BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20210007-EI

ENVIRONMENTAL COST RECOVERY FACTORS

PROJECTIONS

JANUARY 2022 THROUGH DECEMBER 2022

TESTIMONY

OF

BYRON T. BURROWS

FILED: AUGUST 27, 2021

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

BYRON T. BURROWS

Q. Please state your name, address, occupation, and employer.

A. My name is Byron T. Burrows. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or "company") as Director, Environmental Services Department.

Q. Please provide a brief outline of your educational background and business experience.

A. I received a Bachelor of Science degree in Civil Engineering from the University of South Florida in 1995. I have been a Registered Professional Engineer in the state of Florida since 1999. Prior to joining Tampa Electric, I worked in environmental consulting for sixteen years. In January 2001, I joined TECO Power Services as Manager-Environmental with primary responsibility for all power plant environmental permitting, and I have primarily worked in the areas of

environmental, health and safety. In 2005, I became Manager of Air Programs. My responsibilities included air permitting and compliance related matters. In 2020, I was promoted to my current position, Director of Environmental Services. My responsibilities include the development and administration of the company's environmental policies and goals. I am also responsible for ensuring resources, procedures, and programs comply with applicable environmental requirements, and that rules and polices are in place, function properly, and are consistently applied throughout the company.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to demonstrate that the activities for which Tampa Electric seeks cost recovery through the Environmental Cost Recovery Clause ("ECRC") for the January 2022 through December 2022 projection period are activities related to programs previously approved by the Commission for recovery through the ECRC.

Q. Please provide an overview of the environmental compliance requirements that are the result of the Consent Final Judgment ("CFJ") entered into with the Florida Department of Environmental Protection ("FDEP") and the

Consent Decree ("CD") lodged with the U.S. Environmental Protection Agency ("EPA") and the Department of Justice ("the Orders").

A. The general requirements of the Orders provide for further reductions of sulfur dioxide ("SO_2"), particulate matter ("PM") and nitrogen oxides ("NO_x") emissions at Big Bend Station. Tampa Electric has implemented the requirements of the Orders, and now these agreements have been terminated by the corresponding court systems. The ongoing requirements of these projects, which are further described later in my testimony, are now part of the Big Bend Title V operating permit (0570039-128-AV). The projects that are now required under the operating permit are listed below.

- Big Bend Particulate Matter ("PM") Minimization Program
- Big Bend NO_x Emission Reduction Program
- Big Bend Units 1 – 3 Pre-Selective Catalytic Reduction ("SCR") Projects
- Big Bend Units 1 – 4 SCR Projects

Q. Does the termination of the Orders change any of the environmental compliance requirements applicable to the company's generating units?

A. No, the termination of the Orders does not change any of the environmental compliance requirements applicable to the company's generating units. The requirements of the Orders are now part of the Title V operating permit.

Q. Please describe the Big Bend PM Minimization and Monitoring program activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. The Big Bend PM Minimization and Monitoring Program was approved by the Commission in Docket No. 20001186-EI, Order No. PSC-2000-2104-PAA-EI, issued November 6, 2000. In the order, the Commission found that the program met the requirements for recovery through the ECRC. Tampa Electric had previously identified various projects to improve precipitator performance and reduce PM emissions as required by the Orders. Tampa Electric does not anticipate any capital expenditures for this program during 2022; however, the O&M expenses associated with existing and recently installed Best Operating Practice ("BOP") and Best Available Control Technology ("BACT") equipment and continued implementation of the BOP procedures are expected to be $259,560.

Q. Please describe the Big Bend NO_x Emission Reduction program activities and provide the estimated capital and O&M expenses for the period of January 2022 through December 2022.

A. The Big Bend NO_x Emission Reduction program was approved by the Commission in Docket No. 20001186-EI, Order No. PSC-2000-2104-PAA-EI, issued November 6, 2000. In the order, the Commission found that the program met the requirements for recovery through the ECRC. Tampa Electric does not anticipate any capital expenditures for this program in 2022; however, the company will perform maintenance on the previously approved and installed NO_x reduction equipment. This activity is expected to result in approximately $2,089 of O&M expenses during 2022.

Q. Please describe the Big Bend Units 1 through 3 Pre-SCR and the Big Bend Units 1 through 4 SCR projects and provide estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. In Docket No. 20040750-EI, Order No. PSC-2004-0986-PAA-EI, issued October 11, 2004, the Commission approved cost recovery of the Big Bend Units 1 through 3 Pre-SCR and the Big Bend Unit 4 SCR projects. The Big Bend Units 1

through 3 SCR projects were approved by the Commission in Docket No. 20041376-EI, Order No. PSC-2005-0502-PAA-EI, issued May 9, 2005. The purpose of the Pre-SCR technologies is to reduce inlet NO_x concentrations to the SCR systems, thereby mitigating overall SCR capital and O&M expenses. Those Pre-SCR technologies include windbox modifications, secondary air controls, and coal/air flow controls. The SCR projects at Big Bend Unit 1 through 4 encompass the design, procurement, installation, and annual O&M expenses associated with an SCR system for each unit. The SCR for Big Bend Units 1 through 4 were placed in service April 2010, September 2009, July 2008, and May 2007, respectively.

For the period of January 2022 through December 2022, there are not any capital or O&M expenditures anticipated for the Big Bend Units 1 through 3 Pre-SCR projects. There are not any anticipated capital expenditures for the Big Bend Units 1 through 4 SCR. There are no O&M expenses anticipated for Big Bend Unit 1 SCR and Big Bend Unit 2 SCR. The O&M expenses are projected to be $372,522 for Big Bend Unit 3 SCR, and $1,397,376 for Big Bend Unit 4 SCR. These expenses are primarily associated with ammonia purchases and maintenance.

Q. Please identify and describe the other Commission-approved programs, or those pending Commission approval, that you will discuss.

A. The programs previously approved or pending approval by the Commission that I will discuss include the following projects:

1) Big Bend Unit 3 Flue Gas Desulfurization ("FGD") Integration.
2) Big Bend Units 1 and 2 FGD
3) Gannon Thermal Discharge Study
4) Bayside SCR Consumables
5) Clean Water Act Section 316(b) Phase II Study
6) Big Bend FGD System Reliability
7) Arsenic Groundwater Standard
8) Mercury and Air Toxics Standards ("MATS")
9) Greenhouse Gas ("GHG") Reduction Program
10) Big Bend Gypsum Storage Facility
11) Coal Combustion Residuals ("CCR") Rule
12) Big Bend Unit 1 Section 316(b) Impingement Mortality
13) Big Bend Effluent Limitations Guidelines ("ELG") Rule Compliance
14) Bayside Section 316(b) Compliance (pending approval in Docket No. 20210087-EI, filed on April 21, 2021)

Q. Please describe the Big Bend Unit 3 FGD Integration and the Big Bend Units 1 and 2 FGD activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. The Big Bend Unit 3 FGD Integration program was approved by the Commission in Docket No. 19960688-EI, Order No. PSC-1996-1048-FOF-EI, issued August 14, 1996. The Big Bend Units 1 and 2 FGD program was approved by the Commission in Docket No. 19980693-EI, Order No. PSC-1999-0075-FOF-EI, issued January 11, 1999. In these orders, the Commission found that the programs met the requirements for recovery through the ECRC. The programs were implemented to meet the SO_2 emission requirements of the Phase I and II Clean Air Act Amendments ("CAAA") of 1990. Portions of Big Bend Units 1 & 2 FGD will be retired as part of the Big Bend Modernization project. Specific treatment of the retired ECRC assets is being addressed in the company's current general base rate proceeding, Docket No. 20210034-EI, filed on April 9, 2021.

The company does not anticipate any capital or O&M expenditures during January 2022 through December 2022 for the Big Bend Unit 3 FGD Integration project, nor any capital or O&M expenditures for the Big Bend Units 1 & 2

FGD project during January 2022 through December 2022.

Q. Please describe the Gannon Thermal Discharge Study program activities and provide the estimated O&M expenditures for the period of January 2022 through December 2022.

A. The Gannon Thermal Discharge Study program was approved by the Commission in Docket No. 20010593-EI, Order No. PSC-2001-1847-PAA-EI, issued September 14, 2001. In that order, the Commission found that the program met the requirements for recovery through the ECRC. For the period of January 2022 through December 2022, there are not any projected O&M expenditures for this program. In the intent to issue the permit renewal, dated August 9, 2013, FDEP indicated that the proposed NPDES permit authorizes a thermal variance under Section 316(a) of the Clean Water Act for the permit period. Bayside Power Station applied for renewal of the National Pollutant Discharge Elimination System ("NPDES") Permit in February 2018, and the permit is still pending. If a thermal study is required, Tampa Electric will incur O&M expenses and will include them in the true-up filing.

Q. Please describe the Bayside SCR Consumables program

activities and provide the estimated O&M expenditures for the period of January 2022 through December 2022.

A. The Bayside SCR Consumables program was approved by the Commission in Docket No. 20021255-EI, Order No. PSC-2003-0469-PAA-EI, issued April 4, 2003. For the period of January 2022 through December 2022, Tampa Electric projects O&M expenses associated with the consumable goods, primarily anhydrous ammonia, to be approximately $151,000.

Q. Please describe the Clean Water Act Section 316(b) Phase II Study Program activities and provide the estimated O&M expenditures for the period of January 2022 through December 2022.

A. The Clean Water Act Section 316(b) ("Section 316(b)") Phase II Study program was approved by the Commission in Docket No. 20041300-EI, Order No. PSC-2005-0164-PAA-EI, issued February 10, 2005. The final rule adopted under Section 316(b), the Cooling Water Intake Structures ("CWIS") Rule, became effective October 14, 2014. The rule establishes requirements for CWIS at existing facilities. Section 316(b) requires that the location, design, construction, and capacity of CWIS reflect the best technology available

("BTA") for minimizing adverse environmental impacts. Tampa Electric is working with the regulating authority to determine the scheduling for biological, financial, and technical study elements necessary to comply with the rule. These elements will ultimately be used by the regulating authority to determine the necessity of cooling water system retrofits.

At this time, CWIS Rule compliance alternatives for Bayside Power Station have been evaluated. The biological, financial, and technical study elements have been completed for Bayside Power Station and submitted with the station's NPDES permit renewal application in February 2018. Selected cost effective BTA retrofits for impingement mortality reduction include the installation of screening facilities.

The estimated Clean Water Act Section 316(b) Phase II Study related O&M expenses for Big Bend Station and Bayside Power Station for the period January 2022 through December 2022 are $10,150.

For Big Bend Unit 1, which will be repowered to a clean, natural gas-fired combined cycle unit, the permit will require installation of impingement mortality controls. Therefore, in Order No. PSC-2018-0594-FOF-EI, issued on

December 20, 2018, the Commission approved cost recovery for the Big Bend Unit 1 Section 316(b) Impingement Mortality project.

The estimated O&M expense for NPDES Annual Surveillance Fees for Big Bend, Bayside, and Polk generating plants for the period January 2022 through December 2022 are $34,500.

Q. Are other plants expected to require retrofits to comply with Section 316(b)?

A. Yes. As stated earlier and outlined in the company's Bayside Power Station Section 316(b) Compliance petition, filed with the Commission on April 21, 2021, in Docket No. 20210087-EI, Tampa Electric plans to install traveling screens to reduce impingement mortality to comply with Section 316(b).

Q. Please describe the Big Bend Unit 1 Section 316(b) Impingement Mortality project activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. The Big Bend Unit 1 Section 316(b) Impingement Mortality project was approved by the Commission in Docket No.

20180007-EI, Order No. PSC-2018-0594-FOF-EI, issued December 20, 2018. In that order, the Commission found that the program met the requirements for recovery through the ECRC and granted Tampa Electric cost recovery for prudently incurred costs. For the period of January 2022 through December 2022, Tampa Electric projects capital expenditures for the Big Bend Unit 1 Section 316(b) Impingement Mortality Project to be $1,705,374. There are no O&M expenses anticipated for 2022.

Q. Please describe the Bayside Section 316(b) Compliance project activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. The Bayside Section 316(b) Compliance project petition was filed with the Commission on April 21, 2021, in Docket No. 20210087-EI. The petition relates to impingement mortality reduction methods to be applied to comply with the EPA rule. The petition is currently pending approval. For the period of January 2022 through December 2022, Tampa Electric projects capital expenditures for the Bayside Section 316(b) Compliance Project to be $5,689,564. There are no O&M expenses anticipated during 2022.

Q. Please describe the Big Bend FGD System Reliability program activities and provide the estimated capital expenditures for the period of January 2022 through December 2022.

A. Tampa Electric's Big Bend FGD System Reliability program was approved by the Commission in Docket No. 20050958-EI, Order No. PSC-2006-0602-PAA-EI, issued July 10, 2006. The Commission granted approval for prudent costs associated with this project. For the period of January 2022 through December 2022, there are no anticipated capital expenditures for this project.

Q. Please describe the Arsenic Groundwater Standard program activities and provide the estimated O&M expenditures for the period of January 2022 through December 2022.

A. The Arsenic Groundwater Standard program was approved by the Commission in Docket No. 20050683-EI, Order No. PSC-2006-0138-PAA-EI, issued February 23, 2006. In that order, the Commission found that the program met the requirements for recovery through the ECRC and granted Tampa Electric cost recovery for prudently incurred costs. This groundwater standard applies to Tampa Electric's Bayside, Big Bend, and Polk Power Stations. A

detailed plan of study was submitted to the FDEP, and after reviewing the study, FDEP requested a site wide groundwater evaluation. Tampa Electric submitted the results of this evaluation in 2020 and a proposal for modification of the site groundwater monitoring network to evaluate ongoing compliance. The proposal is under review by FDEP. Once FDEP completes its review, additional O&M expenses may be incurred if additional monitoring and assessment are required. For the period of January 2022 through December 2022, the anticipated O&M expenses associated with the program are $37,080.

Q. Please describe the MATS program activities.

A. The MATS program was approved by the Commission in Docket No. 20120302-EI, Order No. PSC-2013-0191-PAA-EI, issued May 6, 2013. In that order, the Commission found that the program met the requirements for recovery through the ECRC and granted Tampa Electric approval for cost recovery of prudently incurred costs. Additionally, the Commission granted the subsumption of the previously approved CAMR program into the MATS program.

On February 8, 2008, the Washington D.C. Circuit Court vacated EPA's rule removing power plants from the Clean

Air Act list of regulated sources of hazardous air pollutants under Section 112. At the same time, the court vacated the Clean Air Mercury Rule. On May 3, 2011, the EPA published a new proposed rule for mercury and other hazardous air pollutants according to the National Emissions Standards for Hazardous Air Pollutants section of the Clean Air Act. On February 16, 2012, the EPA published the final rule for MATS. The rule revised the mercury limits and provided more flexible monitoring and record keeping requirements. Additionally, monitoring of acid gases and particulate matter is required. Compliance with the rule began on April 16, 2015. Tampa Electric is currently meeting or exceeding the standards required by the MATS rule for mercury, particulate matter, and acid gases at Polk Power Station and Big Bend Power Station.

Q. Please provide MATS program estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. For 2022, Tampa Electric does not anticipate capital expenditures under the MATS program. O&M expenditures are projected to be approximately $2,000 for testing requirements and equipment maintenance.

Q. Please describe the GHG Reduction program activities and provide the estimated O&M expenditures for the period of January 2022 through December 2022.

A. Tampa Electric's GHG Reduction program, which was approved by the Commission in Docket No. 20090508-EI, Order No. PSC-2010-0157-PAA-EI, issued March 22, 2010, is a result of the EPA's GHG Mandatory Reporting Rule requiring annual reporting of greenhouse gas emissions. Tampa Electric was required to report greenhouse gas emissions for the first time in 2011. Reporting for the EPA's GHG Mandatory Reporting Rule will continue in 2022. For 2022, there are no O&M expenditures anticipated.

Q. Please describe the Big Bend Gypsum Storage Facility activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. The Big Bend Gypsum Storage Facility program was approved by the Commission in Docket No. 20110262-EI, Order No. PSC-2012-0493-PAA-EI, issued September 26, 2012. In that order, the Commission found that the program meets the requirements for recovery through the ECRC. For 2022, Tampa Electric does not anticipate capital expenditures;

however, the projected O&M expenses for this program are expected to be $1,213,236.

Q. Please describe the company's EPA CCR Rule compliance activities and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. On April 17, 2015, the EPA issued a final rule to regulate CCR as non-hazardous waste under Subtitle D of the Resource Conservation and Recovery Act ("RCRA"). The rule, which became effective on October 19, 2015, covers all operational CCR disposal facilities, as well as inactive impoundments which contain CCR and liquids. The Big Bend Unit 4 Economizer Ash Ponds, the East Coalfield Stormwater Pond (converted former slag fines pond), and the North Gypsum Stackout Area are regulated under the rule.

The initial phase of the company's CCR compliance was approved by the Commission in Docket No. 20150223-EI, Order No. PSC-2016-0068-PAA-EI, issued February 9, 2016. In that order, the Commission found that the CCR Rule – Phase I program met the requirements for recovery through the ECRC. Incremental ongoing O&M expenses resulting from

the groundwater monitoring program, berm inspections, and general maintenance of regulated units were approved under the Order. In order to determine the best option to remain in compliance with the new rule, the company evaluated whether to continue operation of the regulated CCR units or close them. Tampa Electric chose a combination of closure and retrofit projects to remain in compliance with the CCR Rule, as discussed later in this section.

Two CCR retrofit projects were also approved for Tampa Electric's CCR Rule – Phase I program under Order No. PSC-2016-0068-PAA-EI. These included: 1) removal of remaining residual slag from the East Coalfield Stormwater Runoff Pond and lining the pond to continue operating it as part of the station's stormwater system; and 2) installing secondary stormwater containment facilities and lining drainage ditches for the North Gypsum Stackout Area to make it fully compliant with the rule's requirements.

Phase II of Tampa Electric's CCR Rule program was approved by the Commission in Docket No. 20170168-EI, Order No. 2017-0483-PAA-EI, issued December 22, 2017. In that Order, the Commission found that the Phase II program met

the requirements for recovery through the ECRC. Expenses for the Economizer Ash Pond System Closure project, which includes removal and offsite disposal of all CCR and restoration of the area, were approved by the Commission's Order.

The Economizer Ash Pond System Closure began in the fourth quarter of 2018 with initial dewatering and removal of CCR for disposal. Due to the large amount of CCR in the Economizer Ash Ponds that needed to be dewatered and shipped to the landfill, this project has continued and is expected to be completed in late 2021. The East Coalfield Stormwater Runoff Pond (slag pond) closure and retrofit project was originally scheduled to be completed in 2019 but was delayed due to unusually high rainfall amounts throughout that year. As a result, this project was initiated in 2020 and completed in early 2021, in accordance with state regulatory requirements. The North Gypsum Stackout Area Drainage Improvements Project was also delayed to finalize engineering and construction scope details, but is currently underway, with completion expected in 2022.

Tampa Electric expects to incur $1,500,000 in capital expenditures for the North Gypsum Stackout - Phase I

project during 2022. The company expects to incur O&M expenses of $930,000 for this CCR Rule – Phase I project in 2022. There are no capital or O&M expenditures anticipated for the CCR Rule – Phase II (Economizer Ash Closure) project in 2022.

Q. Please describe Tampa Electric's ELG Rule activities, both study and compliance related and provide the estimated capital and O&M expenditures for the period of January 2022 through December 2022.

A. On November 3, 2015, the EPA published the final Steam Electric Power Generating ELG Rule, with an effective date of January 4, 2016. The ELG establish limits for wastewater discharges from FGD processes, fly ash, and bottom ash transport water, leachate from ponds and landfills containing CCR, gasification processes, and flue gas mercury controls. Big Bend Station's FGD system is affected by this rule. The blow-downstream from the FGD system is currently sent to a physical chemical treatment system to remove solids, some metals, and ammonia and adjust pH prior to discharge to Tampa Bay via the once through condenser cooling system water. This treatment system will need to be modified or replaced to achieve compliance with the new EPA regulations. The rule

requires compliance after November 1, 2018, but no later than December 31, 2023. EPA issued a temporary stay of these compliance deadlines beginning April 25, 2017 for certain waste streams, including FGD wastewater.

The Big Bend ELG Study Program ("ELG Study") was approved by the Commission in Docket No. 20160027-EI, Order No. PSC-2016-0248-PAA-EI, issued June 28, 2016.

The ELG Study, which was completed in 2018, identified viable technologies to treat the Tampa Electric Big Bend Station combined effluent streams to bring the streams into compliance with the more stringent requirements under the ELG Rule and resulted in the selection of the deep well injection solution.

The Big Bend ELG Compliance project was approved by the Commission in Docket No. 20180007-EI, Order No. PSC-2018-0594-FOF-EI, issued December 20, 2018. In that order, the Commission found that the program met the requirements for recovery through the ECRC and granted Tampa Electric cost recovery for prudently incurred costs.

On June 6, 2017, the EPA issued proposed rulemaking to postpone these deadlines until it has completed

reconsideration of the 2015 rule. On August 11, 2017, EPA issued a letter to the Utility Water Act Group ("UWAG") and the U.S. Small Business Association regarding petitions received by the EPA requesting reconsideration of the rule. In this letter, EPA stated that it would be appropriate to conduct rulemaking to "potentially revise" the limitations for bottom ash transport water and FGD wastewater. The compliance deadlines for these waste streams were revised to be as soon as possible after November 1, 2021, but no later than December 31, 2023. Tampa Electric expects that the selected compliance option will continue to be required as the best option for customers even if some changes are made to the rule. For the year January 2022 through December 2022, Tampa Electric projects capital expenditures to be $13,510,436. The company projects $4,944 in O&M expenditures for this project for the period.

Q. Please summarize your testimony.

A. The settlement agreements Tampa Electric had with FDEP and EPA required significant reductions in emissions from Big Bend and Gannon Power Stations. These settlement agreements have been terminated due to the company having satisfied all requirements as set forth by the CFJ and

CD. Ongoing requirements for projects originating with the CFJ and CD have been incorporated into Big Bend's Title V Operating permit (0570039-128-AV) and are discussed throughout my testimony. I described the progress Tampa Electric has made to achieve the more stringent environmental standards. I identified estimated costs, by project, which the company expects to incur in 2022. Additionally, my testimony identified other projects that are required for Tampa Electric to meet environmental requirements, and I provided the associated 2022 activities and projected expenditures.

Q. Does this conclude your direct testimony?

A. Yes, it does.