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October 26, 2015

VIA: ELECTRONIC FILING

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Docket No. 150211-EI – Tampa Electric Company's Petition for Approval of
Depreciation Rates for Solar Photovoltaic Generating Units

Dear Ms. Stauffer:

Attached for filing in the above docket is Tampa Electric Company's Responses to Staff's
First Data Request (Nos. 1-13) dated October 8, 2015.

Thank you for your assistance in connection with this matter.

Sincerely,


James D. Beasley

JDB/pp
Attachment

cc: Jenny Wu (w/attachment)

**TAMPA ELECTRIC COMPANY
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1. Paragraph 3 of Tampa Electric Company (TECO)'s petition states that "Discussions with vendors of the equipment being utilized for the TIA installation and other such equipment generate an estimate of design life of 30 years."
 - a. Please identify each of the vendors referenced in the above statement.
 - b. Please provide any documentation from the discussed vendors that support the design life of 30 years.

- A. The estimated design life of 30 years is consistent with the National Renewable Energy Laboratory's (NREL's) 25 to 40 year estimate. Additionally, Tampa Electric contracted with the Solar Electric Power Association (SEPA) during the project planning phase and 30 years was discussed at that time to be a good estimate for design life.
 - a. The estimate of a 30 year design life resulted in conversations with Solar Electric Power Association (SEPA) and Solar Source (the project turnkey construction firm) among other undocumented conversations. The SolarWorld panels used for this project have a manufacturer's guaranteed maximum performance digression of 0.7% per year in the course of 25 years. At 25 years, the panels are expected to perform at more than 80% of the minimum peak power. Based on this information as well as the analysis performed and published by NREL, Tampa Electric believes that 30 years is a good, conservative estimation of the depreciable life of the project.
 - b. The discussions with vendors, referenced in the petition, were not documented; however, NREL's analysis of the equipment's useful life can be found on their web site at: http://www.nrel.gov/analysis/tech_footprint.html. Additionally, in Docket No. 080543-EI, Order No. PSC-08-0731-PAA-EI, the PSC adopted a 30 year life with zero net salvage for comparable solar photovoltaic generating units for Florida Power & Light. The manufacturer's spec sheet for the SolarWorld SW325 panels can be accessed at the following web site: <http://www.civicsolar.com/sites/default/files/documents/sunmodule-pro-series-solar-panel-xl-325-mono-33mm-frame-ds-277024.pdf>

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2. Regarding TECO's photovoltaic (PV) generating systems which are referenced in the instant petition:
- a. Please specify the major components (e.g. PV modules, PV support structure, energy output modules, etc.) of these PV generating systems.
 - b. Do the different components discussed in question 2a have the same design life? Please explain.
 - c. Do the different components discussed in question 2a have the same service life? Please explain.
 - d. Do the different components discussed in question 2a have the same warranty? Please explain.
- A.
- a. The major components of the PV generating system include:
SolarWorld SW325 panels
SMA Sunny Central 800CP-US inverters
Concrete canopy support structure
 - b. It is anticipated that the inverters will have to be replaced once during the life of the system. The design life of the canopy support structure is expected to exceed the estimated 30 year design life of the solar panels.
 - c. Tampa Electric anticipates using the system as designed to meet manufacturer's warranty requirements. In doing so, Tampa Electric expects the service life to exceed the design life, however the company does not have sufficient historical data to support an estimated service life.
 - d. The stated manufacturer's warranty on the Sunny Central 800CP-US inverters is 5 years. A 10 year extended warranty adder was incorporated into the price of the inverters to bring the length of the warranty to 15 years. The concrete support structure has a one year structural warranty; however, the structure was built to meet or exceed the expected facility life.

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3. In paragraph 4 of its petition, TECO indicates that it will own the PV support structure, PV system, and energy output under a 25-year lease from TIA for the space.
 - a. Please explain why TECO proposes to depreciate the solar facility over 30 years when the space on which the facility is located is subject to a 25-year lease.
 - b. Please explain what TECO plans to do with its PV generating units after the lease for the space ends.
 - c. Is it TECO's intent that the PV generating units be retired "early," assuming 30-year service life, and dismantled at the end of year 25?
 - d. Is it TECO's intent that the ownership of the PV generating units be transferred from TECO to TIA after year 25?

- A.
 - a. The lease entered into between Tampa Electric and TIA is for 25 years with an option to extend 5 years for a total of 30 years. The lease reflects a payment schedule for 30 years, should the 5 year renewal option be exercised.
 - b. After the lease for the space ends, Tampa Electric will remove or otherwise dispose of the facility in a mutually agreed upon manner. This determination will be made at the time of the expiration of the lease.
 - c. It is Tampa Electric's intent to exercise the option to extend the lease for an additional 5 years for a total of 30 years from the commencement date.
 - d. It is Tampa Electric's intent to remove the PV generating units at the conclusion of the 30 year lease unless otherwise disposed of in a mutually agreed upon manner, which could include transfer of ownership to TIA.

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4. Regarding the "other solar photovoltaic projects" discussed in paragraph 4 of the petition:
 - a. Will those projects be provided by the same vendors who are now constructing the TIA PV generating units?
 - b. Will those projects be constructed using the same PV panels, the same support structures, and the same auxiliary components as the TIA PV generating units?
 - c. Will those projects be constructed on the land owned by TECO, or on a leased land?

- A.
 - a. Tampa Electric intends to competitively bid future solar PV projects with firms that have similar regional construction experience with comparable PV generating unit capacities.
 - b. Tampa Electric will work with the EPC firms to evaluate all PV system components in order to optimize the functionality of each component based on site specific conditions.
 - c. The 25 MW_{DC} PV project that Tampa Electric is investigating near the Manatee Viewing Center will be constructed on land owned by the Company. Other sites are being evaluated for systems similar in size to the TIA PV system. These sites will be located on leased land or on land owned by a third party with an easement agreement for the space.

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5. In paragraph 5 of the petition, TECO indicates that it will use the following subaccounts to book the plant addition and retirement activities.

Subaccount 303 Intangible Plant Subaccount 341 Structures and Improvements
Subaccount 343 Other Generation Plant Subaccount 345 Accessory Electric Plant

- a. For each of these subaccounts:
- I. Please provide a description of the plant assets typically booked to the subaccount.
 - II. Please identify the solar components or the associated equipment that will be booked, and indicate the respective life expectancy.
 - III. Please identify the major components discussed in question 2a that will be booked in the subaccount.
- b. Please provide the rationale for applying a single depreciation rate, 3.3 percent, given that the account activities of a certain subaccount, such as Subaccount 303, may be very different from the other subaccounts.

- A. a. I. As described in the Code of Federal Regulations 18 CFR Ch. I, Electric Plant Accounts, plant assets typically recorded in listed subaccounts are as follows:

303 Miscellaneous intangible plant account shall include the cost of patent rights, licenses, privileges, and other intangible property necessary or valuable in the conduct of utility operations and not specifically chargeable to any other account.

341 Structures and improvements account include the cost of all buildings and facilities to house, support, or safeguard property or persons, including all fixtures permanently attached to and made a part of buildings and which cannot be removed therefrom without cutting into the walls, ceilings, or floors, or without in some way impairing the buildings, and improvements of a permanent character on or to land.

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343 Prime movers account shall include the cost installed of Diesel or other prime movers devoted to the generation of electric energy, together with their auxiliaries.

345 Accessory electric equipment account shall include the cost installed of auxiliary generating apparatus, conversion equipment, and equipment used primarily in connection with the control and switching of electric energy produced in other power generating stations, and the protection of electric circuits and equipment, except electric motors used to drive equipment included in other accounts. Such motors shall be included in the account in which the equipment with which it is associated is included.

II. The major components of the PV generating system include:

SolarWorld SW325 panels
SMA Sunny Central 800CP-US inverters
Concrete canopy support structure

Tampa Electric has very little experience with large utility scale solar photovoltaic generating facilities and their expected life.

III.

Major Components	Subaccount
SolarWorld SW325 panels	343 Prime movers
SMA Sunny Central 800CP-US inverters	345 Accessory Electric Plant
Concrete canopy support structure	341 Structures and Improvements

- b. Tampa Electric has very little experience with large utility scale solar photovoltaic generating facilities and their expected life, particularly with parking garage canopy solar facilities like the one being constructed on the TIA parking garage. After research, it was determined that the FPL solar photovoltaic generating units had been granted a 3.3% depreciation rate by the FPSC in Docket No. 080543-EI. A 3.3% depreciation rate seemed an appropriate rate to request for the Tampa Electric facilities.

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- 6.** Will any other solar components be booked to different accounts or subaccounts other than the 4 subaccounts discussed in question 5?
 - a. If so, please identify these components.
 - I. For each component, please identify the subaccount to which it will be booked and indicate its life expectancy.

- A.** Tampa Electric plans to use the 4 subaccounts discussed in question 5 for all solar components as adopted by FPSC in Docket No. 080543-EI.

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7. Do any of the solar components of the TIA generating units come with a manufacturer's warranty?

a. If yes, please identify all such components and the length of their warranties.

A. a. The SolarWorld Sunmodule SW325 XL Mono panels used for this project have a 25-year linear performance warranty (manufacturer's guaranteed maximum performance digression of 0.7% per year in the course of 25 years), along with a 10-year product warranty.

The stated manufacturer's warranty on the Sunny Central 800CP-US inverters is 5 years. A 10 year extended warranty adder was incorporated into the price of the inverters to bring the length of the warranty to 15 years.

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- 8.** Do any of the solar components of the TIA generating units come with a warranty provided by the installer?
 - a. If yes, please identify all such components and the length of their warranties.
 - b. Have the vendors identified by TECO in question 1 provided a warranty for the PV modules associated with the TIA project?
 - I. If yes, please identify the length of the warranties.

- A.**
 - a. In addition to the manufacturer's warranties, all solar components of the TIA generating units come with a one-year workmanship warranty provided by the installer.
 - b. The vendor chosen for the TIA solar project has provided a one-year workmanship warranty along with a manufacturer's 25-year linear performance warranty and 10-year product warranty for the PV modules.

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- 9.** In paragraph 5 of its petition, TECO refers to Docket No. 080543-EI, citing, in particular, the Commission's adoption of a 3.3% depreciation, 30 year life, zero net salvage value for Florida Power & Light's (FPL) two requested solar PV plant sites in Brevard and DeSoto counties. Does TECO propose a similar net salvage value of zero? If your response is affirmative:
- a. Please explain the basis for TECO's assumption of zero net salvage value for all the solar facilities components.
 - b. Please cite and identify any estimates, studies, or sources that support a net salvage value of zero for salvaged PV components.
 - c. Please provide price, quantity, or volume estimates from those studies that TECO uses to support its assumption of zero net salvage value.
- A.** Yes, Tampa Electric is proposing a net salvage value of zero. Tampa Electric does not know the salvage value this early in the development of utility scale solar photovoltaic generating stations. Tampa Electric proposes a net salvage value of zero until a better understanding of net salvage value is known. As better understanding is gained over the years this value can be reevaluated.

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10. Please refer to paragraph 5 of TECO's petition. Why does TECO conclude that the TIA solar photovoltaic project currently under construction is comparable to the referenced FPL's solar photovoltaic generating units for purposes of determining depreciation life?

A. The most comparable element between the two projects is that they are both photovoltaic solar generating facilities.

Tampa Electric has very little experience with large utility scale solar photovoltaic generating facilities and their expected life, particularly with parking garage canopy solar facilities like the one being constructed on the TIA parking garage. After research, it was determined that the FPL solar photovoltaic generating units had been granted a 3.3% depreciation rate by the FPSC in Docket No. 080543-EI. A 3.3% depreciation rate seemed an appropriate rate to request for the Tampa Electric facilities.

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- 11.** Please refer to paragraph 6 of TECO' s petition.
- a. When does TECO anticipate filing a site specific depreciation study for TIA?
 - b. What is the legal /regulatory requirement(s) for filing a site specific depreciation study for TIA and each new solar photovoltaic generating unit site upon each site being unitized?
- A.**
- a. Tampa Electric has not determined when a site specific study would be prepared and filed, certainly it would be some time after the TIA site goes into service and all the trailing charges have been booked and unitized.
 - b. Tampa Electric does not suggest that all future solar photovoltaic generating unit sites will always require a site specific depreciation study. The first couple of utility scale sites being considered have some substantial differences in construction and siting between them and therefore a site specific depreciation study may be called for until some understanding of comparable construction and siting become apparent for future developments.

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- 12.** Please refer to paragraph 4 of TECO's petition. When does TECO anticipate filing a site specific depreciation study for the 25 MW photovoltaic system to be sited near the Big Bend Station and Manatee Viewing Center, in the event TECO determines to move forward with the project?
- A.** As described in paragraph 4 of the petition, the 25 MW photovoltaic system which will potentially be sited at or near the Big Bend and Manatee Viewing Center is under investigation. There is no plan to file a site specific depreciation study at this time.

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- 13.** Please refer to paragraph 4 of TECO's petition. Is the entire 2 MW_{DC} photovoltaic system expected to be operational in late December 2015? If not, please explain.
- A.** Yes, the entire 2 MW_{DC} photovoltaic system will be operational in December 2015.