37

Tampa Electric's Response to Staff's Third Set of Interrogatories Nos. 87-101

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 87
BATES PAGE(S): 1
FILED: JUNE 28, 2021

Quality of Service

87. Please refer to TECO's witness Cosby's direct testimony, page 23, lines 7 through 13.

a. What was the total cost of the Greeting Card Campaign from 2014 to 2020?

b. Please explain how the Greeting Card Campaign improves TECO's quality of service to its customers?

A. a. Tampa Electric did not have any Greeting Card Campaign costs prior to 2019. The total cost of the Greeting Card Campaign was approximately $20,000 since implementation of the campaign in 2019.

b. Tampa Electric's greeting card campaign was implemented in 2019 and has helped to improve the experience for customers. To show empathy, excitement, care, and concern for an extraordinary situation a customer recently experienced, the representative mails a personalized greeting card to the customer. Customers have shared many types of situations, including the loss of a family member or pet, an illness, the purchase of a new home or moving into a new apartment, birthday, anniversary, retirement, wedding, or birth of a child. Once the customer shares the situation, the representative may send a personalized greeting card expressing sincere sympathy, wishing them good luck, or share in their joy, depending on the situation. Since implementing this program, representatives have received many cards, phone calls, acknowledgements via social media, and emails from customers that were surprised and excited that the representative cared enough to send them a personalized greeting card.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 88
BATES PAGE(S): 2
FILED: JUNE 28, 2021

88. Please refer to TECO's witness Cosby's direct testimony, page 29, lines 8 through 11.

a. What are the internal performance metrics used to measure customer satisfaction?

b. Are these consistent with industry standards?

A. a. We use internal performance metrics, such as phone and email service levels, to measure performance in the customer experience area; however, we do not currently have any internal performance metrics to measure customer satisfaction. We currently use external metrics only to measure customer satisfaction (i.e., J.D. Power). In 2020, we organized our customer research team and will begin conducting new internal surveys next year to measure customer satisfaction, including participating in a benchmarking survey for the outage experience.

b. Not applicable; we do not currently have any internal performance metrics to measure customer satisfaction. As described in Tampa Electric's response to Staff's Third Set of Interrogatories, No. 88(a), above, only external performance metrics are currently used to measure customer satisfaction.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 89
BATES PAGE(S): 3 - 5
FILED: JUNE 28, 2021

89. Please refer to TECO's witness Cosby's direct testimony, page 34, lines 3 through 16.

a. Please provide the number and type of complaints TECO received directly from its customers by year, from 2016 to 2020.

b. What measures did TECO implement to reduce such complaints?

A. a. Please see the table below for the number and type of Tampa Electric's complaints received from 2016 through 2020. Please note these totals include FSPC Formals, Transfer Connects, eWarms, and Supplementals.

Complaint Type	2016	2017	2018	2019	2020	Total
Billing	233	247	166	187	76	909
Claims	1	5	3	4	6	19
Contact Center	10	3	1	0	2	16
Deposits	37	17	33	14	4	105
Fees	21	12	11	6	4	54
Field	7	17	8	10	16	58
Hurricane	0	31	0	0	0	31
Lighting	34	16	12	7	13	82
Line Clearance	12	12	7	7	11	49
Miscellaneous	13	15	13	0	1	42
Programs	13	2	9	5	2	31
Reliability	116	64	80	139	81	480
Service	76	86	56	52	27	297
Totals	**573**	**527**	**399**	**431**	**243**	**2,173**

Please see the following table for a description of the complaint types:

Complaint Type	Description
Billing	Customers inquiring about bill total, high consumption or payment posting concerns. Billing complaints also include customers requesting payment arrangements and payment installments.
Claims	As a result of a power outage, customers are requesting compensation for damaged property (appliances or electronics) or their inability to work and earn an income.

Complaint Type	Description
Contact Center	Customers stating they were unable to successfully navigate the IVR and experienced difficulty reaching a team member in the Contact Center.
Deposits	Customers requesting initial or additional deposit be reduced, waived or requesting payment arrangements for deposit.
Fees	Customers inquiring or complaining about monthly service charges and late or returned check fees.
Field	Customers expressing concern with their meter; switched, AMI or malfunctioning or requesting equipment removal for renovation or demolition.
Hurricane	As a result of Hurricane Irma, customers requesting service restoration or details related to their outage.
Lighting	Customers inquiring about lighting charges and expediting lighting turn on, repair requests, or removals.
Line Clearance	Customers requesting tree trim, tree removal or unhappy with esthetics of recent tree trimming.
Miscellaneous	Unable to clearly identify customer's concern, unable to reach customer or not Tampa Electric issue; discovered it is an issue with cable or telephone.
Programs	Customer requesting information or expressing concerns related to Tampa Electric programs or offerings such as; Energy Planner, Zap Cap, Budget Billing, electronic billing, etc.
Reliability	Customers inquiring and complaining about momentary, frequent outages or voltage concerns.
Service	Customers complaining about service disconnection for non-payment, delay in activating service, refusal of service or requesting upgrade of their service.

b. Tampa Electric has made substantial improvements to the customer experience, significantly reducing customer complaints. Since 2013, customer complaints decreased by nearly 57 percent, from 561 total complaints in 2013 to 243 complaints in 2020. Note, this is a correction to Tampa Electric's witness Cosby's testimony, which noted a decrease of 53 percent. The company implemented the following to reduce complaints:

1. Improved Customer Experience Contact Center metrics, including phone and email service levels, hold time, and average handle time.
2. Improved self-service through implementation of the first customer self-service portal in 2017, with additional enhancements since then to improve functionality on the customer portal and external websites.

3. Improved reliability through proactive switchgear replacement, cross-functional team "Reliability Council" to address key reliability issues, and improved planned and unplanned outage communication.

4. Gained efficiencies and improved the customer experience by streamlining processes, automating processes and transactions with the 2017 implementation of the new billing system, and ensuring representatives are properly trained to better serve our customers.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 90
BATES PAGE(S): 6
FILED: JUNE 28, 2021

ECRC

90. Please refer to MFR Schedule B-2, regarding ECRC rate base adjustments.

a. Please identify any projects that are currently being recovered through the ECRC and will be reallocated to base rates. Please explain why these projects are being reallocated.

b. Please identify any ECRC projects that will cease due to the retirement of Big Bend Units 1 through 3. As part of your response, please also include costs associated with any of the identified projects.

A. a. No projects currently being recovered through ECRC will be reallocated to base rates.

b. ECRC projects SCR-1, SCR-2, and SCR-3 will cease due to the retirement of Big Bend Units 1 through 3. The majority of the FGD 1&2 assets will be retiring; however, there will be some surviving assets, so that program will remain when Big Bend Units 1 through 3 are retired. Tampa Electric proposed that the remaining Net Book Value of the retired ECRC assets be amortized over a ten-year period, beginning in 2022, and recovered through the ECRC clause.

The 2022 projected costs, based on a ten-year amortization period, for these retired or retiring ECRC assets to be recovered through the ECRC clause are shown in the table below.

2022 ECRC Costs for Projects Impacted by Retirement of Big Bend Units 1 through 3					
	SCR 1	SCR 2	SCR 3	FGD 1&2 Retiring Assets	FGD 1&2 Surviving Assets
Depreciation	4,202,952	5,076,600	4,172,628	1,935,132	1,223,052
ROI	3,171,683	3,830,957	3,148,810	1,460,312	607,367
Total	7,374,635	8,907,557	7,321,438	3,395,444	1,830,419

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 91
BATES PAGE(S): 7
FILED: JUNE 28, 2021

91. Please refer to TECO's witness Cosby's direct testimony, page 37, lines 12 through 25; and page 38, lines 1 through 10. TECO contributed roughly 2 million dollars to various relief efforts. Is TECO seeking to recover the donated monies through rate base?

A. No, as noted in the test year letter, the roughly $2 million in donations to local organizations to provide pandemic relief were not made using ratepayer funds and Tampa Electric is not seeking to recover donated monies through rate base nor base rates.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 92
BATES PAGE(S): 8
FILED: JUNE 28, 2021

92. Please refer to TECO's witness Collins' direct testimony, page 21, lines 5 through 8. Please provide a detailed deployment schedule starting from the date of the EV Pilot's approval to the date TECO intends for all the ports to be deployed and operational.

A. Tampa Electric's current high-level deployment schedule for the EV charging pilot program is listed below. The company intends to work with the installation vendor, selected through an RFP process, to develop a more detailed deployment schedule after that vendor has been contracted. The level of customer interest, along with the need to complete onsite assessments for each participating location (to determine scope of work and installation costs), will determine the timing of the availability of a more detailed deployment schedule.

- Petition approved by Commission on April 1, 2021
- Consummating Order issued on May 18, 2021
- Complete RFP and vendor contract phase by July 31, 2021
- Open on-line customer application process by August 1, 2021
- Begin application evaluations August 1, 2021 (continuing until fully subscribed)
- Begin installations on customer premises by December 31, 2021
- Complete all EV charging pilot program installations by December 30, 2022

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 93
BATES PAGE(S): 9
FILED: JUNE 28, 2021

93. Please refer to TECO's witness Collins' direct testimony, page 21, lines 5 through 8. Please explain if TECO intends to issue a request for proposal (RFP) for the purchase and installation of the 200 charging ports. If so, please provide the anticipated date a RFP would be issued.

A. Tampa Electric issued an RFP on February 24, 2021, and the deadline to submit proposals was March 26, 2021. The company's evaluation team began reviewing the proposals on April 8, 2021, and Tampa Electric expects to complete the contract award process by July 31, 2021.

94. Please refer to TECO's witness Collins' direct testimony, page 21, lines 8 through 11.

a. Please explain how TECO is utilizing customer education to accelerate transportation electrification and decarbonization.

b. Please explain the efforts TECO is taking to support fleet operators' conversion to EVs.

A. a. As is the case with many electric technologies, Tampa Electric believes education is critical in helping customers make informed decisions regarding the adoption of these technologies. As emerging market trends affect the transportation sector, the company believes that customer education will help to accelerate transportation electrification and decarbonization. Tampa Electric expects to provide general customer education through traditional means, such as the company's website, social media, and on-bill information. Specific to the company's approved EV charging pilot program, direct customer engagement throughout the four-year term of the pilot will help to create greater awareness of EVs for all drivers when visiting the participating locations.

The company maintains an EV page on the company web site which helps to educate customers on the benefits of electric transportation and provides links to additional resources for further education. The link to the web page is https://www.tampaelectric.com/company/electricvehicles/.

b. Tampa Electric works with interested customers to convert fleets to EVs on an individual basis to address their specific needs and concerns.

In addition, Tampa Electric is working with an existing customer, a transit agency, to support their adoption of several electric buses through a grant opportunity. Tampa Electric provided a letter of support for this customer's grant application with a commitment to working with the customer to evaluate opportunities related to storm hardening and resiliency of utility electric service (primarily through undergrounding), as well as providing initial funding to support matching funds requirements for the grant. This project is still in an early stage, and the company will continue collaborating with the customer as the project develops.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 95
BATES PAGE(S): 11
FILED: JUNE 28, 2021

95. Please refer to TECO's witness Haines' direct testimony, page 34, line 11 through page 35, line 2.

a. Please explain if this initiative includes any expenditures unrelated to the EV Pilot, as approved by Order No. PSC-2021-0144-PAA-EI.

b. Please identify both the total capital and O&M amounts for the EV Pilot TECO is seeking recovery of in the instant docket.

A. a. Yes. The initiative described in the referenced testimony is intended to express the company's planning efforts to serve in a facilitation role within the EV market, including the work related to the recently approved EV charging pilot program. The estimated $2.2 million investment by year end 2022 includes the $2 million estimated capital expenditure approved for the EV charging pilot program by Order No. PSC-2021-0144-PAA-EI and a $200,000 budget amount for facilitating additional EV development.

b. The EV charging pilot program capital and O&M expenditures, as approved by the above referenced order are estimated as follows:

- Capital - $2,000,000 total by year end 2022
- O&M - $300,000 total for the duration of the four-year pilot and broken down to be $100,000 annually for years two through four of the pilot. As the first year is expected to include only capital expenditures for the deployment phase, no O&M expenditures are expected.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 96
BATES PAGE(S): 12 - 13
FILED: JUNE 28, 2021

96. Please refer to TECO's witness Mincey's direct testimony, page 26, lines 15 through 24. Please explain how the Advanced Distribution Management System (ADMS) project will provide support for:

a. Microgrids.

b. EVs.

A. The core of Tampa Electric's Advanced Distribution Management System ("ADMS") was placed in service on April 10, 2021. A description of how the ADMS will provide support for specifically Microgrids and EVs is provided below. In addition, the installation of the ADMS, coupled with its companion system, the Distributed Energy Resource Management System ("DERMS") module, will bring significant capabilities, functions, and features to the company's distribution system that will benefit Tampa Electric's customers. These additional capabilities include the following:

- Allows for monitoring and control of distributed energy resources such as Solar, Batteries, and EVs.
- Allows for increased and customized customer self-service options such as outage notification through additional channels, i.e., smart phones.
- Allows for monitoring and control of customer smart home energy management.
- Allows for improved reliability performance through increased outage detection, communications, notifications, and reporting.
- Allows for enhanced real-time monitoring of the distribution grid which will result in improved capacity factors, improved power factors, and better overall system efficiency.

The Advanced Applications portion of the ADMS and the DERMS module is expected to go live in March 2022.

a. Microgrids**:** The ADMS will be an important part of real-time microgrid monitoring and management and help the company determine their impact on the distribution electrical systems. Because microgrids typically can island their areas with automatic self-generation, it is vital to the surrounding distribution system that these microgrid systems are continuously monitored and managed to ensure that any adverse impact that is created would be immediately mitigated to prevent disruption to the surrounding area. The Advanced Applications portion of the ADMS will actively monitor microgrid islanding situations and provide operational recommendations. The DERMS module can also provide monitoring support to assist the Distribution System Operators with

switching recommendations. In the future, forecasting and advanced control capabilities will be added into the ADMS and DERMS to directly control distribution level microgrids.

b. Electric Vehicles: With the expected proliferation of EVs in Tampa Electric's service area, the ADMS system and DERMS will play a very important operational role in forecasting, monitoring, controlling, and reporting EV charging and discharging within the distribution network. The ADMS can also display the public charging pilot locations as installations are completed for troubleshooting, outage restoration, and for switching purposes, if necessary. Additionally, with the expected emergence of Vehicle to Grid ("V2G") capabilities, EV charging sites would be modeled as both load and generation resources in DERMS and represented accordingly in power restoration protocols and switching orders within ADMS.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 97
BATES PAGE(S): 14
FILED: JUNE 28, 2021

97. Please refer to TECO's witness Haines' direct testimony, page 31, lines 4 through 15.

a. Please provide TECO's estimated cost savings from the implementation of the new AMR system.

b. Please explain if the customers will be impacted by a reduction in rate base. If impacted, how much of a reduction will there be in the rate base? When will customers experience these cost savings?

A. a. Tampa Electric assumes that this question meant to refer to the implementation of the new AMI system. While there are some cost savings associated with avoided manual meter reading and meter disconnect or reconnect labor created by the AMI implementation, most of the meter reading and other labor cost savings were already achieved during the previous switch from manual read to AMR meters that were read remotely by truck. In addition, there are several incremental O&M costs required to operate the AMI system, including new software license and hosting costs for our IT systems and additional labor required to run and support the new systems. Therefore, the company will not see any net savings following the AMI implementation.

b. Customers will not be impacted by any reductions in rate base. Neither rate base nor base rates will be reduced because of the AMI implementation.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 98
BATES PAGE(S): 15
FILED: JUNE 28, 2021

T&D O&M

98. Please refer to MFR Schedule C-38, column 5.

a. Please list all costs by account, included in recoverable SPP costs (column 5) for transmission (row 2), totaling $4,050,000.

b. Please list all costs by account, included in recoverable SPP costs (column 5) for distribution (row 3), totaling $18,808,000.

A. a. Please see the table below for the list of all costs by account for transmission.

FERC Account	Projected 2022
562 – Station Expenses (Major only)	134,774
563 – Overhead Line Expense (Major only)	312,869
571 – Maintenance of Overhead Lines (Major only)	3,602,181
Total Recoverable Transmission O&M	**4,049,824**

b. Please see the table below for the list of all costs by account for distribution.

FERC Account	Projected 2022
583 – Overhead Line Expenses (Major only)	1,020,000
593 – Maintenance of Overhead Lines (Major only)	21,780,121
Total Recoverable Distribution O&M	**22,800,121**
407.4 – Regulatory Credits	(3,991,870)
Recoverable Distribution O&M Net of Deferred Expense	**18,808,251**

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 99
BATES PAGE(S): 16
FILED: JUNE 28, 2021

99. Please refer to MFR Schedule C-6, page 4 of 6. Please explain why the Miscellaneous Expenses – Distribution (Account No. 586) actual cost spent for 2020 was ($1,706,000).

A. Tampa Electric assumes this question is asking about FERC Account No. 588; therefore, Tampa Electric's response will be for FERC Account 588.

Fleet and Stores assessments are credited to FERC Account 588 for their capital support portions through recurring entries that are set at the beginning of the year. During the pandemic, several team members were re-assigned to ensure their safety and reduce the spread of COVID. During this period, the typical charges against FERC Account 588 were redistributed to FERC Accounts 593 and 583. On MFR Schedule C-6, these charges are higher in 2020 when compared to prior years due to this reassignment. In 2021 and 2022, Tampa Electric has budgeted for normal operations. Additionally, in 2020, as part of the shared service transition, IT costs were not functionalized out of A&G, resulting in less expense to FERC Account 588. However, in 2021 and 2022, Tampa Electric returned to its prior practice of functionalizing IT costs into operational FERC accounts.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 100
BATES PAGE(S): 17 - 18
FILED: JUNE 28, 2021

100. Please refer to MFR Schedule C-6, pages 3-4, for the following questions.

a. For Account No. 569 - Maintenance of Structures – Transmission, $2,431,000 was budgeted for 2020 and the actual amount spent was $1,383,000. TECO is budgeting $3,522,000 for 2021 and $3,452,000 for 2022. Please explain the reason for the increase in cost from 2020 to 2021 and 2022 for Account No. 569.

b. For Account No. 571 - Maintenance of Overhead Lines – Transmission, $1,756,000 was budgeted for 2020 and the actual amount spent was $2,442,000. TECO is budgeting $4,461,000 for 2021 and $4,593,000 for 2022. Please explain the reason for the increase in costs from 2020 to 2021 and 2022 for Account No. 571.

c. For Account No. 585 – Street Lighting and Signal System Expense – Distribution, $610,000 was budgeted for 2020 and the actual amount spent was $1,422,000. Please explain the reason for the increase in the actual amount from the budgeted amount for Account No. 585.

d. For Account No. 588 – Miscellaneous Expenses – Distribution, $6,740,000 was budgeted for 2020 and the actual amount spent was ($1,706,000). TECO is budgeting $10,345,000 for 2021 and $10,605,000 for 2022. Please explain the reason for the increase in costs from 2020 to 2021 and 2022 for Account No. 588.

e. For Account No. 593 – Maintenance of Overhead Lines – Distribution, $21,408,000 was budgeted for 2020 and the actual amount spent was $28,684,000. TECO is budgeting $32,092,000 for 2021 and $35,144,000 for 2022. Please explain the reason for the increase in costs from 2020 to 2021 and 2022 for Account No. 593.

A. a. In 2020, as part of the shared service transition, IT costs were not functionalized out of A&G, resulting in less expense to FERC Account 569 in 2020; however, in 2021, Tampa Electric will functionalize IT costs as they have done in the past and the 2022 test year contains this functionalization of costs out of A&G.

b. The increase in spending starting in 2021 reflects costs for the company's approved Storm Protection Plan vegetation management and transmission asset upgrades.

c. The incremental street lighting expense in 2020 was a result of the company's continued focus on advanced lighting technology, which resulted in the need to write off obsolete inventory.

d. Fleet and Stores assessments are credited to FERC Account 588 for their capital support portions through recurring entries that are set at the beginning of the year. During the pandemic, several team members were re-assigned to ensure their safety and reduce the spread of COVID. During this period, the typical charges against FERC Account 588 were redistributed to FERC Accounts 593 and 583. On MFR Schedule C-6, these charges are higher in 2020 when compared to prior years due to this reassignment. In 2021 and 2022, Tampa Electric has budgeted for normal operations. Additionally, in 2020, as part of the shared service transition, IT costs were not functionalized out of A&G, resulting in less expense to FERC Account 588. However, in 2021 and 2022, Tampa Electric returned to its prior practice of functionalizing IT costs into operational FERC accounts.

e. The increase in spending starting in 2021 reflects costs for the company's approved Storm Protection Plan vegetation management activities.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S THIRD SET OF INTERROGATORIES
INTERROGATORY NO. 101
BATES PAGE(S): 19 - 22
FILED: JUNE 28, 2021

Battery Storage

101. Please refer to witness Pickles direct testimony, page 25, lines 5-10 for the following questions.

a. Please list the actual and projected annual costs broken out by type (e.g. capital, O&M, R&D, etc.) associated with the Big Bend battery storage pilot.

b. Please identify the start and end date of the battery storage pilot.

c. Please provide the battery storage pilot's total energy storage capacity.

d. Please describe any expected benefits of the battery storage pilot.

e. Please explain if TECO considered utilizing data from existing battery storage pilots conducted by other electric utilities in lieu of conducting its own pilot study. If not, please explain why.

f. Please describe how the battery storage will be coupled with the solar facility at Big Bend and if the battery will be exclusively charged by solar.

A. a. The actual and projected annual costs associated with Big Bend battery storage are shown in the following table.

	2018	2019	2020	2021	2022
Capital	1,989,392	9,095,682	403,264		
O&M				75,000	76,500

b. The Big Bend Battery Energy Storage System ("BESS") went into service on 12/18/2019. Based on current knowledge of battery degradation rates, it is expected to last for approximately 19 years.

c. The Big Bend BESS has a total energy storage capacity of 26.118 MWh DC.

d. The Big Bend BESS is a pilot project in the sense it allows the company to test various battery control strategies, determine optimal operating modes, and quantify operational benefits. This information will help shape and guide future large scale battery storage system deployment. Several operating functionalities and expected customer benefits are noted below.

1. Customers will benefit with fewer outages and power quality concerns caused by a storm swinging grid voltage. This is due to voltage support, control, and regulation at the local terminals of the BESS, at the Point of Interconnection ("POI"), or solar plant level during or after extreme weather conditions.

2. Avoiding line losses and future T&D capital investments. This non-wire alternative (batteries) might be less expensive than adding a new feeder to an area as well as providing localized generation support during extreme weather conditions.

3. Load leveling, like peak shaving, is where the company discharges the battery during peak hours, leveling out online generation and possibly delaying start-up of another unit. The battery inverters can store energy during periods of low demand from the grid, in order to later supply this energy when there is a higher demand. Since PV generation may not be online at the same time as peak demand, this facilitates the flexibility and integration of renewable generation into the grid. This BESS load leveling capability also provides short-term localized grid stability to support sudden and frequent power outages.

4. Customers will benefit through reduced outage duration due to quicker restoration of the grid. The battery system could be set up as a black-start resource for Big Bend Station, or future batteries could be set up to help black-start the grid after extreme weather conditions. Future batteries can be located close to critical loads to supply back-up power which provides localized resiliency during extreme weather conditions.

5. Customers will benefit with reduced momentary outages during extreme weather conditions. The battery offers ride through capabilities which may reduce MAIFIe momentary outages during extreme weather conditions.

6. Customers will benefit through enhanced grid stability and fewer outages caused by tripping units or circuits during a storm. Regarding spinning reserves, non-spinning reserves, or quick-start capability, generation capacity over and above customer demand is reserved for use in the event of contingency events like unplanned outages. Many storage technologies can be quickly synchronized to grid frequency through power electronics control, so they can provide a service equivalent to spinning reserves with minimal to zero standby losses.

Energy storage is also capable of providing non-spinning or quick-start capability to cover our first contingency.

7. Customers benefit from enhanced grid stability and restoration during extreme weather conditions.

- Improved grid responsiveness. Battery-based energy storage can provide inertial response for system reliability quicker and much more efficiently, at a lower cost and with substantially reduced emissions than a much larger quantity of thermal generation.

- Low Voltage Ride Through ("LVRT"), Over Voltage Ride Through ("OVRT"), active and reactive power curtailment. With batteries, inverters can withstand a voltage drop and immediately feed the fault with full reactive power if the protection limits are not exceeded. This benefit allows the inverters to absorb and respond to voltage perturbations during extreme weather conditions.

- Power oscillation damping. BESS can be used to dampen or alleviate power oscillations if the proper supplemental controls are deployed, and the BESS is strategically located in the transmission system to be able to affect the modes of oscillation of concern. This helps with restoration.

- The batteries can provide regulating services, including frequency support, by quickly providing or absorbing real power or being part of automatic generation control during or after extreme weather conditions.

- Islanding protection that combines passive and active methods eliminates nuisance tripping and reduces grid distortion. This application is valuable while restoring the grid due to extreme weather conditions.

e. No. Real-time operational battery data is not available from battery storage pilots conducted by other electric utilities. Even if that data were made available, it would not provide the information needed for Tampa Electric because each system's location and interconnection characteristics are unique. Therefore,

another company's battery pilot results would not provide the needed information for Tampa Electric to effectively integrate batteries in its system.

f. The Big Bend BESS is currently charged solely by the Big Bend Solar plant. However, the Big Bend BESS could be charged from the grid once Incentive Tax Credit requirements are completed, after the first five years of operation.