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March 17, 2017

VIA: ELECTRONIC FILING

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

Re: Docket No. 170015-EI – Petition to amend energy education, awareness and agency outreach program, by Tampa Electric Company

Dear Ms. Stauffer:

Attached for filing in the above docket is Tampa Electric Company's Responses to Staff's First Data Request (Nos. 1-12) dated February 24, 2017. The Excel portions of these answers are included on a CD which will be hand delivered to Staff under separate cover.

Thank you for your assistance in connection with this matter.

Sincerely,


James D. Beasley

JDB/pp
Attachment

cc: Takira Thompson (w/attachment)

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1. According to Rule 25-17.001(3), F.A.C., “ reducing the growth rate of weather sensitive peak demand on the electric system to the extent cost effective is a priority.” Please provide how this program will reduce weather sensitive peak demand.
 - A. Tampa Electric believes this proposed program is designed to not only accomplish reducing weather sensitive peak demand but also meeting the other main focus areas of the Rule 25-17.001, Florida Administrative Code (“F.A.C.”) including lessening our reliance on petroleum fuels.

With respect to reducing the growth rate of weather sensitive peak demand, Tampa Electric expects this program to support that portion of the rule in the following ways:

- The Program will provide the opportunity to train young drivers on driving behaviors which will extend the mileage range on a per charge basis. This will make less charges needed for the electric vehicle, thus lowering the overall potential increase in demand, as well as energy needed from the grid. This individual opportunity could potentially be the largest and most innovative impact in reducing weather sensitive peak demand by training drivers on optimizing the operation of electric vehicles when they first start driving. By analogy, if similar energy training had occurred in the 1960’s and 1970’s, the United States would have been impacted less by the Arab oil embargo of 1973 and subsequent regulation and legislation for energy efficiency been impacted such as the Florida Energy Efficiency Conservation Act (“FEECA”).
- The Program will provide an opportunity to leverage electric vehicles in the future for the potential use as a component within a demand response program. Such an electric vehicle based program envisions a large

number of electric vehicles connected to the electrical system through charging stations when not in use and available to be called on when the need for reducing demand on the system is high. In this scenario, much like Tampa Electric's current demand response and standby generator programs, a participating customer would allow for a communication signal to be sent and the stored energy from the electric vehicles batteries could be used to export energy to the grid to assist in supplying the need for demand supply, or to cease charging, for a period of time, to reduce demand. Education about such opportunities as part of the program, particularly for young drivers, would increase the likelihood that they would agree to participate in the future in such a program.

- The Program will provide an opportunity to provide 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 electric vehicle 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.

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- The Program will provide for the opportunity to potentially establish an electric charging rate similar to time of use which would promote the charging of the electric vehicle to off-peak hours.

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2. Please provide the estimated annual energy consumption savings (in KWh) that the proposed program will yield.

A. Tampa Electric views this proposed program as being similar to other behavioral based programs where energy and demand savings do not count toward the company's current approved Demand Side Management ("DSM") goals. At the outset of the Program, the company does not expect annual energy consumption savings with this program. However, energy savings will accrue over time with the education of young drivers who will be driving electric vehicles in the future as the market matures and more and more electric vehicles become the vehicle of choice will provide energy consumption savings. This proposed program will teach these young drivers how to maximize the efficiency of driving and charging such vehicles and how to select the most efficient performing electric vehicles. These resulting behaviors will likely produce energy consumption savings in future years.

Tampa Electric is also currently in the process of finalizing a Research and Development ("R&D") project to be undertaken with the University of South Florida ("USF") and their Center for Urban Transportation Research ("CUTR").

The main R&D research objectives for this project include:

1. Researching benefits of electric vehicles to utility companies and the public.
2. Documenting the impacts of EV usage on energy conservation, energy security, emissions, and cost of electricity production for the utility company.
3. Researching the cost-effectiveness of electric vehicle technologies.

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4. If warranted, assisting with the design of an effective vehicle rebate program to encourage EV purchases and higher EV usage in Tampa Bay.

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3. Please describe how the potential of reducing petroleum fuels at the gas pump affects TECO's electric system, and how it will assist Tampa Electric Company (TECO) in achieving its conservation goals and reducing peak demand.
 - A. Tampa Electric annually forecasts the impacts to the company's electric system due to the number of electric vehicles and public charging stations. The most recent filing of this impact was filed in the company's Ten Year Site Plan ("TYSP") Response for the Supplemental Data Request No. 16 which was filed on May 20, 2016. The company's Load Forecasting Department utilizes a percentage of the rated demand of the charger for the impact to the electric system. The company uses a 20 percent factor for the impact to the summer retail peak demand and a 10 percent factor for the impact to the winter retail peak demand.

As discussed earlier, Tampa Electric is currently finalizing an R&D project to understand this exact correlation between the reduction of the use of petroleum fuels and more accurate assumptions involving the demand and annual energy impacts.

Also discussed earlier, this is an educational program so there is no expectation that the program will count towards meeting the company's current approved DSM goals. This proposed program is expected to educate future drivers and set the state for future DSM programs associated with electric vehicles such as demand response or load management during periods of electric system supply shortages and the potential to offer rate mechanisms to incent charging activity during off-peak periods.

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4. Please provide the perceived energy efficiency benefits that the company expects to see, and describe how the company plans to determine the effectiveness of the program.
 - A. Tampa Electric expects the energy efficiency benefits to occur sometime in the future when young drivers and school faculty choose to begin owning and driving electric vehicles. The benefits from this proposed program, as discussed earlier, are expected to arise from the students and faculty who are educated by the curriculum and the program over a period of years.

To gauge the effectiveness of the program, Tampa Electric plans regular collaboration and contact with the schools, teachers and students during the program. The company intends, as part of the curriculum, to conduct surveys at the end of classes of both the teachers and students. These survey results will provide insight as to the effectiveness of the program. Tampa Electric intends to report these survey results as part of the company's annual DSM report which is filed each year on March 1. The surveys will also be used as a guide to adjust the curriculum if needed as comments and survey results are acquired and reviewed. The company expects that recommended changes and improvements to the curriculum and program will be made to assure effectiveness. Any program changes that would affect the proposed program description and standards will be petitioned to the Florida Public Service Commission ("FPSC") for approval prior to making these changes, if necessary.

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5. Could an increase in electric vehicle use, as a result of this program, cause higher peak demand and annual energy consumption? If so, please detail how electric vehicles would ultimately result in conservation for TECO.
- A. The anticipated growth of electric vehicle product offerings by the car manufacturers across the globe and the expectation of reduced product offerings that solely utilize petroleum based fuels (gasoline and diesel) will result in higher electric peak demands and energy consumption for Tampa Electric and every other electric utility in the United States. The challenge for Tampa Electric and other utilities is to determine how best to manage this growth in electric demand and energy consumption and influence as much as possible the future behavior of customers who will be buying such vehicles and utilizing the electric network to charge them. This proposed program is one method the company believes will directly influence and educate young drivers in their informative years so that this eventual increase in demand and energy usage is actually reduced.

The proposed Program will be consistent with an overarching focus on energy conservation in general. Educating young drivers on electric vehicles will assist in developing them as energy aware consumers for the future and enable them to share their knowledge with other family members which would also increase conservation efforts.

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- 6.** Please indicate whether the Company believes the goal of this program is conservation or load building, and please explain.
- A.** Tampa Electric believes the goal of this program is conservation and that the Program meets the intentions of FEECA. As discussed earlier, the anticipated large increase of electric vehicle purchases will be load building by itself. This proposed program is directly aimed at providing energy conservation education for young drivers regarding electric vehicles as well as other electrical consuming devices.

This program will be limited to five high schools. The company has done extensive measurement and verification at many high schools that have participated in other DSM programs that the company currently offers. Tampa Electric does not foresee that the installation of the level II chargers at the high schools will cause any increase in the high schools' peak demand. The majority of high schools in Tampa Electric's service area set their peak demand early in the weekday afternoons. The energy education curriculum will educate the young drivers as well as the associated faculty on when is the most cost-effective time to charge the electric vehicles. By providing this education on how and when to use the charger and systems, the company anticipates that the program participants will charge the vehicles after hours which will have minimal effect to their demand, if any.

7. If education is the overall goal, please detail whether or not TECO has explored other more cost effective alternatives, such as videos, and why these alternatives were rejected.
- A. Tampa Electric representatives have been in discussion with local high schools for over a year exploring a number of educational alternatives. In each of these discussions, a hands-on, immersive and physical training and learning environment was determined to be the most appropriate and effective way to train young drivers on electric vehicles. As any driver who has taken driver's education can attest, there is no substitute for getting behind the wheel and driving a car to fully understand the driving experience. Similarly, getting behind the wheel and working with the nuances of an electric vehicle to learn the most energy efficient way to drive and charge the vehicle cannot be substituted. This is why in recent years, electric vehicles have been presented for inspection and test drives to better educate public officials on their characteristics and benefits.

Tampa Electric is not eliminating an educational alternative such as video that may be a component of this program, if that determination is made when the curriculum is developed provided it would enhance the driver's energy education. The company approached USF and CUTR to ensure the young drivers are trained on the minimum following topics:

- How to drive the electric vehicle
- Behaviors needed to maximize the driving range of the vehicle (minimize charging)
- What to do in an emergency with an electric vehicle
- How to charge the vehicle, proper charging and difference in charging technologies

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- When to charge the vehicle (difference in utility on-peak and off-peak hours)
- How weather conditions affect vehicle driving range (temperature, inclement weather)
- Understanding charging corridors
- Future DSM programs where electric vehicles could be used as a benefit to the electric system

- 8.** Please detail whether or not charger installations/electric vehicle purchases are necessary to attain the company's goal in amending this program.
- A.** Yes, the company believes that the program would not be successful if the chargers and electric vehicle purchases were not a component of this proposed program. Currently the majority, if not all, of the gasoline powered cars that are used for driver's education program at high schools within Tampa Electric's service area are leased. These vehicles are leased in an effort to lower the overall cost to the school district for providing this education.

Another reason the charger installations/electric vehicle purchases are necessary is to have the equipment in the school so that it can be used to educate the young drivers.

An additional reason supporting why the charger installation is necessary in addition to the electric vehicles is when a comparison is made between electric charging and conventional vehicle refueling. Fueling a conventional vehicle or a lawn mower is something even young non-drivers are commonly exposed to on an ongoing basis. Even when these young non-drivers may have to fill up their lawn mower with gasoline, it is merely an exercise of pouring liquid into a tank. To fully educate drivers on the benefits of electric vehicle transportation, this non-traditional "fueling" practice requires physical demonstration of the safety, convenience and technological aspects of charging an electric vehicle. This technological aspect includes communication from charger to vehicle and radio frequency identification ("RFID") to gain access to utilize the charger. Additionally, while electric vehicles can be charged from a standard 120V outlet, charging an electric

vehicle at public charging stations places will require knowledge of how to use a Level II charging station. Level II charging stations will be the most prevalent public charging stations which will require these young drivers to understand how to safely use them.

Tampa Electric is committed to continue to focus on lowering the cost of this program. If approved, the company plans to lease the first set of vehicles to get the program up and running at the first high school, to demonstrate the value of the program. During the first-year, Tampa Electric will leverage this value and work with electric vehicle manufacturers in the United States to potentially partner in providing the electric vehicles for the other four schools, or at least a portion thereof.

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9. Please provide the estimated monthly residential bill impact (at 1,000 kWh and 1,200 kWh) and the estimated annual Energy Conservation Cost Recovery expenses associated with this program.
- A. This portion of the Energy Education and Awareness and Agency Outreach if approved would add 1.8 Million dollars over three years until the next DSM goals process would move forward in 2020. The estimated monthly residential bill impact for 1,000 kWh and 1,200 kWh is shown in the table below for each of the three years for the incremental portion of this program:

Monthly Residential Bill Impacts		
	1,000 kWh	1,200 kWh
2017	\$0.0000	\$0.0000
2018	\$0.0516	\$0.0619
2019	\$0.0266	\$0.0319
2020	\$0.0266	\$0.0319

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10. Please provide an estimate of the cost effectiveness of the program, using the cost effectiveness tests required pursuant to Rule 25-17.008, F.A.C. (Participants Test, Rate Impact Measure Test, and Total Resource Cost Test).

A. The current results of the Participant Cost test ("PCT"), Rate Impact Measure test ("RIM") and Total Resource Cost test ("TRC") including all assumptions used for each test was provided for the Energy Education, Awareness and Agency Outreach Program on August 5, 2016 within Staff's Interrogatory No. 1 for the Docket No. 160002. In this filing the cost-effectiveness test results were:

RIM: 0.71

PCT: 555

TRC: 3.93

With the addition of the proposed electric vehicle portion to the current Energy Education, Awareness and Agency Outreach Program, the new PCT, RIM and TRC results are:

RIM: 0.51

PCT: 298

TRC: 1.24

The enclosed disc contains the cost-effectiveness tests: PCT, RIM and TRC excel sheets with all formulae intact.

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- 11.** Please detail whether or not the additional cost of the amendment would still result in the Demand Side Management Program (DSM) being cost effective according to the Rate Impact Measure test (RIM).
 - A.** As shown in Response No. 10 of this set, the Energy Education, Awareness and Agency Outreach Program has always had a RIM cost-effectiveness score of less than 1.0. With the addition of the proposed expansion of electric vehicle energy education to this Program, the resulting impact to the RIM score will be a slight reduction in that score.

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12. Please provide a breakdown of the proposed \$1.8 million over 3 years and the details of the associated costs.

A. The breakdown of the proposed \$1.8 million over three years and the details of the associated costs are contained in the table below with detailed descriptions of each cost category further below.

	2017	2018	2019	2020	Total
Electric Vehicles	\$40,000	\$240,000	\$400,000	\$400,000	\$1,080,000
Charger	\$24,000	\$96,000	\$0	\$0	\$120,000
Charger Installation	\$80,000	\$320,000	\$0	\$0	\$400,000
Charger Inspections	\$0	\$1,000	\$5,000	\$5,000	\$11,000
Program Manager	\$10,000	\$25,000	\$25,000	\$25,000	\$85,000
Materials	\$16,000	\$24,000	\$24,000	\$24,000	\$88,000
Advertising	\$4,000	\$4,000	\$4,000	\$4,000	\$16,000
Annual Total	\$174,000	\$710,000	\$458,000	\$458,000	
				Projected Grand Total	\$1,800,000

Electric Vehicles: These costs are associated with the leasing of the electric vehicles for use within the high school's drivers education program. As stated in Response No. 8 of this set, the majority, if not all, of the gasoline powered cars that are used for driver's education program at high schools are leased to lower the overall cost to the school district. As with all of Tampa Electric's approved

DSM programs, the company looks for opportunities to lower associated costs of programs. Tampa Electric sees this category of costs as an opportunity to partner with an American electric vehicle manufacturer once the program has demonstrated its success.

Chargers: These costs are for three Level II chargers with dual-head charging and video demonstration capability at each school.

Charger Installation: These costs are for the installation of electrical service from the customer's service panel to the Level II charger.

Charger Inspections: These costs are for the annual inspections required to ensure the chargers are operating properly and safely on an annual basis.

Program Manager: These costs are for the Program Manager to facilitate the program and maintain a close collaborative working relationship with the participating schools as well as coordinating maintenance, advertising and partnership opportunities.

Materials: These costs are for miscellaneous materials and supplies that are needed on an ongoing basis to effectively facilitate the program.

Advertising: These costs are for the advertising or community outreach portions of the program.