foster. My business address is Duke Energy Florida, LLC, 299 1st Avenue North, St. Petersburg, Florida 33701.

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

A. I am employed by Duke Energy Florida, LLC ("DEF" or the "Company") as Director of Rates and Regulatory Planning.

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

A. I am responsible for regulatory planning and cost recovery for Duke Energy Florida, LLC ("DEF"), including the Company's filing for recovery of its investments in solar projects.

Q. Please describe your educational background and professional experience.

A. I joined the Company on October 31, 2005 in the Regulatory group. In 2012, following the merger with Duke Energy Corporation ("Duke Energy"), I was promoted to my

current position. I have 6 years of experience related to the operation and maintenance of power plants obtained while serving in the United States Navy as a Nuclear Operator. I received a Bachelors of Science degree in Nuclear Engineering Technology from Thomas Edison State College. I received a Masters of Business Administration with a focus on finance from the University of South Florida and I am a Certified Public Accountant in the State of Florida.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide the annualized revenue requirements for the three solar projects included in DEF's second SoBRA filing; Lake Placid Solar Power Plant ("Lake Placid"), Trenton Solar Power Plant ("Trenton"), and DeBary Solar Power Plant ("DeBary"). I will also present the process for submitting the customer rate impacts and tariff sheets in a subsequent filing. Matthew Stout will present direct testimony describing the solar projects and the reasonableness of the costs, and Benjamin Borsch will present direct testimony demonstrating the cost effectiveness of the solar projects.

Q. Have you prepared, or caused to be prepared under your direction, supervision, or control, exhibits in this proceeding?

A. Yes. I am sponsoring the following exhibit:

Exhibit No. ___ (TGF-1), "SoBRA II First Year Annualized Revenue Requirement." This exhibit is true and accurate.

Q. Please describe the SoBRA filing requirements in DEF's 2017 Revised and Restated Settlement Agreement.

A. Paragraph 15 of the 2017 Revised and Restated Settlement Agreement ("2017 Settlement") provides for solar base rate adjustments. Specifically, Paragraph 15.c. states:

> Solar generation projects not subject to the Florida Electrical Power Plant Siting Act (i.e., fewer than 75 MW), also will be subject to approval by the Commission as follows: (i) DEF will file a request for approval of the solar generation project in a separate docket; and (ii) the issues for determination are limited to: the reasonableness and cost effectiveness of the solar generation projects (i.e., will the projects lower the projected system cumulative present value revenue requirement "CPVRR" as compared to such CPVRR without the solar projects); the amount of revenue requirements; and whether, when considering all relevant factors, DEF needs the solar project(s). Any Party may challenge the reasonableness of DEF's actual or projected solar project costs. If approved, DEF will calculate and submit for Commission confirmation the base rate adjustment for each such solar project, consistent with Subparagraphs 15.e. and 15.f.

Q. Have you calculated the revenue requirements for the solar projects consistent with the 2017 Settlement?

A. Yes. Based on the cost information provided in Mr. Stout's testimony, I have calculated the annualized revenue requirements for Lake Placid, Trenton, and DeBary. The annualized revenue requirements have been calculated in accordance with Paragraph 15.f. of the 2017 Settlement, which requires that the revenue requirements be "calculated using a 10.5% ROE and DEF's projected 13-month average capital structure for the first 12 months of operation, including all specific adjustments consistent with DEF's most recently filed December earnings surveillance report, and excluding the treatment of common equity and rate base (working capital) allowed in Paragraph 18 of the 2013 Settlement Agreement, and adjusted to include an ADIT proration adjustment consistent with 26 C.F.R. Section 1.167(l)-1(h)(6) and adjusted to reflect the inclusion of investment tax credits on a normalized basis." Further, as required by Paragraph 12.c. of the 2017 Settlement, DEF has calculated the revenue requirements using the lower 21% federal income tax rate as a result of the 2017 Tax Cuts and Jobs Act. The following table provides the expected in-service date, rate effective date, projected revenue requirement and estimated residential rate impact for each project.

	Lake Placid	**Trenton**	**DeBary**
Expected In-Service Date	Dec 2019	Dec 2019	Mar 2020
Rate Effective Date	Jan 2020	Jan 2020	Apr 2020
Est. Revenue Requirement	$7.8 million	$12.8 million	$11.4 million
Est. Residential Rate $/1,000 kWh *	$0.22	$0.37	$0.33

* To be updated at the time of DEF's Capacity Cost Recovery Clause 2020 projection filing

Q. **Does the 2017 Settlement provide for a true-up mechanism to be applied to SoBRA rates?**

A. Yes. Paragraph 15.g. of the 2017 Settlement states, "In the event that the actual capital expenditures are less than the approved projected costs, included in the petition for cost recovery and used to develop the initial base rate adjustment, the lower figure shall be the basis for the full revenue requirements and a one-time credit will be made through the CCR Clause. In order to determine the amount of this credit, a revised base rate adjustment will be computed using the same data and methodology incorporated in the initial base rate adjustment, with the exception that the actual capital expenditures will be used in lieu of the capital expenditures on which the Annualized Base Revenue Requirement was based. On a going-forward basis, base rates will be adjusted to reflect the revised base rate adjustment. The difference between the cumulative base revenues since the implementation of the initial base rate adjustment and the cumulative base revenues that would have resulted if the revised base rate adjustment had been in-place during the same time period will be credited to customers through the CCR Clause with interest at the 30-day commercial paper rate as specified in Rule 25-6.109, F.A.C." Once the capital expenditures are final, if they are less than the amount approved by the Commission, then DEF will make a true-up filing to reduce base rates going forward and provide a refund through the CCR clause consistent with the provisions in Paragraph 15.g. of the 2017 Settlement.

Q. Have you calculated the solar base rate adjustment factors consistent with the 2017 Settlement?

A. Not at this time. Paragraph 15.e in the 2017 Settlement requires DEF to use the sales forecast in DEF's then-most-current Capacity Cost Recovery (CCR) Clause projection

filing; the CCR projection filing for 2020 is expected to be filed on September 3, 2019. Therefore, at the time of DEF's CCR projection filing, DEF will file a rate exhibit that includes; 1) the rates to be effective January 2020 for Lake Placid, Trenton and the multi-year rate increase pursuant to Paragraph 12.b. and 12.c. of the 2017 Settlement, and 2) the rates to be effective April 2020 for DeBary and Columbia. The Columbia solar project was included in DEF's first SoBRA filing in Docket No. 20180149 and is also expected to be placed in rates in April 2020.

Q. When will DEF file the tariff sheets?

A. In order to promote efficiency and avoid having multiple sets of tariff sheets outstanding for approval, DEF proposes to file two different sets of tariff sheets at two different times. DEF will file tariff sheets with an effective date of January 1, 2020 immediately after the Commission approves Lake Placid and Trenton. DEF will then file tariff sheets with an effective date of April 1, 2020 to include DeBary and Columbia after the rates go into effect for Lake Placid and Trenton. DEF will file both of these sets of tariff sheets for Commission confirmation pursuant to Paragraph 15.c. of the 2017 Settlement.

Q. What is the estimated residential base rate impact of Lake Placid, Trenton, and DeBary?

A. The estimated residential base rate impacts are shown in the table on page 4 of my testimony. These estimated rate impacts are based on the the sales forecast used in DEF's 2018 CCR projection filing for 2019. However, these rates will be updated

based on the sales forecast to be used in DEF's 2019 CCR projection filing for 2020 rates at the time of that filing, as explained above.

Q. **How will DEF notify the Commission of the commercial operation date of each solar facility?**

A. DEF will submit to the Commission a letter that declares the commercial operation date of each solar facility prior to any Solar base rate changes.

Q. Does that conclude your testimony?

A. Yes.

Duke Energy Florida, LLC
SoBRA II First Year Annualized Revenue Requirement
($000)

Docket No. _____-EI
Witness: T.G. Foster
Exhibit No. _____(TGF-1)

	Description	Reference	Lake Placid Project	Trenton Project	DeBary Project
1	Jurisdictional Adjusted Rate Base	Page 2	$ 57,761	$ 95,456	$ 86,916
2	Rate of Return on Rate Base	Pages 3 & 4	6.420%	6.420%	6.450%
3	Net Operating Income Required	Line 1 x Line 2	3,708	6,128	5,606
4	Net Operating Income Achieved	Page 2	(2,078)	(3,421)	(2,846)
5	Net Operating Income Deficiency/(Excess)	Line 3 - Line 4	5,787	9,550	8,452
6	Net Operating Income Multiplier	Note 1	1.344	1.344	1.344
7	Revenue Requirement	Line 5 x Line 6	$ 7,779	$ 12,837	$ 11,361

8 Note 1: Net Operating Income Multiplier is based on MFR C-44 in Docket No. 20090079, except federal tax rate changed to 21%.

Duke Energy Florida, LLC
SoBRA II First Year Annualized Revenue Requirement
($000)

Docket No. _____-EI
Witness: T.G. Foster
Exhibit No. _____(TGF-1)

	Net Plant (13 month average):	Lake Placid Project Total Company	Lake Placid Project FPSC Jurisd.	Trenton Project Total Company	Trenton Project FPSC Jurisd.	DeBary Project	DeBary Project	Jurisd. Factor
1	Solar Production Plant	$59,689	$57,842	$99,178	$96,109	$90,204	$87,412	96.905%
2	Accumulated Reserve - Solar Production Plant	($995)	($964)	($1,653)	($1,602)	($1,503)	($1,457)	96.905%
3	Transmission GSU	$920	$892	$988	$957	$1,000	$969	96.905%
4	Accumulated Reserve - Transmission GSU	($8)	($8)	($9)	($9)	($9)	($9)	96.905%
5	Net Plant	$59,606	$57,761	$98,504	$95,456	$89,691	$86,916	

	Operating Expenses:	Total Company	FPSC Jurisd.	Total Company	FPSC Jurisd.	Total Company	FPSC Jurisd.	
6	O&M	$ 889	$861	$ 1,351	$1,309	$ 880	$853	96.905%
7	Depreciation Expense - Solar Production Plant	1,990	1,928	3,306	3,204	3,007	2,914	96.905%
8	Depreciation Expense - Transmission GSU	17	16	18	17	18	18	96.905%
9	Dismantlement	104	101	211	204	171	166	96.905%
10	Property Insurance	80	78	132	128	120	116	96.905%
11	Property Tax	184	178	357	346	319	309	96.905%
12	Total Operating Expenses	$ 3,264	$ 3,163	$ 5,375	$ 5,208	$ 4,515	$ 4,375	
13	Jurisdictional Interest Expense		1,115		1,842		1,660	

		FPSC Jurisd.	FPSC Jurisd.	FPSC Jurisd.
14	Operating Expenses	$ (3,163)	$ (5,208)	$ (4,375)
15	Income Tax - Operating Expenses (Line 12 x tax rate)	802	1,320	1,109
16	Income Tax - Interest Expense (Line 13 x tax rate)	283	467	421
17	Jurisdictional Net Operating Income	$ (2,078)	$ (3,421)	$ (2,846)

($000) Page 3 of 4

Lake Placid & Trenton Projects

		System Per Sys Per Book	Proration Adjustment	System Per Books Adj'd	Retail Per Books	Pro Rata Adj	Specific Adj	Adjusted Retail	Cap Ratio	Cost Rate	Weighted Cost
1	Common Equity	$7,123,416	$ 811	$ 7,124,227	$ 6,398,129	$ (368,357)	$ (15,257)	$ 6,014,516	42.24%	10.50%	4.44%
2	Long Term Debt	$6,495,521	739	6,496,261	5,834,165	(335,888)		5,498,277	38.60%	4.82%	1.86%
3	Short Term Debt	$229,543	26	229,569	206,171	(11,870)		194,301	1.36%	2.79%	0.04%
4	Cust Dep Active	$197,900	23	197,922	197,922	(11,395)		186,527	1.31%	2.37%	0.03%
5	Cust Dep InActive	$1,901	0	1,901	1,901	(109)		1,792	0.01%		
6	Invest Tax Cr	$114,015	13	114,028	102,406	(5,896)		96,510	0.68%	7.79%	0.05%
7	Deferred Inc Tax	$2,975,187	(1,612)	2,973,575	2,670,510	(153,748)	(265,713)	2,251,048	15.80%		
8	**Total**	$ 17,137,482	$ -	$ 17,137,482	$ 15,411,204	$ (887,262)	$ (280,970)	$ 14,242,972	100.00%		6.42%

Proration Adjustment to Reflect Projected ADFIT Consistent with Projection Year

		Month	ADIT Bal.	Deprec-Related ADFIT Bal.	Deprec-Related ADFIT Activity	Days to Prorate	Future Days in Period	Prorated Deprec-Related ADFIT Activity	Prorated Deprec-Related ADFIT Bal.
9		Jan-20	$ 2,904,709	$ 1,918,495					$ 1,918,495
10	projected	Feb-20	$ 2,920,512	$ 1,922,332	$ 3,838	31	336	$ 3,523	1,922,018
11	projected	Mar-20	$ 2,935,466	$ 1,926,167	3,835	29	307	3,217	1,925,235
12	projected	Apr-20	$ 2,950,790	$ 1,929,844	3,676	31	276	2,772	1,928,007
13	projected	May-20	$ 2,963,957	$ 1,933,444	3,601	30	246	2,420	1,930,427
14	projected	Jun-20	$ 2,975,787	$ 1,937,091	3,647	31	215	2,142	1,932,569
15	projected	Jul-20	$ 2,985,246	$ 1,940,575	3,484	30	185	1,761	1,934,330
16	projected	Aug-20	$ 2,994,429	$ 1,943,972	3,397	31	154	1,429	1,935,759
17	projected	Sep-20	$ 3,004,221	$ 1,947,326	3,354	31	123	1,127	1,936,887
18	projected	Oct-20	$ 3,014,195	$ 1,950,447	3,121	30	93	793	1,937,680
19	projected	Nov-20	$ 3,025,854	$ 1,953,495	3,048	31	62	516	1,938,196
20	projected	Dec-20	$ 3,038,383	$ 1,956,608	3,114	30	32	272	1,938,468
21	projected	Jan-21	$ 2,963,887	$ 1,961,416	4,808	31	1	13	1,938,481
22	13 Mo Avg Bal		$ 2,975,187	$ 1,940,093		366		$ 19,987	$ 1,938,481
23								13 Mo Avg Bal	1,940,093
24								Proration Adj.	$ (1,612)

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DeBary Project

		System Per Sys Per Book	Proration Adjustment	System Per Books Adj'd	Retail Per Books	Pro Rata Adj	Specific Adj	Adjusted Retail	Cap Ratio	Cost Rate	Weighted Cost
1	Common Equity	$7,306,826	$ 993	$ 7,307,819	$ 6,557,342	$ (372,984)	$ (15,243)	$ 6,169,115	42.66%	10.50%	4.48%
2	Long Term Debt	$6,572,909	893	6,573,802	5,898,705	(335,520)		5,563,185	38.46%	4.81%	1.85%
3	Short Term Debt	$192,229	26	192,255	172,512	(9,813)		162,699	1.12%	2.33%	0.03%
4	Cust Dep Active	$197,900	27	197,926	197,926	(11,258)		186,668	1.29%	2.37%	0.03%
5	Cust Dep InActive	$1,901	0	1,901	1,901	(108)		1,793	0.01%		
6	Invest Tax Cr	$135,079	18	135,097	121,224	(6,895)		114,328	0.79%	7.80%	0.06%
7	Deferred Inc Tax	$2,989,453	(1,958)	2,987,494	2,680,693	(152,479)	(261,694)	2,266,520	15.67%		
8	**Total**	$ 17,396,296	$ -	$ 17,396,296	$15,630,304	$ (889,057)	$ (276,938)	$ 14,464,308	100.00%		6.45%

Proration Adjustment to Reflect Projected ADFIT Consistent with Projection Year:

		Month	ADIT Bal.	Deprec-Related ADFIT Bal.	Deprec-Related ADFIT Activity	Days to Prorate	Future Days in Period	Prorated Deprec-Related ADFIT Activity	Prorated Deprec-Related ADFIT Bal
9		Apr-20	$ 2,950,790	$ 1,929,844					$ 1,929,844
10	projected	May-20	$ 2,963,957	$ 1,933,444	$ 3,601	30	336	$ 3,315	1,933,158
11	projected	Jun-20	$ 2,975,787	$ 1,937,091	3,647	31	305	3,047	1,936,206
12	projected	Jul-20	$ 2,985,246	$ 1,940,575	3,484	30	275	2,625	1,938,830
13	projected	Aug-20	$ 2,994,429	$ 1,943,972	3,397	31	244	2,271	1,941,101
14	projected	Sep-20	$ 3,004,221	$ 1,947,326	3,354	31	213	1,957	1,943,059
15	projected	Oct-20	$ 3,014,195	$ 1,950,447	3,121	30	183	1,565	1,944,624
16	projected	Nov-20	$ 3,025,854	$ 1,953,495	3,048	31	152	1,269	1,945,893
17	projected	Dec-20	$ 3,038,383	$ 1,956,608	3,114	30	122	1,041	1,946,933
18	projected	Jan-21	$ 2,963,887	$ 1,961,416	4,808	31	91	1,199	1,948,132
19	projected	Feb-21	$ 2,976,146	$ 1,966,230	4,814	31	60	791	1,948,923
20	projected	Mar-21	$ 2,983,502	$ 1,970,967	4,737	28	32	415	1,949,339
21	projected	Apr-21	$ 2,986,489	$ 1,975,607	4,641	31	1	13	1,949,351
22	13 Mo Avg Bal		$ 2,989,453	$ 1,951,309		365		$ 19,508	$ 1,949,351
23								13 Mo Avg Bal	1,951,309
24								Proration Adj.	$ (1,958)