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Tampa Electric's Response to Staff's First Set of Interrogatories (No. 1-77)

(Nos. 4, 6, 8, 10, 12, 15, 18, 19, 22, 30, 33, 34, 44, 45, 50, 68, 69, 71, 72 have attachments)

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S FIRST SET OF INTERROGATORIES
INTERROGATORY NO. 1
BATES PAGES: 1-2
FILED: JUNE 4, 2021

Dismantlement Study (Bates-stamped pages 1128-1157)

1. Rule 25-6.04364(3) requires each utility's dismantlement study shall include:

(c) The dismantlement study methodology.

(d) A summary of the major assumptions used in the study.

(e) The methodology selected to dismantle each generating unit and support for the selection.

(l) A summary and explanation of material differences between the current study and the utility's last filed study including changes in methodology and assumptions.

Please provide the above-listed information.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

(c) The Dismantlement study methodology

Please see BS pages 1219 – 1273 for the Dismantlement Study prepared by 1898 & Co. The study includes a description of the study methodology on BS page 1225.

The Dismantlement Study prepared by Sargent & Lundy (S&L) for Big Bend Units 1-2 is included on BS pages 1274 – 1373. This study includes a description of the estimate approach on BS pages 1287 – 1288. The Dismantlement Study prepared by S&L for Big Bend Unit 3 included on BS pages 1374 – 1436. This study includes a description of the estimate approach on BS pages 1386 – 1387.

(d) A summary of the major assumptions used in the study

The assumptions for the 1898 & Co. study are presented on BS pages 1232 – 1235.

The assumptions for the S&L study or Big Bend Units 1,2 are presented on BS pages 1298 – 1299. The assumptions for the S&L study or Big Bend Unit 3 are presented on BS pages 1395 – 1397.

(e) The methodology selected to dismantle each generating unit and support for the selection. In addition to the 1898 & Co. assumptions are more site-specific methodologies for Bayside, Big Bend, Polk and the various Solar sites outlined on BS pages 1236 - 1237

The S&L methodology for dismantling Big Bend Units 1,2 are outlined on BS pages 1288 – 1294. The S&L methodology for dismantling Big Bend Unit 3 is outlined on BS pages 1387 – 1392.

(l) Summary and explanation of material differences between the current study and the last filed study

For the 1898 & Co dismantlement study, methodologies and assumptions are materially the same as the 2011 dismantlement study, with the following exceptions.

- A demolition contractor was retained as a subconsultant by Burns & McDonnell on the 2011 study and provided support in developing the quantities and costs. All quantities and costs in the 2020 study were developed internally by 1898 & Co. This resulted in some differences in quantity estimates from 2011 to 2020.

- Grading and seeding costs for site restoration were excluded from the 2011 dismantlement study but have been included in the current study.

- Removal of concrete beneath tanks was excluded from the 2011 dismantlement study but has been included in the current study.

- The 2011 study did not include costs for removing and disposing of pond liners, but they have been included in the 2020 study.

  The 2011 study assumed closure of the coal storage area by removing one foot of material, placing 6 inches of topsoil over the entire coal storage area and then seeding the area. The 2020 study includes costs for excavating the area underneath the coal pile to two feet below grade and covering with eighteen inches of soil and six inches of topsoil.

2. Please refer to Bates-stamped page 1130 for the questions below:

a. Please provide a brief summary of the Big Bend (BB) Units 1 – 3 dismantlement including: major tasks, critical dates, and the associated cost estimates.

b. What entity will perform the physical tasks to dismantle the BB Units 1 – 3?

c. The 3rd paragraph of the page reads:

The company requests an amortization recovery schedule discussion for how these units can be effectively dismantled and how the company can recover projected reserve deficiencies.

Please identify from whom the discussion is requested, and summarize the outcome of the discussion provided.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

a. For a brief summary of Big Bend Units 1-2, please see BS pages 1274 to 1373 for BB Units 1, 2 details. BS Pages 1276 to 1286, a contains detailed summary, on the cost estimate summary, estimated schedule to complete, and major tasks that are organized into four phases: Engineering, Pre-Demolition Construction, Demolition and Post-Demolition.

For a brief summary of Big Bend Unit 3, please see BS pages 1374 to 1436. BS Pages 1376 to 1385 contains a detailed summary on the cost estimate summary, for estimated schedule to complete, major tasks that are organized into four phases: Engineering, Pre-Demolition Construction, Demolition and Post-Demolition.

b. The entity has not been identified. The dismantlement work will be issued for bid and awarded later.

c. We are requesting a 10-year accelerated recovery schedule that will be considered as part of the company's rate case.

3. Referring to Bates-stamped page 1131, please provide a detailed explanation to justify the proposed reduction in the maximum life span from 65 to 60 years for BB Unit 4.

A. There are three drivers for the reduction of life span for Big Bend Unit 4:

1. The company's goal to becoming cleaner and greener.

2. The fuel forecast projections revealed the Natural Gas commodity will remain the economic choice for fuel.

3. The company recognizes the impact on rates when assets retire before they are fully depreciated. The 5-year reduction represents the company's sensitivity to rate impact and signals that long term solid fuel assets do not achieve the company's strategy.

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4. Please refer to Bates-stamped page 1132 for the questions below:

a. Please identify all the plant assets that TECO expected to place in-service due to the Big Bend Modernization project discussed on this page, including the assets to be placed in-service resulting from the BB Unit 1 re-powering discussed in TECO's Petition, paragraph 21.

b. Does the "Company Proposed Accrual (01/01/2022)," shown on Bates-stamped page 1137 include the accrual amount associated with any of the plant additions discussed in Question No. 5(a)? If so, please explain in detail.

c. Please use a table to show the scheduled month/year for any major existing plant assets' respective retirement and dismantlement, as well as any major new plant assets' placing in-service that has/have resulted from the Big Bend Modernization Project.

d. Please provide a detailed explanation to justify the proposed reduction in the maximum life span from 40 to 35 years for Bayside Unit 1.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

a. The Big Bend Modernization project includes the construction of 2 new gas turbines that will be placed in-service December 2021 and 1 new combined cycle steam turbine that will be placed in-service December 2022. Please see below for all plant assets that Tampa Electric expects to place in service due to the Big Bend Modernization project.

- Two (2) new CTGs and auxiliary systems
- Two (2) new CTG step-up transformers and station service transformers
- Two (2) new bypass stacks with diverter dampers
- Two (2) new triple pressure reheat HRSGs w/ SCR systems
- Two (2) new boiler feed pumps (1x100% per HRSG)
- New pipe rack and pipe bridge over inlet canal
- Modernized STG and auxiliary systems
- New auxiliary cooling tower and closed loop cooling system for steam turbine auxiliary cooling
- Condenser transition modifications to support combined cycle operation

- Two (2) new condensate pumps (2 x 100%)
- Two (2) new circulating water pumps (2 x 50%)
- New condensate polishing system
- Repairs to existing Big Bend Unit 1 intake structure and outfall flume
- New Storm Hardened Engineering & Project Management office building
- Upgrade (23) breakers at Big Bend to 80 kA interrupting capability
- On-site transmission circuit reconfiguration

The extent of demolition included in the scope of this project is to remove current Big Bend Unit 1 equipment only within the turbine hall and which needs to be removed to accommodate installation and safe operation of the new combined cycle. Dismantlement of these specific systems will be taken to a safe termination point to include closing any openings created in the building envelope.

b. Yes, there is an accrual for the Big Bend Modernization project. BS page 1137 lists a line item called Big Bend GT's 5-6 that is for the Big Bend Modernization project plant assets listed in the company's response to Staff's First Set of Interrogatories, No. 4(a), above. The dismantlement cost estimate for the Big Bend Modernization project is included on BS Pages 1242 and 1243.

c. Please see Excel file, "(BS 7) 2022 CPR - Generating Unit Capital Recovery Dates - Filed.xlsx". This file utilizes data from the 10-Year Site Plan regarding each generating unit, reflecting the original in-service date and expected terminal date used for dismantlement study accrual modeling.

d. The company recognizes the impact on rates when assets retire before they are fully depreciated. The 5-year change represents the company's sensitivity to rate impact and reflects an expectation that new technology will emerge that will economically justify the replacement or removal of Bayside 1.

5. Referring to Bates-stamped page 1133, please provide a detailed explanation to justify the proposed reduction in the maximum life span from 40 to 34 years for Bayside Unit 2.

A. The company recognizes the impact on rates when assets retire before they are fully depreciated. The 6-year change represents the company's sensitivity to rate impact and reflects an expectation that new technology will emerge that will economically justify the replacement or removal of Bayside 2.

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INTERROGATORY NO. 6
BATES PAGES: 9-11
FILED: JUNE 4, 2021

6. Please refer to Bates-stamped page 1137 for the questions below:

a. Referring to the top left portion of the page, please provide the "October 2020 Inflation Index" and explain how this index was used in deriving the "Summary of Dismantlement Accruals" presented on this page.

b. Please explain the differences, if any, among the "October 2020 Inflation Index," the "Moody's Analytics October 2020 delivery," and the "Escalation Factors" that are contained in "2020 Generation Dismantling Master File - Filed.xlsx."

c. Please provide a comparison between the inflation index used in TECO's instant and its last dismantlement study, and explain your response.

d. Rule 25-6.04364(7), F.A.C., requires that the annual dismantlement accrual shall be a fixed dollar amount and shall be based on a four-year average of the accruals related to the years between the dismantlement study reviews. Given a nine-year interval between TECO's last and the current study, please explain why the Company did not include a scenario of "Proposed Accrual" based upon nine-year accrual average in the current study.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

a. Please see Excel File, "(BS 11) October 2020 Inflation Index using Moodys Analytics.xlsx". BS Page 1137 is a summary of the various units' accrual modeling. BS Page 1138 is the dismantlement cost estimates to which an escalation factor is applied. There are three inflation escalation factors, one of which is assigned to each column of the dismantlement cost estimates on BS Page 1138. Labor is applied the Compensation Per Hour, Productivity and Costs (2012=100) escalation factor; Materials & Equipment is applied the Intermediate Goods, Producer Prices (1982=100) escalation factor; Environmental & Disposal is applied the GDP Chain Price Deflator (2012=100) escalation factor; and Salvage is applied the Intermediate Goods, Producer Prices (1982=100) escalation factor.

b. There is no difference. The escalation factors are derived from the Moody's Analytics October 2020 delivery update used by the accrual model.

c. The same Escalation Factors process for accrual modeling was used in the last

dismantlement study. The only difference was the Moody's Analytics data utilized was published in November 2011. Based on a comparison of the 2011 and the 2020 data provided by Moody's Analytics; the 2020 Compensation Per Hour, Productivity and Costs (2012=100) is trending higher than 2011 for the period 2022 and 2034; then lower for years after 2034. The 2020 Intermediate Goods, Producer Prices (1982=100) and the 2020 GDP Chain Price Deflator (2012=100) are trending higher than 2011 for all years after 2022.

d. The rule requires utilities to file a depreciation study and dismantlement study at least every four years. However, Tampa Electric entered into a settlement agreement to resolve the company's last rate case in 2013 and entered into another agreement in 2017 that amended and restated the 2013 agreement. These agreements relieved the company of the need to file depreciation and dismantlement studies every four years and directed the company to file its next depreciation study and dismantlement study no more than one year or less than 90 days before the filing of the company's next rate. As a result, it has been approximately nine-years since Tampa Electric's last depreciation study and dismantlement study. The dismantlement study is performed on a prospective basis where the next four-year average between 2022 and 2025 is used to set the accrual in this instant filing. The company does not anticipate another rate case stipulation to defer the filing of its next depreciation study and dismantlement study per rule compliance. The dismantlement model has sufficient details to where it can calculate the accrual amount using any number of averaging years. Since the model is calculating each year's annual accrual using a compounding growth rate, performing a nine-year average between 2022 and 2030 would result in an immaterial increase.

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7. Please refer to Bates-stamped pages 1138-1139 for the questions below:

a. Please explain, with necessary supporting documentation and analyses, why TECO believes the 15 percent contingency factor level used to derive its 2020 dismantlement cost estimates is appropriate.

b. Is the 15 percent contingency factor used in TECO's 2020 Dismantlement Study comprised of pricing and scope of omission contingencies?

c. If your response to Question No. 8(b) is affirmative:

(i) Please elaborate on each of these two components of the contingency factor;

(ii) Please identify how the 15 percent is allocated to these two components with corresponding explanation.

d. If your response to Question No. 8(b) is negative, please explain in detail how TECO's contingency factor is determined.

A. a. The company has used contingency factors in prior dismantlement study filings. The 15 percent contingency factor is broken down into 3 components; 5 percent for pricing, 5 percent for scope and 5 percent for company internal resources to participate and supervise the external contractors during dismantlement activities. These components are a standard measure that the dismantlement estimators include in their cost profiles. Sometimes the dismantlement estimators use a higher contingency factor than the company's applied 15 percent.

b. Please see the response to Staff's First Set of Interrogatories No. 7., No. 7(a), above.

c. Tampa Electric assumes this question meant to refer to Interrogatory No. 7(b). As such, please see the response to Staff's First Set of Interrogatories No. 7(a., No. 7a), above.

(i) Please see the response to Staff's First Set of Interrogatories, No. 7., No. 7(a), above.

(ii) Please see the response to Staff's First Set of Interrogatories, No. 7., No. 7(a), above.

d. Please see the response to Staff's First Set of Interrogatories, No. 7., No. 7(a), above.

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INTERROGATORY NO. 8
BATES PAGES: 14-16a
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8. Please refer to Bates-stamped page 1140 for the questions below:

a. Please describe in detail how labor rates were determined for deriving the estimate of the dollar amounts associated with each dismantlement task and/or effort.

b. Please explain how TECO determined the scrap metal values for the instant Decommissioning Study, and provide a copy of supporting documentation and analysis.

c. Apart from the scrap metal values, what other cost components, if any, are included in the column titled "Salvage" reflected on this page?

d. Please clarify whether the "Total" column, net of salvage, reflected on this page includes scrap metal values and if not, please explain.

e. Please explain how TECO determined the environmental & disposal expenses for the instant Decommissioning Study, and provide a copy of supporting documentation and analysis.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

a. 2020 RS Means Labor Rates for a B-8 crew, non-union was the basis of the labor rates utilized in the 1898 & Co. Dismantlement Study.

For Big Bend Units 1, 2 and 3, S&L conducted a labor study to develop craft labor rates for Tampa Electric. The labor study base rates used in the 2018 cost estimates have been escalated for 2020. Costs have been added to cover social security, workmen's compensation, federal and state unemployment insurance. The resulting burdened craft rates were then used to develop typical crew rates applicable to the task being performed. No adjustments to labor rates or productivity have been accounted for in the estimate for long term COVID-19 impacts.

Demolition Estimates: Labor Work Schedule and Incentives – Assumed 5 days x 8-hour day work week.

Pre and Post Demolition Estimates: Labor Work Schedule and Incentives – Assumed 5 days x 10-hour day work week.

Per diem is not required.

For addition estimates only, a regional labor productivity multiplier of 1.1 is included based on Compass International Global Construction Yearbook. The use of this productivity factor is an approach to compare construction productivity in various locations in the USA to a known basis or benchmark of 1.00 for Texas, Gulf Coast productivity. The productivity multiplier does not include weather related delays.

b. The basis of the scrap metal values utilized in the 1898 & Co. Dismantlement Study is outlined on BS page 1235 of the Depreciation and Dismantlement study.

For Big Bend Units 1, 2 and 3, scrap metal values are based on published rates from American Recycler News, Inc., Scrap Metals Market Watch for Zone 5. Tables for June and October 2020 have been provided. Please see attached.

c. There are not any other costs components included in the salvage column.

d. The Total Column is net of Salvage (scrap metal credit).

e. Environmental costs for the Surviving Assets were provided by 1898 & Co. Those costs were developed in a bottom-up cost estimate, with assumptions outlined on BS pages 1232 – 1237. The results of those bottom-up cost estimates, including environmental costs, are presented on BS pages 1240 – 1256.

For Big Bend Units 1, 2 and 3, Tampa Electric's accounting has arranged the S&L cost estimates values to allocate the costs into the four categories shown on BS page 1140. These three categories, 'Labor', 'Materials & Equipment' and 'Environmental & Disposal' equal the total dismantlement cost without scrap value and then the scrap value credit is added to the 'Salvage' column for the net cost to dismantle. Please see response to Staff's First Set of Interrogatories No. 10(b), below, for how all the cost estimates are traced to BS page 1140.

AR Scrap Metals MarketWatch

Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
#1 Bushelings	per gross ton	$261.00	245.00	251.00	262.00	273.00
#1 Bundles	per gross ton	254.00	233.00	235.00	252.00	270.00
Plate and Structural	per gross ton	248.00	223.00	232.00	241.00	269.00
#1 & 2 Mixed Steel	per gross ton	181.00	215.00	221.00	223.00	248.00
Shredder Bundles (tin)	per gross ton	121.00	124.00	150.00	128.00	129.00
Crushed Auto Bodies	per gross ton	121.00	124.00	150.00	128.00	129.00
Steel Turnings	per gross ton	78.00	82.00	86.00	131.00	140.00
#1 Copper	per pound	2.01	2.02	2.16	2.15	2.21
#2 Copper	per pound	1.89	1.90	2.07	2.05	2.08
Aluminum Cans	per pound	.47	.48	.47	.46	.45
Auto Radiators	per pound	1.28	1.19	1.29	1.36	1.35
Aluminum Core Radiators	per pound	.47	.45	.39	.47	.51
Heater Cores	per pound	.95	.94	.96	.98	1.09
Stainless Steel	per pound	.47	.44	.42	.44	.47

All prices are expressed in USD. Printed as a reader service only.

DISCLAIMER: American Recycler (AR) collects pricing and other information from experienced buyers, sellers and facilitators of scrap metal transactions throughout the industry. All figures are believed to be reliable and represent approximate pricing based on information obtained by AR (if applicable) prior to publication. Factors such as grades, quality, volumes and other considerations will invariably affect actual transaction prices. Figures shown may not be consistent with pricing for commodities associated with a futures market. While the objective is to provide credible information, there is always a chance for human error or unforeseen circumstances leading to error or omission. As such, AR is not responsible for the accuracy or completeness of the information provided, or for outcomes arising from use of this information. American Recycler disclaims any liability to any person or entity for loss or damage resulting from errors or omissions, including those resulting from negligence of AR, its employees, agents or other representatives.

Published in the June 2020 Edition of American Recycler News

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AR Scrap Metals MarketWatch

Commodity		Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
#1 Bushelings	per gross ton	$264.00	256.00	252.00	263.00	289.00
#1 Bundles	per gross ton	253.00	235.00	231.00	255.00	262.00
Plate and Structural	per gross ton	254.00	228.00	225.00	251.00	275.00
#1 & 2 Mixed Steel	per gross ton	176.00	220.00	219.00	248.00	265.00
Shredder Bundles (tin)	per gross ton	121.00	125.00	165.00	140.00	135.00
Crushed Auto Bodies	per gross ton	121.00	125.00	165.00	140.00	135.00
Steel Turnings	per gross ton	81.00	88.00	83.00	128.00	149.00
#1 Copper	per pound	2.77	2.45	2.69	3.02	2.76
#2 Copper	per pound	2.64	2.34	2.52	2.84	2.56
Aluminum Cans	per pound	.46	.49	.47	.50	.50
Auto Radiators	per pound	1.32	1.20	1.53	1.49	1.48
Aluminum Core Radiators	per pound	.49	.50	.40	.45	.53
Heater Cores	per pound	1.01	1.00	1.07	1.02	1.10
Stainless Steel	per pound	.47	.47	.51	.52	.51

All prices are expressed in USD. Printed as a reader service only.

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Published in the October 2020 Edition of American Recycler News

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BATES PAGE: 17
FILED: JUNE 4, 2021

9. Please refer to Bates-stamped page 1144 for the questions below:

a. Please explain why TECO's proposed dismantlement reserve transfers are separated into the cost categories of "Labor," "Materials & Equipment," "Environmental & Disposal," and "Salvage."

b. Please explain how TECO determined what dismantlement reserve to transfer from one cost category to another.

c. Please explain how TECO determined what dismantlement reserve to transfer from one plant unit to another, identifying the plant unit in each transfer with explanation.

A. a. The dismantlement study model has been maintained historically for the component columns of the accrual; expenditures posted against the reserves are mapped to the component columns. This is necessary to itemize the units reserves by the component columns. The cost estimates are also itemized by the component columns. Then different escalation factors are applied to each of the component column cost estimates. The model compares the escalated components to the reserve components to create an accrual per component.

b. The proposed reserve transfers stay within the component column cost category.

c. Gannon Power Station component columns were transferred to Bayside Common at 50 percent, Bayside Unit 1 at 25 percent and Bayside Unit 2 at 25 percent. This is because some of the Gannon assets were repowered into Bayside and the rest of Gannon's legacy assets have been dismantled, leaving a reserve surplus to be transferred. City of Tampa and Phillips Station assets were not dismantled but were sold after the 2011 filing. Since these units were approved to have a 2012 accrual, the 2020 filing is retiring the accrual requirement and the reserve surplus is being transferred to Big Bend Unit 1, Big Bend Unit 2 and Big Bend Unit 3 evenly at 33.3 percent. Regarding the reserve transfers from Polk Unit #2 and Polk Unit #3 to Polk 2-5 (4xGT - HRSG -ST), this is due to the line-item mapping format changes mentioned in the company's response to Staff's First Set of Interrogatories No. 10(a), below.

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BATES PAGES: 18-21
FILED: JUNE 4, 2021

10. Please refer to Bates-stamped pages 1149-1150 for the questions below:

a. Referring to Bates-stamped page 1149, please explain how the accrual amount presented on this page were derived.

b. It appears that "2020 Generation Dismantling Master File - Filed.xlsx" does not include worksheets/tabs corresponding to Bates-stamped pages 1149 and 1150 of the 2020 Dismantlement Study. Please provide these worksheets/tabs with formulas and links intact.

c. For Gannon Power Station dismantlement, please provide a chart to show: the respective commencement and completion date, the entity who performed the dismantlement, the total cost incurred, the reserve level at the retirement date and the dismantlement completion date, respectively.

A. The BS pages listed below are from the Depreciation and Dismantlement Study, filed December 30, 2020:

a. Please see the company's response to Staff's First Set of Interrogatories No. 10(b). Additionally, please see tab titled "2012 FPSC Accruals". This tab shows the line-item format mapping changes from the 2011 dismantlement approval order to how the 2020 dismantlement cost estimates were provided by the vendors. BS Page 1149 then references the new line-item mapping on the "2012 FPSC Accruals" multiplied by the nine for the number of years from 2012 to 2020.

b. This has been corrected and provided for in the attached revised Excel file, "(BS 21) 2020 Dismantling Study - Generation Master File - v2.xlsx".

c. Please see the table below for the Gannon Power Station dismantlement.

Gannon Dismantlement

Commencement	2003
Completion	2017
Total Cost	$ 65,418,846
Impact to Reserve	$ 52,838,536
Reserve Balance	$ 58,640,177

Reserve Balance at 12/31/2020	$ 5,801,641

Vendors

Moretrench
Southeastern Mechanical
THE INDUSTRIAL COMPANY
TRC America
ECOR Solutions Inc.- Stack removal
Bay Area Wrecking
ENERGY SERVICE INSULATION INC
DH GRIFFIN WRECKING CO INC
WASHINGTON GROUP INT'L
VOLKERT INC
ANIXTER INC
APC WORKFORCE SOLUTIONS LLC
AVALOTIS PAINTING CO INC
BAY PORT VALVE & FITTING INC
BINGHAM ONSITE SEWERS INC
BRACE INTEGRATED SERVICES INC
CCC GROUP INC.
CE POWER SOLUTIONS OF FLORIDA
CLARK ENVIRONMENTAL, INC.
EATON CORPORATION
EE&G ENVIRONMENTAL SERVICES LLC
ELECTRIC SUPPLY OF TAMPA,INC.
ELECTRO DESIGN ENGINEERING INC
ENERGY SERVICE INSULATION INC
ENVIRONMENTAL CONSULTING
ESI GROUP INC
F & M MAFCO INC
FCC ENVIRONMENTAL
G4S SECURE INTEGRATION LLC
GAFFIN INDUSTRIAL SERVICES
GEORGE F. YOUNG, INC.
GEOSYNTEC CONSULTANTS
HATCH ASSOCIATES CONSULTANTS INC
HD SUPPLY
HDPE INC

HIGH DENSITY POLY ENTERPRISES INC
INDOFF INCORPORATED
INTERCITY LUMBER CO
KATPIL ENTERPRISES II LLC
KIMMINS CONTRACTING CORP
K-TECH SOLUTIONS LLC
LIBERTY WASTE & RECYCLING
LVI ENVIRONMENTAL SERVICES,
MARKAIR INC
MORETRENCH INDUSTRIAL INC
MORROW STEEL
NCM DEMOLITION AND REMEDIATION LP
PEPE & ASSOCIATES INC
PETROTECH SOUTHEAST, INC.
PORTER PAINT CO
PREFERRED MAINT & CONSTRUCTION INC
PREMIER CORROSION PROTECTION
PRO SERV INDUSTRIAL
PROGRESSIVE WASTE SOLUTIONS OF FL
RESOLITE FRP COMPOSITES
SARGENT & LUNDY ENGINEERS
SERVICE WORKS OF TAMPA INC
SOUTH-CO BUILDING CONTRACTORS, INC.
SOUTHEASTERN CONSTR & MAINT
STANTEC CONSULTING SERVICES,
STRUCTURAL PRESERVATION
TAMPA BAY STEEL CORP.
TANK TEK INC
TEAM TECHNICAL SERVICES, INC.
TRANSDOR CORP.
TRUE LINE CORING & CUTTING
URS CORPORATION SOUTHERN
VALLEN DISTRIBUTION INC
VEOLIA ES TECHNICAL
WASTE MANAGEMENT
WEIMER MECHANICAL SERVICES
ZACHRY INDUSTRIAL INC

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11. Please refer to "2020 Generation Dismantling Master File - Filed.xlsx," tab titled "Cost Estimates in 2020," for the questions below:

a. Please explain how the dollar amounts presented in the embedded chart titled of "Cost Estimate Summary for BB Units 1 - 3," shown on (73:H) to (109:O) of the tab, were derived.

b. What are the respective projected commencement and completion dates used in deriving the cost estimate associated with BB Units 1, BB SCR 1, BB Unit 2, BB SCR2, and BB FGD 1-2 dismantlement discussed in Question No. 12(a)?

c. Please define the "Direct Cost," "General Conditions," and "Project Indirect Costs" shown within the aforementioned chart, and explain the difference among these three cost categories.

d. Please explain how each of the cost categories discussed in Question No. 15(c) is related to the cost categories "Labor," "Materials & Equipment," "Environmental & Disposal" and "Salvage" that are used in the 2020 Dismantlement Study.

A. a. Please see the company's response to Staff's First Set of Interrogatories No., No. 10(b), above. The revised excel file now includes the detail cost estimate sheets that support each power stations units. The 1898 & Co. cost estimate summary sheets fit the design of the model's four columns for Labor, Material & Equipment, Environmental & Disposal and Salvage (Scrap Metal). The cost estimate summary sheets provided by S&L for Big Bend Units 1-3 are not in alignment with the four columns and some of the underlying details are mapped accordingly to derive the cost estimates for the columns Labor, Materials & Equipment, Environmental & Disposal and Salvage (scrap metal only). Big Bend Units 1, 2 and 3 each have their own tab that describes how the details were used to derive the four columns. The details for Material Costs and Equip Amount map to the column Material & Equipment, the details for Asbestos Removal and Civil Work map to the column Environmental & Disposal, the summary for scrap value maps to the column Salvage and the rest falls under the column Labor.

b. A level 1 schedule was developed for Big Bend Units 1 and 2. The schedule is attached.

c. DIRECT COSTS are the costs of completing work that is directly attributable to its performance and are necessary for its completion. In construction: it is the cost of installed equipment, material, labor, and supervision directly or immediately involved in the physical construction of the permanent facility. Examples of direct costs include material, labor, subcontracts, construction Equipment, and process equipment.

GENERAL CONDITIONS are direct project overhead costs and include costs incurred at the jobsite for supervision and administration of the overall contract but that are not ascribable to any onsite physical construction activity. Examples of general conditions are per diem, overtime, site services, temporary facilities, mobilization, small tools, general liability insurance, sales tax, and contractor's general and administrative cost.

PROJECT INDIRECTS are costs not directly attributable to the completion of an activity. Indirect costs are typically allocated or spread across all activities on a predetermined basis. In construction, all costs which do not become a final part of the installation, but which are required for the orderly completion of the installation. Examples of project indirects are engineering services, construction management support, start-up and commissioning, start-up parts, excess liability insurance, and owner's cost.

d. Please see the company's response to Staff's First Set of Interrogatories, No., No. 11 (a), above.

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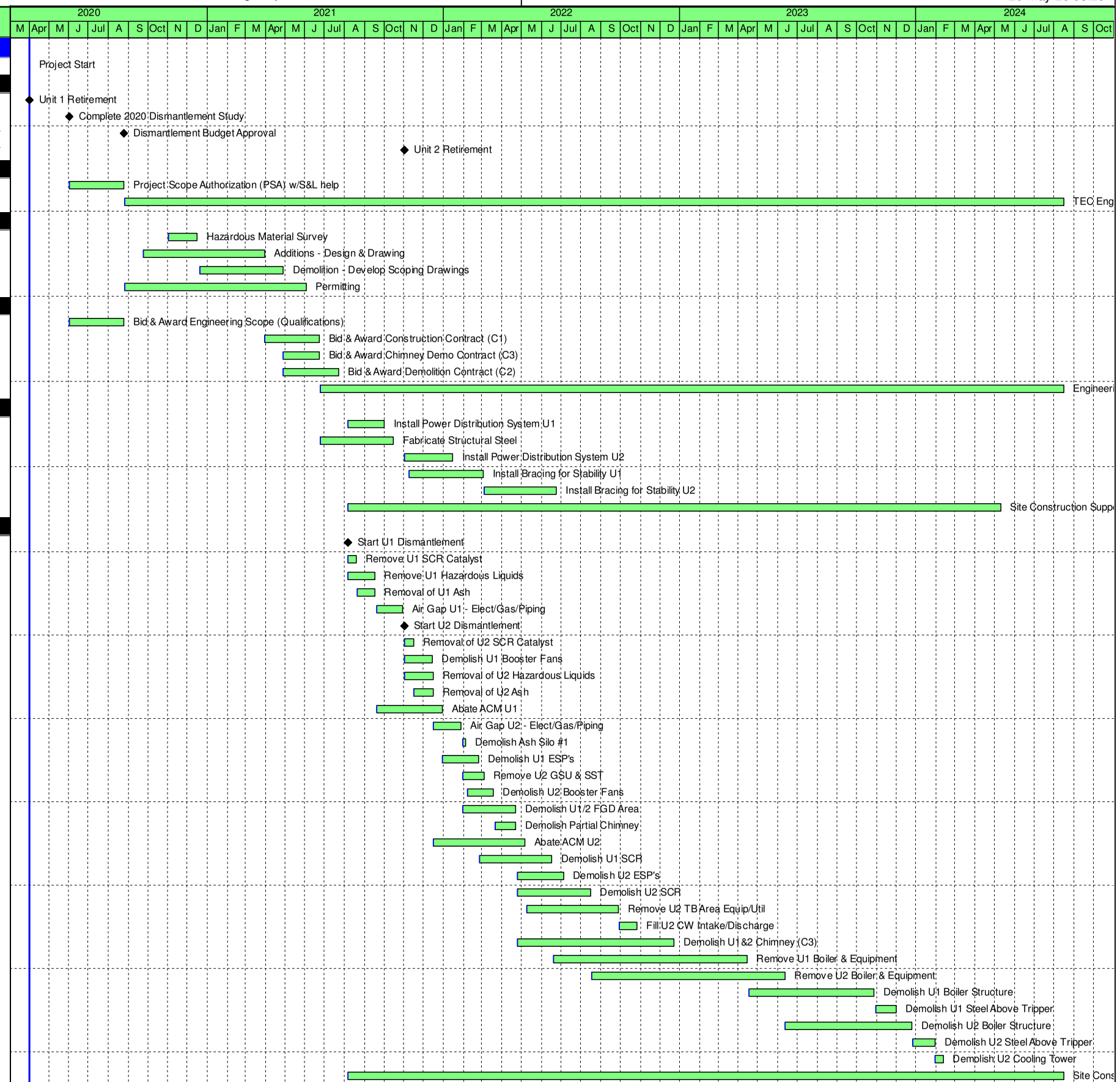
.	Activity ID	Activity Name	Rem Dur	Start	Finish
	BB1-3 Dismantling Sequence		1123	01-Apr-20	16-Aug-24
	A1000	Project Start	0	01-Apr-20	01-Apr-20
	Milestones		404	01-Apr-20	01-Nov-21
	A1020	Unit 1 Retirement	0		01-Apr-20
	A1030	Complete 2020 Dismantlement Study	0		01-Jun-20*
	A1040	Dismantlement Budget Approval	0		25-Aug-20*
	A1050	Unit 2 Retirement	0		01-Nov-21*
	TEC Activities		1080	02-Jun-20	16-Aug-24
	A1070	Project Scope Authorization (PSA) w/S&L help	60	02-Jun-20	25-Aug-20
	A1080	TEC Engineering Staff	1020	26-Aug-20	16-Aug-24
	Engineering		195	26-Aug-20	02-Jun-21
	A1120	Hazardous Material Survey	30	02-Nov-20*	15-Dec-20
	A1110	Additions - Design & Drawing	130	24-Sep-20	30-Mar-21
	A1130	Demolition - Develop Scoping Drawings	90	21-Dec-20	27-Apr-21
	A1100	Permitting	195	26-Aug-20	02-Jun-21
	Procurement		1080	02-Jun-20	16-Aug-24
	A1150	Bid & Award Engineering Scope (Qualifications)	60	02-Jun-20	25-Aug-20
	A1160	Bid & Award Construction Contract (C1)	60	31-Mar-21	23-Jun-21
	A1180	Bid & Award Chimney Demo Contract (C3)	40	28-Apr-21	23-Jun-21
	A1170	Bid & Award Demolition Contract (C2)	60	28-Apr-21	22-Jul-21
	A1190	Engineering Home Office Support	810	24-Jun-21	16-Aug-24
	New Construction (Additions) (C1)		740	24-Jun-21	10-May-24
	A1270	Install Power Distribution System U1	40	06-Aug-21	01-Oct-21
	A1220	Fabricate Structural Steel	80	24-Jun-21	15-Oct-21
	A1300	Install Power Distribution System U2	50	02-Nov-21	14-Jan-22
	A1230	Install Bracing for Stability U1	80	08-Nov-21	03-Mar-22
	A1290	Install Bracing for Stability U2	80	04-Mar-22	24-Jun-22
	A1210	Site Construction Support (Additions)	710	06-Aug-21	10-May-24
	Dismantling (C2 unless noted)		780	06-Aug-21	16-Aug-24
	A1370	Start U1 Dismantlement	0	06-Aug-21	
	A1390	Remove U1 SCR Catalyst	10	06-Aug-21	19-Aug-21
	A1380	Remove U1 Hazardous Liquids	30	06-Aug-21	17-Sep-21
	A1400	Removal of U1 Ash	20	20-Aug-21	17-Sep-21
	A1410	Air Gap U1 - Elect/Gas/Piping	30	20-Sep-21	29-Oct-21
	A1420	Start U2 Dismantlement	0	02-Nov-21	
	A1440	Removal of U2 SCR Catalyst	10	02-Nov-21	15-Nov-21
	A1510	Demolish U1 Booster Fans	30	01-Nov-21	14-Dec-21
	A1430	Removal of U2 Hazardous Liquids	30	02-Nov-21	15-Dec-21
	A1450	Removal of U2 Ash	20	16-Nov-21	15-Dec-21
	A1460	Abate ACM U1	70	20-Sep-21	29-Dec-21
	A1480	Air Gap U2 - Elect/Gas/Piping	30	16-Dec-21	28-Jan-22
	A1550	Demolish Ash Silo #1	5	31-Jan-22	04-Feb-22
	A1520	Demolish U1 ESP's	40	30-Dec-21	24-Feb-22
	A1530	Remove U2 GSU & SST	25	31-Jan-22	04-Mar-22
	A1560	Demolish U2 Booster Fans	30	07-Feb-22	18-Mar-22
	A1540	Demolish U1/2 FGD Area	60	31-Jan-22	22-Apr-22
	A1570	Demolish Partial Chimney	25	21-Mar-22	22-Apr-22
	A1470	Abate ACM U2	100	16-Dec-21	06-May-22
	A1590	Demolish U1 SCR	80	25-Feb-22	17-Jun-22
	A1580	Demolish U2 ESP's	50	25-Apr-22	05-Jul-22
	A1600	Demolish U2 SCR	80	25-Apr-22	16-Aug-22
	A1490	Remove U2 TB Area Equip/Util	100	09-May-22	28-Sep-22
	A1500	Fill U2 CW Intake/Discharge	20	29-Sep-22	26-Oct-22
	A1640	Demolish U1&2 Chimney (C3)	170	25-Apr-22	23-Dec-22
	A1610	Remove U1 Boiler & Equipment	210	20-Jun-22	14-Apr-23
	A1650	Remove U2 Boiler & Equipment	210	17-Aug-22	12-Jun-23
	A1620	Demolish U1 Boiler Structure	140	17-Apr-23	27-Oct-23
	A1630	Demolish U1 Steel Above Tripper	25	30-Oct-23	01-Dec-23
	A1660	Demolish U2 Boiler Structure	140	13-Jun-23	25-Dec-23
	A1670	Demolish U2 Steel Above Tripper	25	26-Dec-23	29-Jan-24
	A1680	Demolish U2 Cooling Tower	10	30-Jan-24	12-Feb-24
	A1360	Site Construction Support (Demolition)	780	06-Aug-21	16-Aug-24

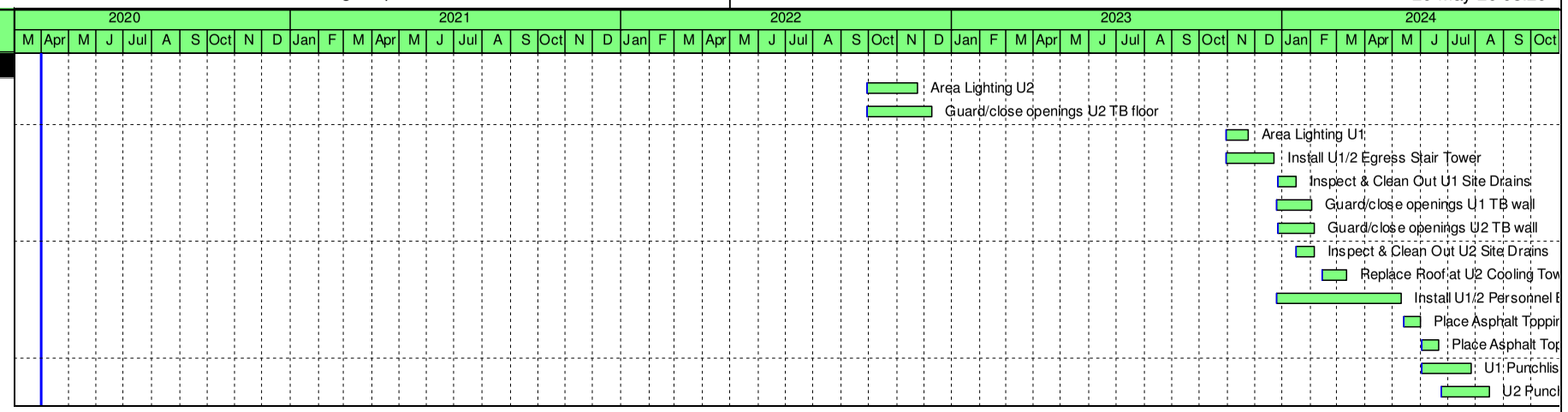


Sargent & Lundy

BB1-3 Dismantling Sequence

29-May-20 08:29

.	Activity ID	Activity Name	Rem Dur	Start	Finish
	Post Demolition Activities		489	29-Sep-22	16-Aug-24
	A1310	Area Lighting U2	40	29-Sep-22	23-Nov-22
	A1330	Guard/close openings U2 TB floor	50	29-Sep-22	09-Dec-22
	A1280	Area Lighting U1	20	30-Oct-23	24-Nov-23
	A1240	Install U1/2 Egress Stair Tower	40	30-Oct-23	22-Dec-23
	A1700	Inspect & Clean Out U1 Site Drains	15	26-Dec-23	15-Jan-24
	A1250	Guard/close openings U1 TB wall	30	25-Dec-23	02-Feb-24
	A1340	Guard/close openings U2 TB wall	30	26-Dec-23	05-Feb-24
	A1710	Inspect & Clean Out U2 Site Drains	15	16-Jan-24	05-Feb-24
	A1320	Replace Roof at U2 Cooling Tower	20	13-Feb-24	11-Mar-24
	A1260	Install U1/2 Personnel Elevator	100	25-Dec-23	10-May-24
	A1720	Place Asphalt Topping U1 Drainage	15	13-May-24	31-May-24
	A1730	Place Asphalt Topping U2 Drainage	15	03-Jun-24	21-Jun-24
	A1740	U1 Punchlist	40	03-Jun-24	26-Jul-24
	A1750	U2 Punchlist	40	24-Jun-24	16-Aug-24



Sargent & Lundy

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TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S FIRST SET OF INTERROGATORIES
INTERROGATORY NO. 12
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12. For the 2020 Dismantlement Study, please provide a summary table to show:

a. Each plant addition investment from which the increase in dismantlement accruals has resulted when compared with TECO's last Dismantlement Study, and in total.

b. The corresponding increased accrual amount associated with each plant addition, and in total.

c. Each plant's retirement amount from which the decrease in dismantlement accruals has resulted when compared with TECO's last Dismantlement Study, and in total,

d. The corresponding decreased accrual amount associated with each plant retirement, and in total.

A. a. Please refer to Excel file, "(BS 27) Comparison 2012 to 2022 for Plant and Accruals.xlsx"

b. Please see response to Staff's First Set of Interrogatories, No. 12 (a), above.

c. Please see response to Staff's First Set of Interrogatories, No. 12 (a), above.

d. Please see response to Staff's First Set of Interrogatories, No. 12 (a), above.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
STAFF'S FIRST SET OF INTERROGATORIES
INTERROGATORY NO. 13
BATES PAGES:28-40
FILED: JUNE 4, 2021

13. Through reviewing TECO's instant and last studies, significant differences in dismantlement cost estimates are noticed as shown in Table 1 below. Please provide a detailed summary to explain the cause(s) of these changes.

Table 1: Comparison of TECO's Generation Plant Dismantlement Cost Estimates (Contingency @ 15%)

Account	2011 Study	2020 Study	Change ($)	Change (%)
Bayside Power Station	$7,506,000	$14,575,850	$7,069,850	94.2%
Big Bend Power Station	$58,809,000	$80,772,550	$21,963,550	37.3%
Polk Power Station	$37,600	$15,229,450	$15,191,850	40403.9%
City of Tampa Station	$204,050			
Gannon Power Station	$18,596,550			
Phillips Station	$2,082,400			
Surviving Fossil Plant Subtotal	$87,235,600	$110,577,850	$23,342,250	26.8%
Surviving Solar Plants		$81,786,195	$81,786,195	
Retired Fossil Plant		$119,390,795		
Total	$87,235,600	$311,754,840	$224,519,240	257.4%

A. Regarding the City of Tampa Station and Phillips Station, these units were sold after the 2011 study filing and were not dismantled. Regarding the Gannon Power Station, which was partially repowered into the Bayside Power Station, dismantlement is complete. No cost estimates nor reserve accruals are necessary in the 2020 study filing. Any remaining dismantlement reserves for those stations are being transferred in the 2020 study filing. Regarding the various Solar Plants, these units were placed in-service after the 2011 study filing and the 2020 study filing is the first time an accrual would be established.

For the other plants, please see the attached memorandum from 1898 & Co. dated June 26, 2020 with the subject, "Cost Comparison for 2011 and 2020 Decommissioning Studies."

The following are the key factors that resulted in changes to the portions of the dismantlement costs prepared by 1898 & Co.

a. Grading and seeding costs for site restoration were excluded from the 2011 dismantlement study; but have been included in the current study.
b. Removal of concrete beneath tanks was excluded from the 2011 dismantlement study; but has been included in the current study.
c. The 2011 study did not include costs for removing and disposing of pond liners; however, they have been included in the 2020 study.

d. Scrap values have decreased from the time of the 2011 study to the time of the 2020 study. Steel decreased by approximately 32%, copper by approximately 24%, and Inconel by approximately 65%. This decrease in scrap value accounts for an increase of nearly $9 million in the costs of the surviving fossil plants.

e. Labor rates and equipment rental costs increased on average by approximately 13%.

f. Since the time of 2011 study, the company has retired a number of the plants previously considered and has added a number of solar projects. This attributes to a change in the overall portions of the dismantlement cost estimates prepared by 1898 & Co.

g. In addition, changes to the scope of demolition due to changes at the plants, resulted in further changes to the dismantlement cost estimates as discussed below.

h. Bayside

   i. Asbestos abatement has occurred since the 2011 study, which decreased costs by approximately $1.3 million

   ii. Common facility costs increased by approximately $2.1 million due to changes in pond closure methodology and additional removal of concrete beneath tanks.

   iii. Grading and seeding costs resulted in an increase of approximately $1.957 million.

   iv. The remaining difference is due to higher labor rates and lower scrap values as discussed above.

i. Big Bend

   i. Estimates for the Retired Assets were prepared by S&L in the current study

   ii. For the Surviving Assets, the following differences apply to the 1898 & Co. prepared estimates

iii. Since the time of the prior study, changes have been made to the plants that have impacted the scope of demolition activities. These changes resulted in an overall increase of approximately $17.8 million.

j. Costs were not included for the following items in the 2011 Study, but are included in the 2020 Study:

i. The northern gypsum storage area (commonly known as the East 40),

ii. The dredge area to the west of the Suncoast Youth Center,

iii. The helicopter pad, comprised of slag, located to the east of the slag dewatering pond, and

iv. A small pond to the southwest of the coalfield.

v. Gas turbines 5 and 6 were added to the site since the time of the 2011 study

vi. Additional coal pile remediation costs were included for a deeper depth of removal below the coal pile

k. The following items were included in the 2011 Study, but have not been included in the 2020 Study for the reasons listed:

i. A bottom ash pond has been filled by the modernization project,

ii. The closing of the three fly ash disposal ponds are set to be completed by 2021,

iii. The residuals of the Slag Dewatering Pond were to be removed as part of the 2020 project,

iv. The southern gypsum storage area was closed and the reclaim completed in 2019,

v. The area of spray fields to be remediated decreased from approximately 45 acres in the 2011 Study to 12 acres in the 2020 Study, and

vi. The area of the settling ponds to be remediated decreased from approximately 27 acres in the 2011 Study to 16 acres in the 2020 Study

vii. Grading and seeding costs resulted in an increase of approximately $5.19 million.

viii. The remaining difference is due to higher labor rates and lower scrap values as discussed above.

l. Polk

i. Since the time of the 2011 Study, the combustion turbine units were converted to combined cycle configuration, resulting in significant additions of equipment. The 2011 Study did not include costs for removal of the steam turbine, SCR, cooling towers and basin, or the stacks, for example. This resulted in an increase of approximately $4 million to account for this new equipment.

ii. Costs for common facilities have increased approximately $1.3 million in the 2020 Study due to the addition of costs for the cooling water intakes and circulating water piping and roads, which were not included in the 2011 study.

iii. Costs for pond closure have increased by approximately $300,000 due to updates to the pond closure methodology.

iv. Grading and seeding costs resulted in an increase of approximately $4.36 million.

v. The remaining difference is due to higher labor rates and lower scrap values as discussed above.

Memorandum

Date: June 26, 2020

To: Joe Legner, TECO

From: Jeff Kopp, 1898 and Co.

Subject: Cost Comparison for 2011 and 2020 Decommissioning Studies

BACKGROUND

1898 & Co. part of Burns & McDonnell Engineering Company, Inc. of Kansas City, Missouri, was retained by Tampa Electric Company ("TECO") to conduct a Decommissioning Cost Study ("Study") for power generation assets located in Florida. The assets include natural gas-fired, coal-fired, and solar generating facilities. The purpose of the Study was to review the facilities and to make a recommendation to TECO regarding the total cost to decommission the facilities at the end of their useful lives. A similar decommissioning study was prepared by Burns & McDonnell in 2011. This memo serves to provide an explanation for the difference in costs between the 2011 Study and the 2020 Study.

UPDATES AFFECTING ALL PLANTS FROM 2011 TO 2020

The following updates from 2011 to 2020 are applied to all plants.

Inflation

Using the Consumer Price Index Data provided by the US department of Labor, Bureau of Labor Statistics, all costs provided in the 2011 Study were adjusted to 2020 dollars for purposes of comparing costs in this memo. These costs are provided in the following tables.

Environmental

Material changes have been made to the plants since the 2011 Study. For example, new ponds and material storage areas have been built and prior areas have been reclaimed. These changes have been accounted for in the 2020 Study, as discussed in the following sections.

Scrap Pricing

1898 & Co. estimated weights for salvageable materials of power plant assets based on nameplate data and in-house historical data available to 1898 & Co. The scrap pricing for both studies was based on costs reported by American Metals Market. The following table includes market scrap values used in each study, showing how the scrap market has changed from the 2011 Study to the 2020 Study.

Table 1: Net Project Cost Summary

Site	2011 Study	2020 Study
Steel	$265/gross ton	$232/gross ton
Copper	$2.50/lb	$1.91/lb
Inconel	$6.50/lb	$2.18/lb

Indirect Costs

In the 2011 Study, indirect costs were excluded from Burns & McDonnell's scope of work. For the 2020 Study, indirects were included as 5 percent of the direct costs.

Memorandum *(cont'd)*

Contingency

Contingency was excluded from the 2011 Study as it was to be determined by TECO. The 2020 Study included a contingency of 20 percent.

Scope Changes

Additional changes made to the Plants since the time of the 2011 Study have been accounted for in the 2020 Study. These changes are discussed in more detail below. In addition to the changes to the Facilities, the list of sites included in the Study have changed. J.H Phillips and City of Tampa Partnership Station sites have been retired since the 2011 Study and 12 solar sites have been added. These sites were excluded in the comparison of the total changes in cost since the 2011 Study.

SUMMARY OF COST COMPARISONS

The following section outlines the total costs for the 2011 Study and the 2020 Study. The estimated total for the 2011 Study in 2020 dollars is $61,442,000 while the estimated total of the 2020 Study includes an increase of $183,091,900 total or $90,596,000 excluding the sites added or removed from the scope.

Table 2: Net Project Cost Summary

Site	2011 Study (2011$)	2011 Study (2020$)	2020 Study (2020$)	Difference (2020$)
Bayside	$4,674,000	$5,363,000	$16,846,000	$11,483,000
Big Bend	$48,480,000	$55,622,000	$115,687,000	$60,065,000
Polk	($1,472,000)	($1,690,000)	$17,344,000	$19,034,000
J.H. Phillips	$1,702,000	$1,953,000	$ -	($1,953,000)
City of Tampa Partnership Station	$170,000	$195,000	$ -	($195,000)

Memorandum *(cont'd)*

Table 3: Solar Project Cost Summary

Site	Net Project Cost ($2020)	$/kW-AC
Balm Solar	$ 19,194,400	$ 206
Big Bend Solar	$ 3,989,600	$ 184
Bonnie Mine Solar	$ 5,815,400	$ 159
Grange Hall Solar	$ 8,609,100	$ 145
Lake Hancock Solar	$ 6,740,800	$ 140
Legoland Solar	$ 146,700	$ 94
Lithia Solar	$ 10,511,600	$ 144
Little Manatee River	$ 11,035,000	$ 152
Payne Creek Solar	$ 10,425,300	$ 151
Peace Creek Solar	$ 7,470,700	$ 137
Tampa Intl Solar	$ 647,600	$ 338
Wimauma Solar	$ 11,616,200	$ 153

COST ESTIMATE COMPARISON

The following sections outline updates in the 2020 Study that create differences between the estimates from 2011 and 2020 specific to each plant.

Bayside

The overall cost to decommission Bayside increased from the 2011 Study. Table 4Table 4 presents the breakout of pricing by major category for the 2011 Study and 2020 Study in 2020 dollars.

Table 4: Bayside Cost Estimates Summary

Category	2011 Study (2020$)	2020 Study (2020$)
Power Block Structures & Equipment	$ 16,213,000	$ 15,469,000
Asbestos	$ 1,287,000	$ -
Common Facilities	$ 4,161,000	$ 5,273,000
Grading & Seeding	$ -	$ 1,957,000
Indirects	$ -	$ 1,135,000
Contingency	$ -	$ 4,540,000
Scrap	$ (16,299,000)	$ (11,528,000)
Total Net Cost	$ 5,362,000	$ 16,846,000

The following reasons are the major contributors to the difference in pricing:

1. Since the time of the 2011 Study, asbestos abatement has occurred. Asbestos abatement at Bayside occurred as part of the Gannon decommissioning project and

the turbine building transite paneling was replaced with steel. As such, costs for abatement were excluded from the 2020 Study, accounting for a decrease of $1,287,000.

2. Costs for common facilities have increased by $1,112,000 due to an increase in pond costs and additional concrete removal costs. For example, the removal of concrete underneath tanks was not included in the 2011 Study but has been accounted for in the 2020 Study. Additionally, the 2020 Study includes costs for backfilling the ponds, whereas the 2011 Study assumed ponds would be filled with crushed concrete and berm material.
3. The 2011 Study did not include costs for grading and seeding the site area. These costs were included in the 2020 Study, which accounts for an increase of $1,957,000.
4. Costs for indirects and contingency were not included in the 2011 Study. This difference accounts for approximately $5,675,000 increase in costs.
5. Additionally, market changes with scrap pricing and labor rates, contribute to the overall increase of $11,484,000.

Big Bend

The overall cost to decommission Big Bend increased from the 2011 Study. Table 5Table 4 presents the breakout of pricing by major category for the 2011 Study and 2020 Study in 2020 dollars.

Table 5: Big Bend Cost Estimates Summary

Category	2011 Study (2020$)	2020 Study
Power Block Structures & Equipment	$ 20,773,000	$ 39,898,000
Asbestos	$ 3,011,000	$ 3,138,000
Coal and Limestone Handling	$ 8,417,000	$ 10,243,000
Common Facilities	$ 46,803,000	$ 46,260,000
Grading & Seeding	$ -	$ 6,409,000
Indirects	$ -	$ 5,297,000
Contingency	$ -	$ 21,190,000
Scrap	$ (23,382,000)	$ (16,748,000)
Total Net Cost	$ 55,622,000	$ 115,687,000

The following reasons are the major contributors to the difference in pricing:

1. Costs for Power Block Structures and Equipment have increased approximately $19,125,000 in the 2020 Study. Part of this increase is a result of the addition of the Gas Turbine Units 5 and 6, which were not included in the 2011 Study and increased costs by approximately $7 million. Portions of the 2011 Study were performed by a

demolition contractor, but the entire 2020 Study was performed by 1898 & Co. These changes to our study methodology resulted in cost increases, which we believe are due to improved quantity estimates.

2. Costs for environmental remediation of the following items were included in the 2011 Study, but have not been included in the 2020 Study for the reasons listed:
    - A bottom ash pond has been filled by the modernization project,
    - The closing of the three fly ash disposal ponds are set to be completed by 2021,
    - The residuals of the Slag Dewatering Pond will be removed as part of the 2020 project,
    - The southern gypsum storage area was closed and the reclaim completed in 2019,
    - The area of spray fields to be remediated decreased from approximately 45 acres in the 2011 Study to 12 acres in the 2020 Study, and
    - The area of the settling ponds to be remediated decreased from approximately 27 acres in the 2011 Study to 16 acres in the 2020 Study.
3. Since the 2011 Study the following additions have been made. As such, costs were not included for these items in the 2011 Study, but are included in the 2020 Study:
    - The northern gypsum storage area,
    - The dredge area to the west of the Suncoast Youth Center,
    - The helicopter pad, comprised of slag, located to the east of the slag dewatering pond, and
    - A small pond to the southwest of the coalfield.
4. The 2011 Study did not include costs for grading and seeding the site area. These costs were included in the 2020 Study, which accounts for an increase of $6,409,000.
5. Costs for indirects and contingency were not included in the 2011 Study. This difference accounts for approximately $26,487,000 increase in costs.
6. Additionally, market changes with scrap pricing and labor rates, contribute to the overall increase of $60,078,000.

Polk

The overall cost to decommission Polk increased from the 2011 Study. Table 6Table 4 presents the breakout of pricing by major category for the 2011 Study and 2020 Study in 2020 dollars.

Memorandum *(cont'd)*

Table 6: Polk Cost Estimates Summary

Category	2011 Study (2020$)	2020 Study
Power Block Structures & Equipment	$ 7,440,000	$ 11,040,000
Common Facilities	$ 4,106,000	$ 5,741,000
Grading & Seeding	$ -	$ 4,362,000
Indirects	$ -	$ 1,057,000
Contingency	$ -	$ 4,229,000
Scrap	$ (13,236,000)	$ (9,085,000)
Total Net Cost	$ (1,690,000)	$ 17,344,000

The following reasons are the major contributors to the difference in pricing:

1. Costs for Power Block Structures and Equipment have increased approximately $3,600,000 in the 2020 Study. Since the time of the 2011 Study, the combustion turbine units were converted to combined cycle configuration, resulting in significant additions of equipment. The 2011 Study did not include costs for removal of the steam turbine building, SCR, cooling towers and basin, or the stacks. This increase is a result of the addition of these costs to the 2020 Study.
2. Costs for common facilities have increased approximately $1,635,000 in the 2020 Study. The 2011 Study did not account for the costs for removal of the cooling water intakes and circulating water piping, roads, balance of plant buildings, and tanks other than fuel tanks. This increase is a result of the addition of these costs to the 2020 Study.
3. Costs for indirects and contingency were not included in the 2011 Study. This difference accounts for approximately $5,286,000 increase in costs.
4. Additionally, market changes with scrap pricing and labor rates, contribute to the overall increase of $19,034,000.

SOLAR COST ESTIMATES

The following section discusses the solar estimates of the 2020 Study. The costs for dismantling the solar sites were prepared according to the following categories of decommissioning activities.

1. Battery Removal
2. Solar Panel Removal
3. Panel Supports and Racking
4. Electrical and Wiring
5. Site Restoration
6. Concrete Debris

Memorandum *(cont'd)*

It should be noted that individual solar projects often have unique features that can affect costs, such as location, size, equipment, environmental concerns, land restoration requirement, and more. As shown in the table below, the majority of the solar sites have comparable cost estimates on a $/kW basis; however, there are a few outliers. Further discussion is provided below identifying the drivers of the cost differentials for each category.

Table 7: Solar Site Cost by Category ($/kW)

Site	Battery Removal	Solar Panel Removal	Panel Supports/ Racking	Electrical & Wiring	Site Restoration	Concrete/ Debris
Balm Solar	$ -	$ 55	$ 127	$ 2	$ 23	$ 0.10
Big Bend Solar	$ 12	$ 95	$ 45	$ 9	$ 22	$ 0.35
Bonnie Mine Solar	$ -	$ 50	$ 76	$ 2	$ 32	$ 0.09
Grange Hall Solar	$ -	$ 54	$ 71	$ 1	$ 18	$ 0.05
Lake Hancock Solar	$ -	$ 51	$ 69	$ 1	$ 20	$ 0.05
Legoland Solar	$ -	$ 37	$ 16	$ 31	$ 9	$ 1.36
Lithia Solar	$ -	$ 55	$ 60	$ 2	$ 26	$ 0.16
Little Manatee River	$ -	$ 55	$ 68	$ 2	$ 26	$ 0.17
Payne Creek Solar	$ -	$ 55	$ 67	$ 3	$ 26	$ 0.14
Peace Creek Solar	$ -	$ 52	$ 63	$ 3	$ 20	$ 0.13
Tampa Intl Solar	$ -	$ 32	$ 279	$ 3	$ 14	$ 10.05
Wimauma Solar	$ -	$ 55	$ 62	$ 1	$ 36	$ 0.08

Balm Solar

The following reasons are the major contributors to the difference in costs developed for the Balm Solar site:

1. The cost for removal of panel supports and racking for the Balm Solar Site is higher than the majority of the other sites. This is due to the larger amount of rack posts to be removed.

Big Bend Solar

The following reasons are the major contributors to the difference in costs developed for the Big Bend Solar site:

1. Big Bend Solar is the only site with battery storage. As such, it is the only site with costs for battery removal.

Memorandum *(cont'd)*

2. The modules installed at the Big Bend Solar site are heavy relative to their output, resulting in higher costs for solar panel removal than the majority of the other sites.
3. The Big Bend Solar site has a smaller number of rack posts, contributing to the cost for removal of panel supports and racking at Big Bend Solar being lower than the majority of the other sites.
4. Costs are included for removal of the substation at the Big Bend Solar site. The substation equipment and concrete removal costs contribute to the costs for electrical/wiring and concrete/debris at Big Bend being higher than the majority of the other sites.

Legoland Solar

The following reasons are the major contributors to the difference in costs developed for the Legoland site:

1. The cost for solar panel removal at Legoland is lower than the majority of the other sites, because of the type of panel installed at the site. The panels installed have a higher power output than the majority of the other sites and therefore not as many are installed on a per kW basis.
2. The Legoland site has a smaller number of rack posts, contributing to the cost for removal of panel supports and racking at Legoland being lower than the majority of the other sites.
3. The Legoland Solar project is installed over a parking lot. As such, grading and seeding are not required, which contributes to the cost for site restoration at Legoland being lower than the majority of the other sites.
4. Costs are included for removal of the substation at the Legoland Solar site. The substation equipment and concrete removal costs contribute to the costs for electrical/wiring and concrete/debris at Legoland being higher than the majority of the other sites.

Tampa International Solar

The following reasons are the major contributors to the difference in costs developed for the Tampa International site:

1. The cost for solar panel removal at Tampa International is lower than the majority of the other sites, because of the type of panel installed at the site. The panels installed have a higher power output than the majority of the other sites and therefore not as many are installed on a per kW basis.

Memorandum *(cont'd)*

2. The Tampa International Solar site is a rooftop array installed above a parking garage. As such, grading and seeding are not required, which contributes to the costs for site restoration being lower than the majority of the other sites.
3. The columns supporting the panels are made of concrete. The costs for removal of the concrete columns contributes to the higher costs for removal of panel supports and racking as well as for removal of concrete and debris.

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Please refer to TECO's Petition for Approval of its 2020 Depreciation and Dismantlement Study and Capital Recovery Schedules (Petition), its Exhibit H "2020 Depreciation and Dismantlement Study" (Study), and the associated MS Excel file "2020 Depr Study Life Analysis - TDG Master File - Filed.xlsx" (TDG Master) for the following questions.

Depreciation - Transmission, Distribution & General (Bates-stamped pages 1437-1630)

14. Please refer to Rule 25-6.0436(5)(e) and (f) for the questions below:

a. Please provide a narrative, consistent with the requirements of the cited rule, to explain and justify the Company's proposed depreciation parameters and rate for each transmission, distribution and general (including transportation and intangible) account.

b. Please summarize the statistical or mathematical methods of analysis or calculation, including the computing procedure and software, used in deriving the proposed rates and parameters.

A. a. Tampa Electric Company is a regulated utility operating within the state of Florida. Through its Tampa Electric division, it is engaged in the generation, purchase, transmission, distribution, and sale of electric energy. As of December 2019, the company's retail territory served comprises an area of about 2,000 square miles in West Central Florida, including Hillsborough County and parts of Polk, Pasco, and Pinellas Counties. The principal communities served are Tampa, Winter Haven, Plant City, and Dade City. More than 779,000 residential, commercial, and industrial customers depend on Tampa Electric for reliable power.

The proposed rates for Transmission Plant reflect the change in remaining lives caused by incremental additions and retirements to plant in the nine years subsequent to 2011, the date of the last comprehensive depreciation study. The individual plant account details and related study changes are embedded in the Summary of TD&G Rates and Components. A common trend amongst structures, station equipment, towers, poles, and conductor is life lengthening.

The proposed rates for Distribution Plant reflect the change in remaining lives caused by incremental additions and retirements to plant in the nine years subsequent to 2011, the date of the last comprehensive depreciation study. The individual plant account details and related study changes are embedded

in the Summary of TD&G Rates and Components. A common trend amongst structures, station equipment, line transformers, poles and conductor is life lengthening. The company made one significant change in this study related to AMR and AMI meters. The company is in the process of replacing AMR meter technology with AMI meter technology. The AMI Project will be placed in-service December 2021. The company will isolate AMI digital meter components in account 370.01, while the account 370.00 will contain the under-recovered remaining book value from AMR meter retirements and surviving analog equipment.

The proposed rates for General Plant reflect the change in remaining lives caused by incremental additions and retirements to plant in the nine years subsequent to 2011, the date of the last comprehensive depreciation study. The individual plant account details and related study changes are embedded in the Summary of TD&G Rates and Components. The current average service lives, curve types, net salvage factors, and level of reserves are still appropriate for general plant accounts.

The proposed rates for Transportation Plant reflect the change in remaining lives caused by incremental additions and retirements to plant in the nine years subsequent to 2011, the date of the last comprehensive depreciation study. The individual plant account details and related study changes are embedded in the Summary of TD&G Rates and Components. These transportation accounts have been impacted by vehicle leasing programs that terminated in 2016 and associated lease buyouts.

The proposed rates for General Plant Amortized are based on guidance under Rule 25-6.0142(3), the Commission's "List of Retirement Units (Electrical Plant) as of January 1, 2000"). For plant accounts or subaccounts within 391, 393, 394, 395, 397, and 398, the commission prescribes the amortizable lives. In addition, previous Commission approvals via depreciation study or other dockets further authorize the amortizable lives to be used. No changes in account parameters are being proposed other than notification of adding subaccount 394.01 ECCR Solar Car Port, which is an approved conservation program to be recovered using a 5-year amortizable life.

The proposed rates for Intangible Plant are derived from previous Commission orders regarding software amortizable lives for assets contained in account 303.15 Non-Solar (15 years) and account 303.99 Solar (30 years, matching the ASL for solar generating facilities).

b. The company has implemented a new depreciation program solution called PowerPlan Depreciation Study Module. This software performs statistical mathematical calculations using Iowa Curve life analysis techniques for plant accounts that have Actuarial vintage asset records or Semi-Actuarial (SPR) using the history of annual additions and retirements.

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15. Please provide, in MS Excel worksheet(s), TECO's actual (or estimate if the actual is not available) plant and reserve activities, in the same format as TDG Master, tabs "2019 B-7" and "2019 B-9" for the year ending December 31, 2020.

A. Please see electronic response MS Excel file, "(BS 45) 2020 Depr Study Life Analysis - TD&G Master File – v2.xlsx". This file includes tabs for the draft actual 2020 B-7, 2020 B-9, Proposed Accruals 2020 and projected budget 2021 B-7, 2021 B-9, Proposed Accruals 2021.

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16. Please provide, in MS Excel worksheet(s), TECO's 2021 budget of plant and reserve activities, in the same format as TDG Master, tabs "2019 B-7" and "2019 B-9."

A. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 15, above.

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17. Please refer to TDG Master, tab "PP DS Query" for the questions below:

a. For Account 35200, Structures & Improvements, please elaborate on why there is a $32,571.43 variance between the amount of surviving plant used in calculating the proposed rate and the amount reported in the 2019 Annual Depreciation Status Report.

b. Please explain what is mean by "Actual Reserve Spread" for an account, and whether it differs from the actual accumulated depreciation reserve of that account.

c. For the calculations that lead to the results presented in the tab, please clarify whether they were performed at the level of an account's total surviving plant, or at the level of the vintage of the account's surviving plant? Please explain your response.

d. Please complete Table 1 below [e.g., Avg Weighted Age Dollar (8) = (6) x (7)]:

Table 1: Formulas Used in Tab "PP DS Query"

	Column Name	Formula Used for Calculation (If applicable)
(1)	B-7 Variance	
(2)	B-9 Variance	
(3)	Curve Id	
(4)	Curve Year	
(5)	Future Net Salvage Pct	
(6)	Surviving Plant	
(7)	Avg Weighted Age	
(8)	Avg Weighted Age Dollars	
(9)	Avg Service Life	
(10)	Avg Service Life Dollars	
(11)	Avg Remaining Life	
(12)	Avg Rem Life Dollars	
(13)	Depr Reserve Ratio	
(14)	Theoretical Reserve	
(15)	Est Future Net Salvage	
(16)	Actual Reserve Spread	

e. It appears that different formulas were applied to different accounts in calculating the Avg Rem Life Dollars. Staff believes, by simulating the computation, that the formula "Avg Rem Life Dollars" = "Surviving Plant" x "Avg Remaining Life", or per the numbered rows in Table 1, (12) = (6) x (11), was used for Accounts 30315 –37300 and 39725; but different formula(s) were applied to the other accounts (e.g., Accounts 39000 – 39700 and 39800 –

39910) for deriving the "Average Rem Life Dollars." Please explain why and provide the details of every formula used.

A. a. A transfer of asset record was posted in the financial system that was to move costs from FERC account 101 and to FERC account 105; however, the transfer did not post correctly in the financial system. As a result, the B-7 schedule was modified to reflect the transfer that did not occur; however, the depreciation study software recognized the cost transfer from the account. The company resolved this issue in December 2020.

b. For purposes of the TDG master file, Actual Reserve Spread equals the actual accumulated depreciation reserve for the account.

c. The tab PP DS Query is an extraction of the PowerPlan Depreciation Study Module results. The account details are calculated using the vintage level surviving plant. The PP DS Query tab is the outputted data set at the account level to facilitate the Excel file summarization of rates and accruals.

d. Please see the table below for formulas used in the PP DS Query tab.

Table 1: Formulas Used in Tab "PP DS Query"		
	Column Name	Formula Used for Calculation
(1)	B-7 Variance	vlookup
(2)	B-9 Variance	vlookup
(3)	Curve Id	Account Analysis Input
(4)	Curve Year	Account Analysis Input
(5)	Future Net Salvage Pct	Account Analysis Input
(6)	Surviving Plant	Vintage Level
(7)	Avg Weighted Age	(8) / (6)
(8)	Avg Weighted Age Dollars	Vintage Level
(9)	Avg Service Life	(10) / (6)
(10)	Avg Service Life Dollars	Vintage Level
(11)	Avg Remaining Life	(12) / (6)
(12)	Avg Rem Life Dollars	Vintage Level
(13)	Depr Reserve Ratio	(14) / (6)
(14)	Theoretical Reserve	Vintage Level
(15)	Est Future Net Salvage	(5) x (6)
(16)	Actual Reserve Spread	Account Level

e. There was a data extraction query SQL code issue that caused the perceived formula difference. The items in question do not impact the original filing's calculation of the various accounts rates and components, theoretical reserves, nor the proposed accruals.

This has been corrected and an updated tab for the PP DS Query is provided in the company's response to Staff's First Set of Interrogatories No. 15.

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18. Referring to Bates-stamped page 1449, where the "Round Average Age" of Account 37001 AMI Meters is zero (0) years, and TDG Master, tab "PP DS Query," where the "Avg Weighted Age" for the same account is 4.3 years, please explain the difference. Please also explain how the 4.3 years average age was derived and support your response with an MS Excel Worksheet.

A. There were a few blanket work order meter assets placed in-service to the account 370.01 AMI Meters, along with some AMI meter asset transfers from account 370.00 AMR & Analog. These work order activities were not associated with AMI Project deferral of additions until completion of the AMI meter roll out will be placed in-service December 2021. As a result, the account 370.01 AMI Meters has asset and reserve balances temporarily assigned to the account 370.00 AMR & Analog on the annual status report B-7 and B-9. This causes a disconnect with the depreciation study software. The purpose of this instant depreciation study is to propose a rate for account 370.01 AMI Meters to coincide with AMI Project major additions going in-service December 2021. Therefore, the average age, average remaining service, theoretical reserve reflects zero. Please see Excel file, "(BS 51) 370.01 AMI Meters - Avg Age.xlsx".

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19. A portion of Bates-stamped page 1474 is shown below:

Broad Group Procedure
January 1 2020

	Plant Amt	Deprecation Reserve Amount	Ratio	Net Plant Amount	Ratio
Recorded	$318,281,546.97	$69,030,066.22	0.2169	$265,165,558.10	0.8331
Computed	$318,281,546.97	$73,365,345.24	0.2305	$260,830,279.08	0.8195
Difference		($4,335,279.02)	-0.0136	$4,335,279.02	0.0136

a. Please indicate whether the "Computed" "Depreciation Reserve Amount" refers to the theoretical reserve. If not, please explain what it represents.

b. Please provide an MS Excel Worksheet to show how each of the amounts and the ratios appearing in the table are related to each other.

A. a. The Computed Depreciation Reserve Amount includes Net Salvage and refers to the Theoretical Reserve. The Recorded Depreciation Reserve Amount is the actual booked accumulated depreciation reserve as of December 31, 2019. Net Plant is not used for Commission purposes.

b. Please see the Excel file, "(BS 53) Example Account 353" for Bates Stamp pages 1471-1473, 1474, and 1475.

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20. A portion of Bates-stamped page 1475 is shown below:

Remaining Life Depreciation Accrual

Account : 353.00 Station
Equipment Scenario: TEC 2019
A - T&D 20200428
Dispersion: 45.00 • **SO**

Average Net Salvage Rate: -5.00 %
Future Net Salvage Rate: -5.00 %

Broad Group Procedure

January 1, 2020

	Plant Amt	Remaining Life	Accrual (Dollars)	Accrual Rate (Gross Plant)	**Accrual Rate** (Nat Plant)
Pre- 2020 Additions	$318,281,546.97	35.12	$7,550,006.87	2.372116%	2.847280%
2020 Additions	$0.00	0.00	$0.00	0.000000%	
2020 Retirements	($3,311,001.97)	0.50	($38,628.36)	1.166667%	
Total:	$318,281,546.97 •		$7,511,378.51	2.359979%	2.832713'¼
Average:	$316,626, 045.99		$7,511,378.51	2.372319%	2.851405%

*Excluding 2020 Retirements

a. Please define each of the following items as well as explain how each item was derived; and provide an MS Excel Worksheet to support your responses.

(i) "Average Plant Amt" $316,626,045.99;

(ii) "Pre-2020 Additions Accrual (Dollars)" $7,550,006.87;

(iii) "2020 Retirements Accrual (Dollars)" ($38,628.36);

(iv) "Total Accrual (Dollar)" $7,511,378.51;

(v) "Total Actual Rate (Gross Plant)" 2.359979%;

(vi) "Average Actual Rate (Gross Plant)" 2.372319%;

(vii) "Pre-2020 Additions Accrual Rate (Net Plant)" 2.847280%;

(viii) "Total Accrual Rate (Net Plant)" 2.832713%; and

(ix) "Average Accrual Rate (Net Plant)" 2.851405%.

b. Please explain how each of the rates discussed above relates to the Commission- approved depreciation/accrual rate.

A. a. For Commission purposes, only the row labeled Pre-2020 Additions is used. This study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

The following data points come from the Generation Arrangement Report referenced on Bates Stamp pages 1471-1473:

- "Pre-2020 Additions Plant Amt" $318,281,546.97
- "Pre-2020 Additions Remaining Life" 35.12

The following data points are the results provided by the study software that support the Commission's remaining life formula technique:

(ii) "Pre-2020 Additions Accrual (Dollars)" $7,550,006.87;
- "Pre-2020 Additions Accrual Rate (Gross Plant)" 2.372116%;

Commission practice is to round the average remaining service life when greater than 20 years to zero decimal and rounding the remaining life depreciation rate calculation to 1 decimal causes a difference to the unrounded study software results.

All the other data points are provided by the study software to meet various needs of different software users. For example, Accrual Rate (Net Plant) has the ability to project future year additions and retirements or usage of plant amount averages.

Additionally, please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 19 (b), above, for reperformance of Bates Stamp pages 1471-1473, 1474, and 1475.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 20(a) above.

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21. Please refer to Bates-stamped pages 1471-1477 and 1527-1533 for the questions below regarding Station Equipment Accounts 35300 (transmission) and 36200 (distribution).

a. Please list the major items comprising the investment in Accounts 35300 and 36200, respectively.
b. Have there been any changes in the design and performance of equipment contained in Account 35300 and Account 36200 since TECO's last depreciation study? If affirmative, please detail the changes and explain how each is expected to impact the average life of the given account.
c. Have any operational procedures changed since the last depreciation study that would affect the average life of transmission and/or distribution station equipment? If affirmative, please explain what operational procedures changed, how they changed, and how the changes are expected to impact the life of Accounts 35300 and 36200.
d. Please explain TECO's replacement policy applicable to the power transformers contained in Accounts 35300 and 36200.
e. Referring to Bates-stamped page 1476, please explain the causes of the 2014 - 2017 peak for retirement amounts for Account 35300 relative to all other years since 1982.

A. a. Below is a chart of the major property groups in the 353 and 362 accounts, the remainder are other items and unassigned (non-unitized) work order activities.

Account 353	Amount	Ratio
Arrester	3,790,665	1%
Batteries	1,822,575	1%
Breaker	52,993,200	17%
Bus	7,007,444	2%
Cable	10,704,121	3%
Capacitor	6,495,478	2%
Conduit	312,339	0%
Cutouts	22,045	0%
Metering	3,693,401	1%
Panels	9,863,612	3%
Reactor	2,980,319	1%
Relay	26,620,767	8%
RTU	8,164,708	3%
Structure	23,602,979	7%
Switch	15,563,247	5%
Telemetering	836,851	0%
Transformer	108,540,360	34%
Wire	2,074,620	1%
	285,088,733	**90%**

Account 362	Amount	Ratio
Arrester	3,120,810	1%
Batteries	2,214,173	1%
Breaker	32,175,572	13%
Bus	3,511,841	1%
Cable	4,766,912	2%
Capacitor	1,829,705	1%
Conduit	581,713	0%
Cutouts	139,800	0%
Metering	2,564,624	1%
Panels	9,339,804	4%
Reactor	293,508	0%
Relay	18,739,926	7%
RTU	8,663,732	3%
Structure	12,939,793	5%
Switch	23,485,830	9%
Telemetering	1,685,800	1%
Transformer	100,975,898	40%
Wire	1,677,788	1%
	228,707,231	**91%**

b. Regarding accounts 35300 and 36200, there have been no changes in design or performance of equipment.

c. For account 353000, Tampa Electric has added predictive equipment that remotely monitors the online dissolved gas analyzer and is considered to help maintain the life of the equipment; however, it does not extend the life of the equipment. For account 36200, there have been no operational procedures changed since the last depreciation study that would affect the average life of distribution station equipment.

d. Regarding accounts 35300 and 36200, the company replaces transformers upon failure, when the company deems them to be unsafe following an inspection, when an undersized condition is found, or when there is an increase in customer load growth.

e. Please see the table below for the retirement accounts for Account 35300. Phillips Station GSU was retired in 2015, which resulted in approximately $2M from sale of Phillips Station assets. The Polk CC non-recurring activity is tied to new generation. The company also made multiple auto transformer and GSU replacements in the normal course of business. The company also made substation asset retirements following substation audits. The table below reflects those details.

	2014	2015	2016	2017
Misc plant adustments due to spare equip audits/substation walk downs	$ (3,328,200)	$ -	$ (2,813,947)	$ (271,149)
Polk CC Conversion - ED		$ (44,463)	$ (3,180,762)	$ (1,286,296)
Phillips Station GSU		$ (1,924,293)		
BB3 GSU Transformer Replacement		$ (845,120)	$ (839,177)	
SR 60 N. Sub Auto Transformer Replacement		$ (1,334,754)		
Gannon Auto Transformer Replacement				$ (1,031,485)
	$ (3,328,200)	$ (4,148,630)	$ (6,833,886)	$ (2,588,929)

BATES STAMPED PAGE

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22. Please refer to Bates-stamped pages 1449 and 1478-1489 for the questions below regarding Account 35400, Towers and Fixtures and Account 35500, Poles and Fixtures:

a. Please confirm that all poles and towers contained in Account 35400 are comprised of steel. If not, please identify the portion of investment associated with wood or other materials.

b. Please identify the respective portions of the steel, concrete and wood poles contained in Account 35500.

c. Please explain the major causes for the transmission tower and pole retirements.

d. Is TECO experiencing any corrosion problems in Accounts 35400 and 35500? If affirmative, please explain.

e. Referring to Bates-stamped pages 1480-1481, please explain the cause of Account 35400 budgeted 2020 retirement, in the amount of $341,869, given that the total retirements from 1982 – 2019 in the account was only $220,010.

f. Referring to Bates-stamped pages 1449 and 1481-1482, please explain the basis for proposing to retain the average future net salvage (NS) percentage of (15) for Account 35400, given that TECO experienced a zero NS percentage each year since 2014 and the total average of the NS percentage experienced is (5) since 1982.

g. TECO proposed to increase the Average Service Life (ASL) of Accounts 35400 and 35500 by five and two years, respectively. Please explain the specific reasons justifying the proposed changes, other than it results from statistical analyses.

A. a. The poles and towers in account 354 are comprised of steel.

b. The account 355 is mostly steel, some concrete and wood poles. The remainder are other items and unassigned (non-unitized) work order activities.

Account 355	Amount	Ratio
Pole Steel	241,552,778	69%
Pole Concrete	81,239,561	23%
Pole Wood	10,355,128	3%
	333,147,467	**95%**

c. Transmission towers and poles are retired for causes such as major deficiencies identified through structure inspection programs and system patrols, targeted replacement of the remaining wood transmission poles as part of the Storm Protection Plan, system upgrades, road improvement projects, developer projects, and damage, such as from vehicle collisions or wildfires.

d. The company has identified corrosion problems in steel lattice transmission towers and tubular steel structures that have flanged connections and/or anchor-bolt foundations. Most of these structures have been in-service for many decades and are located in corrosive environments such as adjacent to Tampa Bay or near phosphate mining/processing operations. Some corrosion problems have been the result of designs where a complex shape held water or the intended drainage did not perform adequately.

   In addition, the vibration common to power lines and lattice towers has worn out some of the connecting hardware and structural members. This has accelerated corrosion due to the premature wear of the protective galvanized coating.

   Although there are exceptions, the company has standardized use of direct-embedded poles with slip joint connections and simple shape attachment points. This is expected to extend service-lives by reducing or eliminating areas where water could be held.

e. For Commission purposes, only the row labeled Pre-2020 Additions is used. This study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

Remaining Life Depreciation Accrual

Account: 355.00 Poles and Fixtures
Scenario: TEC 2019 A - T&D 20200428
Dispersion: 40.00 - R2
Average Net Salvage Rate: -40.00%
Future Net Salvage Rate: -40.00%

Broad Group Procedure

January 1 , 2020

	Plant Amt	Remaining Life	Accrual (Dollars)	Accrual Rate (Gross Plant)	Accrual Rate (Net Plant)
Pre- 2020 Additions	$352,343,824.33	31.41	$12,576,108.09	3.569272%	3.183700%

f. The company is re-filing each of the net salvage annual and 5-year average schedules to remove the allocation of un-unitized 108 Retirement Works in Progress ("RWIP") activity for cost of removal and salvage expenditures. The company is performing this RWIP Allocation for tax accounting purposes to have all 108 Accumulated Reserve activities assigned to a 300 Plant Account. The RWIP Allocation is a temporary accrual/reversal of information related to un-unitized work order activities for cost of removal and salvage that is embedded on the B-9 reserve schedule. The cumulative nature of the RWIP Allocation is acceptable, however, due to timing when viewed on an annual basis; RWIP tends to skew the COR percentage and Salvage percentage relationship to retirements for depreciation study purposes. Please see "(BS 63) Without RWIP Allo.xlsx" that contains the various accounts Excel files. This refiling will assist with other commission questions regarding Cost of Removal and Salvage activities.

g. Tampa Electric took into consideration the other state IOU averages and compared them to where Tampa Electric falls into that range for that account to assist with the best fit possible.

The company is proposing a five-year increase in the ASL for Account 354.

The proposed 55-year service life (a five-year increase) and net salvage of (15) percent falls within the range of ASL utilized by other Florida investor-owned utilities, specifically between 52 and 65 years and NS between (15) and (25) percent. The company's proposed Average Remaining Life (ARL) based on vintage asset records for this account is only 8.7 years, compared to the ARL range between 27 and 34 years for other Florida investor-owned utilities. This difference implies Tampa Electric's towers are older and have been in-service longer and are approaching replacement sooner than the towers utilized by the other IOUs. The company, however, will not replace all towers within the next 8.7 years. As a result, life extension of the account is necessary. Upon replacement, net salvage will be incurred accordingly.

The proposed net salvage level does not represent the company's future expectation for net salvage requirements upon retirement of towers. The company's activity history for these retirements is limited. The level of cost of removal and salvage incurred related to future replacement activities will provide more activity history to analyze in future depreciation study filings.

The company proposes an ASL of 40 years for Account 355, which is a two-year increase. The proposed 40-year ASL and net salvage of (40) percent falls

within the range of ASL utilized by other Florida investor-owned utilities, specifically between 38 and 44 years and NS between (25) and (75) percent. The company used statistical analysis by assigning 40-year ASL to concrete or steel poles and 30 to 35-year ASL to wood pole (hardened) asset costs.

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23. Please refer to Bates-stamped pages 1534-1539 for the questions below regarding Account 36400, Poles Towers and Fixtures (distribution):

a. Please explain the major causes of the retirement of distribution poles.

b. Please provide a percentage breakdown, by pole type, of the investment and the quantity, respectively, in Account 36400.

c. Please explain TECO's pole treatment program, if any.

d. Please explain TECO's pole replacement program, if any.

e. Is TECO's pole replacement performed by contract labor or in-house labor? Please provide the average cost rates per pole, identifying a breakdown of the labor costs and the overhead amount separately.

f. Please explain how TECO disposes of its retired distribution poles.

g. Please explain TECO's pole inspection program including what the program entails.

h. Please identify the estimates of each year's plant additions and retirements, if any, that are resulting from TECO's Storm Protection Plan for the period 2021 - 2025.

i. TECO proposed to increase the ASL of the account by one year. Please explain the specific reasons justifying the proposed change, other than it results from statistical analyses.

A. a. The major causes of distribution pole retirement are:

- Line section relocation due to road relocations and property development.
- Mechanical damage to pole.
- Wood poles may also be retired due to:
  - Animal Damage including woodpeckers and ants.
  - Physical deterioration including pole top weathering, "wind shakes" and decay.

b. Please see the table below. The account 364 contains wood, concrete, and steel poles. The remainder are other items and unassigned (non-unitized) work order activities.

Account 364	Quantity	Ratio	Amount ($)	Ratio
Pole Concrete	6,385	2%	11,478,451	3%
Pole Steel	967	0%	5,235,881	2%
Pole Wood	325,635	98%	305,337,586	92%
	332,987	100%	$322,051,917	97%

c. Tampa Electric's Pole treatment is conducted as part of the Wood Pole Inspection Program. All wood poles receive a visual inspection and are sounded to detect internal voids and decay. When voids are detected, pole borings are used to determine the extents of the voids and an internal chemical treatment is applied. Bore holes are then plugged.

Additionally, all wood poles 16 years and older are subjected to an excavation inspection.

- The pole is excavated to a depth of 18 inches.
- All external decay is removed.
- A wood preservative is applied from the bottom of the excavation to 6 inches above grade.
- A protective wrap is applied to the pole and the excavation is then backfilled.

d. Additionally, pole retirements are often a product of the Wood Pole Inspection Program, referenced in Tampa Electric's response to Staff's First Set of Interrogatories, No. 23 (c), above. Poles may be retired due to physical damage or due to reduced capacity as a result of ground line decay. Once poles are identified through the inspection process as needing replacement, they are noted in our system and a crew is assigned to replace based on a prioritization schedule.

e. Pole replacements are performed both by in-house and contract labor. The average labor costs (for internal labor) to replace a pole in 2020 was $1,953 per pole, including supervision and support. The average internal overhead costs (including fringe and A&G) to replace a pole in 2020 was $2,078 per pole. Labor and overhead information for contract labor is unavailable since pole replacement work is performed on a per unit costing basis.

f. The TECO Investment Recovery department contracts with several companies to handle retired poles. Steel Poles are ultimately recycled. Concrete poles are ground up and the concrete and steel components are recycled. Wood poles are destroyed or recycled as conditions warrant.

g. The distribution pole inspection program is charged with inspecting wood poles on an eight-year cycle. The components of the Wood Pole Inspection Program are:

1. All poles, regardless of material, receive a visual inspection to uncover and evaluate damage to the pole and associated hardware. A pole may remain in service if the defects are considered to not jeopardize the structural integrity of the pole.
2. Wood Poles are sounded to detect internal voids. Internal voids are chemically treated.
3. Wood Poles 16 years old and older are bored at the groundline to detect sub-grade internal voids. Voids are treated chemically.
4. Wood Poles 16 years and older are excavated to 18" below grade, any decay removed, wood preservative and protective wrap applied.
5. Wood poles are measured at the groundline to establish remaining strength. Poles that do not meet the applicable NESC rule 250 B / 250C requirements are identified for replacement.

h. Please see the table below for the total estimates, by year, for plant additions as well as retirements that are a result of the Storm Protection Plan.

	2021	2022	2023	2024	2025
Additions	115,916,460	158,160,178	152,901,453	160,480,758	169,947,560
Retirements	48,620,250	56,561,467	55,582,944	56,994,175	59,491,727

i. Tampa Electric took into consideration the other state IOU averages and compared them to where Tampa Electric falls into that range for that account to assist with the best fit possible.

The company's ASL proposal for Account 364 of 35 years (for a one-year increase) and net salvage of (50) percent falls within range of ASL between 32 and 39 years and NS between (35) and (75) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 40-year ASL to concrete or steel poles and 30 to 35-year ASL to wood pole (hardened) asset costs.

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24. The following questions refer to transmission and distribution conductors and devices, Accounts 35600, 35800, 36500, and 36700.

a. Please identify any and all material changes, since TECO's last depreciation study, for each of these four accounts in terms of:

(i) equipment types,

(ii) percentage breakdown of the kinds of conductors,

(iii) conductors' quality and life resulting from the technology advance in material, design and manufacturing, and

(iv) TECO's reconductoring policy.

b. Please explain the causes of the retirement of conductors in each of these accounts.

c. Please explain any environmental impacts on the actual life expectancy of conductors in each account.

d. Please explain how retired overhead conductors and underground conductors are disposed of, respectively.

e. Referring to Bates-stamped pages 1510-1511, Account 35800, please explain the cause of the relatively high amount of retirement dollars budgeted for 2020 given the history of the account's retirement activities.

f. Referring to Bates-stamped pages 1544-1545, Account 36500, please explain the cause of the 2020 budgeted retirement amount of $4,959,483, which is significantly higher than all other year's retirement amounts since 2009.

g. TECO proposed to increase the ASL of Accounts 35800, 36500 and 36700 by five, two, and five years, respectively. Please explain the specific reasons justifying the proposed changes, other than the increases are resulting from statistical analyses.

A. a. (i) No major changes. See Tampa Electric's response to Staff's First Set of Interrogatories No. 24(a)(ii), below.

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(ii) See the tables below for the breakdown of accounts 35600, 35800, 36500, and 36700. The remainder are other items and unassigned (non-unitized) work order activities.

Acct 356	2019 Quantity	2019 Ratio	2019 Amount	2019 Ratio	2012 Quantity	2012 Ratio	2012 Amount	2012 Ratio
Insulators	30,162	0%	43,024,407	28%	18,737	0%	23,890,313	20%
Static Wire	2,381,246	9%	7,442,060	5%	2,133,010	9%	3,154,997	3%
Switch	456	0%	5,381,798	3%	452	0%	3,851,821	3%
Wire ACSR	10,803,606	41%	56,025,223	36%	10,287,921	41%	37,557,030	32%
Wire AL	10,796,727	41%	30,382,586	20%	10,252,484	41%	33,112,977	28%
Wire CU	1,979,501	8%	1,253,983	1%	2,162,472	9%	1,401,202	1%
	25,991,699	**99%**	**143,510,058**	**92%**	**24,855,076**	**100%**	**102,968,340**	**87%**

Acct 358	2019 Quantity	2019 Ratio	2019 Amount	2019 Ratio	2012 Quantity	2012 Ratio	2012 Amount	2012 Ratio
Cable CU	156,384	99%	6,141,588	83%	236,688	100%	6,444,898	92%
Pothead	57	0%	223,427	3%	57	0%	223,427	3%
	156,441	**99%**	**6,365,015**	**86%**	**236,745**	**100%**	**6,668,325**	**95%**

Acct 365	2019 Quantity	2019 Ratio	2019 Amount	2019 Ratio	2012 Quantity	2012 Ratio	2012 Amount	2012 Ratio
Reclosers	47,822	0%	19,205,257	7%	47,563	0%	5,676,123	2%
RTU	1,445	0%	7,789,900	3%	1,431	0%	7,168,785	3%
Switch	23,153	0%	33,008,832	13%	17,507	0%	25,174,386	11%
Wire ACSR	43,138,412	27%	55,169,811	21%	42,016,023	27%	48,899,247	21%
Wire AL	79,400,410	51%	121,876,987	47%	80,327,560	51%	119,982,834	52%
Wire CU	34,264,880	22%	14,279,499	5%	34,417,878	22%	13,458,338	6%
	156,876,122	**100%**	**251,330,286**	**96%**	**156,827,963**	**100%**	**220,359,713**	**96%**

Acct 367	2019 Quantity	2019 Ratio	2019 Amount	2019 Ratio	2012 Quantity	2012 Ratio	2012 Amount	2012 Ratio
Cable AL	36,511,819	93%	165,249,248	56%	31,427,848	92%	125,176,812	57%
Cable CU	1,801,268	5%	10,872,172	4%	1,914,214	6%	8,120,784	4%
Pothead	125,991	0%	50,348,946	17%	96,432	0%	43,277,727	20%
Switchgear	5,610	0%	61,076,937	21%	4,957	0%	27,240,326	12%
	38,444,688	**98%**	**287,547,304**	**97%**	**33,443,451**	**98%**	**203,815,650**	**93%**

(iii) Tampa Electric updated material specifications to require the upgraded mischmetal coating on the steel core strands of 795, 954 and 1590 ACSR rather than the standard coating. The Transmission Department has also created a standard of using the use of cushion grip, armor grip and thermolign clamps for aluminum conductor and moved to a more traditional clamp for steel overhead ground (OHG) wires, also referred to as static or shield wires. The additional protection afforded by these upgraded clamps is expected to decrease premature failures and likely increase service-lives.

In addition, vibration dampers have been made standard on OHG and optical ground wire (OPGW) which will mitigate some of the vibration-induced failures that have been experienced in recent years. This includes new construction as well as system maintenance. There have been no changes for distribution conductors.

(iv) Although not a specific policy change, the Transmission Department began installing aluminum conductor-composite core (ACCC) conductor in 2016. The ACCC provides high temperature-low sag performance and can provide the required increased current rating while being able to re-use a high percentage of the existing structures. When the ACCC performance cannot meet clearance requirements at the required new rating, TEC added 1158 ACSS/TW to our inventory. In addition to providing a continuous rating over 2,000 amperes, the trapezoidal design has a cross-sectional area very close to the 954 kcmil conductors which are widespread throughout the transmission system. This facilitates the possible re-use of some structures involved in a reconductor since the wind loading is virtually the same. There have been no changes for distribution conductors.

b. Distribution Conductors are retired for end of life, failure, road widenings or load issues. Transmission conductors are retired with system upgrades such as reconductor projects.

c. Major storms are the only environmental impacts effecting life expectancy of distribution conductors. The transmission over-head ground wire has experienced corrosion that may have been accelerated in some areas due to the corrosive environments. Also, in recent years, transmission created a standard on the use of a traditional trunnion clamp rather than the three-bolt clamp that had been used for decades. It was determined that the three-bolt clamp could hold water leading to corrosion under the clamp.

d. Retired distribution and transmission overhead and underground conductors are brought to a Tampa Electric facility, sorted, and stored. A recycling company contracted by Tampa Electric periodically retrieves the conductor and recycles it.

e. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not aa projected filing.

f. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31,2019 and contains actual balances for assets and reserves, not a projected filing.

g. Tampa Electric took into consideration the other state IOU averages and compared them to where Tampa Electric falls into that range for that account to assist with the best fit possible.

The company's proposed ASL of 50 years for Account 356 and net salvage of (40) percent falls within the range of ASL between 47 and 55 years and NS between (20) and (50) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 50-year ASL to wire, insulators, and 30-year ASL to switch asset costs within the account.

The company's ASL proposal for Account 358 of 50 years (for a five-year increase) and net salvage of 0 percent falls within the range of ASL between 50 and 60 years and NS between 0 and (10) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 50-year ASL to cable and 30-year ASL to pothead asset costs within the account.

The company's ASL proposal for Account 365 of 40 years (for a two-year increase) and net salvage of (20) percent falls within the range of ASL between 36 and 45 years and NS between (20) and (60) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 40-year ASL to wire, 30-year ASL to switch and recloser asset costs within the account.

The company's ASL proposal for Account 367 of 40 years (for a five-year increase) and net salvage of (5) percent falls within the range of ASL between 35 and 50 years and NS between (0) and (15) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 50-year ASL to cable and 30-year ASL to switchgear and pothead asset costs within the account.

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25. Referring to Bates-stamped pages 1500-1501, please explain the cause of the 2020 budgeted retirement amount of $96,777 for Account 35601, Clearing Rights of Way, given that this account has no retirement, except $22,630 in 2007, since 1982.

A. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

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INTERROGATORY NO. 26
BATES PAGES: 72-73
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26. The following questions regarding are related to transmission and distribution underground conduit, Accounts 35700 and 36600.

a. Please explain the causes for the retirement of transmission and distribution underground conduit.

b. TECO proposed to increase the ASL of Account 35700 by five years. Please explain the specific reasons justifying the proposed change, other than it results from statistical analyses. Please also explain why TECO proposed to retain the existing ASL for Account 36600.

c. When an underground conduit is retired, is it cut and sealed, abandoned in place, or physically removed?

d. Referring to Bates-stamped page 1506, please explain the cause of the positive gross salvage amount in Account 35700, realized in 2017.

e. Referring to Bates-stamped pages 1551-1552, please explain the budgeted 2020 retirement amount of $764,187 for Account 36600 which is the highest since 2010.

A. a. Transmission underground conduits are retired when the underground infrastructure is no longer required or has reached end-of-life conditions, or if the underground transmission circuit is permanently placed out of service. There have been very few underground transmission conduits retired due to very limited use of underground facilities on the transmission system. The conduits most recently retired were due to a road improvement project that would have required relocation. The cables were decades old, and the area had experienced significant overhead transmission additions since the original in-service. It was determined they were no longer needed and subsequently retired. The distribution underground conduit is retired when a faulted cable cannot be removed from it or the distribution equipment serviced by the cable is no longer in use.

b. Tampa Electric took into consideration the other state IOU averages and compared them to where Tampa Electric falls into that range for that account to assist with the best fit possible.

The company's proposed ASL for Account 357 of 60 years (for a five-year increase) and net salvage of 0 percent falls within range of ASL between 55

and 60 years and NS between 0 and 0 percent utilized by other Florida IOUs. Statistical analysis was simply used by assigning 60-year ASL to conduit asset costs within the account. This was done to sync up with the Account 366 ASL of 60-years for underground conduit.

c. When the underground transmission conduit is retired, the transmission cable and oil are removed and the conduit is cleaned, cut, sealed, and abandoned. When the underground distribution conduit is retired, it is cut and abandoned in place.

d. The salvage of $28,238 was related to the $84,461 in retirements of manhole frames and covers. In addition, please see response to Staff's First Set of Interrogatories, No. 24 (f), above.

e. For Commission purposes, only the row labeled Pre-2020 Additions is used. This study filing is as of December 31, 2019 actual balances for assets and reserves, not a projected budget filing.

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INTERROGATORY NO. 27
BATES PAGES: 74-75
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27. Please refer to Bates-stamped pages 1449, 1561-1566 for the questions below regarding Account 36800, Line Transformers.

a. Please identify any large line construction projects, if any, by which this account was/will be affected for the period 2013 – 2019 and 2020 – 2025.

b. Referring to Bates-stamped pages 1564-1565, please explain the budgeted 2020 retirement amount of $16,655,859, which is significantly higher than any other year's retirement since 1982.

c. Please explain the process involved in determining when a line transformer is replaced.

d. TECO proposes to increase the ASL of this account by five years. Please explain the specific reasons justifying the proposed change, other than it results from statistical analyses.

e. Referring to Bates-stamped page 1449, please explain the basis for the proposed significant reduction in NS percentage for the account, from 10 to (20).

f. Does TECO have an inspection and/or replacement program(s) for line transformers? Please explain.

g. Does TECO's Storm Protection Plan affect this account? Please explain.

h. Please explain when an overhead transformer was changed as a part of the pole replacement program, how the related COR was booked among the pole and transformer accounts.

i. For the transformers replaced during 2014 - 2019, what is the approximate percentage of replacements that were performed as part of the pole replacement program?

A. a. Existing line Transformers may be impacted during large line projects if they need to be moved to accommodate construction activities. This impact would not be known for future dated projects not yet in construction. Tampa Electric's on-going work efforts on the existing Pole Replacement and Padmount Transformer Inspection Programs during the 2013-2019 period provide the largest impact to Account 36800, Line Transformers.

b. For Commission purposes, only the row labeled Pre-2020 Additions is used. Theis study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

c. Line transformers, both underground and overhead style, are replaced upon failure or when external physical condition deteriorates enough to pose a hazard.

d. In prior depreciation study filings, the company used a location-life based approach for this account, in conjunction with historical information where high salvage was recognized for the remanufacturing/repairing of the line transformer to be placed back into inventory for reissue. This led to a shorter average service expectation. Since the last depreciation study, the company made changes within the account to recognize higher levels of cost of removal and lower levels of salvage resulting from pole changeouts and stainless-steel transformer issues, moving this account to a cradle-to-grave approach like the other Florida IOUs.

e. Please see Tampa Electric's response to First Set of Interrogatories, No. 27 (d), above.

f. Yes. For underground or pad-mounted transformers only. We proactively inspect a revolving 10 percent of our pad-mounted equipment each year and replace, repaint, or repair, as necessary.

g. Yes, there are existing overhead transformers that will be removed/replaced based on the scope of the program. Additionally, new UG transformers will be installed as part of the Lateral Undergrounding program.

h. Tampa Electric's work management software called WorkPro ("WP"), determines the percentage of work charged to install and COR based on the detailed design specifications.

i. Approximately 30 percent of the transformers replaced during this time period were related to the pole replacement program.

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INTERROGATORY NO. 28
BATES PAGES: 76-77
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28. Please refer to Bates-stamped pages 1567-1578 for the questions below regarding Overhead and Underground Services, Accounts 36900 and 36902:

a. Please provide a list of the major items that comprise the investment in each account.

b. Please explain the specific reasons justifying the change in the ASL for Account 35900, other than it results from statistical analyses.

c. Referring to Bates-stamped pages 1570-1571, please explain the cause of the 2020 budgeted $1.85 million retirement for Account 36900, which is the highest in history since 1982 with every year's retirements being less than $0.4 million since 2008.

d. Referring to Bates-stamped pages 1576-1577, please explain the cause of the 2020 budgeted $1.80 million retirement for Account 36902, which is the highest in history with every year's retirements amount being less than $0.3 million since 1982.

A. a. The account 36900 and account 36902 is comprised of aluminum cable. The remainder are other items and unassigned (non-unitized) work order activities.

Overhead Service Account 36900	**Amount**	**Ratio**
Cable AL	76,790,444	99%

Underground Service Account 36902	**Amount**	**Ratio**
Cable AL	125,191,709	99%

b. Tampa Electric took into consideration the other state IOU averages and compared them to where Tampa Electric falls into that range for that account to assist with the best fit possible.

The company's proposed ASL for Account 36900 40 years (for a five-year increase) and net salvage of (20) percent falls within the range of ASL between 34 and 48 years, but outside the range of NS between (40) and (85) percent utilized by other Florida IOUs. The company used statistical analysis by assigning 40-year ASL to service overhead cable costs within the account.

The company's proposed ASL for Account 36902 of 40 years (0-year increase) and net salvage of (10) percent falls within the range of ASL between 38 and 43 years and NS between (40) and (85) percent utilized by other Florida IOUs.

The company used statistical analysis by assigning 40-year ASL to service Underground cable costs within the account.

c. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

d. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

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29. Please refer to Bates-stamped pages 1449 and 1585-1591 for the questions below regarding Account 37300, Street Lighting and Signal Systems.

a. Please identify the major categories of street lights contained in Account 373 and the percent of the account's December 31, 2020 investment associated with each.

b. Please explain the technology changes in last decade that have affected the life of street lighting and signal systems.

c. In Document No. 05429-2011, Docket No. 110131-EI, TECO noted:

LED lighting that provides energy and maintenance efficiency could increase the expected fixture life by 50 percent. There is induction lighting that provides energy and maintenance efficiency that could increase the expected fixture life by 75 percent. And there is remote detection that identifies component failures in progress, which might enable utilities to perform preventative maintenance extending the life of the unit.

Have the above envisioned life extensions been realized? If so, please explain why TECO proposed to retain the existing 20-year ASL of the account as shown on Bates-stamped Page 1449.

d. Does TECO have an inspection and/or replacement program(s) for street lighting and signal systems? Please explain.

e. Does TECO's Storm Protection Plan affect the activities of this account? Please explain.

f. Referring to Bates-stamped pages 1589-1590, please explain the cause of the 2020 budgeted $10.5 million retirement, which is the highest since 1982.

A. a. Please see the table below for the breakdown of Account 373 as of December 2019. The remainder are other items and unassigned (non-unitized) work order activities.

Account 373	Amount	Ratio
Luminaire LED	58,687,097	21%
Luminaire HPS	52,398,794	19%
Premium Fixtures	41,273,072	15%
Cable CU	36,675,133	13%
Conduit	26,550,772	10%
Pole Concrete	20,518,134	7%
Pole Wood	4,559,515	2%
Pole Aluminum	3,283,280	1%
Pole Fiberglass	1,784,436	1%
Cable AL	1,715,440	1%
	247,445,673	**90%**

b. Over the last 10 years, the transition from the older light delivery systems to LED has been the single largest technology transformation in the lighting industry. LEDs may provide a longer asset life as there are less components that can fail; however there is not enough long-term operational data to corroborate this claim. Tampa Electric began deploying LEDs in bulk in 2018 through the LED project, (Docket Nos. 20170199-EI & 20170198-EI) therefore, a sufficient data set to assess how this technology may impact the life of a lighting service is not available.

c. It is inconclusive at this point to determine the life of an LED asset as compared to older technology, as the LED conversion project began in February 2018 and there is not sufficient LED data available. LEDs can potentially provide a longer service life since components (failure mechanisms) such as ballasts only exist in older non-LED technology. Most LED deployments across the industry have been deployed in recent years, therefore, there is insufficient data available. As of March 1st, 2021, Tampa Electric has deployed approximately 145,000 LEDs. Approximately 130,000 have been installed in the last three years through the LED conversion project. The data across the last three years is a sufficient sample set which demonstrates that the reliability of brand-new units which is better than the system average, however, is not reflective of reliability across the life of the asset.

d. Tampa Electric's lighting replacement activities are driven by maintenance needs. Upon mobilization to a service, the technician will assess what activity is needed to restore the light to normal operation which may include replacement of the luminaire. Tampa Electric ceased group re-lamping and removed the activity from its tariff in 2009. Proactive replacement today is performed solely under the LED conversion project (Docket Nos. 20170198-EI & 20170199-EI).

e. Tampa Electric's lighting service is unaffected by the storm hardening activities. Lighting on existing distribution poles will remain active and on the same poles to continue to support public safety. The pole where the distribution feed is transferred from overhead to underground will remain classified as a distribution pole in Account 364.

f. For Commission purposes, only the row labeled Pre-2020 Additions is used. This study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

30. The following questions related to Accounts 37000 and 37001, AMR Meters & Analog Equip and AMI Meters.

a. Referring to Bates-stamped page 1449, please explain the specific reasons justifying the proposed decrease in the ASL for Account 37001, AMI Meters, from 18 years to 15 years, given that (i) no historical data was provided to support this proposed change because "AMI meters additions will occur in January 1, 2022" as indicated on Bates-stamped page 1442 and (ii) the Commission approved ASL for the AMI account for the only Florida utility which maintains an AMI meters account is 20 years (as indicated in TDG Master File, tab "Comparison").

b. In Document No. 04177-2019, Docket No. 20190107-EI, TECO noted:

When the company prepares its next depreciation study, which could be after the AMI project is complete, the AMI meters statistics will be reflected in the life analysis of FERC Account – 370 – Meters based on their then existing remaining life.

Please provide the aforementioned AMI meters statistics, if available, to support the proposed decrease in the ASL of the AMI meters account.

c. Please provide a percentage breakdown of the investment by the type of meters in Account 37000, AMR Meters & Analog Equip. as of December 31, 2019 (actual), and as of January 1, 2022 (prospectively).

d. Please refer to Bates-stamped pages 30 and 1441. Assuming TECO's requested AMR Capital Recovery Schedule is approved, what is the expected remaining plant assets balance in Account 37000, as of January 1, 2022? Please provide a description of each major item and the net book value of its associated investment, as well as the total plant balance as of January 1, 2022.

e. TECO's instant Petition, Item 43, states:

Tampa Electric is in the process of a system-wide replacement of AMR meters and associated infrastructure with state-of-the-art AMI metering infrastructure. Over a four-year period, the company will replace its AMR meters with over 800,000 AMI meters, which will be part of a new, fully functional AMI system that will bring many new customer benefits and company efficiencies to Tampa Electric's service area in January 2022.

(i) Please provide the number, and the associated dollar amount, of AMR meters to be replaced/retired in each of the aforementioned four years.

(ii) How many AMR meters will be remaining in service as of January 1, 2022, if any?

(iii) Does TECO have a plan to continuously replace the remaining AMR meters, if any, with AMI meters after January 2022? Please explain.

f. With respect to the replaced AMR meters, are they junked for scrap salvage? Please explain and identify the impact to depreciation accounts.

g. Please refer to TECO's instant Petition, items 44 – 47, and identify all the depreciation accounts that are affected by the implementation of the AMI system.

A. a. The 370.01 AMI Meter account was established for tracking AMI meter investment. The company determined it was necessary to create subaccounts within Account 370 and established Account 370.00, AMR & Analog, and Account 370.01, AMI Meters. When the company created Account 370.01, AMI Meters, it adopted the pre-existing Account 370.00, AMR & Analog depreciation rates. Account 370.00 blends the average service of digital meter components (15 years) with non-digital meter components (25 years). Account 370.01 would be comprised of only digital meter components with an ASL of 15 years to be consistent with the treatment of digital meter components in Account 370.00. In addition, please see Tampa Electric's response to Staff's First Set of Interrogatories No. In addition, please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 30 (b), below.

b. Tampa Electric does not have any statistics available at this time.

c. Please see the table below for the summary of AMR meters and Other assets within Account 370.00. Additionally, please see Excel file, "(BS 85) labeled Breakdown of 370.00 NBV.xlsx". The company performed this analysis in September 2020 in preparation for filing the depreciation study. The purpose of the analysis was to identify the investment subject to capital recovery amortization of over the requested 10-year period.

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As of 9/30/2020		Estimated Dec-20	Estimated Dec-21	Estimated Dec-22
Assets	**AMR Meters**	$64,265,481	-	-
Assets	**Other Assets**	$13,585,951	$13,585,951	$13,585,951
Assets	**Total**	**$77,851,432**	**$13,585,951**	**$13,585,951**
Reserves	**AMR Meters**	$23,491,495	($36,146,871)	($32,532,184)
Reserves	**Other Assets**	$5,283,261	$6,261,450	$7,334,740
Reserves	**Total**	**$28,774,757**	**($29,885,421)**	**($25,197,444)**
NBV	**AMR Meters**	$40,773,986	$36,146,871*	$32,532,184
NBV	**Other Assets**	$8,302,689	$7,324,501	$6,251,211
NBV	**Total**	**$49,076,675**	**$43,471,372**	**$38,783,395**

***** NBV capital recovery amortization schedule over 10-years

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 30 (c), above.

e. (i) Please see the table below for the number of meters and associated dollars for AMR meter replacement.

Year	# of Poles Replaced	Annual $
2018	50,252	$3,761,746
2019	312,582	$6,754,291
2020	257,178	$5,760,207
2021	95,000 (estimated)	$2,200,000 (estimated)

(ii) As of January 1, 2022, no residential AMR meters are projected to be in-service. Approximately 750 commercial and/or industrial meters will remain in service with one-way communication for meter reading. However, these meters were not traditionally classified as "AMR" meters.

(iii) Tampa Electric Company is committed to providing accurate and reliable metering for our customers. Any meters that are not converted to AMI

technology during the programmed deployment will be converted as technology provides solutions and AMI meters are available.

f. For AMR meters, Tampa Electric scraps for salvage will no impact on the depreciation accounts.

g. Please see the table below for the major additions to the AMI account as of December 2021.

303.15 Software (15-years)	124,068,012
370.01 AMI Meters	108,719,943
391.02 Computer Equipment	1,402,008
370.00 Communications Equipment	6,519,320
	$240,709,283

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31. Referring to Bates-stamped pages 1596-1597, please explain the cause of the 2020 budgeted $2.2 million retirement for Account 39000, Structures and Improvements, which is significantly higher than any other year's retirement amounts since 2007.

A. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31,2019 and contains actual balances for assets and reserves, not a projected filing.

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32. Please refer to Bates-stamped pages 1599-1603 of the Study for the following questions related to Account 39725, Communication Equipment-Fiber:

a. Please provide a list of the major items that comprise the investment in Account 39725 as of December 31, 2019 and December 31, 2021, respectively.

b. Referring to Bates-stamped pages 1602-1603, please explain the cause of the 2020 budgeted $5.6 million retirements, given that all of the annual retirement amounts booked to the account were less than $0.4 million since 1982 and zero retirements were booked to the account since 2010.

c. Will this account have any early retirements due to TECO's deployment and transition from AMR to AMI technology? If yes, please identify the related unrecovered net book value (NBV) of the investment, if any, and explain how the identified NBV will be treated.

A. a. Please see the tables below for a list of the major items that comprise the investment in Account 39725.

The account 397.25 contains fiber cable and fiber equipment as of December 2019. The remainder are other items and unassigned (non-unitized) work order activities.

Account 397.25	Amount	Ratio
Fiber Optic Cable	25,136,062	83%
Fiber Optic Equip	4,325,545	14%
	29,461,607	**97%**

As of December 31, 2021, the estimated breakdown would be similar (B-7 prorated).

Account 397.25	Amount	Ratio
Fiber Optic Cable	29,661,506	83%
Fiber Optic Equip	5,104,307	14%
	34,765,812	**97%**

b. For Commission purposes, only the row labeled Pre-2020 Additions is used. The study filing is as of December 31,2019 and contains actual balances for assets and reserves, not a projected filing.

c. There are no plans for any fiber retirement due to AMI.

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33. Referring to Bates-stamped page 1450, Transportation Equipment accounts, please provide, in MS Excel worksheet, a list of each vehicle in-service as of December 31, 2019, by vehicle account, showing the associated vintage, original cost, and age.

A. Please see the Excel file, "(BS 90) labeled Vehicles 2019 CPR.xlsb", which includes the detailed request for each of the four vehicle accounts.

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34. Referring to Bates-stamped page 1450, Transportation Equipment accounts, please provide, in MS Excel worksheet, a list of each vehicle retired by vehicle account with the associated in-service date, amount retired, salvage realized, and COR incurred for each of the years 2016 - 2020.

A. Revised net salvage schedules have been submitted in Tampa Electric's response to Staff's First Set of Interrogatories, No. 22(f), above. The revised net salvage values removed the Tax RWIP Allocation.

Additionally, please see Excel file, "(BS 92) labeled Vehicles 2016-2020 Retirements and NS.xlsb, which includes the details requested for each of the four vehicle accounts.

In the file, each of the four 392 vehicle accounts are isolated for summarizing the annual asset retirement details and net salvage (NS) tab explanations. Negative cost of removal is due to an error in usage of cost element on the financial transaction posting; these would be classified as Salvage instead of Cost of Removal. Asset retirements are made upon notification; however, in some instances, blanket work orders posting the financial transactions for salvage were not unitized annually, causing the distortion of high salvage in some years and no salvage in other years.

35. Please describe TECO's vehicle retirement policy, e.g., based on vintage, mileage.

A. Fleet Services conducts an annual review of Tampa Electric's vehicles based on age, mileage, and maintenance expense to determine replacement. Internal customer feedback is also taken into consideration. They are then given a ranking and placed on the current year replacement schedule. Unplanned retirements occur in the event unforeseen circumstances dictate, such as accidents beyond repair, and repairs that outweigh the value of the asset.

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36. Please describe TECO's vehicle leasing policy, if any, including the lease buyouts policy that would affect the retirement activities of the vehicle accounts.

A. Tampa Electric utilized leasing prior to 2016. The company determined it was more cost effective to own and operate its own fleet.

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37. Please refer to Bates-stamped pages 1607-1608 for the following questions related to Account 39202, Energy Delivery Light Trucks:

a. In general, please explain why there is removal cost incurred when retiring a vehicle. Please also explain in what situation a positive, or a negative, amount of removal cost will be booked.

b. In general, please explain the logic and general causes of the negative Gross Salvage associated with the retirement of a vehicle.

c. Please explain why this account incurred negative Gross Salvage in 2016.

A. a. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above. Any costs that are associated with retiring a vehicle are related to the preparation for disposal which could include removing logos, devices, and equipment. Additional costs could be associated with transport and fees associated by the auction.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

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38. Please refer to Bates-stamped pages 1612-1613 for the questions below related to Account 39203, Energy Delivery Heavy Trucks:

a. Please explain the causes of the relatively high amount of retirements for the year 2019 and 2020 compared to 2015-2018.

b. Please explain the cause and logic of the negative CORs recorded in 2018 and 2019.

c. In 2016, this account retired $0.43 million investments, but the related cost of removal was more than $1.2 million. Please explain the specific reasons associated with these account activities.

d. Please explain the causes and logic of the negative Gross Salvage recorded in 2016 and 2019, respectively.

A. a. For Commission purposes, only the row labeled Pre-2020 additions is used on Bates Stamped page 1612. This study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing. Please see the table below for Bates Stamped page 1613 as two large bucket trucks were retired in 2019.

Description	Amount ($)
VEH# 02868 2009 INT'L MODEL 7300 & (1) TELECECT MODEL SML55 W/TELELECT BODY PURCHASED FROM TEREX UTILITIES VO#138531	228,268
VEH# 02867 2009 INT'L MODEL 7300 & (1) TELELECT MODEL SML55 W/TELELECT BODY PURCHASED FROM TEREX UTILITIES VO#138533	228,471
	$456,739

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

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39. Please refer to Bates-stamped pages 1617-1618 for the questions below related to Account 39212, Energy Supply Light Trucks:

a. Please explain the cause of the 2020 budgeted retirement which is the highest retirement amount since 2011.

b. In 2015, this account retired a $46,124 investment but incurred a negative $99,959 COR and a negative $53,162 Gross Salvage. Please explain the causes and logic

c. behind these account activities.

d. Please explain the logic and causes of the negative Gross Salvage recorded in 2016.

A. a. For Commission purposes, only the row labeled Pre-2020 additions is used on Bates Stamped page 1617. This study filing is as of December 31, 2019 and contains actual balances for assets and reserves, not a projected filing.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

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40. Please refer to Bates-stamped pages 1622-1623 for the questions below related to Account 39213, Energy Supply Heavy Trucks:

a. Please explain the logic and cause of the negative COR recorded in 2019.

b. Please explain the logic and cause of the negative Gross Salvage recorded in 2019.

c. For 2013 – 2015, this account had zero retirement but incurred relatively high amount of negative COR each year. Please explain the reasons behind.

A. a. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 34, above.

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41. The following questions are related to Accounts 39315 and 39399, Software.

a. Please provide a list of the major items that comprise the investment in Accounts 39315 and 39355, respectively.

b. Please explain whether each of these accounts will be affected by deployment and transition from AMR to AMI technology. If yes, please provide details.

A. a. We interpret this question to refer to Accounts 303.15 and 303.99.

Please see the tables below for the major items that comprise the software investment in accounts 30315 and 30399.

Account 303.99 Software 30-year amortization

Software Description	Amount ($)
ABB Portfolio Optimization	387,444
Planning & Fuels Data Warehouse System	27,715
Total	$415,159

Account 303.15 Software 15-year amortization major items below. The remainder are other items and unassigned (non-unitized) work order activities.

Software Description	Amount ($)	Ratio
SAP Customer Relations and Billing	104,597,041	44%
SAP Enterprise Resource Planning (GL)	34,077,026	14%
Corporate Enterprise Network	18,694,483	8%
EMS	12,251,179	5%
ETRM (Fuels Accounting)	11,761,239	5%
GIS	10,527,524	4%
PowerPlan (Fixed Assets & Tax Accounting)	6,169,452	3%
OMS	6,125,556	3%
Total	$204,203,500	87%

b. The AMI Project in-service date is December 2021 and will result in approximately $124,000,000 of asset additions in Account 303.15 Software 15-year amortization. The 30-year amortization rate from Account 303.99, Software is specifically used for Solar Site operating software.

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42. Please refer to Bates-stamped page 1450 for the questions below regarding the general amortizable accounts:

a. Please explain the Company's policy of retirements of investments in the amortizable accounts. As investments are fully amortized, are they retired regardless of whether or not the related equipment has retired? If no, how do retirements affect the amortization expenses? Please explain.

b. For each of these amortizable accounts, please identify the Commission Order with which the amortization year is prescribed.

A. a. Amortizable accounting relieves the company of asset tagging and tracking each piece of equipment and notification of retirement to the Finance Department. The financial system is configured one of two ways; accounts that are group depreciated (gross plant balance times depreciation rate) or amortized (where individual asset records are individually amortized to the account's reserve). The formula used for amortization of individual asset records is as follows:

$$\frac{\text{Net Book Value (Cost – Reserve)}}{\text{Remaining Number of Months}}$$

This formula technique prevents over depreciation (reserve surplus) situations whether or not the asset cost is retired. The company does monitor when amortizable assets have been fully depreciated and retires the asset record soon after its net book value = $0.

b. The proposed rates for General Plant Amortized are based on guidance under Rule 25-6.0142(3), F.A.C., the Commission's "List of Retirement Units (Electrical Plant) as of January 1, 2000"). For plant accounts or subaccounts within 391, 393, 394, 395, 397, and 398, the Commission prescribes the amortizable lives. In addition, previous Commission approvals via depreciation study or other dockets further authorize the amortizable lives to be used. The company is not proposing any changes in account parameters other than notification of adding subaccount 394.01 ECCR Solar Car Port, which is an approved conservation program, to be recovered using a five-year amortizable life.

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43. Please refer to Petition, pages 7 – 15, for the questions below:

a. Please identify all of the transmission, distribution and general accounts, if any, that will be affected by the Big Bend Modernization Project (Project) for the period 2022 – 2025 during which TECO's proposed new depreciation rates applicable to the accounts will be effective if approved by the Commission.

b. For all of the accounts identified above, if any, please explain how each of the account will be affected by the Project, e.g., expecting large amount of plant addition.

A. a. Big Bend Modernization is a two-phase project. Phase 1's in-service date is December 2021, when Big Bend CT 5 and Big Bend CT 6 will be operational. Phase 2's in-service date is December 2022, when the two CTs' combined cycle steam turbine will be operational. Phase 1 also includes transmission lines and substation equipment buildout for grid connection.

b. Phase 1 production other costs (Accounts 341 to 346) are approximately $355,000,000 and the transmission (Accounts 352, 353, 355 and 356) costs are approximately $28,000,000. Phase 2 production other (Accounts 341 to 346) costs are approximately $446,000,000 in 2022 and $37,000,000 to be spent in 2023 to complete the project.

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Please refer to TECO's Petition for Approval of its 2020 Depreciation and Dismantlement Study and Capital Recovery Schedules (Petition), its Exhibits B - F, H "2020 Depreciation and Dismantlement Study" (Study), the associated MS Excel files "2020 Depr Study Life Analysis - Generation Master File - Filed.xlsx" (Generation Master), "2020 Depr Study Life Analysis - TDG Master File - Filed.xlsx" (TDG Master), and "2020 Generation Dismantling Master File - Filed.xlsx" (Dismantling Master) for the following questions.

Depreciation Study – General

44. TECO's last depreciation study was based on data as of December 31, 2011, and the proposed effective date of the new rates was January 1, 2012. For the instant Study, however, TECO performed the analyses of the depreciation parameters, reserves, and annual accruals as of December 31, 2019, and proposed an effective date of the new depreciation rates as of January 1, 2022 (Bates-stamped pages 51-70).

a. Please explain why TECO did not prepare the instant Study based upon similar to that used in last depreciation study.

b. TECO's Petition, Paragraphs 13 - 49, (also see Exhibits B – H) address two major capital projects, the AMI metering system implementation and the Big Bend Modernization Project, which affect the period of 2020-2023. Since these projects' depreciation activities have significant impacts on various accounts, does TECO agree that including in the Study more updated information, such as 2020 and 2021 data, would make the proposed new depreciation rates more applicable for 2022-2025, the period in which the new rates will be effective?

c. Please explain whether the appropriateness and/or reasonableness of the proposed new depreciation rates would be affected by the additional information/data of two years (2020 and 2021) which are in between the years that are analyzed and the year(s) that are projected.

d. Please provide TECO's understanding/interpretation/implementation of Rule 25-6.0436(4)(d) which requires the following for an electric utility's depreciation study in the context of TECO's 2020 Depreciation Study:

The plant balances may include estimates. Submitted data including plant and reserve balances or company planning involving estimates shall be brought to the effective date of the proposed rates.

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A. a. Commission Order No. PSC-2017-0456-S-EI required Tampa Electric to file its next depreciation study "no more than one year nor less than 90 days before the filing of its next general rate proceeding." As a result, the company was required to submit the instant depreciation study by the end of December 2020. The company's internal preparers began compiling the depreciation study in July 2020 using the most current actual year-end data available at that time, namely December 31, 2019. Projected data for 2021 was not available at that time, so the company did not include projected data through December 31, 2021.

Recently, Tampa Electric updated its depreciation study calculations to reflect actual plant and reserve balances as of December 31, 2020, and forecasted plant and reserve balances at December 31, 2021. We analyzed average remaining service lives using the same unit terminal dates, curve types, average service lives and net salvage factors used in the original study we filed in December 2020.

Our updated calculations resulted in an increase of approximately $7 million in 2022 depreciation expense. Given the numerous estimates used in and the judgmental nature of a depreciation study, the company does not consider this a material change from the amount from the original study, which was used to determine the amount included in the test year in the current rate filing.

The impact of the updated calculations is roughly 1.4% of the total depreciation expense proposed for the test year. The following points should be noted about the results of the updated calculations:

- The updates to the study amounts were predominantly the vintage asset additions and asset retirements that occurred in 2020 and are projected to occur in 2021. The remaining impacts were from actual and projected cost of removal, salvage and adjustment postings to the reserve.
- An example of one component impacting the updated results is the change in asset cost balances in depreciation groups related to assets for which there is a terminal year. For instance, the assets at Bayside Power Station Unit 1 have a terminal year of 2038. The total amount for those assets was roughly $348 million at December 31, 2019, but are forecasted to be about $398 million at December 31, 2021. As a result, the 2022 depreciation amount for Bayside Station is higher by approximately $1.3 million.

- It should be noted that the updates described above resulted in some depreciation rates increasing, some depreciation rates decreasing and some depreciation rates not changing at all.
- Overall, 49% (or 97) of the depreciation groups had no change in the proposed depreciation rate percentage. 21% (or 41) of the depreciation groups had a change of +/- 0.001 in proposed rate. 23% (or 45) of the depreciation groups had a change between +/- 0.001 to +/- 0.005 in the proposed rate. 7% (or 14) of the depreciation groups had a change greater than +/- 0.005 in the proposed rate.

The company has included summaries to reflect the overall impacts resulting from the updated calculations. Please see Excel file, "(BS 105) 2022 Depr Rates Side by Side Comparison.xlsx.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 44(a), above.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 44(a), above.

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 44(a), above.

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45. In the Petition and Exhibits B - F, TECO requested a Capital Recovery Schedule with a ten-year amortization period to recover the unrecovered net book value of the capital investment associated with Big Bend Units 1-3 and AMR to be effective on 1/1/2022. In Exhibit H, TECO requested new annual accruals, calculated based upon the proposed new rates and the plant balance, as of 12/31/2019, to be effective on 1/1/2022. For the purpose of clarification, please provide responses to the following:

a. An update to the "Annual Depreciation Accrual" and "Change in Annual Accruals," shown in Exhibit H, Bates-stamped pages 63-66, as well as the corresponding MS Excel file "Generation Master," tab "Proposed Accrual," using the estimate of the plant cost as of 12/31/2021 which should exclude the NBV amount included in the Capital Recovery Schedule for each affected generation account.

b. Please provide an update to the "Annual Depreciation Accrual" and "Change in Annual Accruals," shown in Exhibit H, Bates-stamped page 1455, as well as the corresponding MS Excel file "TDG Master," tab "Proposed Accruals," using the estimate of the plant cost, as of 12/31/2021, which should exclude the NBV amount included in the Capital Recovery Schedule for Account 37000, AMR Meters & Analog Equip.

c. Please provide an update to the "Annual Depreciation Accrual" and "Change in Annual Accruals," shown on Bates-stamped pages 63-66, as well as MS Excel file "Generation Master," tab "Proposed Accrual," using the estimate of the plant cost as of 12/31/2021 which should exclude the NBV amount included in the Capital Recovery Schedule for each affected generation account.

A. a. Please see Excel file, "(BS 107) 2020 Depr Study Life Analysis - Generation Master File - v3.xlsx". the tabs Proposed Accruals 2021, 2021 B-7, and 2021 B-9, exclude the NBV amount included in the Capital Recovery Schedule for each affected generation account.

b. Please see Excel file "(BS 108) 2020 Depr Study Life Analysis - TDG Master File - v3.xlsx". The tabs Proposed Accruals 2021, 2021 B-7, and 2021 B-9, exclude the NBV amount included in the Capital Recovery Schedule for Account 37000, AMR Meters & Analog Equip.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 45(a), above.

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46. The following questions relate to depreciation reserve.

a. In its last depreciation study, TECO proposed reserve transfers for the majority of production, transmission, distribution and general transportation accounts "to correct negative or inappropriate depreciation rates, to correct for average service life changes and to correct for net salvage changes." (Document Nos. 02905-2011 and 05429-2011, Docket No. 110131-EI) In contrast, TECO did not propose the reserve transfer for any account within the instant Study. Please explain TECO's reason(s) for not proposing any reserve transfers.

b. Please explain TECO's current policy/philosophy for transferring reserve among production plant units and accounts.

A. a. For Production accounts: In the last depreciation study filing, the company performed reserve transfers for accounts within Big Bend Station to correct for historical operational failures and outages that created reserve deficiencies for some older units, while newer units were not as susceptible to creating reserve deficiencies. The company performed these reserve transfers in conjunction with the implementation of various Big Bend environmental SCR assets in between the 2007 depreciation study and 2011 depreciation study. The company did not expect these assets to have reserve deficiencies soon after implementation. These SCR account deficiencies were not related to operational failures and outages. The SCR accounts used initial depreciation start rates that were lower, causing the 2011 depreciation study analysis to yield theoretical reserves deficiencies and set depreciation rates higher going forward. The reserve transfer performed between Bayside Station and Polk Station accounts was related to GE Contractual Service Agreements (CSA) parts replacement modeling of life expectancy changes. In addition, the implementation of new Bayside Units 3-6 and Polk Units 4-5 in between the 2007 depreciation study and 2011 depreciation study, where the initial depreciation start rate of 4.3 percent was higher, caused the 2011 depreciation study analysis to yield theoretical reserves surpluses and set depreciation rates lower going forward.

For Production accounts: In the instant depreciation study filing, the company did not consider reserve transfers for accounts within Big Bend Station due to early shutdown of Big Bend Units 1-3, Big Bend SCRs 1-3, and Big Bend FGD 1 & 2 and the net book value analyses for accelerated cost recovery schedule amortization. The reserve deficiencies generated by the instant depreciation study for Bayside Unit 1 and Bayside Unit 2 are primarily due to the acceleration

of each unit's terminal date by 5 and 6 years, respectively. The company did not consider reserve transfers for Polk Station units, as each unit has an overall reserve deficiency, except for the newer Polk Combined Cycle Steam Turbine assets tied to Polk Units 2-5, which has no reserve surplus nor deficiency at this time.

For Transmission accounts: In the last depreciation study filing, the company proposed rebalancing of each account's theoretical reserve ratio in part because each account within the transmission function had an average service life extension.

For Transmission accounts: In the instant depreciation study filing, only three transmission accounts have an average service life extension. Rebalancing each account or selective accounts can be still performed and would potentially have an immaterial decrease to the overall change in accrual. Reserve transfers from another function are not warranted due to FERC Wholesale rate filings.

For Distribution accounts: In the last depreciation study filing, the company proposed rebalancing of each account's theoretical reserve ratio in part because all but one account within the distribution function had an average service life extension.

For Distribution accounts: In the instant depreciation study filing, some distribution accounts have an average service life extension. Rebalancing each account or selective accounts can be still performed and would potentially have a material decrease to the overall change in accrual.

For General Transportation accounts: In the last depreciation study filing, the company proposed rebalancing of each account's theoretical reserve ratio due to inappropriate depreciation rates on some account of 1.0 percent and 32.4 percent without correct reserve transfers.

For General Transportation accounts: In the instant depreciation study filing, no inappropriate account depreciation rates were identified needing corrective reserve transfers. Rebalancing each account can be still performed and would potentially have an immaterial increase to the overall change in accrual.

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 46(a), above.

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47. For the following questions, please refer to Bates-stamped page 1456 and MS Excel file "TDG Master," tab "Proposed Rates," row 66, where TECO identified a new amortizable general account 39401 ECCR Solar Car Port, indicating "New rate requested for conservation clause project," and proposed a 5-year amortizable rate being effective 1/1/2022.

a. Please provide detailed explanations of this ECCR conservation clause project, specifically, the Solar Car Port for which TECO requested approval of a new amortization rate.

b. Is the indicated "conservation clause project" a new project? If the answer is affirmative, please respond to the following questions:

(i) Has the project been approved by the Commission? Please explain the response.

(ii) When will the project's associated plant be placed in-service?

(iii) What will be the respective initial and total plant amounts associated with the project?

(iv) Apart from Account 39401, are any other depreciation/amortizable accounts affected by the project? If so, please provide details.

c. What are the estimates of the respective annual and total plant amounts of the Solar Car Port to be recorded in Account 39401 for the period 2021 through 2025?

d. What is the manufacturer-suggested service life for the Solar Car Port?

e. Does any other regulated utility, if know, use a same or similar amortization rate for assets which are the same or equivalent to the Solar Car Port? Please explain.

f. Please provide all the relevant information and documents to support the proposed 5-year amortization rate for the requested new Account 39401.

A. a. The commercial/industrial Integrated Renewable Energy System Program (Solar Car Port) is a five-year pilot program to study the capabilities and Demand Side Management ("DSM") opportunities of a fully integrated

renewable energy system. The integrated renewable energy system will include an approximate 800 kW photovoltaic array, two-250 kW batteries, and several electric vehicle charging systems to charge electric vehicles, industrial vehicles, and auxiliary industrial vehicle batteries. The pilot program will have two main purposes. The first main purpose is to evaluate the capability to perform demand response from the main batteries and each vehicle battery and to determine the preferred operating characteristics of a fully integrated renewable and energy storage system to leverage DSM opportunities. The second main purpose is to use the installation and its associated operational information as an education platform for commercial and industrial customers seeking information on this type of system and its benefits, concerns, and capabilities.

b. Yes, the ECCR conservation clause project is a new DSM pilot program.

(i) Yes, the pilot program was approved by the Commission in the company's most recent DSM Plan Docket No. 20200053-EG.

(ii) The estimated in-service date for the project is 05/30/2021.

(iii) The total estimated Plant amount associated with the project is $4,500,000. The estimated initial Plant amount is $4,350,000 with an estimated in-service date of May 2021 and $ 150,000 in June 2021.

(iv) The company does not anticipate using other accounts.

c. The total amount of $4,500,000 will be recorded as plant additions in 2021. No plant additions are expected between 2022 and 2025, other than $10,000 per year in O&M expense.

d. The suggested service life for the Solar Car Port is 30 years.

e. We are not aware of any other regulated Utility that has an Integrated Renewable Energy System Program.

f. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 47(b)(i), above.

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Depreciation Study – Generation (Bates-stamped pages 42-1126)

Questions Nos. 48 – 51 below are related to Big Bend Power Station (BB).

48. Bates-stamped page 44 reads:

Shutdown on 12/31/2021	Shutdown on 4/30/2023
Big Bend Unit 1	Big Bend Unit 3
Big Bend SCR System 1	Big Bend SCR System 3
Big Bend Unit 2	
Big Bend SCR System 2	
Big Bend FGD System 1-2	

The resulting change [for BB Station] is an increase in annual depreciation expense of $4,184,336 as shown on the change in rates and accruals schedule included herein.

a. MS Excel file "Generation Master," tab "Proposed Accrual, indicates that the amount of $4,184,336 is comprised of the proposed changes in annual accruals associated with BB Units 1-3, SCR Systems 1-3 and 1&2 FGD Systems ("Assets") calculated by applying the proposed new depreciation rates (effective on 1/1/2022) to the plant balance of the "Assets" as of 12/31/2019.

On page 18 of the Petition, TECO requested a Capital Recovery Schedule for the unrecovered NBV (as of 1/1/2021) associated with the "Assets."

Please explain the rationale for requesting approval to increase the annual depreciation accruals for the "Asset," in the amount of $4,184,336 that was calculated by using plant balance of the "Assets," as of 12/13/2019, and the new depreciation rates, effective on 1/1/2022, given that the plant balance of the "Assets," as of 1/1/2022, has been included in the requested Capital Recovery Schedule.

b. Referring to Bates-stamped pages 50-51, please explain why TECO proposed to change the Average Service Life (ASL) and the Future Net Salvage Percentage (NS), effective on 1/1/2022, for the following BB Units 1, 2 and 3-related accounts (Acct), given the shutdown dates of these units as listed in the above table:

Acct 31141, BB Unit 1, increase ASL from 50 to 54 years, decrease NS from (1) to (2);

Acct 31241, BB Unit 1, decrease NS from (4) to (5);

Acct 31441, BB Unit 1, decrease NS from (4) to (6);
Acct 31541, BB Unit 1, decrease NS from (3) to (5);
Acct 31641, BB Unit 1, increase ASL from 35 to 42 years.

Acct 31142, BB Unit 2, increase ASL from 50 to 56 years, decrease NS from (1) to (2);
Acct 31442, BB Unit 2, decrease NS from (4) to (6);
Acct 31642, BB Unit 2, increase ASL from 36 to 43 years, increase NS from (8) to (2);

Acct 31143, BB Unit 3, increase ASL from 57 to 60 years, decrease NS from (1) to (2);
Acct 31243, BB Unit 3, increase ASL from 34 to 35 years, increase NS from (6) to (5);
Acct 31443, BB Unit 3, decrease NS from (5) to (6);
Acct 31543, BB Unit 3, increase ASL from 29 to 34 years, increase NS from (6) to (5);
Acct 31643, BB Unit 3, increase ASL from 35 to 37 years, increase NS from (4) to (2);

Acct 31146, 1&2 FGD System, increase ASL from 35 to 36 years;
Acct 31246, 1&2 FGD System, increase ASL from 33 to 34 years;
Acct 31546, 1&2 FGD System, increase ASL from 30 to 32 years;
Acct 31646, 1&2 FGD System, increase ASL from 36 to 38 years.

Acct 31251, 1 SCR System, increase ASL from 23 to 24 years;
Acct 31551, 1 SCR System, increase ASL from 22 to 24 years.

Acct 31552, 2 SCR System, increase ASL from 25 to 27 years;
Acct 31652, 2 SCR System, increase ASL from 28 to 29 years.

Acct 31253, 3 SCR System, increase ASL from 28 to 29 years, decrease NS from (6) to (3);
Acct 31553, 3 SCR System, increase ASL from 27 to 29 years, decrease NS from (6) to (3);
Acct 31653, 3 SCR System, increase ASL from 31 to 32 years, increase NS from (5) to (1);

c. Please explain what plant assets with the estimated amounts, if any, will be left in the above listed accounts on the proposed effective date of the BB Units-related capital recovery schedule;

A. a. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 48 (b) and (c), below.

b. This instant depreciation study approach was to study these accounts as if early shutdown capital recovery was not being considered to provide a baseline change in accrual impact or if capital recovery schedule amortizations were deferred past year 2022. In addition, some accounts will have all assets retired and other accounts will have surviving assets needing an effective depreciation rate on 1/1/2022. The study results indicate various changes to average service lives and net salvage factors consistent with the approach for stratification of assets life categorization within the account, application of Iowa curves, and net salvage assessments. The terminal dates for each unit's accounts were not changed from the terminal dates used in the last depreciation study to prevent acceleration of average remaining lives for the surviving assets. The surviving assets were identified to help support the operations of Big Bend units not subject to early shutdown at this time. The surviving assets may be transferred to the unit accounts in which the surviving assets support going forward.

Additionally, please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 69, below for Net Salvage.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories No. 45(a), above, which provides budgeted estimates for year 2021 to produce the 12/31/2021 change in accruals to align with the 1/1/2022 effective date of implementation. This update reflects some accounts will have surviving assets that will not be retired as part of the early shutdown capital recovery request. The majority of the $4,184,336 12/31/2019 change in accrual will be replaced on 1/1/2022 with the capital recovery 10-year amortization amount. This can be viewed as a net impact effect for year 2022 by turning on the 10-year amortization expense amount and turning off the majority of the group depreciation 12/31/2019 change in accrual amount when the early shutdown assets are retired in December 2021.

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49. Please refer to Bates-stamped page 51 for the questions below related to the Other Production Account 34644, BB CT No. 4 which was placed in-service in 2009:

a. Please identify the major plant assets recorded in this account.

b. Please explain why the existing ASL of this account is zero years.

c. Please provide an explanation to justify the proposed 34-year ASL for the account.

A. a. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 49(c), below.

b. Big Bend CT No. 4 was placed in-service in between the 2007 depreciation study and 2011 depreciation study. At the time of the budgeted 2011 depreciation study, no assets existed in the 34644 account and the company's filing listed the 34644 account but did not request any depreciation rate components as it did for 34144, 34244, 34344 and 34544. This was reflected in Commission Order No. PSC-2012-0175-PAA-EI, which approved the company's 2011 depreciation study. However, when the BB CT No. 4 project work orders were closed and unitized during 2011; assets were placed in-service to account 34644. As a result, the company applied the depreciation rate approved for account 34544 to account 34644. In 2017, Tampa Electric filed a petition with the Commission seeking approval for this depreciation rate for account 34644 subaccounts. *See* Docket No. 20170182-EI. The Commission approved this rate as an interim rate in Order No. PSC-2017-0443-PAA-EI. In this instant depreciation study, the company only reflected the existing rate used by the 34644 account, but none of the 34544 component details.

c. The table below shows how the 34-year ASL was calculated and lists the property included in the 34644 account and the depreciation study parameters applied to each life category supporting the ASL of 34-years.

Property Group	Retirement Unit	Cost	Life Category	ASL	Weighted
Station Air	Compressor	303,874	Medium	30	9,116,233
Station Air	Piping - Under 6"	180,758	Long	40	7,230,306
Station Air	Cooler	18,361	Long	40	734,425
Crane	Crane or Hoist Eqp	7,672	Long	40	306,880
		510,665		**34**	**17,387,844**

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50. Please refer to Bates-stamped page 50 for the questions below regarding BB Common:

a. Will the shutdown of the BB Units 1-3 cause any asset retirements in the BB Common accounts? If so, please provide details.

b. Please identify the plant assets recorded in the BB Common Accounts 31140, 31240, 31440, 31240, 31540 and 31640, respectively, with clarification of what assets are used to serve the coal generation unit and what assets are used to serve the natural gas generation unit.

c. Please provide a detailed explanation to justify the proposed reduction in the ASL associated with the following accounts:

Acct. 31140, from 39 to 35 years,
Acct. 31240, from 36 to 32 years, and
Acct. 31440, from 45 to 43 years.

d. Please provide a detailed explanation to justify the proposed increase in the ASL associated with the following accounts:

Acct. 31540, from 29 to 32 years,
Acct. 31640, from 26 to 30 years.

A. a. No, at this time only the equipment specific to each of the unit accounts was reviewed for early shutdown or need to survive for operating the remaining station units.

b. Please see Excel file,"(BS 121) BB Common 311.40 to 316.40.xlsx".Please see Excel file "(BS 121) BB Common 311.40 to 316.40.xlsx".

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 50 (b), above. Additionally, the main difference between the last depreciation study and this instant depreciation study is that the terminal date for Big Bend Unit 4 operations changed from 2050 to 2045. The terminal dates for Big Bend Common, BB SCR 4, and BB FGD 3&4 are tied to BB Unit 4. This 5-year reduction impacts the stratified long-life category of the accounts 31140 to 31640, where the majority of investment vintage dollars are after year 2000 is the cause for a decreasing average service life.

d. In the last depreciation study, the Big Bend Rail infrastructure project for coal transportation was preliminarily classified to in-service under the 31140 and

31240 accounts. When this project was closed and unitized, about half of the assets dollars that were preliminarily classified to the 31140 account were unitized to accounts 31540 and 31640. As a result, the instant depreciation study now reflects those long life category asset costs, which is the cause for increasing the average service life for accounts 31540 and 31640 and was offset by the terminal date 5-year reduction.

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51. The following questions are related to the BB Modernization Project discussed on Bates-stamped page 45:

a. Please explain the differences, if any, in the asset mix and the new technology deployed in the BB combined cycle (cc) system CT 5-6+CCST, compared with Polk cc system CT 2-5+CCST, that would affect the average service life and depreciation rate.

b. Please refer to MS Excel file "Generation Master," tab "TEC Plant-In Service," and identify BB CCST 5-6's max. nameplate, summer and winter capacity respectively, if known to TECO now at this time.

A. a. Polk CT 2 – 5 + CCST consists of the following:

The Polk Unit 2-5 Combined Cycle Conversion Project converted the existing simple cycle combustion turbine units into a combined cycle electric generating facility. Polk Units 2-5 are four existing, simple cycle General Electric (GE) 7FA combustion turbine generators (CTG) that were converted to a four-on-one combined cycle configuration utilizing Heat Recovery Steam Generators (HRSGs) and a single Steam Turbine Generator (STG). This produces approximately 495 gross additional megawatts (495 MW) using natural gas as the primary fuel for the CTGs and HRSG duct burners. The minimum Plant design life is 35 years with a depreciation rate of 2.9%. This rate was previously approved by the Commission.

BB CT 5 - 6 + CCST consists of the following:

The Big Bend Unit 1 Modernization Project (Project) is to complete the conversion of Big Bend (BB) Unit 1 into a combined cycle electric generating facility, along with associated transmission and interconnection facilities and natural gas infrastructure, located on the site of the existing Big Bend Power Station. Unit 1 is an existing pulverized coal unit that is to be modernized into a single two-on-one combined cycle configuration utilizing two new GE 7HA.02 Combustion turbines, HRSGs and a single Modernized STG reusing the existing generator and portions of the LP steam turbine. BB CT 5 – 6 + CCST includes all modifications and tie-ins to existing facilities required on the existing plant site to complete the desired conversion.

b. When in combined cycle, the max rated net capacity for modernized Unit 1 is 1055 MW summer and 1120 MW winter. This net output is made up of approximately 360 MW summer and 390 MW winter per CT and 335 MW summer and 340 MW winter for ST1.

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Questions Nos. 52 – 56 below are related to Bayside Power Station.

52. Referring to Bates-stamped pages 46 and 52, please provide a detailed explanation to justify the proposed changes in the ASL associated with BP Common-related accounts below:

Acct. 34130, from 45 to 38 years,
Acct. 34230, from 41 to 40 years,
Acct. 34330, from 35 to 25 years,
Acct. 34530, from 26 to 30 years, and
Acct. 34630, from 32 to 29 years.

A. In the last depreciation study, the terminal date year was 2045. The composite average age of the accounts was 11.6 years. The composite average service life of the accounts was 38 years. The composite average remaining life of the accounts was 29 years.

In this instant depreciation study, the terminal date year is still 2045. The composite average age of the accounts is 14.5 years. The composite average service life of the accounts is 34 years. The composite average remaining life of the accounts is 21 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a decreasing/increasing average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2045. Vintage year costs placed in-service after year 2002 can only have a remaining life of 29.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date the long life category, ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

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Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Please see Bates stamped pages 572 to 622 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and, CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

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53. Referring to Bates-stamped pages 46 and 52, please provide a detailed explanation to justify the proposed changes in the ASL associated with BP Unit 1-related accounts:

Acct. 34131, from 40 to 34 years,
Acct. 34231, from 36 to 31 years,
Acct. 34531, from 34 to 29 years,
Acct. 34631, from 38 to 35 years.

A. In the last depreciation study, the terminal date year was 2043. The composite average age of the accounts was 8.5 years. The composite average service life of the accounts was 29 years. The composite average remaining life of the accounts was 22 years.

In this instant depreciation study, the terminal date year was accelerated to 2038. The composite average age of the accounts is 14.4 years. The composite average service life of the accounts is 28 years. The composite average remaining life of the accounts is 14.5 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study is a driver for a decreasing average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage, a terminal date decrease of 5-years, and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2038. Vintage year costs place in-service after year 1998 can only have a remaining life of 18.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long life category ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable) are considered perpetual plant with no end-of-life measurement.

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Additionally, please see Bates stamped pages 623 to 668 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

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54. Referring to Bates-stamped pages 46 and 52, please provide a detailed explanations to justify the proposed changes in the ASL associated with BP Unit 2-related accounts:

Acct. 34132, from 40 to 33 years,
Acct. 34232, from 36 to 32 years,
Acct. 34532, from 35 to 29 years, and
Acct. 34632, from 37 to 34 years.

A. In the last depreciation study, the terminal date year was 2044. The composite average age of the accounts was 8.1 years. The composite average service life of the accounts was 29 years. The composite average remaining life of the accounts was 23 years.

In this instant depreciation study, the terminal date year was accelerated to 2038. The composite average age of the accounts is 14.0 years. The composite average service life of the accounts is 28 years. The composite average remaining life of the accounts is 14.8 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a decreasing average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage, terminal date decrease of 6-years, and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2038. Vintage year costs placed in-service after year 2002 can only have a remaining life of 18.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date the long life category, ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional

accounts (non-amortizable) are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 689 to 714 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

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55. Please refer to Bates-stamped pages 52-53 and 56-57 for the following questions regarding several accounts associated with Bayside BP CT Nos. 3-6 which were placed in-service in 2009 as indicated in MS Excel file "Generation Master," tab "TEC Plant In-Service:"

a. Please explain why the existing ASLs of Account 34633, 34634, 34635 and 34636 are zero years.

b. Please provide an explanation to justify the proposed 30-year ASL for Accounts 34633 and 34634, respectively.

c. Please provide an explanation to justify the proposed 37-year ASL for Account 34635.

d. Please provide an explanation to justify the proposed 40-year ASL for Account 34636.

A. a. Bayside Units 3-6 were placed in-service in between the 2007 depreciation study and 2011 depreciation study. At the time of the budgeted 2011 depreciation study, no assets existed in accounts 34633, 34634, 34635 and 34636. The company's 2011 depreciation study listed the 34633, 34634, 34635 and 34636 accounts but did not request any depreciation rate components as it did for 341, 342, 343, 345 accounts per unit. This was reflected in Commission Order No. PSC-2012-0175-PAA-EI, which approved the company's 2011 depreciation study. However, when the Bayside Units 3-6 project work orders were closed and unitized during 2011, assets were placed in-service to accounts 34633, 34634 and 34636. As a result, the company applied the depreciation rate approved for accounts 34533, 34534 and 34546 to accounts 34633, 34634 and 34646. In 2017, Tampa Electric filed a petition with the Commission seeking approval for these depreciation rates for the seven 346.xx subaccounts. *See* Docket No. 20170182-EI. The Commission approved these rates as interim rates in Order No. PSC-2017-0443-PAA-EI. In this instant depreciation study, the company only reflected the existing rate used by the 34633, 34634, 34635 and 34636 account, but none of the 345 account component details.

b. For account 34633, see Bates stamped page 749 for the vintage asset cost found in the medium life category for the 30-year ASL calculation. For account 34634, Bates stamped page 786 displays the vintage asset cost found in the medium life category for the 30-year ASL calculation.

c. For account 34635, this account does not have any asset costs to study. To prevent this condition of an account not having a rate provided from occurring again, the account 34535 components for average age, average service life and average remaining life were mapped to account 34635. The average age of account 34635 should be 0.0.

d. For account 34636, Bates stamped page 749 displays the vintage asset cost found in the long life category for the 40-year ASL calculation.

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56. Referring to Bates-stamped page 57 and MS Excel file "Generation Master," tab "Plant & Reserve," please explain the nature and cause of the negative amounts of Accumulated Reserves, as of 12/31/2019, recorded in Accounts 34133, 34134, and 34135 associated with BP CT Nos. 3-5.

A. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 61, below.

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Questions Nos. 57 – 60 below are related to Polk Power Station.

57. Referring to Bates-stamped pages 47 and 53, please provide a detailed explanation to justify the proposed changes in the ASL associated with PK Common accounts:

Acct. 34180, from 45 to 35 years,
Acct. 34280, from 28 to 31 years,
Acct. 34380, from 47 to 32 years,
Acct. 34580, from 36 to 30 years, and
Acct. 34680, from 43 to 31 years.

A. In the last depreciation study, the terminal date year was 2047. The composite average age of the accounts was 14 years. The composite average service life of the accounts was 44 years. The composite average remaining life of the accounts was 31 years.

In this instant depreciation study, the terminal date year is still 2047. The composite average age of the accounts is 9.7 years. The composite average service life of the accounts is 34 years. The composite average remaining life of the accounts is 26 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a decreasing/increasing average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2047. Vintage year costs placed in-service after year 1995 can only have a remaining life of 27.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long life category ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

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Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 870 to 912 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

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58. Referring to Bates-stamped pages 47 and 53, please provide a detailed explanation to justify the proposed changes in the ASL associated with PK Unit 1 accounts:

Acct. 34181, from 40 to 34 years,
Acct. 34281, from 32 to 30 years,
Acct. 34381, from 24 to 28 years,
Acct. 34581, from 31 to 33 years, and
Acct. 34681, from 35 to 30 years.

A. In the last depreciation study, the terminal date year was 2036. The composite average age of the accounts was 13.6 years. The composite average service life of the accounts was 30 years. The composite average remaining life of the accounts was 17.5 years.

In this instant depreciation study, the terminal date year is still 2036. The composite average age of the accounts is 17.9 years. The composite average service life of the accounts is 30 years. The composite average remaining life of the accounts is 14.2 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation stud are driers for a decreasing/increasing average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2036. Vintage year costs placed in-service after year 1995 can only have a remaining life of 16.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long life category ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

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Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 913 to 961 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

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INTERROGATORY NO. 59
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59. Referring to Bates-stamped pages 47 and 53-54, please provide a detailed explanation to justify the proposed changes in the ASL associated with PK CT Nos. 2-5 accounts:

Acct. 34182, from 37 to 39 years,
Acct. 34282, from 32 to 28 years,
Acct. 34382, from 25 to 29 years,
Acct. 34582, from 36 to 35 years, and
Acct. 34682, from 30 to 40 years.

Acct. 34283, from 35 to 34 years,
Acct. 34383, from 24 to 32 years,
Acct. 34583, from 34 to 32 years, and
Acct. 34683, from 34 to 40 years.

Acct. 34184, from 41 to 39 years,
Acct. 34284, from 32 to 42 years,
Acct. 34384, from 27 to 31 years, and
Acct. 34584, from 28 to 35 years.

Acct. 34185, from 41 to 39 years,
Acct. 34385, from 27 to 31 years, and
Acct. 34585, from 28 to 35 years.

A. For accounts 34182 to 34682:

In the last depreciation study, the terminal date year was 2040. The composite average age of the accounts was 10.3 years. The composite average service life of the accounts was 28 years. The composite average remaining life of the accounts was 18.6 years.

In this instant depreciation study, the terminal date year is still 2040; however, the composite average age of the accounts is 15.7 years. The composite average service life of the accounts is 32 years. The composite average remaining life of the accounts is 16.4 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a change in average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the

vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage and the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long life category of assets based on the terminal date year of 2040. Vintage year costs placed in-service after year 1999 can only have a remaining life of 20.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long-life category ARL begins to truncate. When investments are made within 30 years of the terminal date, the medium life category ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 962 to 1007 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

For Accounts 34183 to 34683:

In the last depreciation study, the terminal date year was 2042. The composite average age of the accounts was 7.8 years. The composite average service life of the accounts was 27 years. The composite average remaining life of the accounts was 19.8 years.

In this instant depreciation study, the terminal date year is still 2042. The composite average age of the accounts is 16.7 years. The composite average service life of the accounts is 33 years. The composite average remaining life of the accounts is 16.9 years.

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a change in average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the

vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage and the vintage additions and retirements that have occurred since the last depreciation study are drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long-life category of assets based on the terminal date year of 2042. Vintage year costs placed in-service after year 2001 can only have a remaining life of 22.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long-life category ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 1008 to 1053 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

For accounts 34184 to 34684

In the last depreciation study, the terminal date year was 2047. The composite average age of the accounts was 4.3 years. The composite average service life of the accounts was 29 years. The composite average remaining life of the accounts was 24 years.

In this instant depreciation study, the terminal date year is still 2047. The composite average age of the accounts is 11.6 years. The composite average service life of the accounts is 34 years. The composite average remaining life of the accounts is 22 years

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a change in average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the

vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage is also a driver for a decreasing average remaining life, as well as the vintage additions and retirements that have occurred since the last depreciation study. Curve truncation is becoming more prevalent for the long-life category of assets based on the terminal date year of 2047. Vintage year costs placed in-service after year 2006 can only have a remaining life of 22.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long-life category ARL begins to truncate. When investments are made within 30 years of the terminal date the medium life category, ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 1054 to 1090 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yields the average service life and average remaining life per vintage year costs.

For accounts 34185 to 34685

In the last depreciation study, the terminal date year was 2047. The composite average age of the accounts was 4.4 years. The composite average service life of the accounts was 29 years. The composite average remaining life of the accounts was 25 years.

In this instant depreciation study, the terminal date year is still 2047. The composite average age of the accounts is 11.8 years. The composite average service life of the accounts is 33 years. The composite average remaining life of the accounts is 21 years

Production curve usage and the vintage additions and retirements that have occurred within the Long, Medium, Short and CSA life categories since the last depreciation study are drivers for a change in average service life. The vintage survivors have declining average service lives due to the terminal date year (end of life) and the

vintage retirements are no longer included in the weighted average calculation of the account's survivors yielding a lower average service life.

Production curve usage the vintage additions and retirements that have occurred since the last depreciation study are also drivers for a decreasing average remaining life. Curve truncation is becoming more prevalent for the long-life category of assets based on the terminal date year of 2047. Vintage year costs placed in-service after year 2006 can only have a remaining life of 22.5 years for depreciation purposes. This is an accelerated recovery concept that effects production accounts. For example, when investments are made within 40 years of the terminal date, the long-life category ARL begins to truncate. When investments are made within 30 years of the terminal date, the medium life category ARL begins to truncate. Lastly, when investments are made within 20 years of the terminal date, the short life category ARL begins to truncate.

Declining vintage survivor ASL and truncating ARL only impacts the Production accounts, in contrast to Transmission, Distribution and General Plant functional accounts (non-amortizable), which are considered perpetual plant with no end-of-life measurement.

Additionally, please see Bates stamped pages 1091 to 1124 and the various Generation Arrangement Reports for each account's stratified Long, Medium, Short, and CSA life category analysis that yield the average service life and average remaining life per vintage year costs.

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60. Please refer to Bates-stamped pages 52-53 for the following questions regarding several accounts associated with PK CT Nos. 4-5 which were placed in-service in 2007 as indicated in MS Excel file "Generation Master," tab "TEC Plant In-Service:"

a. Please explain why the existing ASLs of Account 34684 and 34685 are zero years.

b. Please provide an explanation to justify the proposed 35-year ASL for Accounts 34684 and 34685, respectively.

A. a. Accounts 34684 and 34685 do not have any asset costs. In previous depreciation study filings, these accounts had no assets to study and no rate was requested. In 2017, Tampa Electric filed a petition with the Commission seeking approval for depreciation rates for the seven 346.xx subaccounts. *See* Docket No. 20170182-EI. The Commission approved these rates as interim rates in Order No. PSC-2017-0443-PAA-EI. If future additions are made to the 346 account, which is possible, the company is requesting a rate similar to those like kind accounts.

b. The ASL is taken from the 34584 and 34585 accounts and the ARL of 28 is the terminal year 2047 minus 2019 to calculate the remaining life rate.

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61. Referring to Bates-stamped pages 57 and MS Excel file "Generation Master," tab "Plant & Reserve," please explain the nature and cause of the negative amount of Accumulated Reserves, as of 12/31/2019, recorded in the following accounts:

Account 34133, BP CT No. 3 – Str & Improve, ($27,876),
Account 34134, BP CT No. 4 – Str & Improve, ($122,817),
Account 34135, BP CT No. 5 – Str & Improve, ($173,609), and
Account 34680, Polk Common – Misc. Power Plant Equipment, ($131,378).

A. For accounts 34133, 34134, and 34135, the negative reserve balance occurred as a result of the last depreciation study that used budgeted projections and rebalancing of theoretical reserves via transfers. The budgeted amount for these account assets and reserves used in the last depreciation study were budgeted too high and as a result, when the reserve transfers were booked to the financial system during 2012, the reserve balances became negative.

For account 34680, the negative reserve balance occurred in 2018 as the result of retiring analog security system camera equipment that was replaced with digital camera technology additions.

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62. Please refer to MS Excel file "Generation Master," tab "Solar" for the questions below:

a. Please identify the major plant assets recorded in Account 342.99 – Fuel Holders, Producers and Accessories that are associated with a solar site. Are they similar to the major plant assets recorded in a Fuel Holders, Producers and Accessories accounts that are associated with a coal-fired generation units and/or a natural gas-fired generation units?

b. Please identify the major plant assets recorded in Account 343.99 – Prime Movers, that are associated with a solar sites. Are they similar to the major plant assets recorded in a Prime Movers accounts that are associated with a coal-fired generation units and/or a natural gas-fired generation units?

c. In which account are the solar photovoltaic panels recorded?

A. a. Currently, the Solar projects in-service and under construction will be utilizing the accounts 341.99, 343.99, 345.99 and 348.99.

The format of the depreciation study summarization schedules assumes the accounts eligible to used are 341, 342, 343, 345 and 346 for a generating unit. To prevent the condition from occurring, as noted by the company's responses to Staff's First Set of Interrogatories Nos. 49 (b), 55 (a) and 60 above, the company is requesting a depreciation rate for accounts 342.99 and 346.99 based on zero asset costs found in the accounts.

b. The 340 to 346 series of accounts for other production is currently used by utilities for generating units that are not coal-fired steam, nuclear, or hydraulic. The 340 to 346 series of accounts would contain natural gas-fired and wind generating units. Solar Sites have not been broken out by FERC and thus fall under the other production 340 to 346 series of accounts. At this time, the 343 account is the best fit for solar photovoltaic panels and inverters that are converting sun light into electricity.

Equipment	Account 343.99	Ratio
Panels	$ 263,410,878	97%
Inverter	7,505,623	3%
	$ 270,916,501	**99%**

c. Solar photovoltaic panels are only recorded in account 343.99

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63. Please explain the methodology (including the use of stratified investment) TECO used in the current Study to determine the curve shape, average service life, future net salvage, and average remaining life for production plant. Please provide an example with sample calculations.

A. Please see Tampa Electric's response to Staff's First Set of Interrogatories, Nos. 64, 65, 66, 67, 68 and 69, below.

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64. Please respond to the following questions regarding the life category stratification:

a. Referring to MS Excel file "Generation Master," tab "Life Category 2019," please explain what is meant by the column titled "Production – CSA."

b. Please identify all the life categories TECO used in the 2020 Study, and provide an example of assets contained in each stratified life category.

c. Please explain how the stratified life categories for each production plant site were determined.

d. Are the stratified life categories used for each production plant site the same as those used in the 2011 depreciation study? If the categories are different from the 2011 study, please identify the specific reasons justifying each life category change.

e. Please explain how the average age of each life category is determined.

f. Please explain how TECO determined the curve types for long, medium, and short life production plant in the 2020 Study. If the method used differs from that method used in the 2011 study, please explain why the current method was chosen.

A. a. The Production – CSA life category is given to the part replacements managed under the contractual service agreements with General Electric (GE). The activities included are related to combustion turbine outages at Bayside and Polk stations. These parts are highly susceptible to wear and tear and are replaced more frequently than assets found in the life categories of Long, Medium and Short.

b. Tampa Electric used the following life categories in the instant depreciation study:

Long – buildings and enclosures, superstructures, concrete foundations, support steel, roads, reservoirs, steel piping, conduit, waste ponds, etc.

Medium – boiler tubes, ductwork, waterfall tubes, rotors, stators, pump systems, conveyors, compressors, control systems, transformers, etc.

Short – computer equipment, monitors, exhaust systems, expansion joints, SCR and FGD catalyst, steam turbine parts, etc.

CSA – combustion turbine parts; nozzle tips, baskets, blade rows, etc.

c. Consistent with prior depreciation studies, the asset retirement units' assignment to each stratified life category were developed by the company's operations engineers based on service life expectations. Assets subject to wear and tear generally have shorter lives. Other assets that house and support the operations of the units generally have longer lives.

d. Yes, the stratified life categories used for each production plant sites are the same as used in the 2011 depreciation study.

e. Coal-fired units at Big Bend have had life extensions over the years. In the 2007 depreciation study, Big Bend Common and Units 1- 4 life spans were extended by 15 years. The long-life category uses a SQ curve type and curve age is based on the maximum life span of the unit (terminal date year minus the unit's in-service year). The medium life category uses a S4 curve type and curve age of 35 years. The short life category uses a S3 curve type and curve age of 20 years.

Natural gas-fired units at Bayside and Polk are assumed to have a 40-year maximum life span. The long-life category uses a SQ curve type and curve age of 40 years, except for Common plant curve age is extended to support the last unit placed in-service. The medium life category uses a S4 curve type and curve age of 30 years. The short life category uses a S3 curve type and curve age of 20 years. The CSA life category uses a SQ curve type and curve age of 12 years.

f. The curve types used for Medium – S4, Short – S3 and CSA – SQ have been used in prior depreciation study filings. The curve type used for Long has changed from a custom/modified Iowa curve used in prior depreciation study filings to using a SQ curve type. This was determined during the replacement of the spreadsheet depreciation study model and implementation of the PowerPlan Depreciation Study software.

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65. Referring to "Generation Master," tab "TEC Plant In-Service," please identify all the generation units, if any, in which the Capital Recovery year is different from what was proposed in TECO's 2011 depreciation study with an explanation of the specific reasons for capital recovery date revision.

A. The generating units that have different capital recovery years are Big Bend Station Common, Big Bend Unit 4 Boiler, Big Bend SCR 4, and FGD 3 & 4. These generating units' capital recovery year were reduced by 5-years. Additionally, Bayside Station Units 1 and 2 also have a different capital recovery schedule. Bayside Station Unit 1 capital recovery year was reduced by 5-years and Bayside Station Unit 2 capital recovery year was reduced by 6-years. The company believes that it is prudent to recognize public policy changes and the trend in the utility industry towards reduced coal consumption by reducing the lives of coal-burning generating assets.

Station Unit No.	2011 Recovery Year	2019 Recovery Year
Big Bend Station		
Common	2050	2045
Boiler 4	2050	2045
FGD 3&4	2050	2045
SCR 4	2050	2045
Bayside Station		
Unit 1 (3xCT + CCST)	2043	2038
Unit 2 (4xCT + CCST)	2044	2038

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66. Did TECO use any interim retirement rate for production plant? If yes, please explain how an interim retirement rate was derived and provide both a quantitative explanation as well as a narrative explanation.

A. No. The depreciation study software used for this instant filing performs all the Iowa curve calculations for average remaining life and theoretical reserve analysis.

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67. Did TECO use any future estimated retirement rate for production plant? If yes, please explain how a future estimated retirement rate was derived and provide both a quantitative explanation as well as a narrative explanation.

A. No. The depreciation study software used for this instant filing performs all the Iowa curve calculations for average remaining life and theoretical reserve analysis. In prior depreciation study filings, future estimated retirement rates were used for the applicable of net salvage factors. The depreciation study software used for this instant filing applies net salvage factors to the surviving plant balances.

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68. For production plant, does TECO propose any curve types (e.g., S3-25) different from those that are currently prescribed? If so, please explain, by account, the quantitative and qualitative reasons for the change.

A. Yes, Tampa Electric proposed different curve types. The curve type used for the long-life category has changed from a custom/modified Iowa curve used in prior depreciation study filings to using a SQ curve type. This was determined during the replacement of the spreadsheet depreciation study model and implementation of the PowerPlan Depreciation Study software. The curve type used for the medium life category for Big Bend CT4, Bayside and Polk stations were changed from S3 - 25 to S4 - 30 to provide more useful life separation from the short life category. The curve type used for the short life category S3 - 20 did not change.

Please see Excel file, "(BS 152) Curve and NS Changes.xlsx".

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69. For each production account where TECO's proposed interim future net salvage differs from what is currently prescribed, please explain the reasons for changing the future net salvage. The explanation should include relevant quantitative data and analysis as well as a brief narrative explanation for each account.

A. In prior depreciation study filings, the spreadsheet model used a future estimated retirement rate to applied net salvage factors. A like-kind template approach was used for applying net salvage to each account's estimated retirements per life category. The new depreciation study software does not use an estimated retirement rate for application of net salvage. An analysis was performed based on B-9 from 2011 to 2019 and 5-year average activities basis for net salvage. A like-kind template was derived to apply net salvage to coal-fired Big Bend accounts and natural gas-fired Bayside and Polk units. In addition to the internal analysis, the results were compared to the other Florida utilities recent depreciation study filings for reasonableness.

Please see Excel file, "(BS 154) 2020 CPR - NS Analysis on ASR 2011 to 2019 - Final.xlsx".

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70. Referring to Bates-stamped pages 80-1124, please explain how production plant retirements were estimated and developed for the budget year 2020.

A. This instant filing is based on 2019 actuals and is not a 2020 projected budget filing. The new depreciation study software attempts to project the next year's retirement but is not relied upon. See the example below of the Remaining Life Depreciation Accrual report for the 311.42 Medium life category account. This instant filing focus is on the Pre-2020 Additions row of information only.

Remaining Life Depreciation Accrual

Account: 311.42 M Str & Improvements-BB2
Scenario: TEC 2019 A - Strat 20201110
Dispersion: 35.00 - S4
Average Net Salvage Rate: -2.00%
Future Net Salvage Rate: -2.00%

Broad Group Procedure

January 1 , 2020

	Plant Amt	Remaining Life	Accrual (Dollars)	Accrual Rate (Gross Plant)	Accrual Rate (Net Plant)
Pre- 2020 Additions	$455,204.54	16.63	$21,601.56	4.745461%	6.014767%
2020 Additions	$0.00	0.00	$0.00	0.000000%	
2020 Retirements	($22,846.89)	0.50	($332.93)	1.457222%	
Total:	$455,204.54 *		$21,268.63	4.672323%	5.922065%
Average:	$443,781.10		$21,268.63	4.792594%	6.120642%

* Excluding 2020 Retirements

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71. Please provide, in MS Excel file, TECO's actual (or estimate if the actual is not available) Production Plant and Reserve Activities, for the year ending December 31, 2020. For this request, please use a similar format as MS Excel file "Generation Master," tabs "2019 B-7" and "2019 B-9."

A. Please see Excel file, "(BS 105) 2020 Depr Study Life Analysis - Generation Master File - v3.xlsx", provided in Tampa Electric's response to Staff's First Set of Interrogatories, No. 45(a), above.

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72. Please provide, in MS Excel file, TECO's 2021 Budget of Production Plant and Reserve Activities, in a similar format as MS Excel file "Generation Master," tabs "2019 B-7" and "2019 B-9."

A. Please see Excel file, "(BS 105) 2020 Depr Study Life Analysis - Generation Master File - v3.xlsx", provided in Tampa Electric's response to Staff's First Set of Interrogatories, No. 45(a), above.

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73. Please refer to MS Excel file "Generation Master," tab "Plant & Reserve" for the questions below:

a. Please describe the plant assets included in the amortizable Accounts 31647 (Big Bend Amortizable Tools), 34637 (Bayside Amortizable Tools) and 34687 (Polk Amortizable Tools).

b. Please describe the plant assets included in the amortizable Accounts 31247 (Big Bend Fuel Clause), and 34287 (Polk 1 Fuel Clause).

c. Please explain how the amortization expense is calculated for the aforementioned production plant accounts, and specify how the vintage group concept is applied within the calculation.

A. a. These tool account equipment types are of the same natural accounts that is prescribed for account 394 Tools, Shop and Garage Equipment. Each power station has its own tool account, since these tools are not transferrable and are to be used with that power station, not cross-functionally like the 394 account between transmission and distribution operating locations.

b. These two accounts were created for fuel clause purposes that recovered the cost over a 5-year period. The investments were made to allow for Big Bend Units 1-4 and Polk Unit 1 to pre-heat with natural gas instead of propane. Big Bend Units 1-4 started using the 312.47 account in 2015 and recovered the asset cost through 2020.

Polk Unit 1 started using the 342.87 account in 2013, the asset costs were recovered through 2018.

The types of assets included in both accounts are;

Equipment Types
Control Valve
Heater / Heater Shell
Piping - Under 6"
Piping 6" & larger
Skid
Structural Support Steel
Valves - 10" & larger
Wire & Cable

c. The financial system is configured one of two ways; accounts that are group depreciated (gross plant balance times depreciation rate) or amortized (where individual vintage asset records are individually amortized to the account's reserve). The formula used for amortization of individual vintage asset records is as follows:

$$\frac{\text{Net Book Value (Cost – Reserve)}}{\text{Remaining Number of Months}}$$

This formula technique prevents over depreciation (reserve surplus) situations whether or not the asset cost is retired. The company does monitor when amortizable assets have been fully depreciated and retires the asset record soon after its net book value = $0.

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74. Apart from the Big Bend Modernization Project, are there any major overhauls or upgrades planned for production plant during 2020 - 2025? If so, please include a description of the work to be performed, any retirement units expected to be replaced as a direct result of the overhaul or upgrade, and identify the year each overhaul or upgrade is planned to take place. Please provide the January 1, 2022 estimated investment and reserve associated with the equipment currently planned for replacement during each overhaul, by account by plant site.

A. The table below represents the planned major overhauls and upgrades to production plant. This is a five-year projection where the estimated scope, costs and timing are subject to change based on operation changes and generation system demands. The assets records have not been identified for retirement at this time, so we will not be able to identify the associated reserve.

Big Bend	2020	2021	2022	2023	2024	2025	Total	Assets
BB4 FGD Common Inlet Duct	13,457,647						13,457,647	FGD duct work
BB4 Generator Rewind	5,438,049						5,438,049	Generator
BB4 BFP Turbine Overhaul	1,089,522						1,089,522	Boiler Feed pump
BB4 HP/IP/LP Main Turb&Vlv	6,442,430						6,442,430	HP,IP,LP turbine calves
BB4 ESP Fields 3&4 Replacement	16,122,183						16,122,183	BB4 Precipitator
BB4 2019 Furnace Water Wall Tube Re	7,095,623						7,095,623	Boiler waterwall tubes
BB4 APH Replacement	2,743,805						2,743,805	Air preheater
Big Bend 4 Major Outage	**52,389,260**	**-**	**-**	**-**	**-**	**-**	**52,389,260**	
BB4 Boiler Furnace Roof Tube Replacement					3,437,500	4,690,496	8,127,996	Boiler waterwall tubes
HP/LP Centerline Improvements					3,424,170	4,669,323	8,093,493	Turbine
BB4 GSU Replacement					2,000,000	3,000,000	5,000,000	GSU
Phase II Ductwork					1,000,000	2,000,000	3,000,000	Ductwork
ID Fans (A&B) Wheels Replacement					1,000,000	2,000,000	3,000,000	ID Fans
Big Bend 4 Major Outage	**-**	**-**	**-**	**-**	**10,861,670**	**16,359,819**	**27,221,489**	
Bayside								
BPS Advanced Hardware Upgrades	665,405	27,276,200	20,233,867	29,505,934	8,027,250		85,708,655	Replace Hot Gas components
BPS unit 1 major		1,068,356	8,904,839	4,880,250	8,099,166		22,952,611	HP/IP/LP turbine rotor and blades
BPS unit 2 major		889,268	5,915,014	23,449,615			30,253,897	steam turbine and control repl.

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75. Are there any substantial retirements or additions to production plant expected in connection with current or proposed state or federal regulations, including environmental regulations, during 2021-2025? If so, please include a description of the regulation and the work to be performed, any retirement units expected to be replaced as a direct result, and identify the year(s) each retirement or addition is planned to take place. Please provide the January 1, 2022 estimated investment and reserve associated with the equipment currently planned for replacement, by account by plant site.

A. The table below represents the planned major overhauls and upgrades to production plant. This is a five-year projection where the estimated scope, costs and timing are subject to change based on operation changes and generation system demands. The assets records have not been identified for retirement at this time, so we will not be able to identify the associated reserve.

Big Bend	2020	2021	2022	2023	2024	2025	Total	Assets
ECRC FGD Waste Inj.	2,382,912	13,675,041	8,173,319				21,848,360	Pumps, motors, piping, valves

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76. Please refer to TECO's Response to OPC's 1st IRR Nos. 1-5, Electronic Files IRR 05, "(BS 18) 2020 CPR - Generation Life Category Analysis.xlsb." It appears that a different tab of this file shows a different plant amount for the same power station as indicated in Table 1 below:

Table 1: Different Plant Amounts Shown in Different Tabs of "(BS 18) 2020 CPR - Generation Life Category Analysis.xlsb"

File Name	(BS 18) 2020 CPR - Generation Life Category Analysis.xlsb		
Tab Name	Summary Depr Study View	Summary Generation Depr Groups	B-7 2019
	(1)	(2)	(3)
Bayside Total	1,110,577,446.47	1,112,170,337.52	1,110,577,446.47
Big Bend Total	2,221,175,464.51	2,228,099,093.02	2,180,333,328.62
Polk Total	1,368,350,417.81	1,386,547,759.28	1,368,350,417.81
Solar Total	545,189,315.58	611,379,191.93	545,189,315.58
Grand Total	5,277,215,390.94	5,370,119,128.32	5,245,292,644.37

a. In general, please explain the difference between the plant amounts shown in column (1) and column (2) for a same power station, or, the grand total of production plant.

b. Please explain the difference between the plant amounts shown in columns (1) and (2) associated with the Bayside Station.

c. Please explain the difference between the plant amounts shown in columns (1) and (2) associated with the Big Bend Station.

d. Please explain the difference between the plant amounts shown in columns (1) and (3) associated with the Big Bend Station.

e. Please explain the difference between the plant amounts shown in columns (1) and (2) associated with the Polk Station.

f. Please explain the difference between the plant amounts shown in columns (1) and (2) associated with the Solar Total.

g. Please explain the difference between the amounts shown in columns (1), (2) and (3) associated with the Production Plant Grand Total.

A. a. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 76(b) - (f) below.76(b) - (f), below.

b. The variance between (1) and (2) is due to the inclusion of account 340.30 Land & Land Rights-BPC amount of $1,592,891. Land is excluded from the (1) depreciation study view. The variances between (3) and (2) are due to the inclusion of account 340.30 Land & Land Rights-BPC amount of $1,592,891. Land accounts on (3) B-7 2019 are included in a different subtotal section called Non-Depreciable Property.

c. The variance between (1) and (2) is due to the inclusion of account 310.40 Land & Land Rights-BBCM amount of $ 6,923,629. Land is excluded from the (1) depreciation study view. The variance between (3) and (2) is due to the inclusion of account 310.40 Land & Land Rights-BBCM amount of $6,923,629 and other production Big Bend CT 4 accounts 341.44 to 346.44 amount of $40,842,136. Land accounts on (3) B-7 2019 are included in a different subtotal section called Non-Depreciable Property and on (3) B-7 2019 Big Bend has two subtotals, one in steam production and in other production.

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 76 (c), above.

e. The variance between (1) and (2) is due to the inclusion of account 340.81 Land & Land Rights-Polk Unit 1 amount of $18,197,341. Land is excluded from the (1) depreciation study view. The variances between (3) and (2) are due to the inclusion of account 340.81 Land & Land Rights-Polk Unit 1 amount of $18,197,341. Where land accounts on (3) B-7 2019 is included in a different subtotal section called Non-Depreciable Property.

f. The variance between (1) and (2) is due to the inclusion of account 340.99 Land & Land Rights-Solar amount of $66,189,876. Land is excluded from the (1) depreciation study view. The variances between (3) and (2) are due to the inclusion of account 340.99 Land & Land Rights-Solar amount of $66,189,876. Where land accounts on (3) B-7 2019 is included in a different subtotal section called Non-Depreciable Property.

g. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 76(b) - (f), above.

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77. Referring to TECO's response to OPC's 1st POD 2, "(BS 68) Mortality Curve ID.xlsx," where TECO provided the following the mortality curves that were used in the 2020 Study:

Mortality Curve Id	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
Description	GM1.0	GM1.5	GM2.0	GM2.5	GM3.0	GM3.5	GM4.0	GM4.5	GM5.0	GM5.5	H0.50	H1.00	H1.50	H2.00	H2.50	H3.00	H4.00	H5.00
Gm Indicator	1	1	1	1	1	1	1	1	1	1	3	3	3	3	3	3	3	3

a. Please explain what is a GM curve type.

b. Please explain what is an H curve type.

c. Please explain the difference between GM1.0 and GM 1.5 types.

d. Please explain the difference between H1.0 and H1.5 types.

e. Please explain why a Gm indicator is applicable, even for an H curve type.

A. a. The file (BS 68) Mortality Curve ID.xlsx was only a refence list to be used in conjunction with all the other files provided in response OPC's 1st POD2. The file (BS 68) Mortality Curve ID.xlsx was not intended to be a listing of only the curves used in this instant depreciation study. The data set provided was an extraction of the entire Depreciation Study software eligible curves table to support the various other files submitted. Below chart are the curves that were used in this instant depreciation study.

Generation Curves	T,D&G Curves
S3	L1
S4	L3
SQ	L4
	R1
	R1.5
	R2
	R3
	R5
	S0
	S4
	S5
	SQ

b. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 77(a), above.

c. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 77(a), above.

d. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 77(a), above.

e. Please see Tampa Electric's response to Staff's First Set of Interrogatories, No. 77(a), above.