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May 7, 2018

VIA: EMAIL TRANSMISSION

Mr. Nathan Whitchurch
Public Utility Analyst I
Division of Economics
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Tampa Electric Company's 2017 DSM Annual Report

Dear Mr. Whitchurch:

Attached for filing in the above docket is Tampa Electric Company's Responses to Staff's First Data Request (Nos. 1-8) dated April 19, 2018.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Attachment

cc: Tripp Coston (w/attachment)
Paula K. Brown (w/attachment)
Billy Stiles (w/attachment)

1. The following questions are in regards to TECO's Electric Vehicle and Energy Education Program:

a. Please describe the implementation process for the Electric Vehicle & Energy Education Program including any challenges incurred during this process.

b. Has the company completed any initial surveys of teachers and students? If so, please provide a summary of these surveys. If not, when are the surveys anticipated to take place?

c. What is the status of partnering with an electric car manufacturer for this program?

d. What is the status of installing electric charging stations on school campuses?

e. What is the number of participating students, to date, in this program?

f. Please provide the company's updated implementation plan for this program through 2020. Please include identified school participants and an explanation of the rationale for the selected schools.

A. a. The implementation process/plan that Tampa Electric followed for the Electric Vehicle & Energy Education Program included several key components: school selection, developing education materials, installing electric vehicle ("EV") chargers, and assisting in the leasing of one electric vehicle per high school selected. Below are details on each of these components.

- **School selection:** Tampa Electric collaborated with Hillsborough County Schools in selecting the first school. The school was selected with significant consideration being given to the understanding that the implementation process may encounter unforeseen challenges and the program would benefit greatly from a willing participant that would assist in working through any challenges. Subsequent schools will be selected by working closely with school administration to ensure opportunities for participation are equitable across multiple regions of the Tampa Electric service territory and a variety of school demographics. Considering the size of the

Hillsborough County School District, the greatest challenge that may be encountered is not being able to offer this program at all high schools as part of Tampa Electric's program. Another challenge to the school selection, is that Pasco and Polk County have closed their formal driver's education programs within high schools. Because of these two counties concluding offering driver's education programs within the company's service area, Tampa Electric is following the guidance from the Commission by holding two of the five approved schools under this program for these counties if they re-establish a formal driver's education program.

- **Education Materials**: Tampa Electric worked closely with the Center for Urban Transportation Research ("CUTR") at the University of South Florida in developing the educational materials that introduce information on electric vehicle technology and operation while connecting those concepts to energy efficiency and how it relates to broader utility conservation efforts. The education materials (Instructor Guide and Student Handouts) were presented to and approved by the school administration and classroom instructors. Tampa Electric provided a copy of the student handout in the company's 2017 Demand Side Management ("DSM") annual report as well as posting it on the company's website. No challenges were encountered during this process.

- **EV Chargers:** The first charger was installed at the selected school using existing Hillsborough County School processes that included leveraging school facilities personnel and established contractors already authorized to conduct work on school properties. The charger was installed and activated without any significant challenges. A thorough evaluation of any participating school's existing electrical facilities will ensure a smooth process for subsequent schools.

- **EV Acquisition:** This portion of the implementation had the largest challenge. This challenge occurred due to the timing of the school's procurement and contracting process. Although Tampa Electric and Hillsborough County Schools had significant collaboration, the school districts leased vehicle agreement renewal requirements caused a delay for obtaining an EV. This barrier has been overcome by having all

necessary administration approvals now having been obtained as of April 2018. This approval will allow EV's to now be included in the school's leased vehicle agreements starting in the fall of 2018. Tampa Electric continues to work with vehicle manufacturers and local dealers to potentially acquire a temporary loaner vehicle to begin exposing students to the program concepts and materials.

b. Due to the inability to obtain an EV for the program, Tampa Electric has not completed any teacher or student surveys.

c. Tampa Electric continues to discuss the program with multiple vehicle manufacturers and looks for potential opportunities to leverage those relationships to benefit the program. Currently, there are no manufacturer partnerships to benefit the program.

d. The first charger installation was completed at the beginning of the 2017-2018 school year at the first selected high school. Tampa Electric is currently collaborating with Hillsborough County Schools to select the remaining two high schools for participation in this program.

e. To date, no students have participated in the program as intended. While students have been exposed to the general concepts and installation of the EV charger, the lack of the EV for the program has been a barrier for participation.

f. Given the delays in obtaining the EV, the implementation plan for Hillsborough County Schools has been adjusted to begin full classroom deployment in the 2018-2019 school year. While school administration establishes lease agreement details within their procurement process, Tampa Electric will work with school administration to identify the subsequent school participants. Collaboration will help to ensure that school participants include a broad representation of Tampa Electric customers and Hillsborough Schools student demographics. These collaborative efforts will ensure a positive learning experience for students and the critical role instructors will play. Lastly, the site evaluation necessary to determine power availability and/or electrical system upgrades required to complete the charger installation may impact school selection. While unsurmountable obstacles are not anticipated with respect to the charger installations, only a thorough assessment completed by school personnel and authorized contractors will ensure

the ability to install them in an optimal location adjacent to the driver's education course. Regarding the other two counties, Tampa Electric remains hopeful of a possibility of initiating the other two approved schools in Polk and Pasco counties.

2. The following programs have not enrolled new participants since the inception of the 2015 DSM plan:

i. Industrial Load Management
ii. Commercial Load Management- Extended
iii. Commercial Load Management- Cyclic
iv. Commercial/Industrial Refrigeration
v. Commercial Wall Insulation
vi. Commercial Water Heating

a. Please describe the implementation process for the Electric Vehicle & Energy Education Program including any challenges incurred during this process.

b. Please explain any changes the company is considering to these programs or in its advertising approach to acquire participants for these programs.

A. a. Please see Response 1a this set.

b. Below are Tampa Electric's changes the company is considering or has initiated previously to each of the programs listed above or in its advertising approach to acquire participants for these programs.

Industrial Load Management (GSLM– 2&3): Tampa Electric's Account Managers meet regularly with large customers to discuss opportunities to participate in the company's DSM programs, including the GSLM 2&3 program in which there are current discussions with potential customers. The company was successful at adding one participant in March of 2018.

Commercial/Industrial Load Management (Extended)(GSLM-1): Tampa Electric is continuing to evaluate a replacement of the existing Commercial Load Management Program platform for suitability and cost-effectiveness. Currently, the program uses the same load management switches and technology that was retired in 2016 for the residential "Prime Time" program. The company has been exploring potential technology for the last couple of years to replace this existing technology as well as position this program for expansion to obtain more commercial and industrial participants. The company is intending to replace the existing technology using similar technology of that used to facilitate the company's Residential Price Responsive Load Management Program

("Energy Planner"). Once the new platform has been fully implemented, the company at that time will begin to market this program for new participants.

Commercial/Industrial Load Management (Cyclic)(GSLM-1): Tampa Electric is continuing to evaluate a replacement of the existing Commercial Load Management Program platform for suitability and cost-effectiveness. Currently, the program uses the same load management switches and technology that was retired in 2016 for the residential "Prime Time" program. The company has been exploring potential technology for the last couple of years to replace this existing technology as well as position this program for expansion to obtain more commercial and industrial participants. The company is intending to replace the existing technology using similar technology of that used to facilitate the company's Residential Price Responsive Load Management Program ("Energy Planner"). Once the new platform has been fully implemented, the company at that time will begin to market this program for new participants.

Commercial Refrigeration Anti-condensate Control: The company believes this program's participation is less than projected due to customer awareness of this technology. Tampa Electric developed a separate refrigeration anti-condensate brochure to promote the engagement of commercial and industrial customers and to educate them on the value of participating in this DSM program. The company also hands this brochure out in the performance of a Commercial/Industrial Energy Audit to applicable potential participants.

Commercial Wall Insulation: The company believes this program's participation is less than projected due to the cost and inconvenience that would be incurred by the participant needing to remove the necessary building envelope materials to gain access to the wall cavity to enable installing the wall insulation.

Commercial/Industrial Water Heating: The company believes this program's participation is less than projected due to customer awareness of this technology. Tampa Electric developed a separate commercial/ industrial water heating brochure to promote the engagement of commercial and industrial customers and to educate them on the value of participating in this DSM program. The company also hands this brochure out in the performance of a Commercial/Industrial Energy Audit to applicable potential participants.

3. Is the company considering or pursuing any new programs or modifications to existing DSM programs within the next year? Please explain.

A. No, Tampa Electric is not considering or pursuing any new programs or modifications to existing DSM programs within the next year.

4. Please describe the company's process for monitoring any new federal energy efficiency standards and Florida Building Code requirements, including how the company modifies existing programs to reflect these changes if necessary (6th version of FLBC released June 2017, effective December 2017).

A. Tampa Electric recognizes that staying on top of building codes and appliance efficiency standards is a challenge. To ensure that the DSM programs the company offers are aligned with building codes and appliance efficiency standards, Tampa Electric's Energy Management Services ("EMS") Department stay abreast and ahead of changing appliance efficiency standards and buildings codes including the sixth version of the Florida Building Code released June 2017, effective December 2017. These Program Managers and select EMS team members ensure the DSM programs the company offers are correctly positioned to enhance energy efficiency above the base/minimum level required. Here are specific examples of the company's approach for monitoring any new federal energy efficiency standards/codes or Florida Building Code requirements and identifying the resultant future impact to the existing DSM Program:

- Tampa Electric DSM Program Managers subscribe to the annual Florida Building Code - Energy Conservation Edition. The company has individual team members within EMS that serve as a designated team member whom is associated with the Florida Department of Business Professional Regulations.
- Tampa Electric Commercial Energy Management Team ("CEMT") members receive updates from the State of Florida's Energy Technical Advisory Committee ("TAC") and actively participate in webinars offered by the TAC.
- The CEMT belongs to several energy efficiency associations and consortiums such as the Association of Energy Engineers or the Consortium for Energy Efficiency.
- The CEMT will also attend national level training events which provide insight into current and future industry changes along with legislative changes that are scheduled to occur.
- Program Managers are responsible for charting a timeline comparison with the current program standards and identifying the needed changes to ensure the program is in alignment with the new energy efficiency standard or building code.
- Program Managers meet annually with the company's Manager of Regulatory Rates to walk-through each DSM program to ensure the

DSM program's standards are aligned with any new or upcoming changes to federal or state building codes or appliance energy efficiency requirements.

- Program Managers will reach out to recognized experts or vendors to discuss the impacts of changes and determine the most appropriate adjustments to make to the DSM program. An example of this was Tampa Electric's approach to the 2016 NESHAP rules change for the use of generators as standby. Tampa Electric's Manager of Energy Management Services several years ago invited the Environmental Protection Agency ("EPA") and other experts from the industry to collaborate and determine what these changing requirements were. The program was positioned so that when the future changes came, these changes would not affect the program or its participants. This was done by making the change in the recent DSM Standards, supporting the new Commission approved DSM Plan, which requires that the generator installation and operation must comply with all applicable regulations, including air emission guidelines and EPA's rules in order for participation.
- Program Managers that facilitate programs which have designated vendors ensure the vendor is aware of potential and future advancements in appliance energy efficiency standards and building codes and to position the supporting technology so that it is compatible, and it enhances the overall program.
- Program Managers and individual team members also achieve professional certifications by attending classes, participating in trade shows, formal meetings, conferences or other training events which cover appliance energy efficiency standards and building codes such as:
    - Certified Energy Manager (CEM)
    - Business Energy Professional (BEP)
    - Commercial Energy Auditor (CEA)
    - Residential Energy Auditor (REA)
    - Demand Side Management Professional (CDSM)
    - Florida Building Engineering & Facility Maintenance Show
    - RESNET Certified Energy Rater seminars
    - Energy Management Congress events
    - EPA – ENERGY STAR training
    - ENERGY STAR Certified Homes Stakeholder meeting
    - Association of Energy Service Professionals (AESP)
    - Association chapter meetings: Association of Energy Engineers (AEE), Tampa Bay Builders Association (TBBA), Refrigeration & Air Conditioning Contractors Association

(RACCA) and American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

Also, in addition to Standby Generator DSM Program Standards mentioned above, it is important to note that Tampa Electric writes other DSM Program standards in a manner that supports enhancing the building code or appliance energy efficiency standard as it is increased, while not requiring any modification to the program. An example of this is the requirement in the company's standards for the Residential Heating and Cooling Program that rebates will be paid if the customer installs a qualifying air condition system that exceeds the Department of Energy ("DOE") energy efficiency standard or the Florida Building Code, whichever is more stringent, by equal to or greater than 1.000 ARI SEER rating.

5. Please provide a detailed description of the company's research and development initiatives, including the status of each project, and any final reports related to the work completed under this DSM program.

A. Currently, the company is conducting the following research and development initiatives:

Electric Vehicle potential impacts: Tampa Electric utilized USF's CUTR to assist in the development of a training program focused on high school students regarding electric vehicle usage and a Research and Development ("R&D") project related to the potential impacts of electric vehicles ("EV").

The training portion is focused on providing more detailed energy education to young drivers, as well as driver's education faculty and others who come in contact with the program, to learn how the price of power and the resulting cost to charge an EV can change throughout each day and between weekdays and weekends. Learning about the changing price to charge during on-peak and off-peak periods and the effect of that on the cost of operating an electric vehicle is expected to change behaviors and shift charging times to periods that will ultimately reduce weather sensitive peak demand on the company's electric system. The program will educate young drivers, as well as faculty and those that come into contact with the program, on the other conservation programs available including Energy Planner which would encourage the charging of these vehicles during off-peak hours. Such program adoptions will also assist in the reduction of weather sensitive peak demand on the company's electric system. Tampa Electric included a copy of the student guide that was developed in the company's annual DSM report that was filed with the Commission on March 1, 2018.

The R&D portion of this work will be to perform the following:

- Researching benefits of EVs to utility companies and the public.
- Documenting the impacts of EV usage on energy conservation, energy security, emissions, and cost of electricity production for the utility company.
- Researching the cost-effectiveness of EV technologies.
- If warranted, assisting with the design of an effective vehicle rebate program to encourage EV purchases and higher EV usage in Tampa Bay.

The R&D portion of the work on EVs has yet to be completed at the time of this filing. Tampa Electric will submit a copy of the R&D report once it is completed to the Commission and will also submit it as an appendix with the company's 2018 DSM annual report on March 1, 2019.

Small to mid-size Commercial Battery Storage: Tampa Electric is utilizing USF to assist in the performance of an R&D project to evaluate the feasibility of potentially offering a battery storage DSM program for commercial/industrial customers. The battery storage R&D project will be evaluated through research and field study with at least one battery being installed at a commercial/industrial customer's facility. Tampa Electric has specified the size of battery for this R&D project to be between 10 kW and 150 kW with the project from inception to completion lasting approximately three-years which would afford this program to become a DSM program within the company's future 2020-2029 DSM Plan if the results are positive. This R&D project is projected to cost approximately $250,000 with the following objectives:

- Evaluate the potential for battery storage for the use of load shifting on demand savings.
- Evaluate the efficiency of load shifting from a battery storage system and the associated control and monitoring system.
- Evaluate the impact on the total energy consumption of the battery and facility when used in a load shifting capacity (versus reliability).
- Evaluate and compare batteries based on performance and cycling tolerance when used in Florida's climate.
- Examine the associated costs from cradle to disposition of battery.
- Evaluate the load profile impact on power vs. capacity tradeoffs

Tampa Electric included a copy of the initial portion of R&D project which is the battery research study that was developed in the company's annual DSM report that was filed with the Commission on March 1, 2018.

Commercial Low-Income Weatherization: Tampa Electric is evaluating the benefits and measurable energy and demand savings from the potential offering of a commercial low-income weatherization type DSM program. Tampa Electric has two very successful low-income weatherization and energy education DSM programs which led to the start of this R&D effort. Tampa Electric utilized census data tracks to randomly select 11 small to mid-sized commercial customer facilities to participate in this R&D program. Each of the 11 customer sites had a "Commercial Weatherization Energy

Efficiency Kit" installed by a third-party contractor. These energy efficiency kits included the following measures:

- 9-watt LED lamps (six lamps maximum)
- Digital programmable thermostat
- Weather stripping
- Caulk windows
- Insulate A/C refrigerant line
- Insulate Hot Water pipes
- Duct seal
- Ceiling insulation

Recording meters were set at each of these facilities to monitor the energy and demand usage. The company is currently performing the Measurement and Verification ("M&V") to quantify the energy and demand savings delivered by the energy efficiency measures. Once the M&V evaluation is completed, Tampa Electric will submit a copy of the final report to the Commission and will also submit it as an appendix with the company's 2018 DSM annual report on March 1, 2019.

Heat Pump Water Heater inclusion into the Energy Planner Program: Tampa Electric is desiring to evaluate the inclusion of residential heat pump water heaters/hybrid water heaters into the Energy Planner Program as an electric thermal storage device. At this time, due to the company being close to initiating the advanced metering infrastructure ("AMI") project, the company has chosen to delay the start of this evaluation so as to be able to take full advantage of the benefits when AMI becomes fully realized for Tampa Electric.

6. Please describe any changes the company has made to its process for ensuring low-income customers are aware of, and have access to, conservation programs.

A. Tampa Electric has added several new communication avenues to assist existing customers ensuring low-income customers are aware of, and have access to, the company's conservation programs. These communications now include social media Facebook and Twitter posts from Tampa Electric's Corporate Communications Department to all Tampa Electric customers, including low-income customers. These social media posts include announcing when, where and what neighborhoods the company will be installing the Neighborhood Weatherization Program. In addition, these social media posts will provide information announcements on any upcoming community energy education and awareness events where the company will be promoting the Education, Awareness and Agency Outreach program. When customers attend an energy education and awareness event in the community, it affords the company the opportunity to engage the customer with an energy expert from Tampa Electric the ability to present valuable energy-saving tips and program information. Tampa Electric continues to grow its customer attendance over the past year by focusing on increasing the number of energy education and awareness events the company participates in. These events are free to customers who attend and may be eligible to receive a free energy-savings kits.

7. The following program fell below the company's initial projected participation penetration levels:

Commercial Duct Repair

a. Please describe the company's assessment on why it did not achieve the projected participation levels for 2017.

b. Is the company considering any program modifications to ensure these programs achieve the projected participation levels? Please explain.

A. a. The company believes this program's participation is less than projected due to a combination of factors involving the beginning of a saturated market, duct seal requirements in building codes, and expected lowering of the rebate with the 2015-2024 DSM Plan and the marketing approach of duct seal contractors.

b. Tampa Electric is not considering any program modifications at this time. The company has started the process of reevaluating the need for a new request for proposal for new duct seal contractors that would support the 2020-2029 DSM Plan to achieve the next set of Commission approved DSM goals. The company is also reviewing technologies associated with duct repair to see if there are other opportunities to increase participation in this valuable DSM program.

8. The following programs exceeded the company's initial projected participation penetration levels in 2017:

Residential Electronically Commutated Motors
Energy Star for New Multi Family
Residential Window Replacement
Commercial Electronically Commutated Motors
Commercial Lighting

Does the company anticipate participation levels to continue at the current level for the remainder of the goal cycle? Please explain.

A. Below are Tampa Electric's explanations on the participation levels for each of the programs identified above:

Residential Electronically Commutated Motors ("ECM"): Tampa Electric anticipates participation to remain at close to zero or at zero for the remainder of the company's 2015–2024 DSM Plan. The company believes this low participation is being driven mainly by Heating, Ventilation and Air Conditioning ("HVAC") system warranties are almost all ten years in length now. This limits the potential to retrofit an existing HVAC system with a new ECM due to warranty conflicts and homeowners are replacing the entire system rather than just the ECM.

ENERGY STAR for New Multi Family: Tampa Electric anticipates participation to increase to what the company projected when it received approval of the program in May 2017 for the remainder of the company's 2015-2024 DSM Plan. Tampa Electric has been collaborating with several high-rise apartment building developers about the rebate but were unaware of all requirements pertaining to meeting ENERGY STAR criteria. Tampa Electric upgraded the information regarding this program on the company's website to better inform developers of all requirements.

Residential Window Replacement: Tampa Electric anticipates participation for this program to remain at elevated levels for the remainder of the company's 2015-2024 DSM Plan. The company believes this increased participation is being driven by increased hurricane activity and the expanded impact zones which has resulted in homeowners upgrading their windows for safety purposes. This upgrading of windows for safety purposes also brings additional value to these customers by adding energy efficiency to this customer investment.

Commercial Electronically Commutated ("ECM") Motors: Tampa Electric had excellent participation in this program due to two national grocery chains retrofitting their store refrigeration systems with new ECM motors. The majority of installations in 2017 (180 of the 202) occurred in February and March. Since the completion of these two large projects participation has leveled out. Tampa Electric does not anticipate this level of participation to be maintained.

Commercial Lighting: Tampa Electric continues to see commercial/industrial customers take advantage of both the Conditioned and Non-Conditioned Lighting DSM Programs. In addition, the company's Commercial/Industrial Energy Analyst audit reports show that there are still many facilities in Tampa Electric's service are in which a lighting retrofit is being recommended. The company is also seeing a rise with third-party vendors and Energy Service Companies ("ESCOs") recommending lighting retrofit projects. In addition, lighting continues to consume a significant portion of energy in commercial buildings and the company believes that commercial and industrial customers are becoming much more educated on Light Emitting Diode ("LED"), other energy efficient lighting technologies and the return on investment of performing lighting retrofits. Tampa Electric believes the increased participation levels will continue for the remainder of the current DSM goal cycle.