



Santee Cooper Resource Planning Stakeholder Working Group Meeting #3 September 4, 2024



Welcome and Agenda

Stewart Ramsay, Meeting Facilitator
VANRY Associates

Meeting Agenda and Outcomes



Meeting Agenda

- 1:30 pm Welcome and Agenda
- 1:40 pm Resource Planning Update Prior to Filing the 2024 IRP Update
- 3:20 pm Meeting Closeout

Meeting Outcome

- Members understand the resource recommendations in the 2024 IRP Annual Update and the next steps Santee Cooper plans to take.

New Working Group Member



New Member Introduction

- Name?
- Organization?
- Role?
- Prior IRP experience?

Category	Organization/Individual
Regulatory/Government	Office of Regulatory Staff South Carolina Department of Consumer Affairs South Carolina Department of Natural Resource South Carolina Dept. of Environmental Services
Central	Central Electric
Industrial Customers	Industrial Customer Association – J. Pollock Century Aluminum Nucor Messer Google
Municipal Customer	South Carolina Association of Municipal Power Systems
Residential/Commercial	3 Representatives
NGOs	Carolina Clean Energy Business Association Conservation Voters of South Carolina Coastal Conservation League South Carolina Energy Justice Coalition Southern Alliance for Clean Energy Southern Environmental Law Center Sierra Club Vote Solar



Resource Planning Update Prior to Filing the 2024 IRP Update

Clay Settle, Manager Resource Planning
Santee Cooper

Summary

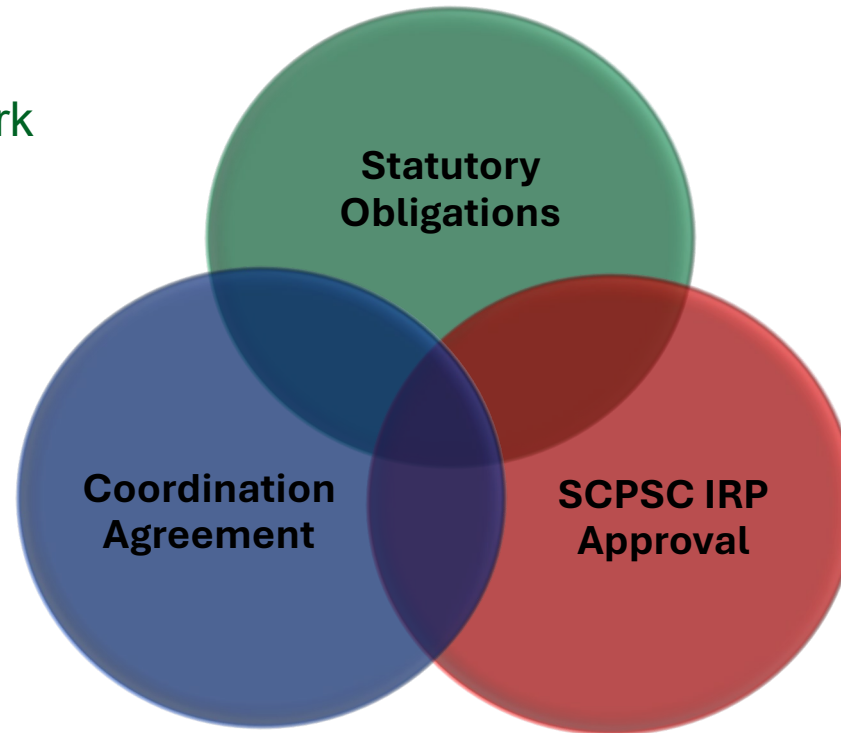


- Santee Cooper's 2023 triennial IRP was approved by the Commission in March 2024
- On May 30, Santee Cooper and Central, unanimously adopted an updated system load forecast, which shows significant increase to load projections
- On August 2, the Central and Santee Cooper Joint Planning Committee unanimously approved the Generation Expansion Plan (GEP) to identify resources to meet the growing needs
- Concurrently, Santee Cooper is preparing to file its 2024 IRP annual update in September
 - Meet statutory requirements and comply with the PSC's order approving the 2023 IRP
 - Enhanced stakeholder engagement
 - The conclusions in the 2024 IRP are consistent with the GEP

Planning Obligations

Coordination Agreement:

- Joint planning framework
- Load Forecast, GEP, Resource Commitment Process



Statutory Requirements:

File IRP every three years with annual updates, to PSC for approval

IRP annual update requirements:

- Update base planning assumptions relative to its most recently accepted integrated resource plan (2023 IRP)
- Describe the impact of the updated base planning assumptions on the selected resource plan

March 2024
2023 IRP Approved

September 2024
2024 Annual IRP Update

September 2025
2025 Annual IRP Update

September 2026
Triennial IRP

2024

2025

2026

2027

Key Conclusions



- GEP and 2024 IRP update key conclusions are consistent with the 2023 IRP Preferred Portfolio
 - Large Natural Gas Combined Cycle (NGCC) resource still an economic resource decision, upon Winyah's retirement
 - Capacity from Combustion Turbines (CTs) and Battery Energy Storage Systems (BESS) to meet system peaking needs
 - Substantial amounts of solar resources
- The updated plan includes opportunities for additional capacity from existing resources at the Rainey Station and continued operation of the Cherokee NGCC
- The analysis considers the potential impact of the new EPA 111 Greenhouse Gas regulations

Diverse Portfolio of Resources



Solar Additions	<ul style="list-style-type: none"> • 300 MW per year from 2026 through 2030 (1,500 MW) • Aggregate approximately 3,600 MW through 2040
Coal Retirement	<ul style="list-style-type: none"> • Retire Winyah by 2031 <ul style="list-style-type: none"> – Actual retirement depends on timely availability of replacement resources and sufficient resources to meet load and reserve margin
NGCC	<ul style="list-style-type: none"> • 1,020 MW operational by Winyah’s retirement (potentially, jointly with DESC)
CTs	<ul style="list-style-type: none"> • 447 MW in 2031 to meet system peaking needs
Battery Storage	<ul style="list-style-type: none"> • 240 MW in 2027 increasing to 500 MW through 2040
Rainey 2 Conversion to NGCC	<ul style="list-style-type: none"> • Incremental 178 MW by 2028
Other Rainey Upgrades	<ul style="list-style-type: none"> • Approx. 50 MW incremental capacity from Rainey 1 existing NGCC • 21 MW incremental capacity from upgrading three existing Rainey CTs
Power Purchase Agreements (PPAs)	<ul style="list-style-type: none"> • Capacity alternatives to mitigate financial and/or implementation risk, bridge capacity need gap, and respond to load growth

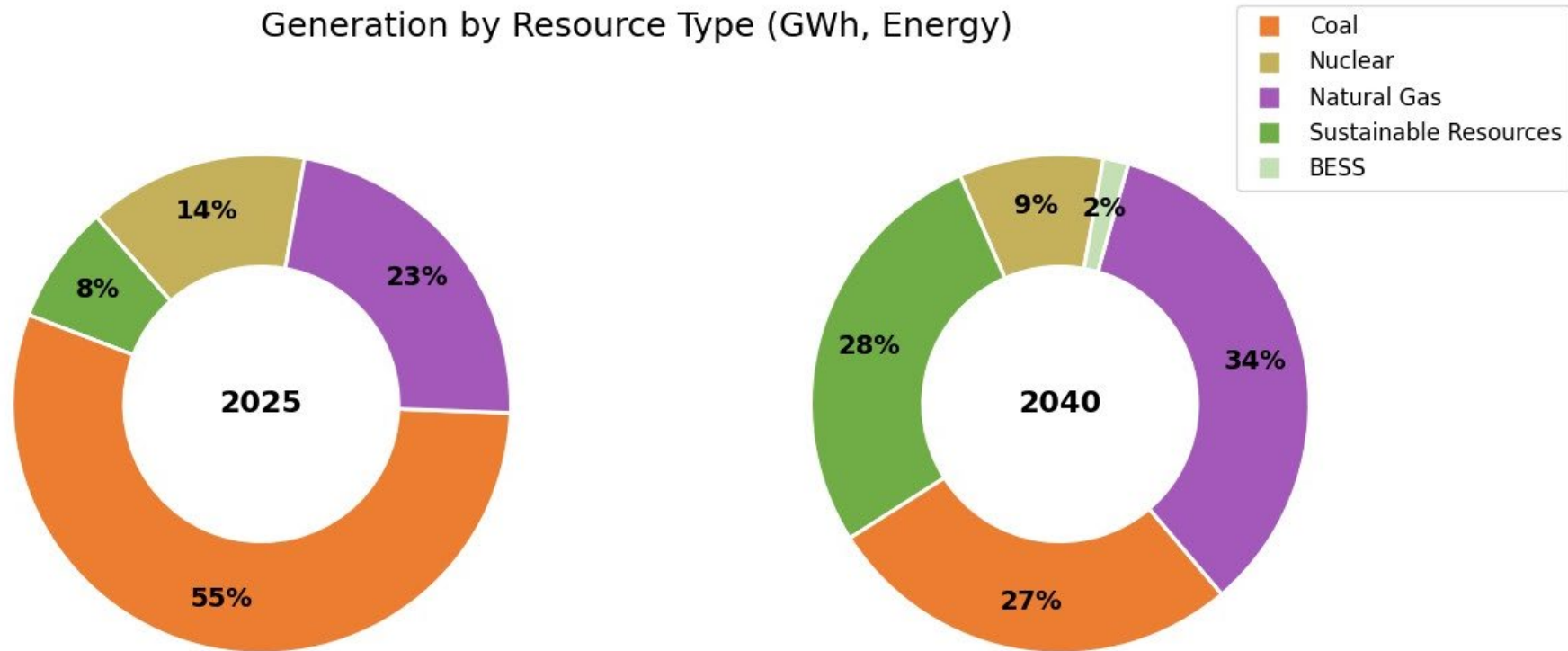
**Preliminary IRP results are consistent with the GEP and subject to changes until the filing of the 2024 IRP Annual Update*

Generation Diversity

Reduced risk through greater fuel diversity primarily from:

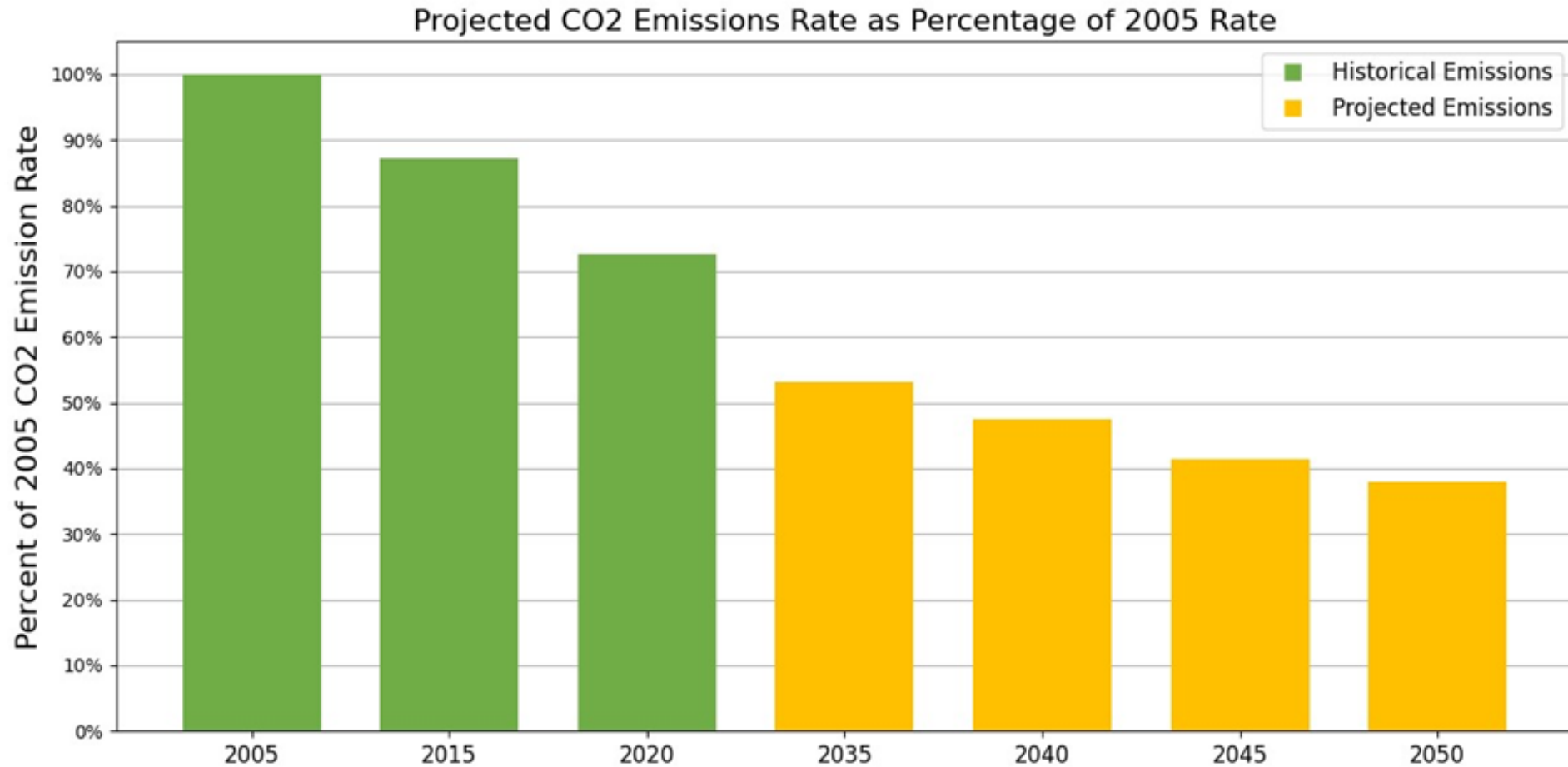
- Reduced coal reliance
- Solar expansion
- New efficient NGCC

Generation by Resource Type (GWh, Energy)



*Preliminary IRP results are consistent with the GEP and subject to changes until the filing of the 2024 IRP Annual Update

CO2 Reduction

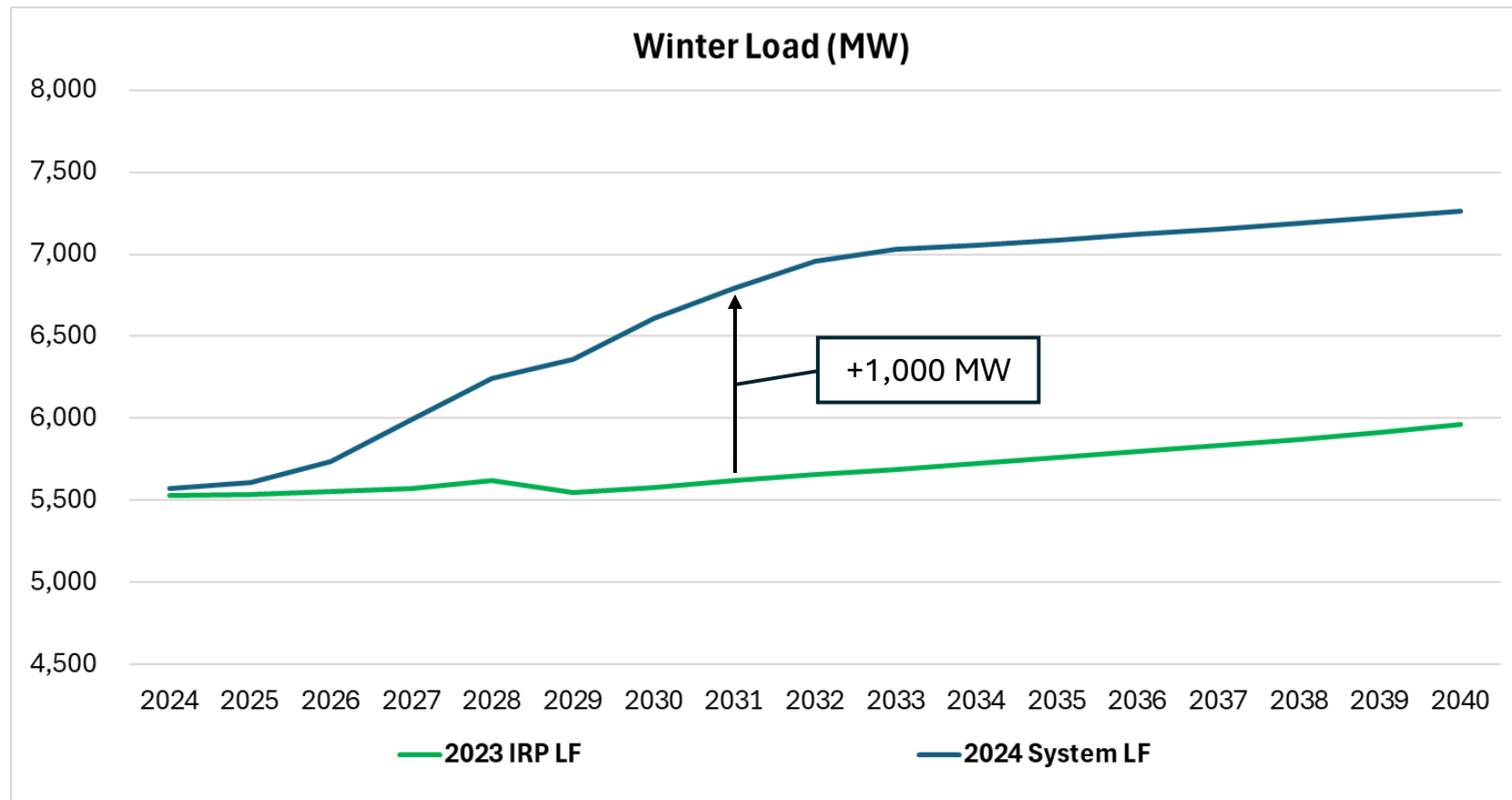


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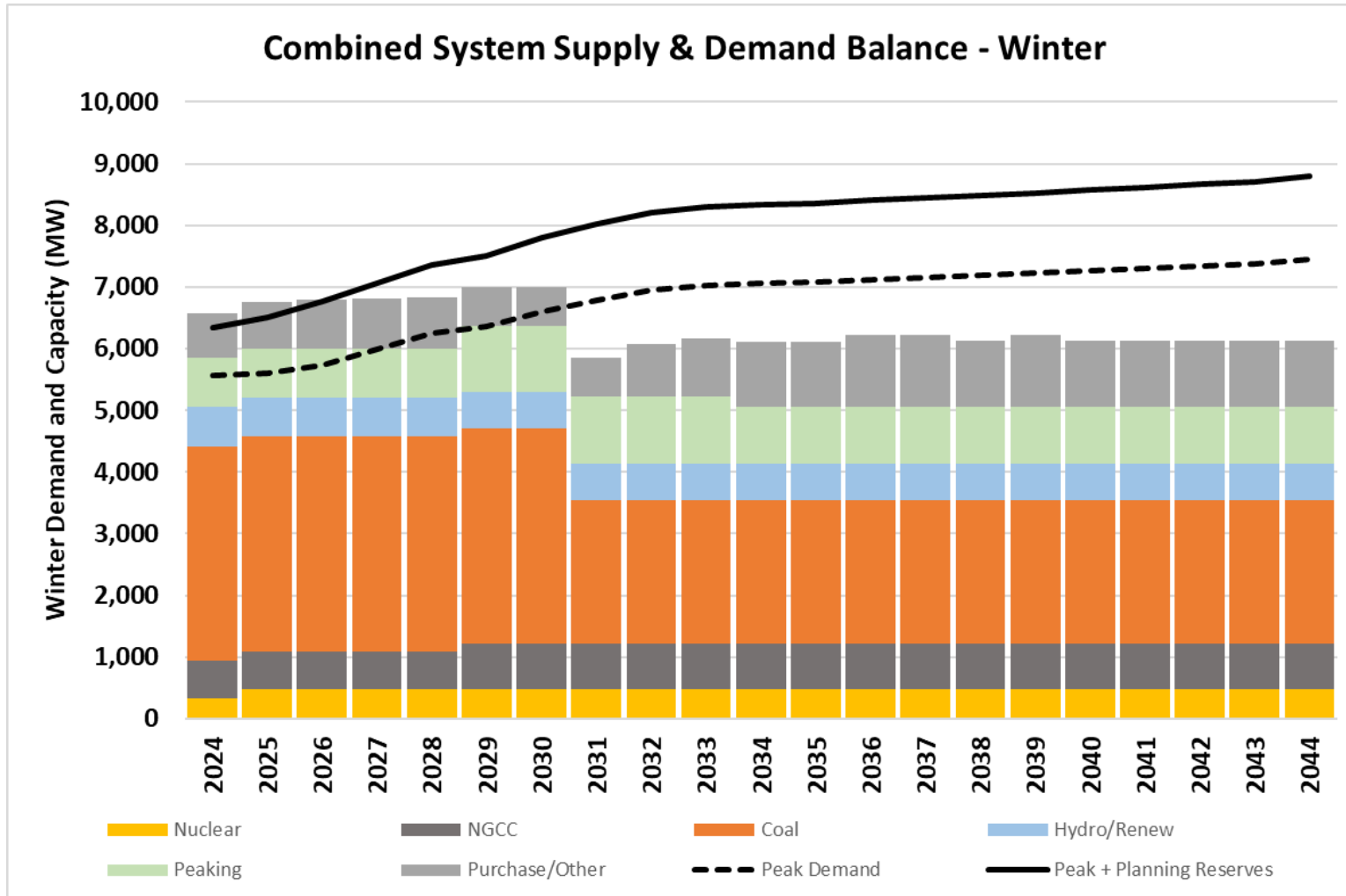
Evaluation Approach

2024 System Load Forecast

- Jointly developed with Central and unanimously approved by the Joint Planning Committee



Capacity Need



- Approximately 200 MW of capacity need starting in 2027
- Capacity need growing to approximately 2,000 MW by 2031 upon the retirement of Winyah Generating Station

(1) Demand Response and Solar capacities are included with Purchase/Other Capacity shown

EPA 111 Greenhouse Gas Rule



- The EPA 111 Greenhouse Gas Rule (GHG Rule) is a set of New Source Performance Standards (NSPS) for greenhouse gas emissions (GHG) from existing coal-fired generating units, and for new and reconstructed gas-fired generating units. It became effective July 8, 2024, litigation against the rule is pending
- Existing combustion turbines (simple and combined cycle) will be addressed in a separate rulemaking
- Existing coal combustion units
 - Must retire by end of year 2031 to be exempt
 - Operation beyond 2031 through end of year 2038 requires a 40% co-fire with natural gas
 - Operation beyond 2039 requires carbon capture and sequestration (CCS) technology
- New or reconstructed combustion turbine units (simple and combined cycle) have capacity factor (CF) limitations:

▪ Low Load	<20% CF	low emitting fuels
▪ Intermediate Load	20%< CF <40%	NGCT/NGCC
▪ Base Load	>40% CF	NGCC with CCS by end of year 2031

Modeling Strategy Summary



- 2024 IRP Update is an update to the Commission about how recent changes in market conditions and modeling assumptions affect the 2023 IRP Preferred Portfolio

Portfolios Evaluated:

- 2023 IRP Preferred Portfolio (updated for new market conditions and assumptions)
- Optimized Portfolio (derived under new market conditions and assumptions)
- EPA GHG Portfolio (derived under new market conditions, assumptions, and GHG Rule)

2023 IRP Preferred & Optimized Portfolios

- Business-as-usual cases that assume the recent GHG regulation is stayed

EPA GHG Portfolio

- Assume the GHG Rule is implemented as currently filed

Sensitivity Analyses

- Load Forecast
- Fuel Prices
- Other as required

Preliminary Portfolio Results



Preliminary Portfolio Cost and Resource Additions through 2040

	Optimized Portfolio	EPA GHG Portfolio
NPV (\$ B)	\$29.7	\$36.0
NPV Increase from Optimized Portfolio (\$ B)	-	+ \$6.3
<u>Coal Retirement</u>	- 1,150 MW (by 2031)	- 1,150 MW (by 2031) - 2,330 MW (by 2032)
<u>Solar</u>	3,600 MW	4,500 MW
<u>NGCC</u>	1,020 MW (2031)	1,020 MW (2031) 2,719 MW (2032)
<u>CTs</u>	447 MW (2031) ⁽¹⁾	447 MW (2031) 45 MW (2039)
<u>Battery Storage</u>	500 MW	350 MW
<u>Wind</u>	500 MW (2032 – 2040)	1,100 MW (2029 – 2040)

- Preliminary IRP Annual Update analysis supports GEP Results
- 2023 IRP Preferred Portfolio, updated for new assumptions, materially similar to the Optimized Portfolio

⁽¹⁾ The modeling results included two H-class CTs totaling 894 MW in 2031, if no PPAs are offered as resource options beginning in 2031. The GEP recommendation includes one H-class CT and anticipates reliance on PPAs to mitigate implementation and financial risk.

**Preliminary IRP results are consistent with the GEP and subject to changes until the filing of the 2024 IRP Annual Update*

Rainey 2 Combined Cycle Conversion



Under the Optimized Portfolio evaluation, the Rainey 2 Combined Cycle Conversion (Rainey 2 CC) is selected by the model as an economic resource

For the Generation Expansion Plan sensitivity analysis was performed to further evaluate the Rainey 2 CC resource decision

- If the Rainey 2 CC is not implemented, power supply costs are projected to be \$370M higher
- GHG sensitivity analysis was performed to evaluate possible impact, Rainey Unit 2 CC provides a more economic solution even if limited to lower capacity factor

NGCC Evaluation



- The Optimized Portfolio evaluation analysis affirms the recommendation from the 2023 IRP for a NGCC resource in 2031 upon the retirement of Winyah Generating Station
 - 1,020 MW Shared NGCC was selected as an economic resource decision
- If not offered a shared NGCC opportunity, the model still selects a 2x1 NGCC
- GHG Portfolio evaluation supports the new combined cycle to be optimal, even with capacity factor constraints

Other Resources



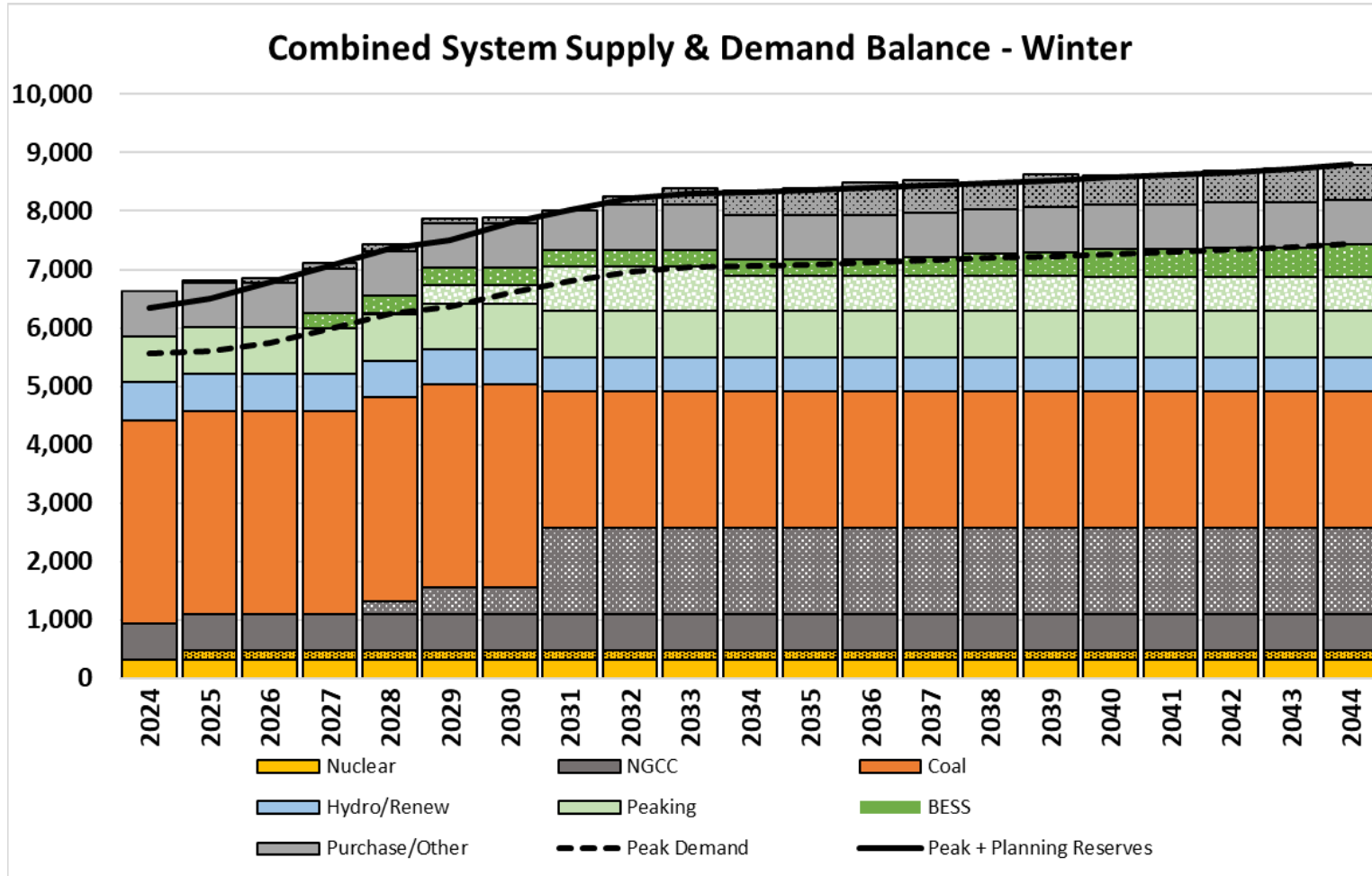
- Continued operation of Cherokee NGCC Resource
- BESS starting in 2027
- Implementation of solar consistent with the 2023 IRP
- Analysis identified large frame CT capacity beginning in 2031
- Analysis incorporates PPAs
 - Alternatives to bridge capacity need gap for resource implementation, flexible resources that can respond to load growth, and potential solution to reduce financial and/or implementation risk

GHG Considerations



- GHG Portfolio results in over \$6B higher than w/o GHG
- GHG Portfolio found the addition of CCs and CTs to replace the retiring Cross Generating Station
- Plan studied involves significant implementation challenges and risks including supply chain concerns
- Continued monitoring of the legal status of the GHG Rule is necessary

Capacity Need



(1) Demand Response, Wind, and Solar capacities are included with Purchase/Other Capacity shown

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Next Steps

Next Steps



- *2024 IRP Annual Update.* Filing with SCPSC in September. Continue to work with stakeholders to support the IRP planning process.
- *Implement Solar Resource.* Central and Santee Cooper have initiated a joint Request for Proposals targeting solar additions beginning in 2026
- *Rainey 2 Combined Cycle Conversion.* Work with Central to expedite resource commitment timeline & prepare to file siting application with the Commission
- *CT Resources.* Conduct further diligence including FEED study and site evaluations
- *NGCC.* Continue joint NGCC due diligence and evaluation of NGCC options
- *GHG Regulation.* Monitor legal proceedings and impacts on resource plans
- *BESS.* Work with Central to develop solicitation strategy and documentation



Meeting Closeout

Stewart Ramsay, Meeting Facilitator
VANRY Associates

- Stakeholder Working Group Meeting 4 – Targeting November
- Meeting 4 Topics
 - Review of 2024 IRP Annual Update filing
 - Transmission Impact Analysis Studies including Cross retirement
 - Siting of resources and impacts on transmission costs and resource modeling
 - 2026 Reserve Margin and ELCC Update including higher levels of renewables
- See Working Group Meeting 2 Presentation for Future Meeting Topics

Meeting Outcomes Achieved?



Meeting Outcome

- Members understand the resource recommendations in the 2024 IRP Annual Update and the next steps Santee Cooper plans to take.

Thank you!

We would like to hear from you about
your experience at this session.

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that will appear in your browser as you leave the meeting**

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