BEFORE THE

FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20210034-EI

IN RE: PETITION FOR RATE INCREASE

BY TAMPA ELECTRIC COMPANY

DIRECT TESTIMONY AND EXHIBIT

OF

JOHN C. HEISEY

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

PREPARED DIRECT TESTIMONY

OF

JOHN C. HEISEY

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

A. My name is John C. Heisey. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am employed by Tampa Electric Company ("Tampa Electric" or "company") as Manager, Gas and Power Trading.

Q. Please describe your duties and responsibilities in that position.

A. I am responsible for natural gas and power trading activities and work closely with the company's unit commitment team to provide low cost, reliable power to customers. I am also responsible for portfolio optimization and all aspects of our Optimization Mechanism.

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

A. I graduated from Pennsylvania State University with a Bachelor of Science in Business Logistics. I have over 25 years of power and natural gas trading experience, including employment at TECO Energy Services, FPL Energy Services, El Paso Energy, and International Paper. Prior to joining Tampa Electric, I was Vice President of Asset Trading for the Entegra Power Group LLC ("Entegra"), where I was responsible for Entegra's energy trading activities. Entegra managed a large quantity of merchant capacity in bilateral and organized markets. I joined Tampa Electric in September 2016 as the Manager of Gas and Power Trading and currently hold that position.

Q. What are the purposes of your direct testimony?

A. My direct testimony describes Tampa Electric's fuel inventory planning process; the factors that influence maintaining a reliable supply and delivery of natural gas, coal, and oil; and our proposed level of fuel inventory for the 2022 test year. My direct testimony also describes the company's Optimization Mechanism and explains why it should be continued after the company's 2017 Amended and Restated Stipulation and Settlement Agreement ("2017 Agreement") expires on December 31, 2021.

Q. Have you prepared an exhibit to support your direct testimony?

A. Yes. Exhibit No. JCH-1 entitled "Exhibit of John C. Heisey" was prepared under my direction and supervision. The contents of my exhibit were derived from the business records of the company and are true and correct to the best of my information and belief. It consists of four documents, as follows:

Document No. 1	List of Minimum Filing Requirement Schedules Sponsored or Co-Sponsored by John C. Heisey
Document No. 2	2022 Proposed Coal Inventory
Document No. 3	2022 Proposed Total Fuel Inventory
Document No. 4	Optimization Mechanism Results

Q. Are you sponsoring any sections of Tampa Electric's Minimum Filing Requirement ("MFR") Schedules?

A. Yes. I am sponsoring or co-sponsoring the MFR schedules listed in Document No. 1 of my exhibit. The data and information on these schedules were taken from the business records of the company and are true and correct to the best of my information and belief.

Q. How does your direct testimony relate to the direct testimony of other Tampa Electric witnesses.

A. Tampa Electric witness David A. Pickles explains in his direct testimony how the transformation of our generating system has changed the mix of fuel we use to generate electricity, and I explain how those changes influence our fuel purchasing practices and reduced our inventory of solid fuel (coal). My direct testimony supports the total amount of fuel inventory we propose to include in working capital for 2022. Tampa Electric witness A. Sloan Lewis explains how our proposed level of fuel inventory factors into our revenue requirement calculation for the test year.

Q. What types of fuel does Tampa Electric use to generate electricity?

A. Tampa Electric uses natural gas, coal and petroleum coke ("coal" or "solid fuel"), and light oil to generate electricity. In 2020, Tampa Electric's generation mix was comprised of approximately 89 percent natural gas, approximately six percent solar, approximately five percent coal, and less than one percent light oil. The company's annual coal requirement is approximately 400 to

600 thousand tons and our annual natural gas requirement is about 130 million MMBtu. The company maintains a relatively small amount of light (No. 2) oil as a backup fuel for Polk Unit 2.

Q. How does Tampa Electric's fuel mix today compare to its fuel mix in 2013?

A. Being cleaner and greener is one of Tampa Electric's areas of strategic focus, and the price of natural gas has fallen dramatically in the last decade, so the company has changed its generation mix away from coal to solar and natural gas. Natural gas-fired generation has become our primary fuel for generating electricity. Consequently, although coal inventory is still needed for the company to reliably provide electric service to our customers, our total coal inventory requirement, in tons, is much lower than it has been in the past, which means lower coal-related costs for customers.

In 2013, natural gas accounted for 41 percent of our fuel mix, and coal made up the remaining 59 percent. Today, coal accounts for about five percent of our fuel mix, with natural gas at about 89 percent and solar (no fuel) at about six percent.

Q. Does the company maintain an inventory of natural gas?

A. Yes. Under normal operating conditions, the natural gas supply and pipeline infrastructure in the United States allows natural gas to be produced, transported, and consumed without a need to maintain a substantial amount in inventory. Nevertheless, Tampa Electric maintains two million MMBtu of natural gas storage capacity to provide operational flexibility and to ensure it has a reliable supply of natural gas supply during disruption events. Natural gas storage also mitigates short term price volatility for our customers during disruption events.

Q. What is the objective of Tampa Electric's fuel management plan?

A. The company seeks to maintain a reasonable level of fuel inventory that minimizes the risk of electric service interruptions from lack of fuel so we can generate power to meet instantaneous system demand, while at the same time minimizing the economic impact to customers.

Q. How does the company plan to achieve this objective?

A. The company’s overall fuel procurement planning process

recognizes the operating factors that affect inventory levels, such as fuel supply availability, fuel delivery logistics, fuel consumption, storage capacity, fuel quality, and risk of extraordinary events that could disrupt supply. Experience shows that maintaining reasonable levels of fuel is less expensive than making emergency purchases of fuel or replacement power at premium prices, and also reduces the risk of interrupting electrical service to customers. Tampa Electric uses diverse supply sources and delivery methods to mitigate the risks of events that may interrupt fuel supply to the company's generating system.

Q. What fuel inventories are components of your overall system-wide fuel inventory?

A. Our fuel inventory includes natural gas, coal, and oil.

The natural gas amount included in inventory is the amount owned by Tampa Electric and stored in underground storage caverns or interstate pipelines.

Our oil inventory includes quantities stored in tanks on-site at generating stations.

Our coal inventory has historically included all coal that the company purchased and had in its control, including coal stored on-site at the power plants, coal stored off-site, and coal that was purchased and in transit to our generating sites. In 2018, however, the company began purchasing "delivered" coal, which shifted the responsibilities, costs, and logistics of transporting coal by water to our Big Bend unloading terminal to the supplier. Most of the coal we now consume arrives by water, and we use coal delivered by rail to supplement our incremental needs during peak consumption periods. The costs and responsibility for arranging coal transportation by rail remains the responsibility of Tampa Electric because our suppliers have been unwilling to accept that responsibility.

Q. Are the 2022 projected fuel inventory levels shown on MFR Schedule B-18 for natural gas, coal and oil reasonable?

A. Yes.

COAL INVENTORY

Q. What level of coal inventory does the company propose to include in working capital for 2022?

A. As shown on MFR Schedule B-18, the company proposes to include a thirteen-month average of 285,789 tons with a value of approximately $17.7 million in working capital for the 2022 test year.

Q. Was this amount adjusted using the FPSC approved thirteen-month average 98-day average daily burn methodology ("98-day average burn") approved in the company's last rate case?

A. No. The company is proposing a new coal inventory methodology because the existing 98-day average burn methodology is no longer reasonable or appropriate for evaluating the amount of coal inventory to be included in working capital for Tampa Electric.

Q. Why not?

A. The way Tampa Electric uses coal-fired generation and the role its coal plants play in the economic unit commitment and dispatch of the company's generating fleet have changed since the 98-day coal inventory level was established on February 2, 1993 in Order PSC-0165-FOF-EI, Docket 920324-EI. The 98-day coal inventory level will not provide the company enough coal to reliably operate

our coal plants the way we expect to operate them in the future or allow for sufficient coal inventory levels if something unexpected were to happen to our natural gas supply, natural gas transportation, or natural gas-fired generation.

Q. Please explain.

A. Coal units like Big Bend Units 1 through 4 and Polk Unit 1 (integrated gasification combined cycle) have been the work horses in the company's generation fleet for many years. They were designed to burn coal (or to gasify coal and burn gas, in the case of Polk 1) and operated as base load units for decades. Base load units normally operate to satisfy the minimum load of a system, and consequently run continuously, burn fuel, and produce electricity at relatively constant rates. When these units ran on coal as base load units, they burned large volumes of coal almost every day at relatively constant rates; however, several things changed.

First, the Polk 2 Conversion changed the unit commitment and dispatch order of Polk Unit 2 versus our Big Bend units. Polk Unit 2, which was converted to a natural gas combined cycle unit, transitioned from primarily being a

peaking facility to a baseload facility, and the role of our Big Bend units became secondary in support of our baseload facilities.

Second, the price of natural gas dropped and stayed low. Although some of our generating units (*i.e.*, Polk Unit 1 and Big Bend Unit 3) can operate on coal and natural gas, it has been more economical for them to operate on natural gas, which means we are burning less coal.

Third, as explained in the direct testimony of Mr. Pickles and Tampa Electric witness J. Brent Caldwell, we are in the process of modernizing Big Bend Unit 1 and will be retiring Big Bend Units 2 and 3. These changes have already reduced the amount of coal the company is burning and will further reduce the amount we consume in the future.

Fourth, as explained in the direct testimony of Mr. Pickles and Tampa Electric witness C. David Sweat, the company built approximately 655 MW_{ac} of solar generating capacity from 2017 to 2021 and plans to build an additional 600 MW_{ac} of solar capacity from 2021 to 2023 ("Additional Solar"). This solar capacity has and will continue to reduce the company's need to consume coal.

As a result, the role coal plays in our generation has changed from a primary fuel to a secondary fuel. We no longer need coal as a primary fuel to burn continuously in large amounts for long periods of time. Rather, we need coal for use when the economics of doing so are favorable, when system conditions change, or for use if something unexpected happens to natural gas supply, natural gas transportation, or our natural gas-fired generation is not available.

Q. How have these changes reduced the company's consumption of coal?

A. Our coal consumption has fallen from approximately four million tons in 2015 to 430,000 tons in 2020, or by about 90 percent. As our coal consumption has declined, so too has the amount of coal we need to maintain in inventory.

Q. What are the benefits of burning less coal?

A. Burning less coal means we use less water, generate less wastewater, and lower our emission of CO_2, SO_2, and NO_x, all of which makes us cleaner and greener. Burning less coal has also enabled the company to reduce its production O&M expenses. Lastly, burning less coal means we need to

keep less coal in inventory, which also reduces our costs and the costs we recover from our customers.

Q. Does the company still need to maintain a reasonable level of coal inventory?

A. Yes. Even though we are burning less coal, we still must have enough coal on hand to operate our coal-fired facilities when we need them.

Q. Is the thirteen-month, 98-day daily average burn coal inventory level approved in the company's rate case still a reasonable methodology for establishing appropriate levels of coal inventory?

A. No. Due to the company's transformation to a cleaner and greener generation system, daily coal burn is so low that calculating a coal inventory level using the 98-day average daily burn methodology produces a very low coal inventory amount. More specifically, basing our coal inventory levels on the 98-day average daily amount of coal we are burning will result in a coal inventory at levels that will not allow the company to recover the amount of coal inventory required to operate its coal plants as base load units if an outage at one or more of

the company's natural gas-fired units occur or if natural gas supply or natural gas transportation becomes unavailable. Therefore, using the traditional 98-day average daily burn methodology will not allow the company to recover the cost of the coal inventory needed to maintain the reliability of our system.

Q. How has the 98-day average daily burn amount changed over time?

A. From 2013 to 2015, our 98-day average burn was 1.2 million tons. From 2019 to 2020, it was 132 thousand tons, or about ten percent of what it was from 2013-2015. We do not believe that maintaining a thirteen-month average of 132 thousand tons of coal, which can be burned at Big Bend Unit 4 in less than a month, will be adequate for us to provide reliable service to our customers. The company has been maintaining coal inventory at much higher levels, even though we cannot recover the incremental inventory under the 98-day coal inventory level.

Q. What coal inventory level is the company using to determine the system-wide coal inventory levels to support its operations?

A. For planning and operating purposes, Tampa Electric targets enough coal inventory to run its coal plants (primarily Big Bend Unit 4) at maximum burn levels for 60 days. Therefore, the company requests permission to adopt this 60-day maximum burn level for base rate making purposes.

MFR Schedule B-18 in Document No. 1 of my exhibit shows the company's proposed level of coal inventory by station in tons and dollars for each month of the 2022 test year and supports the 13-month average amounts of coal inventory shown on page 9 of my direct testimony. Document No. 2 of my exhibit shows the overall anticipated quantities of coal in inventory by station projected for 2022.

MFR Schedule B-18 does not include any coal inventory stored off-site, because our agreement for storage at Davant, Louisiana ends in December 2021 and is not expected to be renewed.

The inventory amounts shown on MFR Schedule B-18 for the Polk Power Station ("Polk") are zero each month, because the company does not expect to burn coal at Polk in 2022.

The other monthly amounts (Big Bend) shown on MFR Schedule B-18 vary seasonally and reflect monthly inventory amounts of between 50 to 67 days of maximum burn and a thirteen-month weighted average of 57 days maximum burn. This thirteen-month average amount is slightly below the target we use for planning and operations and is below the thirteen-month average 60-day maximum burn coal inventory level we are requesting the Florida Public Service Commission ("Commission") approve in this base rate case.

Q. How does the company's proposed amount of inventory for 2022 compare to the amount that would be allowed under the traditional 98-day average burn methodology?

A. Our proposed amount is higher on a thirteen-month average basis by about 140,000 tons or approximately $9.0 million.

Q. For how long would the company be able to run its coal plants at the maximum burn rate if it uses the 98-day average burn coal inventory level?

A. About 29 days.

Our maximum daily burn is about 5,000 tons a day and the

98-day average burn methodology would allow us to keep only about 145,000 tons of coal in inventory.

We do not believe keeping only 29 days of coal on hand to operate our coal plants at maximum burn levels is adequate, reasonable, or prudent. Our proposal to use a 60-day maximum burn target is informed by the risks, and our experiences with, factors that impact coal supply availability and deliverability, fuel use variability, and the potential for extraordinary events. It is also informed by the risks of natural gas supply and delivery interruptions that I discuss in the next section of my direct testimony. Tampa Electric targets a minimum of approximately 60 days of maximum coal burn in its operations and closely monitors these factors because of the dramatic impacts they can have on the cost and availability of fuel.

Q. Why do the amounts of inventory shown on Document No. 1 of your exhibit vary by month?

A. The amount of electricity we generate each month varies seasonally and so too must the amount of inventory we keep on hand. We generally keep more inventory in the summer months because energy usage in those months is high and

the potential adverse impact of hurricanes and other named tropical storms on the deliverability of fuel is higher than in other times in the year.

Q. Why does the company need 60 days of maximum burn in inventory, rather than a fewer number of days?

A. First, we are actually keeping about that much coal inventory on hand as we operate our business. The fact that we keep that amount of inventory on hand, when cost recovery for that full level is not available under the 98-day average burn methodology, is strong proof of our need for and commitment to a 60-day maximum burn level of inventory.

Second, due to the generation fleet changes described above, we now view coal as a secondary fuel and need it primarily to operate our dual-fuel plants on coal as base load units if we experience a natural gas supply or natural gas transportation interruption or an unplanned outage at one or more of the company's gas-fired units. A major planned or unplanned outage at one of our base load natural gas-fired plants could take up to 60 days or more, in which case we would likely need to run our coal plants as base load units for 60 days or more. Having a

60-day maximum burn amount of coal inventory on hand will allow us to maintain system reliability by burning coal on hand and provide an adequate amount of time to arrange the purchase of additional coal, as needed, if we have a major outage at one of our gas units.

Q. Why does the company need 60 days to procure additional coal?

A. The company can procure coal in less than 60 days on an emergency basis, however, emergency coal purchases are almost always more expensive than planned purchases.

In addition, unlike natural gas, which is delivered via pipelines which are ready to instantaneously deliver gas on short notice, the coal we purchase is over 1,000 miles away and must be transported by water or rail to our facilities. Even when purchase and delivery conditions are perfect, it takes up to 60 days to complete the coal purchasing cycle (identify need, order, transport, receive). Bearing in mind, conditions for purchasing and delivering coal are not always perfect. Under extreme conditions the time to procure coal can take more than 90 days.

Q. How do factors like coal supply availability and delivery risks influence the company's need to maintain coal inventories at its proposed 60-day maximum burn level?

A. Both are important considerations.

Over the years, coal supply availability and deliverability to Tampa Electric have been adversely affected by weather conditions including floods, hurricanes, extreme conditions on waterways, water route blockages, work disruptions in the coal and railroad industries, consumption variations, and transportation provider equipment breakdowns. The level of coal inventory we need to maintain must reflect the risks associated with supply availability and delivery disruptions. Our proposed 60-day maximum burn standard accounts for these risks but does not overstate our need for coal.

Q. Did changing the delivery responsibilities for waterborne coal in 2018 reduce the company's operating exposure to delivery disruptions?

A. No. The fact that we changed the delivery point of waterborne coal from the mine to our generating stations

in 2018 does not mean that our operations are no longer subject to supply disruptions. Whether the company or its suppliers are responsible for transportation, the company remains subject to supply disruptions from river closings. Portions of the Mississippi and Ohio River systems must be closed periodically to repair the lock and dam mechanisms used to raise and lower barges for proper navigation. Almost every year, high or low water conditions due to rain, snow, or drought slow or stop river traffic. Fog, ice, and transportation equipment breakdowns can also delay or interrupt waterborne transportation on the rivers. Fog, hurricanes, and equipment breakdowns also affect waterborne transportation in the Gulf of Mexico as well.

Q. Is rail transportation subject to delivery interruptions?

A. Yes. The rail transportation system we rely on can be adversely affected by traffic congestion, track maintenance, rail blockings, flooding, and equipment breakdowns, resulting in slower turn times. Turn time is the time it takes a train to return to the coal mine for its next shipment. Slower turn times mean fewer deliveries.

Q. Has the company recently faced coal delivery disruptions?

A. Yes. The company recently faced coal delivery disruptions caused by the weather (Mississippi River flooding or hurricanes). Weather events can cause lingering issues that disrupt normal fuel supply and logistics for many months. We successfully managed through these disruptions by having sufficient inventory (*e.g.,* 60 days of maximum coal burn) and being able to shift our supplier choice and delivery method from waterborne to rail.

Q. Do you have examples of how weather events have affected fuel availability or deliveries?

A. Hurricanes Katrina (2005) and Isaac (2012) struck the mouth of the Mississippi River and caused significant disruptions to coal and other energy commodity deliveries.

After Hurricane Katrina, Tampa Electric's on-site inventory levels at Big Bend fell to a low of only 20 days. Tampa Electric was able to maintain adequate inventory supply on-site and manage through the disruption of deliveries, which lasted almost six months, without disrupting service to its customers.

Hurricane Isaac caused widespread flooding and disabled several bulk storage terminals at the mouth of the Mississippi River for many weeks.

Tropical Storm Debbie, which hit in June 2012, constrained shipping in Tampa Bay for an extended period of time.

In addition, Tampa Electric experienced multiple supply vessel delays due to the multiple hurricanes affecting the Gulf Coast of Florida and Louisiana in 2020.

Q. Does Tampa Electric's ability to receive coal by water and rail mitigate the risk of delivery disruptions to the company?

A. Yes. Tampa Electric's ability to receive coal by water and rail provides important optionality and reduces the risk of a solid fuel disruption to customers. It also gives us negotiating leverage with suppliers. However, it still takes as many as 60 days to purchase and receive coal, so we must keep an adequate supply on hand.

Q. Is coal supply availability a growing concern?

A. Yes. The market dynamics for domestic coal production are

changing. Electric utilities all over America have retired or are planning to retire coal-fired generating plants, which has substantially reduced the demand for domestic coal. Reduced demand and increased production costs for coal have caused financial distress for many domestic coal producers and created uncertainties about the future availability and costs of coal. Force majeure events and mine issues can and have influenced and disrupted coal production. Diminished supplier performance can and has disrupted coal supplies and deliveries. Even though we are consuming less coal, our need for coal remains, and it is becoming more difficult to find suppliers that we can count on in the future. Keeping an adequate supply of coal on hand helps mitigate the risks associated with supplier failures and disruptions.

Q. How have coal mining companies performed during recent years?

A. Coal suppliers have had significant economic challenges and faced bankruptcies, acquisitions, and reorganizations, but the suppliers Tampa Electric deals with have managed to keep their supply commitments to Tampa Electric.

Q. What is "coal burn variability" and how does it affect Tampa Electric's coal inventory planning process?

A. Coal burn variability refers to the difference between our planned coal burn and our actual coal burn. Burn variability is influenced by a variety of factors, such as the relative economics of natural gas, seasonality, weather, unit operating performance (including unit availability, heat rate, and capacity factor), and other system operating factors such as grid stability.

For the most cost-effective pricing, coal suppliers and transporters require consistent, expected sales volumes, so they can plan their monthly production and delivery schedules. Getting coal out of the ground for sale is not as simple as opening a valve on a natural gas pipeline.

As the role our coal plants play on our system has changed, our coal burn variability has increased, and our ability to find suppliers who will accommodate inconsistent or variable monthly consumption volumes has been challenging. All other things being equal, maintaining higher coal inventory levels allows us to absorb swings in supply availability during times of greater burn variability.

The extent to which burn variability affects Tampa Electric in the overall inventory planning process depends on how quickly and completely the company can respond to unexpected fuel requirements at the electric generating plants. Given where our coal suppliers are located and the distances coal must travel before we use it, our planning process must accommodate higher levels of coal burn variability. When fuel supply availability is constrained, the process of procuring solid fuel can increase from 60 days to well over 90 days from the time we identify a need for more coal to the time that coal arrives at a Tampa Electric power plant.

Q. What kind of "extraordinary events" affect coal inventory planning?

A. In addition to the "regular" supply and delivery risks discussed above, we must consider the possibility of extraordinary events. Examples from the past include the terrorist attacks on September 11, 2001, which complicated and delayed the transportation of coal due to heightened port security. Although it was less significant, the COVID-19 pandemic reduced access to labor in some areas and delayed coal shipments. The collapse of the Sunshine Skyway Bridge in the 1980s and

vessels sinking in Port of Tampa Channels have blocked or delayed waterborne coal deliveries to Tampa Electric. While events like these are rare, the potential reliability impact is significant if we do not maintain an adequate level of coal inventory.

Q. Should the Commission approve the company's proposal to replace the 98-day average burn coal methodology of establishing inventory levels in working capital to establishing inventory levels using 60 days of maximum burn?

A. Yes. Based on the reasons stated above and the company's need to maintain coal inventory levels to operate the coal units prudently and reliably, the Commission should approve the proposed 60 days of maximum burn coal inventory level.

NATURAL GAS INVENTORY

Q. What amount of natural gas inventory does the company propose to include in working capital for the 2022 test year?

A. As shown on MFR Schedule B-18, the company proposes to include its projected 13-month average volume of natural

gas in storage for 2022 of 336,726 MCF with a value of $0.9 million in test year working capital.

Q. Please explain the company's need for and portfolio of natural gas supply.

A. Tampa Electric has a fleet of natural gas fired generating units including combined cycle units at Bayside and Polk; dual-fuel units at Big Bend; Polk Unit 1, which can operate on natural gas or a blend of petroleum coke and coal; and natural gas fired aero-derivative combustion turbines at Bayside and Big Bend.

Q. Please describe Tampa Electric's natural gas supply plan.

A. The company's supply plan for natural gas is to maintain a portfolio of natural gas supply arrangements that have access to multiple supply basins, various receipt and delivery points, volume flexibility, and varying term lengths. We must also ensure that we have enough firm natural gas transportation to deliver the natural gas we purchase to our natural gas-fired power plants. These natural gas supply arrangements are established using industry standard contracts with creditworthy parties. This process gives us supply reliability, operating

flexibility, and lower overall costs. Most of the costs for these supply arrangements are recovered through the Fuel, Purchased Power and Capacity Recovery Clause, but the amount of natural gas we keep in storage is an inventory item and is recovered through base rates.

Maintaining underground natural gas storage is another valuable part of our plan to provide reliable service to our customers. We primarily use natural gas in storage to address unexpected swings in our natural gas supply needs from unexpected increases in our use of natural gas-fired generating units and to "smooth" natural gas supplies over weekends and holidays when consumption levels may change dramatically. In addition, natural gas storage helps to mitigate reliability or cost impacts on customers when extreme conditions occur.

Tampa Electric also maintains nearly full contracted storage levels during times of greatest uncertainty. For instance, Tampa Electric fills natural gas storage capacity to approximately 80 percent before the start of each hurricane season since supply availability may be at risk while our use of natural gas is at its maximum. Similarly, Tampa Electric keeps natural gas storage at similar levels during major plant outages and extreme cold

weather periods since natural gas consumption is most uncertain during those times.

Q. What factors impact the risk of natural gas supply and transportation disruptions?

A. Extreme weather conditions present the greatest risks to a reliable supply of deliverable natural gas. Natural gas production companies shut down production in the Gulf of Mexico when tropical storms and hurricanes threaten the safe operation of drilling platforms and production facilities in the Gulf. As we saw during Winter Storm Uri in February 2021 and the resulting Texas grid failure, extremely cold weather can interfere with onshore natural gas production as natural gas wells freeze, interrupting the production of natural gas. Other less likely events that could impact the transportation of natural gas supply could be severe weather (i.e., earthquakes, floods or lightning), equipment failures, accidents, or a terrorist attack on energy infrastructure. Extreme weather and high demand for natural gas in other areas of the United States, including demand for LNG exports, can also increase the price of natural gas on the spot market.

Q. Did the Winter Storm Uri impact Tampa Electric's ability

to purchase or take delivery of natural gas to operate its natural gas generating units?

A. Yes. While our ability to deliver natural gas to our power plants was not interrupted in February 2021, the storm did result in an increase in the price of natural gas on the spot market. In some cases, natural gas was not available for purchase. Because Tampa Electric has natural gas in storage, the company was able to offset the commodity shortage, avoid fuel disruptions, and mitigate price volatility for customers by using some of the low-cost natural gas it was holding in storage. The company was able to withdraw its $3/MMBtu priced natural gas from storage during this event instead of purchasing any high-priced natural gas in the $15-$25/MMBtu range. In addition, Tampa Electric lowered the overall natural gas requirements for its portfolio during the event by maximizing coal generation on Big Bend Unit 4 and having Polk Unit 2 available on oil in case further natural gas reductions were needed.

Q. What natural gas storage capacity does Tampa Electric have?

A. Because our natural gas consumption is increasing, Tampa

Electric enhanced its natural gas portfolio by adding 250,000 MMBtu of additional underground natural gas storage capacity in 2018. Tampa Electric now has a total of 2,000,000 MMBtu of long-term storage capacity to provide operational flexibility and to enhance the reliability of natural gas supply. Tampa Electric currently has contracts with Bay Gas Storage near Mobile, Alabama, and Southern Pines Energy Center in Eastern Mississippi for a combined total of 2,000,000 MMBtu of storage capacity, which gives us approximately ten days of natural gas supply at our maximum daily withdrawal quantity.

The projected 13-month average volume of natural gas in storage in 2022 is 336,726 MCF with a value of $0.9 million as shown on Document No. 1 of my exhibit. It is also shown on MFR Schedule B-18.

Q. Please explain how Tampa Electric determined the appropriate amount of natural gas inventory for the 2022 test year.

A. Tampa Electric evaluated the estimated amount of supply in its portfolio that is at risk due to high impact events. The high impact events considered were an

interruption from a hurricane or other supply interruptions in the Mobile Bay area for a 10-day period. We continuously evaluate our storage needs based on market changes, expected demand and our generation plans.

Q. How does the company's Asset Management Agreement affect natural gas inventory and fuel supply reliability?

A. The company has an Asset Management Agreement ("AMA") for a portion of its storage capacity. The AMA has no effect on natural gas inventory and fuel supply reliability because Tampa Electric has the same rights to its storage inventory as it had prior to entering the AMA. However, any AMA natural gas in storage is not included in the projected 13-month average volume for 2022 (see Document No. 1, Note 1 under natural gas inventories).

Q. Does the company expect to incur fuel hedging expenses in the 2022 test year?

A. No. Paragraph 11(a) of the company's 2017 Amended and Restated Stipulation and Settlement Agreement ("2017 Agreement") states: "except as specified in this 2017 Agreement, the company will enter into no new natural gas financial hedging contracts for fuel through December 31,

2022." Consistent with this provision, the company did not make natural gas financial hedging contracts in 2020 and will not be doing so in 2021 or 2022. This position is reflected in MFR Schedule C-42.

OIL INVENTORY

Q. What amount of oil inventory does the company propose to include in working capital for the 2022 test year?

A. As shown on MFR Schedule B-18, the company has included 38,229 barrels of oil in inventory for 2022. This volume represents about 85 percent of Tampa Electric oil storage capacity and equates to a 13-month average of $3.1 million.

Q. What is the company's oil inventory planning process?

A. Oil is a backup fuel. The company's oil inventory plan is to maintain its storage tank at or near full to provide reliable backup fuel in the case of extreme demand or a natural gas pipeline interruption. We must periodically run our generating units on oil to test and ensure the reliability of the units on backup fuel, so we monitor inventory levels and replenish as needed.

TOTAL FUEL INVENTORY

Q. What is the total amount of fuel inventory that Tampa Electric proposes to be included in working capital for 2022?

A. The 2022 13-month average total fuel inventory included in working capital is $21.7 million as shown on Document No. 3 of my exhibit and on MFR Schedule B-18.

Q. How does the 2022 total fuel inventory compare to the amount proposed for 2014 during the company's last base rate case?

A. The 2022 13-month average total fuel inventory included in working capital is $84.8 million less than the 2014 13-month average included in working capital in Docket No. 20130040-EI. The transformation of the Tampa Electric generation portfolio to a cleaner, greener fleet with significantly less projected coal consumption results in an 80 percent reduction in total fuel inventory from 2014 to 2022. The reduced fuel inventory results in lower costs for customers without affecting the reliability of fuel supply.

OPTIMIZATION MECHANISM

Q. What is the Optimization Mechanism?

A. On June 30, 2016, Tampa Electric filed a petition in Docket No. 20160160-EI that asked the Commission to approve an Optimization Mechanism. In the 2017 Agreement, the parties consented to Commission approval of the program for a four-year period beginning January 1, 2018.

Q. What is the purpose of the Optimization Mechanism?

A. Under the Optimization Mechanism, gains on wholesale power transactions and optimization activities are shared between shareholders and customers. The program is designed to incentivize Tampa Electric to maximize gains to the mutual benefit of customers and the company.

Q. What portion of the gains are retained by Tampa Electric?

A. All gains up to $4.5 million are retained by customers. Gains between $4.5 million and $8.0 million are split, with 60 percent of gains allocated to the company's shareholders and 40 percent allocated to customers. Gains above $8 million are also split, with 50 percent of gains allocated to shareholders and 50 percent of gains allocated to customers.

Q. What activities are eligible to be included under the Optimization Mechanism?

A. Gains on the company's wholesale sales, short-term wholesale purchases, and optimization activities are eligible for the Program. Optimization activities include efforts such as:

- **Gas Storage Utilization** – Release of contracted storage space or sales of stored natural gas during non-critical demand seasons.

- **Delivered Gas Sales Using Existing Transport** – Sales of natural gas to Florida customers using Tampa Electric's existing natural gas transportation capacity during periods when it is not needed to serve the company's native electric load.

- **Delivered Solid Fuel and/or Transportation Capacity Sales Using Existing Transport** – Sales of coal and coal transportation using Tampa Electric's existing coal and transportation capacity during periods when it is not needed to serve Tampa Electric's native electric load.
- **Production (Upstream) Area Sales** – Sales of natural gas in the natural gas production areas using Tampa

Electric's existing natural gas transportation capacity during periods when it is not needed to serve the company's native electric load.

- **Capacity Release of Gas Transport** – Sales of temporarily available natural gas transportation capacity for short periods when it is not needed to serve the company's native electric load.

- **Asset Management Agreement** – Outsourcing of optimization functions to a third party through assignment of power, transportation, and/or storage rights in exchange for a premium paid to Tampa Electric.

Q. Has Tampa Electric incurred incremental costs associated with the Program?

A. Yes. Tampa Electric incurred incremental labor costs to establish processes and manage the optimization activities. The company, however, agreed that it would not seek recovery of these costs through the Optimization Mechanism. As a result, the company does not track these costs separately.

Q. How are gains tracked and reported to the Commission?

A. Tampa Electric tracks and reports all gains achieved in the prior year on a "Total Gains Schedule" that is included as a part of the company's annual final true-up filing in the fuel and purchased power cost recovery clause ("fuel clause") docket. The company also includes a description of each activity included in the Total Gains Schedule for the prior year in the final true-up filing. The Commission reviews the amounts and activities listed in the filing to determine whether they are eligible for inclusion in the program.

Q. What mechanism does the company use to apportion gains and deliver the customers' share of those gains?

A. The Total Gains Schedule shows the customers' portion of total gains which directly benefit customers in the current period. Tampa Electric receives approval to recover its portion of the total gains through adjustments to the fuel clause factors during the following year and recovers its portion of the gains during the year after that.

Q. Has the Optimization Mechanism resulted in gains for

customers since its inception in 2018?

A. Yes. In 2018, customers received a benefit of approximately $5.3 million. In 2019, customers received a benefit of approximately $5.3 million, and in 2020, customers received a benefit of approximately $5.4 million.

Q. Has the Optimization Mechanism achieved its original goals?

A. Yes. The Optimization Mechanism was designed to create additional value for Tampa Electric's customers while incenting the company to maximize gains on power transactions and optimization activities. The mechanism generated over $15.0 million in benefits to customers over its first three years, so Tampa Electric believes it was a success.

Q. Should the Commission extend the Optimization Mechanism beyond the initial four-year period approved in the 2017 Agreement?

A. Yes. Given the success of the Optimization Mechanism in generating benefits for Tampa Electric's customers, the

company believes the program should continue beyond its initial four-year period and should be renewed effective January 1, 2022.

Q. Is the company proposing any modifications to the Optimization Mechanism at this time?

A. No. The Optimization Mechanism is working as intended and will continue to provide benefits to customers in its current form when authorized to continue beyond 2021.

SUMMARY

Q. Please summarize your direct testimony.

A. Tampa Electric generates energy for customer use from a diversified fuel portfolio of natural gas, coal, and oil-fired units, as well as solar generation. The company utilizes a fuel inventory plan that considers the uncertainty in availability of fuel commodity supply and transportation, fuel consumption variability, and other risk factors. The company's fuel plan provides a consistent level of system protection and reliability. Inventory levels account for the types of fuel maintained and consumed to meet plant requirements in a cost-effective manner and reliably serve customers.

Tampa Electric's 2022 total proposed fuel inventory of $21.7 million is an appropriate value for the fuel inventory component of working capital. This level of inventory provides for continued reliable service at a cost that is less than the consequences of not having enough fuel to meet customer needs. Finally, this inventory level is consistent with the company's inventory planning process.

The Optimization Mechanism provided customer benefits of over $15.0 million in the first three years of operation. Based on that success, Tampa Electric believes the program should continue beyond the initial four-year period.

Q. Does this conclude your direct testimony?

A. Yes, it does.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20210034-EI
WITNESS: HEISEY

EXHIBIT

OF

JOHN C. HEISEY

Table of Contents

LIST OF MINIMUM FILING REQUIREMENT SCHEDULES

SPONSORED OR CO-SPONSORED BY JOHN C. HEISEY

MFR Schedule	Title
B-18	Fuel Inventory by Plant (2020-2022)
C-09	Five Year Analysis – Change in Cost
C-42	Hedging Costs
F-08	Assumptions

2022 PROPOSED COAL INVENTORY

	Tons	**Amount ($000)**
Big Bend Units 3-4	285,789	$17,664
Polk Unit 1	0	$0
Total 2022 Proposed Coal Inventory	**285,789**	**$17,664**

*Total system wide 13-month average, based on end of the month inventory using projected burn.

**The proposed 60-day maximum burn coal inventory level in tons is as follows:

- Big Bend – 302,209 tons (Big Bend Unit 4, 465 MW summer rating, 10.2 heat rate (MMBtu/MWh), 11,300 heat content (Btu/lb), 24 hours, 60 days)
- Polk – 170,296 tons (Polk Unit 1, 320 MW summer rating, 10.2 heat rate (MMBtu/MWh), 13,800 heat content (Btu/lb), 24 hours, 60 days)

2022 PROPOSED TOTAL FUEL INVENTORY

	Amount ($000)
Coal	$17,664
Natural Gas	$911
Light (#2) Oil	$3,110
Total 2022 Proposed Fuel Inventory	**$21,685**

*Total system wide 13-month average, based on end of the month inventory.

OPTIMIZATION MECHANISM RESULTS

	Customer Benefits ($000)	**Total Gains ($000)**
2018	$5,247	$6,367
2019	$5,287	$6,468
2020	$5,357	$6,642
2018-2020	**$15,891**	**$19,477**