



Santee Cooper

Integrated Resource Plan 2025 Update



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EXECUTIVE SUMMARY

Santee Cooper is pleased to submit to the Public Service Commission of South Carolina (“Commission”) this Integrated Resource Plan 2025 Update (“2025 IRP Update” or “IRP Update”) as an update to its triennial 2023 Integrated Resource Plan (“2023 IRP”) approved by the Commission in Order 2024-171 and its 2024 IRP Update approved by the Commission in Order 2025-244.

The 2025 IRP Update includes changes to planning assumptions and analyzes impacts on Santee Cooper’s Preferred Portfolio identified in the 2023 IRP (referred to herein as the “2023 Preferred Portfolio”) and the 2024 IRP Update. This 2025 IRP Update also provides the status of items identified in the 2023 IRP and 2024 IRP Update Short-Term Action Plans, including resource actions, pursued collaboratively with Central Electric Power Cooperative, Inc. (“Central”), to meet capacity needs. Santee Cooper appreciates the valuable contributions from stakeholders throughout the stakeholder working group process leading up to the preparation of this IRP Update.

The evaluations presented in this report indicate that the resource portfolio referred to herein as the “2025 Portfolio Update” is the most attractive for Santee Cooper’s customers, when balancing planning objectives for cost, risks, and emissions.

The differences between the 2025 Portfolio Update and the 2023 Preferred Portfolio approved by the Commission are driven primarily by higher projected loads to be served by Santee Cooper and a significant increase in the expected cost of solar resources resulting from the accelerated termination of tax credits, as discussed further below in this Executive Summary and in the Changes in Federal Law section. Both portfolios include the natural gas combined cycle (“NGCC”) resource being developed jointly with Dominion Energy South Carolina, Inc. (“DESC”) at the Canadys site (“Joint NGCC”) as an important resource addition for the Combined System. The 2025 Portfolio Update assumes the Joint NGCC will be completed by 2033,¹ and that a subsequent NGCC facility would be added to the Combined System² by 2035 upon the retirement of the coal-fired units at the Winyah Generating Station (“Winyah”). Delaying the implementation of the subsequent NGCC facility after the completion of the Joint NGCC defers financing requirements related to that facility and increases flexibility to deal with potential changes in future market and regulatory conditions, which reduces risk for Santee Cooper’s customers.

Santee Cooper intends for the 2025 Portfolio Update to guide its further planning activities until the 2026 Triennial IRP is completed and approved. More specifically, Santee Cooper’s near-term plans, in coordination with Central, include the following.

¹ Santee Cooper and DESC currently anticipate the 3-units that comprise the Joint NGCC will be completed between late 2031 and the late 2032.

² The term “Combined System” refers to the power supply resources and bulk transmission network of Santee Cooper and Central.

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- Continue ongoing planning and development activities for the Rainey Upgrades (as defined and discussed in the Rainey Upgrades subsection below), peaking generation at the Winyah site, battery energy storage system (“BESS”) resources, and the Joint NGCC
- Future solicitations aimed at procuring cost-effective solar capacity additions
- Continue evaluating need and options for additional resources after the Joint NGCC
- Perform various studies to support the 2026 Triennial IRP

Santee Cooper respectfully submits this 2025 IRP Update to the Commission for consideration and acceptance.

CONCLUSIONS

The results of analyses performed for the 2025 IRP Update are consistent with and confirm many of the primary conclusions reached in the 2023 IRP and 2024 IRP Update regarding preferred resource additions to the Combined System portfolio, indicating that the following resources should be pursued.

- Development of the Joint NGCC facility to provide approximately 1,000 MW by 2033
- Addition of natural gas combustion turbine (“NGCT”) capacity and/or BESS to meet system peaking needs beginning in the late 2020s
- Continued and regular addition of solar resources to enhance portfolio diversity and mitigate risks, with consideration of recent changes in federal laws and tax policy

The analyses presented in this IRP Update confirm that the near-term resource decisions related to the Joint NGCC, combustion turbine resources (including the LM6000s described below), and BESS resources are appropriate under a broad range of future conditions.

Similar to changes in assumptions modeled for the 2024 IRP Update, the load to be served by the Combined System is projected to be higher than values assumed in the 2023 IRP, resulting in the need for considerably greater resource additions than those recommended in the 2023 IRP. These additional resources include the following.

- Conversion of Rainey Generating Station (“Rainey”) combustion turbine units 2A and 2B to combined cycle operation and upgrades to other combustion turbine and combined cycle resources at Rainey (adding approximately 255 MW by 2028)³
- Addition of at least 300 MW of BESS capacity by 2029
- Addition of 107 MW of LM6000 aeroderivative combustion turbine resources by 2028
- Addition of two 1x1 NGCC resources totaling 1,296 MW by 2035

³ Pursuant to Commission Orders, including an Order Granting Certificate of Environmental Compatibility and Public Convenience and Necessity, Order 2025-137. Santee Cooper is working toward the conversion of the two referenced Rainey combustion turbines to combined cycle operation by adding heat recovery steam generators and steam turbines, along with related equipment.

Executive Summary

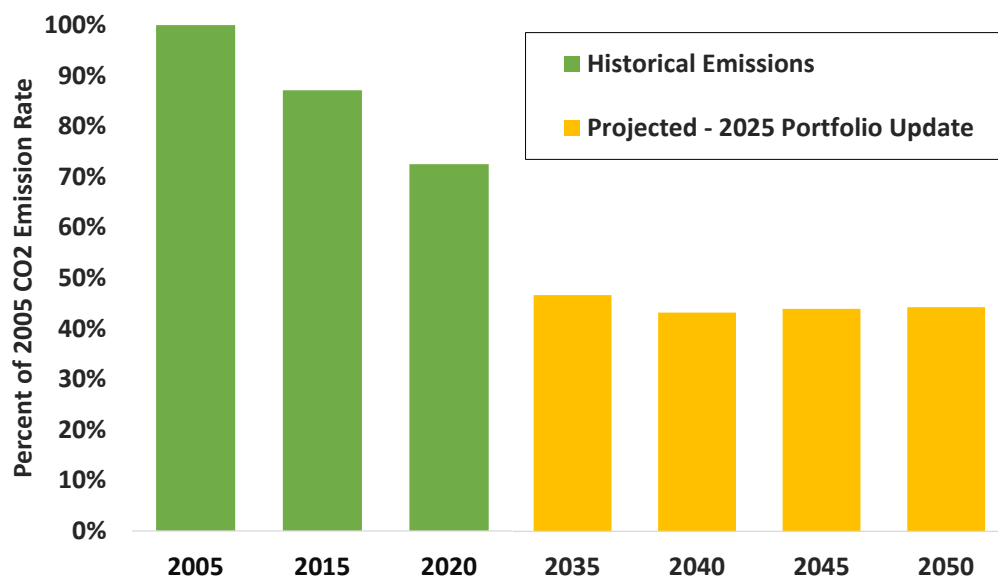
- Addition of solar resources acquired through Power Purchase Agreements (“PPA”) totaling 2,000 MW by the end of the 2025-2052 period studied for the 2025 IRP Update (“Study Period”)

These resource changes were found to be generally consistent across all of the portfolios studied in the 2025 IRP Update, regardless of whether the portfolio objective being modeled was to minimize costs, phase out coal resources under potential Greenhouse Gas (“GHG”) regulations, or manage risk of resource decisions under varying load forecast assumptions. Where appropriate, NGCC and NGCT resource additions were allowed to increase or decrease in response to higher or lower loads, while the timing of solar resource additions was varied by portfolio to investigate impacts on portfolio decisions and costs, and solar, NGCC, and NGCT resources were installed as needed to meet emissions targets for the GHG 2024 Rule Portfolio.

The resource additions identified above result in the most cost-effective, least-risk, and most reliable portfolio, providing multiple benefits to customers, including the following.

- **Reduction in Greenhouse Gas Emissions.** Reduction in CO₂ emissions rate to approximately 43 percent of 2005 levels by 2040, as shown in Figure 1, below.⁴

Figure 1. Projected CO₂ Emissions Rate as a Percentage of 2005 Rate



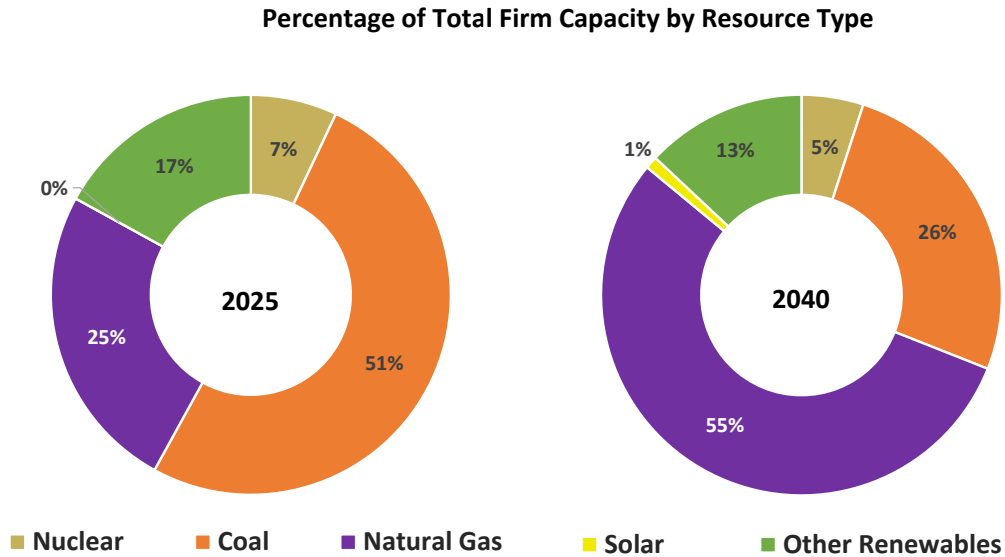
- **A More Diverse Resource Mix to Serve Capacity Needs.** Consistent with Santee Cooper’s goal to diversify its resource mix, Figure 2 illustrates the significant changes in the mix of capacity resources serving the Santee Cooper system under this portfolio. The dramatic shift away from coal generation is a direct result of (i) the replacement of Winyah with NGCC resources, (ii) the finding herein that NGCC and NGCT resources are the most cost-effective way to serve the significant load growth projected for the system, and (iii) the

⁴ The CO₂ emissions rate used herein refers to emissions per unit of electricity generation.

Executive Summary

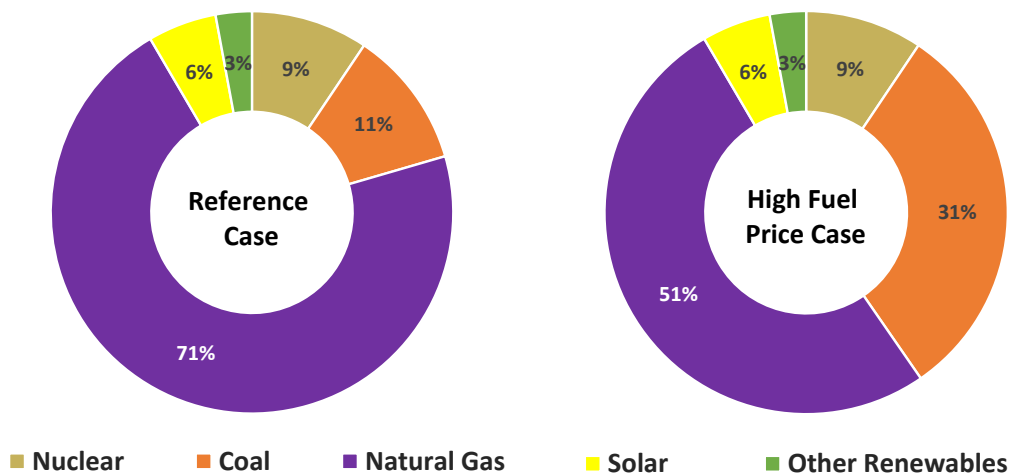
acceleration of solar resources reflected in this portfolio. Note that, while solar does not contribute significantly to the typical Santee Cooper winter peak demand, these resources represent significant energy resources (as shown in the next bullet regarding fuel price risk and energy mix).

Figure 2. Projected Capacity Mix by Fuel Type



- Reduced Fuel Price Risk.** While natural gas generation is projected to serve the majority of energy demand for the Combined System in the Reference Case, the diverse capacity portfolio would allow Santee Cooper to instead rely more heavily on other resources, including the remaining coal resources, during periods of high natural gas prices. The effect of this fuel switching capability is illustrated in Figure 3 below, which compares the energy mix projected for 2040 under the Reference and High Fuel Price Cases.

Figure 3. Projected 2040 Energy Mix – Reference v. High Fuel Price Cases



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- Highly Dispatchable Resource Portfolio.** The addition of significant dispatchable resources, including NGCC, peaking, and BESS, will aid in the integration of renewables and managing load volatility. While the recent termination of tax credits for solar and wind resources is projected to adversely impact the economics of renewable resources for some time, Santee Cooper intends to continue to solicit the market for solar resources and opportunistically add solar resources when economically attractive to do so.
- Resource Plan Flexibility.** The staging of resource changes, including the retirement of the Winyah coal resources and NGCC resource implementations, and the more gradual development of long-term resources through 2040 provide flexibility to adjust as conditions change or if customer demand for electricity is higher or lower than currently projected. This is highlighted in the sensitivity analyses for load growth discussed below.

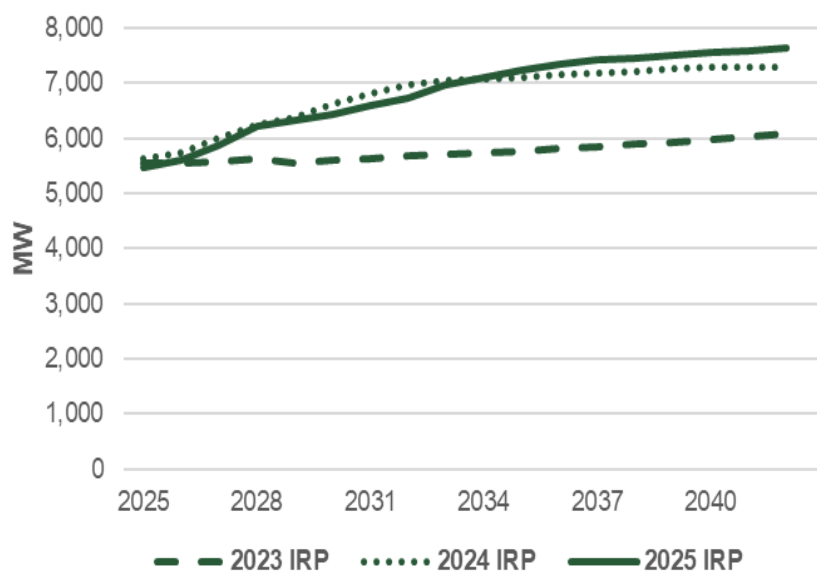
DRIVERS AND CONSIDERATIONS

2025 LOAD FORECAST

Santee Cooper and Central work collaboratively to annually develop a Combined System load forecast, which is a key input into Santee Cooper's IRP process. Similar to the recent experience of many utilities around the country, Santee Cooper and Central's member cooperatives have received multiple inquiries from industrial and other large commercial customers with substantial new peak demand and energy requirements for potential service. Beginning with the 2024 IRP Update, Santee Cooper developed a process for incorporating these prospective new loads in a probabilistic manner, using probabilities dependent on a variety of factors. The development of this process follows a Commission order to engage stakeholders regarding the best approach to incorporate such new loads into the load forecast.

Figure 4 highlights the differences in winter peak demand from the 2023 IRP load forecast to the 2024 and 2025 IRP Updates, which reflect projected loads that are higher by more than 1,000 MW by the early 2030s. This increase in demand is the key driver of the need for additional resources identified in the 2025 IRP Update relative to the 2023 IRP.

Figure 4. Comparison of Winter Peak Forecasts



EARLY TERMINATION OR PHASE-OUT OF IRA TAX CREDITS

On July 4, 2025, HR1, known as the "One Big Beautiful Bill," ("OBBB") was signed into law.

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Among many other impacts, the OBBB significantly modifies the tax incentives introduced through the 2022 Inflation Reduction Act (“IRA”). As a result of the OBBB, solar and wind resources are not eligible for tax credits unless they begin construction within 12 months of OBBB enactment or are placed into service before 2028. This requirement considerably compresses the timeline for tax credit eligibility (and therefore pricing) for future solar and wind resources. For other renewable and BESS resources, the OBBB alters the “applicable year” for purposes of the phase-out of tax credits to fix the applicable year at 2032 rather than having it dependent on the extent of U.S. electricity sector greenhouse gas emissions. This restatement of the applicable year implies that the phase-out of the tax credits for qualified facilities will effectively start for facilities that begin construction in 2034.

In August 2025, the U.S. Treasury also released revised guidance related to identifying the start of construction for eligibility for clean electricity tax credits, in most cases essentially removing the previous 5% expenditure test for safe harboring equipment in favor of requirements related to physical work at the project site or manufacturing of equipment. As this guidance has been only recently released, Santee Cooper is continuing to evaluate its key features and implications.

As a result of this acceleration in the phase-out of tax credits for solar and wind resources, and without further changes to the federal policies, the projected net cost of such resources to Santee Cooper will be considerably higher than would otherwise be the case and higher than had been assumed in the 2023 IRP and 2024 IRP Update. Similarly, the cost of BESS resources is projected to be considerably higher beginning the mid-2030s, as tax credits phase out.

The impact of changing tax policy on the 2025 IRP Update is that solar and wind are projected to be less cost-effective options relative to other resource options. However, recognizing that these resources provide benefits of fuel diversity, reduced carbon risk, and improved environmental emissions, Santee Cooper intends to assess the market for renewable resources regularly.

GREENHOUSE GAS REGULATIONS

Existing GHG Rule

The U.S. Environmental Protection Agency (“EPA”) published a final rule (“EPA GHG 2024 Rule”) regulating the emission of GHGs from new gas-fired combustion turbines and existing coal, oil, and gas-fired steam generating units. Under this rule, coal units were to either cease operations before January 1, 2032, or choose one of two compliance pathways: (i) convert to co-fire with natural gas before January 1, 2030, at 40 percent or greater co-firing and cease all operations before January 1, 2039; or (ii) implement 90 percent carbon capture and sequestration (“CCS”) before January 1, 2032. Neither compliance pathway was expected to be viable for Santee Cooper; therefore, our analysis of the impacts of the EPA GHG 2024 Rule assumes ceasing operations of Cross Generating Station (“Cross”) by 2032. New natural gas-fired combustion turbines and combined cycle electric generating units have three potential compliance pathways depending on capacity factor—CCS by 2032 for high capacity factor units, CO₂ emissions rate limit of 1,170 lbs/MWh for units operating at an intermediate capacity factor equal to or less than 40%, and CO₂ emissions rate limit of 160 lbs/MMBtu for units operating at a low capacity factor of less than 20%. Existing combustion turbines (whether operated as simple cycle or combined cycle units) were not addressed in the final EPA GHG 2024 Rule.

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For the 2025 IRP Update, Santee Cooper has evaluated a resource portfolio that meets the requirements of the EPA GHG 2024 Rule, and the results presented in this report show significant potential costs to customers and implementation challenges to comply with the rule as currently written. The EPA GHG 2024 Rule would increase the need for resources upon the retirement of Cross by 3032 and, importantly, demonstrate that the key NGCC resource additions are needed to comply with the requirements of the EPA GHG 2024 Rule.

Proposed Changes to the GHG Rule

While numerous legal challenges to the EPA GHG 2024 Rule are being pursued by various states and other entities, the EPA, under the Trump Administration, undertook a wholesale review of the rule and on June 17, 2025, submitted the 2025 Draft EPA GHG Rule in the Federal Register. The proposed rule provides two alternative pathways to repeal the GHG 2024 Rule: (i) a “full repeal” involving the revocation of the “endangerment finding” of CO₂ for fossil fuel plants, or (ii) a “partial repeal” involving removing CCS as a Best System of Emission Reduction (“BSER”) for fossil fuel plants and the requirement for coal-fired units to co-fire with natural gas, in addition to removing CO₂ emission standards for existing coal plants. The proposed rule has been reviewed by Office of Management and Budget, and the public comment period closed on August 7, 2025. A final rule is expected before the end of this year.

The net effect on the modeling of portfolios for the 2025 IRP Update in response to the proposed repeal of the GHG 2024 Rule is that a full repeal would eliminate all GHG limitations. In addition, the portfolios identified herein would comply with a partially-repealed GHG 2024 Rule. A partial repeal of the GHG 2024 Rule eliminates CCS as a best available control technology (“BACT”) and permits new NGCC resources to operate without restrictions on annual capacity factors. Additionally, new H-class and LM6000 combustion turbine resources are assumed to meet the 1,170 lbs/MWh limits imposed for intermediate capacity factor resources, or those operating up to a 40% annual capacity factor (which is the standard capacity factor limit imposed for new combustion turbines simulated for all portfolio scenarios for the 2025 IRP Update).

Santee Cooper will continue to monitor developments regarding GHG regulation to be incorporated into future IRPs.

RESOURCE DEVELOPMENT ACTIVITIES

As noted above, the 2025 Load Forecast projects a significant increase in loads for the Combined System as compared to the forecast used for the 2023 IRP, resulting in the need for substantial resource additions over the next several years and into the future. Santee Cooper, working collaboratively with Central, is actively working to acquire or contract for resources, including both short-term power purchase agreements (“PPAs”) and longer-term resources that can help meet this need. The acquisition and planning for these resources are consistent with the Short-Term Action Plan developed for the 2023 IRP and updates to the Plan as depicted in the 2024 IRP Update.

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RAINEY UPGRADES

Conversion of Rainey combustion turbines 2A and 2B to combined cycle and upgrades to other combustion turbine and combined cycle resources at Rainey will add over 250 MW of capacity to the system by year-end 2027.

- Pursuant to Commission Orders, including an Order Granting Certificate of Environmental Compatibility and Public Convenience and Necessity, Santee Cooper is working toward the conversion of the two referenced Rainey combustion turbines to combined cycle operation by adding heat recovery steam generators and steam turbines, along with related equipment.
- Santee Cooper is also moving forward with the Advanced Gas Path upgrade to Rainey Power Block 1 (an existing combined cycle resource). The upgrade work has been incorporated into Santee Cooper's planned maintenance outage schedule with planned completion in 2027.
- Finally, Santee Cooper is moving forward with an axial fuel staging upgrade at certain existing Rainey combustion turbine units.

SOLICITATION FOR CAPACITY RESOURCES

In January 2025, Santee Cooper issued a request for proposals ("RFP") for capacity and energy purchases from dispatchable resources beginning as early as 2026 for varying durations. Santee Cooper received responses on February 14, 2025, which included options to purchase power from both existing and new generating resources, as well as options to acquire new resources. As a result of the evaluation of proposals, Santee Cooper has identified opportunities to pursue short-term purchases to meet near-term capacity needs but did not identify any long-term power purchase agreements that would be more cost-effective than building new Santee Cooper-owned resources considered herein.

PEAKING RESOURCES

Santee Cooper plans to install two GE Vernova LM6000 aeroderivative combustion turbine generators and their associated facilities. These resources will utilize a dual-fuel dry low nitrogen oxide ("NOx") combustion system, which enables the units to operate on both natural gas and fuel oil while minimizing NOx emissions without the need for water or steam injection. Each unit is rated to produce approximately 54 MW.

SOLAR PROCUREMENT

Based on a Commission-approved Competitive Procurement Program ("CPRE"), in June 2024, Santee Cooper issued an RFP for solar resources. A total of 32 proposals were submitted by 20 different developers, representing approximately 3,058 megawatts ("MW") of nameplate capacity. Santee Cooper and Central jointly selected two projects totaling 212 MW. At this point, the counterparties are evaluating the impacts of the OBBB, Treasury guidance related to demonstrating construction commencement for tax credit eligibility, and permitting issues. While Santee Cooper and Central are working towards resolutions with the two prospective counterparties, the projects have not been reflected in the 2025 IRP Update.

Santee Cooper plans to regularly assess the market for renewable resources.

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IMPLEMENTATION OF BATTERY ENERGY STORAGE SYSTEM RESOURCES

Santee Cooper initiated a competitive procurement process in March 2025 for up to 300 MW of four-hour BESS to be located at the Jefferies Generation Station site, formerly home to retired coal and oil generation units. Interest in the solicitation was robust, with 30 firms submitting a total of 88 offers. Santee Cooper evaluated proposals with assistance from Sargent & Lundy and is currently in contract discussions with the finalists. Consistent with the analyses completed for this 2025 IRP Update, Santee Cooper is targeting at least 150 MW BESS by the winter of 2028. This battery storage project represents a significant step in modernizing its energy resource mix and enhancing grid reliability. Santee Cooper is working towards a signed energy storage tolling agreement with the winning bidder by the end of October 2025 and will continue to provide updates on this initiative in future IRPs and IRP updates, as directed by the Commission.

JOINT NGCC RESOURCE

Pursuant to South Carolina Act 41, Santee Cooper has been jointly planning a multi-unit natural gas-fired advanced-class combined cycle generation plant, which we refer to herein as the Joint NGCC, with DESC. The new plant will consist of three (3) advanced class combined cycle units with a total capacity of approximately 2,000 MW. Santee Cooper will own a 50 percent share, or approximately 1,000 MW. The Joint NGCC will be located on DESC's former Canadys Station site in Colleton County, South Carolina. Construction of the Joint NGCC is subject to review and approval by the Commission in a future application for a Certificate of Environmental Compatibility and Public Convenience and Necessity under the South Carolina Utility Facility Siting and Environmental Compatibility Act ("Siting Act"). Santee Cooper and DESC are currently preparing an application for submittal under the Siting Act. The Joint NGCC will use a current brownfield site and will advance the economy and serve the general welfare of the state.

EVALUATION OF THE 2023 PREFERRED PORTFOLIO

Consistent with the requirements of S.C. Code Ann. § 58-37-40(D)(1), Santee Cooper evaluated the 2023 Preferred Portfolio to assess the impacts of changes to base planning assumptions. This evaluation was prepared by re-optimizing the resource portfolio assuming changes in major assumptions, including a significant increase in load growth, and assuming the Winyah coal units are retired once the full Joint NGCC resource is projected to be online by 2033 (rather than 2031 in the 2024 IRP Update). For this re-optimized portfolio, solar resources were assumed to be added at 300 MW per year for 2028 through 2032, consistent with assumptions used to model the 2023 Preferred Portfolio. Finally, the generic, short-term PPA resources that were modeled for 2023-2028 have been replaced with the near-term resource additions described above. The re-optimization under these assumptions and the broader planning assumptions detailed herein are referred to herein as the 2023 Portfolio Re-Optimized.

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Table 1 provides a summary of resource additions and retirements through 2040 that were included for the 2023 Preferred Portfolio and those that were selected for the 2023 Portfolio Re-Optimized.⁵

Table 1. Re-optimization of the 2023 Preferred Portfolio

Resource Changes Through 2040	Additions (Retirements) (MW) ⁶	
	2023 Preferred Portfolio	2023 Portfolio Re-Optimized
Retirements		
• Winyah (2031)	(1,150)	0
• Winyah (2033)	0	(1,150)
• MB and HH CTs (2034)	(165)	(165)
Joint NGCC		
• 2031-2033	1,020	998
Other New NGCC		
• 2031-2033	0	1,296
New Peaking		
• 2028-2031	0	107
• 2032-2033	0	0
• 2034-2040	112	449
New Solar ⁷		
• 2026-2033	2,150	1,500
• 2034-2040	550	0
New BESS		
• 2026-2033	0	300
• 2034-2040	350	0
New Wind		
• 2029-2033	0	0
• 2034-2040	0	0

Comparison of the 2023 Preferred Portfolio to the 2023 Portfolio Re-Optimized shows that the updates in key assumptions result in portfolio additions that are consistent with the 2023 Preferred Portfolio, but more expansive to meet the revised load projections and reflecting key differences, as discussed in the following bullets.

⁵ Resource build tables presented herein exclude the Rainey Upgrades, Central PPA NSR resources, and the near-term PPA resources discussed above.

⁶ Capacity amounts shown herein reflect winter capacity for thermal resources and nameplate capacity for solar, wind, and BESS resources, unless otherwise noted.

⁷ The amounts of New Solar capability shown are in addition to the 200 MW of solar PPAs procured by Santee Cooper and Central through the 2020 Solar RFP.

Executive Summary

- **Winyah Retirement.** Both portfolios include Winyah retirement, with the retirement in the 2023 Portfolio Re-Optimized deferred two years to align with the availability of the Joint NGCC in 2033.
- **NGCC Capacity.** For both portfolios, substantial NGCC capacity is added, including the Joint NGCC. The availability of the Joint NGCC was updated to 2033 (from 2031 in the 2023 Preferred Portfolio) to reflect the most recent project schedule. In addition to the Joint NGCC, the 2023 Portfolio Re-Optimized adds considerably more NGCC capacity, totaling an additional 1,296 MW by 2033, due primarily to the higher loads forecasted to be served.
- **Solar Capacity.** As a result of the OBBB and accelerated termination of tax credits on solar resources, the 2023 Portfolio Re-Optimized includes considerably less solar resource additions, totaling 1,500 MW by 2040 (versus 2,700 MW by 2040 in the 2023 Preferred Portfolio), with this amount being added only because the portfolio assumes such additions over the 2028-2032 period.
- **Peaking and BESS Resources.** Additional New Peaking resources are reflected in the 2023 Portfolio Re-Optimized. However, BESS capacity added is somewhat lower, as the projected cost of BESS has been increased due to accelerated phase-out of tax credits over the late 2030s under the OBBB.
- **Rainey Upgrades.** While not shown in the build table above, the 2023 Portfolio Re-Optimized includes the upgrades to Rainey. The Rainey Upgrades would provide approximately 255 MW of additional NGCC and NGCT capacity to meet capacity needs beginning 2028, as well as providing value throughout the remainder of the Study Period.⁸

Overall, the 2023 Portfolio Re-Optimized reflects the addition of a larger amount of resources than contemplated in the 2023 Preferred Portfolio because of higher load projections. The 2023 Portfolio Re-Optimized reflects generation additions through 2040, totaling approximately 5,600 MW of nameplate capacity versus approximately 4,700 MW in the 2023 Preferred Portfolio.⁹ Moreover, except for lower projected additions of solar, which are influenced by the elimination of tax credits, resource additions are reasonably consistent between the two portfolios when considering the higher capacity requirements for the 2023 Portfolio Re-Optimized.

⁸ Santee Cooper also recently acquired a small NGCC facility, Cherokee, and has secured PPA capacity not captured in the table above. In the 2023 Preferred Portfolio, capacity needs through 2030 then-forecasted were fulfilled by generic, short-term PPAs that were offered to EnCompass.

⁹ The approximately 5,600 MW of nameplate capacity additions for the 2023 Portfolio Re-Optimized represents all new capacity additions through 2040, including the Rainey Upgrades and Central PPA NSR resources.

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PORTFOLIO EVALUATION AND RESULTS

In addition to the 2023 Portfolio Re-Optimized described above, Santee Cooper evaluated the following portfolio strategies for the 2025 IRP Update.

- **2025 Optimized Portfolio** – The EnCompass software optimizes the resource build plan to both replace Winyah, assumed to be retired by 2033, and add additional resources to meet higher demand and energy forecasts. This portfolio evaluation incorporates the higher costs for solar, wind, and BESS reflected by changes in regulations and tax credit policies for renewable resources.
- **2025 Portfolio with Solar** – Same as the 2025 Optimized Portfolio but includes incremental solar additions beginning in the early 2030s to achieve an assumed target level¹⁰ of additional future solar implementation over the study period.
- **2025 Portfolio Update** – Same as the 2025 Portfolio with Solar but defers the need for additional resources by delaying retirement of Winyah from 2033 to 2035. This portfolio seeks to reduce financial risk and provide greater implementation flexibility.
- **GHG 2024 Rule Portfolio** – An optimized build plan considering requirements of the EPA GHG 2024 Rule including the retirement of all coal resources before January 2032 and operating limits on new natural gas-fired resources.

A GHG portfolio reflecting the EPA's proposed partial repeal of the GHG 2024 Rule was also contemplated. However, standard resource assumptions and simulation results for all evaluated portfolios indicate that the portfolios would meet the requirements of the proposed rule changes, thus eliminating the need to model the proposed 2025 GHG rule change as a specific portfolio.

Table 2 summarizes the resource additions and retirements for each of the portfolios through 2040.

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¹⁰ In both the 2023 Preferred Portfolio Re-Optimized and the 2025 Optimized Portfolio, the portfolio optimizations found the addition of up to 2,000 MW of solar over the study period to be part of the economic portfolio. Considering the results of these portfolios, Santee Cooper assumed 2,000 MW of solar over the Study Period as the target level in the 2025 Portfolio with Solar evaluation.

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Table 2. Summary of Optimized Portfolios

Resource Changes Through 2040	Additions (Retirements) (MW)			
	2025 Optimized Portfolio	2025 Portfolio with Solar	2025 Portfolio Update	GHG 2024 Rule Portfolio
Retirements				
• Winyah (2032/2033)	(1,150)	(1,150)	0	(1,150)
• Winyah (2035)	0	0	(1,150)	0
• Cross (2032)	0	0	0	(2,330)
• HH and MB CTs (2034)	(165)	(165)	(165)	(165)
Joint NGCC				
• 2031-2033	998	998	998	998
Other New NGCC				
• 2031-2033	1,296	1,296	0	2,296
• 2035	0	0	1,296	0
New Peaking				
• 2028-2031	107	107	107	107
• 2032-2033	0	0	0	2,244
• 2034-2040	449	449	449	449
New Solar ¹¹				
• 2026-2033	0	100	100	1,200
• 2034-2040	0	700	700	1,550
New BESS				
• 2026-2033	300	300	300	300
• 2034-2040	0	0	0	0
New Wind				
• 2029-2033	0	0	0	0
• 2034-2040	0	0	0	200

The following key conclusions can be drawn from the analysis of the resource builds shown above.

- **NGCC Resources.** All portfolios reflect the addition of large NGCC resources to replace Winyah and serve load growth, which is consistent with the results of the 2023 IRP. All portfolios select the 998 MW Joint NGCC resource by 2033. All portfolios also add approximately 1,300 MW of additional NGCC capacity that coincides with the retirement of Winyah.

¹¹ The amounts of New Solar capability shown are in addition to the approximately 200 MW of solar PPAs procured by Santee Cooper and Central in 2021.

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- **Solar and Wind Resources.** The 2025 Optimized Portfolio reflects no solar or wind resources being added through 2040, though solar is added in later years, with 2,000 MW being added by 2052. The 2025 Portfolio with Solar and 2025 Portfolio Update depict an accelerated implementation of solar resources reflecting a more gradual implementation rate over the Study Period (up to 100 MW per year) while still achieving the same total of 2,000 MW of solar by 2052 as the 2025 Optimized Portfolio.
- **EPA GHG 2024 Rule.** The GHG 2024 Rule Portfolio relies on the same amount of NGCC resources as the other portfolios despite the limitation on NGCC capacity factors imposed by the rule. Additional resources, in part to replace the retirement of the remaining coal-fired assets, include larger amounts of renewable resources—approximately 1,700-1,900 MW more than the other portfolios over the Study Period, and more NGCT resources.

Importantly, the portfolio builds shown in Table 2 confirms that near-term resource plans to proceed toward a portfolio like the 2025 Portfolio Update would be appropriate whether the EPA GHG 2024 Rule remains, is stayed, or revised. If Santee Cooper knew today that a rule with similar constraints to the EPA's GHG 2024 Rule would be implemented, Santee Cooper would not reverse the actions it is now taking with regard to the Joint NGCC and consideration of additional NGCC and peaking resources.

Net present value ("NPV") Power Costs presented in Table 3 summarize the incremental power supply costs projected to result from the implementation of each portfolio. Costs are presented in NPV 2025 dollars, computed over the Study Period, and represent only incremental costs that could vary between alternative resource plans.

Table 3. Comparison of NPV Power Costs (\$B)

Portfolios	NPV Power Costs
2023 Portfolio Re-Optimized	\$37.3
2025 Optimized Portfolio	\$36.7
2025 Portfolio with Solar	\$36.8
2025 Portfolio Update	\$36.8
GHG 2024 Rule Portfolio	\$43.7
<u>Difference to 2023 Portfolio Re-Optimized</u>	
2025 Optimized Portfolio	(\$0.6)
2025 Portfolio with Solar	(\$0.4)
2025 Portfolio Update	(\$0.5)
GHG 2024 Rule Portfolio	\$6.4

Comparing results for the 2025 Optimized Portfolio and 2025 Portfolio with Solar in Table 3 indicates that additions of modest amounts of solar resources, even without the tax incentives previously available under the IRA, does not increase costs significantly.

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Similarly, comparing results for the 2025 Portfolio with Solar and the 2025 Portfolio Update indicates that the assumed two-year delay in the additional generic NGCCs and Winyah retirement has little impact on projected costs. Both of these refinements to the 2025 Optimized Portfolio (i.e., adding solar capacity sooner and delaying the next NGCC after the Joint NGCC) reduce risk with little cost impact. The reduction in risk from the delay results from deferring financing requirements and maintaining additional flexibility to allow for further consideration of resource additions after the Joint NGCC. The inclusion of more solar capacity than indicated in the 2025 Optimized Portfolio provides a hedge against the potential for increases in natural gas prices above the levels now projected and the impacts of potential future federal government policy that would return to prioritizing retirement of coal resources, limiting operating levels of natural gas fueled resources, and reliance on renewables.

The results in Table 3 also indicate that power costs would be significantly higher under scenarios that assume constraints on utilities like those included in the EPA GHG 2024 Rule. As shown, incremental NPV power supply costs under the GHG 2024 Rule Portfolio are projected to be \$6.4 billion higher over the Study Period than under the 2023 Portfolio Re-Optimized. Much of the additional incremental costs under the GHG 2024 Rule Portfolio would result directly from the additional costs of replacement resources and transmission additions necessitated by the mandated retirement of the Cross Generating Station.

Table 4 below provides an assessment of the sensitivity of costs for each portfolio to fuel price uncertainty. As shown, the 2025 Optimized Portfolio and the 2025 Portfolio Update would be impacted the least by the variations in fuel prices studied. As shown in the far-right column of Table 4, the costs of the GHG 2024 Rule Portfolio are much more sensitive to future fuel prices than the other portfolios. Therefore, in addition to adding higher costs to be borne by customers, a decision to implement the type of constraints included in the EPA GHG 2024 Rule would also add much greater uncertainty regarding future costs.

Table 4. Fuel Price Sensitivity Results

Supplemental Portfolios	NPV Fuel Costs (\$B)			Diff. to Reference (\$B)		
	Reference Case	Low Fuel Price	High Fuel Price	Low Fuel Price	High Fuel Price	Uncertainty Range
2023 Portfolio Re-Optimized	\$37.3	\$31.8	\$47.5	(\$5.5)	\$10.2	\$15.7
2025 Optimized Portfolio	\$36.7	\$31.0	\$47.4	(\$5.7)	\$10.8	\$16.5
2025 Portfolio with Solar	\$36.8	\$31.2	\$47.3	(\$5.6)	\$10.5	\$16.1
2025 Portfolio Update	\$36.8	\$31.3	\$47.1	(\$5.5)	\$10.3	\$15.8
GHG 2024 Rule Portfolio	\$43.7	\$37.5	\$58.4	(\$6.1)	\$14.7	\$20.8

Difference to 2023 Portfolio Re-Optimized

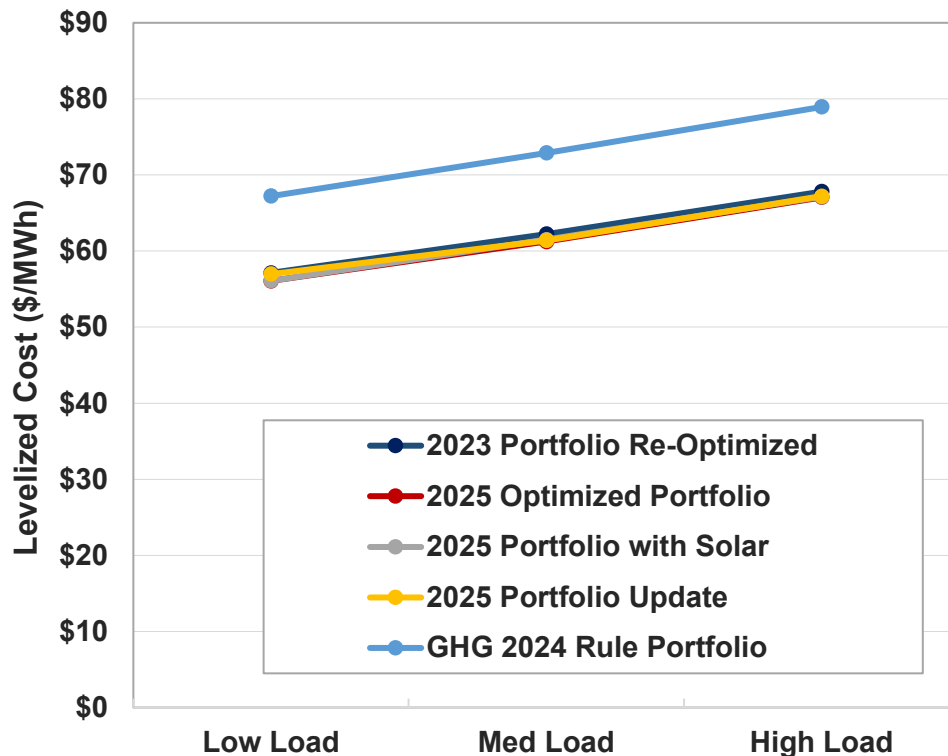
2025 Optimized Portfolio	(\$0.6)	(\$0.8)	(\$0.1)
2025 Portfolio with Solar	(\$0.4)	(\$0.5)	(\$0.2)
2025 Portfolio Update	(\$0.5)	(\$0.5)	(\$0.5)
GHG 2024 Rule Portfolio	\$6.4	\$5.8	\$10.9

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Figure 5 below indicates that portfolios studied, other than the GHG 2024 Rule Portfolio, are projected to have similar average levelized costs for each of the load forecast sensitivities studied. Importantly, the load sensitivity analysis confirms there is not a significant risk to Santee Cooper's customers should projected load additions not materialize, given modifications to the resource plans assumed in response to the change in load forecast. This is a key reason why the delay in additional NGCC capacity after the Joint NGCC reduces customers' risk. The delay allows more time to assess load growth and the need for additional resources.

As indicated by the difference between the blue and gold lines in Figure 5, the GHG 2024 Rule Portfolio is somewhat more sensitive to load levels than the 2025 Portfolio Update (and other portfolios studied). More specifically, the levelized cost for the GHG 2024 Rule Portfolio is higher than for the other portfolios by approximately \$10/MWh under the Low Load Forecast to approximately \$12/MWh for the High Load Forecast.

Figure 5. Load Forecast Sensitivity Case Results



Results of the fuel price and load forecast sensitivities demonstrate that the key resource decisions reflected in the 2025 Portfolio Update are robust under a wide range of assumptions.

Based on a careful review of the needs of the Combined System and the evaluations discussed in this 2025 IRP Update, Santee Cooper has determined that the 2025 Portfolio Update will be used to guide its resource planning decisions until the 2026 Triennial IRP. The resource changes in this portfolio are consistent with the key elements in the 2023 Preferred Portfolio and the 2024 IRP Update.

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UPDATES TO SANTEE COOPER'S SHORT-TERM ACTION PLAN

Considering the results of the evaluations and conclusions above, Santee Cooper plans to proceed as discussed in the table below, subject, where appropriate, to acceptance of the 2025 IRP Update by the Commission. Santee Cooper will update the Commission on the progress of these actions in conjunction with its 2026 Triennial IRP filing.

Category	Activities
NGCC Resources	<ul style="list-style-type: none"> Continue to proceed with DESC toward jointly developing and executing the Joint NGCC project. File a CECPCN application with the Commission currently planned for late 2025.
Near-term Resources	<ul style="list-style-type: none"> Winyah LM6000s – Santee Cooper filed a CECPCN¹² with the Commission on August 28, 2025, under Docket Number 2025-246-E. Santee Cooper will continue to coordinate with Central in the approvals and implementation required to support this project. BESS Resources – Complete the solicitation process targeting at least 150 MW BESS installation by 2028 and continue coordination with Central regarding additional planned BESS additions. Short-term capacity purchases – Santee Cooper is evaluating short-term capacity options that will be pursued to ensure capacity requirements are met in the near term until other long-term resources are operational.
Solar Resources	<ul style="list-style-type: none"> Santee Cooper and Central have negotiated PPAs with two prospective counterparties. However, execution of contracts is impacted by uncertainties caused by the OBBB and other issues that require resolution. Santee Cooper will work with Central to complete this process. Santee Cooper plans to conduct procurement efforts in the future and otherwise assess the market for renewable resources regularly.
Load Forecast	<ul style="list-style-type: none"> Working with Central, continue to update the load forecast and monitor changes in potential new large customers. Continue to engage with stakeholders in discussing the methodology used to quantify the probability of large new customers connecting to the Combined System.

¹² Certification of Environmental Compatibility and Public Convenience and Necessity under the "Utility Facility Siting and Environmental Protection Act"

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Category	Activities
Regulatory Developments	Santee Cooper will continue to monitor environmental regulations and will continue to refine the options for complying with evolving GHG regulations, as needed.
Prior Commitments and Commission Orders	<p>Santee Cooper will complete studies identified in the 2023 IRP and 2024 IRP Update Short-Term Action Plans and comply with the requirements of Orders 2024-171 and 2025-244. The ongoing studies include the following.</p> <ul style="list-style-type: none"> • Cross retirement and associated transmission studies • Planning Reserve Margin Study • Effective Load Carrying Capability Study • Renewable Integration Study • Demand Side Management Market Potential Study • Wind Feasibility Study <p>Santee Cooper will continue to engage with stakeholders to provide updates on these studies as they are prepared.</p>

INTRODUCTION

The state of South Carolina requires Santee Cooper to file an Integrated Resource Plan (“IRP”) every three years and an update in intervening years.¹³ The 2025 IRP Update provides an update to Santee Cooper’s 2023 IRP approved by the Commission in Order No. 2024-171 (“Order 2024-171”) issued March 8, 2024 and the 2024 IRP Update approved by the Commission in Order No. 2025-244 (“Order 2025-244”) issued May 1, 2025.

In preparing the 2025 IRP Update, Santee Cooper addressed four key topics—(i) activities identified in the 2023 IRP Short-Term Action Plan, as modified by the 2024 IRP Update, (ii) addressing items required by Order 2025-244, (iii) continuing stakeholder engagement efforts, and (iv) reflecting trends that will impact utility operations and planning, including recent and unprecedented potential growth in load from large customers and the passage of the OBBB in July 2025.

As specified in the 2023 IRP Short-Term Action Plan, Santee Cooper is working with our largest customer, Central, to plan for the near-term needs of the combined system and to procure solar resources identified in the 2023 IRP. Additionally, pursuant to the recently passed Act 41 legislation, Santee Cooper is collaborating with DESC in pursuing the development of a multi-unit natural gas-fired advanced-class combined cycle generation plant. As discussed later, Santee Cooper and DESC are currently preparing an application for submittal to the Commission under the Siting Act.

Order 2025-244 directed Santee Cooper to continue to provide updates regarding its plans for the Cross Generating Station retirement evaluation and associated transmission evaluations, monitor and report annually on forecasted versus actual load related to Economic Development Load, update modeling assumptions in the 2025 IRP Update to reflect the latest available EPA guidance, provide updates regarding solicitation for BESS resources, continue to engage with stakeholders as outlined in the 2024 IRP Update, provide updates to the Commission on the stakeholder process, consider recommendations made by parties in the 2024 IRP Update docket, and address the recommendations raised by the Office of Regulatory Staff (“ORS”) in the 2024 IRP Update docket. In this IRP Update, Santee Cooper provides a status update for each of these items.

Santee Cooper continues to conduct a robust and inclusive stakeholder engagement process, as discussed in the section titled Stakeholder Engagement Process. Through this process, Santee Cooper provides stakeholders with the opportunity to engage at their desired technical level to ensure that Santee Cooper’s planning process considers all perspectives.

The 2025 IRP Update reflects the careful consideration of the potential impacts of the trends and issues identified below on the 2023 Preferred Portfolio.

- Substantial growth in customer load and potential additional load from large customers
- Increases in capital costs for new generation, both fossil-fueled and renewable resources, as well as BESS resources

¹³ S.C. Code Ann. Section 58-37-40.

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- Accelerated termination or phase-out of tax credits available for renewable and BESS resources resulting from the OBBB
- Regulations related to greenhouse gas emissions

The 2025 IRP Update is intended to outline Santee Cooper's efforts to incorporate and address the critical issues and trends identified above and to lay out a roadmap for the 2026 Triennial IRP. Santee Cooper, through this IRP Update, has worked to ensure all stakeholders and the Commission are aware of the critical drivers and issues that will impact Santee Cooper's near- and long-term resource decisions.

RECENT ACTIVITIES AND DEVELOPMENTS

This section provides an overview of Santee Cooper's activities related to the Short-Term Action Plans presented in the 2023 IRP and 2024 IRP Update and efforts to comply with Commission Order 2024-171 and Order 2025-244. Additionally, information is provided related to regulatory developments.

SHORT-TERM ACTION PLAN ITEMS FROM THE 2023 IRP AND 2024 IRP UPDATE

In the 2023 IRP and 2024 IRP Update, Santee Cooper committed to addressing several items in its Short-Term Action Plans. This section provides a status update for key items.

NATURAL GAS COMBINED CYCLE IMPLEMENTATION INCLUDING POTENTIAL JOINT PROJECT WITH DESC

Santee Cooper, pursuant to Act 41 passed by the South Carolina General Assembly and signed into law by Governor McMaster, on May 12, 2025, has been pursuing the development of the proposed Joint NGCC, as a multi-unit natural gas-fired advanced-class combined cycle generation plant, to be co-owned with DESC. The new plant will consist of three advanced-class combined-cycle units with an approximate capacity of 2,000 MW. Santee Cooper will own a 50 percent share, or 1,000 MW. The Joint NGCC will be located on DESC's former Canadys Station site in Colleton County, South Carolina. Construction of the Joint NGCC is subject to review and approval by the Commission in a future application for a Certificate of Environmental Compatibility and Public Convenience and Necessity under the Siting Act.

Santee Cooper and DESC are currently preparing an application for submittal under the Siting Act. A request for proposal ("RFP") has been issued for the combustion gas turbines and associated equipment, and bids received in August are currently under review. The Canadys site is a former electric generating site approximately forty miles northwest of Charleston. As a brownfield site, Canadys is a previously developed site with a well-understood environmental baseline and offers robust electric transmission interconnectivity from rights of way that radiate from the site toward major load centers. It is near existing and planned Santee Cooper electric transmission lines as well. Santee Cooper views the Joint NGCC as an important resource to advance the economy and serve the general welfare of the state.

DESC has executed three Precedent Agreements related to pipeline expansion projects that will provide firm natural gas transportation to the Joint NGCC. DESC is preparing to assign natural gas capacity to Santee Cooper under these precedent agreements.

UPGRADES AT THE EXISTING RAINEY GENERATING STATION

On January 30, 2025, the Commission issued a Directive Order permitting Santee Cooper to construct and operate a combined-cycle steam turbine generator and associated facilities on existing units at Santee Cooper's Rainey Generating Station (i.e., conversion to combined cycle by installation of heat recovery steam generation units), expected to result in an increase in capacity of 178 MW to plant capacity, as well as a significant improvement in efficiency. This directive was followed on March 4, 2025, with an Order Granting Certificate of Environmental Compatibility and Public Convenience and Necessity, Order 2025-137.

Recent Activities and Developments

Santee Cooper continues to expect this project to be placed in-service during winter 2028 (i.e., December 2027 through February 2028).

Santee Cooper is also moving forward with the Advanced Gas Path upgrade to Rainey Power Block 1 that will add approximately 50 MW of incremental capacity to the unit. Engineering studies are substantially complete, and the upgrades are viable. Santee Cooper is planning to enter contracts to acquire the hardware and have the upgrades installed in the third quarter of 2025. The upgrade work has been incorporated into Santee Cooper's planned maintenance outage schedule with planned completion in 2027. The additional capacity from the upgrades will be available during winter 2028.

Finally, Santee Cooper is moving forward with the Axial Fuel Staging upgrade on the Rainey Combustion Turbines 3, 4, and 5 that will add a total of approximately 21 MW of incremental capacity to the units in aggregate (7 MW per unit). Santee Cooper continues to await a firm priced proposal for the hardware and installation from our technology vendor, GE Vernova. The upgrade work has been incorporated into Santee Cooper's planned maintenance outage schedule with planned completion in 2027. The additional capacity from the upgrade will be available during winter 2028.

SOLICITATIONS FOR CAPACITY RESOURCES

In January 2025, Santee Cooper issued RFPs for capacity and energy purchases from dispatchable resources beginning as early as 2026 for varying durations. Santee Cooper received 28 different offers from 13 companies on February 14, 2025. They included purchase power offers from existing resources totaling 2,089 MWs and 20 proposed new build generating resources totaling 9,478 MWs, as well as options to acquire new resources. Over 60 percent of the megawatts received were not available until after 2030. As a result of the evaluation of proposals, Santee Cooper has identified opportunities to pursue short-term purchases to meet near-term capacity needs but did not identify opportunities to make long-term purchases that would be more cost-effective than Santee Cooper-owned resources considered herein.

PEAKING RESOURCE OPTIONS

Santee Cooper is planning to install two GE Vernova LM6000 aeroderivative combustion turbine resources and associated facilities. These aeroderivative resources will employ a dual fuel dry low nitrogen oxide ("NOx") combustion system, which allows the units to operate on both natural gas and fuel oil while minimizing NOx emissions without the use of water or steam injection. At conditions established by the International Standards Organization (59 degrees Fahrenheit and 60% relative humidity) ("ISO Conditions") each unit can produce approximately 54 MW. The design net heat rate at ISO Conditions is 9,609 British thermal units ("BTU") per kilowatt-hour ("kWh") using natural gas or 9,646 BTU/kWh using fuel oil. For emissions control, the facilities will include an air dilution selective catalytic reduction ("SCR") system, which reduces nitrogen oxides by reacting them with ammonia, and a carbon monoxide ("CO") catalyst, which oxidizes CO to carbon dioxide.

Recent Activities and Developments

PROCUREMENT OF SOLAR RESOURCES

On January 3, 2024, the Commission approved Santee Cooper's Competitive Procurement Program under Order No. 2024-2. As part of this approval, Santee Cooper is required to publish a public report after each solar solicitation, summarizing the proposals received and the awards made, including details such as project size, location, pricing, and term length.

Under the program guidelines, Santee Cooper issued the 2024 Solar RFPs on June 10, 2024, inviting solar developers to submit competitive project bids. The process was facilitated by The Energy Authority ("TEA") through its online platform.

The process was carried out in a structured and transparent manner. In March 2024, a 90-day advance notice was distributed to approximately 400 developers to alert them of the upcoming solicitation. This was followed in April by a 45-day notice that included the draft power purchase agreement, evaluation criteria, interconnection guidelines, and other relevant documents. Two virtual pre-bid meetings were held in May and June to provide information and address questions from interested developers. Based on feedback received, a revised version of the draft contract was issued in late May. Proposals were due by August 5, 2024.

A total of 32 proposals were submitted by 20 different developers, representing approximately 3,058 megawatts ("MW") of nameplate capacity. Project sizes ranged from under 10 MW to more than 350 MW. Santee Cooper and Central jointly negotiated PPAs with developers representing two projects totaling 212 MW that the parties hope to sign by late 2025. At this point, the counterparties are evaluating the impacts of the OBBB, Treasury guidance related to demonstrating construction commencement for tax credit eligibility, and other issues that need resolution. While Santee Cooper and Central are continuing dialogue with the two counterparties, they have not been reflected in the 2025 IRP Update.

Full reports, including notices, evaluation methodology, and filed documents, are available under Docket No. 2022-351-E.

Santee Cooper plans to regularly assess the market for renewable resources.

IMPLEMENTATION OF BATTERY ENERGY STORAGE SYSTEM RESOURCES

Santee Cooper initiated a competitive procurement process in March 2025 for up to 300 MW of four-hour battery energy storage systems ("BESS") to be located at the Jefferies Generation Station in Moncks Corner, South Carolina, formerly home to retired coal and oil generation units.

Santee Cooper requested pricing for BESS systems of 100 MW, 200 MW, and 300 MW capacities, with commercial operation as early as December 2026. The selected bidder will own and operate the facility, while Santee Cooper will retain exclusive dispatch rights under a 20-year agreement with fixed monthly payments.

The solicitation was administered by Sargent & Lundy and hosted by TEA. Following the issuance on March 10, 2025, Santee Cooper conducted a virtual pre-bid meeting and an on-site walkthrough. Developers were invited to submit questions through mid-April, with responses provided by the end of the month.

Recent Activities and Developments

Interest in the solicitation was robust with 30 firms submitting a total of 88 proposals. Proposals are currently under evaluation with assistance from Sargent & Lundy. Seven firms were selected for final interviews held over July 7th through 18th, and three finalists were then selected for contract negotiations. Santee Cooper expects to issue a final award in September and execute a long-term energy storage service agreement in October 2025. Consistent with the analyses completed for this IRP Update, Santee Cooper is targeting at least 150 MW BESS by winter of 2028.

This battery storage project represents a key step in modernizing our resource mix and provides value to the utility through grid reliability and flexibility. Santee Cooper anticipates that the project will qualify for enhanced federal tax incentives under the Inflation Reduction Act, which can significantly improve project economics. Specifically, its location on a former coal-fired generation site should make it eligible for Energy Community bonus tax credits. Santee Cooper will continue to provide updates on this initiative in future IRPs and IRP updates, as directed by the Commission. For additional details, please refer to Docket No. 2023-13-E.

CROSS GENERATION STATION RETIREMENT EVALUATIONS

Since the 2023 IRP, Santee Cooper has worked with stakeholders to develop and refine the analytical process utilized to study the retirement of units at Cross. This included initial discussions on the analysis methodology, including supporting transmission studies, at stakeholder working group meetings held in November 2024 and February 2025. Additionally, Santee Cooper held technical meetings on April 10, 2025, and May 29, 2025, to support further engagement and discussions. Results of the retirement evaluation for Cross will be incorporated in the 2026 Triennial IRP analyses. Santee Cooper will continue to work with stakeholders in planning and conducting these evaluations.

WIND RESOURCE STUDY

Santee Cooper has hired DNV, an industry leading firm with deep experience in wind energy, to conduct a study of the viability of onshore wind resources in South Carolina. Results of the study are expected in late 2025 and will be used to inform assumptions for the 2026 Triennial IRP.

COMMISSION REQUIREMENTS FROM ORDER 2024-171 AND ORDER 2025-244

In Order 2024-171, the Commission directed Santee Cooper to address the following issues in the 2024 IRP Update and future IRPs:

- Consider other approaches to load forecasting and resource portfolio analysis to plan for future industrial load growth due to economic development and provide updates to the Commission in future IRP filings
- Incorporate actual solar additions and any updates to future planned solar additions in its annual IRP updates
- Continue to evaluate the NGCC shared resource in the analyses conducted for future IRPs and IRP updates
- Review and address the recommendations of the ORS witnesses to discuss seven issues with stakeholders no later than the 2026 Triennial IRP

Recent Activities and Developments

The ORS recommendations regarding discussions with stakeholders include the following topics.

- Commodity price forecasts for natural gas, coal, and CO₂ and if the forecasts sufficiently consider variation and risk
- Higher penetration of renewable resources and Effective Load Carrying Capability (“ELCC”) studies
- Integration costs and associated modeling methodologies, including modeling operating reserves
- Impacts of EPA GHG regulations and the need for a sensitivity scenario to evaluate the rules impacts
- Scope for further studies to analyze any potential cost savings that might accrue to ratepayers from retirement of additional coal units
- Development of a quantitative reliability metric
- Methodology to study and evaluate transmission investment costs associated with the retirement of Cross coal-fired generating facility

In Order 2025-244, the Commission directed Santee Cooper to address the following issues in the 2025 IRP Update and future IRPs:

- Continue to engage with stakeholders as outlined in the processes described in the Santee Cooper 2024 IRP Update
- Provide updates to the Commission about the activities of the group and Santee Cooper's plans to incorporate lessons learned into future IRP filings
- Continue to provide updates regarding its plans for the Cross Generating Station retirement evaluation and associated transmission evaluations, as well as the results of the study in support of the 2026 comprehensive IRP in the Stakeholder Working Group
- Monitor, track, and report annually the forecasted versus actual load consumption for Economic Development Load
- Update its GHG Rule Portfolio¹⁴ modeling assumptions in the 2025 IRP Update to reflect the latest EPA guidance available at the time the modeling is performed
- Provide updates in future IRPs and IRP Updates regarding the planned solicitation for a battery energy storage system of up to 300 MW of four-hour duration which, according to Santee Cooper's Reply Comments, would be sited at the Jefferies Generating Station, to leverage existing interconnection capacity and the Energy Communities tax credit bonus per the Inflation Reduction Act
- Consider all recommendations of the parties to this Docket when conducting future IRP and IRP Update filings and must specifically address the recommendations raised by ORS in this Docket as Santee Cooper prepares for the 2025 IRP Update

¹⁴ Note that this refers to a portfolio presented in the 2024 IRP Update but is similar in focus to the GHG 2024 Rule Portfolio discussed herein.

Recent Activities and Developments

The ORS recommendations regarding discussions with stakeholders include the following topics.

- Continue to monitor hydrogen availability and discuss forecast assumptions with IRP stakeholders in the stakeholder working group (“SWG”) prior to the 2026 comprehensive IRP
- Continue to discuss updates related to the Inflation Reduction Act and Infrastructure Investment and Jobs Act incentives
- Perform production cost model benchmarking studies of its EnCompass model in conjunction with its comprehensive IRPs and discuss the results in the SWG
- Discuss changes to its assumptions based on changes to the EPA 111 Rule in the SWG prior to the 2025 IRP Update
- Discuss its plans to prepare the next Market Potential Study in the SWG ahead of the Market Potential Study update in 2025

See Appendix H for a compliance table of requirements from Order 2024-171 and Order 2025-244 with a cross reference where this 2025 IRP Update provides an update on each requirement.

ENVIRONMENTAL REGULATORY DEVELOPMENTS

EPA GREENHOUSE GAS RULE

The U.S. Environmental Protection Agency (“EPA”) published a final rule (“EPA GHG 2024 Rule”) regulating the emission of GHGs from new gas-fired combustion turbines and existing coal, oil, and gas-fired steam generating units. Under this rule, coal units were to either cease operations before January 1, 2032, or choose one of two potential compliance pathways: (i) convert to co-fire with natural gas before January 1, 2030 (at 40 percent or greater co-firing) and cease all operations before January 1, 2039; or (ii) implement 90 percent carbon capture and sequestration (“CCS”) before January 1, 2032. Neither compliance pathway was expected to be viable for Santee Cooper; therefore, our analysis of the impacts of the EPA GHG 2024 Rule presented herein assumes ceasing operations of Cross by 2032.

New natural gas-fired combustion turbines and combined cycle electric generating units were to comply via one of three potential compliance pathways as follows.

- i. Base load units (i.e., units operating at greater than 40 percent annual capacity factor) were to meet CO₂ emission standards for highly efficient combined cycle generation upon startup and then must comply with 90 percent CCS before January 1, 2032.
- ii. Intermediate load units (i.e., units operating at annual capacity factors between 20 percent and 40 percent) were to meet CO₂ emission standards for highly efficient simple cycle generation (CO₂ emissions rate of less than 1,170 lbs/MWh).
- iii. Low load units (i.e., units operating at annual capacity factors less than 20 percent) were to utilize low-emitting fuels (CO₂ emission rate of less than 160 lbs/MMBtu).

Existing combustion turbines (whether operated as simple cycle or combined cycle units) are not addressed in the final EPA GHG 2024 Rule.

Recent Activities and Developments

While numerous legal challenges to the EPA GHG 2024 Rule were pursued by various states and other entities, the EPA, under the Trump Administration, undertook a wholesale review of the rule and on June 17, 2025, submitted the 2025 Draft EPA GHG Rule in the Federal Register. The proposed rule provides two pathways to repeal the GHG 2024 Rule.

- Pathway 1, Full Repeal, pursues the revocation of the “endangerment finding” of CO₂ for fossil fuel plants. This would fully repeal the GHG 2024 Rule and previous New Source Performance Standards for CO₂ pollution of fossil fuel plants.
- Pathway 2, Partial Repeal, (“Alternative Pathway”) removes CCS as a Best System of Emission Reduction (“BESR”) for fossil fuel plants, thereby removing CCS requirements for coal-fired and base load natural gas-fired generating units required in the EPA GHG 2024 Rule. In addition, the Alternative Pathway removes the requirement for coal-fired units to co-fire with natural gas and removes CO₂ emission standards for existing coal plants.

The proposed rule has been reviewed by the U.S. Office of Management and Budget (“OMB”), and the public comment period closed on August 7, 2025. A final rule is expected before the end of this year.

As mentioned above, Santee Cooper has incorporated an assessment of the potential impact of the GHG 2024 Rule in this 2025 IRP Update and will continue to monitor developments regarding GHG regulation to be incorporated into future IRPs.

EPA EFFLUENT LIMIT GUIDELINES RULE

The 2024 Effluent Limit Guideline (“ELG”) rule provides the following potential pathways for compliance.

- 1) Cease Operation Options
 - a. Cease operations by December 31, 2028, with no modifications required.
 - b. Cease operations by December 31, 2034, in addition to compliance with the 2020 ELG Best Available Technology (“BAT”) standards requiring physical chemical and biological treatment of Flue Gas Desulfurization (“FGD”) wastewater by December 31, 2025.
- 2) Continue Operation Options
 - a. Voluntary Incentive Program (“VIP”) Option – Comply by December 31, 2028, with the 2020 ELG VIP requiring physical chemical and membrane treatment for FGD wastewater and comply with 2024 ELG BAT standards requiring zero discharge of Bottom Ash Transport Water (“BATW”) by December 31, 2029.
 - b. BAT Option – Comply by December 31, 2029, with the 2024 ELG rule¹⁵ BAT standards requiring zero discharge of FGD (through installation of membrane treatment) and BATW in addition to compliance with the 2020 ELG BAT standards requiring physical chemical and biological treatment of FGD wastewater by December 31, 2025.

¹⁵ The rule retains most of 2020 ELG rule requirements and adds to the 40 CFR 423 Steam Electric ELG.

Recent Activities and Developments

Santee Cooper previously submitted notification of its intention to comply with option 1a for Winyah and option 2a for Cross. However, both plants are currently on paths that would limit compliance to option 1b or option 2b given that construction of physical chemical and biological treatment systems for FGD wastewater is in progress to meet the December 31, 2025, compliance deadline for the 2020 ELG Rule. The 2024 ELG rule requires notification to permitting authorities no later than December 31, 2025, if compliance will be achieved through any option other than BAT.

The EPA has undertaken making revisions to the 2024 ELG rule. Proposed changes were submitted to the OMB on August 11, 2025. The OMB has up to 90 days to review this rule before it is released for public comment. Santee Cooper will continue to monitor developments regarding ELG rule regulation to be incorporated into future IRPs.

CHANGES IN FEDERAL LAW

On July 4, 2025, HR1, known as the “One Big Beautiful Bill,” (“OB BB”) was signed into law. Among many other impacts, the OB BB significantly modifies the tax incentives introduced through the IRA. As a result of the OB BB, solar and wind resources are not eligible for tax credits unless they begin construction within 12 months of OB BB enactment or are placed into service before 2028. This requirement considerably compresses the timeline for tax credit eligibility (and therefore pricing) for future solar and wind resources. For other renewable and BESS resources, the OB BB alters the “applicable year” for purposes of the phase-out of tax credits to fix the applicable year at 2032 rather than having it dependent on the extent of U.S. electricity sector greenhouse gas emissions. This restatement of the applicable year implies that the phase-out of the tax credits for qualified facilities will effectively start for facilities that begin construction in 2034.

Additionally, in August 2025, the U.S. Treasury released revised guidance related to identifying the start of construction for eligibility for clean electricity tax credits, in most cases essentially removing the previous 5% expenditure test for safe harboring equipment in favor of requirements related to physical work at the project site or manufacturing of equipment. The guidance explicitly excludes such preliminary activities as planning, designing, and securing financing from the definition of “physical work of a significant nature.”

ACT 41 OF THE 2025 SOUTH CAROLINA LEGISLATIVE SESSION

The South Carolina Energy Security Act, Act No. 41 of 2025 (“Act 41”), became law on May 12, 2025. Among other things, Act 41 enacted important provisions concerning Santee Cooper’s potential joint build with DESC, as well as revisions to IRP requirements and considerations.

JOINT NGCC BUILD WITH DOMINION ENERGY SOUTH CAROLINA

Through Act 41, the General Assembly encouraged Santee Cooper and DESC to “jointly complete evaluations related to construction of a joint resource or joint resources to address energy needs and advance the economy and general welfare of the State.” S.C. Code Ann. § 58-33-195(A). The General Assembly also granted Santee Cooper “the power to jointly own, as tenants-in-common or through a limited liability company, with DESC, one or more natural gas-fired generation facilities, and related transmission facilities, to be constructed on a site at or near DESC’s former Canadys coal-fired generation station in Colleton County.” S.C. Code Ann. § 58-31-205(A).

Recent Activities and Developments

Without this power, a joint project with DESC would not be possible.¹⁶ With respect to a joint build of natural gas-fired generation resources with DESC at the Canadys site, the General Assembly mandated that Santee Cooper own a percentage of any plants and facilities at the Canadys site equal to the percentage of the money furnished or the value of property supplied by Santee Cooper for the acquisition and construction of the plants and facilities and that Santee Cooper own and control a like percentage of the electrical output from the plants and facilities. *Id.*

REVISIONS TO IRP REQUIREMENTS

Act 41 now requires that a Triennial IRP include a report addressing updates to the utility's transmission plan under the utility's open access transmission tariff pursuant to the federal jurisdictional planning process. S.C. Code Ann. § 58-37-40(B)(1)(j). The report must, when applicable, describe planned transmission improvements specific to the siting of new resources expected to impact interconnection constraints or other operations of the systems and describe how alternate transmission technologies were evaluated in developing solutions for identified transmission needs for interconnecting resources. *Id.* The report must also include how the utility evaluates transmission investments. S.C. Code Ann. § 58-37-40(B)(1)(j)(i)-(v).

With respect to the Commission's review of an IRP, Act 41 provides that it should focus on "decisions which the applicant must make in the near-term based on the triennial [IRP] under consideration at the time" and requires that the review "give due consideration as to the resources and actions necessary for the utility to fulfill compliance and reliability obligations pursuant to the Federal Energy Regulatory Commission, the North American Electric Reliability Corporation, the SERC Reliability Corporation, and the Nuclear Regulatory Commission requirements, as well as environmental requirements applicable to resources serving customers in this state." S.C. Code Ann. § 58-37-40(C)(2). Act 41 also modified two of the balancing factors that the Commission must consider in approving an IRP to ensure that economic development and industry retention are taken into account. S.C. Code Ann. § 58-37-40(C)(2)(a) "resource adequacy and capacity to serve anticipated peak electrical load, including the need for electric capacity and energy required to support economic development and industry retention in . . . [Santee Cooper]'s service territory and to meet applicable planning reserve margins" and (b) "consumer affordability and least reasonable cost considering the resources needed to support economic development and industry retention, and other risks and benefits."

Finally, Act 41 also makes clear that matters related to the scope and sufficiency of the utility's demand-side management plans and activities are not to be considered in IRP proceedings. *Id.*

¹⁶ The General Assembly also granted Santee Cooper "the power to plan, finance, acquire, own, operate, and maintain an interest in such plants and facilities necessary or incidental to the generation and transmission of electric power and the power to make plans and enter into such contracts as are necessary or convenient for the planning, financing, acquisition, construction, ownership, operation, and maintenance of such plants and facilities." S.C. Code Ann. § 58-31-205(A).

STAKEHOLDER ENGAGEMENT PROCESS

Santee Cooper is committed to undertaking a robust IRP process, which includes continually engaging stakeholders. In advance of the 2023 IRP, Santee Cooper facilitated a stakeholder process that informed the development of the IRP, and Santee Cooper has built on this foundation to improve and extend its stakeholder engagement for the 2024 IRP Update, 2025 IRP Update, and future IRPs.

Several different engagement opportunities are available to stakeholders with the goal of providing the best opportunity to receive desired information and the most efficient means for providing feedback to Santee Cooper. These efforts include the formation of a stakeholder working group, general notice meetings, and technical meetings requested by interested stakeholders. The engagement process supported the development of the 2024 IRP Update and the 2025 IRP Update and will continue after the 2025 IRP Update filing through the 2026 Triennial IRP and beyond.

Materials for the stakeholder engagement process can be found on the Santee Cooper IRP web page.¹⁷ Additionally, as documented by materials, Santee Cooper has engaged stakeholders on all items required in Commission Orders as outlined in section titled Commission Requirements from Order 2024-171 and Order 2025-244.

OVERVIEW OF THE IRP STAKEHOLDER WORKING GROUP

Santee Cooper has formed a working group of interested stakeholders (“Stakeholder Working Group”), including all intervenors from the 2023 IRP proceeding at Docket 2023-154-E. The Stakeholder Working Group has a set membership that provides a wide range of perspectives and expertise to inform the development of IRPs. The working group engages through virtual meetings facilitated by an independent firm, Vanry Associates, and meets approximately every three to four months. Meetings include technical presentations from Santee Cooper subject matter experts and consultants and presentations from working group members who desire to share their information and opinions.

Below is a list of the current Stakeholder Working Group membership.

- South Carolina Office of Regulatory Staff
- South Carolina Department of Consumer Affairs
- South Carolina Department of Natural Resources
- South Carolina Department of Environmental Services
- Central Electric Power Cooperative, Inc.
- Industrial Customer Association, J. Pollock
- Century Aluminum
- Nucor
- Messer
- Google
- South Carolina Association of Municipal Power Systems

¹⁷ <https://www.santeecooper.com/about/integrated-resource-plan/2026-irp-stakeholder-process/>

Stakeholder Engagement Process

- 3 Individual Members representing Residential and Commercial customers
- Carolina Clean Energy Business Association
- Conservation Voters of South Carolina
- South Carolina Coastal Conservation League
- South Carolina Energy Justice Coalition
- South Carolina Appleseed Legal Justice Center
- South Carolina Research Authority
- Southern Alliance for Clean Energy
- Southern Environmental Law Center
- Sierra Club
- Vote Solar

Since the filing of the 2024 IRP Update, Santee Cooper hosted five Stakeholder Working Group meetings on November 13, 2024, February 26, 2025, May 6, 2025, June 4, 2025, and September 10, 2025. Meetings covered topics such as coal retirement evaluations, transmission studies supporting IRPs, modeling methodologies, 2026 Reserve Margin and Effective Load Carrying Capability Study, 2026 Market Potential Studies, the 2025 Load Forecast, and assumptions and portfolios for the 2025 IRP Update. On the IRP web page and for each meeting to date, Santee Cooper posted the presentation and meeting summary and will continue to do so for future meetings.

OVERVIEW OF IRP GENERAL NOTICE MEETINGS

In addition to the Stakeholder Working Group, Santee Cooper periodically hosts meetings of a less technical nature intended to garner participation by a broader group of stakeholders (“General Notice Meetings”). A General Notice Meeting was held on April 3, 2025, and reflected a virtual format, also facilitated by Vanry Associates. The meeting followed a similar public notice and registration process utilized during the 2023 IRP stakeholder process and allowed any interested person the opportunity to register. The agenda covered Santee Cooper resource planning, the 2025 Load Forecast, the 2024 IRP Update results and Short-Term Action Plan, and Santee Cooper Demand Side Management programs. On the IRP web page and for each meeting to date, Santee Cooper posted the presentation, video recording, question and answer log, and meeting summary.

Santee Cooper will continue to host General Notice Meetings to support future IRPs including the 2026 Triennial IRP.

OVERVIEW OF IRP TECHNICAL MEETINGS

At the request of any stakeholder, Santee Cooper periodically hosts technical meetings on specific topics. The meetings provide the opportunity for in-depth conversations on highly technical topics. Since the filing of the 2024 IRP Update, Santee Cooper hosted the following technical meetings:

- April 10, 2025 – Coal Retirement Technical Meeting #1
- May 1, 2025 – 2026 Market Potential Studies Technical Meeting #1
- May 29, 2025 – Coal Retirement Technical Meeting #2
- September 10, 2025 – 2026 Market Potential Studies Technical Meeting #2

Stakeholder Engagement Process

For each technical meeting, Santee Cooper posted a summary on the Santee Cooper IRP web page and will continue to do so for future meetings.

KEY STAKEHOLDER INPUT

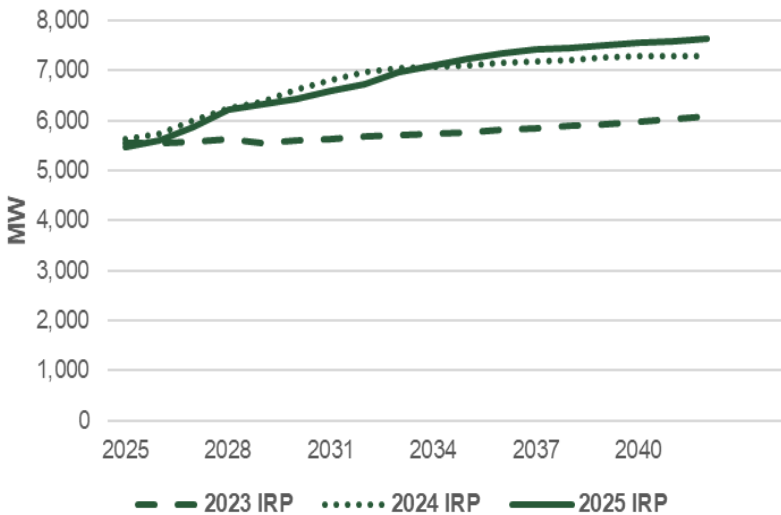
The stakeholder process is a cornerstone in producing a robust IRP and the feedback and lessons learned are invaluable to Santee Cooper's overall resource planning. Below are key items that stakeholders have helped Santee Cooper consider in our evaluations and have influenced Santee Cooper IRPs:

- Feedback on the overall stakeholder process including content for General Notice Meetings, additional members to include as part of the Stakeholder Working Group, the value of schedules of meetings for stakeholders to be able to plan and participate, and the sharing of data and results for IRP filings
- Feedback on load forecast methodology best practices
- Information on procuring and operating energy storage systems
- Input on assumptions for conventional and renewable resources
- Input on the portfolios and sensitivities considered for IRPs
- Methodologies for evaluating retirement of existing coal units and associated transmission studies
- Feedback on conducting Market Potential Studies in support of IRPs

ELECTRIC LOAD FORECAST OVERVIEW

With assistance and input from Central, other customers, and consultants, Santee Cooper annually prepares a 20-year load forecast. The load forecast used in the 2025 IRP Update was

Figure 7. Comparison of Winter Peak Forecasts

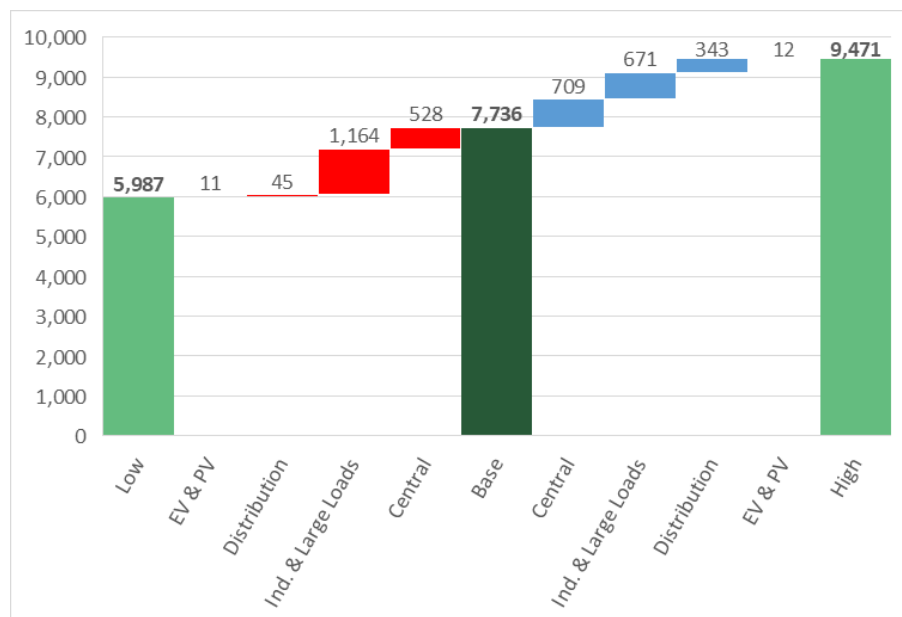


finalized in May 2025 (“2025 Load Forecast”). It was developed using the same approach as the load forecast used in the 2024 IRP Update, which included a post modeling adjustment for potential new large loads. These updates and the post-modeling adjustment result in a lower winter peak demand compared to the forecast used in the 2024 IRP Update by approximately 210 MW by 2030, but a 215 MW higher winter peak demand by 2040.

Aggregate demand in the winter is forecasted to grow from 5,468 MW in 2025 to 7,664 MW in 2044. Energy sales are also projected to grow at a higher rate, from 27,560 GWh to 43,910 GWh over the same period. This represents a 1.7 percent compound annual growth rate (“CAGR”) for coincident peak demand and a 2.4 percent CAGR for energy. This is an increase from the projected load requirements in the 2024 IRP Update, which reflected 1.4 percent CAGR for demand and 2.1 percent CAGR for energy. This is consistent with the statewide, regional, and national trend of increasing demand in the electric industry.

In addition to the base load forecast, Santee Cooper prepares load forecast scenarios to reflect the uncertainty inherent with forecasting over long periods of time and that are intended to incorporate a reasonable range of possible

Figure 6. High v. Low Case 2044 Winter Peaks



Electric Load Forecast Overview

outcomes. These scenarios consider uncertainty related to economic activity, demographic shifts, customer photovoltaic (“PV”) rooftop solar adoption, distributed battery storage, electric vehicle (“EV”) penetration, large load siting, and other uncertainties that could affect Santee Cooper’s energy and demand requirements, resulting in variations from the Base Case for 2044 winter peak demand shown in Figure 6. In the “High Case” scenario, assumptions were adjusted to reflect higher economic growth and other drivers of customer usage relative to the base scenario, resulting in forecasted winter demand growing to 9,471 MW and energy requirements growing to 54,897 GWh by 2044. In the “Low Case” scenario, in which the assumptions are adjusted to reflect lower economic growth and other drivers of customer usage relative to the base scenario, Santee Cooper forecasts winter peak demand to increase only to 5,987 MW and energy requirements to increase slightly to 31,403 GWh by 2044.

2025 LOAD FORECAST METHODS AND RESULTS

DIRECT-SERVED RESIDENTIAL AND COMMERCIAL CLASSES

In developing the 2025 Load Forecast, Santee Cooper used similar modeling techniques and assumption sources as used in the 2024 IRP Update and 2023 IRP for the direct-served residential and commercial classes. The residential forecast is developed using statistically-adjusted end use (“SAE”) modeling. To support this, models are developed to forecast the number of customers and average use per customer, which are then multiplied to determine total energy sales to the class. The commercial forecast is developed using similar linear forecasting techniques.

Santee Cooper provides power directly to approximately 216,000 residential and commercial customers located in Berkeley, Georgetown, and Horry counties. The population growth in these areas continues to exceed previously forecasted levels. The accelerated growth is partially offset by the continued decline in individual customer usage, which is a continuation of the historical trend for this customer class. Over the 20-year forecast, the number of residential customers is expected to increase by approximately 1.4 percent on average annually, while use per customer is expected to decline by approximately 0.2 percent on average per year, which represents a markedly slower rate of decline compared to the 0.5 percent average annual decrease in the 2024 load forecast. Nevertheless, this downward pressure on usage per customer offsets the increased number of customers, leading to an average annual residential energy increase of 1.2 percent.

Santee Cooper’s direct-served commercial class continues to experience lower usage needs over time as the energy needs from new customers is offset by lower energy needs from the existing customers. Santee Cooper expects commercial energy use to grow slightly, with a 20-year CAGR of 0.2 percent; however, recent energy needs have been lower, resulting in a lower commercial forecast in the early years. Commercial customers are forecasted to consume three percent less energy than the 2024 load forecast. For the High Case and Low Case scenarios, Santee Cooper used the 95th and 5th percentile of outcomes of the stochastically derived residential and commercial forecasts.

The EV forecast and the rooftop PV solar forecast results were similar to the results in the load forecast used in the 2024 IRP Update and 2023 IRP. Santee Cooper used the same High Case and Low Case methodology as the 2023 IRP to create the EV and PV forecasts.

Electric Load Forecast Overview

DIRECT-SERVED INDUSTRIAL CLASSES

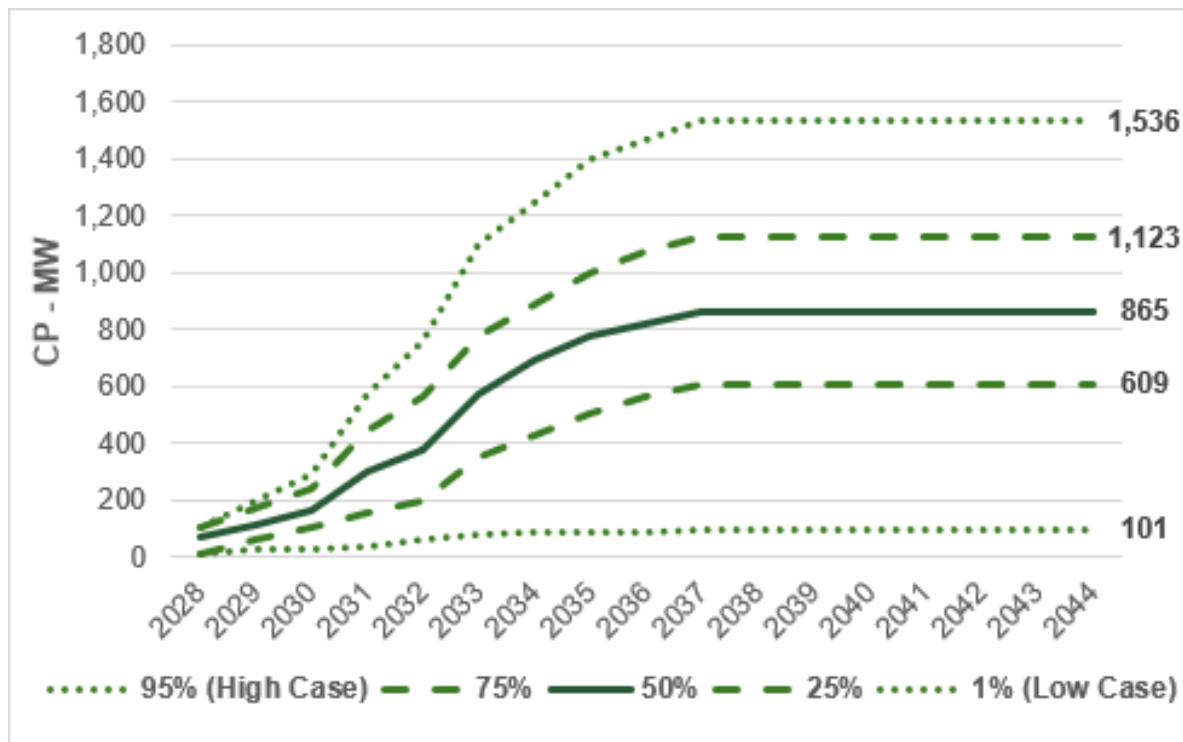
Santee Cooper's direct-served industrial class experienced the loss of two smaller customers and the consolidation of three others into a single customer, shrinking the customer count from 31 customers in the 2024 load forecast to 29 in the 2025 Load Forecast. These customer losses, as well as small changes in other existing customers, result in a reduction in forecasted industrial demand of 14 MW and 217 GWh compared to the 2024 IRP Update. The 2025 Load Forecast reflects changes in contracts and recent power consumption needs but does not reflect any broad economic trends.

CENTRAL

Central prepares its own load forecast and provides the results to Santee Cooper for inclusion in the Combined System load forecast. Central's methodology remains substantially consistent with the methodology used in the 2024 IRP Update and 2023 IRP. Central's load forecast reflects many of the same trends as Santee Cooper's direct-served residential forecast as rapid population growth is occurring throughout much of South Carolina. Central's load forecast also includes the addition of several new large customer loads. Due to customer growth, Central's energy requirements are expected to increase from 16,481 GWh in 2025 to 24,946 GWh in 2044. Central's demand requirements are expected to increase from 3,657 MW in 2025 to 4,968 MW in 2044. This represents CAGRs of 2.1 percent and 1.5 percent for energy and demand, respectively. Central used similar methods as Santee Cooper for creating its High Case and Low Case scenarios by varying inputs to the 90th and 10th percentiles, respectively.

POTENTIAL NEW LARGE LOAD CUSTOMERS

Since the development of the load forecast used in the 2023 IRP, Santee Cooper and Central member cooperatives have received a number of inquiries for potential service from industrial and other customers with substantial energy requirements. Santee Cooper included in its 2024 and 2025 Load Forecast a post modeling adjustment to anticipate and plan for new large loads in a risk adjusted approach. Accommodating uncertainty surrounding the probability a project will be sited in Santee Cooper or Central member cooperative service territory, the magnitude of such potential projects, and the timing and potential delays of such projects, Santee Cooper's stochastic approach evaluated 24 potential customers ranging in size from 2 MW to 500 MW. Like in the load forecast used in the 2024 IRP Update, after evaluating the results of 50,000 trials, Santee Cooper chose to include the 50th percentile outcome in its load forecast. Since the 2024 load forecast, several large potential loads signed contracts in Santee Cooper or Central member cooperative service territory, necessitating their removal from the stochastic model and their inclusion in the conventional load forecast. Thus, the stochastic results for the 2025 Load Forecast are lower than the forecast used in the 2024 IRP Update by about 220 MW; however, this is the result of load becoming more certain and thus being removed from the risk-adjusted post modeling adjustment and being included in the standard modeling.

Figure 8. Range of Projected Potential New Large Loads


For purposes of the High Case scenario, Santee Cooper used the 95th percentile outcome, which reflected 671 MW of additional new large loads by 2044 for a total of 1,536 MW of new large loads (on a coincident peak demand basis). For the Low Case scenario, Santee Cooper used the results near the minimum stochastic outcome (i.e., the 1st percentile), which represents 101 MW of new large loads. Furthermore, the Low Case includes a 400 MW reduction representing the loss of a very large, or several smaller industrial customers in Santee Cooper or Central member cooperative territory. These two adjustments net to a 200 MW reduction in industrial and new large loads. The Low Case results reflected a decrease of 1,164 MW compared to the Base Case.

SANTEE COOPER SYSTEM LOAD FORECAST

The 2025 Load Forecast Base Case reflects the mixed growth that has been occurring on the Combined System. Continued population growth and especially rapid economic development, as well as slowing declines in usage per customer throughout the state leads to increased energy sales from Santee Cooper's direct served customers and Central. Santee Cooper's 2043 winter CP demand is forecasted to be approximately 227 MW higher in the 2025 Load Forecast compared to the 2024 IRP with an average annual growth rate of 1.7 percent compared to an expected growth rate of 1.4 percent in the 2024 IRP Update. Table 5 presents the forecasted winter peak demand, and Table 6 presents annual energy sales for the system from 2025-2044, including transmission and distribution losses and excluding future demand side management and energy efficiency.

Electric Load Forecast Overview

Table 5. Forecasted System Peak Demand (Winter MW)

Year	Direct-Served Residential and Commercial ¹⁸	Direct-Served Industrial	Municipal & Off-System	Central	Potential Large Load	Total	High Case	Low Case
2025	952	737	123	3,657	0	5,470	5,526	5,022
2026	960	751	130	3,763	0	5,604	5,701	5,126
2027	968	746	119	4,033	0	5,865	6,005	5,357
2028	975	746	96	4,329	76	6,221	6,436	5,623
2029	983	746	36	4,442	116	6,323	6,635	5,667
2030	994	746	36	4,476	168	6,419	6,811	5,688
2031	1003	746	36	4,511	298	6,593	7,187	5,711
2032	1013	746	36	4,546	381	6,722	7,461	5,749
2033	1024	746	36	4,570	577	6,952	7,882	5,775
2034	1034	746	36	4,602	691	7,109	8,125	5,795
2035	1043	746	36	4,634	776	7,235	8,369	5,812
2036	1055	746	36	4,667	825	7,329	8,537	5,830
2037	1065	746	36	4,698	865	7,410	8,699	5,852
2038	1075	746	36	4,731	865	7,453	8,799	5,867
2039	1082	746	36	4,766	865	7,495	8,900	5,883
2040	1091	746	36	4,804	865	7,541	9,006	5,902
2041	1097	746	36	4,839	865	7,582	9,113	5,916
2042	1107	746	36	4,879	865	7,633	9,227	5,939
2043	1115	746	35	4,921	865	7,682	9,344	5,961
2044	1122	746	35	4,968	865	7,736	9,471	5,987

Table 6. Forecasted System Energy Sales (GWh)

Year	Direct-Served Residential and Commercial ¹⁹	Direct-Served Industrial	Municipal & Off-System	Central	Potential Large Load	Total	High Case	Low Case
2025	4,312	6,191	585	16,481	0	27,569	27,932	23,842
2026	4,359	6,389	597	18,029	0	29,374	29,895	25,513
2027	4,404	6,350	519	20,291	0	31,565	32,255	27,574
2028	4,448	6,350	348	22,074	617	33,837	34,980	29,194
2029	4,501	6,350	187	22,434	942	34,414	36,174	29,388
2030	4,562	6,350	176	22,567	1,392	35,048	37,299	29,480
2031	4,630	6,350	176	22,713	2,445	36,314	40,138	29,609
2032	4,691	6,350	176	22,916	3,180	37,313	42,147	29,908
2033	4,761	6,350	176	22,978	4,861	39,125	45,374	30,086
2034	4,824	6,350	176	23,122	5,841	40,313	47,119	30,213
2035	4,886	6,350	175	23,266	6,586	41,263	48,896	30,322

¹⁸ Gross of future demand side management/energy efficiency ("DSM/EE") related to Santee Cooper's retail customers but net of Central's DSM/EE.

¹⁹ Gross of future DSM/EE related to Santee Cooper's retail customers but net of Central's DSM/EE.

Electric Load Forecast Overview

Year	Direct-Served Residential and Commercial ¹⁹	Direct-Served Industrial	Municipal & Off-System	Central	Potential Large Load	Total	High Case	Low Case
2036	4,958	6,350	175	23,473	7,005	41,961	50,065	30,467
2037	5,023	6,350	175	23,566	7,331	42,445	51,043	30,596
2038	5,090	6,350	175	23,725	7,331	42,671	51,535	30,683
2039	5,145	6,350	175	23,895	7,331	42,896	52,038	30,774
2040	5,207	6,350	175	24,137	7,331	43,199	52,620	30,921
2041	5,263	6,350	174	24,260	7,331	43,379	53,094	30,978
2042	5,334	6,350	174	24,459	7,331	43,649	53,648	31,101
2043	5,390	6,350	174	24,666	7,331	43,911	54,214	31,224
2044	5,445	6,350	174	24,946	7,331	44,247	54,898	31,403

ASSESSMENT OF RESOURCE NEED

CURRENT RESOURCE OVERVIEW

Santee Cooper plans for firm power supply from its own generating capacity and firm power contracts to equal its firm load plus a reserve margin. Table 7 below details Santee Cooper's resource capacity classified by fuel type for both summer and winter peak power supply capability.

Table 7. Resource Capacity by Fuel Type (as of September 2025)

	Summer		Winter	
	(MW)	% of Total	(MW)	% of Total
Coal	3,465	60.1	3,480	59.4
Natural Gas and Oil	1,203	20.9	1,413	24.1
Long-Term Contracted Purchases	463	8.0	463	7.9
Nuclear	322	5.6	322	5.5
Owned Hydro Generation	142	2.5	142	2.4
Solar ⁽¹⁾	146	2.5	12	0.2
Landfill Methane Gas	<u>26</u>	<u>0.5</u>	<u>26</u>	<u>0.4</u>
Total	<u>5,767</u>	<u>100.0</u>	<u>5,858</u>	<u>100.0</u>

(1) Includes 5 MW of Santee Cooper's owned resources and 283 MW of purchased power on a nameplate basis. The capability shown in the table represents the effective load carrying capability of solar. See the section titled Solar Procurement for further information.

OWNED GENERATING FACILITIES

Information regarding Santee Cooper's generating facilities is provided in Table 8 below. See Appendix G for data for current generating facilities.

Table 8. Existing Owned Generating Facilities (as of September 2025)

Generating Facilities	Location	Initial Date in Service	Winter Net Dependable Capacity (MW)	Summer Net Dependable Capacity (MW)	Energy Source
Jefferies Hydroelectric Generating Station	Moncks Corner	1942	140	140	Hydro
Wilson Dam Generating Station	Lake Marion	1950	2	2	Hydro
MB Combustion Turbines Nos. 1 and 2	Myrtle Beach	1962	20	16	Oil/Gas
MB Combustion Turbines Nos. 3 and 4 ⁽¹⁾	Myrtle Beach	1972	20	19	Oil
MB Combustion Turbine No. 5	Myrtle Beach	1976	25	21	Oil
HH Combustion Turbine No. 1	Hilton Head Island	1973	20	16	Oil
HH Combustion Turbine No. 2	Hilton Head Island	1974	20	16	Oil
HH Combustion Turbine No. 3	Hilton Head Island	1979	60	52	Oil
Winyah Generating Station	Georgetown				
No. 1		1975	280	275	Coal
No. 2		1977	290	285	Coal
No. 3		1980	290	285	Coal
No. 4		1981	290	285	Coal
Summer Nuclear Unit 1 ^(2,3)	Jenkinsville	1983	322	322	Nuclear

Assessment of Resource Need

Generating Facilities	Location	Initial Date in Service	Winter Net Dependable Capacity (MW)	Summer Net Dependable Capacity (MW)	Energy Source
Cross Generating Station.....	Cross				
Unit 1.....		1995	585	580	Coal
Unit 2.....		1983	570	565	Coal
Unit 3.....		2007	580	585	Coal
Unit 4.....		2008	595	605	Coal
Horry Landfill Gas Station.....	Conway	2001	3	3	LMG ⁽⁴⁾
Lee County Landfill Gas Station.....	Bishopville	2005	11	11	LMG
Richland County Landfill Gas Station.....	Elgin	2006	8	8	LMG
Georgetown County Landfill Gas Station.....	Georgetown	2010	1	1	LMG
Berkeley County Landfill Gas Station.....	Moncks Corner	2011	3	3	LMG
Rainey Generating Station.....	Starr				
Unit 1.....		2002	520	460	Gas
Unit 2A.....		2002	180	146	Gas
Unit 2B.....		2002	180	146	Gas
Unit 3.....		2004	90	75	Gas
Unit 4.....		2004	90	75	Gas
Unit 5.....		2004	90	75	Gas
Cherokee.....	Gaffney	1998	98	86	Gas
Solar ⁽⁵⁾	Various	2006-19	5	5	Solar
Total Capability			<u>5,388</u>	<u>5,163</u>	

- (1) Myrtle Beach Combustion Turbine No. 4 is currently unavailable until further notice and is not included in the totals above.
(2) Virgil C. Summer Nuclear Generating Station Unit 1.
(3) Represents Santee Cooper's one-third ownership interest in Virgil C. Summer Nuclear Generating Station Unit 1.
(4) Landfill Methane Gas ("LMG").
(5) Capacity values here reflect the nameplate capacity.

PLANNED RETIREMENTS

For the 2025 IRP Update, Santee Cooper has assumed that Hilton Head and Myrtle Beach Combustion Turbines retire at year end 2033. The evaluations discussed herein reflect the retirement of Winyah by 2033 or 2035. Actual retirement dates could be impacted by changes in load projections and the availability of replacement resources.

POWER PURCHASE AGREEMENTS

Santee Cooper and Central have entered various PPAs for capacity and energy needs. Table 9, below, lists these existing PPAs.

Table 9. Power Purchase Agreements (as of September 2025)

Generating Facilities	Term End Date/Year	Nameplate Capacity (MW)	Winter Capacity (MW)	Energy Source
Long-term Contracts				
Domtar	2028	38	38	Biomass
EDF Renewables	2043	36	36	Biomass
Southeastern Power Administration (SEPA)	Indefinite	305	305	Hydro
St. Stephen Hydro ⁽¹⁾	2035	<u>84</u>	<u>84</u>	Hydro
Total Long-term Contracts		463	463	
Solar Purchases				
Solar Qualifying Facilities ^(2,3)	Various	287	12	Solar
Solar Power Purchase Agreements ^(3,4)	2026-2046	<u>200</u>	<u>8</u>	Solar
Total Solar		487	20	
Purchase Contracts				
Purchase 1	2024-2028	200	200	System Purch.
Purchase 2	2024-2028	50	50	Natural Gas
Purchase 3	2025-2028	150	150	Nuclear
Purchase 4	2024-2025 ⁽⁵⁾	<u>47</u>	<u>47</u>	Natural Gas
Total Purchases		<u>447</u>	<u>447</u>	
Total PPAs ⁽⁶⁾		<u>1,397</u>	<u>930</u>	

(1) Santee Cooper anticipates taking ownership of St. Stephens by 2035.

(2) Solar Qualifying Facilities contracts of varying lengths.

(3) Winter firm capacity based on the effective load carrying capability study discussed herein.

(4) Central and Santee Cooper are entitled to 72.5% and 27.5%, respectively, of the output of these PPAs.

(5) Santee Cooper is working to extend this purchase and has reflected its extension in the analyses presented herein.

(6) Totals may not add due to rounding.

PLANNED RESOURCE ADDITIONS

For the 2025 IRP Update, Santee Cooper included the upgrades at the Rainey Station, as described in the section titled, Upgrades at the Existing Rainey Generating Station, as available generation starting in 2028.

CENTRAL NON-SHARED RESOURCES

Central has executed three PPAs, described as follows, to meet its obligations under the Coordination Agreement to provide Non-Shared Resources (“NSR”) to supply a portion of the capabilities of the Proposed Shared Resource (“PSR”) identified in 2021.

- Base Load PPA – 150 MW from the Catawba Nuclear Station
- NGCC PPA – 230 MW from a 1x1 NGCC on the Southern Company (“SOCO”) system
- Peaking PPA – 292 MW from an NGCT resource, also on the SOCO system

Assessment of Resource Need

All three PPAs have terms that begin no later than 2029. In addition to the three PPAs above, Central has indicated it intends to execute long-term agreements for BESS resources totaling 150 MW, expected to be available beginning in 2029.

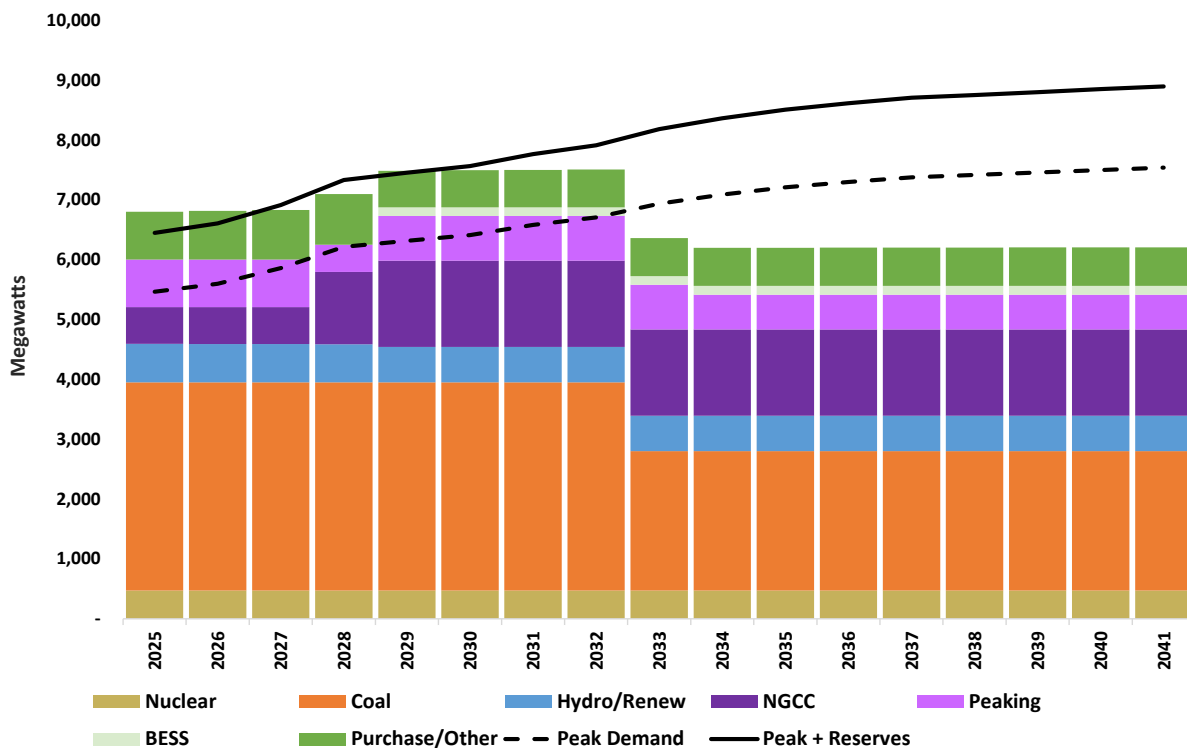
PLANNING RESERVE REQUIREMENTS

In conjunction with the 2023 IRP, Santee Cooper retained Astrapé Consulting, now PowerGEM, to perform a planning reserve margin (“PRM”) study. The PRM study concluded that Santee Cooper’s PRM requirement should reflect a winter requirement and that a winter reserve margin in the range of 17-18 percent was appropriate to ensure the target reliability levels. The study also concluded that a summer reserve margin requirement should be considered a secondary requirement and that a 14-16 percent range was appropriate. Accordingly, Santee Cooper has utilized minimum winter and summer PRM requirements for the 2025 IRP Update at 18 percent and 15 percent, respectively, consistent with the PRM requirements assumed for the 2023 IRP and 2024 IRP Update. Santee Cooper is currently working with PowerGEM to perform a PRM study for the 2026 Triennial IRP. This work is being conducted with stakeholder engagement.

SUPPLY AND DEMAND BALANCE

Combining projections from the 2025 Load Forecast, existing owned and contracted resource capabilities, assumed retirement of Winyah and the Hilton Head and Myrtle Beach Combustion Turbines, upgrades to Rainey Station, Central NSRs, and reserve requirements yields projections of the future Santee Cooper supply-demand balance as depicted in Figure 9.

Figure 9. Projected Supply v. Demand Balance (Base Case)



DEMAND-SIDE MANAGEMENT OVERVIEW

SANTEE COOPER DIRECT-SERVE PROGRAMS

As outlined in Figure 14 of the 2023 IRP, Santee Cooper has begun implementation of new DSM programs based on DSM portfolio planning completed in 2024. In close collaboration with third-party consultant Resource Innovations and our dedicated internal program managers and DSM planners, Santee Cooper developed a new recommended portfolio of DSM programs. This portfolio is based on the Energy Efficiency and Demand Response Market Potential Studies (“MPS”) used in the 2023 IRP. The aim of this effort was to leverage the MPS results applied in IRP scenarios and build on Santee Cooper’s existing DSM programs.

Santee Cooper’s planning process built upon the successes and lessons learned from past DSM programs offered by Santee Cooper. We have also considered the challenges in the current marketplace and how we can expand to target additional customers who have not fully utilized Santee Cooper’s historic DSM offerings. Santee Cooper, with Resource Innovations’ assistance, examined the end-use measures and technologies identified in the MPS to determine a recommended portfolio. This portfolio allows Santee Cooper to bundle measures into programs that can be effectively offered to its direct-serve customers. A key assumption used throughout this program planning process was that the proposed program portfolio, including startup costs of the programs, would be cost-effective as measured by the Utility Cost Test (“UCT”).

The proposed portfolio of DSM programs features enhancements to existing offerings as well as the introduction of new programs. As part of this updated portfolio, Santee Cooper launched Marketplace in February 2025. Marketplace is an online energy-efficiency store where residential customers can purchase energy-saving products delivered directly to their homes. In April 2025, Santee Cooper introduced the Power Partners program, a community-based initiative focused on bringing energy-saving solutions to neighborhoods with the greatest opportunity for impact. The program includes in-home energy assessments and direct installation of energy-efficient equipment at no cost to participating customers. Additionally, Santee Cooper is in the process of procuring a vendor for a new smart thermostat demand response offering.

Santee Cooper will continue to follow its DSM portfolio plan while also taking into account findings from the new 2025/2026 market potential studies and making adjustments as needed based on emerging data and insights. For purposes of this 2025 IRP Update, Santee Cooper has continued to utilize the Medium Case from the MPS.

Looking ahead, Santee Cooper has begun the stakeholder process for the update to the MPS with final versions of these documents expected to be completed in early 2026. The results of these studies will be incorporated into the 2026 Triennial IRP and will continue to shape Santee Cooper’s future strategies and programs.

CENTRAL PROGRAMS

Assumptions for Central’s incremental DSM program impacts are consistent with those utilized for the 2023 IRP.

TRANSMISSION PLANNING

Santee Cooper continually performs assessments of transmission system performance in accordance with NERC Reliability Standards associated with transmission planning under many different future scenarios. Santee Cooper maintains transmission modeling information needed to perform the assessments referenced above with updates for planned transmission and generation facility additions and modifications, load forecast, and other system topology changes. Santee Cooper coordinates with neighboring utilities to update adjacent system models to allow for coordination of local plans and to assess potential impacts on other utilities. In 2024, Santee Cooper participated in regional reliability studies coordinated by SERC, the Eastern Interconnection Planning Collaborative ("EIPC"), and the South Carolina Regional Transmission Planning ("SCRTP") FERC Order 1000 planning region. In 2024, Santee Cooper and Dominion Energy South Carolina also began participating in Southeastern Regional Transmission Planning ("SERTP") activities and will be joining the SERTP planning region concurrent with compliance filings associated with FERC Order 1920 and will retire the SCRTP at that time.

Santee Cooper invested approximately \$155 million in capital additions and improvements to its transmission system in 2024. Any project that involved the reconstruction of existing transmission line facilities also had existing wood structures replaced with steel. This increases the reliability and resiliency of these facilities under normal and severe weather conditions while also decreasing the overall cost of operation and maintenance. Santee Cooper has several major transmission projects under way or otherwise expected to be completed within the next five years. These projects, along with other major planned projects, are discussed in Appendix B.

MAJOR MODELING ASSUMPTIONS

This section details major modeling assumptions that underpin the 2025 IRP Update. These assumptions were developed based on industry best practices and in consultation with stakeholders.

FINANCING AND ECONOMIC ASSUMPTIONS

The 2025 IRP Update reflects assumptions regarding future general cost escalation and Santee Cooper cost of debt shown in Table 10 below. The NPV cost results shown herein reflect a discount rate set equal to Santee Cooper's assumed cost of debt.

Table 10. Financial Assumptions

General Inflation	2.6%
Santee Cooper Cost of Debt	5.0%
Weighted Cost of Short-term Debt	5.0%
Present Value Discount Rate	5.0%

The assumed long-term general inflation rate is based on a historical average of the annual change in the consumer price index, published by the U.S. Bureau of Labor Statistics, over 2005-2024, consistent with Santee Cooper's company-wide inflation assumption. Escalation of certain nominal costs, including capital costs of generation facilities, reflect the combination of specific assumed real escalation rates and the general inflation rate. Fixed and variable operation and maintenance costs reflect the general inflation rate, unless otherwise noted.

The assumed cost of Santee Cooper long- and short-term debt to finance capital equipment, such as generation and transmission facilities, was determined in consultation with Santee Cooper's financial adviser, Public Financial Management™ ("PFM").

SYSTEM ENERGY AND PEAK DEMAND

Forecasts of monthly energy requirements and peak demand for the Santee Cooper system through 2044 were developed as discussed in the section titled Electric Load Forecast Overview. These values were taken on a gross of planned and potential new DSM/EE and DSM/DR basis.

Future annual assumed DSM/EE impacts for Santee Cooper's Distribution system were taken from results of the EE MPS, referenced in the section titled Demand-side Management Overview and are modeled as load reductions. Monthly impacts were derived from annual and seasonal impacts based on the underlying load shape of the relevant segment of Santee Cooper's load. Assumptions regarding future DSM/EE impacts for Central were consistent with those assumed for the 2023 IRP.

Major Modeling Assumptions

Table 11 provides the resulting projected impacts of future DSM/EE program activity on annual energy requirements and winter peak demand for the Combined System, including losses, over the first 20 years of the Study Period. Projections beyond 2044 generally reflect a simple linear extrapolation.

Table 11. Combined System Demand-side Management/EE Impacts with Losses

Year	Energy (GWh)	Winter Peak Demand (MW)
2025	63	9
2026	90	13
2027	119	17
2028	149	21
2029	179	25
2030	209	30
2031	237	34
2032	266	38
2033	292	42
2034	318	46
2035	342	49
2036	366	53
2037	389	56
2038	409	59
2039	433	62
2040	456	65
2041	479	68
2042	502	71
2043	525	75
2044	548	78

System hourly load profiles were based on 2019 data.²⁰

FUEL FORECASTS

Forecasted fossil fuel prices throughout the Study Period generally reflect forecasts taken from the Energy Information Administration's ("EIA") 2025 Annual Energy Outlook ("AEO") Reference Case, with prices for Henry Hub natural gas through 2029 based on forward prices. To study a reasonable range of uncertainty regarding future fuel prices, Low and High Cases were derived from this average adjusted by the relative percentage differences between the AEO Reference Case and the High and Low Oil and Gas Supply cases, respectively.

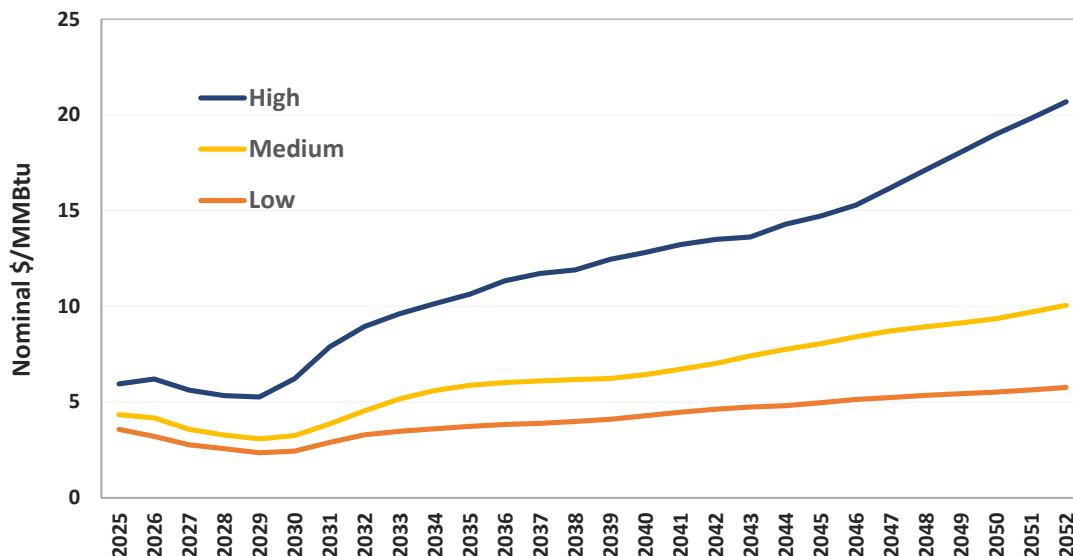
²⁰ For this purpose, hourly load profiles in September 2019 were adjusted to remove the estimated effects of Hurricane Dorian, which impacted South Carolina over September 4th through 6th.

Major Modeling Assumptions

The High Oil and Gas Supply Case reflects more accessible oil and natural gas resources and lower extraction costs than the Reference Case, while the Low Oil and Gas Supply Case reflects less accessible resources and higher extraction costs.

Forecasts of Henry Hub natural gas prices are shown in Figure 10 below.

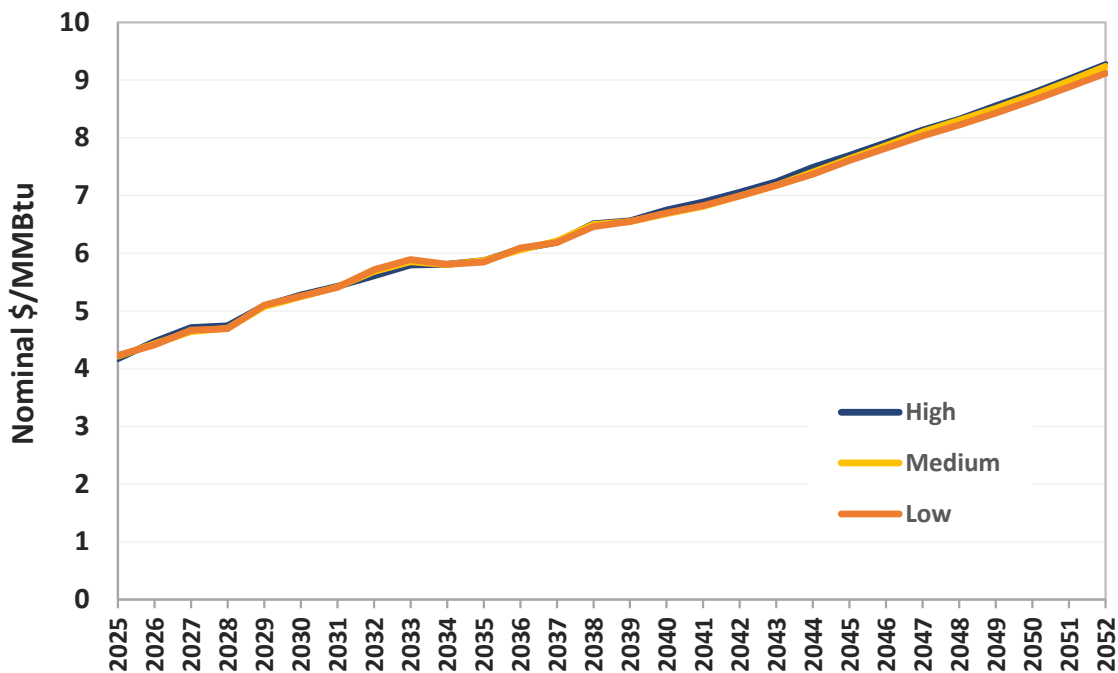
Figure 10. Natural Gas Price Forecasts



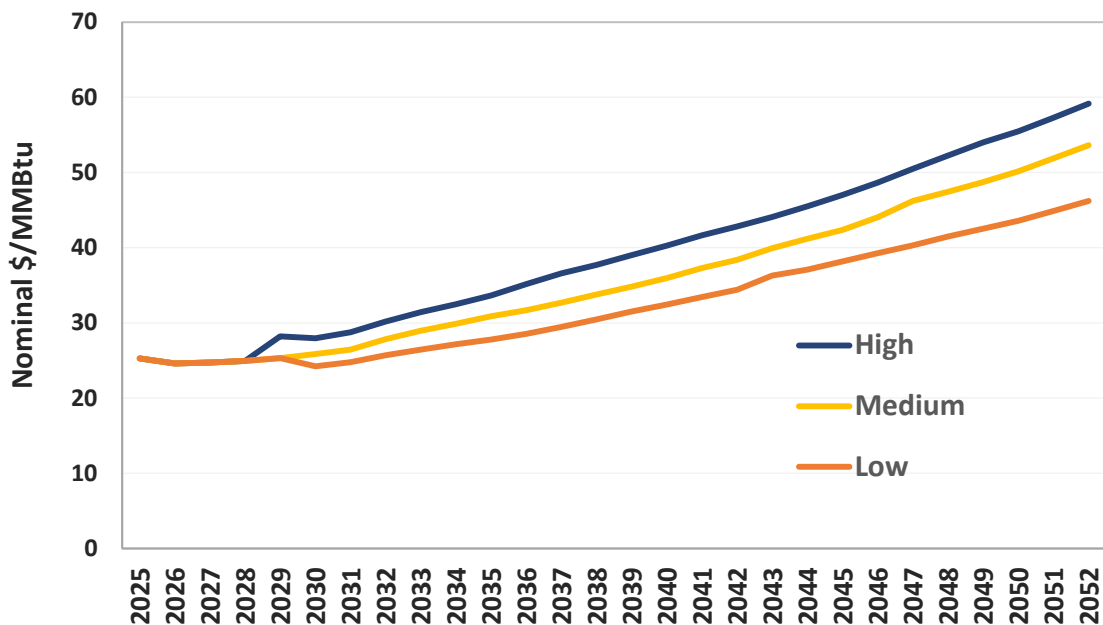
Forecasted delivered natural gas prices used in the EnCompass simulations described herein include both Henry Hub commodity prices and costs to deliver the natural gas to each generating unit. Delivered costs reflect forecasted basis differentials from S&P Platts, and representative delivery costs, including charges for pipeline transportation.

For prospective new natural gas-fired generation, Santee Cooper has assumed prices for new firm natural gas supply based on information provided by natural gas system operators for delivery of natural gas to and within South Carolina.

Forecasted delivered coal prices are based on basin price forecasts from the 2025 AEO for Central Appalachian, Northern Appalachian, and Illinois basins and rail delivery costs to South Carolina based on Santee Cooper estimates and are shown in Figure 11 below. As the High and Low Cases were drawn from the relative differences in these projections in the AEO High and Low Oil and Gas Supply Cases, there is very little variation in coal supply costs among these cases. That is not to suggest that coal costs are not uncertain, but such uncertainty is not correlated with the factors that drive the Oil and Gas Supply Cases, as modeled by the EIA.

Figure 11. Coal Price Forecasts

Forecasted fuel oil prices, shown in Figure 12 below, were based on forecasts from the 2025 AEO, with High and Low sensitivity cases developed as discussed above, and were adjusted for regional delivery costs based on information developed by Santee Cooper.

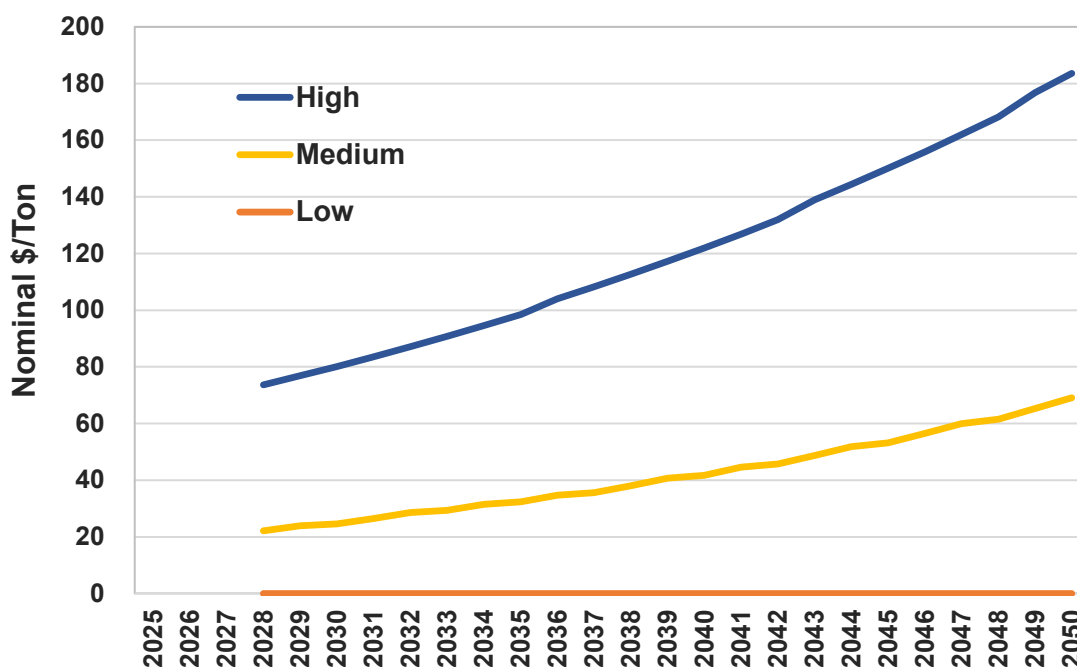
Figure 12. Distillate Fuel Oil Price Forecasts

CARBON EMISSIONS PRICING

While CO₂ is not currently regulated by the federal government nor by the State of South Carolina, to assess the impact on Santee Cooper's future build plans and the sensitivity of power costs under various build plans to such regulation, Santee Cooper has developed three scenarios regarding the cost of CO₂ emissions over the coming decades, as described below and illustrated in Figure 13 below.

- **Low Case** – Reflecting no regulation or cost of CO₂ emissions over the Study Period
- **Medium Case** – Reflecting a CO₂ emissions price starting in 2028 at \$22/ton and escalating at 5.3 percent per year
- **High Case** – Reflecting a CO₂ emissions price starting in 2028 at \$74/ton and escalating at 4.2 percent per year

Figure 13. CO₂ Emissions Price Forecasts



These scenarios and the basis of assumptions are consistent with those utilized and described in the 2023 IRP. The 2025 IRP Update includes an analysis of a prospective portfolio under the EPA GHG Rule, as well as sensitivities for the cost of CO₂ emissions reflected above.

EXISTING RESOURCE OPERATING COSTS AND CHARACTERISTICS

Variable non-fuel operating costs and characteristics of Santee Cooper's existing resources modeled in EnCompass are based on historical data and developed jointly by Santee Cooper staff and consultants. Variable non-fuel operating costs reflect the cost of consumables and allowances for start costs and impacts on long-term maintenance costs and are generally assumed to escalate with general inflation.

Major Modeling Assumptions

Fixed operation and maintenance costs and capital costs for existing resources are not included in the portfolio costs, except for costs associated with coal-fired resources that are avoided in portfolios in which such resources are assumed to be retired or are incurred for portfolios in which such resources are evaluated for continued operation beyond the retirement date reflected in other portfolios. Such costs are developed based on historical data, anticipated capital expenses, and reasonable estimates of long-term requirements to maintain such units, adjusted for inflation.

RESOURCE OPTION ASSUMPTIONS

Updated assumptions regarding capital and operating costs and characteristics for future resource options are discussed in the subsections below.

FOSSIL-FUELED AND NUCLEAR ASSETS

Base year capital costs, operating costs, operating characteristics, and capital cost escalation for NGCC, NGCT, aeroderivative turbines, and small modular reactor (“SMR”) resource options were based on engineering estimates developed by Sargent & Lundy (“S&L”). Additionally, Santee Cooper reviewed capital cost estimates for the Joint NGCC that were prepared by DESC for use in their IRP 2025 Update. Based on this review, Santee Cooper increased by 10% the estimates of overnight facility cost prepared by S&L to provide general consistency with recent DESC estimates for the Joint NGCC and to provide a conservative estimate of capital costs when modeling new resource options.

Capital costs, fixed and variable operating costs, and heat rates of the fossil-fueled and nuclear resources available as options in the resource optimization analyses are shown in Table 12 below. All costs are shown in 2025 dollars. Capacity ratings and per-unit capital costs reflect average ambient conditions; hence, the capacity ratings will not exactly match other values reported herein on a winter rating basis. Capital costs include land and transmission and natural gas pipeline interconnection. Fixed O&M costs exclude property taxes (or payments in lieu of taxes) and insurance.

Table 12. Fossil-Fueled and Nuclear Resource Option Parameters

Type	Technology	Net Capacity (MW; Avg. Ambient)	Base Year Capital Costs (\$/kW)	Fixed O&M Cost (\$/kW-yr.)	Variable O&M Cost (\$/MWh)	Full Load Heat Rate (Btu/kWh)	Year First Available
Combined Cycle	(1) 1x1; H-class	652	1,783	17.91	2.57	6,186	2033
	(2) 1x1; H-class	1,303	1,639	13.81	2.33	6,186	2033
	(3) 1x1; H-class (Joint w/ DESC)	1,955	1,516	11.93	2.20	6,186	2032
Combustion Turbine	H-class	442	1,330	7.02	1.15	9,096	2033
	F-class	236	1,539	11.70	1.14	10,104	2033

Major Modeling Assumptions

Type	Technology	Net Capacity (MW; Avg. Ambient)	Base Year Capital Costs (\$/kW)	Fixed O&M Cost (\$/kW-yr.)	Variable O&M Cost (\$/MWh)	Full Load Heat Rate (Btu/kWh)	Year First Available
Aeroderivative Turbine	(2) LM6000	108	2,528	16.80	7.99	9,528	2028
RICE²¹	6 x 18V50DF	106	2,557	23.40	7.28	8,487	2028
Nuclear	Small Modular Nuclear Reactors	300	11,565	177.09	3.11	10,035	2040

Based on S&L projections, capital costs for combined cycle units are assumed to decline in real dollars by approximately 0.8 percent per year, while capital costs for turbines and RICE are assumed to decline in real dollars by approximately 0.9 percent per year. Hence, in nominal dollars, given the underlying general inflation assumption utilized in the 2025 IRP Update, capital costs for combined cycle and combustion turbine/RICE units are assumed to increase at approximately 1.8 and 1.7 percent per year, respectively. Fixed and variable O&M are assumed to escalate at the rate of general inflation, or 2.6 percent per year.

RENEWABLE AND ENERGY STORAGE RESOURCES

Utility-scale solar, wind (both onshore and offshore), and BESS resources have been reflected in EnCompass as PPA options based on estimates of the levelized cost of energy (“LCOE”), or in the case of BESS resources, levelized cost of capacity (“LCOC”), over their useful lives. Santee Cooper assumes, for purposes of the 2025 IRP Update, that renewable and BESS resources will be implemented through PPAs. However, Santee Cooper and Central will determine the implementation method that best meets their needs over time.

The 2025 IRP Update reflects the same annual planning limits on solar and onshore wind resource installations as assumed for the 2023 IRP. It should be noted that these limits are imposed for planning purposes, and Santee Cooper may work to acquire more or less renewable resources in any year. We will continue to evaluate the annual limits on solar and wind resources and will update the assumptions if warranted.

Capital and operating cost assumptions for solar, wind, and BESS resources are based on data provided by S&L. The S&L dataset reflects capital and operating costs for wind resources that have been adjusted to reflect higher costs for Southeast projects relative to those in more prevalent wind resource regions.

The resulting capital and operating costs (in 2025 dollars and reflecting 2025 online dates assumed for the 2025 IRP Update are provided in Table 13 below.²²

²¹ Reciprocating internal combustion engine (“RICE”) resources

²² As these technologies typically reflect declining real capital cost curves for future installations, the capital cost values (in constant dollars) for future install years will vary from these values.

Table 13. Renewable Resource Option Parameters

Technology	Capital Cost (\$/kW)	Fixed O&M (\$/kW-yr.)	Operating Life (Years)	First Year Available
Solar (PV)	1,619	23.41	30	2028
BESS (4-Hour)	1,716	42.90	20	2027
BESS (8-Hour)	4,020	100.50	20	2027
On-shore Wind	2,106	43.57	30	2034
Off-shore Wind	6,938	92.07	30	2040

New BESS resources are assumed to be available beginning January 2027, while new solar resources are assumed available beginning January 2028. On-shore wind resources are assumed to be available beginning January 2034 to allow for the gradual testing and development of such resources in the state. Due to the development and permitting timeframe for off-shore wind resources, such resources are assumed to be available beginning 2040.

Financing costs are based on the 2023 ATB, reflecting the cost structure of a taxable developer, with some adjustments to assumed after-tax return on equity, to maintain consistency with broader interest rate trends, and financing structure. Table 14 below provides the debt interest rates and approximate after-tax return on equity values that underpin renewable and BESS PPA pricing.

Table 14. Renewable Resource Debt Interest and After-tax Return on Equity²³ Rates

Technology	Interest Rates
Debt Interest Rate	7.0%
Return on Equity:	
Solar	10.8%
Batteries	10.8%
Onshore Wind	12.0%
Offshore Wind	13.0%

As a result of the passage of the OBBB in July 2025, tax credits for solar and wind resources under the Inflation Reduction Act of 2022 (“IRA”) are likely to be largely unavailable for projects with online dates later than 2030. For BESS resources, the OBBB fixes the “applicable year” for determination of the phase-out of tax credits under the IRA to 2032, resulting in phase-out of the investment tax credit (“ITC”) beginning 2034.

²³ Assumed after-tax return on equity rates vary slightly across online years.

Major Modeling Assumptions

Accordingly, projected costs for solar and wind resources modeled for selection by EnCompass in the 2025 IRP Update assume tax credits are not available. Projected costs for BESS resources reflect the impact of the ITC with a phase-out beginning 2036 (to allow for a two-year construction period). Assumed PPA prices reflect that 90 percent of BESS facility costs will be eligible for the ITC and that tax credits are sold for 90 percent of their value.²⁴

Figure 14 provides resulting projections of the LCOE for solar, onshore wind, and offshore wind resources. Differences in escalation are driven primarily by differing projections of capital costs provided by S&L.

Figure 14. Levelized Cost of Energy of Renewable Resources by Install Year

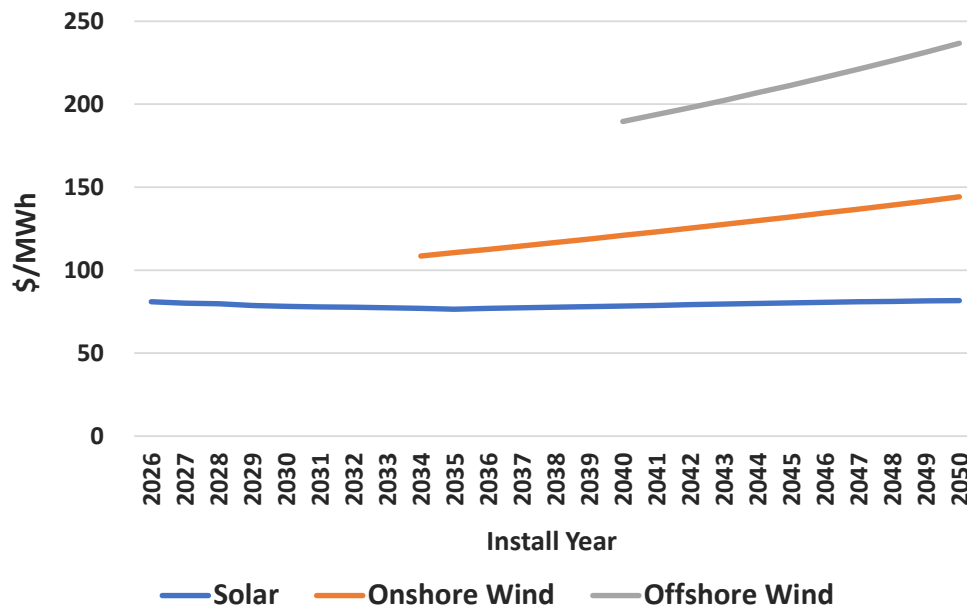
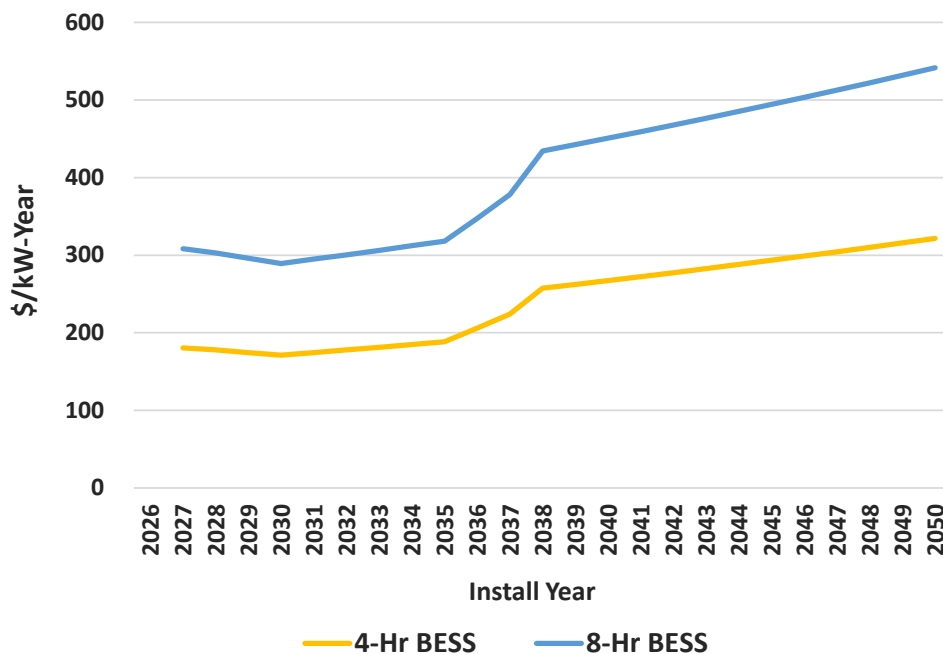


Figure 15 provides resulting projections of the LCOC for 4- and 8-hour duration BESS resources, reflecting the assumed phase-out of investment tax credits resulting from the OBBB.

²⁴ Industry estimates typically reflect that 85-90 percent of facility costs will be eligible and that tax credit sales are discounted by 5-15 percent versus the tax credit value (i.e., at 85-95 cents on the dollar).

Figure 15. Levelized Cost of Capacity of Battery Resources by Install Year



Solar production profiles were developed from NREL’s System Advisor Model (“SAM”), utilizing 2019 conditions, to represent a diversified aggregate profile based on several representative locations.

An onshore wind production profile was also developed from NREL’s SAM but is represented as a typical 24-hour profile by month, as the latest year of available weather conditions for use in SAM was 2014. Offshore wind production profiles were provided by an offshore wind developer, representative of 2019 weather conditions as a typical 24-hour profile by month.

EFFECTIVE LOAD CARRYING CAPABILITY

ELCC represents the amount of dependable capacity from a given resource that can be counted on for resource adequacy purposes. The ELCC is determined by finding the amount of additional load that can be served by a given resource without adversely affecting system reliability as compared to a system without the resource. ELCC is represented as a percentage of nameplate capacity and is calculated by dividing the amount of additional peak load that can be served with the resource in place by the nameplate capacity of the additional resource. For the 2025 IRP Update, Santee Cooper utilized the same ELCC assumptions as the 2023 IRP.

Santee Cooper is working with PowerGEM to update the ELCC results including scenarios with higher penetrations of renewable resources. This work is being done with stakeholder input and is expected to be complete for inclusion in the 2026 Triennial IRP.

RENEWABLE AND STORAGE RESOURCE INTEGRATION

Renewable resources are valued for their ability to produce energy with no emissions and low to no fuel cost. Some renewable resources (e.g., hydro resources) are dispatchable and can be called upon to supply capacity and energy. Other renewable resources (e.g., wind and solar facilities without storage) are inherently intermittent. While they often supply significant energy into the system, because of the intermittent nature of their production, solar and wind generation resources tend to increase the level of operating reserves and ramping capability required for reliable electric system operation. These reserves support the system capacity and operational needs given the variability of solar and wind production.

Incremental integration costs for two representative periods and resource mix scenarios assumed for the 2025 IRP Update are the same as assumed for the 2023 IRP. Santee Cooper has been and will continue to work with stakeholders to evaluate methodologies for integration costs for renewable resources, consistent with the ORS recommendation from the 2023 IRP proceeding and Commission Order 2024-171. Any changes to methodology will be reflected in the 2026 Triennial IRP.

TRANSMISSION SYSTEM REQUIREMENTS

Significant investment in the transmission system may be required to retire existing coal resources that support the Combined System and to integrate resource additions considered in the 2024 IRP Update, particularly if replacement generation of similar magnitude and with similar capabilities is not located at or near the sites of retiring coal facilities. Transmission upgrade requirements vary depending on the specific coal facility being retired and the type and location of replacement generation that is added in each potential resource plan. Separate estimates of required transmission investments are included in the NPV revenue requirements for each of the resource portfolios discussed in the next section. These cost estimates, in 2025 dollars, range from approximately \$291 million for portfolios that do not retire the Cross Generating Station to \$1.9 billion for the GHG 2024 Rule Portfolio, which requires the retirement of Cross by 2032. These transmission cost estimates should be viewed as high level planning estimates that could vary considerably, depending on the precise location and characteristics of resource additions, the amount of new resources being connected at each location, escalation in labor and material costs, changes in interest rates, and siting and permitting requirements.

OPERATING RESERVES

For the purposes of the 2025 IRP Update, the operating reserves modeled in EnCompass include regulating reserves, contingency reserves spinning (spinning reserves), and contingency reserves supplemental (non-spinning reserves). As a member of the Carolinas Reserve Sharing Group

Major Modeling Assumptions

(“CRSG”),²⁵ Santee Cooper is required to carry 235 MW of contingency reserves through 2027, growing to 295 MWs by 2030.

Table 15 below provides the operating reserves modeled half as spinning and half as non-spinning reserves for the IRP analysis and collectively referred to as the Base Ancillary Services Requirements.

Table 15. Base Ancillary Services Requirements

Time Frame	Total Contingency Reserves (MW)	Spinning Reserves (MW)	Non-Spinning Reserves (MW)
2025-2027	235	117.5	117.5
2028	255	127.5	127.5
2029	275	137.5	137.5
2030 & Beyond	295	147.5	147.5

²⁵ CRSB includes Santee Cooper, Duke Energy Carolina, Duke Energy Progress, and Dominion Energy South Carolina. Each participating member is required to carry its load ratio share of the total contingency reserve requirement for the combined systems based on the previous year’s peak load.

RESOURCE PLAN EVALUATION

For the 2025 IRP Update, Santee Cooper has evaluated how changes in assumptions impact the resource recommendations from the 2023 Preferred Portfolio. The key changes in planning assumptions made for the 2025 IRP Update are identified below.

- Much higher load growth than forecasted in the 2023 IRP, requiring additional resource capacity beyond the levels contemplated in the 2023 IRP.
- Consistent with the timeframe in which the Joint NGCC is expected to be online, the retirement of Winyah, which had been set to 2031 in the 2023 IRP, has been delayed to 2033 at the earliest in the updated portfolios studied herein.
- Changes in federal law have led to earlier termination of tax credits for renewable resources available through the IRA, resulting in much higher costs for such resources, particularly solar and wind resources, than expected in the 2023 IRP.
- The EPA GHG 2024 Rule, to the extent not stayed or overturned, would force considerable changes to Santee Cooper's resource mix including the retirement of its entire coal fleet early in the next decade and development of large amounts of replacement capacity.
- As discussed in the Fuel Forecasts section above, projections of fuel prices have been updated based on the most recent projections available from the EIA's 2025 AEO Reference Case.
- As discussed in the Resource Option Assumptions section above, capital and operating costs have been updated based on engineering estimates provided by S&L.

Santee Cooper evaluated impacts to the 2023 Preferred Portfolio due to the updated planning assumptions discussed above by re-optimizing and determining the need for additional resources beyond specific, key resources identified in the 2023 IRP. Results of the re-optimized build are presented herein and compared to the 2023 Preferred Portfolio.

Santee Cooper also evaluated comprehensive optimizations utilizing the updated planning assumptions for four portfolios with differing build and operating constraints. Resulting resource builds and portfolio costs and other metrics are compared using an approach similar to the 2023 IRP.

OVERVIEW OF METHODOLOGY

For the 2025 IRP Update, Santee Cooper has utilized the EnCompass power systems dispatch and optimization simulation software system from Yes Energy (formerly Anchor Power Solutions).

REFERENCE CASE

For purposes of resource optimization simulation, a Reference Case was developed reflecting assumptions for key variables described in Table 16 below.

Table 16. Reference Case Definition

Key Uncertainty	Reference Case Assumption	Assumption Basis
Fuel Prices	Medium Case	2025 AEO Reference Case
CO₂ Emissions Cost	Low Case	No regulation of CO ₂ (CO ₂ emissions cost of \$0/ton)
Load Forecast	Medium Case	2025 Load Forecast Base Case, as discussed in section titled Electric Load Forecast Overview
Demand-side Management	Medium Case	As discussed in section titled Demand-side Management Overview
Resource Option Capital and Fixed costs	As described in the section above titled Resource Option Assumptions	

The optimization analysis, which reflects certain simplifications in the portfolio dispatch as described in the 2023 IRP, was used to identify the optimum portfolio of resources to be analyzed further as described below.

PORTFOLIO COST ANALYSES

To project variable portfolio production costs (e.g., fuel costs, renewable energy costs, emissions costs, etc.), optimized resource plans for each portfolio were simulated in more detail using an hourly 8760 chronological representation, resource operating limitations (minimum up/down times, ramp rates, etc.), and resource commitment. The simulation incorporates the impacts of intermittency of renewable resources and operating limitations of dispatchable resources. Accordingly, it was not necessary to add allowances for renewable integration costs as was done in the optimization analyses.

Incremental fixed production and transmission costs and DSM program costs were then estimated and included with the projected variable portfolio costs to determine total portfolio costs.

MODELED POWER COSTS

As in the 2023 IRP, the power supply costs modeled in this analysis include only those categories that vary between alternative resource plans being evaluated. More specifically, the following categories of power supply costs were considered.

- Capital cost for new resources
- Differences in fixed O&M and capital expenses for existing resources evaluated for retirement at differing timeframes (i.e., Cross and Winyah)
- Natural gas transportation costs
- Fuel and purchased energy costs
- Variable O&M costs
- Emissions-related costs

- Demand-side management program costs
- Costs of transmission system upgrades and transmission wheeling and losses (for resources wheeled from off-system)

For purposes of estimating the impact of variations in power costs on rates, additional categories of costs were estimated and extrapolated from historical values and combined with projected power costs, as described in the Rate Impacts of Portfolios section.

RISK ANALYSIS APPROACH

In addition to the Reference Case assumptions, sensitivity cases were evaluated for each portfolio for the following variables.

- **Fuel Prices** – High and Low Case projections drawn from variations reflected in the AEO High and Low Oil and Gas Supply Cases
- **CO₂ Emissions Costs** – Medium and High Case costs of CO₂ emissions drawn from estimates of the social cost of CO₂ developed by the federal government
- **Load Forecast** – High and Low Case forecasts as described in the Electric Load Forecast Overview section

Detailed descriptions of the assumptions and associated projections are provided in the preceding sections. For each sensitivity simulation, all other variables remain at the Reference Case values.

Production costs for resource plans resulting from optimization under the Reference Case assumptions were simulated with the variations in fuel prices. For purposes of the load forecast sensitivities, however, given the variations in future load levels inherent in these cases, an additional optimization was run for each sensitivity allowing EnCompass flexibility beyond certain near-term build decisions (as discussed further below) to determine the most economic variations from the Reference Case optimization.

The sensitivity analyses (other than the load sensitivities) do not reflect optimization of the resource additions under each sensitivity case, as the purpose of the evaluation is to understand the sensitivity of each portfolio to changes in certain key assumptions and the resulting impact on power costs and other metrics subsequent to the adoption of key initial resource decisions.

The resulting power costs across these sensitivities are utilized, in part, to inform some of the Portfolio Metrics discussed below.

PORTFOLIO METRICS

The evaluation of portfolios included development and review of the following metrics, guided by Act 90 and Commission direction in previous IRP proceedings.

- **NPV Cost** – Total cumulative NPV power supply costs over the 30-year study horizon
- **Mini-Max Regret** – Assesses the potential for each resource plan to incur higher costs than other plans under the same sensitivity case
- **Fuel Cost Resiliency** – Measures the degree to which resource plan costs vary with respect to modeled variations in fuel prices

- **CO₂ Emissions** – Total emissions and emissions rate over the Study Period and at specific points in time
- **Generation Diversity** – Measure of the balance in the mix of sources of generation, with no single resource type dominating the generation sources
- **Clean Energy** – Percentage of generation that is from non-CO₂-emitting resources, including solar, wind, hydro, landfill methane gas, biomass, and nuclear facilities
- **Fixed Cost Obligations** – Cumulative capital and fixed costs, including firm natural gas reservation costs, PPA cost obligations, and fixed O&M costs
- **Reliability Factors** – Measures the extent to which resource plans incorporate resources and features that improve system reliability

It is important to recognize that several of the metrics inherently measure the same or highly related issues. For example, sensitivity to fuel cost variability, as represented by the fuel cost resiliency metric, would also tend to affect the Mini-Max Regret metric. However, the metrics can provide useful information regarding the relative merits of potential resource portfolio directions.

In Order 2024-171, the Commission directed Santee Cooper to work with stakeholders to develop a quantitative reliability metric. This metric would be in addition to, or would improve upon, the current reliability metric. Santee Cooper will work with stakeholders and include the metric when available and no later than the 2026 Triennial IRP.

RE-OPTIMIZATION OF THE 2023 PREFERRED PORTFOLIO

As a first step in the 2025 IRP Update, Santee Cooper performed a portfolio optimization simulation “locking in” certain key resources from the 2023 Preferred Portfolio, including the Joint NGCC resource then assumed added coincident with the timing of Winyah’s retirement and significant solar resources added over 2026-2030. The EnCompass software optimization model then determined the optimal resource additions needed to meet the increased demand and energy forecasts. This portfolio is referred to as the 2023 Portfolio Re-Optimized.

Importantly, the 2023 Portfolio Re-Optimized reflects the following changes to the resource portfolio imposed on the optimization relative to the 2023 Preferred Portfolio:

- Joint NGCC availability by 2033 to reflect the current schedule for the project
- Winyah retirement aligned with the full availability of the Joint NGCC
- Rainey Power Block 2 conversion and upgrades to Rainey Combined Cycle and Combustion Turbines in 2028
- Addition of 150 MW BESS beginning of 2029 as a component of Central’s NSR package

Table 17 summarizes the resulting build plan through 2040 for the 2023 Portfolio Re-Optimized as compared to the 2023 Preferred Portfolio.

Table 17. Re-optimization of the 2023 Preferred Portfolio

Resource Changes Through 2040	Additions (Retirements) (MW) ²⁶	
	2023 Preferred Portfolio	2023 Portfolio Re-Optimized
Retirements		
• Winyah (2031)	(1,150)	0
• Winyah (2033)	0	(1,150)
• MB and HH CTs (2034)	(165)	(165)
Joint NGCC		
• 2031-2033	1,020	998
Other New NGCC		
• 2031-2033	0	1,296
New Peaking		
• 2028-2031	0	107
• 2032-2033	0	0
• 2034-2040	112	449
New Solar ²⁷		
• 2026-2033	2,150	1,500
• 2034-2040	550	0
New BESS		
• 2026-2033	0	300
• 2034-2040	350	0
New Wind		
• 2029-2033	0	0
• 2034-2040	0	0

Comparison of the 2023 Preferred Portfolio to the 2023 Portfolio Re-Optimized shows that the updates in key assumptions result in portfolio additions that are consistent with the 2023 Preferred Portfolio, but more expansive to meet the revised load projections and reflecting key differences, as discussed in the following bullets.

- **Winyah Retirement.** Both portfolios include retirement of the Winyah coal resources, with the retirement aligned with the availability of the Joint NGCC.
- **NGCC Capacity.** For both portfolios, substantial NGCC capacity is added, including the Joint NGCC. The availability of the Joint NGCC was updated to 2033 (from 2031 in the 2023 Preferred Portfolio) to reflect the most recent project schedule.

²⁶ Capacity amounts shown herein reflect winter capacity for thermal resources and nameplate capacity for solar, wind, and BESS resources, unless otherwise noted.

²⁷ The amounts of New Solar capability shown are in addition to the 200 MW of solar PPAs procured by Santee Cooper and Central in 2021.

In addition to the Joint NGCC, the 2023 Portfolio Re-Optimized adds considerably more NGCC capacity, totaling an additional 1,296 MW by 2033, due primarily to the higher loads forecasted to be served.

- **Solar Capacity.** As a result of the OBBB and accelerated termination of tax credits on solar resources, the 2023 Portfolio Re-Optimized includes considerably less solar resource additions, totaling 1,500 MW by 2040 (versus 2,700 MW in the 2023 Preferred Portfolio), this amount being added only because the portfolio assumes such additions over the 2028-2032 period.
- **Peaking and BESS Resources.** Additional New Peaking resources are reflected in the 2023 Portfolio Re-Optimized. However, BESS capacity added is somewhat lower, as the projected cost of BESS has been increased due to accelerated phase-out of tax credits over the late 2030s under the OBBB.
- **Rainey Upgrades.** While not shown in the build table above, the 2023 Portfolio Re-Optimized includes the upgrades to Rainey. The Rainey Upgrades would provide approximately 255 MW of additional NGCC and NGCT capacity to meet capacity needs beginning 2028, as well as providing value throughout the remainder of the Study Period.²⁸

Overall, the 2023 Portfolio Re-Optimized reflects the addition of a greater amount of resources than contemplated in the 2023 Preferred Portfolio because of higher load projections. The 2023 Portfolio Re-Optimized reflects generation additions through 2040 totaling approximately 5,600 MW of nameplate capacity versus approximately 4,700 MW in the 2023 Preferred Portfolio.

2025 PORTFOLIOS EVALUATED

Santee Cooper performed additional optimization simulations that reflect Winyah's retirement by 2033 and allowed the EnCompass software to optimize the resource build plan to both replace Winyah's retiring capacity and to meet the projected higher load levels. In addition to an unconstrained optimization, the 2025 IRP Update includes a portfolio that incorporates an assumed acceleration of future solar implementation and a portfolio that assumes the same acceleration of solar implementation, but also delays the need for additional new generation by delaying Winyah's retirement to 2035, as a means to further mitigate financial risk and provide flexibility as load projections evolve. Finally, an optimization simulation was performed reflecting the impacts of the EPA GHG 2024 Rule. The four portfolios are shown in Figure 16 and described further below.

²⁸ Santee Cooper also recently acquired a small NGCC facility, Cherokee, and has secured PPA capacity not captured in the table above. In the 2023 Preferred Portfolio, capacity needs through 2030 then-forecasted were fulfilled by generic, short-term PPAs that were offered to EnCompass.

Figure 16. Resource Portfolios Evaluated

2025 Optimized Portfolio	<ul style="list-style-type: none"> Unconstrained Optimized Build Considering Fossil, Renewable, BESS, and Nuclear Resource Options
2025 Portfolio with Solar	<ul style="list-style-type: none"> Same as 2025 Optimized Portfolio Above but Includes a Minimum Level of Future Solar Implementation
2025 Portfolio Update	<ul style="list-style-type: none"> Same as 2025 Portfolio with Solar Above but Delays the Online Date of the Additional NGCCs to 2035
GHG 2024 Rule Portfolio	<ul style="list-style-type: none"> Cross Retirement by 2032 and NGCC/CT Operations Limits Optimized Build Considering Fossil, Renewable, BESS, and Nuclear

2025 Optimized Portfolio – The EnCompass software optimizes the resource build plan to both replace Winyah, assumed to be retired by 2033, and add additional resources to meet higher demand and energy forecasts.

2025 Portfolio with Solar – Same as the 2025 Optimized Portfolio but includes a required minimum level of future solar implementation by the end of the Study Period, irrespective of economics.

2025 Portfolio Update – Same as the 2025 Portfolio with Solar but defers the need for of additional resources by delaying the retirement of Winyah from 2033 to 2035. This portfolio seeks to reduce financial risk and provide greater implementation flexibility.

GHG 2024 Rule Portfolio – An optimized build plan considering requirements of the EPA GHG 2024 Rule including the retirement of all coal resources before January 2032 and operating limits on new natural gas-fired resources.

A GHG portfolio reflecting the EPA's proposed partial repeal of the GHG 2024 Rule was also contemplated. However, standard resource assumptions and simulation results for all evaluated portfolios indicate that the portfolios would meet the requirements of the proposed rule changes, thus eliminating the need to model the proposed 2025 GHG rule change as a specific portfolio.

PORTFOLIO OPTIMIZATION RESULTS

COMPARISON OF OPTIMIZED PORTFOLIOS

Table 18 summarizes the build plan for each of the portfolios through 2040. Detailed build plans for each portfolio are shown in Appendix C: Optimized Portfolio Builds .

Table 18. Summary of Optimized Portfolios

Resource Changes Through 2040	Additions (Retirements) (MW)			
	2025 Optimized Portfolio	2025 Portfolio with Solar	2025 Portfolio Update	GHG 2024 Rule Portfolio
Retirements				
• Winyah (2032/2033)	(1,150)	(1,150)	0	(1,150)
• Winyah (2035)	0	0	(1,150)	0
• Cross (2032)	0	0	0	(2,330)
• HH and MB CTs (2034)	(165)	(165)	(165)	(165)
Joint NGCC				
• 2031-2033	998	998	998	998
Other New NGCC				
• 2031-2033	1,296	1,296	0	1,296
• 2035	0	0	1,296	0
New Peaking				
• 2028-2031	107	107	107	107
• 2032-2033	0	0	0	2,244
• 2034-2040	449	449	449	449
New Solar ²⁹				
• 2026-2033	0	100	100	1,200
• 2034-2040	0	700	700	1,550
New BESS				
• 2026-2033	300	300	300	300
• 2034-2040	0	0	0	0
New Wind				
• 2029-2033	0	0	0	0
• 2034-2040	0	0	0	200

The following key conclusions can be drawn from analysis of the resource builds shown above.

- **NGCC Resources.** All portfolios reflect the addition of large NGCC resources to replace Winyah and serve load growth, which is consistent with the results of the 2023 IRP. All portfolios select a 998 MW NGCC resource, developed jointly with DESC, by 2033.

²⁹ The amounts of New Solar capability shown are in addition to the approximately 200 MW of solar PPAs procured by Santee Cooper and Central in 2021.

All portfolios also add approximately 1,300 MW of additional NGCC capacity that coincides with the retirement of Winyah.

- **Solar and Wind Resources.** The 2025 Optimized Portfolio reflects no solar or wind resources being added through 2040, though solar is added in later years, with 2,000 MW being added by 2052. The 2025 Portfolio with Solar and 2025 Portfolio Update depict an accelerated implementation of solar resources reflecting a more gradual implementation rate over the Study Period (up to 100 MW per year) while still achieving the same total of 2,000 MW of solar by 2052 as the 2025 Optimized Portfolio.
- **EPA GHG 2024 Rule.** The GHG 2024 Rule Portfolio relies on the same amount of NGCC resources as the other portfolios despite the limitation on NGCC capacity factors imposed by the rule. Additional resources, in part to replace the retirement of the remaining coal-fired assets, include larger amounts of renewable resources—approximately 1,700-1,900 MW more than the other portfolios over the Study Period, and more NGCT resources.

Importantly, the portfolio builds shown in Table 2 above confirm that the near-term resource actions necessary to proceed toward a portfolio like the 2025 Portfolio Update would be appropriate whether or not the EPA's GHG 2024 Rule (or a rule with similar constraints) remains. If Santee Cooper knew today that a rule with similar constraints to the EPA's GHG 2024 Rule would be implemented, Santee Cooper would not reverse the actions it is now taking.

PORTFOLIO METRICS

To evaluate the portfolios, Santee Cooper simulated each portfolio under the Reference Case assumptions and a series of sensitivity cases. The sensitivity cases represent a reasonably broad range of future conditions related to fuel prices, CO₂ emissions cost, and load levels. To allow for total costs and emissions to be comparable, results are separately provided for sensitivities reflecting Base Load Forecast load levels and those reflecting variations in the load forecast.

Projected NPV power costs are shown herein in billions of dollars. Some differences between portfolios can be within rounding and may impact comparisons that are illustrated as differences in color-coding of resulting values.

NPV POWER COSTS

The NPV Power Cost metric measures the costs to customers of each of the resource portfolios based on NPV modeled power costs in 2025 dollars of each portfolio over the Study Period. Table 19 compares the NPV power cost for the portfolios under the Reference Case Assumptions, with color-coding from green, gold, and then to a rose color indicating lowest to highest values.

Table 19. Comparison of NPV Power Costs for the Reference Case (\$B)

Portfolios	NPV Power Costs
2023 Portfolio Re-Optimized	\$37.3
2025 Optimized Portfolio	\$36.7
2025 Portfolio with Solar	\$36.8
2025 Portfolio Update	\$36.8
GHG 2024 Rule Portfolio	\$43.7
<u>Difference to 2023 Portfolio Re-Optimized</u>	
2025 Optimized Portfolio	(\$0.6)
2025 Portfolio with Solar	(\$0.4)
2025 Portfolio Update	(\$0.5)
GHG 2024 Rule Portfolio	\$6.4

The Reference Case results show that the 2025 Optimized Portfolio is projected to have the lowest NPV power cost. Additionally, the 2025 Portfolio with Solar and the 2025 Portfolio Update are shown to have similar NPV power costs. Comparing results for the 2025 Optimized Portfolio and 2025 Portfolio with Solar in Table 19 indicates that additions of modest amount of solar resources, even without the tax incentives previously available under the IRA, does not increase costs significantly. Similarly, comparing results for the 2025 Portfolio with Solar and 2025 Portfolio Update indicates that deferring the need for additional generic NGCCs by delaying Winyah's retirement has little impact on projected costs.

Both of these refinements (i.e., adding solar capacity and delaying the next NGCC after the Joint NGCC) to the 2025 Optimized Portfolio reduce risk with little cost impact. The reduction in risk from the delay results from deferring financing requirements and maintaining additional flexibility to give further consideration to resource additions after the Joint NGCC. The inclusion of more solar capacity than indicated in the 2025 Optimized Portfolio provides a hedge against the potential for increases in natural gas prices above the levels now projected and impacts of potential future Federal government policy that would return to prioritizing retirement of coal resources, limiting operating levels of natural gas-fueled resources, and encouraging renewables through a tax on emissions.

The results in Table 19 also indicate that power costs would be significantly higher under scenarios that assume constraints on utilities like those included in the EPA GHG 2024 Rule. As shown, incremental NPV power supply costs under the GHG 2024 Rule Portfolio are projected to be \$6.4 billion higher over the Study Period than under the 2023 Portfolio Re-Optimized and \$6.9 billion higher than under the 2025 Portfolio Update. Much of the additional incremental costs under the GHG 2024 Rule Portfolio would result directly from the additional costs of replacement resources and transmission additions necessitated by the assumption that retirement of Cross would be mandated.

A summary of NPV power costs by portfolio over both the full Study Period and over a 20-year period from 2031-2050 is provided in Appendix D.

MINI-MAX REGRET

The Mini-Max Regret metric evaluates the potential to incur higher power costs by pursuing any resource portfolio relative to other plans as evaluated across the modeled sensitivities. The Mini-Max Regret first measures the difference in NPV power cost between each portfolio and the lowest cost portfolio for each sensitivity case. That difference can be referred to as the potential regret of choosing a portfolio if the specific scenario conditions were to occur. The maximum regret score for each portfolio is the maximum difference observed across all sensitivity cases. This metric indicates which portfolio minimizes the computed maximum regret. The Mini-Max Regret evaluation assumes no change to the portfolios are made in response to the sensitivity conditions unfolding. While this is not necessarily realistic, this evaluation metric provides an indication regarding the relative risks of the various portfolios.

Table 20 provides the NPV power costs for each portfolio across the fuel and CO₂ price sensitivities and computes the maximum regret by portfolio. The results indicate that the maximum regret is minimized by both the 2023 Portfolio Re-Optimized and 2025 Portfolio with Solar. The 2025 Optimized Portfolio and the 2025 Portfolio Update exhibit a slightly higher maximum regret driven by the impact of the High CO₂ Price sensitivity but still perform relatively well compared to the lowest maximum regret portfolios. The maximum regret for the GHG 2024 Rule Portfolio is considerably higher, driven by the much greater reliance on NG resources.

Table 20. NPV Power Costs Across Sensitivities and Maximum Regret (\$B)

Portfolios	Reference Case	Low Fuel Price	High Fuel Price	Med CO ₂ Price	High CO ₂ Price
2023 Portfolio Re-Optimized	\$37.3	\$31.8	\$47.5	\$45.1	\$59.7
2025 Optimized Portfolio	\$36.7	\$31.0	\$47.4	\$45.2	\$61.2
2025 Portfolio with Solar	\$36.8	\$31.2	\$47.3	\$45.1	\$60.5
2025 Portfolio Update	\$36.8	\$31.3	\$47.1	\$45.3	\$61.5
GHG 2024 Rule Portfolio	\$43.7	\$37.5	\$58.4	\$50.5	\$63.6

Max Regret by Portfolio	
2023 Portfolio Re-Optimized	\$0.8
2025 Optimized Portfolio	\$1.4
2025 Portfolio with Solar	\$0.8
2025 Portfolio Update	\$1.7
GHG 2024 Rule Portfolio	\$11.3

FUEL COST RESILIENCY

Table 21 provides an assessment of the sensitivity of costs for each portfolio by comparing NPV fuel costs across the fuel price cases and the total range of uncertainty for each portfolio.

Results reflect that the 2023 Portfolio Re-Optimized results in the lowest range of uncertainty followed closely by the 2025 Portfolio Update. Additionally, as shown in the far-right column of the table, costs for the GHG 2024 Rule Portfolio are much more sensitive to future fuel prices than the other portfolios studied. Therefore, in addition to adding higher costs to be borne by customers, a decision to implement the type of constraints included in the EPA GHG 2024 Rule would also cause much greater uncertainty regarding future costs. Importantly, while a portfolio with a greater reliance on renewables might tend to have lower fuel cost uncertainty, the future cost of renewable resources over the Study Period is also significantly uncertain, which is not captured in this metric.

Table 21. Fuel Price Sensitivity Results

Supplemental Portfolios	NPV Power Costs (\$B)			Diff. to Reference (\$B)		
	Reference Case	Low Fuel Price	High Fuel Price	Low Fuel Price	High Fuel Price	Uncertainty Range
2023 Portfolio Re-Optimized	\$37.3	\$31.8	\$47.5	(\$5.5)	\$10.2	\$15.7
2025 Optimized Portfolio	\$36.7	\$31.0	\$47.4	(\$5.7)	\$10.8	\$16.5
2025 Portfolio with Solar	\$36.8	\$31.2	\$47.3	(\$5.6)	\$10.5	\$16.1
2025 Portfolio Update	\$36.8	\$31.3	\$47.1	(\$5.5)	\$10.3	\$15.8
GHG 2024 Rule Portfolio	\$43.7	\$37.5	\$58.4	(\$6.1)	\$14.7	\$20.8

Difference to 2023 Portfolio Re-Optimized

2025 Optimized Portfolio	(\$0.6)	(\$0.8)	(\$0.1)
2025 Portfolio with Solar	(\$0.4)	(\$0.5)	(\$0.2)
2025 Portfolio Update	(\$0.5)	(\$0.5)	(\$0.5)
GHG 2024 Rule Portfolio	\$6.4	\$5.8	\$10.9

CO₂ EMISSIONS

Santee Cooper is committed to reducing the carbon footprint of its generating fleet. Table 22 compares CO₂ emissions in millions of tons (“MT”) and CO₂ emissions rates in pounds per MWh of energy produced over the Study Period across the resource portfolios and fixed load sensitivities. Not surprisingly, given the intent of the portfolio, results reflect that the GHG 2024 Rule Portfolio would produce the lowest CO₂ emissions, considerably lower than the other portfolios on both a mass and rate basis. The other portfolios reflect fairly similar carbon emissions (i.e., within about 10%) for each of the sensitivities.

Table 22. Comparison of CO₂ Emissions Across Fixed Load Sensitivities

Portfolios	Reference Cases	Low Fuel Price	High Fuel Price	Med CO2 Price	High CO2 Price
<u>Cumulative Emissions (MT)</u>					
2023 Portfolio Re-Optimized	480	457	599	461	452
2025 Optimized Portfolio	514	490	624	495	486
2025 Portfolio with Solar	500	476	614	481	472
2025 Portfolio Update	518	493	629	499	489
GHG 2024 Rule Portfolio	411	408	421	409	407
<u>Average Emissions (lbs/MWh)</u>					
2023 Portfolio Re-Optimized	847	808	1,044	816	801
2025 Optimized Portfolio	906	865	1,088	875	860
2025 Portfolio with Solar	883	844	1,072	853	838
2025 Portfolio Update	913	871	1,098	882	866
GHG 2024 Rule Portfolio	737	731	760	734	730

GENERATION DIVERSITY

The extent to which a resource plan relies significantly upon a single type of resource or fuel can represent a significant source of risk for the system, both in terms of cost and reliability. A useful measure of diversity for this purpose is the coefficient of dispersion, which represents the standard deviation of a series of values divided by the average of the values. A lower coefficient of dispersion corresponds to a more uniform, equally distributed set of values.

Table 23 presents the coefficient of dispersion for capacity and energy by fuel type over the Study Period for each of the portfolios. The coefficient of dispersion here represents the standard deviation of the capacity and generation by fuel type divided by the average across the fuel types.³⁰ The 2023 Portfolio Re-Optimized reflects the lowest coefficient of dispersion, reflecting a lower reliance on any one fuel or resource type than the other portfolios, followed closely by the 2025 Portfolio Update.

³⁰ For this purpose, the generation is taken from the Reference Case.

Table 23. Diversity of Generation Resources Across Portfolios

Portfolios	Coefficient of Dispersion		
	Capacity	Energy	Average
2023 Portfolio Re-Optimized	1.32	1.61	1.47
2025 Optimized Portfolio	1.41	1.68	1.55
2025 Portfolio with Solar	1.39	1.65	1.52
2025 Portfolio Update	1.38	1.63	1.51
GHG 2024 Rule Portfolio	1.60	1.64	1.62

CLEAN ENERGY PROPORTION

The Clean Energy Proportion metric measures the percentage of system energy that is derived from carbon-free resources, including solar, wind, nuclear, hydro, biomass, and landfill gas (“LFG”) facilities. Table 24 provides the proportion of carbon-free generation across the portfolios over the Study Period for the Reference Case and the fuel price and CO₂ price sensitivities.³¹ The GHG 2024 Rule Portfolio, not surprisingly, derives the highest proportion of system energy from carbon-free resources. The other portfolios reflect a lower clean energy proportion, primarily as a result of portfolios installing less solar resources in response to the accelerated termination of renewable tax credits. However, as noted above, they achieve significant carbon emissions reductions that are similar to the 2023 Portfolio Re-Optimized.

Table 24.
Carbon-free Generation Proportion Across Portfolios

Portfolios	Reference Case	Low Fuel Price	High Fuel Price	Med CO ₂ Price	High CO ₂ Price
2023 Portfolio Re-Optimized	20.6%	20.6%	20.6%	20.6%	20.6%
2025 Optimized Portfolio	16.6%	16.6%	16.6%	16.6%	16.6%
2025 Portfolio with Solar	18.2%	18.2%	18.2%	18.2%	18.2%
2025 Portfolio Update	17.6%	17.6%	17.6%	17.6%	17.6%
GHG 2024 Rule Portfolio	27.9%	27.9%	27.9%	27.9%	27.9%

FIXED COST OBLIGATIONS

The fixed cost obligations metric considers the total of fixed costs that would not vary based on energy provided from the resources. These would include debt service and fixed operating costs of new resources, payment obligations under take-or-pay PPAs, or other fixed costs directly attributable to resource decisions. Table 25 provides the total fixed cost obligations across the portfolios on an NPV basis over the Study Period.

³¹ The values shown are the same for each portfolio across the sensitivities because the carbon-free resources are non-dispatchable and the energy provided from these resources to serve load is largely the same for a portfolio under all sensitivities.

The results reflect that the 2025 Optimized Portfolio incurs the lowest burden of fixed costs of the portfolio options, followed closely by the 2025 Portfolio Update. The GHG 2024 Rule Portfolio reflects considerably higher fixed cost obligations, driven by additional solar and NGCT resources.

Table 25.
Fixed Cost Obligations by Portfolio Over the Study Period

Portfolios	NPV (\$B)
2023 Portfolio Re-Optimized	\$11.0
2025 Optimized Portfolio	\$8.9
2025 Portfolio with Solar	\$9.6
2025 Portfolio Update	\$9.1
GHG 2024 Rule Portfolio	\$18.4

This relative level of fixed cost obligations also provides some indication regarding the sensitivity of the portfolios to changes in capital costs. Variations in capital costs, driven by real escalation in the cost of raw materials (e.g., steel, copper) or equipment that spans all generating resource types will have the most impact on those portfolios with higher fixed cost obligations. This implies that the cost of portfolios that reflect relatively large concentrations of renewable and BESS resources tend to be more sensitive to variations in capital costs.

RELIABILITY

As solar, wind, and BESS resources may not provide for as high a level of reliability as more dispatchable generating resources, Santee Cooper has developed a reliability metric that measures the annual quantity of solar, wind, and BESS nameplate capacity relative to the peak winter demand for 2026 through 2035. This period represents an initial period over which Santee Cooper is most concerned with future resource additions.

Table 26, below, provides a summary of the reliability metric computed for the portfolios under the Reference Case assumptions. This metric reflects that the 2025 Optimized Portfolio, the 2025 Portfolio with Solar, and the 2025 Portfolio Update all have lower levels of BESS and intermittent renewable resources as compared to the 2023 Portfolio Re-Optimized and GHG 2024 Rule Portfolio.

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Table 26.
Renewable and BESS Capacity as a Percentage of Peak Demand

Portfolios	Percent (2026 - 2035)
2023 Portfolio Re-Optimized	17%
2025 Optimized Portfolio	4%
2025 Portfolio with Solar	5%
2025 Portfolio Update	5%
GHG 2024 Rule Portfolio	13%

Santee Cooper will continue to work with stakeholders to discuss further development of quantitative reliability metrics for use in future IRPs and IRP Updates.

FLEXIBILITY TO ADAPT TO LOWER OR HIGHER CUSTOMER LOADS

A key priority for the IRP has been to identify a portfolio that affords Santee Cooper the flexibility to adapt as conditions and levels of customer load changes. Accordingly, Santee Cooper performed sensitivity analysis that assumes variations in the load forecast to understand the flexibility of the portfolios to load levels and the sensitivity of levelized NPV power costs to such load variations. For this purpose, while the sensitivity analysis reflects performing an EnCompass optimization to add or eliminate future resources as needed to meet variations in forecast peak demands and capacity requirements, the assumption was made that certain major decisions related to the development of the Joint NGCC and the retirement of Winyah, as well as early decisions to develop BESS and LM6000 resources over 2026-2030, would not be affected by potential future variations in load levels, thereby evaluating portfolio flexibility and cost mitigation that may exist outside of these major and early resource decisions.

Table 27 summarizes the resource build plan resulting from the re-optimization of the 2025 Optimized Portfolio across the load growth sensitivity cases. Under the Low Load case, more solar is implemented, and the NGCC and NGCT resources through 2040 are not implemented. In the High Load case, additional LM6000, solar, and BESS resources are implemented prior to 2032, and additional NGCC and NGCT resources are built in the late 2030s.

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Table 27. 2025 Optimized Portfolio Build Across Load Sensitivities

Resource Changes Through 2040	Additions (Retirements) (MW)		
	Low Load	Medium Load	High Load
Retirements <ul style="list-style-type: none"> Winyah (2033) HH and MB CTs (2034) Cross (2032) 	(1,150) (165) 0	(1,150) (165) 0	(1,150) (165) 0
Joint NGCC <ul style="list-style-type: none"> 2031-2033 	998	998	998
Other New NGCC <ul style="list-style-type: none"> 2031-2033 2034-2040 	0 0	1,296 0	1,296 1,296
New Peaking <ul style="list-style-type: none"> 2028-2031 2032-2033 2034-2040 	107 0 0	107 0 449	749 0 898
New Solar ³² <ul style="list-style-type: none"> 2026-2033 2034-2040 	0 350	0 0	150 0
New BESS <ul style="list-style-type: none"> 2026-2033 2034-2040 	300 0	300 0	350 0
New Wind <ul style="list-style-type: none"> 2029-2033 2034-2040 	0 0	0 0	0 0

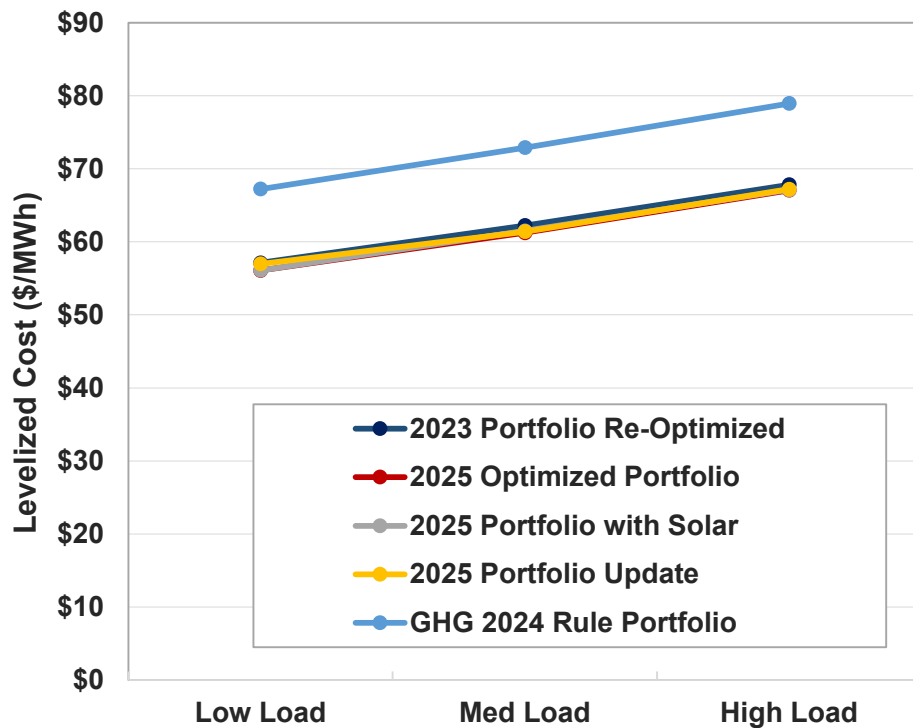
Santee Cooper prepared re-optimized portfolios for the Low and High Load forecast sensitivity cases for the other portfolios and computed total and levelized NPV costs for the reference and load sensitivity cases to provide a comparison of costs resulting from variations in load forecast assumptions. Figure 17 below depicts the average levelized power cost over the Study Period for each of the portfolios under the three load forecast scenarios. The chart illustrates that the portfolios studied, other than the GHG 2024 Rule Portfolio, are projected to have similar average levelized costs for each of the load forecast sensitivities. Importantly, the load sensitivity analysis confirms there is not a significant risk to Santee Cooper's customers should projected load additions not materialize, given the modifications to the resource plans assumed in response to the change in load forecast. This is one of the reasons for the delay in the NGCCs after the Joint NGCC reduces customers' risk. The delay allows more time to assess need and make adjustments to the resource plan as conditions change.

³² The amounts of New Solar capability shown are in addition to the approximately 200 MW of solar PPAs procured by Santee Cooper and Central in 2021.

In addition to locking in the near-term decisions identified above, this analysis also does not reflect resource retirements that could be implemented to further mitigate the impacts of a low load case.

As indicated by the difference between the blue and gold lines in Figure 17 below, the GHG 2024 Rule Portfolio is somewhat more sensitive to load levels than the 2025 Portfolio Update (and other portfolios studied). More specifically, the levelized cost for the GHG 2024 Rule Portfolio is higher than for the other portfolios by approximately \$10/MWh under the Low Load Forecast to approximately \$12/MWh for the High Load Forecast.

Figure 17. Sensitivity of Levelized Power Costs to Load Growth Variations³³



SUMMARY OF PORTFOLIO METRICS

Table 28 summarizes the Portfolio Metrics by ranking the portfolios relative to the others for each of the metrics. In addition, a composite average of the rankings across all metrics is computed and then ranked to provide an overall ranking across the metrics. The composite average reflects an average across the metrics but collapses two pairs of metrics that are so highly related as to be measuring essentially the same aspects of the portfolios—CO2 Emissions and Clean Energy, and Fuel Cost Resiliency and Generation Diversity are collapsed into two contributors when computing the composite average.

³³ The portfolios other than the EPA GHG 2024 Rule Portfolio are virtually indistinguishable in this chart.

Table 28. Ranking of Potential Portfolios for Evaluation Metrics

Portfolios	NPV Power Cost	Mini-max Regret	Reliability Uncertainty	Fixed Cost Obligation	Fuel Cost Resiliency	CO2 Emissions	Generation Diversity	Clean Energy	Load Sensitivity
2023 Portfolio Re-Optimized	4	1	5	4	1	2	1	2	2
2025 Optimized Portfolio	1	3	1	1	4	4	4	5	3
2025 Portfolio with Solar	3	2	2	3	3	3	3	3	4
2025 Portfolio Update	2	4	2	2	2	5	2	4	1
GHG 2024 Rule Portfolio	5	5	4	5	5	1	5	1	5

Average Metric Rank

Portfolios	Composite Average	Rank
2023 Portfolio Re-Optimized	2.7	3
2025 Optimized Portfolio	2.5	1
2025 Portfolio with Solar	2.9	4
2025 Portfolio Update	2.5	1
GHG 2024 Rule Portfolio	4.3	5

The following are key observations from the portfolio evaluation metrics detailed above.

- The 2025 Portfolio Update and the 2025 Optimized Portfolio have the same composite average rank across the metrics and the lowest across the portfolios studied. While ranked the same, the 2025 Portfolio Update is viewed as preferred for guiding Santee Cooper's future resource development activities given its greater flexibility for the timing of future NGCC resource decisions and accelerated implementation of solar resources.
- The GHG 2024 Rule Portfolio reflects the worst-ranked portfolio, performing the worst across several of the metrics.
- The 2023 Portfolio Re-Optimized ranks the best on the Mini-max Regret metric (i.e., exhibits the lowest maximum regret); however, the maximum regret of the portfolios other than the GHG 2024 Portfolio are relatively close, with the driver of the slightly higher regret for the 2025 Portfolio Update being higher costs under the High CO₂ Price Sensitivity.
- The 2025 Portfolio Update ranks very highly across the remaining metrics, ranking the best or second best across six of the nine metrics evaluated (with the lower performing metrics being an outcome of the delayed retirement of Winyah).

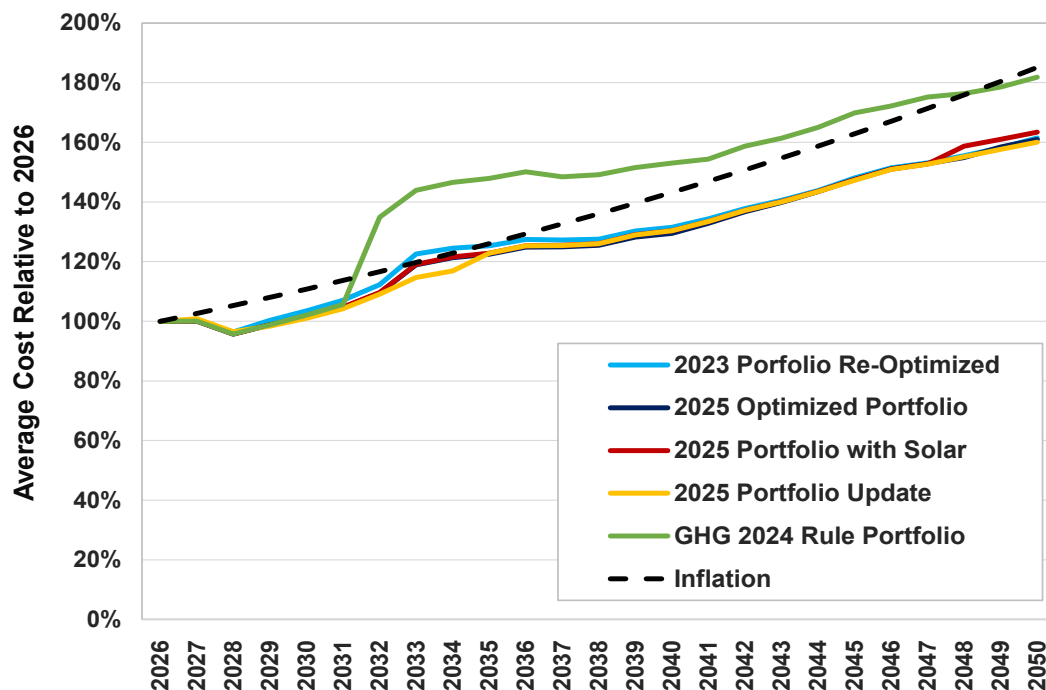
A key result of these analyses is that each of these portfolios feature similar resources that are needed by the early 2030s and upon retirement of Winyah—namely NGCC resources upon the retirement of Winyah and BESS and NGCTs to meet peak load requirements. The need for these types of resources is not materially dependent on the differences in the constraints introduced in each portfolio. The amounts and timing of implementation of additional solar resources vary considerably across the portfolios, but such resources act as an additional hedge against potentially volatile fuel costs and will help Santee Cooper to continue making progress on carbon emissions reduction.

RATE IMPACTS OF PORTFOLIOS

Portfolio costs refer to total fuel and purchased energy costs plus only the level of fixed costs that vary between portfolios (e.g., debt service and fixed O&M for resources added in the future). However, the portfolio costs that underlie the analyses presented elsewhere herein are only part of the total costs that must be recovered from future Santee Cooper charges to customers. The information below places the projected portfolio costs compared elsewhere in the IRP in the context of the projected impact on Santee Cooper's average rates to customers.

To approximate the average rate level, Santee Cooper's total cost-of-service³⁴ has been projected by adding, to the portfolio costs, allowances for other Santee Cooper costs that would be approximately the same for all portfolios. These other costs have been projected based on existing debt service schedules and by escalating other production, transmission, distribution, and customer costs at the rate of inflation. It should be noted that the cost-of-service projected for this purpose includes the impact of fuel cost escalation assumptions which Santee Cooper passes through to customers as actual fuel and purchased energy expense incurred. Figure 18 below provides the resulting trend in projected rates indexed to 2026 for Santee Cooper's customers for each of the portfolios studied based on the Reference Case assumptions.³⁵

Figure 18. Projected Rate Index Across Portfolios (Reference Case)



³⁴ The cost-of-service analysis prepared for this purpose is appropriate for assessing the difference in rate impacts of the portfolios analyzed in the 2025 IRP Update. However, the analyses do not consider the same level of information normally reflected in financial planning or rate setting studies. The analysis presented does not consider recovery of costs deferred due to Cook Settlement Exceptions, which costs would be the same or similar for all portfolios analyzed.

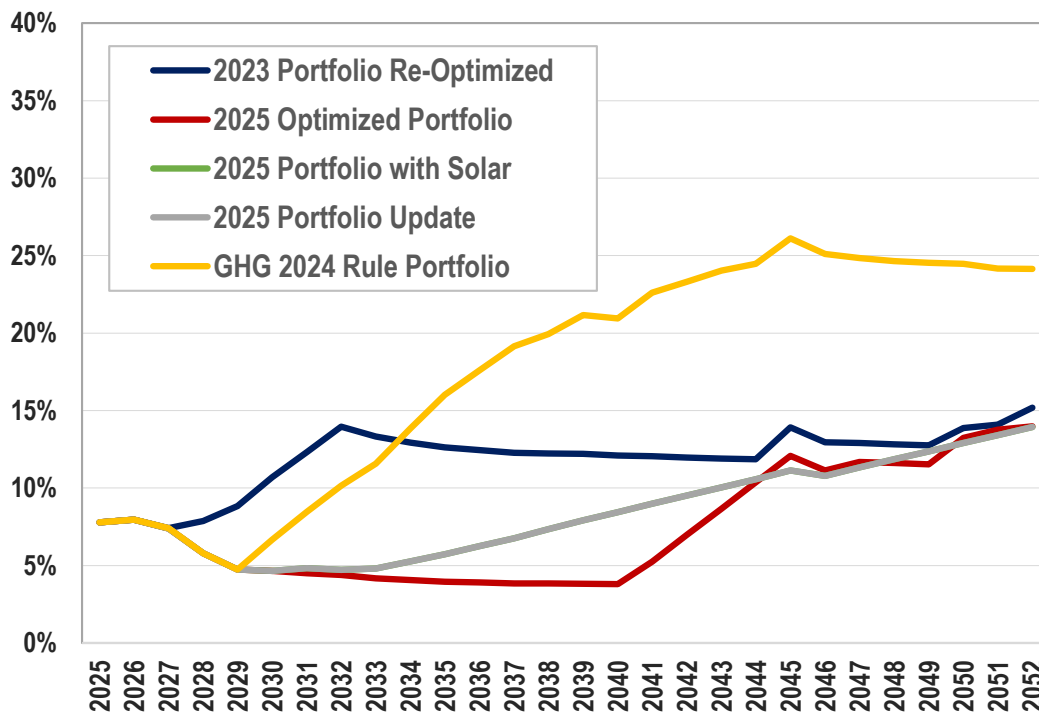
³⁵ Similar information for fuel and CO₂ price sensitivity cases is provided in Appendix F.

Figure 18 indicates that all portfolios other than the GHG 2024 Rule Portfolio result in projected cost increases that are generally well below the rate of inflation over the Study Period. The GHG 2024 Rule Portfolio, on the other hand, results in a large cost increase in 2032, the first year of compliance with the rule, and costs that generally escalate well above inflation until late in the Study Period.

RENEWABLE ENERGY FORECAST

Each of the portfolios reflect significant increases over the Study Period in the proportion of system energy requirements served from renewable resources. Figure 19 depicts the trend in this proportion over the Study Period. As should be expected, the GHG 2024 Rule Portfolio reflects considerably higher concentration of renewable resources over most of the Study Period. Moreover, the figure indicates the slower implementation of solar resources that are projected for the 2025 Optimized Portfolio and the 2025 Portfolio Update; however, all of the portfolios, other than the GHG 2024 Rule Portfolio, achieve similar levels of renewal implementation by the end of the Study Period.

Figure 19. Percentage of System Energy Served from Renewables



Renewable generation amounts by year are provided in Appendix E.

CAPTIAL COST SENSITIVITY

To test the sensitivity of the conclusion that NGCCs and NGCTs represent important, cost-effective generation capacity additions, Santee Cooper prepared sensitivity analyses assuming capital costs for all fossil-fueled resource types would be approximately 50% higher than assumed under the Reference Case assumptions and re-optimizing the 2025 Optimized Portfolio.

This sensitivity case does not assume higher costs of renewable, BESS, or other resource types considered in this IRP even though most of the circumstances that would result in higher fossil-fueled resource capital costs would also adversely impact costs of those other resources. Santee Cooper has taken this conservative approach to “stress test” the consideration of NGCC and NGCT resources. This Capital Cost sensitivity results in resource additions that are consistent with those under the 2025 Optimized Portfolio and reflects the selection of NGCCs and NGCTs as the most economical resources to replace Winyah and meet growing system demands.

CONCLUSIONS

The results of the resource plan analyses presented in this Update support and reinforce many of the key conclusions reached in the 2023 IRP and 2024 IRP Update and the key elements of the 2023 Preferred Portfolio. Key changes in conditions reflected in the 2025 IRP Update include a considerably higher load forecast than used for the 2023 IRP that is similar to the forecast used for the 2024 IRP Update and recent federal policy changes. Directionally, the 2025 IRP supports continued planning of the Joint NGCC and subsequent NGCC resources and moderation of solar capacity additions as compared to the 2023 IRP and 2024 IRP Update. The table below provides more discussion of conclusions from the 2025 IRP Update regarding specific resource types.

Portfolio Element	Conclusions
NGCC Resources	<ul style="list-style-type: none"> ▪ The Joint NGCC is a cost-effective project and a robust decision across a wide range of future scenarios. ▪ Additional NGCC resources are likely to be cost-effective upon Winyah's retirement. ▪ Higher projected load levels than assumed in the 2023 IRP and the accelerated termination of tax credits for solar resources resulting from the OBBB favor efficient NGCC resources. ▪ The GHG 2024 Rule Portfolio suggests that, even under the restrictive regulations in the current final rule, significant NGCC resources are a key feature of the optimal portfolio.
Solar Resources	<ul style="list-style-type: none"> ▪ Termination of tax credits increases the net cost of solar resources; however, the GHG 2024 Rule Portfolio demonstrates that solar would be a valuable resource in a carbon constrained future. ▪ Because solar costs are assumed to decline in real cost terms through 2035, solar is projected to be more economical in the later years of the Study Period. ▪ Santee Cooper intends to continue to monitor the costs of solar resources and to seek opportunities to add cost-effective solar to its portfolio over time as a hedge against potentially volatile fuel costs and to continue making progress on carbon emissions reduction.
BESS Resources	<ul style="list-style-type: none"> ▪ While tax credits for BESS resources are also being phased out under the OBBB, BESS resources can provide valuable system reliability support as a peaking resource, and their quick start capability provides for system operating reserves similar to aeroderivative NGCTs.
Onshore Wind	<ul style="list-style-type: none"> ▪ As a result of the termination of tax credits for wind resources, only very limited onshore wind resources are selected across the portfolios other than the GHG 2024 Rule Portfolio.

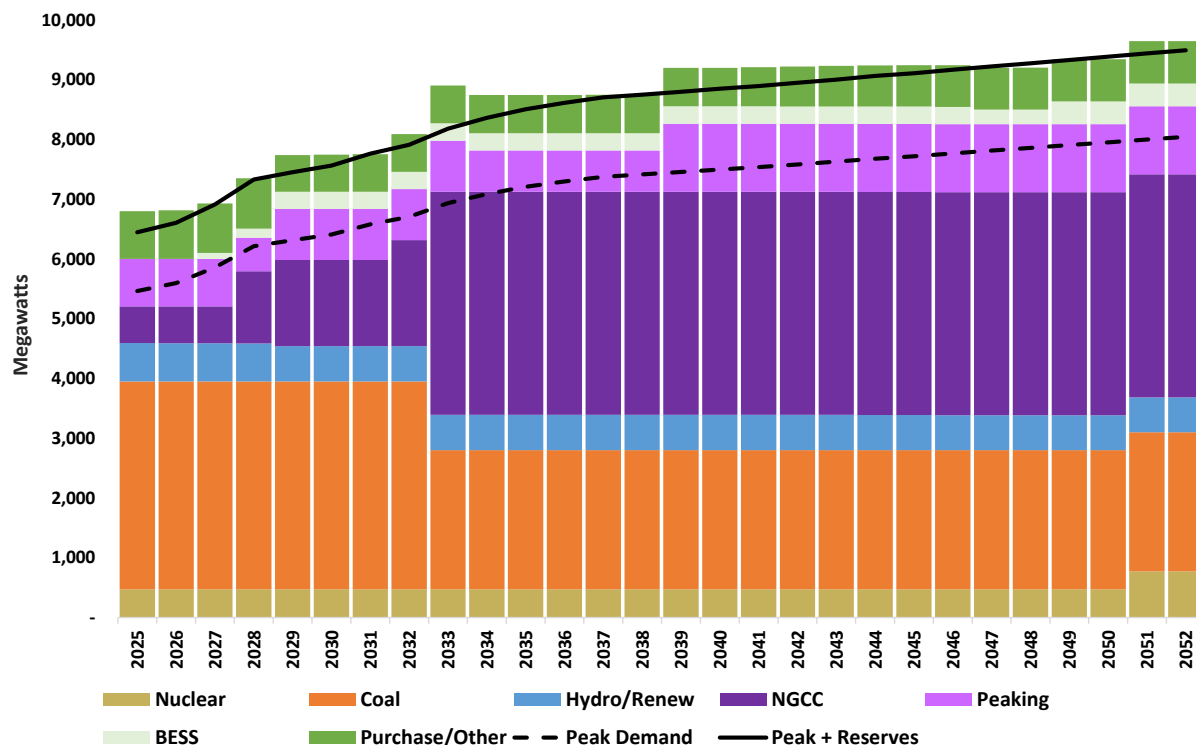
Conclusions

The evaluations presented in the preceding section indicate that the 2025 Portfolio Update is the most attractive for Santee Cooper's customers, when balancing cost, risk, and emission metrics.

The differences between the 2025 Portfolio Update and the 2023 Preferred Portfolio approved by the Commission are driven primarily by higher projected load levels to be served by Santee Cooper and projected higher costs of solar resources. Both portfolios include the Joint NGCC at DESC's Canadys site. The 2025 Portfolio Update assumes the Joint NGCC will be completed by 2033,³⁶ and the next large capacity addition to the Combined System after the Joint NGCC would be completed by 2035, as would Winyah's retirement. The delay in timing of that next large capacity addition defers related financing requirements and increases flexibility to address changes in conditions, which reduces risk to Santee Cooper's customers.

Figure 20 below depicts Santee Cooper's projected winter peak demand and winter peak with reserve margin requirement versus the winter peak contribution of Santee Cooper's existing resources and the incremental resource build for the 2025 Portfolio Update over the Study Period. The chart depicts the Rainey NGCT upgrades and NGCC conversion in 2028, Central's NSR additions in 2029, the addition of the Joint NGCC by 2033, the retirement of Winyah and installation of the additional NGCC resources by 2035, and the addition of a mix of peaking resources and BESS over the Study Period. Not visible in this chart are solar resources being added beginning the mid-2030s, as these do not contribute significantly to the winter peak requirement.

Figure 20. Supply and Demand Balance Under the 2025 Portfolio Update

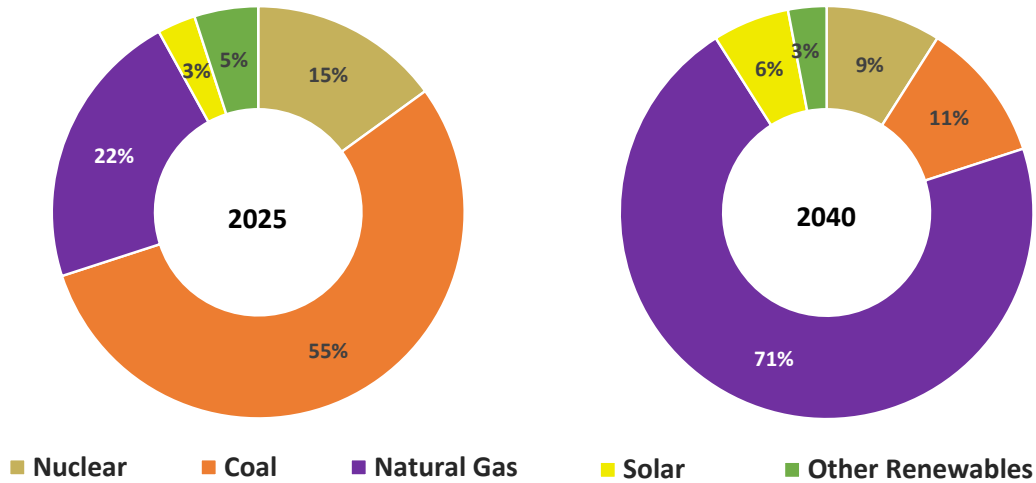


³⁶ Santee Cooper and DESC currently anticipate the 3-units that comprise the Joint NGCC will be completed between late 2031 and late 2032.

Conclusions

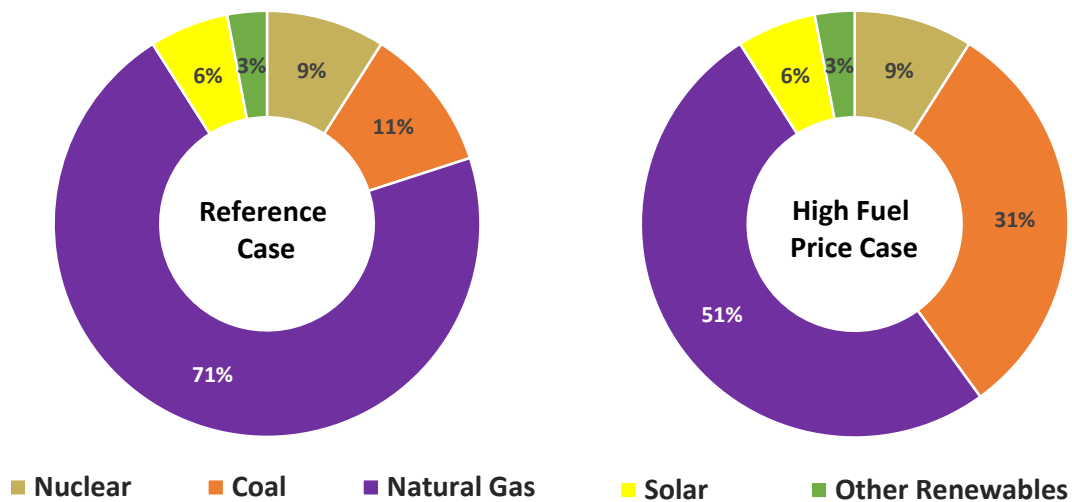
Figure 21 shows the projected generation mix for the 2025 Portfolio Update under the Reference Case, reflecting a significant transition away from coal resources toward more natural gas generation, as well as a greater mix of solar generation.

Figure 21. Generation Mix Under the 2025 Portfolio Update (Reference Case)



Importantly, the 2025 Portfolio Update maintains Cross as a key capacity resource and hedge to attenuate the impact of higher natural gas prices and volatility. While natural gas generation is projected to serve the majority of energy demand for the Combined System in the Reference Case, the diverse capacity portfolio would allow Santee Cooper to instead rely more heavily on other resources, including the remaining coal resources, during periods of high natural gas prices. The effect of this fuel switching capability is illustrated in Figure 22 below, which compares the energy mix projected for 2040 under the Reference and High Fuel Price Cases.

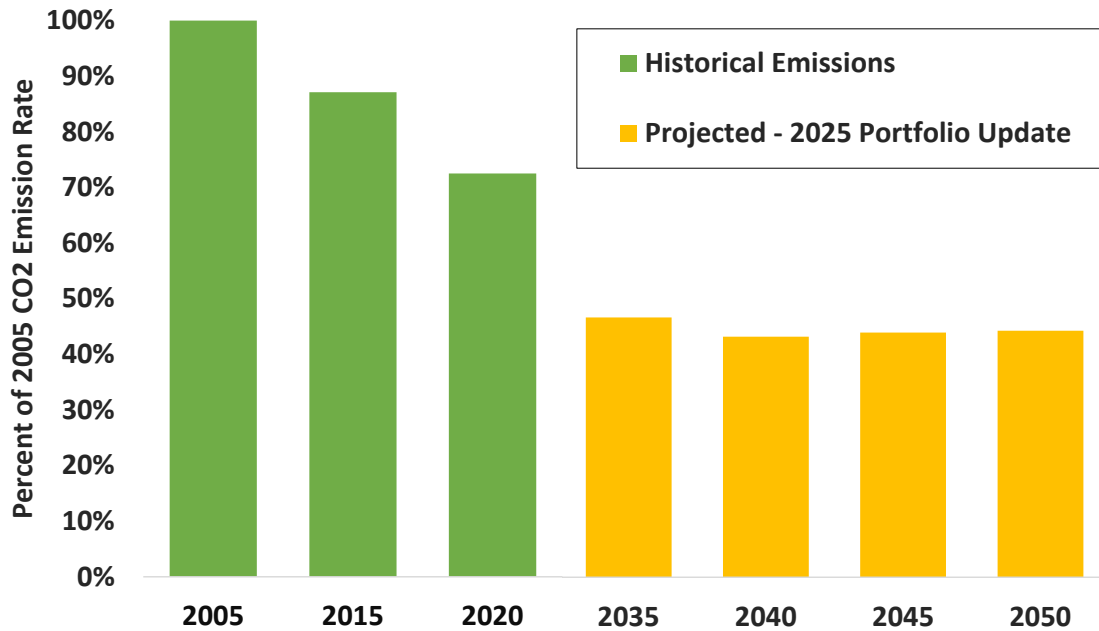
Figure 22. Projected 2040 Energy Mix – Reference v. High Fuel Price Cases



Conclusions

Figure 23 depicts historical and projected CO₂ emissions under the 2025 Portfolio Update for representative years as a percentage of 2005 emissions. The projected CO₂ emissions rate³⁷ resulting from the significant transition in generation mix above reflects a reduction to approximately 43 percent of 2005 levels by 2040 and below 40 percent by 2050.

Figure 23. Projected CO₂ Emissions Rate as a Percent of 2005



Based on a careful review of the needs of the Combined System and the evaluations discussed in this 2025 IRP Update, Santee Cooper has determined that the 2025 Portfolio Update will be used to guide its resource planning decisions until the 2026 Triennial IRP. The resource changes in this portfolio are consistent with the key elements in the 2023 Preferred Portfolio and the 2024 IRP Update.

Santee Cooper respectfully submits this 2025 IRP Update to the Commission for consideration and acceptance.

³⁷ The CO₂ emissions rate used herein refers to emissions per unit of electricity generation.

SHORT-TERM ACTION PLAN

Considering the results of the planning analyses summarized above and explained further in the body of the 2025 IRP Update report, Santee Cooper plans to proceed as follows, subject, where appropriate, to acceptance of the 2025 IRP Update by the Commission.

JOINT NGCC BUILD

This IRP Update has confirmed the key resources identified in the 2023 IRP, including the need for the Joint NGCC. It also supports additional large NGCC resources upon the retirement of the Winyah coal units. The greater load growth the Combined System is experiencing, and Santee Cooper and Central anticipate continuing for some period into the future, increases the need for these resources.

Santee Cooper will continue to refine project costs and schedule and will continue joint development of the project with DESC and preparation of a CEPCN filing currently planned for December 2025.

IMPLEMENT NEAR-TERM RESOURCES

An increase in Santee Cooper's planning reserve margin and the growth in load identified in the 2025 Load Forecast drive the need for resources that can be available in the near-term. These resources are critical for meeting the near-term demands but also serve as cost-effective and reliable long-term resources for customers of the Combined System. Santee Cooper intends to work closely with Central in implementing these resources, including the following, while complying with the requirements in the Coordination Agreement.

- **Winyah Two LM6000 Combustion Turbines.** The project presents a unique opportunity to add highly flexible and dispatchable resources to the Winyah Generation Station to meet capacity needs by winter 2028. Santee Cooper filed a Certification of Environmental Compatibility and Public Convenience and Necessity under the Siting Act with the Commission on August 28, 2025, under Docket Number 2025-246-E. Santee Cooper will continue to coordinate with Central in the approvals and implementation required to support this project.
- **Additional BESS Resources.** The 2025 IRP Update has identified the need for near-term BESS resources. Santee Cooper expects to issue a final award for the BESS RFP in September and execute a long-term energy storage service agreement in October 2025. Consistent with the analyses completed for this IRP Update, Santee Cooper is targeting at least 150 MW BESS by winter of 2028. Santee Cooper will update the Commission in the 2026 Triennial IRP.
- **Short-term capacity purchases.** Santee Cooper is evaluating short-term capacity options that will be pursued to ensure capacity requirements are met in the near term until other long-term resources are operational.

Short-term Action Plan

SOLAR RESOURCES

Santee Cooper and Central have negotiated contracts related to bids received through the 2024 Solar RFP; however, the counterparties are evaluating the impacts of the OBBB and related Treasury guidance, among other issues. Santee Cooper and Central expect to conclude this process soon. Updates will be provided to the Commission in Docket No. 2022-351-E and in future IRP filings. Santee Cooper plans to conduct other procurement efforts in the future and otherwise assess the market for renewable resources regularly.

UPDATE THE LOAD FORECAST AND MONITOR CHANGES IN POTENTIAL NEW LARGE CUSTOMERS

Santee Cooper and Central will continue to work closely together to monitor and update the load forecast including the potential for the addition of new customer loads. Santee Cooper will also continue to engage with stakeholders in discussing the methodology used to quantify the probability of large new customers joining the Combined System. The 2026 Triennial IRP will reflect updated load forecasts and, if warranted, changes to recommended resources or implementation schedules.

REFINE OPTIONS FOR NATURAL GAS RESOURCES TO MEET GROWING LOAD

This IRP Update has identified additional NGCC and NGCT resources, beyond the Joint NGCC, as cost-effective and reliable resources to meet growing load and resource needs in the mid- to late-2030s. Santee Cooper will continue to monitor and update the load forecast, which will impact the need for and the timing of these dispatchable resources. Santee Cooper will continue to evaluate the need and appropriate implementation steps to developing these resources and flexibly responding to system load growth and other future conditions.

MONITOR REGULATORY DEVELOPMENTS

As demonstrated by this IRP Update, the EPA GHG 2024 Rule has potentially dramatic cost implications and implementation risks for Santee Cooper and Central's customers. We will continue to monitor these regulations and will continue to refine the options for complying with existing and future GHG regulations.

CONTINUE STAKEHOLDER ENGAGEMENT AND STUDIES TO SUPPORT FUTURE FILINGS

Santee Cooper will complete studies identified in the 2023 IRP and 2024 IRP Update Short-Term Action Plans and comply with the requirements of Orders 2024-171 and 2025-244. These ongoing studies include the following.

- Cross retirement and associated transmission studies
- Planning Reserve Margin Study
- Effective Load Carrying Capability Study
- Renewable Integration Study
- Demand Side Management Market Potential Study
- Wind Feasibility Study

Santee Cooper will continue to engage with stakeholders to provide updates on these studies as they are prepared.

APPENDIX A: ABBREVIATIONS

AEO	Annual Energy Outlook	ITC	Investment tax credit
ATB	Annual Technology Baseline	kV	Kilovolt
BACT	Best available control technology	kW	Kilowatt
BAT	Best available technology	kWh	Kilowatt-hour
BESS	Battery energy storage system	LCOE	Levelized cost of energy
CAGR	Compound average growth rate	LCOC	Levelized cost of capacity
CC	Combined cycle generator	LFG	Landfill gas
CO ₂	Carbon dioxide	LOLE	Loss of load expectation
CRSG	Carolinas Reserve Sharing Group	MMBtu	1 million British thermal units
CT	Combustion turbine generator	MPS	Market potential study
CVR	Conservation voltage reduction	MW	Megawatt
DEC	Duke Energy Carolinas, LLC	MWh	Megawatt-hour
DESC	Dominion Energy South Carolina	NCP	Non-coincident peak
DG	Distributed generation	NERC	North American Electric Reliability Corporation
DOE	Department of Energy	NGCC	Natural gas-fired combined cycle
DR	Demand response	NGCT	Natural gas-fired combustion turbine
DSM	Demand-side management	NOAA	National Oceanic and Atmospheric Administration
EE	Energy efficiency	NRC	Nuclear Regulatory Commission
EFOR	Equivalent forced outage rate	NREL	National Renewable Energy Laboratory
EIA	Energy Information Administration (of the Department of Energy)	NSR	Non-Shared Resource
ELCC	Effective load carrying capability	NYMEX	New York Mercantile Exchange
ELG	Effluent limitation guidelines	OBBA	One Big Beautiful Bill (i.e., HR1)
EPA	Environmental Protection Agency	O&M	Operation and maintenance
EPRI	Electric Power Research Institute	PCT	Production tax credit
EV	Electric vehicle	PMPA	Piedmont Municipal Power Agency
FERC	Federal Energy Regulatory Commission	PO	Planned maintenance outage
GADS	Generating Availability Data System	PPA	Power purchase agreement
GHG	Greenhouse gas	PRM	Planning reserve margin
GWh	Gigawatt-hour (i.e., 1,000 MWh)	PSR	Proposed Shared Resource
IRA	Inflation Reduction Act	PV	Photovoltaic
IRP	Integrated resource plan		

Appendix A: Abbreviations

PVRR	Present value revenue requirement
RFP	Request for proposal
RICE	Reciprocating internal combustion engine
SAE	Statistically-adjusted end-use
SAM	NREL System Advisory Model
SCC	Social cost of carbon (CO ₂)
SERC	SERC Reliability Corporation
SERVM	Strategic Energy and Risk Evaluation Model
SEPA	Southeastern Power Administration
SMR	Small modular reactor
SOCO	Southern Company
TEA	The Energy Authority
UCT	Utility cost test

APPENDIX B: TRANSMISSION PROJECTS

ACTIVE PROJECTS

Johns Island – Queensboro (DESC) 115 kV Line

Currently, Johns Island has a single 230 kV transmission line providing service to the island and surrounding area. Backup service is available through a normally open 115 kV tie line with DESC, but it is not sufficient to serve all of the load in the area (Johns Island, Kiawah Island, Seabrook Island, and Wadmalaw Island) during high load periods. The backup tie line utilizes the same transmission corridor and structures as the 230 kV line for approximately 6 miles, making it vulnerable to outages during local weather events and making certain major maintenance activities impractical without a sustained outage. This new 115 kV project provides a transmission path from a separate source on a diverse route, or corridor, and will improve the electric reliability and increase resiliency for the James Island and Johns Island areas. This project is scheduled to be completed in 2025.

Conway 230 kV Switching Station

The Conway 230 kV Switching Station is expected to provide support for load in the Horry County area and mitigate voltage and thermal loading issues under contingency conditions. Initial plans involve folding in the Hemingway – Red Bluff 230 kV Line and termination of the new Marion – Conway 230 kV Line to the new 230 kV switching station. The site is located adjacent to the existing Conway 115-34.5 kV Substation and will be configured to allow for additional 230 kV network expansion in the area and future 230-115 kV transformation. This project is scheduled to be completed in 2025.

Marion – Conway 230 kV Line

The Marion – Conway 230 kV Line is expected to provide an additional 230 kV source to support load in Horry County and mitigate voltage and thermal loading violations which could occur under contingency conditions. This project involves constructing approximately 34 miles of double circuit 230/115 kV from the Marion 230-115-69 kV Substation to the proposed Conway 230 kV Switching Station. This construction is expected to be within the existing Marion – Conway 115 kV right-of-way and will result in the rebuild of the Marion-Conway 115 kV Line for 230/115 kV double-circuit, which increases the reliability of delivery points served directly from this line. This project is scheduled to be completed in 2025.

Carolina Forest 230-115 kV Transformer #1 Addition

This project is expected to mitigate the existing Carolina Forest transformer thermal loading violations that could occur under contingency conditions. This second transformer will increase the power flow through the Carolina Forest 230-115 kV Substation and will also reduce loading on the Perry Road 230-115 kV transformers. This project is scheduled to be completed in 2025.



Appendix B: Transmission Projects

Conway – Perry Road 230 kV Line

This project will establish a new 230 kV line between the Conway 230 kV Switching Station and Perry Road 230-115 kV Substation and is intended to be constructed on existing rights-of-way. This line provides an additional path into the load center in the Myrtle Beach area and alleviates thermal loading under contingency conditions. This project is scheduled to be completed in 2025.

Wassamassaw – Pringletown #1 & #2 115 kV Line

This transmission project will provide additional load serving capability for the anticipated load growth at Camp Hall and surrounding areas. The scope of this project includes the construction of a 230/115 kV double circuit line, to be initially operated at 115 kV, from the Pringletown 115 kV switching station to the Wassamassaw 230-115 kV substation. This project is scheduled to be completed in 2025.

Reconductor Purrysburg – McIntosh 230kV Tie Lines

This project is necessary to mitigate thermal loading under contingency conditions and increases transfer capability with neighboring utilities to support scheduled transmission service reservations. This project is scheduled to be completed in 2026.

Indian Field 230-115kV Substation

This substation will support 230 kV network expansion plans and load growth in the St. George area. The scope of this project includes folding in the existing Harleyville – St. George 115kV line to a new Indian Field 230-115kV substation and constructing a new 115kV transmission line from the Indian Field 230-115kV Substation to the existing St. George 115kV Switching Station. This project is scheduled to be completed in 2026.

Indian Field – Wassamassaw 230kV Line

This project will support load growth in Dorchester, Berkeley and Charleston counties. This project, along with the future Seaboard-Indian Field 230 kV line project, will create an additional 230 kV networked transmission path from the Southern region of the system directly to areas where load is growing. Transfer capability through the southern interface will also be improved by this additional 230 kV path, allowing Santee Cooper to continue to support the large load growth while maintaining transmission reliability.

The scope of this project includes the construction of an approximately 22 mile 230kV line from the proposed Indian Field 230-115kV substation to the Wassamassaw 230-115kV substation utilizing existing rights-of-way. This project is scheduled to be completed in 2026.

Cross – Wassamassaw 230 kV Line #2

This 230 kV circuit provides an additional path from Cross to Wassamassaw to provide a parallel network path to load and to mitigate thermal loading under contingency conditions. This project will use existing structures on the Cross– Jefferies 230 kV line for 15 miles from Cross and then



Appendix B: Transmission Projects

use existing right-of-way to construct the remaining 3-mile section to the Wassamassaw 230-115 kV Substation. This project is scheduled to be completed in 2027.

Bennettsville – Latta 69 kV Rebuild as Double Circuit

This 69 kV line rebuild will upgrade the existing circuit and provide an additional path to an area in Marion County seeing industrial load growth. This project alleviates multiple thermal and voltage violations identified under contingency conditions. This project rebuilds the existing Latta – Bennettsville 69 kV line as a double circuit 69/69 kV line, which will increase the overall reliability in the area and to delivery points served from this line. This project is scheduled to be completed in 2027.

Seaboard 230-115 kV Substation

A new Seaboard 230-115 kV Substation will facilitate the addition of new 230 kV transmission lines to support future transmission network expansion plans. The existing Varnville Substation has space limitations and cannot accommodate additional 230 kV line terminals or other facilities required to provide reliable long-term service to the area. This project is scheduled to be completed in 2027.

Seaboard – Indian Field 230 kV Line

This 230 kV line project is necessary to add an additional 230 kV transmission path from the Southern region of the system to the Eastern region of the system. Planning assessments indicate that the existing Southern path will be constrained under contingency conditions. The scope of this project includes the construction of a 230 kV transmission line (approximately 38 miles in length) from the Seaboard 230-115 kV Substation to the new Indian Field 230-115 kV Substation as well as rebuilding the existing Bells Crossroads – Varnville 115 kV Line for 230/115 kV double-circuit on the existing right-of-way. The scope also includes rebuilding the St. George – Bells Crossroads 115 kV Line #2 for 230/115 kV double-circuit on the existing right-of-way. This project is scheduled to be completed in 2028.

Marion– Red Bluff 230 kV Line

The Marion – Red Bluff 230 kV line will provide an additional 230 kV source to the northern end of the Horry-Georgetown area which is continuing to experience high load growth. This project mitigates thermal loading issues in the eastern part of the transmission system under contingency conditions. This project will construct a 230 kV line from the Marion 230-115-69 kV Substation to the Red Bluff 230-115 kV Substation using a combination of existing right-of-way and new right-of-way and would result in rebuilding portions of the Marion – Latta #2 69 kV Line, the Allen – Pine Level #2 115 kV line and the Pine Level – Red Bluff 115 kV Line for double circuit 230/115 kV construction, which will increase reliability to delivery points served from these lines. This project is scheduled to be completed in 2028.



Appendix B: Transmission Projects

Kingstree – Hemingway 230 kV Line #2

This 230 kV line will provide an additional path from generating resources in the western part of the state toward load centers in the east and alleviates multiple thermal and voltage violations identified under contingency conditions. This project rebuilds the existing Kingstree – Hemingway 115 kV line as a double circuit 230/115 kV line, which will increase the reliability to delivery points served from this line. This project is scheduled to be completed in 2029.

Bluffton – Market Place #2 115 kV Line Phase 2

This project will provide additional transmission capacity to support the load growth, and it will also provide increased electric reliability to residents and businesses on Hilton Head Island. The new transmission line will be constructed to the most up-to-date standards and codes that will provide more resilience during adverse weather conditions. This project will establish a new 115 kV line from the Bluffton area to Hilton Head Island and terminate at the Hilton Head 115 kV Switching Station in Jasper County. This new line section will be extending an existing 115 kV line from the Buckingham area in Bluffton to the Hilton Head plantation area. This project is scheduled to be completed in 2030.

Yemassee – Varnville 230 kV Line Rebuild

This 230 kV line project is necessary to facilitate an additional 230 kV transmission path from the Southern region of the system toward the Eastern region of the system. Planning assessments indicate that the existing Southern path will be constrained under contingency conditions. This project will rebuild the existing Yemassee – Varnville 230 kV line as two parallel 230 kV circuits from the Yemassee 230 kV Switching Station to the new Seaboard 230-115 kV Substation (approximately 9 miles) along the existing transmission corridor. This project is scheduled to be completed in 2030.

PLANNED PROJECTS

Nixons Crossroads – Red Bluff #1 115 kV Line

This project will provide support to the north Myrtle Beach area and help to maintain system reliability under contingency conditions. The scope of this project includes the construction of a 115 kV transmission line from Nixon's Crossroads 115-12 kV Substation to the Brooksville Cooperative Delivery Point Substation.

Cross – Jefferies 230 kV #2 Line

This project will add an additional 230 kV transmission network path to support load growth in Berkeley, Dorchester and Charleston counties. Planning assessments indicate that this project will mitigate thermal loading violations under contingency. The scope of this project includes the construction of a 230kV transmission line (approximately 23 miles in length) from the Cross Generation Station to the Jefferies 230-115 kV Substation, mostly on existing right-of-way. The



Appendix B: Transmission Projects

scope includes rebuilding of sections of an existing 115 kV line as double circuit 230/115 kV and building a single 230 kV circuit utilizing existing corridors.

Bucksville – Conway 230 kV Line

This project will add an alternate path to deliver power from Hemingway to Bucksville via Conway and mitigate identified thermal loading conditions in the area. The scope of this project includes the construction of a 7-mile 230 kV line from the Bucksville 230-115 kV substation to the Conway 230 kV Switching Station along the existing transmission corridor.

Orangeburg – Indian Field 230 kV Line

This project will add an additional 230 kV transmission path to the Eastern region of the system to support load growth in the St. George area. Planning assessments indicate that the existing transmission paths into the area will be constrained under contingency conditions. The scope of this project includes the construction of a 230kV transmission line (approximately 26 miles in length) from the Indian Field 230-115kV substation to the Orangeburg 230-115kV substation. The scope includes the rebuild of an existing 115 kV line from the Orangeburg 230-115 kV Substation to the St. George 115 kV Switching Station along the existing corridor.

Rebuild Perry Rd – Myrtle Beach #2 115 kV Line

This project will alleviate thermal loading identified under contingency conditions and maintain transmission reliability in the area. The project scope includes rebuilding the existing 556 ACSR section of the Perry Road-Myrtle Beach #2 115 kV Line with 1272 ACSR conductor.

Cedar Knoll 230-69kV Substation

This project will support load growth in the Blythewood and Columbia areas and alleviate transformer loading in the area identified under contingency conditions. The scope of this project includes the construction of the new 230-69 kV Cedar Knoll substation as well as the fold in of the Pomaria – Sandy Run 230kV Line, the Bythewood - Pomaria 69 kV line, and the Blythewood - Columbia 69 kV lines into the new substation.

APPENDIX C: OPTIMIZED PORTFOLIO BUILDS

Table C-1: 2023 Portfolio Re-Optimized Additions and Retirements (MW)

Year	Changes in Existing Resources				New Resources								Total
	Coal	NGCC	NGCT	Solar	PPAs	Central NSR	NGCC	NGCT	Solar	Wind	BESS	SMR	
2025	0	0	0	0	441	0	0	0	0	0	0	0	441
2026	0	0	0	125	0	0	0	0	0	0	0	0	125
2027	0	0	0	0	0	0	0	0	0	0	100	0	100
2028	0	594	(339)	(75)	0	0	0	0	300	0	50	0	530
2029	0	0	0	(130)	(394)	672	0	0	300	0	150	0	598
2030	0	0	0	0	0	0	0	0	300	0	0	0	300
2031	0	0	0	0	0	0	0	0	300	0	0	0	300
2032	0	0	0	0	0	0	333	0	300	0	0	0	633
2033	(1,150)	0	0	0	0	0	1,961	0	0	0	0	0	811
2034	0	0	(165)	0	0	0	0	0	0	0	0	0	(165)
2035	0	0	0	0	0	0	0	0	0	0	0	0	0
2036	0	0	0	0	0	0	0	0	0	0	0	0	0
2037	0	0	0	0	0	0	0	0	0	0	0	0	0
2038	0	0	0	0	0	0	0	0	0	0	0	0	0
2039	0	0	0	0	0	0	0	449	0	0	0	0	449
2040	0	0	0	0	0	0	0	0	0	0	0	0	0
2041	0	0	0	0	0	0	0	0	0	0	0	0	0
2042	0	0	0	0	0	0	0	0	0	0	0	0	0
2043	0	0	0	0	0	0	0	0	0	0	0	0	0
2044	0	0	0	0	0	0	0	0	0	0	0	0	0
2045	0	0	0	0	0	0	0	0	300	50	0	0	350
2046	0	0	0	(200)	0	0	0	0	0	0	0	0	(200)
2047	0	0	0	0	0	0	0	0	0	0	(50)	0	(50)
2048	0	0	0	0	0	0	0	0	0	0	50	0	50
2049	0	0	0	0	0	0	0	0	0	0	50	0	50
2050	0	0	0	0	0	0	0	0	200	0	100	0	300
2051	0	0	0	0	0	0	0	0	50	0	50	0	100
2052	0	0	0	0	0	0	0	0	200	0	50	0	250
Total	(1,150)	594	(504)	(280)	47	672	2,294	449	2,250	50	550	0	4,972

Appendix C: Optimized Portfolio Builds

Table C-2: 2025 Optimized Portfolio Additions and Retirements (MW)

Year	Changes in Existing Resources				New Resources								Total
	Coal	NGCC	NGCT	Solar	PPAs	Central NSR	NGCC	NGCT	Solar	Wind	BESS	SMR	
2025	0	0	0	0	441	0	0	0	0	0	0	0	441
2026	0	0	0	125	0	0	0	0	0	0	0	0	125
2027	0	0	0	0	0	0	0	0	0	0	100	0	100
2028	0	594	(339)	(75)	0	0	0	0	0	0	50	0	230
2029	0	0	0	(130)	(394)	672	0	0	0	0	150	0	298
2030	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	0	0	0	0	0
2032	0	0	0	0	0	0	333	0	0	0	0	0	333
2033	(1,150)	0	0	0	0	0	1,961	0	0	0	0	0	811
2034	0	0	(165)	0	0	0	0	0	0	0	0	0	(165)
2035	0	0	0	0	0	0	0	0	0	0	0	0	0
2036	0	0	0	0	0	0	0	0	0	0	0	0	0
2037	0	0	0	0	0	0	0	0	0	0	0	0	0
2038	0	0	0	0	0	0	0	0	0	0	0	0	0
2039	0	0	0	0	0	0	0	449	0	0	0	0	449
2040	0	0	0	0	0	0	0	0	0	0	0	0	0
2041	0	0	0	0	0	0	0	0	250	0	0	0	250
2042	0	0	0	0	0	0	0	0	300	0	0	0	300
2043	0	0	0	0	0	0	0	0	300	0	0	0	300
2044	0	0	0	0	0	0	0	0	300	0	0	0	300
2045	0	0	0	0	0	0	0	0	300	0	0	0	300
2046	0	0	0	(200)	0	0	0	0	0	0	0	0	(200)
2047	0	0	0	0	0	0	0	0	100	0	(50)	0	50
2048	0	0	0	0	0	0	0	0	0	0	0	0	0
2049	0	0	0	0	0	0	0	0	0	0	150	0	150
2050	0	0	0	0	0	0	0	0	300	0	0	0	300
2051	0	0	0	0	0	0	0	0	100	0	0	300	400
2052	0	0	0	0	0	0	0	0	50	0	0	0	50
Total	(1,150)	594	(504)	(280)	47	672	2,294	449	2,000	0	400	300	4,822

Appendix C: Optimized Portfolio Builds

Table C-3: 2025 Portfolio with Solar Additions and Retirements (MW)

Year	Changes in Existing Resources				New Resources								Total
	Coal	NGCC	NGCT	Solar	PPAs	Central NSR	NGCC	NGCT	Solar	Wind	BESS	SMR	
2025	0	0	0	0	441	0	0	0	0	0	0	0	441
2026	0	0	0	125	0	0	0	0	0	0	0	0	125
2027	0	0	0	0	0	0	0	0	0	0	100	0	100
2028	0	594	(339)	(75)	0	0	0	0	0	0	50	0	230
2029	0	0	0	(130)	(394)	672	0	0	0	0	150	0	298
2030	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	50	0	0	0	50
2032	0	0	0	0	0	0	333	0	0	0	0	0	333
2033	(1,150)	0	0	0	0	0	1,961	0	50	0	0	0	861
2034	0	0	(165)	0	0	0	0	0	100	0	0	0	(65)
2035	0	0	0	0	0	0	0	0	100	0	0	0	100
2036	0	0	0	0	0	0	0	0	100	0	0	0	100
2037	0	0	0	0	0	0	0	0	100	0	0	0	100
2038	0	0	0	0	0	0	0	0	100	0	0	0	100
2039	0	0	0	0	0	0	0	449	100	0	0	0	549
2040	0	0	0	0	0	0	0	0	100	0	0	0	100
2041	0	0	0	0	0	0	0	0	100	0	0	0	100
2042	0	0	0	0	0	0	0	0	100	0	0	0	100
2043	0	0	0	0	0	0	0	0	100	0	0	0	100
2044	0	0	0	0	0	0	0	0	100	0	0	0	100
2045	0	0	0	0	0	0	0	0	100	0	0	0	100
2046	0	0	0	(200)	0	0	0	0	100	0	0	0	(100)
2047	0	0	0	0	0	0	0	0	100	0	(50)	0	50
2048	0	0	0	0	0	0	0	0	100	0	(50)	300	350
2049	0	0	0	0	0	0	0	0	100	0	0	0	100
2050	0	0	0	0	0	0	0	0	100	0	0	0	100
2051	0	0	0	0	0	0	0	0	100	0	0	0	100
2052	0	0	0	0	0	0	0	0	100	0	0	0	100
Total	(1,150)	594	(504)	(280)	47	672	2,294	449	2,000	0	200	300	4,622

Appendix C: Optimized Portfolio Builds

Table C-4: 2025 Portfolio Update Additions and Retirements (MW)

Year	Changes in Existing Resources				New Resources								Total
	Coal	NGCC	NGCT	Solar	PPAs	Central NSR	NGCC	NGCT	Solar	Wind	BESS	SMR	
2025	0	0	0	0	441	0	0	0	0	0	0	0	441
2026	0	0	0	125	0	0	0	0	0	0	0	0	125
2027	0	0	0	0	0	0	0	0	0	0	100	0	100
2028	0	594	(339)	(75)	0	0	0	0	0	0	50	0	230
2029	0	0	0	(130)	(394)	672	0	0	0	0	150	0	298
2030	0	0	0	0	0	0	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0	0	50	0	0	0	50
2032	0	0	0	0	0	0	333	0	0	0	0	0	333
2033	0	0	0	0	0	0	665	0	50	0	0	0	715
2034	0	0	(165)	0	0	0	0	0	100	0	0	0	(65)
2035	(1,150)	0	0	0	0	0	1,296	0	100	0	0	0	246
2036	0	0	0	0	0	0	0	0	100	0	0	0	100
2037	0	0	0	0	0	0	0	0	100	0	0	0	100
2038	0	0	0	0	0	0	0	0	100	0	0	0	100
2039	0	0	0	0	0	0	0	449	100	0	0	0	549
2040	0	0	0	0	0	0	0	0	100	0	0	0	100
2041	0	0	0	0	0	0	0	0	100	0	0	0	100
2042	0	0	0	0	0	0	0	0	100	0	0	0	100
2043	0	0	0	0	0	0	0	0	100	0	0	0	100
2044	0	0	0	0	0	0	0	0	100	0	0	0	100
2045	0	0	0	0	0	0	0	0	100	0	0	0	100
2046	0	0	0	(200)	0	0	0	0	100	0	0	0	(100)
2047	0	0	0	0	0	0	0	0	100	0	(50)	0	50
2048	0	0	0	0	0	0	0	0	100	0	50	0	150
2049	0	0	0	0	0	0	0	0	100	0	0	0	100
2050	0	0	0	0	0	0	0	0	100	0	0	0	100
2051	0	0	0	0	0	0	0	0	100	0	0	300	400
2052	0	0	0	0	0	0	0	0	100	0	0	0	100
Total	(1,150)	594	(504)	(280)	47	672	2,294	449	2,000	0	300	300	4,722

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Appendix C: Optimized Portfolio Builds

Table C-5: GHG 2024 Rule Portfolio Additions and Retirements (MW)

Year	Changes in Existing Resources				New Resources								Total
	Coal	NGCC	NGCT	Solar	PPAs	Central NSR	NGCC	NGCT	Solar	Wind	BESS	SMR	
2025	0	0	0	0	441	0	0	0	0	0	0	0	441
2026	0	0	0	125	0	0	0	0	0	0	0	0	125
2027	0	0	0	0	0	0	0	0	0	0	100	0	100
2028	0	594	(339)	(75)	0	0	0	0	0	0	50	0	230
2029	0	0	0	(130)	(394)	672	0	0	0	0	150	0	298
2030	0	0	0	0	0	0	0	0	300	0	0	0	300
2031	0	0	0	0	0	0	0	0	300	0	0	0	300
2032	(3,480)	0	0	0	0	0	2,294	2,244	300	0	0	0	1,358
2033	0	0	0	0	0	0	0	0	300	0	0	0	300
2034	0	0	(165)	0	0	0	0	449	300	100	0	0	684
2035	0	0	0	0	0	0	0	0	300	100	0	0	400
2036	0	0	0	0	0	0	0	0	300	0	0	0	300
2037	0	0	0	0	0	0	0	0	300	0	0	0	300
2038	0	0	0	0	0	0	0	0	150	0	0	0	150
2039	0	0	0	0	0	0	0	0	200	0	0	0	200
2040	0	0	0	0	0	0	0	0	0	0	0	0	0
2041	0	0	0	0	0	0	0	0	300	0	0	0	300
2042	0	0	0	0	0	0	0	0	150	0	0	0	150
2043	0	0	0	0	0	0	0	0	150	0	0	0	150
2044	0	0	0	0	0	0	0	0	100	0	0	0	100
2045	0	0	0	0	0	0	0	0	300	0	0	0	300
2046	0	0	0	(200)	0	0	0	0	0	0	0	0	(200)
2047	0	0	0	0	0	0	0	0	0	0	(100)	300	200
2048	0	0	0	0	0	0	0	0	0	0	(50)	0	(50)
2049	0	0	0	0	0	0	0	0	0	0	0	0	0
2050	0	0	0	0	0	0	0	0	0	0	0	0	0
2051	0	0	0	0	0	0	0	0	0	0	0	300	300
2052	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	(3,480)	594	(504)	(280)	47	672	2,294	2,693	3,750	200	150	600	6,736

APPENDIX D: NPV POWER COST SUMMARY

Table D-1: Net Present Value Power Costs by Portfolio Across Sensitivities (\$B; 2025\$)

Portfolio	Sensitivity Case	Study Period (2024-52)	20 Years (2031-50)
2023 Portfolio Re-Optimized	Reference	\$37.3	\$28.0
2025 Optimized Portfolio	Reference	\$36.7	\$27.5
2025 Portfolio with Solar	Reference	\$36.8	\$27.7
2025 Portfolio Update	Reference	\$36.8	\$27.5
GHG 2024 Rule Portfolio	Reference	\$43.6	\$34.1
2023 Portfolio Re-Optimized	Low Fuel	\$31.8	\$23.4
2025 Optimized Portfolio	Low Fuel	\$31.0	\$22.6
2025 Portfolio with Solar	Low Fuel	\$31.2	\$22.9
2025 Portfolio Update	Low Fuel	\$31.3	\$22.8
GHG 2024 Rule Portfolio	Low Fuel	\$37.5	\$28.8
2023 Portfolio Re-Optimized	High Fuel	\$47.5	\$36.6
2025 Optimized Portfolio	High Fuel	\$47.4	\$36.6
2025 Portfolio with Solar	High Fuel	\$47.3	\$36.5
2025 Portfolio Update	High Fuel	\$47.0	\$36.1
GHG 2024 Rule Portfolio	High Fuel	\$58.3	\$46.9
2023 Portfolio Re-Optimized	Med CO2	\$45.1	\$34.1
2025 Optimized Portfolio	Med CO2	\$45.2	\$34.2
2025 Portfolio with Solar	Med CO2	\$45.1	\$34.1
2025 Portfolio Update	Med CO2	\$45.3	\$34.3
GHG 2024 Rule Portfolio	Med CO2	\$50.4	\$39.3
2023 Portfolio Re-Optimized	High CO2	\$59.7	\$45.4
2025 Optimized Portfolio	High CO2	\$61.2	\$46.7
2025 Portfolio with Solar	High CO2	\$60.5	\$46.1
2025 Portfolio Update	High CO2	\$61.5	\$46.9
GHG 2024 Rule Portfolio	High CO2	\$63.6	\$49.1
2023 Portfolio Re-Optimized	High Load	\$29.3	\$21.0
2025 Optimized Portfolio	High Load	\$28.8	\$20.6
2025 Portfolio with Solar	High Load	\$28.8	\$20.6
2025 Portfolio Update	High Load	\$29.2	\$21.0
GHG 2024 Rule Portfolio	High Load	\$34.5	\$26.0
2023 Portfolio Re-Optimized	Low Load	\$46.6	\$36.3
2025 Optimized Portfolio	Low Load	\$46.1	\$35.8
2025 Portfolio with Solar	Low Load	\$46.1	\$35.9
2025 Portfolio Update	Low Load	\$46.2	\$35.8
GHG 2024 Rule Portfolio	Low Load	\$54.2	\$43.6

APPENDIX E: RENEWABLE GENERATION FORECAST

Table E-1: Renewable Generation by Portfolio (GWh)³⁸

Year	2023 Portfolio Re-Optimized	2025 Optimized Portfolio	2025 Portfolio with Solar	2025 Portfolio Update	GHG 2024 Rule Portfolio
2025	2,142	2,142	2,142	2,142	2,142
2026	2,329	2,329	2,329	2,329	2,329
2027	2,329	2,325	2,325	2,325	2,329
2028	2,653	1,949	1,949	1,949	1,949
2029	3,024	1,621	1,622	1,621	1,622
2030	3,730	1,624	1,624	1,624	2,325
2031	4,444	1,621	1,741	1,741	3,051
2032	5,176	1,629	1,747	1,746	3,762
2033	5,175	1,624	1,865	1,864	4,493
2034	5,173	1,620	2,104	2,106	5,520
2035	5,168	1,620	2,342	2,342	6,543
2036	5,181	1,629	2,602	2,603	7,316
2037	5,166	1,620	2,845	2,845	8,051
2038	5,170	1,620	3,103	3,103	8,424
2039	5,184	1,623	3,359	3,359	8,962
2040	5,175	1,626	3,607	3,607	8,939
2041	5,175	2,254	3,860	3,860	9,704
2042	5,166	3,006	4,105	4,105	10,061
2043	5,165	3,762	4,356	4,357	10,430
2044	5,180	4,529	4,621	4,621	10,687
2045	6,087	5,283	4,871	4,870	11,411
2046	5,707	4,904	4,752	4,752	11,055
2047	5,716	5,172	5,019	5,020	11,000
2048	5,711	5,167	5,277	5,276	10,976
2049	5,704	5,162	5,530	5,531	10,976
2050	6,236	5,955	5,802	5,802	11,004
2051	6,365	6,216	6,063	6,063	10,924
2052	6,899	6,355	6,334	6,333	10,963

³⁸ Renewable generation includes solar, hydro, wind, and biomass.

APPENDIX F: RATE IMPACTS

Figure F-1: Projected Rate Index for the Portfolios Studied Under Low Fuel Prices

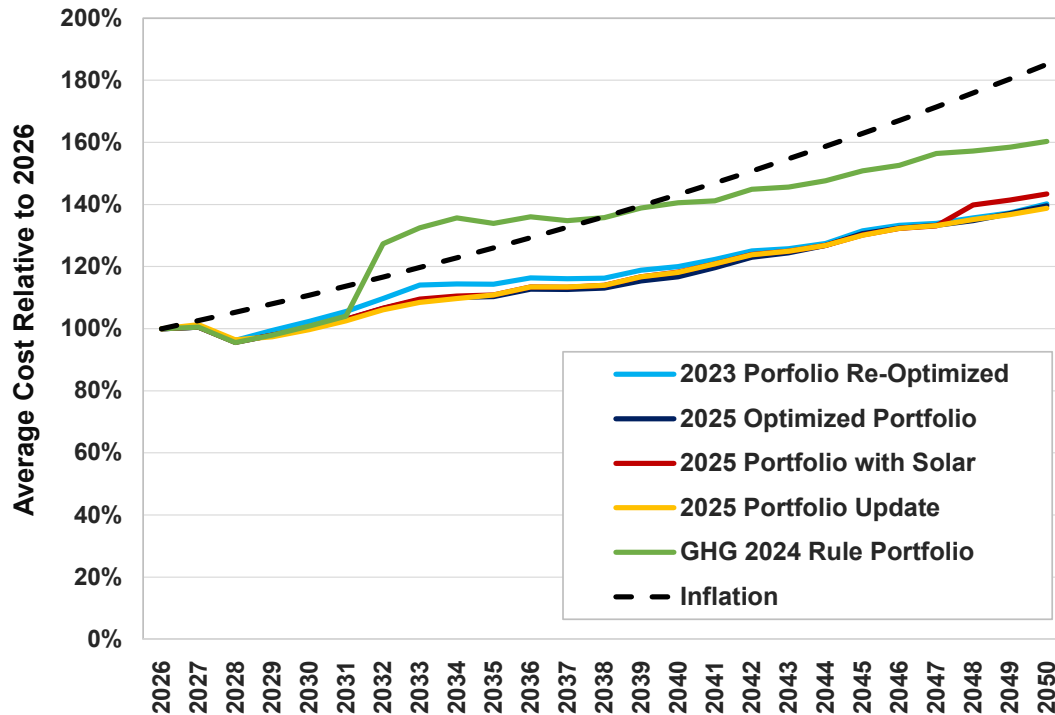


Figure F-2: Projected Rate Index for Foundational Portfolios Under High Fuel Prices

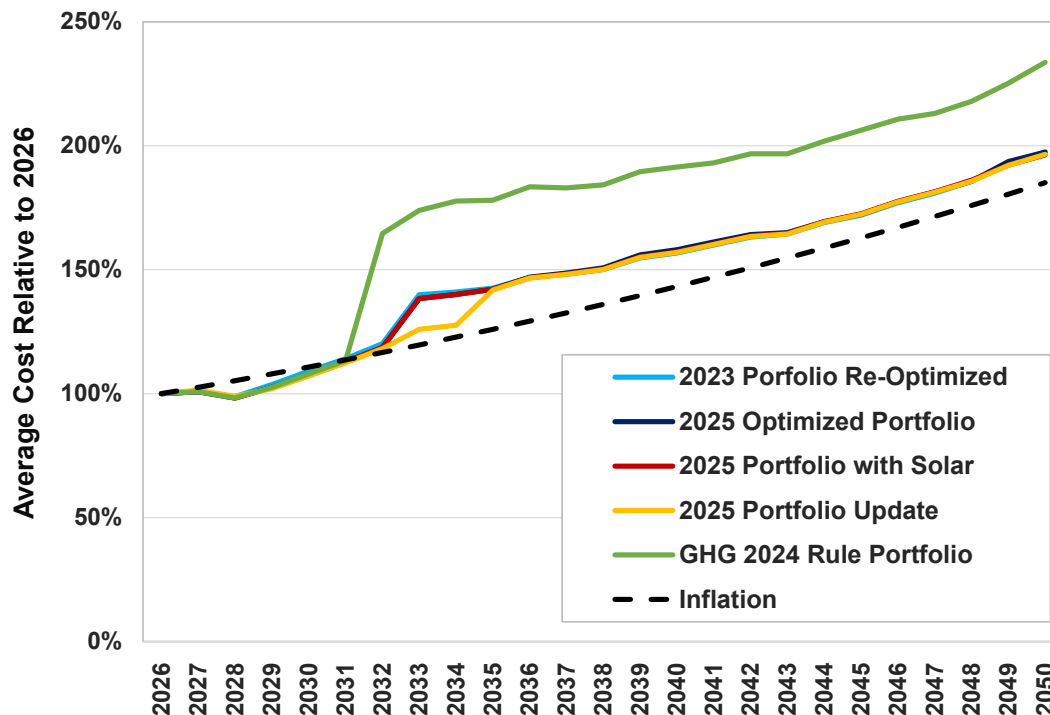


Figure F-3: Projected Rate Index for Foundational Portfolios Under Medium CO₂ Prices

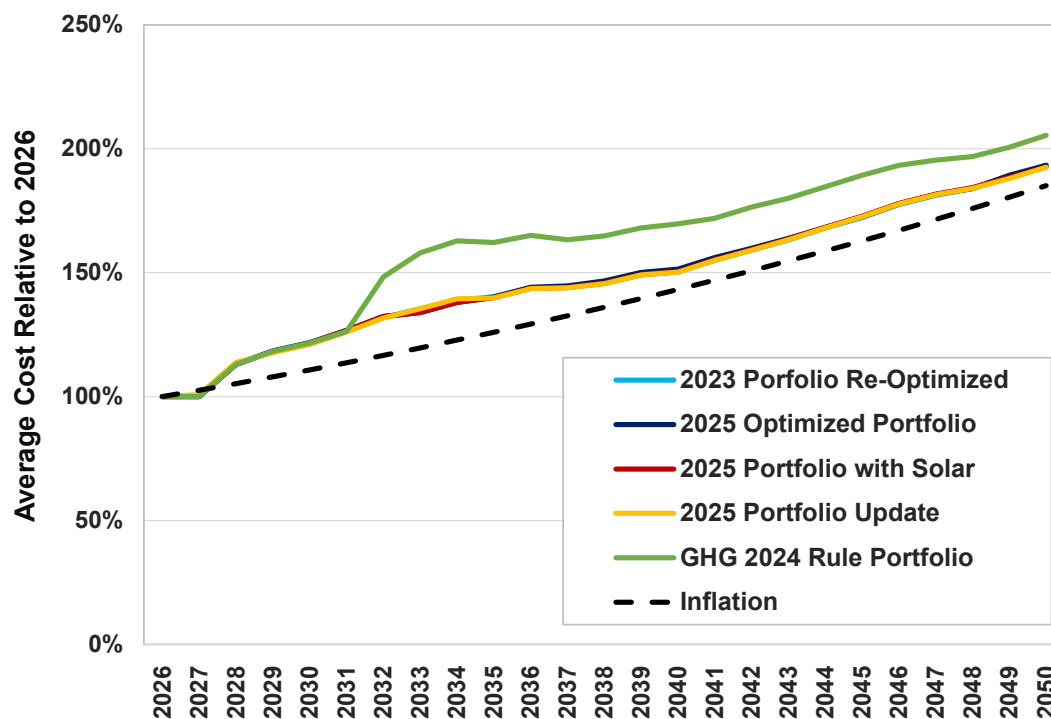
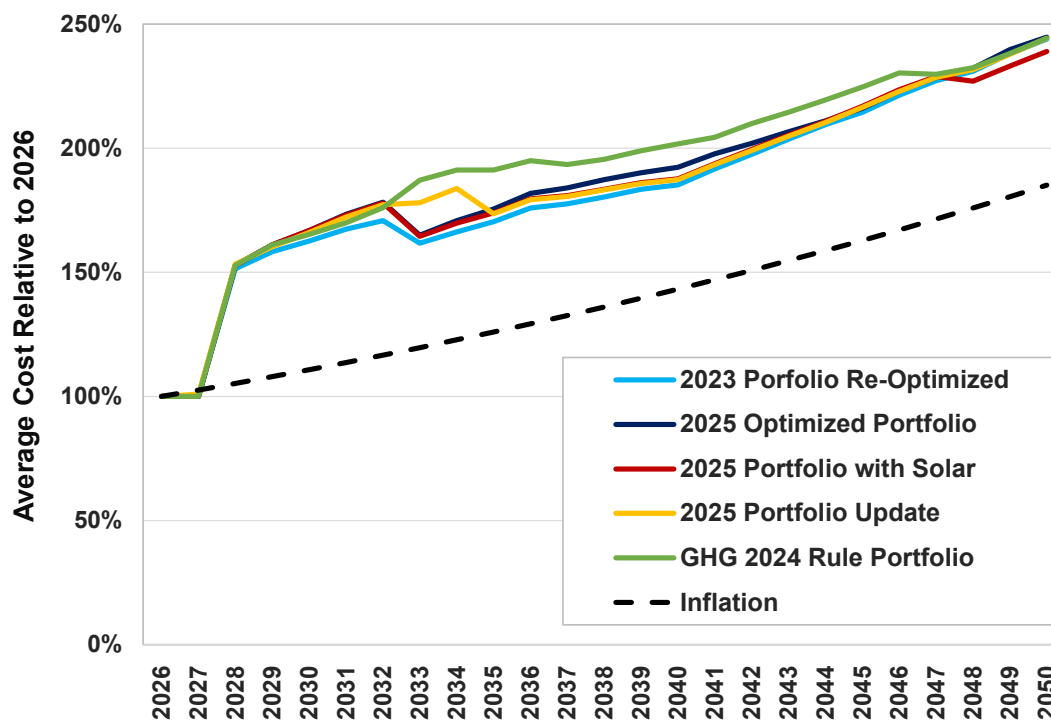


Figure F-4: Projected Rate Index for Foundational Portfolios Under High CO₂ Prices



APPENDIX G: GENERATION FLEET DATA

Table G-1: Generation Fleet Summary

Generating Station	Unit #	Service Date	End of Useful Life ¹	Fuel Type	Technology	Winter Rating ² (MW)	Summer Rating ² (MW)
Cross Pineville, SC	1	1995	2055	Coal	ST	585	580
	2	1983	2053	Coal	ST	570	565
	3	2007	2067	Coal	ST	580	585
	4	2008	2068	Coal	ST	595	605
Winyah Georgetown, SC	1	1975	To be retired as soon as replacement resources can be implemented	Coal	ST	280	275
	2	1977		Coal	ST	290	285
	3	1980		Coal	ST	290	285
	4	1981		Coal	ST	290	285
Rainey Iva, SC	1 ³	2002	2052	NG	CC	520	460
	2A	2002	2052	NG	CT	180	146
	2B	2002	2052	NG	CT	180	146
	3	2004	2054	NG	CT	90	75
	4	2004	2054	NG	CT	90	75
	5	2004	2054	NG	CT	90	75
Cherokee Gaffney, SC		2023 ⁴	2052	NG	CC	98	86
Myrtle Beach	1	1962	2034	NG	CT	10	8
	2	1962	2034	NG	CT	10	8
	3	1972	2034	NG	CT	20	19
	4 ⁵	1972	2034	NG	CT	20	19
	5	1976	2034	NG	CT	25	21
Hilton Head	1	1973	2034	Oil	CT	20	16
	2	1974	2034	Oil	CT	20	16
	3	1979	2034	Oil	CT	60	52
V.C. Summer Nuclear Unit 1 Jenkinsville, SC	1 ⁶	1983	2062	Uranium	NUC	322	322
Jefferies Lake Moultrie	1	1942	2062	Water	Hydro	30	30
	2	1942	2062	Water	Hydro	36	36
	3	1942	2062	Water	Hydro	30	30
	4	1942	2062	Water	Hydro	36	36
	6	1942	2062	Water	Hydro	8	8
Spillway Lake Marion	-	1950	2070	Water	Hydro	2	2
Landfill Gas (multiple sites)	-	2001 - 2011		LFG	CT, IC	26	26
Total Capacity						5383	5158
<p>1) Referenced end of useful life of resources were developed for use for IRP planning and modeling and are based on specific retirement dates proposed by Santee Cooper, industry data on actual and planned retirement dates for generating resources in the U.S. reported by S&P Global Capital IQ (S&P) and Energy Velocity/ABB (EV), industry data on operating lives of existing resources in the U.S. reported by S&P and EV, and information contained in recent Duke and Dominion Energy IRPs filed in South Carolina. Estimated potential lives are not based on any information on the condition of Santee Cooper facilities.</p> <p>2) Ratings shown are Net Dependable Capacity values</p> <p>3) Rainey 1 denotes the combined capacity of combustion turbine Units 1A and 1B combined with steam turbine Unit 1S in a combined cycle configuration.</p> <p>4) Purchased by Santee Cooper 2023</p> <p>5) Myrtle Beach Combustion Turbine No. 4 is unavailable until further notice and is not included in the totals above.</p> <p>6) Current operating license was recently extended to 2062.</p>							

Appendix G: Generation Fleet Data

Table G-2: Annual Forced Outage Rate

Annual Forced Outage Rate						
Generating Station	Unit	2020	2021	2022	2023	2024
Cross Pineville, SC	1	1.51%	1.31%	3.15%	3.60%	29.79%
	2	0.00%	5.37%	35.50%	8.16%	11.21%
	3	1.30%	8.52%	1.67%	2.19%	6.72%
	4	1.00%	1.84%	4.41%	2.20%	4.58%
Winyah Georgetown, SC	1	4.93%	5.08%	2.75%	3.42%	6.60%
	2	3.26%	4.92%	3.72%	3.90%	11.46%
	3	0.91%	0.69%	1.81%	3.22%	0.55%
	4	6.99%	0.00%	8.99%	3.29%	1.39%
Rainey Iva, SC	1	0.50%	0.38%	0.10%	0.91%	0.24%
	2A	0.01%	0.11%	0.01%	0.10%	0.07%
	2B	0.22%	0.14%	0.02%	0.00%	0.55%
	3	0.27%	0.59%	0.00%	0.72%	4.97%
	4	22.54%	5.91%	0.00%	0.36%	3.58%
	5	0.67%	1.71%	0.93%	0.00%	4.73%
Cherokee Gaffney, SC	1	6.41%	0.29%	0.56%	8.25%	0.46%
Myrtle Beach	1	0.00%	99.76%	90.90%	99.17%	99.75%
	2	66.31%	70.21%	47.19%	99.80%	88.41%
	3	52.12%	98.87%	12.32%	0.00%	0.00%
	4	100.00%	100.00%	N/A	N/A	0.00%
	5	99.12%	0.00%	93.19%	99.98%	95.80%
Hilton Head	1	0.00%	0.00%	99.05%	0.00%	0.00%
	2	0.00%	0.00%	0.00%	99.92%	98.83%
	3	97.07%	26.37%	79.62%	75.28%	93.92%
Summer Nuclear Unit 1 Jenkinsville, SC	1	0.73%	8.36%	0.00%	4.20%	0.00%
Jefferies Lake Moultrie	1	0.00%	4.35%	46.24%	0.16%	22.61%
	2	0.10%	0.17%	0.12%	0.80%	1.07%
	3	0.00%	24.77%	0.45%	0.33%	0.18%
	4	0.01%	0.15%	3.24%	0.08%	0.91%
	6	0.00%	0.00%	0.00%	0.00%	0.00%

Appendix G: Generation Fleet Data

Table G-3: Annual Availability Factor

Annual Availability Factor						
Generating Station	Unit	2020	2021	2022	2023	2024
Cross Pineville, SC	1	97.8%	91.5%	67.4%	91.5%	74.6%
	2	96.3%	89.3%	66.4%	54.8%	79.5%
	3	96.9%	61.3%	95.9%	89.7%	87.8%
	4	97.1%	75.8%	92.6%	93.0%	81.1%
Winyah Georgetown, SC	1	89.7%	91.4%	90.0%	77.4%	92.9%
	2	69.2%	71.7%	93.1%	91.9%	67.9%
	3	92.5%	75.3%	95.1%	89.2%	77.8%
	4	97.3%	43.2%	86.4%	71.1%	92.7%
Rainey Iva, SC	1	94.2%	92.9%	96.8%	85.3%	69.6%
	2A	96.5%	95.1%	97.7%	93.9%	97.3%
	2B	96.3%	95.7%	98.8%	98.4%	88.9%
	3	98.0%	96.2%	98.3%	97.9%	97.5%
	4	94.2%	97.1%	96.8%	98.0%	96.9%
	5	96.0%	92.9%	99.1%	98.1%	97.6%
Cherokee Gaffney, SC	1	86.2%	90.9%	93.4%	90.7%	88.6%
Myrtle Beach	1	100.0%	96.7%	94.9%	95.0%	72.7%
	2	99.9%	99.9%	99.3%	96.2%	95.2%
	3	99.9%	75.9%	99.8%	99.8%	98.5%
	4	0.0%	0.0%	N/A	N/A	N/A
	5	94.2%	100.0%	81.4%	72.8%	85.0%
Hilton Head	1	100.0%	100.0%	41.5%	99.8%	99.7%
	2	0.0%	100.0%	99.9%	77.3%	79.7%
	3	92.1%	95.5%	93.5%	99.4%	88.1%
Summer Nuclear Unit 1 Jenkinsville, SC	1	91.1%	82.5%	99.4%	87.9%	86.9%
Jefferies Lake Moultrie	1	95.8%	99.1%	79.6%	89.4%	98.2%
	2	96.0%	99.6%	100.0%	99.5%	94.1%
	3	99.9%	86.5%	98.8%	88.1%	99.8%
	4	99.8%	99.2%	96.8%	93.4%	96.4%
	6	100.0%	99.7%	99.1%	100.0%	99.3%

Appendix G: Generation Fleet Data

Table G-4: Annual Capacity Factor

Annual Capacity Factor						
Generating Station	Unit	2020	2021	2022	2023	2024
Cross Pineville, SC	1	20.1%	39.0%	17.5%	22.2%	30.2%
	2	-0.6%	9.5%	0.5%	10.6%	12.9%
	3	40.5%	41.8%	67.7%	64.1%	63.5%
	4	62.2%	54.4%	62.3%	66.4%	58.1%
Winyah Georgetown, SC	1	36.3%	55.5%	36.9%	32.8%	54.9%
	2	30.8%	36.9%	30.6%	35.7%	27.9%
	3	16.7%	31.1%	22.9%	16.7%	27.8%
	4	8.2%	1.5%	3.6%	21.2%	35.3%
Rainey Iva, SC	1	58.6%	53.9%	61.0%	78.3%	65.7%
	2A	57.3%	45.4%	53.8%	69.6%	53.5%
	2B	55.3%	48.2%	54.5%	74.9%	50.3%
	3	5.0%	7.4%	13.4%	6.0%	12.9%
	4	4.3%	7.0%	13.3%	9.1%	12.3%
	5	3.7%	6.4%	13.0%	7.2%	11.1%
Cherokee Gaffney, SC	1	44.6%	47.1%	53.6%	14.8%	82.5%
Myrtle Beach	1	-0.2%	-0.2%	0.1%	-0.1%	-0.1%
	2	-0.2%	-0.1%	0.3%	-0.2%	0.2%
	3	-0.1%	-0.1%	0.5%	-0.1%	0.0%
	4	0.0%	0.0%	N/A	N/A	N/A
	5	-0.1%	0.0%	0.2%	-0.1%	0.0%
Hilton Head	1	0.0%	0.0%	0.3%	0.0%	0.1%
	2	0.0%	0.0%	0.4%	0.0%	0.1%
	3	0.0%	0.1%	0.5%	0.0%	0.1%
Summer Nuclear Unit 1 Jenkinsville, SC	1	91.1%	82.7%	101.5%	88.8%	87.5%
Jefferies Lake Moultrie	1	6.1%	5.6%	4.7%	7.0%	5.1%
	2	35.1%	34.4%	34.5%	34.4%	32.9%
	3	5.2%	5.5%	5.6%	6.8%	9.1%
	4	37.1%	34.4%	33.1%	32.4%	33.5%
	6	-1.1%	-1.3%	-0.8%	-1.3%	-1.2%

APPENDIX H: CROSS REFERENCE FOR COMPLIANCE WITH S.C. CODE § 58-37-40(D) AND COMMISSION ORDERS 2024-171 AND 2025-244

In Commission Order 2024-171 approving Santee Cooper's 2023 IRP, the Commission directed Santee Cooper to reflect available updates on a variety of assumptions and information and infuse certain activities into the 2024 IRP Update. The following table provides the requirements of S. C. Code § 58-37-40(D), Order 2024-171, and Order 2025-244 and a reference to the section and page number of this 2024 IRP Update report demonstrating compliance.

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan.	2025 IRP Update, pp. 33-56
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan, including: - energy and demand forecast	Electric Load Forecast Overview, p. 33
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan, including: - commodity fuel price inputs	Major Modeling Assumptions: Fuel Forecasts, p. 46
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan, including: - renewable energy forecast	Major Modeling Assumptions: Renewable and Storage Resource Integration, p. 55; Resource Plan Evaluation: Renewable Energy Forecast, p. 77; Appendix E, p. 98
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan, including: - energy-efficiency and demand-side management forecasts	Demand-Side Management Overview, p. 43; Major Modeling Assumptions: System Energy and Peak Demand, p. 45

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
(D)(1)	An annual update must include an update to Santee Cooper's base planning assumptions relative to its most recently accepted integrated resource plan, including: - changes to projected retirement dates of existing units	Executive Summary, pp. 1-6 and 12-13; Assessment of Resource Need: Current Resource Overview, p. 39; Resource Plan Evaluation: 2025 Portfolios Evaluated, p. 62; Conclusions, p. 79; Appendix G, p. 101
(D)(1)	Santee Cooper's annual update must describe the impact of the updated base planning assumptions on the selected resource plan.	Executive Summary, pp. 9-12; Resource Plan Evaluation, pp. 57-78; Conclusions, p. 79
Order No. 2024-171, p. 99 (Ordering Paragraph 3)	Santee Cooper is directed to consider other approaches to load forecasting and resource portfolio analysis to plan for future industrial load growth due to economic development and provide updates to the Commission in future IRP filings.	Executive Summary: 2025 Load Forecast, p. 5; Electric Load Forecast Overview, p. 33
Order No. 2024-171, p. 99 (Ordering Paragraph 4)	Santee Cooper is directed to incorporate actual solar additions and any updates to future planned solar additions in its annual IRP Updates.	Recent Activities and Developments: Procurement of Solar Resources, p. 23; Assessment of Resource Need: Power Purchase Agreements, p. 40
Order No. 2024-171, p. 92	[T]he Commission concludes that Santee Cooper has provided sufficient justification for its 300 MW target of solar additions per year from 2026-2030 and instructs Santee Cooper to work with stakeholders if revisions to the assumption are warranted for future IRPs and IRP Updates.	Major Modeling Assumptions: Resource Option Assumptions: Renewable and Energy Storage Resources, pp. 51; Resource Plan Evaluation: Re-Optimization of the 2023 Preferred Portfolio, pp. 60; Resource Plan Evaluation: 2025 Portfolios Evaluated, p. 62
Order No. 2024-171, p. 99 (Ordering Paragraph 5) and p. 66	Santee Cooper is directed to continue to evaluate the natural gas combined cycle shared resource in the analyses conducted for future IRP Updates and IRPs; Santee Cooper must continue to consider the NGCC and alternatives to the NGCC in the analyses conducted for future IRP Updates and IRPs.	Executive Summary, pp. 1-5, pp. 9-18; Recent Activities and Developments: Short-term Action Plan Items From the 2023 IRP and 2024 IRP Update: Natural Gas Combined Cycle Implementation Including

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
		Potential Joint Project with DESC, p. 21: Recent Activities and Developments: Act 41 of the 2025 South Carolina Legislative Session: Joint Build with Dominion Energy South Carolina, p. 28; Major Modeling Assumptions: Resource Option Assumptions, p. 50; Resource Plan Evaluation, pp. 57-78; Conclusions, p. 79; Short-Term Action Plan, p. 83
Order No. 2024- 171, p. 94	The Commission does not find it necessary to require Santee Cooper to update or revise its capital or operating cost assumptions utilized for its proposed NGCC resource for the purposes of this IRP. Santee Cooper has committed to updating stakeholders and the Commission, through future IRPs and IRP Updates, as well as compliance with all requirements of [the Siting Act].	Major Modeling Assumptions: Existing Resource Operating Costs and Characteristics, p. 49; Major Modeling Assumptions: Resource Option Assumptions, p. 50
Order No. 2024- 171, p. 99 (Ordering Paragraph 2)	Santee Cooper is directed to review and address the recommendations of the ORS witnesses to discuss seven issues with stakeholders no later than the 2026 Triennial IRP.	Introduction, p. 19; Stakeholder Engagement Process, p. 30
Order No. 2024- 171, p. 99 (Ordering Paragraph 2); ORS Recommendation D1	ORS recommends all commodity forecasts, including coal and carbon dioxide ("CO ₂ ") forecasts, should continue to be discussed in the Stakeholder Working Group.	Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Major Modeling Assumptions, p. 45; Major Modeling Assumptions: Fuel Forecasts, p. 46; Major Modeling Assumptions: Carbon Emissions Pricing, p. 49
Order No. 2024- 171, p. 95 (Ordering Paragraph 2);	Santee Cooper intends to expand its future ELCC studies to address more resource types and to evaluate higher resource implementation levels. The	Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Major

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
ORS Recommendation E1	Commission concludes that the ELCC values utilized in this IRP are reasonable and instructs Santee Cooper to discuss this topic with stakeholders.	Modeling Assumptions, p. 45; Major Modeling Assumptions: Effective Load Carrying Capability, p. 54
Order No. 2024-171, p. 99 (Ordering Paragraph 2); ORS Recommendation E3	ORS recommends integration costs and associated modeling methodologies, including modeling operating reserves, be discussed further in the Stakeholder Working Group.	Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Major Modeling Assumptions, p. 45; Major Modeling Assumptions: Renewable and Storage Resource Integration, p. 55
Order No. 2024-171, p. 99 (Ordering Paragraph 2); ORS Recommendation E4	Santee Cooper discuss potential impacts of the United States Environmental Protection Agency (EPA) Section 111 proposed rule in the Stakeholder Working Group and consider including a sensitivity scenario in the 2024 IRP Update to address the proposed rule if adopted and not stayed.	Recent Activities and Developments: Environmental Regulatory Developments: EPA Greenhouse Gas Rule, p. 26; Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Resource Plan Evaluation, p. 57
Order No. 2024-171, p. 99 (Ordering Paragraph 2); ORS Recommendation F2	Santee Cooper to discuss in the Stakeholder Working Group the scope for further studies to analyze any potential cost savings from the retirement of remaining coal generation assets.	Recent Activities and Developments: Cross Generation Station Retirement Evaluations, p. 24; Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Stakeholder Engagement Process: Overview of IRP Technical Meetings, p. 31
Order No. 2024-171, p. 99 (Ordering Paragraph 2); ORS Recommendation G1	Santee Cooper to discuss the development of a quantitative reliability metric in the Stakeholder Working Group.	Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Resource Plan Evaluation: Reliability, p. 71
Order No. 2024-171, p. 99	Santee Cooper to discuss the methodology it will use to estimate	Recent Activities and Developments: Cross

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
(Ordering Paragraph 2); ORS Recommendation G2	transmission investment associated with the retirement of the Cross Unit in the Stakeholder Working Group.	Generation Station Retirement Evaluations, p. 24; Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Stakeholder Engagement Process: Overview of IRP Technical Meetings, p. 31
Order No. 2025-244, p. 46 (Ordering Paragraph 3)	All requirements or ordering provisions from the Santee Cooper 2023 IRP decision, Commission Order No. 2024-171, and decisions in all subsequent IRP Updates shall be addressed in ongoing stakeholder engagement, potential negotiations, and testimony for the 2025 Santee Cooper IRP Update.	Stakeholder Engagement Process, p. 30
Order No. 2025-244, p. 46 (Ordering Paragraph 4)	Santee Cooper shall continue to engage with stakeholders as outlined in the processes described in the Santee Cooper 2024 IRP Update.	Stakeholder Engagement Process, p. 30; Major Modeling Assumptions, p. 45
Order No. 2025-244, p. 46 (Ordering Paragraph 5)	Santee Cooper shall consider all recommendations of the parties to Docket No. 2024-18-E when conducting future IRP and IRP Update filings and must specifically address the recommendations raised by ORS in Docket No. 2024-18-E as Santee Cooper prepares for the 2025 IRP Update.	Recent Activities and Developments: Commission Requirements from Order 2024-171 and Order 2025-244, p. 24; See Orders and 2025 IRP Update Section references described above in this table
Order No. 2025-244, p. 46 (Ordering Paragraph 6)	Santee Cooper shall continue to provide updates regarding its plans for the Cross Generating Station retirement evaluation and associated transmission evaluations, as well as the results of the study in support of the 2026 comprehensive IRP in the SWG.	Recent Activities and Developments: Cross Generation Station Retirement Evaluations, p. 24; Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Stakeholder Engagement Process: Overview of IRP Technical Meetings, p. 31
Order No. 2025-244, p. 46	Santee Cooper shall continue to monitor hydrogen availability and	Stakeholder Engagement Process: Overview of the

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
(Ordering Paragraph 7)	discuss price forecast assumptions with IRP stakeholders in the SWG prior to the 2026 comprehensive IRP.	IRP Stakeholder Working Group, p. 30; Major Modeling Assumptions, p. 45; Major Modeling Assumptions: Fuel Forecasts, p. 46; Major Modeling Assumptions: Carbon Emissions Pricing, p. 49
Order No. 2025-244, p. 46 (Ordering Paragraph 8)	Santee Cooper shall continue to discuss updates related to the Inflation Reduction Act and Infrastructure Investment and Jobs Act incentives in the SWG.	Recent Activities and Developments: Changes in Federal Law, p. 28; Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30
Order No. 2025-244, p. 46 (Ordering Paragraph 9)	Santee Cooper shall perform production cost model benchmarking studies of its EnCompass model in conjunction with its comprehensive IRPs and discuss the results in the SWG.	To be incorporated in the 2026 Triennial IRP and SWG process
Order No. 2025-244, p. 16-17, 47 (Ordering Paragraph 10)	For future IRPs and IRP Updates, Santee Cooper shall monitor, track, and report annually the forecasted versus actual load consumption for Economic Development Load. It is reasonable for Santee Cooper to monitor, track, and report annually on potential new large load in future IRPs and IRP Updates to keep the Commission, ORS, and stakeholders apprised of the impact these loads have on the load forecast, including explanations of variances from prior forecasts.	Executive Summary: 2025 Load Forecast, p. 5; Electric Load Forecast Overview, p. 33
Order No. 2025-244, p. 47 (Ordering Paragraph 11)	Santee Cooper shall update its GHG Rule Portfolio modeling assumptions in the 2025 IRP Update to reflect the latest EPA guidance available at the time the modeling is performed. Santee Cooper shall discuss changes to its assumptions based on changes to the	Recent Activities and Developments: Environmental Regulatory Developments: EPA Greenhouse Gas Rule, p. 26;

Appendix H: Cross Reference for Compliance

S.C. Code § 58-37-40, Order No. 2024-171, and Order No. 2025-244	Requirement	2025 IRP Update Section Satisfying Requirement
	EPA 111 Rule in the SWG prior to the 2025 IRP Update.	Stakeholder Engagement Process: Overview of the IRP Stakeholder Working Group, p. 30; Resource Plan Evaluation, p. 57
Order No. 2025-244, p. 47 (Ordering Paragraph 12)	Santee Cooper shall provide updates in future IRPs and IRP Updates regarding the planned solicitation for a battery energy storage system of up to 300 MW of four-hour duration which, according to Santee Cooper's Reply Comments, would be sited at the Jefferies Generating Station, to leverage existing interconnection capacity and the Energy Communities tax credit bonus per the Inflation Reduction Act.	Recent Activities and Developments: Implementation of Battery Energy Storage System Resources, p. 23
Order No. 2025-244, p. 47 (Ordering Paragraph 13)	In advance of future IRPs and IRP Updates, and as required by S.C. Code Ann. section 58-27-40(A)(3), Santee Cooper shall continue to host the SWG. Further, Santee Cooper shall provide updates to the Commission about the activities of the group and Santee Cooper's plans to incorporate lessons learned into future IRP filings.	Stakeholder Engagement Process, p. 30; A summary of the stakeholder process will be filed with the Commission in the 2025 IRP Annual Update Docket subsequent to filing Santee Cooper's 2025 IRP Annual Update
Order No. 2025-244, p. 47 (Ordering Paragraph 14)	Santee Cooper shall discuss its plans to prepare the new Market Potential Study in the SWG ahead of the Market Potential Study update in 2025.	Stakeholder Engagement Process, p. 30; Demand-Side Management Overview, p. 43
Order No. 2025-244, p. 47 (Ordering Paragraph 15)	Any ordering provision(s) from previous Santee Cooper IRP decisions issued by the Commission that have not already been addressed by Santee Cooper shall be incorporated in any ongoing stakeholder engagement, potential negotiations, and in its 2025 IRP Update.	Stakeholder Engagement Process, p. 30