

DIRECT TESTIMONY OF
TIMOTHY CHITESTER, MARK GENTRY, AND KIMBERLY REOME
IN SUPPORT OF GEORGIA POWER COMPANY’S APPLICATION TO ADJUST
RATES TO INCLUDE REASONABLE AND PRUDENT VOGTLE UNITS 3 AND 4 AND
COMMON COSTS

DOCKET NO. 29849

I. INTRODUCTION

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

2 **A.** My name is Timothy Chitester. I am a Partner in the Philadelphia office of HKA Global,
3 LLC (“HKA”). My business address is 2005 Market Street, Suite 820, Philadelphia,
4 Pennsylvania 19103.

5 My name is Mark Gentry. I am a Partner in the Minneapolis office of HKA. My business
6 address is 10 South 5th Street, Suite 1020, Minneapolis, Minnesota 55402.

7 My name is Kimberly Reome. I am a Partner in the Chicago office of HKA. My business
8 address is 300 South Wacker Drive, Suite 2600, Chicago, Illinois 60606.

9 **Q. PLEASE PROVIDE AN OVERVIEW OF HKA.**

10 **A.** HKA is a business and litigation consulting firm with significant experience in construction
11 and major power plant projects in the United States and internationally. HKA’s
12 professionals have substantial experience with the public utility industry, nuclear power
13 plants, design and construction and other relevant matters. HKA professionals have
14 sponsored expert testimony with respect to damages and schedule analyses as well as
15 technical issues before state and federal courts, domestic and international arbitration
16 tribunals, and state utility commissions.

1 **Q. WHAT EXPERIENCE DOES HKA HAVE IN ANALYZING POWER PLANT**
2 **PROJECT ISSUES?**

3 **A.** HKA personnel have worked on over 60 different nuclear power plants analyzing technical,
4 cost, and schedule issues related to, among other issues, original construction, cost and
5 schedule prudence; steam generator replacements; extended power uprates;
6 decommissioning; and additional storage of spent nuclear fuel. In addition, HKA
7 personnel have worked on approximately 30 natural gas and 35 coal power plants, as well
8 as other matters regarding hydroelectric, geothermal, bio-mass, solar, and wind generation.
9 HKA personnel have testified in both prudence and litigation proceedings regarding our
10 findings.

11 **Q. MR. CHITESTER, PLEASE SUMMARIZE YOUR EDUCATION AND**
12 **PROFESSIONAL EXPERIENCE.**

13 **A.** I have earned a Bachelor of Science degree in Mechanical Engineering from the University
14 of Pittsburgh, Pennsylvania. I am a registered professional engineer in the United States
15 with over 45 years of experience in the engineering, design, and construction industry.

16 Over 25 years of that time I was in design build roles for nuclear projects including with
17 Bechtel Power Corporation (“Bechtel”) and Stone & Webster Engineering Corporation. I
18 have actively worked on site of four nuclear power projects during construction,
19 commissioning, and 1st fuel cycle, including filling utility roles as a supervisor of nuclear
20 design and as a director of nuclear design. In several of these roles, I have provided support
21 to the owner/co-owners in state prudence reviews after construction completion.

22 I have provided engineering and construction services on an additional 12 nuclear plants
23 to produce and implement engineering design basis management and modification
24 installation management. In addition, I have provided consulting services to both
25 contractors and owners on advanced reactor, First of a Kind projects including the AP1000,

1 Advanced Boiling Water Reactor (“ABWR”), and Evolutionary Power Reactor (“EPR”).
2 I am currently providing both advisory and consulting services on post Fukushima Station
3 Blackout projects as well as Steam Generator replacement and Calandria Tube replacement
4 projects.

5 I am recognized as a construction and consulting expert and I have testified in federal court,
6 state court, AAA arbitration, ICDR arbitration, ICC arbitration, and other international
7 forums. I have also testified in an enforcement conference in front of NRC regional
8 officials.

9 **Q. MR. CHITESTER, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE**
10 **GEORGIA PUBLIC SERVICE COMMISSION (THE “COMMISSION”)?**

11 **A.** No, I have not.

12 **Q. MR. GENTRY, PLEASE SUMMARIZE YOUR EDUCATION AND**
13 **PROFESSIONAL EXPERIENCE.**

14 **A.** I graduated with honors from the University of Illinois with a Bachelor of Science degree
15 in Civil Engineering. I am a licensed Professional Engineer, a LEED Accredited
16 Professional, and have OSHA 10 and 30 certifications. I worked at Tucker Alan Inc. from
17 2000 to 2004 and as a Managing Consultant at Navigant Consulting from 2004 to 2006,
18 where I provided consulting services on a variety of construction and utility matters. I
19 worked as a project manager for JE Dunn Construction from 2006 to 2010. I worked at
20 The Kenrich Group LLC from 2010 to 2019 when it was acquired by HKA and am
21 presently a Partner at HKA managing the firm’s Minneapolis office. I lead teams that
22 analyze critical path method schedules, productivity, cost increases and accounting, and
23 contract issues. I have testified in federal and state court proceedings as well as in domestic
24 and international arbitration settings.

1 I have been involved with the retrofit, upgrade, construction, and decommissioning of
2 numerous nuclear power facilities in the United States and internationally. In addition, I
3 have provided consulting services on nearly every type of electric utility supply, including
4 nuclear, coal, gas, hydroelectric, solar and wind generation facilities as well as battery
5 energy storage projects.

6 **Q. MR. GENTRY, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE**
7 **COMMISSION?**

8 **A.** Yes, in 2017 as a part of the Seventeenth Vogtle Construction Monitoring (“VCM”)
9 hearings.

10 **Q. MS. REOME, PLEASE SUMMARIZE YOUR EDUCATION AND**
11 **PROFESSIONAL EXPERIENCE.**

12 **A.** I have a Master of Business Administration from Northwestern University Kellogg School
13 of Management, and I graduated with high honors with a Bachelor of Arts in Finance from
14 Michigan State University Honors College. I am a Certified Construction Industry
15 Financial Professional and a Certified Fraud Examiner.

16 I have over 30 years of experience analyzing, quantifying, and developing damages claims,
17 with experience analyzing accounting, financial, and economic issues in various types of
18 disputes, with a primary focus in the electric power and construction industries. I have
19 provided expert testimony, authored expert reports, and assisted in the production of expert
20 reports on numerous electric power and construction disputes. I have provided consulting
21 and expert services on over 75 matters related to over 40 nuclear power plants, as well as
22 numerous coal, natural gas, wind, solar and hydroelectric plants.

23 I worked at The Kenrich Group LLC from 2004 to 2019 as a Vice President and member
24 of the Board of Directors. The Kenrich Group was acquired by HKA in 2019, and I am
25 presently a Partner at HKA managing the Chicago office. I previously worked at Tucker

1 Alan Inc. from 1994 to 2004 at various positions including Principal, and Peterson
2 Consulting LP from 1991 to 1994 at various positions including Senior Consultant.

3 **Q. MS. REOME, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE**
4 **COMMISSION?**

5 **A.** No, I have not.

6 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

7 **A.** Georgia Power Company (“Georgia Power”), through Troutman Pepper Hamilton Sanders
8 LLP, retained HKA to conduct an analysis of the key risks, delays, and cost growth that
9 have occurred on Vogtle Units 3 and 4 (the “Project”) since VCM 17. Our testimony
10 explains the findings included in the following expert reports:

11 1. Expert Report of Timothy R. Chitester, dated September 8, 2023, Analysis of Risks
12 Identified in VCM 17 (the “Chitester Report”).

13 2. Expert Report of Mark Gentry, dated September 8, 2023, Analysis of Delays to
14 Commercial Operation of Vogtle Units 3 and 4 (the “Gentry Report”).

15 3. Expert Report of Kimberly R. Reome, dated September 8, 2023, Analysis of Vogtle
16 Units 3 and 4 Cost Growth (the “Reome Report”).

17 **Q. MR. CHITESTER, PLEASE SUMMARIZE YOUR CONCLUSIONS.**

18 **A.** My work has included assimilation, study, and analysis of documents associated with the
19 technical issues of the Project. After evaluating the facts and applying generally accepted
20 standards in the engineering and construction industry, I have concluded that the Lessons
21 Learned programs created a positive feedback mechanism on the Project and contributed
22 to improved performance on Unit 4. A number of Key Risks, outside of Southern Nuclear
23 Company’s (“SNC’s”) control, were identified at the time of VCM 17 and materialized on

1 the Project, including: Trade labor productivity, First of a Kind (“FOAK”) Challenges,
2 Risks in Procurement, Unidentified Scope, and Risks during Testing/Startup. Overall, it is
3 my opinion that the actions and mitigation undertaken by SNC to finish construction and
4 startup of Unit 3 and Unit 4 at Vogtle were reasonable and prudent.

5 **Q. MR. GENTRY, PLEASE SUMMARIZE YOUR CONCLUSIONS.**

6 **A.** I concluded that Commercial Operation of Unit 3 was delayed approximately 20 months
7 from November 30, 2021 to July 2023 while Commercial Operation of Unit 4 is projected
8 to be delayed approximately 13 months from November 30, 2022 to December 2023. My
9 analysis determined that the most significant impacts that resulted in delay to Commercial
10 Operation of Units 3 and 4 included the challenges presented by the COVID-19 pandemic,
11 identification of additional scope required to complete the Project, the need for more
12 rework than anticipated, the inability of the construction completion contractor, Bechtel,
13 to achieve planned production rates, and greater than expected Unit 3 testing and startup
14 challenges following Fuel Load.

15 **Q. MS. REOME, PLEASE SUMMARIZE YOUR CONCLUSIONS.**

16 **A.** Georgia Power estimated that Vogtle Units 3 and 4 would have a Total Construction &
17 Capital Cost, net of the Toshiba Parent Guaranty (“TPG”) of \$7.293 billion
18 (Georgia Power’s share) as of its VCM 17 submission in August 2017. The current
19 Estimate at Completion (“EAC”) of Total Construction & Capital Cost, net of the TPG,
20 with minimal costs remaining, is \$10.188 billion (Georgia Power’s share), an increase of
21 \$2.895 billion.

22 Of the \$2.895 billion of increased costs (Georgia Power’s share), Georgia Power is seeking
23 recovery for \$269 million. Georgia Power is not seeking recovery for \$1.362 billion, plus
24 Georgia Power has decided to forgo recovery of an additional \$1.264 billion per the

1 August 29, 2023 Stipulation with the Commission's Public Interest Advocacy Staff
2 ("PIA Staff") and several intervenors.

3 Georgia Power estimated that Vogtle Units 3 and 4 would have a to-go cost of
4 \$4.244 billion (Georgia Power's share) as of its VCM 17 submission in August 2017 (for
5 costs July 2017 forward). The current EAC (for costs July 2017 forward), with minimal
6 costs remaining, is \$7.044 billion (Georgia Power's share), an increase of \$2.800 billion.
7 The cost growth of \$2.800 billion in Georgia Power's share is \$6.127 billion in 100% of
8 dollars.

9 The primary drivers of the cost growth included: delay-related costs, productivity
10 performance, craft labor per diems and wage incentives, COVID-19 impacts, rework,
11 technical changes, and scope increase.

12 **II. GENERAL OVERVIEW OF HKA'S INVOLVEMENT WITH THE PROJECT**

13 **Q. PLEASE PROVIDE AN OVERVIEW OF HKA'S INVOLVEMENT WITH THE**
14 **VOGTLE PROJECT TO DATE.**

15 **A.** HKA (previously Kenrich) has worked on the Vogtle Project on behalf of Georgia Power,
16 and at times on behalf of all the Owners of the Project, in varying capacities for over ten
17 years. Kenrich was retained as a consultant in 2011, as a litigation expert witness in 2012
18 and 2015, as a scheduling expert for the prudence review in 2016, and for an independent
19 evaluation of the to-go cost and schedule as part of VCM 17. HKA has been retained to
20 assist with a commercial dispute as well as to provide expert witness services for the
21 present matter regarding prudence of costs incurred following VCM 17.

1 **III. ANALYSIS OF VOGTLE PROJECT KEY RISKS – THE CHITESTER REPORT**

2 **Q. WHAT DATA AND DOCUMENTS DID YOU CONSIDER IN CONDUCTING**
3 **YOUR ANALYSIS?**

4 **A.** I have relied on documents made available to me by counsel and by SNC. These generally
5 include, but are not limited to, Project drawings, specifications, and other engineering or
6 design-related documents, Project reports including VCM Reports and Monthly Status
7 Reports, and other contemporaneous Project files, such as Scorecards, both in native and
8 PDF formats.

9 **Q. PLEASE PROVIDE AN OVERVIEW OF YOUR ANALYSIS AND THE PROJECT**
10 **ISSUES EXPLORED.**

11 **A.** My report discusses the Westinghouse (“WEC”) AP1000 and its emergence as a FOAK
12 fleet design across the United States and abroad. Despite WEC’s representation that this
13 new generation of engineering ultimately solved many of the challenges associated with
14 its predecessor pressurized water reactors, PWRs, the AP1000 was not without its own
15 challenges. As discussed in greater detail in my report, many of the initial positions
16 asserted by WEC proved, over time, to be optimistic, at best. I have demonstrated how
17 five specific risks, as identified in VCM 17, actually materialized over the duration of
18 Project construction, and have provided a technical evaluation of representative examples
19 for each. I have also analyzed whether lessons learned during construction of Unit 3
20 successfully translated to measurable improvements for Unit 4.

21 **Q. WHAT WERE THE PRIMARY AREAS AND IMPACTS OF LESSONS LEARNED**
22 **BETWEEN UNIT 3 AND UNIT 4?**

23 **A.** The Lessons Learned (“LL”) program actively evolved over time to achieve improvements
24 on the Vogtle AP1000 units. The LL program was used to funnel LL experienced from
25 the AP1000 Fleet in China into Vogtle via Condition Reports. The LL process was

continuously evolving and was used as a method to help inform Project teams on previous and current issues experienced by the Fleet. In an effort to facilitate continuous improvement, the Project also used LL from Unit 3 to apply on Unit 4.

The LL program reinforced LL from Unit 3 to enhance the focus of electrical installation and IEEE quality issues in Unit 4. Furthermore, Unit 4 had less electrical and piping nonconformances than Unit 3, which demonstrates Unit 4 work benefited from Unit 3 LL.

Based on my review of the earned and actual hours reported for installation of both piping and electrical bulk commodities at the Annex Building as well as generally within the Nuclear Island, LL at Unit 3 translated successfully to Unit 4. This translation was evidenced by the improvement in labor productivity, as measured quantitatively through CPI.

When compared to Unit 3 milestones, Unit 4 start and finish milestone dates improved. The implemented LL program helped the Project achieve improvements, reduce the risk of repeating mistakes, and increase the chance that successes are repeated.

Q. PLEASE IDENTIFY THE PRIMARY PROJECT RISKS AND WHETHER THEY MATERIALIZED.

A. Regardless of the improvements identified through the LL program, many risks remained to be managed to complete construction of the Project. These risks were defined in VCM 17, some of which materialized and others which did not. I have identified five such risks and have analyzed if and how they materialized on the Project. Specifically, I evaluated the following:

- The risk that the labor force and craft will be unable to maintain their productivity improvements. Based on my analysis, I have determined that the Project was subject to numerous individual and cumulative impacts or factors which ultimately adversely affected productivity on the Project, beyond what SNC could have been reasonably

1 anticipated, despite hiring a sophisticated, experienced completion contractor. Despite
2 the improvements obtained through the LL program, numerous impacts, beyond the
3 reasonable control of SNC continued to contribute to a decline in productivity. This
4 degradation is believed to be attributable to shortage of skilled labor, stacking of trades,
5 logistics due to confined spaces, and eventually COVID-19 pandemic and subsequent
6 absenteeism of the workforce.

- 7 • The risk that the Project will be unable to continue to meet FOAK challenges. I have
8 provided an evaluation of four examples of the type of risk associated with FOAK that
9 did materialize, including Fleet-wide emergent/developmental issues, actual effect of
10 application of 10 CFR 52, Primary Containment Cooling System (“PCCS”) Tank, and
11 AP1000 DC System IEEE Separation.
- 12 • Procurement Risk, specifically involving major manufacturing defects or necessary
13 design changes to long-lead time equipment, components, or materials with the ability
14 to significantly affect the price and timing of delivery. I have evaluated the
15 materialization of this risk through discussion of issues associated with the procurement
16 of various bulk construction materials mainly for the skilled trades.
- 17 • Unidentified Scope Risk, specifically for commodity quantity changes and growth that
18 was unforeseen and not predicable at the time of VCM 17. My evaluation of the
19 Scorecards indicates that this risk did materialize, particularly with respect to increased
20 reinforcement quantities in the Auxiliary building.
- 21 • Testing and Startup Risk, specifically during Unit 3 commissioning. Following Hot
22 Functional Testing (“HFT”) and Fuel Load, it is my understanding that this risk
23 materialized via the following issues: Vibration of pipe supports associated with the
24 Automatic Depressurization System (“ADS”), Reactor and Turbine trips following
25 initial criticality testing, and the hydrogen leak in the main generator following planned
26 maintenance outages.

1 **IV. ANALYSIS OF VOGTLE PROJECT DELAYS – THE GENTRY REPORT**

2 **Q. WHAT DATA AND DOCUMENTS DID YOU CONSIDER IN CONDUCTING**
3 **YOUR ANALYSIS?**

4 **A.** Generally, our analysis relies on formal status reporting at various intervals and the
5 underlying contemporaneously prepared source documents for those reports, as well as
6 HKA’s historical experience with over 120 nuclear and other power plant construction
7 projects. In addition, HKA relied on Project controls tools such as the Scorecard and Trend
8 program along with documentation related to various Project oversight programs,
9 including the Corrective Action Program. We also reviewed various other relevant
10 documents as appropriate to ensure our opinions are consistent with the factual accounting
11 of the Project narrative.

12 **Q. PLEASE DESCRIBE THE ANALYSIS OF THE TO-GO SCHEDULE**
13 **CONDUCTED FOR VCM 17.**

14 **A.** The to-go schedule analysis conducted for VCM 17 was robust and multifaceted. Georgia
15 Power retained external experts, including Kenrich and Bechtel, to provide independent
16 opinions on the to-go schedule. In addition, SNC performed its own analysis of the to-go
17 schedule. The analyses performed by Kenrich, SNC, and Bechtel provided a reasonable
18 range of schedule outcomes based on differing risks, methodologies, and underlying
19 assumptions. Georgia Power evaluated the various schedule analyses and ultimately
20 proposed a 29-month schedule extension to Commercial Operation of Units 3 and 4. The
21 29-month schedule extension represented Commercial Operation dates for Units 3 and 4
22 of November 2021 and 2022, respectively and was subsequently adopted by the
23 Commission.

1 **Q. WHAT IS THE VOGTLE PROJECT DELAY?**

2 **A.** I concluded that Commercial Operation of Unit 3 was delayed approximately 20 months
3 from November 30, 2021 to July 2023 while Commercial Operation of Unit 4 is projected
4 to be delayed approximately 13 months from November 30, 2022 to December 2023.

5 **Q. WHAT METHODOLOGIES DID YOU USE TO ANALYZE THE VOGTLE**
6 **PROJECT SCHEDULE?**

7 **A.** My team and I utilized critical path method schedule analysis techniques, focused on delays
8 to certain key milestones on the Project, including HFT, Fuel Load, and Commercial
9 Operation. The critical path is the series of activities and corresponding logic relationships
10 that determine when a project can be completed. We utilized the June 2, 2018 schedule as
11 the baseline schedule for the analysis and the July 28, 2023 schedule and other
12 contemporaneous records for the as-built information.

13 **Q. WHAT WERE THE PRIMARY DRIVERS OF THE VOGTLE PROJECT DELAY?**

14 **A.** I concluded that the most significant impacts which resulted in delay to Commercial
15 Operation of Units 3 and 4 included the challenges presented by the COVID-19 pandemic,
16 identification of additional scope required to complete the Project, the need for more
17 rework than anticipated, Bechtel's inability to achieve planned production rates, and
18 greater than anticipated Unit 3 testing and startup issues.

19 **Q. PLEASE EXPLAIN THE DELAY EXPERIENCED DUE TO THE COVID-19**
20 **PANDEMIC.**

21 **A.** The COVID-19 pandemic was an unprecedented and unforeseen event that impacted the
22 entire world. Following the onset of the pandemic in March 2020, the Project team worked
23 diligently to protect the health and safety of employees and the surrounding community.

1 As a result of the stringent safety measures implemented on the Project, increased
2 absenteeism was experienced due to the requirement for personnel with or exposed to
3 COVID-19 to isolate for a period of 14 days or until receipt of a negative test. The Project
4 saw craft absenteeism rates peak at 22-30% in April 2020 and May 2020, compared to
5 significantly lower absenteeism rates of 11-14% in April 2019 and May 2019.
6 Additionally, a 20% reduction in force was implemented in April 2020 to limit the spread
7 of COVID-19 onsite. Despite the Project team's best efforts, unavoidable production
8 impacts stemming from the COVID-19 pandemic resulted in delay to the Project.

9 **Q. PLEASE EXPLAIN THE DELAY EXPERIENCED DUE TO THE**
10 **IDENTIFICATION OF ADDITIONAL SCOPE NOT REALIZED AT THE TIME**
11 **OF VCM 17.**

12 **A.** Following WEC declaration of bankruptcy in March 2017, SNC and WEC executed an
13 interim assessment agreement which allowed SNC to access WEC's information, such as
14 its internal cost estimating information, related to the Project that had previously not been
15 available to SNC. SNC utilized this newly available information to prepare an estimate of
16 to-go quantities on a compressed timeframe of approximately two months in preparation
17 for the VCM 17 proceedings. As the Project progressed, the Project team discovered work
18 not captured in the VCM 17 scope estimate that required additional direct craft hours to
19 complete. For example, Unit 3 Auxiliary Building rebar was estimated at 1,536 tons and
20 ultimately required 2,503 tons, an increase of over 60%. HKA identified added scope in
21 civil and electrical commodities, which coincided with the Project's critical path. The
22 increase in direct craft hours necessary to complete critical path work contributed to Project
23 delay.

1 **Q. PLEASE EXPLAIN THE DELAY EXPERIENCED DUE TO GREATER THAN**
2 **ANTICIPATED AMOUNTS OF REWORK.**

3 **A.** SNC and Bechtel encountered the need to perform rework, above what could have been
4 reasonably anticipated, which contributed to the delay experienced on the Project. HKA
5 analyzed rework and quality issues that impacted the Project critical path following
6 completion of Unit 3 HFT in July 2021. Electrical commodity installation quality,
7 including IEEE-384 cable separation, and Inspection Record nonconformances were
8 identified as significant impacts to the Project critical path in this period. HKA analyzed
9 spent direct craft hours and determined over 50% of Unit 3 spent hours from September
10 2021 to September 2022 were related to rework / emergent scope.

11 **Q. PLEASE EXPLAIN THE DELAY EXPERIENCED DUE TO THE INABILITY TO**
12 **ACHIEVE PLANNED PRODUCTION RATES.**

13 **A.** The multifaceted schedule analyses performed as part of the VCM 17 proceedings, as
14 previously described, incorporated assumptions for commodity installation productivity
15 and production rates. Ultimately, the Project team was unable to meet the planned
16 production rates contemplated at the time of VCM 17. The Project experienced difficulties
17 with craft productivity meeting the target installation rates which manifested in reduced
18 production when additional craft could not be engaged to recover the productivity shortfall.
19 Additionally, the Project team periodically encountered difficulty attracting and retaining
20 qualified craft personnel, including electricians. HKA further identified difficulties with
21 work package planning and FOAK constructability issues as contributors to the Project
22 team's inability to achieve planned production rates.

1 **Q. PLEASE EXPLAIN THE DELAY EXPERIENCED DUE TO UNIT 3 TESTING**
2 **AND STARTUP CHALLENGES.**

3 **A.** Testing and startup of Vogtle Unit 3 following Fuel Load ensured safe operation of the first
4 AP 1000 reactor commissioned in the United States. The testing and startup sequence
5 involved six sequential “modes” leading up to Commercial Operation with varying degrees
6 of power output by the reactor. HKA identified several issues encountered during the
7 testing and startup process that delayed Unit 3 Commercial Operation including excessive
8 vibration in the Automatic Depressurization System, multiple reactor and turbine trips, and
9 a hydrogen leak in the main generator. The Project team addressed each of the issues
10 encountered during the testing and startup process which resulted in Unit 3 successfully
11 reaching Commercial Operation in July 2023.

12 **Q. WAS THE PLANNED SCHEDULE REASONABLE?**

13 **A.** The planned baseline schedule produced in June 2018 represented a reasonable plan to
14 complete the Project. Despite the numerous impacts described above, the Project team
15 successfully completed select work sequences in a shorter duration than planned. For
16 example, HFT for Unit 4 was completed in a shorter duration than planned in the baseline
17 schedule. Considering the robust and multifaceted process to develop the planned schedule
18 and the Project team's ability to outperform the planned schedule durations while
19 overcoming the Project challenges described above, the planned schedule was reasonable.

1 **V. ANALYSIS OF VOGTLE PROJECT COST GROWTH – THE REOME REPORT**

2 **Q. WHAT DATA AND DOCUMENTS DID YOU CONSIDER IN CONDUCTING**
3 **YOUR ANALYSIS?**

4 **A.** I relied on Project data and documents provided to me. These generally include, but are
5 not limited to, monthly cost performance reports; Vogtle Project Management Board
6 meeting minutes; VCM filings, testimony transcripts and orders; cost estimates; contracts
7 and change orders; Bechtel Quantity and Unit Rate Reports, Scorecards and monthly status
8 reports; Change Control Forms; and other Project documents.

9 **Q. PLEASE DESCRIBE THE METHODOLOGY YOU USED FOR YOUR COST**
10 **GROWTH ANALYSIS.**

11 **A.** I analyzed the Project's cost growth from VCM 17 to the current costs using the following
12 methodology. I performed a variance analysis by comparing the cost estimate at VCM 17
13 to the current actual costs and Estimate to Complete. I investigated how the VCM 17
14 estimate was prepared and analyzed the estimate calculation files prepared at the time of
15 VCM 17. I further investigated the files supporting the VCM 19 cost estimates. I analyzed
16 the actual costs incurred to date starting from July 2017. I analyzed the total cost variance
17 from VCM 17 to the most recent cost estimate, and identified and quantified six overall
18 categories of cost growth.

19 **Q. WHAT WAS THE OVERALL VARIANCE BETWEEN VCM 17 AND CURRENT**
20 **COSTS?**

21 **A.** I analyzed the cost growth from VCM 17 to the actual costs incurred and current Estimate
22 to Complete. The most recent actual cost data I analyzed was from July 1, 2017 through
23 May 31, 2023, and a May 2023 Southern Nuclear projection of forecasted remaining costs.
24 VCM 17 projected a to-go Estimate at Completion of \$9.287 billion, and the current
25 Estimate at Completion is \$15.414 billion (at 100% of costs). (My summary of actual costs

1 incurred from July 2017 to May 2023, plus the remaining forecast, is shown at Table 9 in
2 my Report.) The overall variance, at 100% of costs, is \$6.127 billion. Georgia Power's
3 share of that variance, at its 45.7% ownership share, is \$2.800 billion. I further identified
4 the variance at each Level 1 cost category (i.e., construction, engineering, procurement,
5 subcontracts, Southern Company labor, etc.). This variance calculation is shown in Table 1
6 in my Report.

7 **Q. HOW DOES YOUR OVERALL VARIANCE CALCULATED RELATE TO THE**
8 **TOTAL CONSTRUCTION & CAPITAL COST THAT GEORGIA POWER**
9 **REPORTED IN ITS APPLICATION?**

10 **A.** Additional adjustments are necessary to convert the overall variance I described above of
11 \$2.800 billion (Georgia Power share) to the Total Construction & Capital Cost shown in
12 Table 1.1 of the VCM filings. This \$2.800 billion variance is comparable to the category
13 "New Site Forecast EPC" in the VCM 17 filing. The Original EPC, Interim Payments &
14 Liens, and Georgia Power Additional Costs are added. A subtraction is made for Duplicate
15 Costs which are included in the Site ETC but are shown in the Georgia Power Additional
16 Costs in the VCM filings. The Total Construction & Capital Cost is reduced by the TPG
17 net of customer refunds. Finally, the Construction Monitor costs are added. After these
18 adjustments, I calculated the Total Construction & Capital Cost, net of the TPG, was
19 \$7.293 billion at VCM 17, is currently \$10.188 billion, with a variance of \$2.895 billion.
20 These calculations are shown in Table 2 in my Report.

21 **Q. HOW DOES YOUR VARIANCE RELATE TO THE AMOUNT THAT GEORGIA**
22 **POWER IS SEEKING TO RECOVER IN THIS PROCEEDING?**

23 **A.** Georgia Power maintains that all \$10.188 billion in construction and capital cost is
24 reasonable and prudent. Georgia Power has stated, however, that it will not be seeking
25 recovery for \$694 million identified in VCM 19. In its August 2023 filing, Georgia Power
26 identified another \$688 million that it elected not to seek recovery, resulting in a total

1 \$1.362 billion for which Georgia Power elected not to seek recovery. Georgia Power
2 concluded that the appropriate amount to recover from customers is \$8.826 billion.
3 Georgia Power has reached Stipulation with PIA Staff and several intervenors, agreeing to
4 forgo additional recovery of \$1.264 billion. These reductions result in Total
5 Construction & Capital Cost, net of the TPG and amounts to be absorbed by Georgia
6 Power, of \$7.562 billion. When compared to the projection at VCM 17 of \$7.293 billion,
7 the variance after reducing amounts Georgia Power agreed not to recover, is \$269 million.
8 These calculations are shown in Table 3 of my Report.

9 **Q. EXPLAIN YOUR ANALYSIS OF THE COST ESTIMATES PREPARED AT**
10 **VCM 17 AND VCM 19.**

11 **A.** I reviewed the cost estimate that Southern Nuclear prepared at the time of VCM 17,
12 including the Southern Nuclear Estimate to Complete Report that Georgia Power included
13 with its VCM 17 filing, and the supporting files that prepared the calculations. Georgia
14 Power's VCM 17 filing included a range of estimates, both from Southern Nuclear as well
15 as several consultants' reports (including Kenrich's report with which I was involved at
16 the time). Georgia Power and the various independent experts prepared a range of
17 estimates, some of which were higher than the expected cost that Georgia Power predicated
18 its VCM 17 forecast on. Further, Georgia Power's VCM 17 filing identified numerous
19 risks that also could have increased the VCM 17 forecast, and some of these risks ultimately
20 transpired. I reviewed the Commission-approved stipulation and the Commission decision
21 at the time of VCM 17.

22 Southern Nuclear's cost estimates and cost reporting structures continued to evolve during
23 the time period from VCM 17 to VCM 19. Therefore, I also reviewed the VCM 19 cost
24 estimate files for my variance analysis, to properly align the actual cost reporting from
25 July 2017 to current. The new estimate of Georgia Power's projected share of the Site ETC
26 included in VCM 19 increased by \$1.060 billion, which is comprised of \$366 million in

1 unspecified Project contingency and \$694 million that Georgia Power will not seek
2 recovery. My comparison of VCM 17 and 19 cost variance is shown as Table 8 in my
3 Report.

4 **Q. WHAT WERE THE PRIMARY OVERALL CAUSES OF COST GROWTH ON**
5 **THE PROJECT?**

6 **A.** The primary drivers of the cost growth included: delay-related costs, productivity
7 performance, craft labor per diems and wage incentives, COVID-19 impacts, rework,
8 technical changes, and scope increase. Table 10 in my Report summarizes the
9 quantification of cost growth by category of impact.

10 **Q. WHAT WAS THE COST GROWTH DUE TO SCHEDULE DELAYS?**

11 **A.** The Project experienced time-related delays that are detailed further in the Gentry Report.
12 I calculated the rate for delay on the Project to be approximately \$94 million per month. I
13 applied the rate of delay to the months of delay quantified in the Gentry Report to reach a
14 total cost impact of \$1.6 billion for time-related delays. I calculated the Project's extended
15 time-related costs by the following steps: (1) I determined the Project's time-related costs;
16 (2) I calculated a monthly rate; and (3) I multiplied the monthly rate by the months of delay.

17 **Q. WHAT WAS THE COST GROWTH DUE TO PRODUCTIVITY**
18 **PERFORMANCE?**

19 **A.** The Project experienced lower than expected productivity. Lower productivity caused an
20 increase of \$1.3 billion in costs. Productivity was impacted by COVID-19 impacts, rework
21 and emergent scope, subcontractor impacts and other issues.

1 **Q. WHAT WAS THE COST GROWTH DUE TO CRAFT LABOR PER DIEM, WAGE**
2 **INCENTIVES, TAXES AND OTHER BECHTEL “EXCLUDED COSTS”?**

3 **A.** Bechtel incurred additional manhours and costs related to what it referred to as “Excluded
4 Costs” that were not included in the base estimate as of VCM 17. These Excluded Costs
5 include costs for craft labor per diem, craft labor wage incentives, taxes, work scope that
6 is not related to the achievement of final completion, and other costs. The total cost impact
7 of the Bechtel “Excluded Costs” is \$606 million.

8 **Q. WHAT WAS THE COST GROWTH DUE TO DESIGN AND TECHNICAL**
9 **CHANGES?**

10 **A.** Design and technical changes caused increased costs. These included design changes,
11 FOAK issues, and increased procurement costs. These technical changes resulted in an
12 increase of \$335 million.

13 **Q. WHAT WAS THE COST GROWTH DUE TO INCREASE IN QUANTITIES?**

14 **A.** The Project saw growth in the estimated quantities for certain material, including rebar,
15 formwork and embeds. This scope increase caused an increase of \$130 million.

16 **Q. WHAT WAS THE COST GROWTH DUE TO COVID-19 DIRECT MITIGATION?**

17 **A.** The Project incurred costs for direct mitigation of COVID-19. This included infrastructure
18 costs such as medical village, testing, janitorial services; and workforce isolation costs for
19 workers who were in quarantine. The COVID-19 direct mitigation costs totaled
20 \$82 million. This is in addition to the productivity impacts of COVID-19, which are
21 included in the productivity impacts described above.

