



August 1, 2022

VIA: ELECTRONIC MAIL

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

Re: Petition of Tampa Electric Company for approval of Direct Current Microgrid
Pilot Program. Annual Status Report
Dkt. 20200234-EI

Dear Mr. Teitzman:

Enclosed for filing is Tampa Electric Company's Direct Current Microgrid Pilot Program
Annual Status Report.

Thank you for your assistance in connection with this matter.

Sincerely,

A handwritten signature in blue ink that reads 'Malcolm N. Means'.

Malcolm N. Means

MNM/bmp
Enclosure

cc: Suzanne Brownless, Special Counsel, FPSC (w/attachement)
TECO Regulatory Department

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition of Tampa Electric Company)
for Approval of Direct Current Microgrid)
Pilot Program and for Variance or Waiver)
of Rule 25-6.065 of the Florida)
Administrative Code)
_____)

DOCKET NO. 20200234-EI

FILED: August 1, 2022

FIRST ANNUAL REPORT

Tampa Electric Company ("Tampa Electric" or "company"), files this First Annual Report for its Microgrid Pilot Program and says:

I. BACKGROUND

1. On June 30, 2021, the Florida Public Service Commission ("PSC") approved Tampa Electric's Request for Approval of its microgrid pilot program ("Pilot") that involves the use of the Block Energy System ("BES"). The BES connects 37 homes in the Hillsborough County Community of Medley at Southshore Bay, built by Lennar Homes, LLC ("Lennar").

2. The BES is comprised of:

- a) a buried DC loop;
- b) a Community Energy Park ("CEP") containing a large battery, 2 natural gas fired generators, a control enclosure, and an interconnection to Tampa Electric's distribution grid;
- c) Each house participating in the Pilot hosting additional equipment, on average, 7.8 kW-(DC) of rooftop solar photovoltaic panels as well as a BlockBox containing 17.7 kWh of battery storage and other equipment. Each BlockBox has an inverter to convert DC microgrid power to AC for use inside the home. The BES is also backed up by a traditional underground AC distribution system.

3. The objective of the Pilot is to test the capability of the BES to provide power to residential homes with a high level of renewable energy while also providing superior reliability and resiliency. Tampa Electric expects that the BES will achieve the following objectives:

- a) Ride through all upstream AC distribution system disturbances with no interruption to the customer;
- b) Integrate high levels of renewable energy; with a target of up to 60 percent of the total energy used by the homes coming from the BES solar panels.
- c) Reduce impacts on the transmission and distribution system during peak demand periods

4. The following benefits would be quantifiable:

- a) Increased renewable energy penetration
- b) Reduced system losses
- c) Reduced generation capacity costs
- d) Reduced system transmission and distribution capacity costs
- e) Reduced energy costs
- f) Increased reliability.

II. MICROGRID BUILDOUT ACTIVITIES

5. The buried AC and DC loops were installed in March 2021 without any safety issues, delays or impacts to the customers or Lennar. In parallel, Peoples Gas System installed a gas line extension and placed it into service to supply the generator at the CEP.

6. Lennar's practice for this subdivision was to wait until a lot was sold before beginning construction on the home. Tampa Electric's solar panels, switches and BlockBox installations were coordinated with Lennar's construction schedule such that there were no delays or impacts to the

customer closing dates. This work spanned over a period of 14 to 16 months with the last home closing on March 15, 2022.

7. Concurrent with the home build, Emera Technologies LLC (“ETL”) constructed the CEP, which included a large battery, generator, control enclosure and interconnection to Tampa Electric’s distribution grid.

8. ETL began the commissioning of the CEP in the fall of 2021. Equipment (rooftop solar, fiber optic network connections, power connections to the buried loops and BlockBoxes) installed at the homes was tested by ETL upon installation. The installation of the BlockBoxes was delayed due to delivery delays and fabrication issues related to the battery.

9. In the course of BlockBox testing, Tampa Electric and ETL discovered common failure issues with the batteries within each BlockBox. These critical manufacturing defects required the removal of all installed BlockBoxes and replacement of the batteries in all 37 BlockBoxes. Tampa Electric developed a mitigation plan, with all parties involved, to carry out the battery replacement. The mitigation plan consisted of ETL leasing a local warehouse where the batteries could be repaired by the battery manufacturer field technicians. This reduced the repair turnaround time rather than shipping BlockBoxes to California for repair. The remaining BlockBoxes not yet installed were delayed approximately five weeks until this plan was in place and installation resumed. All 37 BlockBoxes were installed or re-installed by May 11, 2022. Each BlockBox was tested after installation or re-installation and before the equipment was placed into service. On May 27, 2022, all 37 homes were switched from the AC grid to the BES.

10. It is important to note that none of these delays resulted in additional costs to Tampa Electric.

11. The one-year Evaluation Period for the Pilot began on June 7, 2022. During the Evaluation Period, ETL is required to provide monthly performance reports to Tampa Electric; with the first report due on July 15, 2022. The report will contain data from the beginning of the Evaluation Period through June 30, 2022.

III. CUSTOMER ENGAGEMENT

12. Throughout the construction of the Pilot, Tampa Electric maintained a consistent line of communication with the customers. Such communication included notifications via phone, text and email ahead of any work on roofs or in the yards of customers such as solar contractors working on roofs, installation, testing and placement of BlockBox equipment. Project updates were relayed to the 37 customers via email as they became available.

13. Additionally, customers received a welcome letter via email that provided helpful information such as a link to a website with FAQs and contact information for Tampa Electric personnel who can address any questions or concerns they may have. A copy of the welcome letter is attached as Document No. 1. Customers also have the ability to connect with a Tampa Electric Program Manager that serves as a company point of contact. Customers are able to reach out to the Program Manager as questions arise related to scheduling, solar, microgrid, billing or other items such as small property damage.

IV. RESULTS

14. The amount of data at this time is not sufficient to provide meaningful observations about the performance of the system to date. The categories of data that Tampa Electric will be receiving from ETL and reporting on an annual basis going forward is listed below:

- a) Individual (anonymized) (each home)
 - i. energy consumption

- ii. solar generation
- b) Collective or community (as measured at the CEP)
 - i. Combined energy consumption
 - ii. Combined renewable energy generated
 - iii. Total energy drawn from the Tampa Electric AC grid at the CEP interface
 - iv. Total energy generated by NG units in the CEP
 - v. Qualify the benefits associated with the project with respect to reliability and resiliency.
- c) This section will outline reliability performance of the Microgrid
- d) This section will compare the reliability performance with comparable reliability performance of a neighborhood on a traditional AC system.
- e) This section will capture the performance metrics that represent the resiliency of the BES in terms of the life of the major BES components, the ability to provide and uninterrupted source of energy to the homes.

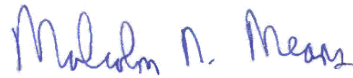
V. COSTS

15. At this time, the company does not have any cost information to provide other than what was shared in the company's initial filing and data request responses. The capital cost to Tampa Electric remains at \$1.99 million, and Tampa Electric has not incurred O&M costs related to maintenance since this remains the responsibility of ETL. Fuel costs to run the local generator or importing from the grid are likely higher due to elevated natural gas prices; but this is likely offset by the PV generation included in the system. ETL will be tracking its costs on an annual basis and will be captured on our next annual report.

16. Tampa Electric will continue to collect the information required for annual reports in this docket and will provide its next annual report by August 1, 2023.

DATED this 1st day of August 2022.

Respectfully submitted,



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