

BEFORE THE
GEORGIA PUBLIC SERVICE COMMISSION
STATE OF GEORGIA

FILED

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**EXECUTIVE SECRETARY
G.P.S.C.**

In Re:

Review of Proposed Revisions and Verification
of Expenditures Pursuant to Georgia Power
Company's Certificate of Public Convenience
and Necessity for Plant Vogtle Units 3 and 4
Sixteenth Semi-annual Construction Monitoring
Report.

Docket No. 29849

**POST-HEARING BRIEF AND RECOMMENDATIONS OF THE SOUTHERN
ALLIANCE FOR CLEAN ENERGY**

The Southern Alliance for Clean Energy ("SACE"), by and through its undersigned counsel, pursuant to the Georgia Public Service Commission's ("Commission" or "PSC") Procedural and Scheduling Order filed on March 27, 2017, respectfully submits its Post-Hearing Brief in the above-styled proceeding. SACE incorporates by reference herein all of its briefs and pleadings submitted in previous Vogtle construction monitoring review proceedings in Docket 29849, and offers the following arguments and recommendations for the Commission's consideration in the instant docket ("16th VCM").

INTRODUCTION

This matter is presently pending before the Commission on Georgia Power Company's ("Georgia Power" or "the Company") Sixteenth Semi-Annual Construction Monitoring Report for Plant Vogtle Units 3 & 4 ("the Project"), which was filed with the Commission on February 28, 2017, pursuant to O.C.G.A. § 46-3A-7(b). In the 16th VCM, Georgia Power requests verification and approval of \$222 million in expenditures made on the Project from July 1, 2016 through December 31, 2016 ("16th VCM period").¹ 16th VCM Report, at p. 3.

As referenced throughout the testimony in this proceeding, Westinghouse, the former contractor for the Project, filed for bankruptcy protection in March of 2017. Tr. 296-297. After taking over as contractor at both the Vogtle Project and the VC Summer Project in South Carolina at the beginning of 2016, Westinghouse completed a revised assessment of the estimated cost to complete the two Projects, and estimated the *increase* in the cost to complete the two Projects to be \$6.1 billion. Tr. 275 (emphasis in original), SACE Ex. 1, ¶ 25. Based on this dramatically increased estimate, Westinghouse's continued performance under the EPC contracts at the two Projects became "untenable," forcing it into bankruptcy. SACE Ex. 1, ¶¶ 25-26. Thus, there is ample testimony in this proceeding about the bankruptcy and the resulting "uncertainty" currently surrounding the Project, as well the Company's in-depth "reevaluation" of the Project, including the development of revised estimates of the Project's cost and schedule.

However, as discussed in more detail *infra*, it is not the Westinghouse bankruptcy that has caused the "uncertainty" currently surrounding the Project or the need for the Company to undertake a thorough "reevaluation" of the Project. In sharp contrast, this uncertainty and reevaluation have been necessitated by Georgia Power's failure, for more than eight years, to prudently exercise its management and oversight responsibilities at the Project. Furthermore, the Company's imprudence and inability to manage and oversee the Project in accordance with industry standards has created a situation where it is no longer economic – and certainly not in the Company's ratepayers' best interest -- to continue with construction of the Project.

ARGUMENT

I. GEORGIA POWER HAS FAILED TO PRUDENTLY EXERCISE ITS MANAGEMENT AND OVERSIGHT RESPONSIBILITIES AT THE PROJECT.

¹ Georgia Power makes this request even though it cannot provide the Commission, or its ratepayers who are paying for the Project, with basic information about the Project including the estimated cost to complete the Project or the estimated in-service dates of the proposed Units. Tr. 166.

The overwhelming weight of testimony and evidence in the 16th VCM -- as well as in previous Vogtle construction review proceedings in Docket 29849 -- demonstrates that Georgia Power has failed to prudently exercise its management and oversight responsibilities at the Project since construction commenced in 2009. Despite the Company's attempts to assign responsibility for the current quagmire that is Vogtle Units 3 & 4 on the various Project contractors, and Westinghouse in particular, Georgia Power is ultimately responsible for the management and oversight of the Project. Tr. 335, 349. In fact, during the certification proceeding in 2008 and 2009 for Vogtle Units 3 & 4, the Company stated that it would be an active manager and would have a significant presence at the Project for the purposes of management and oversight. Tr. 66, 349. These representations notwithstanding, Georgia Power's lack of prudence in its management and oversight of the Project is evidenced by, amongst other things, more than eight years into construction of the Project: (1) the fact that there has never been a reasonable, fully integrated and resource loaded Level 3 Integrated Project Schedule ("IPS") or valid Estimate to Complete ("ETC") for the Project, both of which are required to prudently manage the construction of these proposed new nuclear reactors; and (2) the fact that the Project continues to suffer from low productivity and production, leading to lackluster levels of construction completion and a corresponding slippage of critical path construction activities and the Project schedule as a whole -- in addition to the delays already realized previously.

A. THE PROJECT HAS NEVER HAD A REASONABLE, FULLY INTEGRATED, RESOURCE LOADED LEVEL 3 INTEGRATED PROJECT SCHEDULE OR A VALID ESTIMATE TO COMPLETE.

As early as the 6th VCM in 2012², Staff warned Georgia Power about the imprudence of proceeding with construction of the Project without having a reasonable, fully integrated, resource loaded, Level 3 IPS (hereinafter “high quality IPS”). Tr. 67, 293-294. However, Staff testimony during the 16th VCM demonstrated that Georgia Power still does not have, nor has it ever had, a high quality IPS for the Vogtle Units 3 & 4 Project. Tr. 321. Staff witness Roetger testified that the failure constitutes imprudence on the part of the Company, and Mr. Roetger and Dr. Jacobs, the independent Vogtle Construction Monitor, testified that not utilizing and following a high quality IPS for the Project is unreasonable -- and indeed unheard of -- in the nuclear industry. Tr. 320, 330, 372. This is because the importance of a high quality IPS for a Project of this magnitude cannot be understated. The Roetger and Jacobs’ panel testified:

Given the scope and complexity of this Project, not having a quality IPS makes it nearly impossible to proactively identify, mitigate, and move beyond inevitable Project challenges.

Tr. 294 (emphasis added). Furthermore, Mr. Roetger testified that Staff has not seen an Estimate to Complete (“ETC”) for the Project since the Vogtle Units 3 & 4 certification docket,³ despite the fact that industry practice dictates that an ETC -- along with an IPS -- be monitored and updated as the Project moves through time to completion. Tr. 319. Mr. Roetger testified that Staff considers both a high quality IPS and an ETC to be “fundamental to management ... especially of a mega project” like Vogtle Units 3 & 4. Tr. 319-320 (emphasis added). In fact, Staff further testified that the lack of an ETC raised questions as to the reasonableness of cost forecasts presented by the Company in previous VCM proceedings, and that in 2016 Staff --

² See SACE final brief on February 13, 2017 in the 15th VCM, including at p. 15 in which excerpts of Staff/consultant testimony back to the 6th VCM was highlighted on the continued challenges facing the Project. Available at http://www.cleanenergy.org/wp-content/uploads/SACE_FinalBrief_15VCM_021317.pdf.

³ At the certification stage in 2008-2009, Georgia Power produced an Estimate at Completion (“EAC”), which is based on assumptions but very little experience; thus, the EAC is generally understood to not be accurate and will need to be updated in the form of an ETC as construction progresses. Tr. 320.

based on the lack of an ETC and a high quality IPS -- “simply did not believe [the Company’s] forecast or schedule.” Tr. 321.

However, for the past five years, Georgia Power has recklessly failed to heed Staff’s warnings and ensure that a fully integrated, resource loaded, Level 3 IPS was being utilized for the Project. This is despite the fact that the Company recognizes the value of a high quality IPS and the fundamental truth that such an IPS could have been developed at any time. Tr. 293-294.⁴ Instead, the Company is presently using an eight-week “look ahead” schedule, which it previously has used for extended periods of time as well. Tr. 372-373. Such a short term schedule is far inferior to a high quality IPS because “if you focus on a very short period you are going to end up with problems” Tr. 330. During this five-year period since the 6th VCM, the Company has, despite failing to ensure that the Project had a high quality IPS and an ETC, spent an additional \$2 billion in capital costs on the Project while its ratepayers have paid an additional \$1.7 billion in nuclear construction cost recovery (“NCCR”) finance charges. Tr. 67.

The implications of Georgia Power’s failure to ensure that a high quality IPS was developed and utilized earlier at the Project, i.e., when Staff warned it was necessary during the 6th VCM, as well as its failure to ensure that there was an ETC for the Project, are extremely telling of the uncertainty and questions surrounding the Project’s status and future. Staff’s testimony establishes that had Georgia Power properly exercised its management and oversight responsibilities in these regards, the Company would have known the true cost and schedule for the Project five years ago. Tr. 296. Additionally, the Company would have realized that its

⁴ Dr. Jacobs also testified that Georgia Power was not following INPO (Principles for Excellence in Nuclear Power Construction) Principle Number 4, *Schedules are Realistic and Understood*, (which had been addressed previously in the 11th VCM as well) at the Project, even though the Company talks about this Principle at almost every weekly meeting. Tr. 376.

forecast to complete the Project (cost and schedule) at that time -- and up to present -- was "severely underestimated," and this knowledge would have allowed the Company to provide the Commission with a more accurate analysis of the Project's value as opposed to its alternative(s). Tr. 294. Finally, and perhaps most troubling, is Staff's testimony that, with a high quality IPS for the Project, the Company could have foreseen the Westinghouse bankruptcy, and attempted to mitigate the bankruptcy's likely adverse material impacts on the Project's cost and schedule.

Tr. 294-296, 377. It goes without saying that such mitigation would have materially benefitted Georgia Power's ratepayers if the Company decides to, with the Commission's blessing, continue construction of the Project.

B. THE PROJECT CONTINUES TO BE PLAGUED BY LOW PRODUCTIVITY AND PRODUCTION RESULTING IN SIGNIFICANT, FURTHER SLIPPAGE OF CRITICAL PATH ACTIVITIES AND THE PROJECT SCHEDULE.

Georgia Power's imprudent Project management and oversight is further evidenced by its ongoing failure to improve productivity and production at the Project during the 16th VCM period. The 16th VCM evidence establishes that various efforts by Georgia Power and its contractor(s) to improve project performance and productivity were unsuccessful during the 16th VCM period, like they have been during previous VCM reporting periods. Tr. 276-279. Furthermore, and perhaps most telling of the Project's current uncertain fate, a worker productivity field study revealed that craft workers at the Project spend more time during their day on non-work related activities as compared to work-related activities. Tr. 357-358. The result of the Company's failure to improve productivity and production at the Project during the 16th VCM period is that critical path construction activities/milestones and the Project schedule experienced significant, additional schedule slippage.⁵ Based on the foregoing, it comes as little

⁵ Based on the Company's "base case" in-service dates of June 30, 2019 and June 30, 2020, the Project's schedule has already incurred delays of over three years. Moreover, the Company stated publicly as early as March of 2017

surprise that the Project is – after eight years of construction – only 32% complete. Tr. 317.

Specifically, during the 16th VCM period, Fluor’s Step-Change Initiative failed to meet its monthly construction completion percentage goals, and generally failed to achieve improvement in productivity and production. Tr. 277-278, 350. Similarly, Westinghouse’s Construction Performance Improvement Plan and Performance Improvement Management Team, while cleverly named, failed to have any effect on productivity or production during the 16th VCM period or afterwards. Tr. 278-279. Furthermore, a consultant was hired to conduct a field study over a five-week period from August – October of 2016 to determine how craft workers were spending their time at the Project site. Tr. 279. The results of this study showed that: (1) the average worker spent more time on non-work related activities than he/she did on work-related activities; and (2) that a significant portion of the non-work related time was considered to be “idle” time. Tr. 357-358. The consultant returned in early 2017, and while some improvements were noted, idle time, early quits and late starts remained high. Tr. 358. Data like this only reinforces the fact that Georgia Power is not prudently managing and overseeing the Project.

Based on the Company’s continuing failure to improve productivity and production at the Project during the 16th VCM period, the four critical path construction activities identified and monitored by Staff incurred significant delays during the 16th VCM period and beyond. In fact, over the one-year period from April of 2016 to April of 2017 (hereinafter “one year period”), these four critical Project areas slipped an average of 325 days, or almost a day-for-day slippage.⁶ Tr. 287-288, 307, 365. Specifically, the Unit 3 Containment Building milestone incurred a cumulative delay of 272 days over the one year period, and Staff testified that the revised

that the revised in-service dates of December 2019 and September 2020, which were provided to Georgia Power in late 2016/early 2017 by Westinghouse and represent an almost four year schedule delay, are also unachievable. Tr. 153-154.

⁶ These four critical project areas were slipping prior to the 16th VCM period, when Westinghouse (and Fluor) took over as the contractor(s) for the Project. Tr. 359.

milestone forecasted by the Company's Senior Management in April of 2017 would also not be met. Tr. 284, 366. The Unit 3 Shield Building milestone experienced a 293 day delay during the one year period, and the panel testified that the Company would not meet Senior Management's April 2017 revised milestone date for the Shield Building. Tr. 285, SACE Hearing Request STF-HR-16th VCM. Similarly, the third critical path Project area, the Unit 3 Auxiliary Building milestone, incurred a 340 day delay over the one year period, and the panel testified that Georgia Power would not meet Senior Management's April 2017 revised milestone date for the Auxiliary Building. Tr. 286, 369. Finally, the fourth critical path area, the Unit 3 Annex Building milestone, experienced a 396 delay during the one year period. Tr. 287. Furthermore, while the panel believed that Senior Management's April 2017 revised milestone date for the Annex Building was reasonable and should be met, it is significantly in the future as compared to the other revised milestone dates discussed above. Tr. 370.

II. THE PROJECT'S EXPECTED ECONOMIC BENEFIT HAS CONTINUED TO ERODE TO THE POINT WHERE IT IS NO LONGER ECONOMIC – NOR IN THE BEST INTEREST OF RATEPAYERS - TO COMPLETE CONSTRUCTION OF THE PROJECT.

Georgia Power's inability to prudently manage and oversee the Project has, not surprisingly, also adversely affected the economic viability of the Project, to the point where it is no longer economic to complete construction of Vogtle Units 3 & 4. The Company's own base case cost to complete analysis presented in its 16th VCM Report, while based on invalid assumptions that tend to make Project completion appear more economically favorable than it actually is, still demonstrates that the Project's expected economic benefit has continued to decrease to the point where it is no longer economic. Tr. 424-425, 16th VCM Report, at 33.⁷ Furthermore, Staff's cost to complete analysis, which is based on more reasonable assumptions

⁷ Based on this, the Company's statement that "Completing the project remains the best cost option for our customers" is hard to reconcile. 16th VCM Report, at 4.

than the Company's analysis, and in fact conservative assumptions, also demonstrates that the Project is now uneconomic by \$1.1 billion. Tr. 434, 444 (emphasis added). Thus, the evidence clearly demonstrates that the Project's economic benefit has now eroded to the point where it is no longer economic -- and certainly is not in the best interest of Georgia Power ratepayers -- to complete construction of the Project.

The assumptions utilized by Georgia Power in its base case⁸ cost to complete economic evaluation presented in its February 28, 2017, 16th VCM Report are dubious at best, and are most accurately characterized as a disingenuous attempt to depict the bleak economic state of the Project in a positive light. Georgia Power's base case economic evaluation made the following unreasonable and unrealistic assumptions: it assumed the EPC agreement would stay in place, that Westinghouse would be responsible for certain cost overruns, and, that there would be no additional delays or associated owners' capital costs increases. Tr. 419-420. The Company also assumed that its share of the remaining total cost to complete the Project was \$1.7 billion, which, perhaps ironically, is the amount of Georgia Power's share of the Toshiba parental guarantee. Tr. 434. Georgia Power used this \$1.7 billion figure despite the fact that Westinghouse had publicly disclosed in late 2016 that prior cost estimates for the Project were significantly deficient, Tr. 417, and further had, in early February of 2017, provided the Company with revised (delayed) in-service dates, which of course would increase the cost to complete even further. 16th VCM Report, at 4. In fact, Staff agreed that utilizing these earlier, unachievable in-service dates would tend to make the Company's economic evaluation produce results that make completion of the Project appear more favorable. Tr. 497.

⁸ The Company's base case -- which is no longer valid -- is the 39-month delay scenario (June 2019/June 2020) -- and is determined by comparison to the original in-service dates of April 2016/2017 presented during Certification.

While the Company's base case analysis indicates it is economic to complete the Project under most scenarios, Tr. 423, Staff's closer look at Georgia Power's analysis is telling. Staff's comparison of Georgia Power's 16th VCM delay scenarios demonstrates that the value of the Project will erode significantly as additional delays occur -- even without consideration of the additional EPC costs that previously were the responsibility of Westinghouse. Tr. 424, Table 2. Moreover, a comparison of the Company's base case cost to complete analyses over the past six Vogtle construction monitoring review dockets shows that the Project's expected economic benefit has trended downward from each proceeding to the next, with a total decrease of \$3.4 billion. Tr. 424, Table 3. Stated differently, the Project's expected economic benefit continues to trend negatively, even as further sunk costs are incurred, which Staff states is atypical for a cost to complete analysis, because usually as more work is completed and money spent, the expected economic benefit is anticipated to increase. Tr. 425.

Staff also performed a cost to complete analysis that is based on far more reasonable assumptions than Georgia Power's analysis, and in fact utilizes conservative assumptions. As noted in Staff's pre-filed testimony and as testified to by Mr. Hayet and Mr. Kollen at the June 29, 2017 hearing, the purpose of Staff's analysis was to provide "the Commission with a complete and accurate picture of the Project's potential benefits and detriments." Tr. 431, 490. Staff's analysis is more reasonable in that it factors in further delays and increased costs, other impacts associated with the Westinghouse bankruptcy that might affect the economics of the Project, more balanced natural gas price forecasts, and various Stipulation modeling assumptions (which provide protections to ratepayers). Tr. 417, 431-432, 441, 443-444. Specifically, Staff assumed: (1) that the Project would be delayed by an additional 36 months to June 2022 and June 2023; (2) that the capital cost to complete would increase to \$8.440 billion, or an additional

\$3 billion on top of the Company's projected number in its 16th VCM Report;⁹ and (3) that the various ratepayer protections of the Stipulation applied.¹⁰ Tr. 432. Under these reasonable and conservative assumptions, Staff concluded that the Vogtle Project is not economic by the amount of \$1.1 billion (emphasis added). Tr. 434-438. Additionally, under Staff's alternative analysis -- where protections for ratepayers are removed -- the Project becomes "overwhelmingly uneconomic," to the tune of \$3.2 billion (emphasis added). Tr. 437-438.

CONCLUSION AND RECOMMENDATIONS

Based on the foregoing arguments, SACE respectfully requests that the Commission take the following actions in its 16th VCM Order:

1. The Commission should not verify nor approve the \$222 million spent by Georgia Power during the 16th VCM period until the Company submits a reasonable, fully integrated, resource loaded, Level 3 Integrated Project Schedule ("IPS") and a verifiable Estimate to Complete ("ETC") the Project.

2. Alternatively, the Commission should disapprove of at least one-half (1/2) of the labor costs incurred during the 16th VCM period because the Company's imprudent management and oversight of the Project allowed substandard productivity levels to continue and the majority of craft workers' time was spent was on non-work-related activities as compared to work-related activities, and a significant portion of this non-work related activity was "idle" time.

3. The Commission should, consistent with O.C.G.A. § 46-3A-7(b), expand the scope of its semi-annual Vogtle Construction Monitoring review to verify the reasonableness of and approve,

⁹ Staff also accounted for additional financing costs associated with the additional capital cost and delay assumptions, and further assumed the Company would apply the \$1.7 billion Toshiba guarantee and would mitigate these additional costs. Tr. 432.

¹⁰ It is important to note that Staff was clear in its testimony that, even with the Stipulation, the Project can still be uneconomic. Tr. 417, 452.

disapprove, or modify the Company's revised Estimate to Complete the Project and the Company's revised commercial operation dates for both units.

4. The Commission should order the Company to publicly account for all costs that were covered by the fixed price EPC Agreement but are not covered after Westinghouse's rejection of the EPC Agreement in its bankruptcy proceeding, and the Company should provide a full explanation of how those additional costs will be accounted for moving forward for purposes of cost recovery.

5. The Commission should immediately implement a risk-sharing mechanism so that Georgia Power ratepayers are not responsible for 100% of any Project's capital costs above the \$5.68 billion agreed to in the Stipulation, as well as associated financing and all other costs related to the Project.

6. The Commission should adopt Staff's recommendation regarding the Company's future economic analyses of the delay scenarios, "... that for each such delay scenario, the Company provide the Total Project Cost that it expects customers will incur both during construction and over the operating lives of the Units." (Direct Testimony of Phil Hayet and Lane Kollen, p. 7).

7. The Commission should require that the Company's economic evaluations in future VCM's treat the Toshiba Parental Guarantee as a cost offset in their analysis. (Direct Testimony of Phil Hayet and Lane Kollen, p. 19).

8. The Commission should Order that the risk of Toshiba's contractual performance pertaining to its Parental Guarantee should be retained by Georgia Power Company and should not be imposed on ratepayers. (Direct Testimony of Hayet and Kollen, pp. 19 and 26).

9. The Commission should adopt Staff's recommendation to require the Company to include sunk costs in the Company's cost-to-complete analysis. (Direct Testimony of Hayet and Kollen, pp. 21-22).

10. The Commission should require the Company to use its embedded long-term debt rate for determining the ROE for the Project in all future VCM reports. (Direct Testimony of Hayet and Kollen, p. 23)

Respectfully submitted this 28th day of July, 2017.



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Certificate of Service

I hereby certify that the foregoing **POST-HEARING BRIEF AND RECOMMENDATIONS OF THE SOUTHERN ALLIANCE FOR CLEAN ENERGY** in Docket No. 29849 was filed with the Public Service Commission's Executive Secretary by hand delivery. An electronic copy of same was served upon all parties listed below by electronic mail, unless otherwise indicated, as follows:

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This 28th day of July, 2017.

A handwritten signature in black ink, appearing to be 'Anne G. Blair', written over a horizontal line.

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