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October 27, 2022

Ms. Sallie Tanner
Executive Secretary
Georgia Public Service Commission
244 Washington Street, S.W.
Atlanta, Georgia 30334

RE: Review of Expenditures Pursuant to Georgia Power Company's Certificate of Public Convenience and Necessity for Plant Vogtle Units 3 and 4, Twenty-seventh Semi-annual Construction Monitoring Report; Docket No. 29849

Dear Mr. McAlister:

Enclosed for filing in support of Georgia Power Company's Twenty-seventh Semi-Annual Vogtle Construction Monitoring Report, please find (1) the Direct Testimony of the Panel of David L. McKinney and Jeremiah C. Haswell, and (2) the Direct Testimony of the Panel of Stephen E. Kuczynski and John B. Williams.

Please call me at 404-885-3475 if you have any questions regarding this filing.

Sincerely,

Steven J. Hewitson

Enclosures

DIRECT TESTIMONY OF

DAVID L. MCKINNEY AND JEREMIAH C. HASWELL

IN SUPPORT OF GEORGIA POWER COMPANY'S
TWENTY-SEVENTH SEMI-ANNUAL VOGTLE CONSTRUCTION MONITORING REPORT

DOCKET NO. 29849

I. INTRODUCTION

Q. PLEASE STATE YOUR NAMES, TITLES, AND BUSINESS ADDRESSES.

A. My name is David L. McKinney. I am the Senior Vice President of Nuclear Development at Georgia Power Company ("Georgia Power" or the "Company"). My business address is 241 Ralph McGill Boulevard, N.E., Atlanta, Georgia 30308.

My name is Jeremiah C. Haswell. I am the Project Oversight Director for Georgia Power. My business address is 241 Ralph McGill Boulevard, N.E., Atlanta, Georgia 30308.

Q. MR. MCKINNEY, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from Auburn University with a Bachelor of Science degree in Civil Engineering. I joined Southern Company Services as a co-op in the Hydro Engineering department and moved from there into a Project Engineer role in Southern Company Generation. I then served as a Civil Engineering Manager in the Technical Services Department before taking an assignment as Project Manager of Combined Cycle Construction. After that, I served as General Manager of New Generation Construction. I have served in various leadership roles on Plant Vogtle Units 3 and 4 (the "Project") since 2009, with my current role being the Senior Vice President of Nuclear Development for Georgia Power. In this role, I have responsibility for Commercial and Cost Management, Project oversight, regulatory relationships with the Georgia Public Service Commission

(the "Commission") and their staff ("Commission Staff") as well as the U.S. Department of Energy ("DOE").

Q. MR. MCKINNEY, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I testified in this docket regarding the Sixth, Seventh, Eighth, Ninth/Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, Fifteenth, Sixteenth, Seventeenth, Eighteenth, Nineteenth, Twentieth/Twenty-first, Twenty-second, Twenty-third, Twenty-fourth, Twenty-fifth and Twenty-sixth Semi-annual Vogtle Construction Monitoring ("VCM") Reports.

Q. MR. HASWELL, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the University of Alabama at Birmingham with a Bachelor of Science degree in Mechanical Engineering and a Master of Science degree in Civil Engineering (Construction Management focus). I completed a Master of Business Administration at Augusta University and am a licensed Professional Engineer. I joined Southern Company as an Engineer in Southern Company Services Research and Technology Management focusing on new technology deployment in the existing operating fleet. I held multiple Team Leader roles in the areas of Maintenance, Engineering, and Compliance at Alabama Power Company's Plant Gorgas. In 2012, I moved to Plant Vogtle Units 3 and 4 in the Construction Compliance organization and later to the role of Construction Compliance Supervisor for the Turbine Island and Balance of Plant. I am currently the Project Oversight Director with responsibility for regulatory filings for the Project, compliance with Georgia Power's loan guarantee with the DOE, Project oversight, risk management, and lead interface with the Commission Staff, Construction Monitor, and the other Project Owners (Oglethorpe Power Corporation, the Municipal Electric Authority of Georgia, and Dalton Utilities, through the Board of Water, Light and Sinking Fund Commissioners of the City of Dalton) (collectively, the "Owners").

Q. MR. HASWELL, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I testified in this docket regarding the Thirteenth, Fourteenth, Fifteenth, Seventeenth, Eighteenth, Nineteenth, Twentieth/Twenty-first, Twenty-second, Twenty-third, Twenty-fourth, Twenty-fifth and Twenty-sixth Semi-annual VCM Reports.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. Our testimony is submitted on behalf of Georgia Power and a panel consisting of Stephen Kuczynski and John Williams will set forth the testimony of Southern Nuclear Operating Company ("Southern Nuclear" or "SNC"), the Project manager at the site. Georgia Power continues to exercise its oversight role on behalf of itself and as agent for the other Owners. Southern Nuclear continues to have primary responsibility for cost and schedule performance as well as safety and quality in all aspects of the Project.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of our testimony is to support the Twenty-seventh Semi-annual Vogtle Construction Monitoring Report ("VCM 27 Report"), which presents $522 million in capital expenditures invested between January 1, 2022, and June 30, 2022 (the "Reporting Period") for Commission review.

Our testimony will demonstrate Georgia Power's commitment to bringing this 60 to 80-year, carbon- and emission-free generation technology online. We will also provide an update on current Project status as well as the current Project cost and schedule.

Q. WHAT PERIOD DOES THE TWENTY-SEVENTH VCM REPORT COVER?

A. The VCM 27 Report, incorporated herein by reference, covers the period between January 1, 2022, and June 30, 2022.

II. PROJECT COST

Q. WHAT IS THE CURRENT STATUS OF THE PROJECT'S ESTIMATED COST?

A. The Company's projected share of the Project's total capital cost forecast increased by $32 million since the filing of the VCM 27 Report to replenish unallocated construction contingency. The Company's projected share of the Project's total capital cost forecast remains approximately $10 billion. Georgia Power invested $522 million of capital expenditures during the Reporting Period, bringing Georgia Power's cumulative capital investment in the Project through the end of the Reporting Period to approximately $8.9 billion, after accounting for Georgia Power's portion of the Toshiba Parent Guaranty (less the costs associated with securing the Parent Guaranty payment and the customer refunds totaling approximately $188 million). Georgia Power's investment in the Project has been prudently incurred and complies with the Certificate of Public Convenience and Necessity.

Q. PLEASE ELABORATE ON GEORGIA POWER'S ACTUAL EXPENDITURES DURING THE REPORTING PERIOD.

A. The following table identifies the breakdown of Georgia Power's $522 million of actual expenditures during the Reporting Period.

Construction & Capital Cost	VCM 27 (in millions)
Original EPC	$ -
Interim Payments & Liens	-
Site Construction Management	
Engineering Contractor	52
Procurement	79
Contract Construction	237
Construction Support & Project Management	91
Total Site Construction Management	**458**
Owners Costs	39
Ad Valorem	25
Transmission Interconnection	0
Test Fuel Offsets	-
Total Construction & Capital Cost	**$ 522**

Q. WHAT IS THE COMPANY REQUESTING OF THE COMMISSION REGARDING THE $522 MILLION?

A. The Company is presenting the $522 million to the Commission for review only and is not requesting verification and approval of the expenditures at this time.

Q. WILL THE COMPANY REQUEST VERIFICATION AND APPROVAL OF THIS AMOUNT AT A FUTURE DATE?

A. As stated in the stipulation adopted by the Commission in its VCM 24 Order, the Company may request verification and approval of these costs at a later date, but not prior to the prudency review contemplated by the VCM 17 Order. That decision has not yet been made and will not be made until closer to that time.

III. PROJECT STATUS

Q. PLEASE PROVIDE AN UPDATE ON PROJECT STATUS.

A. On July 29, 2022, the Company announced that documentation for the 398 Inspection, Test, Analysis, and Acceptance Criteria ("ITAAC") required in the Unit 3 licensing basis had been submitted to the Nuclear Regulatory Commission ("NRC") in accordance with 10 C.F.R Part 52.103(g) ("103(g)"). On August 3, 2022, the NRC published its 103(g) finding that the acceptance criteria in the combined license had been met. This finding allowed for Southern Nuclear to load nuclear fuel in Unit 3 and allowed start-up testing to begin in accordance with its combined license.

Following the receipt of the 103(g) finding, the Site team continued work in preparation for initial Fuel Load in Unit 3. The Site transitioned the 42 systems required for Fuel Load to the Operations team and successfully completed all the required technical specification surveillances, document closures, and regulatory requirements to meet the Fuel Load milestone. In addition, in preparation for Fuel Load, the Site team achieved the full security integration of Vogtle Units 1-3. Following the completion of these activities, the Site team started initial Fuel Load on October 13, 2022 and completed Fuel Load four days later on October 17, 2022 when all 157 initial fuel bundles had been loaded into the reactor.

The Site team continues to make progress at Unit 4 with the transition from construction to critical testing activities, as recently demonstrated with the successful completion of Open Vessel Testing ("OVT"). The Site team is continuing this transition in preparation for Closed Vessel Testing and Turbine on Gear testing. In support of these upcoming testing milestones, the Unit 4 focus remains on completion of complex electrical commodity installations. The Site team continues to focus on ensuring there are appropriate levels of craft and field non-manual resources to support electrical commodity installation and documentation closure. Through September 2022, direct construction for Unit 4 was approximately 97% complete.

While the Project continues to make progress, many challenges remain to completing the work to go and achieving the remaining major milestones. The projected in-service dates for Unit 3 and Unit 4 are unchanged from the VCM 27 Report, with Unit 3 Commercial Operation projected during the first quarter of 2023 and Unit 4 Commercial Operation projected during the fourth quarter of 2023.

Q. PLEASE PROVIDE AN UPDATE ON UNIT 3 FUEL LOAD AND START-UP.

A. As noted above, the Site team successfully completed loading fuel into the reactor of Unit 3 on October 17, 2022 and the Site team is now completing work in preparation to enter into MODE 5 of the start-up sequence. Further discussion on the start-up MODEs can be found in the testimony of Mr. Kuczynski and Mr. Williams.

Over the next several months, the Site team expects to continue to move Unit 3 through the various MODEs and into initial criticality, power ascension, and 100% reactor thermal power. Each of these MODEs is critical in the start-up sequence designed to ensure Unit 3 is ready to achieve Commercial Operation in the first quarter of 2023.

Q. PLEASE DISCUSS POTENTIAL START-UP RISKS FOR UNIT 3.

A. It is possible that during the first of a kind start-up testing of Unit 3, the Project team will experience unanticipated challenges. In anticipation of potential challenges, the Operations organization has spent significant time learning about the AP1000 technology and implementing lessons learned from their observations of the start-up of the Chinese units and simulator operations. These experiences should provide the background needed to support any technical issues that may arise during Unit 3 start-up testing.

During Hot Functional Testing ("HFT"), the Project team successfully operated Unit 3 at designed temperature and pressure without fuel in the reactor, by utilizing the Reactor Coolant Pumps ("RCPs"). However, minimal testing was conducted on the secondary steam supply systems during HFT. Many of these systems will be tested and operated for

the first time during start-up testing through various plateau power levels until operating at 100% power.

Q. PLEASE PROVIDE AN UPDATE ON UNIT 4 PERFORMANCE.

A. Progress on Unit 4 was slowed during the Reporting Period due to the temporary diversion of craft and support resources from Unit 4 to support construction efforts on Unit 3. The Project team implemented efforts to increase craft labor and field non-manual support resources, particularly electricians, to help provide for continued progress and to increase production. In the months since the VCM 27 Report was filed, as work has completed on Unit 3, craft and field non-manual staffing has increased on Unit 4.

As you can see in the table below, electrical progress on Unit 4 is currently maintaining the forecasted pace assumed for the December 2023 Risk Adjusted Schedule. To achieve the December 2023 Risk Adjusted Schedule, the Project team needs to continue its current pace of electrical production to meet the required system turnovers needed to support projected dates for upcoming testing milestones.

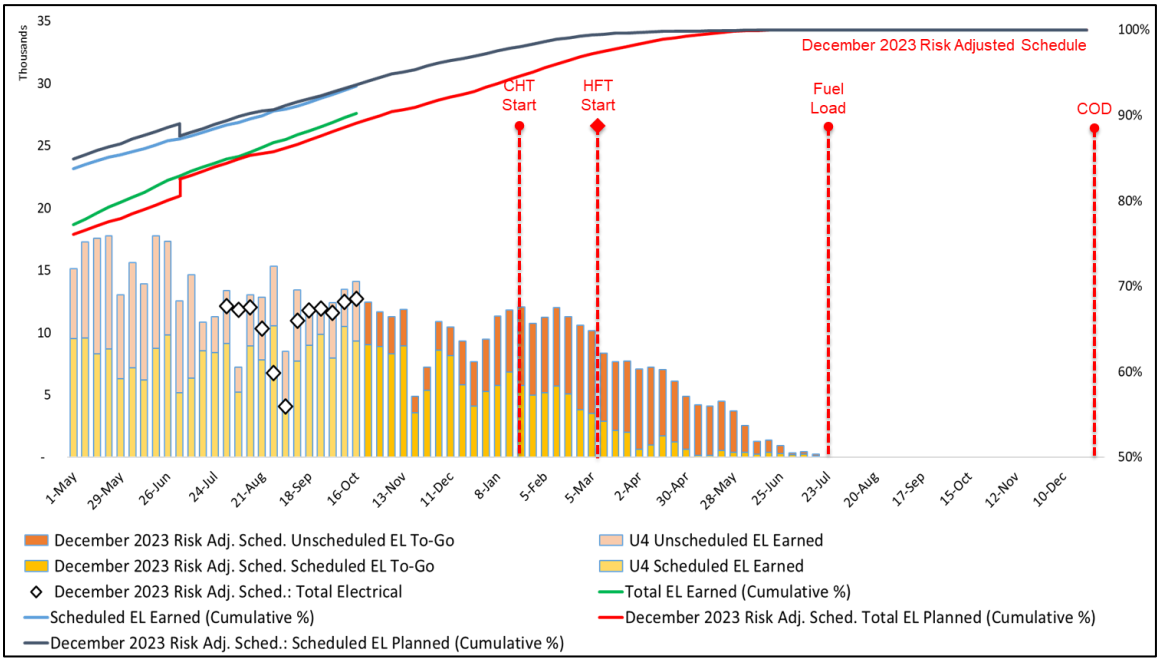


Figure A - Unit 4 Electrical Percent Complete

Q. WHAT IS THE CURRENT STATUS OF UNIT 4 TESTING?

A. Progress continues for the work necessary to support the upcoming milestones of Closed Vessel and Cold Hydro Testing, while construction production has supported the successful completion of OVT. The Construction team is challenged to meet the current construction production targets, specifically in the areas of electrical commodity installation; an increased focus on these areas is needed to continue to support the upcoming testing milestones. Additionally, the continued incorporation of lessons learned from Unit 3 is needed to sustain improvements in first-time quality and documentation closure.

Q. WHAT ACTIVITIES MUST HAPPEN ON UNIT 4 TO REDUCE THE DURATION BETWEEN THE HFT AND FUEL LOAD MILESTONES?

A. The Unit 4 Risk Adjusted Schedule assumes lessons learned from Unit 3 have been incorporated to reduce the timeframe for HFT and the duration between the HFT and Fuel Load. Based on the Company's experience with Unit 3 milestones, the Company will need sustained improvements in first-time quality, including adherence to IEEE 384 standards, to reduce the schedule durations between HFT and Fuel Load. The practice of closing documentation as work is completed must also be continued at Unit 4 to prevent a backlog of uncompleted inspection records and other construction and testing work packages. It is also expected that any testing deficiencies discovered on Unit 3 will be planned for and corrected prior to entering into the equivalent phase of testing on Unit 4. The Unit 4 Risk Adjusted Schedule contains the same start-up duration of 160 days from Fuel Load to Commercial Operation as Unit 3.

IV. CONCLUSION

Q. WHAT IS GEORGIA POWER REQUESTING AT THIS TIME?

A. The Company is not requesting that the Commission take any action at this time regarding the $522 million in actual expenditures invested in the construction of the Project during the Reporting Period of January 1, 2022, through June 30, 2022.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

DIRECT TESTIMONY OF
STEPHEN E. KUCZYNSKI AND JOHN B. WILLIAMS
IN SUPPORT OF GEORGIA POWER COMPANY'S
TWENTY-SEVENTH SEMI-ANNUAL VOGTLE CONSTRUCTION MONITORING REPORT

DOCKET NO. 29849

I. INTRODUCTION

Q. PLEASE STATE YOUR NAMES, TITLES, AND BUSINESS ADDRESSES.

A. My name is Stephen E. Kuczynski. I am the Chairman, President, and Chief Executive Officer of Southern Nuclear Operating Company ("Southern Nuclear" or "SNC"). My business address is 7825 River Road, Waynesboro, Georgia 30830.

My name is John B. Williams. I am the Vice President of Business Operations for Plant Vogtle Units 3 and 4 (the "Project"). My business address is 7825 River Road, Waynesboro, Georgia 30830.

Q. MR. KUCZYNSKI, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the Milwaukee School of Engineering with a Bachelor of Science degree in electrical engineering technology. I am also a graduate of the Harvard Advanced Management Program and have earned a senior reactor operator license from the U.S. Nuclear Regulatory Commission ("NRC"). I was elected to my current position as Chairman, President, and Chief Executive Officer of Southern Nuclear in July 2011. I am responsible for construction of the Plant Vogtle Units 3 and 4 (the "Project") and other nuclear development initiatives, as well as all operations at Southern Company's six operating nuclear reactors at plants Farley, Hatch, and Vogtle. I have more than 37 years of experience in the nuclear industry, joining Southern Nuclear from Exelon Nuclear,

where I held the role of Senior Vice President of Engineering and Technical Services, responsible for fleet engineering, capital projects, outage services, and nuclear fuel. Prior to that role, I was the Senior Vice President of Exelon Nuclear's Midwest Operations. In that role, I was responsible for oversight of Exelon Nuclear's six Illinois operating facilities and 11 reactors.

I previously served as chair of the Nuclear Energy Institute's ("NEI") Advanced Reactor Working Group and the New Plant Advisory Committee. I am a former member of the Terrestrial Power Industry Advisory Board and the board of advisors of X-Energy, a nuclear reactor and fuel design engineering services company. I previously served on the board of directors and the executive committee of NEI, the Institute of Nuclear Power Operations National Nuclear Accrediting Board, as well as the advisory boards for the Oak Ridge National Laboratory Nuclear Science and Engineering Directorate, and the U.S. Department of Energy's ("DOE") Gateway for Accelerated Innovation in Nuclear. I previously served as a member of the DOE's Office of Nuclear Energy, Nuclear Energy Advisory Committee. I have received the Special Achievement Award from the U.S. Nuclear Infrastructure Council and the Presidential Citation from the American Nuclear Society. I testified before Congress about advanced nuclear technology innovation on May 17, 2016.

Q. MR. KUCZYNSKI, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. Yes. I testified in this docket regarding the Eighteenth, Nineteenth, Twentieth/Twenty-first, Twenty-second, Twenty-third, Twenty-fourth, Twenty-fifth and Twenty-sixth Semi-annual Reports.

Q. MR. WILLIAMS, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the Georgia Institute of Technology with a bachelor's degree in nuclear and radiological engineering. I am currently the Vice President of Business Operations for Southern Nuclear Plant Vogtle 3 and 4. I joined Southern Nuclear in 2005 and have more than 20 years of engineering and nuclear fuel experience and have served in several leadership positions throughout the Southern Nuclear organization, including Plant Hatch Engineering Director, Nuclear Fuels and Analysis Director, and Interim Engineering Vice President.

I have represented Southern Nuclear on the Department of Energy Industry Advisory Boards for the Advance Fuels Campaign and the Nuclear Energy Advance Modeling and Simulation ("NEAMS") program. I have also served as the utility lead for the NEI's Accident Tolerant Fuel Working Group's ("ATFWG") Licensing and Safety Benefits Task Force, leading the team that introduced the first Accident Tolerant Fuel into a commercial reactor at Plant Hatch in 2018 and Plant Vogtle in 2019.

Q. MR. WILLIAMS, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I testified in this docket regarding the Twenty-sixth Semi-annual Report.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of our testimony is to support the Twenty-seventh Semi-annual Vogtle Construction Monitoring Report ("VCM 27 Report") and to update the Commission on efforts by Southern Nuclear regarding the construction and future operation of this long-term asset for Georgia customers. Additionally, our testimony, along with the testimony of Georgia Power Company's ("Georgia Power" or the "Company") witnesses Mr. McKinney and Mr. Haswell, provides justification for Georgia Power's actual expenditures

invested in the Project between January 1, 2022, and June 30, 2022 (the "Reporting Period"), as made pursuant to the Certificate of Public Convenience and Necessity.

II. PROJECT STATUS

Q. WHAT IS THE CURRENT STATUS OF THE PROJECT?

A. As discussed in the VCM 27 Report, the Project team continues its work promoting a safety-first culture. The Project continued on a positive safety trend that is well below the heavy construction industry average with a Total Recordable Incident Rate for 2022 remaining below both the target set for 2022 and the actual rate in 2021. Site leadership continues to emphasize the importance of safety onsite.

We remain committed to our organization's high standards for safety and quality and continue to prioritize these two tenets ahead of schedule. This commitment was demonstrated when the Project received the historic Unit 3 103(g) letter from the NRC and, most importantly, when the Project team safely and successfully completed initial Fuel Load by placing 157 nuclear fuel assemblies and two neutron sources into the Unit 3 Reactor Vessel on October 17, 2022. Unit 3 Fuel Load marks the first time in over 30 years that a newly constructed domestic nuclear reactor has successfully performed initial fuel load operations and represents another major step towards fulfilling our commitment to the citizens of Georgia by providing a clean, safe, and reliable source of power for the next 60 to 80 years.

The next major milestone for Unit 3 will be Commercial Operation which is projected in the first quarter of 2023. The steps to achieving Commercial Operations are summarized later in this testimony.

For Unit 4, the Project team successfully completed Open Vessel Testing ("OVT"). The successfully completed tests and measurements obtained during OVT ensured that safety and defense-in-depth systems and components function properly to support pre-operational testing and meet the design requirements for protection of the plant and the public during

normal and emergency operating conditions. In the coming months, Unit 4 is expected to progress further into testing as the Project team performs Closed Vessel Testing ("CVT") and Cold Hydro Testing ("CHT"), both of which support the start of Hot Functional Testing ("HFT") which is projected by the end of the first quarter of 2023. Additionally, the Turbine on Gear ("TOG") and Condenser Vacuum Milestones are projected to occur in the fourth quarter of 2022.

Q. WHAT IS THE PERCENT COMPLETE FOR THE PROJECT?

A. We provide the Total Project Percent Complete as of July 31, 2022 on page 12 of the VCM 27 Report. The Total Project Percent Complete shown below is one measure of how progress is tracked onsite and does not include work associated with remediation. As of September 30, 2022, those figures are:

Table 1 – Project Percent Complete	
Project Phase	**% Complete**
Engineering	100%
Procurement	99.9%
Construction	98.5%
I&C/Cyber Security	100%
Initial Test Program	80.1%
Total Project	**97.8%**

III. STATUS OF PROJECT SCHEDULE

Q. WHAT IS THE CURRENT PROJECTED IN-SERVICE DATE FOR UNIT 3?

A. The projected in-service date during the first quarter 2023 for Unit 3 has not changed since the VCM 27 Report was filed. The achievability of this date is subject to current and future challenges, including the pace of system and area transitions to Operations, discovery of additional scope, the completion of documentation, and the progression of start-up and

other testing. Additional delays could result in a Unit 3 in-service date beyond the first quarter of 2023.

The following table summarizes Southern Nuclear's projected timing of the remaining major milestones included in the Risk Adjusted Schedule.

Table 1A - Unit 3 Risk Adjusted Schedule	
Unit 3 Major Milestone	**March 2023 Risk Adjusted Schedule**
103(g) Letter Received	August 2022 (Actual)
Fuel Load	October 2022 (Actual)
Commercial Operation Date	March 2023

Q. HOW HAS UNIT 4 PROGRESSED SINCE THE VCM 27 REPORT?

A. The projected in-service date during the fourth quarter 2023 for Unit 4 has not changed since the VCM 27 Report was filed. The Project team continues to work towards a more aggressive site work plan that currently targets a third quarter 2023 in-service date. The pace of certain electrical commodity installations on Unit 4 has recently increased with the transition of additional resources from Unit 3, improvements to the execution of nightshift support, and the continued incorporation of lessons learned.

Project leadership continues to believe that working toward an aggressive schedule is the best strategy to maintain the focus and drive of the Project, identify and mitigate risks early, and ultimately support the Project's objective of safely and successfully reaching Commercial Operation.

The table below shows a comparison of milestone dates between the current Unit 4 site work plan and the projected timing of milestones included in the Risk Adjusted Schedule.

Table 1-B – Unit 4 Comparison to Risk Adjusted Schedule		
Unit 4 Major Milestone	**August 2022 Site Work Plan**	**December 2023 Risk Adjusted Schedule**
Structural Integrity Test ("SIT")/ Integrated Leak Rate Test ("ILRT")	February 2022 (Actual)	
Cold Hydro Testing Start	October 2022	January 2023
Hot Functional Testing Start	December 2022	March 2023
Fuel Load Start	March 2023	July 2023
Commercial Operation Date	August 2023	December 2023

IV. CONSTRUCTION AND TESTING PROGRESS

Q. HOW IS CONSTRUCTION PROGRESSING AT THE SITE?

A. As of the end of September 2022, total construction on the Project is approximately 99% complete after including site-specific Balance of Plant ("BOP") structures. BOP scope is largely complete, and Unit 3 direct construction, consisting of Bechtel's current scope of work, is nearing completion. The number of craft assigned to Unit 3 has decreased by approximately 70% since the beginning of the reporting period, with the remaining construction personnel assigned to Unit 3 focused on completing the final work scopes including coatings and cleaning and a limited amount of identified discovery work. All other remaining work has been assigned to the Maintenance organization with miscellaneous subcontractor support. This work includes post testing adjustments to system line-ups, as well as support to troubleshoot and correct testing deficiencies. Unit 4 direct construction is approximately 97% complete, with electrical commodity installation and subcontract scope the primary areas of focus.

Q. WITH FUEL LOAD COMPLETE, WHAT IS THE STATUS OF UNIT 3?

A. On October 13, 2022, Vogtle Unit 3 became the first newly constructed nuclear plant in the United States to load fuel in over 30 years. The Site Operations team performed surveillances and met all the required Technical Specifications to successfully load the 157 fuel assemblies and the two neutron source rods into the Reactor Vessel. The entire Fuel Load evolution took approximately four days and was completed safely on October 17, 2022.

Since successfully completing Unit 3 Fuel Load, the Project team is preparing to place the Reactor Vessel Integrated Head Package ("IHP") back on the Reactor Vessel and tension the bolts that secure the IHP to the Reactor Vessel. The Site team is currently focused on completing the transition of systems to support MODE 5 through MODE 1 (discussed below), completing documentation, and performing the Start-up Testing while the Site Operations team is validating the required conditions are achieved prior to entering into each of the MODEs required prior to Commercial Operation.

Q. PLEASE DESCRIBE EACH OF THE "MODES" LEADING UP TO COMMERCIAL OPERATIONS.

A. With the receipt of the 103(g) letter, the next step for Unit 3 is to commence with the phases of Plant start-up conditions. The phases of start-up and shut-down conditions are identified as "MODEs." There are six different MODEs defined in the Technical Specifications through which the plant transitions from having no fuel in the reactor, all the way to 100% power output from the reactor. These MODEs will be utilized through the life of the Plant, for example, the Plant will establish the required condition for each of the MODEs at the completion of future refueling outages. During Unit 3 Start-up, the MODEs count down from MODE 6 to MODE 1. The applicable Technical Specifications and specific Plant conditions are required to be achieved prior to entering into each of the MODEs. During each stage of the Unit 3 start-up, the Operations and Initial Test Program ("ITP") teams

will work together to perform the required Plant testing, through utilizing MODE checklists, will validate all required Technical Specifications are met and that Plant conditions are achieved prior to a change in MODEs.

MODE 6 is the "refueling" MODE. On October 13, 2022 when nuclear fuel was loaded into the reactor, Unit 3 entered into MODE 6. Prior to loading fuel, the ITP team performed the requisite testing on each of the required systems, and the Operations team performed surveillances to evaluate the functionality and operability of each system to ensure required Technical Specifications were met in support of performing the initial fuel load. Additionally, achieving specific cleanliness requirements became very important prior to and during this MODE. In the future, MODE 6 will represent the refueling stage during fueling outages.

In MODE 5, the Plant is described as being in Cold Shutdown. The Plant enters into this MODE once all of the 157 fuel assemblies are loaded in the Reactor Vessel and the Integrated Head Package ("IHP") is fully tensioned to the Reactor Vessel. The Operations team will validate the Secondary systems are ready to support heat removal, and the Pressurizer is full of water; at which time, the Reactor Coolant Pumps ("RCPs") will be utilized to initiate the Plant heat up to approximately 190 -195 degrees Fahrenheit and the Containment Vessel will be prepared for closure.

MODE 4 signifies Safe Shutdown. To achieve MODE 4, the Containment Vessel will be closed, the required Technical Specifications will be verified, and as the reactor system temperature is increased to over 200 degrees Fahrenheit, the Plant will enter MODE 4. During MODE 4, the temperature will continue to be raised, systems required to support the operation of the Steam Generators will be placed into service, and testing will be performed at several temperature plateaus both in the reactor systems and secondary systems.

MODE 3 is described as the Hot Standby mode. MODE 3 is achieved once the reactor systems are raised to a temperature above 420 degrees Fahrenheit. During MODE 3, chemistry of the reactor systems is adjusted, the RCPs are utilized to increase the temperature of the Reactor Coolant System ("RCS") to 557 degrees Fahrenheit and the pressure is increased to 2,235 psig., which are the Plant conditions experienced during HFT and represent the normal operating pressure and temperature of the Plant. At the end of this Mode, once all the testing at MODE 3 is complete, an important transition into the next MODE will begin as this will be the first time the nuclear chain reaction will be initiated for Unit 3.

MODE 2 is the start-up mode. This MODE is entered as the Plant initiates the nuclear chain reaction and starts increasing reactivity in the reactor by raising the controls rods from the core and reducing the boron concentration of the water in the reactor through dilution. The reactor is considered "Critical" when the number of neutrons being produced equals the number being absorbed, which in turn produces the same number of neutrons and the chain reaction becomes self-sustaining. Low-Power physics testing is performed during this MODE and confirms the conditions in the reactor core remain consistent with what is expected per the design.

MODE 1 is considered Power Operations. Once the reactor power raises above 5% thermal power, MODE 1 is entered. During MODE 1, the Plant will go through several sets of tests to validate the operation of critical components and the ability for those components to respond to various conditions which is intended to ensure the systems required for safe operation perform as intended. During the start-up power phase, tests are performed at increasing levels of power from roughly 10 percent through 100 percent. Similar tests and baseline data collection are performed at various plateau power levels. Test examples include rod controls testing, testing from the remote shutdown room, validation of control during a simulated loss of offsite power, load swing testing and both a generator and plant trip. Upon successful completion of the MODE 1 testing and the unit is available for reliable dispatch, Unit 3 will be ready to declare Commercial Operation Status.

Table 2 – Plant Start-up MODES				
MODES	**Title**	**% Rated Thermal Power (MWth)**	**Avg. RCS Temperature (◦F)**	**Description**
6	Refueling	N/A	N/A	Fuel is loaded into the Reactor Vessel
5	Cold Shutdown	N/A	≤ 200	Reactor Vessel is pipe tight in preparation for operation
4	Safe Shutdown	N/A	420 ≥ Tavg > 200	Adding energy to reactor coolant system – most safety systems required to be operable
3	Hot Standby	N/A	> 420	Reactor coolant system heated to normal operating pressure & temperature
2	Start-up	≤ 5	N/A	Operators begin nuclear reaction and production of nuclear heat
1	Power Operation	> 5	N/A	Operators raise power for electricity generation

Q. PLEASE DISCUSS THE PROGRESS OF SYSTEM TURNOVERS AND TESTING FOR UNIT 3.

A. To support each MODE, Unit 3's current focus is the transition of systems to Operations. Fifty-four systems have been transitioned to Operations with 33 remaining. As systems in support of each MODE are identified as ready for transition, they are reviewed by a cross functional team and then presented to the Plant Health Committee prior to approval for transition. After systems are transitioned, they are tested by the Operations team to validate operability and functionality. In cases where the Operations team identifies adjustments or modifications to the transitioned systems, they are assigned to the Maintenance organization for disposition. The work performed by the Maintenance organization allows for the organization to become more familiar with the Plant systems.

Q. PLEASE PROVIDE AN UPDATE ON THE STATUS OF THE UNIT 4 ITAAC SUBMITTALS.

A. All Unit 4's Uncompleted ITAAC Notifications ("UINs") have been submitted. As discussed in prior testimony, ITAAC Closure Notifications ("ICNs") for both units have been and will be submitted following satisfaction of the acceptance criteria in the ITAAC. Through September 30, 2022, 145 of 393 Unit 4 ICNs have been submitted.

Q. WHAT IS THE STATUS OF TESTING ON UNIT 4?

A. Since the VCM 27 Report was filed, Unit 4 has completed OVT and projects to complete the CVT, CHT, Condenser Vacuum and TOG in the coming months. The completion of each of these testing evolutions will support start of HFT by the end of the first quarter 2023.

The site is preparing for CVT, which is the next testing evolution and targeted to begin in the 4th quarter 2022.

Additionally, TOG and Condenser Vacuum are targeted to occur in the 4th quarter of 2022. TOG testing includes simultaneously rotating the four steam turbines with use of the gear motor to validate the reliability of operation and is a prerequisite to the Condenser Vacuum testing, which demonstrates the integrity and tightness of the condenser so the vacuum pumps can pull vacuum. Successful completion of these milestones is important to performing HFT and will lay the foundation for successful Plant start-up and the path to commercial operations.

V. PROJECT CHALLENGES

Q. WHAT ARE THE PRIMARY CHALLENGES FACING THE PROJECT TODAY?

A. Challenges on the Project continue to evolve as the Project matures. For Unit 3, the risk has shifted to activities which impact system transitions to Operations and the completion of the testing to support Technical Specifications for MODE transitions. Unit 4 continues to face challenges to performance, specifically related to electrical commodity installations; however, the Project has recently experienced positive momentum in certain electrical commodity installations with the transition of craft and field non-manual resources from Unit 3 to Unit 4. Completion of documentation continues to be a focus for the Unit 4 team with the review and closure of required documentation necessary to achieve upcoming milestones completed as related work is done. The Project team continues to

prioritize safety and quality ahead of schedule and is working closely with Bechtel and subcontractors to support their efforts to increase production in a safe and quality manner.

Q. PLEASE PROVIDE AN UPDATE ON THE PROJECT'S DOCUMENTATION CLOSURE EFFORTS.

A. The Project continued to make significant progress with document closure on Unit 3 as demonstrated by achieving the 103(g) and Fuel Load milestones, and prior to loading fuel, the design authority on Unit 3 was transited from Westinghouse to Southern Nuclear. Documentation closure will continue on Unit 3 as the Site team progresses through start-up testing and achieves each of the MODEs. transferred. As mentioned above, for Unit 4, the Project team remains focused on a "sign as you go" approach for documentation closure. Although the approach has impacted the rate of the system turnovers as compared to the site expectation; the approach is expected to reduce the impacts of documentation completion during the final stages of construction leading up to Unit 4 start-up activities next year.

Q. PLEASE DESCRIBE THE POTENTIAL CHALLENGES FACING THE PROJECT DURING UNIT 3 START-UP AND COMMISSIONING.

A. While not expected, it is possible the Project will experience an unanticipated challenge that would impact the forecasted in-service dates due to the first of a kind technology. As Unit 3 continues with start-up testing, Operators will continue to utilize general operating procedures for the first time to transition the plant from cold shutdown to initial criticality, synchronize the Unit to the grid, and achieve power ascension through multiple steps, ultimately raising power to 100%.

During Unit 3 HFT, the Project successfully operated the plant at designed temperature and pressure without fuel in the reactor. With RCPs being the only heat source during HFT, minimal steam was generated for turbine testing and not all the secondary steam supply systems were operated. The remaining secondary steam supply systems will be tested for

the first-time during start-up when Unit 3 reaches 100% power with nuclear fuel inside the reactor. The organization is well equipped and should have sufficient licensed operators to continue to address challenges as they arise during start-up and commissioning.

Q. PLEASE DESCRIBE UNIT 4'S CURRENT PRODUCTIVITY CHALLENGES.

A. Unit 4 electrical progress continues to be one of the key drivers for supporting the upcoming testing evolution and completion of major milestones. Unit 4 continues to evaluate and adjust resources to improve productivity as resource and production challenges have decreased with the completion of Unit 3 construction, the transfer of resources to Unit 4, and recent improved production from the night shift.

The initiatives put into place during the previous Reporting Periods such as Quality Control maintaining a workable backlog, increasing focus on first time quality, documentation "sign as you go," and closure of work packages are expected to set Unit 4 up for success as the resources increase on Unit 4.

VI. COST FORECAST

Q. PLEASE DISCUSS ANY UPDATES TO THE TOTAL CAPITAL FORECAST FOR THE PROJECT SINCE VCM 27.

A. Southern Nuclear utilizes its Project Controls processes and tools to manage project costs and evaluate risks as part of the monthly cost forecasting process. As stated in the VCM 27 Report, the total capital cost forecast remains approximately $10 billion. Since the VCM 27 Report was filed, an additional $32 million has been added to the total capital cost forecast to replenish the unallocated construction contingency for the Project.

VII. CONCLUSION

Q. HOW WOULD YOU DESCRIBE THE PROGRESS DURING THE REPORTING PERIOD?

A. The Project team remains committed to safely bringing both Units online. Since the reporting period, 103(g) and Fuel Load were safely achieved at Unit 3, both of which represent historic milestones and drive Unit 3 ever closer to being the first domestic commercial nuclear power plant to be continuously constructed, tested and placed into operations in the past 30 years. We are excited that in 2023, Unit 3 will achieve Commercial Operations status and fulfill a commitment to our stakeholders and the citizens of Georgia by providing a clean, safe, and reliable source of power for the next 60 to 80 years.

With our unwavering commitment to safety and quality, Project Leadership continues to increase focus on Unit 4 to ensure continued implementation of lessons learned from Unit 3, drive improvements in the timing of documentation closure, and continue electrical commodity installations to support the start of HFT by the end of the first quarter of 2023.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

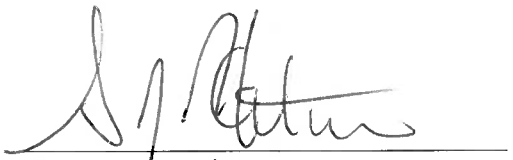
A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of the within and foregoing DIRECT TESTIMONY OF THE PANEL OF DAVID L. MCKINNEY AND JEREMIAH C. HASWELL AND THE DIRECT TESTIMONY OF THE PANEL OF STEPHEN E. KUCZYNSKI AND JOHN B. WILLIAMS IN DOCKET NO. 29849 upon all parties listed below via electronic service or by hand delivery and addressed as follows:

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This 27th day of October 2022.



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