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Tampa Electric's Response to Staff's Fourth Set of Interrogatories Nos. 102-132

(Nos. 109, 110, 115, 121, 122, 125, 127 have attachments)

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S FOURTH SET OF INTERROGATORIES
INTERROGATORY NO. 102
BATES PAGES: 1
FILED: JULY 13, 2021

Cybersecurity

102. Please refer to TECO witness Mincey's direct testimony, page 31, lines 16-17. Is any portion of the $30.5 million used for cybersecurity training, and if so, what percentage? As part of your response, please explain if TECO requires end-user training on cybersecurity for all employees, either as part of general training or specifically on the topic of computer security and company policy. If not, why not?

A. Yes, approximately 0.19 percent of the $30.5 million is budgeted for cybersecurity training. This represents the annual costs associated with a cyber risk learning platform used for end-user training on cybersecurity plus budgeted training allocated to employees in purely cybersecurity roles.

Tampa Electric does require cybersecurity training that addresses computer security as well as relevant company polices for all employees and contractors. This requirement is above and beyond required general training.

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103. Please refer to TECO witness Mincey's direct testimony, Exhibit KMM-1, Document No. 2. Of the IT projects listed, please identify which, if any, have strengthened TECO's cybersecurity and give a general description of how.

A. It is the company's general practice to leverage large technology projects to address any needed known cybersecurity improvements and/or implement additional cybersecurity controls to strengthen our overall cybersecurity posture when we are upgrading existing business functionality. Below are any major cybersecurity improvements realized as part of the implementation of projects where existing business functionality was upgraded so a cybersecurity baseline exists.

- 2014 – CCM – Contact Center Management: the main cybersecurity improvement for this project was the implementation of single sign-on ("SSO") whereby employees only needed to be authenticated with their main corporate identity to gain access to the system. This helped eliminate dozens of application specific user accounts; each of which represent a potential vector for compromise. Additionally, the consolidation of systems helps to reduce complexity in the environment, which makes it easier to defend from a cybersecurity perspective.
- 2015 – Windows 10/Laptop Replacement: this project saw the implementation of several key cybersecurity features including the implementation of Microsoft Active Directory Federated Services ("ADFS"), standardized full-disk encryption, a centralized printer management system which eliminated one reason to have local administrative privileges, upgrade or removal of unsupported legacy desktop applications, standardization on the latest version of Microsoft Office with its built-in security enhancements and, finally, moving nearly the entire inventory to the latest version of Microsoft Windows with its built-in security enhancements over prior versions.
- 2016 – ETRM – Energy Trading and Risk Management: this project had similar cybersecurity benefits as the 2014 CCM project whereby SSO was enabled and the environment was dramatically simplified.
- 2016 – EMS – Energy Management System: the primary cybersecurity benefit of this project was to move away from older, soon to be unsupported systems.
- 2017 – CRB – Customer Relationship Management & Billing: the primary cybersecurity improvement made during this project was to segment the new environment into its own security zone. As with most large projects, there were also cybersecurity benefits from general consolidation and simplification.

- 2019 – UCS – Unified Communications System: this project allowed for the consolidation of account management across several systems into one management system; thereby strengthen our cybersecurity.
- 2021 – IVR/CCM – Interactive Voice Response/Contact Center Management: the main cybersecurity benefit of this project is to move away from older, soon to be unsupported technology along with the implementation of SSO for end users.

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Optimization Mechanism

104. Please refer to TECO witness Heisey's direct testimony, page 36, lines 17-25. Please explain how these thresholds and sharing percentages were determined and explain why they should remain unchanged.

A. Tampa Electric originally proposed a different threshold amount in Docket No. 20160160-EI. Specifically, Tampa Electric proposed a threshold of $3.5 million, wherein customers would receive 100 percent of those gains; customers would keep 40 percent and the company would keep 60 percent of all gains that exceed $3.5 million but less than $7.0 million and any gains that exceed $7.0 million, the customers and company shared the gains equally, at 50 percent. The $3.5 million threshold was calculated based on the previous four years (2012-2015) of actual wholesale sales and purchases transactions and reflected the company's experience in the wholesale market. Tampa Electric's current optimization threshold was approved in the company's 2017 settlement, in Order No. PSC-2017-0456-S-EI with the thresholds increased by $1 million from the company's original proposal. The original thresholds proposed by Tampa Electric reflected the company's experience in the Florida wholesale market. Tampa Electric believes the current thresholds are still a reasonable baseline and reflective of expected performance in the Florida market. Therefore, the current thresholds should not be changed.

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105. Please refer to TECO witness Heisey's direct testimony, page 37, line 1, through page 38, line 13. Please identify and describe any activities that were conducted prior to approval of the Optimization Mechanism.

A. Tampa Electric was granted approval to participate in an incentive mechanism program involving gains from non-separated wholesale power sales in Order No. PSC-2000-1744-PAA-EI, issued September 26, 2000 in Docket No. 19991779-EI. Tampa Electric's incentive mechanism program was in place from 2001 to 2017. Additionally, please see Tampa Electric's response to Staff's Fourth Set of Interrogatories, No. 110, below.

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INTERROGATORY NO. 106
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106. Please refer to TECO witness Heisey's direct testimony, page 40, line 20, through page 41, line 3. Please identify the period of time the Optimization Mechanism would be extended and explain what will happen at the end of this time period.

A. The company proposes that the Optimization Mechanism be extended until the company's next base rate case, at which time the Commission can evaluate whether the thresholds should be adjusted.

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107. Please refer to TECO witness Heisey's direct testimony, page 40, line 20, through page 41, line 3. Please explain why it is necessary to continue the Optimization Mechanism when the Generating Performance Incentive Factor is already in place.

A. Tampa Electric believes it is necessary to continue the Optimization Mechanism. The Optimization Mechanism replaced the company's non-separated wholesale power sales incentive, which also operated in conjunction with the Generating Performance Incentive Factor ("GPIF"). Furthermore, the Optimization Mechanism and GPIF are two distinct mechanisms; however, both mechanisms work together to complement each other. The GPIF focuses on the performance of generating units in the portfolio and includes heat rate and outage rate targets. Customers benefit from the GPIF as the company seeks to meet or exceed the targets by operating the generating units at efficient heat rates and minimizing outages. The Optimization Mechanism focuses on the execution of transactions, such as short-term power sales and purchases and short-term sales of natural gas transportation. The customer benefits from the Optimization Mechanism include lower fuel costs through economy power sales and purchases, sale of excess solid fuel, and reduction of fixed costs through short-term sales of excess natural gas transport. Both the GPIF and the Optimization Mechanism result in lower overall fuel costs for Tampa Electric customers, and, if certain thresholds are achieved, some of those benefits are also shared with the company.

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108. Please refer to TECO witness Heisey's direct testimony, page 40, line 20, through page 41, line 3. Please indicate whether or not TECO would be able to produce value for ratepayers and receive an incentive on some activities without the continuation of the Optimization Mechanism.

a. Please identify what options TECO would have to seek recovery of costs for activities benefiting ratepayers if the Optimization Mechanism is not continued.

A. Prior to the adoption to Tampa Electric's Optimization Mechanism, Tampa Electric participated in an non-separated wholesale sales incentive program, approved in Order No. PSC-2000-1744-PAA-EI, issued September 26, 2000 in Docket No. 991779-EI. The previous employed incentive mechanism was limited to power sales only. Customers receive greater benefits through the Optimization Mechanism as the thresholds are set to maximize gains across multiple activities. Should Tampa Electric no longer continue its Optimization Mechanism, Tampa Electric would resume participating in the non-separated wholesale sales incentive that was previously approved in Order No. PSC-2000-1744-PAA-EI. Customers would receive 100 percent of gains associated with wholesale power sales up until the 3-year rolling average threshold; where anything that exceeds that three-year rolling average would be split: 80 percent to customers and 20 percent to Tampa Electric.

a. Tampa Electric would not seek recovery of any incremental costs associated with the Optimization Mechanism whether it is extended or not.

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109. Please refer to TECO witness Heisey's direct testimony, Exhibit JCH-1, Document No. 4. Please provide a breakdown of benefits and gains by category (wholesale sales, wholesale purchases, each of the optimization activities, etc.). Please provide this information in Microsoft Excel format with formulas intact.

A. Please see the table below. In addition, refer to the confidential electronic response document provided in MS Excel format entitled (BS 10) IRR 109_Optimization Mechanism Gains by Category-CONF.xlsx which will be provided separately subject to a Request for Confidential Classification. The MS Excel file summarizes gains by category for 2018, 2019 and 2020 using Exhibit No. JCH-1 provided in Staff's Third Request for Production of Documents, No. 6.

OPTIMIZATION MECHANISM RESULTS

Total Gains by category ($000)

Category	2018	2019	2020	2018-2020
Wholesale Sales	2,547	1,499	423	4,468
Wholesale purchases	2,973	4,428	5,694	13,095
Natural Gas Delivered Citygate Sales	2			2
Natural Gas Storage Optimization	754	10		764
Natural Gas AMA	90	277	305	672
Resale of Solid Fuel	1	255	220	475
Total Gains	6,367	6,468	6,642	19,477

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110. Please refer to TECO witness Heisey's direct testimony, Exhibit JCH-1, Document No. 4. Please provide data in the format of this exhibit for the years 2010 through 2017, prior to approval of the Optimization Mechanism. Please provide this information in Microsoft Excel format with formulas intact.

a. Please provide a breakdown of benefits and gains by category (wholesale sales, etc.). Please provide this information in Microsoft Excel format with formulas intact.

A. Power Sales is the only category in the Incentive Mechanism for the period 2010 through 2017. Please see the table below for the Incentive Mechanism results.

INCENTIVE MECHANISM RESULTS

Year	Customer Benefits ($000)	Total Gains ($000)
2010	$2,760	$2,949
2011	$902	$902
2012	$247	$247
2013	$894	$894
2014	$2,775	$3,299
2015	$497	$497
2016	$684	$684
2017	$1,645	$1,683
Total	***$10,404***	***$11,155***

Please see electronic response documents provided in MS Excel format entitled (BS 12) IRR 110 Summary of 2010-2017 Incentive Mechanism Gains.xlsx.

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Energy Supply Operation and Maintenance (O&M)

111. Please refer to TECO witness Pickles' direct testimony, page 18, lines 12-14. Please list and describe the activities that will result in the O&M savings directly associated with the Big Bend Modernization and the retirement of Big Bend Unit 3.

a. Please provide a table showing the cost breakdown and the total savings anticipated as a result of these activities. Please provide this information in Microsoft Excel format with formulas intact.

A. a. Please see the Excel file entitled "(BS 17667) HUA 1st Set PODs – No. 34.xlsx," which Tampa Electric produced in response to HUA's First Request for Production of Documents, No. 34. Tampa Electric's customers are expected to save $436 million cumulative net present value in operation and maintenance expense from the Big Bend Modernization Project as compared to the base case expansion plan that does not retire and modernize Big Bend Units 1 and 2. The savings come from reductions in chemicals, pre- and post-processing of fuel, staffing levels, operation of environmental equipment, and maintenance costs associated with older and less reliable generation equipment.

Additionally, as shown in Document No. 4 of Exhibit JBC-1 in the Direct Testimony of witness Caldwell, the System Variable O&M savings from the early retirement of Big Bend Unit 3 are projected to be $10,007,000 CPVRR, and Fixed O&M savings are projected to be $114,381,000 CPVRR. As with the early retirement of Big Bend Unit 2, the savings come from reductions in chemicals, pre- and post- processing of fuel, staffing levels, operation of environmental equipment and maintenance cost.

Please see the table below for the projected savings of Big Bend Unit 3 Early Retirement.

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Reference			BB3 Early Retirement			Delta			Delta Present Value (2019$)		
System VOM	Big Bend FOM	Total O&M	System VOM	Big Bend FOM	Total O&M	System VOM	Big Bend FOM	Total O&M	System VOM	Big Bend FOM	Total O&M
$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
$ 35,289	$ 62,073	$ 97,363	$ 35,289	$ 62,073	$ 97,363	$ -	$ -	$ -	$ -	$ -	$ -
$ 38,007	$ 55,042	$ 93,049	$ 38,007	$ 55,042	$ 93,049	$ -	$ -	$ -	$ -	$ -	$ -
$ 40,922	$ 45,991	$ 86,913	$ 40,915	$ 45,991	$ 86,906	$ (7)	$ -	$ (7)	$ (6)	$ -	$ (6)
$ 31,817	$ 49,188	$ 81,005	$ 31,749	$ 40,338	$ 72,087	$ (68)	$ (8,850)	$ (8,918)	$ (56)	$ (7,285)	$ (7,341)
$ 35,038	$ 43,128	$ 78,166	$ 33,451	$ 36,595	$ 70,045	$ (1,587)	$ (6,533)	$ (8,121)	$ (1,224)	$ (5,040)	$ (6,264)
$ 34,398	$ 53,903	$ 88,301	$ 32,776	$ 44,644	$ 77,421	$ (1,621)	$ (9,259)	$ (10,881)	$ (1,172)	$ (6,694)	$ (7,866)
$ 35,145	$ 49,672	$ 84,816	$ 33,957	$ 38,775	$ 72,732	$ (1,188)	$ (10,897)	$ (12,085)	$ (805)	$ (7,383)	$ (8,188)
$ 37,404	$ 53,496	$ 90,900	$ 35,489	$ 42,272	$ 77,762	$ (1,914)	$ (11,224)	$ (13,138)	$ (1,216)	$ (7,127)	$ (8,343)
$ 37,641	$ 60,289	$ 97,930	$ 36,591	$ 41,128	$ 77,719	$ (1,049)	$ (19,161)	$ (20,211)	$ (624)	$ (11,403)	$ (12,027)
$ 39,767	$ 53,415	$ 93,182	$ 38,513	$ 42,358	$ 80,870	$ (1,254)	$ (11,057)	$ (12,312)	$ (700)	$ (6,167)	$ (6,866)
$ 39,212	$ 62,973	$ 102,185	$ 38,286	$ 51,687	$ 89,973	$ (926)	$ (11,286)	$ (12,212)	$ (484)	$ (5,899)	$ (6,383)
$ 40,162	$ 56,454	$ 96,616	$ 39,633	$ 44,933	$ 84,566	$ (528)	$ (11,522)	$ (12,050)	$ (259)	$ (5,644)	$ (5,903)
$ 42,707	$ 58,045	$ 100,752	$ 41,296	$ 46,281	$ 87,576	$ (1,411)	$ (11,765)	$ (13,176)	$ (648)	$ (5,401)	$ (6,049)
$ 42,802	$ 68,495	$ 111,297	$ 42,200	$ 47,669	$ 89,869	$ (602)	$ (20,826)	$ (21,428)	$ (259)	$ (8,960)	$ (9,219)
$ 46,027	$ 61,371	$ 107,398	$ 44,902	$ 49,099	$ 94,001	$ (1,125)	$ (12,272)	$ (13,397)	$ (454)	$ (4,948)	$ (5,402)
$ 45,531	$ 72,457	$ 117,988	$ 44,921	$ 59,920	$ 104,841	$ (610)	$ (12,537)	$ (13,147)	$ (230)	$ (4,738)	$ (4,968)
$ 48,523	$ 64,900	$ 113,423	$ 47,321	$ 52,089	$ 99,410	$ (1,203)	$ (12,811)	$ (14,014)	$ (426)	$ (4,537)	$ (4,963)
$ 50,596	$ 66,744	$ 117,340	$ 49,415	$ 53,652	$ 103,067	$ (1,181)	$ (13,092)	$ (14,273)	$ (392)	$ (4,345)	$ (4,737)
$ 55,298	$ 78,858	$ 134,157	$ 53,644	$ 55,261	$ 108,905	$ (1,654)	$ (23,597)	$ (25,251)	$ (515)	$ (7,340)	$ (7,854)
$ 58,690	$ 70,600	$ 129,290	$ 57,435	$ 56,919	$ 114,354	$ (1,255)	$ (13,681)	$ (14,936)	$ (366)	$ (3,988)	$ (4,354)
$ 57,832	$ 83,452	$ 141,284	$ 57,010	$ 69,464	$ 126,474	$ (822)	$ (13,988)	$ (14,810)	$ (225)	$ (3,821)	$ (4,046)
$ 58,987	$ 74,691	$ 133,678	$ 59,195	$ 60,386	$ 119,581	$ 208	$ (14,305)	$ (14,097)	$ 53	$ (3,663)	$ (3,609)
$ 60,489	$ 62,197	$ 122,686	$ 60,489	$ 62,197	$ 122,686	$ -	$ -	$ -	$ -	$ -	$ -
$ 59,676	$ 64,063	$ 123,739	$ 59,676	$ 64,063	$ 123,739	$ -	$ -	$ -	$ -	$ -	$ -
$ 69,391	$ 65,985	$ 135,376	$ 69,391	$ 65,985	$ 135,376	$ -	$ -	$ -	$ -	$ -	$ -
$ 69,314	$ 76,965	$ 146,279	$ 69,314	$ 76,965	$ 146,279	$ -	$ -	$ -	$ -	$ -	$ -
$ 71,506	$ 70,004	$ 141,509	$ 71,506	$ 70,004	$ 141,509	$ -	$ -	$ -	$ -	$ -	$ -
$ 71,499	$ 72,104	$ 143,603	$ 71,499	$ 72,104	$ 143,603	$ -	$ -	$ -	$ -	$ -	$ -
$ 75,895	$ 74,267	$ 150,161	$ 75,895	$ 74,267	$ 150,161	$ -	$ -	$ -	$ -	$ -	$ -
$ 82,182	$ 76,495	$ 158,677	$ 82,182	$ 76,495	$ 158,677	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,511,747	$ 1,907,318	$ 3,419,065	$ 1,491,948	$ 1,658,655	$ 3,150,603	$ (19,799)	$ (248,663)	$ (268,463)	$ (10,007)	$ (114,381)	$ (124,388)

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112. Please refer to TECO witness Pickles' direct testimony, page 58, line 22, through page 59, line 3. Please provide a breakdown by activity of the estimated $6 million O&M cost for the planned Bayside outage.

A. The table below outlines the major activities being planned for the Bayside major outage in 2022.

Project Title **Bayside Outage - Unit #1 - 2022**	**Amount**
HP Centerline Open/Close Inspection, Non-Destructive Testing, and replacement of #5 bearing	1,650,000.00
LP Centerline Open/Close Inspection and Non-Destructive Testing	1,100,000.00
Front standard inspection	110,000.00
Generator inspection	1,430,000.00
Exciter inspection	101,200.00
Valves inspection	1,320,000.00
Lube oil/seal oil systems	165,000.00
Turning gear inspection	33,000.00
Misc. Electrical	55,000.00
Steam Turbine Audit and Life assessment	110,000.00
Crossover bellows Non-Destructive Testing only	22,000.00
Unit # 1 Outage Totals	**6,096,200**

113. Please refer to TECO witness Pickles' direct testimony, page 59, lines 9 through 22. Please provide an estimate of the O&M savings resulting from each of these measures.

A. This request seeks specific O&M savings for measures outlined in witness Pickles' direct testimony, page 59, lines 9 through 22. As described in witness Pickles' direct testimony, page 10, line 7 through page 11, line 22, Asset Management enables Tampa Electric to predict, schedule, and manage the maintenance of the fleet, ensuring maximum reliability, efficiency, and cost effectiveness. Centralization of contractor management allows the company to oversee and manage contractor head count and spend while allocating resources in the most effective and efficient manner.

While these measures contribute to the overall cost effectiveness strategy for Energy Supply ("ES"), it would be impossible to provide accurate estimation of the savings from implementation of Asset Management or Centralized Contractor Management due to their wide-ranging reach over all aspects of ES operations as well as overlap between measures. It is, therefore, much more appropriate to evaluate these cost effectiveness measures in terms of overall ES O&M savings.

As shown on MFR Schedules C-37, C-38, C-39, and C-41, as well as summarized in witness Pickles' direct testimony, page 55, line 25 through page 56, line 21, production O&M, excluding all costs recovered through cost recovery clauses, is budgeted to be $28.6 million, or 21.6 percent, favorable to the 2012 benchmark. Cost controls and efficiencies, including the implementations of Asset Management practices and Contractor Management Centralization, as well as the shift to cleaner and more reliable sources of generation, helped contributed to an approximate 24.1 percent reduction to labor costs, and approximately 40.5 percent reduction in outside services and materials costs, from the peak of production expense in 2016.

Transitioning Solar operation and maintenance to in-house resources provides cost reduction opportunities while also providing jobs for team members that may be impacted by the modernization of Big Bend. The estimated savings of transitioning the solar operation and maintenance in-house will result in approximately $1.7 million savings to O&M in 2022.

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114. Please refer to TECO witness Pickles' direct testimony, Exhibit DAP-1, Document No. 13. Please describe how vendors are selected to conduct O&M activities.

A. Tampa Electric has a formal bidding process to procure all ordinary goods and services that is outlined in company policy and procurement procedures. This bidding process is led by the company's corporate Procurement Department to ensure and maintain an unbiased, consistent, and objective procurement process. Key elements of the process include: requesting formal and well documented bids from three (3) or more vendors, a full review of bidders qualifications and information submitted, evaluating other factors such as diversity considerations and ensuring proper level of approvals after vendor has been chosen.

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115. Please refer to TECO witness Pickles' direct testimony, Exhibit DAP-1, Document No. 13. Please provide a breakdown of what is included in the costs for each of the "By Cost Element" categories.

A. Please see electronic response documents provided in MS Excel format entitled (BS 20) IRR-115_ Summary.xlsx.

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116. Please refer to TECO witness Pickles' direct testimony, Exhibit DAP-1, Document No. 13. Please explain in detail why the Energy Supply O&M costs are projected to increase in 2022 when they have been trending downward since 2016.

A. Bayside Power Station's major outage, as outlined in witness Pickles direct testimony, is the cause for the increase in Energy Supply O&M for 2022. This outage is estimated to cost approximately $6 million. Excluding this outage, Energy Supply O&M it is projected to decrease by approximately $3.5 million in 2022.

Major outages usually occur every three to four years, depending on the unit. The purpose of these outages is to perform regular, preventive maintenance on the generating unit in order to ensure maximum efficiency and reliability. Typical costs will include opening and closing various vessels and generator casings; steam turbine rotor and blade inspection; bearing and seal cleaning, inspection, and maintenance; lift oil and seal oil flushes; and steam turbine valve cleaning, inspection, and maintenance. Please see Tampa Electric's response to Staff's Fourth Set of Interrogatories, No. 112, above for more information about this outage and its associated costs.

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Big Bend Modernization

117. Please refer to TECO witness Caldwell's direct testimony page 24, lines 1-17.

a. For Big Bend Unit 1, please explain how TECO determined $151 Million of capital expenditures were needed to keep Unit 1 in service. Please identify any assumptions made in determining this cost.

b. For Big Bend Unit 2, please explain how TECO determined $142 Million of capital expenditures were needed to keep Unit 2 in service. Please identify any assumptions made in determining this cost.

c. Please clarify if TECO's conversion of the Big Bend units to natural gas has been reviewed and approved by the Commission in a prior proceeding. If so, please identify the Commission Order(s) approving the conversion(s).

A. a. Tampa Electric calculated the revenue requirements associated with the projected annual capital and O&M expenses needed to safely operate and reliably maintain Big Bend Unit 1 in its current configuration. It also calculated the revenue requirements associated with the projected annual capital and O&M expenses needed to safely operate and reliably maintain the Big Bend Modernization Project. The $151 million savings associated with Big Bend Unit 1's modernization is the difference in revenue requirements for these two scenarios. Please see BS 17,666 - 17,667, provided in Tampa Electric's response to HUA's First Request for Production of Documents, No. 34 for details regarding this value.

b. Tampa Electric calculated the revenue requirements associated with the projected annual capital and O&M expenses needed to safely operate and reliably maintain Big Bend Unit 2 in its current configuration. The $142 million savings associated with Big Bend Unit 2 is the total revenue requirements avoided by retiring Big Bend Unit 2 early. Please see BS 17,666 - 17,667, provided in Tampa Electric's response to HUA's First Request for Production of Documents, No. 34 for details regarding this value

c. No. A determination of need was not required for site certification of the Big Bend Modernization Project under the Power Plant Siting Act. See Siting Board Final Agency Order, at 51 (available at https://www.doah.state.fl.us/ROS/2018/18002124_282_07292019_13152747_e.pdf.)

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Generation Base Rate Adjustment

118. Please refer to TECO witness Chronister's direct testimony, page 51, lines 4–13. Please explain why TECO believes it is appropriate to use a GBRA for recovery instead of CWIP.

A. Tampa Electric believes the use of a GBRA is more appropriate because the comprehensive budgeting process for the company wide CWIP spend profile was not performed for 2023. However, specific focus is given to major projects that are captured in the GBRA and the spend profile on these major projects is carried out through the duration of the project and contains the details to support a GBRA. It's also important to note that the major projects we have included in the proposed GBRA earn AFUDC and are excluded from CWIP in Rate Base until they go into service. Therefore, these are appropriately segregated from CWIP.

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Advanced Distribution Management System

119. Please refer to TECO witness Haines' direct testimony, page 20, line 20 through page 21, line 1 and TECO witness Mincey's direct testimony, Exhibit KMM-1, Document No. 2.

a. Please explain the function of the Advanced Distribution Management System (ADMS).

b. What is the expected life of the ADMS project?

c. Explain what technologies the ADMS will be utilizing to accomplish TECO's goal of "…providing advanced analytic and diagnostic tools that will help us reduce customer outages and reduce outage duration".

d. Please provide a cost breakdown of the $24.3 million associated with the ADMS. Please include costs for Labor, R&D, Electric Vehicle Support Technology and Microgrid Support Technology.

e. Please explain the relationship between the ADMS and the Energy Control Center.

f. Please explain the relationship between the ADMS and the Advanced Metering Infrastructure (AMI) system.

A. a. ADMS is a software system that merges complete distribution control and optimization into a single platform. It offers planning and operating tools, traditionally at the transmission level, for distribution operations. The ADMS technology provides a centralized location for unifying OMS, SCADA, Switching, Volt/VAR, and new network analytic capabilities. It will monitor, control, and optimize distribution network operation to increase operators' situational awareness and reduce reaction time.

b. It is expected that the ADMS project itself will conclude in March 2022. ADMS is expected to be utilized for at least 10 years with occasional upgrades required to keep up with advancing technology.

c. ADMS utilizes an integrated package of network analysis applications that constantly monitors analog and status measurements on the distribution system evaluating for areas that are outside of acceptable operating limits.

The Fault Isolation and Service Restoration ("FLISR") function uses fault Amp and phase status measurements to determine potential fault locations along the distribution feeders then creates switching plans to isolate faulted sections and to restore service to the non-faulted sections. The Load and Volt/VAR Management ("LVM") function attempts to maintain voltage and VAR targets by coordinating and optimizing capacitors, voltage regulators and LTCs.

d. The ADMS project does not have an R&D component. The Electric Vehicle Support Technology and Microgrid Support Technology are part of the core system, so they do not have specific costs associated to them.

The following table details the project cost breakdown by area:

	Project To Date May 2021 ($)	Estimate June 2021 – Completion ($)	Project Total ($)
Vendor Costs	2,849,957.76	2,701,815.00	5,551,772.76
Hardware	2,844,353.47	0.00	2,844,353.47
Labor	7,329,468.34	3,100,527.75	10,429,996.09
Labor - Contractor	4,158,190.31	1,122,248.00	5,280,438.31
Misc	127,408.37	66,370.00	193,778.37
Grand Total	$17,309,378.25	$6,990,960.75	$24,300,339.00

e. ADMS is a mission critical system that physically resides in the Energy Control Center with its backup located at Tampa Electric's disaster recovery site (Secure Center). Its prime operational purpose is to support the Distribution control center operations which resides in the Energy Control Center.

f. ADMS collects and analyzes Advanced Metering Infrastructure ("AMI") observations along with customer phone calls, to assist in determining the most likely location where a customer power has been interrupted.

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DC Microgrid Pilot

120. Please refer to TECO witness Haines' direct testimony, page 25, lines 6–18 and page 35, lines 4–16. Does TECO have any other microgrid projects, besides the DC Microgrid Pilot Program, currently planned?

A. There are no other DC microgrid projects planned at this time.

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121. Please specify the months and years included in the actual data (beginning and ending) and the month and years included in the forecast data (beginning and ending) of each Explanatory (Independent) Input Variable shown on Schedule F-7, pages 1 and 2 of 4, used to produce TECO's Customer, Average Use Per Customer, and Peak Demand forecasts.

A. Please see electronic response document provided in MS Excel format entitled (BS 28) IRR 121.xlsx.

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122. Please provide the historical monthly actual and forecasted data for each forecasted annual dependent and independent variable data point shown in MFR Schedule F-7, pages 2 and 3 of 4 in electronic format (Excel). Please include data up through the most recent month in 2021 for which actual data is available.

A. Please see the confidential electronic response document in MS Excel format entitled (BS 30) IRR 122-CONF.xlsx.

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123. Please refer to witness Cifuentes' direct testimony, page 9, lines 20-25, and page 10, lines 1-14 for the following questions.

a. Please identify the assumptions relating to the long-term saturation and efficiency trends in end-use equipment.

b. Please explain why TECO relied on EIA/Itron Corporation for the forecasted trends as described in 3.a.

A. a. Residential assumptions used for average use include long-term saturation and energy intensity trends for ten end-use appliance groupings, to create an interactive trend of the two called unit energy consumption [saturation times energy intensity]. These groupings are further aggregated into three: heating, cooling and non-HVAC [Heating, ventilation, and air conditioning].

Commercial assumptions use average kWh per square foot for ten end-use appliance groupings. These groupings are further aggregated into three: heating, cooling and non-HVAC.

b. The company relied on Itron for the forecasted trends described in 3.a. because they initially prepared the residential and commercial appliance efficiency trend variables used in the company's energy consumption models. Itron developed these trend variables using data from the Department of Energy's, Energy Information Administration's ("EIA") South Atlantic Region data from RECS [Residential Energy Consumption Surveys] and CBECS [Commercial Building Energy Consumption Surveys]. EIA periodically updates residential and commercial appliance saturation and energy consumption projections, and these projections are used to update Tampa Electric's assumptions. We continue to use EIA's projections as they are a known credible and reliable source of energy-related information.

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124. Please refer to TECO witness Cifuentes' direct testimony, page 10, lines 5-14 for the following questions. Witness Cifuentes testifies that the appropriate monthly weather impacts to the Company's forecasting models are based on Monte Carlo simulations for weather patterns over the past 20 years.

a. Please briefly describe TECO's weather normalization process underlying its load forecasts in this proceeding.

b. Please explain how TECO's Monte Carlo simulations of weather patterns used to prepare its load forecasts in this proceeding compare to 20-year averages, as well as the rationale behind why TECO chose to utilize Monte Carlo simulations in its allocation of weather impacts.

c. Please identify the trend(s), if any, in the temperature data (CDDs, HDDs) used by TECO over the past 20 years.

d. If a trend(s) exists, please explain if and how TECO's Monte Carlo simulations account for this trend(s).

e. Please explain TECO's historical method of calculating weather impacts on energy and demand, and at what point TECO began using Monte Carlo simulations to estimate weather impacts on its load forecasts.

A. a. Page 10, lines 5-14 describes the application of seasonality, monthly weather impacts, to the consumption data being forecasted. This seasonality is based on normal degree-days which are estimated based on 20 years of historical degree-days.

b. The degree-days resulting from the Monte Carlo simulation are very similar to the 20-year average. The rationale behind why Tampa Electric chose to utilize Monte Carlo simulations versus a simple 20-year average is because the simulations provide results at different probability levels, which can be used for sensitivities. Tampa Electric currently selects the 50 percent probability level for normal degree-days. This means there is a 50 percent probability the degree-days can be higher and a 50 percent probability they can be lower.

c. The primary trend that exists over the past 20 years shows warmer temperatures throughout the year, with the exception of a few years. This

trend is also reflected in the normal degree-days that provide the monthly seasonality in the energy consumption models.

d. Monte Carlo simulations provide probabilistic results, showing what could happen and how likely each outcome is to occur; so we can be confident that any trends in the degree day data are accounted for by this approach.

e. Tampa Electric's historical method of calculating normal weather for purposes of forecasting energy consumption was a 20-year average. Tampa Electric began using Monte Carlo simulations to estimate normal degree-days in 2011.

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125. For MFR Schedule F-7 forecasts of its dependent variables, beginning with TECO's first forecasted data point (month/year) and ending with its most recent data point for which actual data is available, please provide the following:

a. For each rate class, a side-by-side comparison of TECO's projected monthly forecasts to TECO's actual monthly result, including both quantities and percent differences.
b. A causative explanation for any deviations greater than 15 percent for sales and demand forecasts and 3 percent for customer forecasts.

A. a. Please see electronic response document provided in MS Excel format entitled (BS 35) IRR 125_Forecast vs Actual.xlsx.

b. Please see Tampa Electric's response to Staff's Fourth Set of Interrogatories, No. 125 (a), above.

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126. Please refer to MFR Schedules F-5 and F-7 for the following:

a. Please list all the FPSC filings in which TECO presented the customer, energy, or demand forecasts presented in MFR Schedules F-5 and F-7, and explain how they were used in dockets or otherwise by the Commission.

b. Please list all FPSC dockets which were opened after August 2020 in which TECO filed customer, energy, or demand forecasts which were different from the forecasts presented in witness Cifuentes' direct testimony and MFR Schedules F-5 and F-7. Please explain in each instance why a different forecast was used and how those forecasts differed from those in the current case.

c. What is the developmental schedule for each updated and/or scheduled TECO load and customer forecast subsequent to the forecasts filed in this proceeding?

d. Please explain the process by which the customer, energy, and demand forecasts appearing in MFR Schedule F-7 (extending to 2022) were integrated into projections appearing in witness Cifuentes' Exhibit LLC-1, which extend forecasts through either 2024 or 2030.

A. a. The Storm Cost Recovery Clause testimony, Docket No. 20210010-EI, filed May 3, 2021, used the same forecasts presented in MFR Schedules F-5 and F-7 as a basis for its 2022 projections.

b. There have been no FPSC dockets opened after August 2020 in which Tampa Electric filed customer, energy or demand forecasts which were different from the forecasts presented in witness Cifuentes' direct testimony and MFR Schedules F-5 and F-7.

c. The development schedule for Tampa Electric load and customer forecasts begins in mid-April and ends in June or July of each year.

d. The same forecast models were used to develop the forecasts appearing in MFR Schedule F-7 and in Exhibit LCC-1. The models' forecast period was from August 2020 through December 2040.

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127. Please refer to TECO witness Cifuentes' Exhibit LLC-1, Documents 1 and 2. Please provide a similar table that includes the existing data as well as customer and energy sales forecasts from TECO's 2020 Ten-Year Site Plan (TYSP) and TECO's 2021 TYSP.

A. Tampa Electric Company provides a similar table to Document 2 including the customer and energy sales forecasts from the 2020 and 2021 TYSP. Document 1 is a list of minimum filing requirement schedules.

Please see electronic response document provided in MS Excel format entitled (BS 38) IRR 127.xlsx

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128. Please refer to TECO witness Cifuentes' direct testimony, page 17, lines 21-25. Regarding the inclusion of the impact of COVID-19 in its customer and sales forecasts, witness Cifuentes testifies that an out-of-model adjustment factor to energy consumption per customer was used to "capture the short-term-behavioral changes that the economic data cannot fully explain, including customer-specific behavioral changes such as staying at home and decisions to close or open educational institutions and non-essential businesses." Please identify and explain:

a. The methodology used to determine the differing impacts the COVID-19 pandemic has had on each rate class.

b. TECO's rationale and support for concluding that a COVID-19 adjustment factor on the Company's customer and energy sales forecasts is no longer necessary post-2021, as witness Cifuentes details on page 18, lines 4-8 of her Direct testimony.

A. a. Please see Tampa Electric's response to Staff's Third Request for Production of Documents, No. 11. The methodology used to determine the impacts that the COVID-19 pandemic has had on each rate class is provided in MS Excel file "(BS 28) Staff 3rd Set POD No11_COVID_Impacts.xls".

b. The impacts of COVID-19 began to show a steady improvement after May of 2020, and the expectation was that it would continue to improve and get back to normal levels of consumption in late 2021. The rationale for concluding the adjustment was no longer needed by the end of 2021 came from discussions with Itron Corporation consultants and Economic webinars that discussed the timing of the availability of vaccines.

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129. Please explain how TECO calculated its real electricity price, as shown in witness Cifuentes' direct testimony, Document No. 3, page 1 of 1. Please identify all sources TECO utilized in its calculation.

A. The historic real electricity price is calculated for each customer class by dividing monthly base revenues into monthly sales to create nominal rates. These rates are converted to real by dividing nominal rates by the consumer price index [CPI]. In order to provide a smoother price trend for our models, we use a 12-month moving average of the real price of electricity for each customer class.

For the forecast, we incorporate projections of base and clause rates, developed internally. From here, we determine the annual percent change in the total price of electricity by customer class and apply these to the historic real price 12-month moving average. The forecasted total rates are used as input to the MetrixND average use models.

The base revenue and sales data are provided to us through the company's Business Objects Analysis report, BL019 Billing and Revenue Report. And, the CPI data is purchased from Moody's Analytics. Please see Tampa Electric's confidential response to OPC's First Request of Production of Document, No. 1 "(BS 310) Price.xls."

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130. How do TECO's models account for specific events for the 2022 test year, such as new housing developments, port expansions, new large commercial expansions/contractions in the service area, and new or exiting large industrial customers and/or processes which may significantly impact customers, sales, and demand?

A. Tampa Electric's models do not account for specific events such as housing developments, etc. This type of growth is indirectly captured in population and economic projections. Tampa Electric did account for COVID-19 impacts in the 2021 projections.

When projecting the consumption of larger interruptible and phosphate customers, known expansion projects or closures are taken into account.

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131. Please refer to the following Documents appearing in Exhibit LLC-1 of witness Cifuentes' direct testimony for the following questions.

a. Document 6 - Please explain why 2021 and 2022 per customer energy sales are projected to decrease by an average of approximately 1.9 percent (as calculated below) which is over twice the average of approximately 0.9 percent over the years 2011-2020.

- 2022 sales minus 2020 sales divided by 2020 sales multiplied by 100 [(23,589 kwh – 24,517 kwh) / 24,517 kwh] X 100 = -3.8 percent

- 3.8 percent divided by 2 = -1.9 percent average

b. Document 7 – Please explain why 2021 and 2022 retail energy sales are projected to decrease by an average of approximately 0.4 percent (as calculated below), compared to the approximate 0.8 percent average increase over the years 2011-2020.

- 2022 sales minus 2020 sales divided by 2020 sales multiplied by 100 [19,781 gwh – 19,954 gwh) / 19,954 gwh] X 100 = -0.86 percent

- -0.86 percent divided by 2 = -0.43 percent average

c. Document 8 – Please explain why TECO projects 2021 per-customer winter peak demand to increase approximately 22.9 percent (as calculated below) to 5.53 KW/customer, the highest usage since 2011, while simultaneously projecting 2021 per-customer summer peak demand to decrease approximately 3.5 percent (as calculated below) to 5.22 KW/customer, the lowest usage in any of the past 10 years.

- 2021 winter peak minus 2020 winter peak divided by 2020 winter peak multiplied by 100
(5.53 kw - 4.50 kw)/ 4.50 kw X 100 = 22.9 percent)

- 2021 summer peak minus 2020 summer peak divided by 2020 summer peak multiplied by 100
(5.22 kw - 5.41 kw)/ 5.41 kw X 100 = -3.5 percent)

A. a. The primary reason the average annual growth from 2020 to 2022 is over twice the historical average is due to the significantly hotter than normal weather in 2020. The years 2021 and 2022 are projected assuming normal weather. The change from 2020 to 2021 is -3.4 percent of the -3.8 percent in question. The change from 2021 to 2022 is only -0.4 percent, which is less than the historical average of -0.9 percent.

b. The primary reason the average annual growth from 2020 to 2022 is below the historical average is due to the significantly hotter than normal weather in 2020. The years 2021 and 2022 are projected assuming normal weather. The change from 2020 to 2021 is -1.8 percent. The change from 2021 to 2022 is 1.0 percent which is above the historical average of 0.8 percent.

c. The actual winter peak demand in 2020 was very low due to very mild winter weather. The projected year 2021 is based on winter peak-day weather assumptions. The peak day in 2011 was a very cold day resulting in 5.93 kW-per-Customer demand.

The actual summer peak demand in 2020 was above normal due to hotter than normal peak-day temperatures. The projected year 2021 is based on summer peak-day weather assumptions. Comparing the two years results in a decline in 2021 due primarily to the higher peak-day temperatures in 2020.

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132. Please provide actual data and three-year forecast data for total customers and retail energy sales, for 2017, 2018, 2019, and 2020, for TECO as shown below:

Year	TECO - Accuracy of Total Customers Forecasts					
	Forecast Error Rate (%)				0-3 Year Error (%)	
	Years Prior*				Average	Absolute Average
	3 Years	2 Years	1 Year	0 Years		
2017						
2018						
2019						
2020						
Average						

*Examples: In the column '3 Years,' row '2017', enter the percent error in the Company's 2014 forecast of 2017 customers. Similarly, in the column '0 Years', row '2020', enter the percent error in the Company's 2020 forecast of 2020 customers.

Year	TECO - Accuracy of Retail Energy Sales Forecasts					
	Forecast Error Rate (%)				0-3 Year Error (%)	
	Years Prior*				Average	Absolute Average
	3 Years	2 Years	1 Year	0 Years		
2017						
2018						
2019						
2020						
Average						

*Examples: In the column '3 Years,' row '2017', enter the percent error in the Company's 2014 forecast of 2017 retail energy sales. Similarly, in the column '0 Years', row '2020', enter the percent error in the Company's 2020 forecast of 2020 retail energy sales.

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A. Please see the tables below for the requested information.

TECO - Accuracy of Total Customers Forecasts

	Forecast Error Rate (%) Years Prior*				0-3 Year Error (%)	
Year	3 Years	2 Years	1 Year	0 Years	Average	Absolute Average
2017	-1.1%	-0.6%	0.3%	-0.1%	-0.4%	0.5%
2018	-0.5%	0.6%	0.1%	0.5%	0.2%	0.4%
2019	0.4%	-0.2%	0.3%	-0.6%	0.0%	0.4%
2020	-0.4%	0.3%	-0.6%	0.0%	-0.2%	0.3%
Average	-1.1%	-0.6%	0.3%	-0.1%	-0.4%	0.5%

*Examples: In the column '3 Years,' row '2017', enter the percent error in the Company's 2014 forecast of 2017 customers. Similarly, in the column '0 Years', row '2020', enter the percent error in the Company's 2020 forecast of 2020 customers.

TECO - Accuracy of Retail Energy Sales Forecasts

	Forecast Error Rate (%) Years Prior*				0-3 Year Error (%)	
Year	3 Years	2 Years	1 Year	0 Years	Average	Absolute Average
2017	-1.6%	-0.6%	-0.8%	-0.4%	-0.8%	0.8%
2018	-1.8%	-2.0%	-1.6%	-0.4%	-1.5%	1.5%
2019	-1.4%	-0.9%	-0.4%	-1.5%	-1.0%	1.0%
2020	-0.7%	-0.2%	-1.6%	-1.9%	-1.1%	1.1%
Average	-1.6%	-0.6%	-0.8%	-0.4%	-0.8%	0.8%

*Examples: In the column '3 Years,' row '2017', enter the percent error in the Company's 2014 forecast of 2017 retail energy sales. Similarly, in the column '0 Years', row '2020', enter the percent error in the Company's 2020 forecast of 2020 retail energy sales.