2023 Integrated Resource Plan (IRP)

Public Stakeholder Meeting #1

March 1, 2022

Welcome

Stewart Ramsay
Meeting Facilitator
VANRY Associates

Meeting Guidelines

Principles to guide today's session

- Respectful dialogue
- Questions and comments are public
- Transparency of questions & answers
- Participant emails limited to IRP communications
- Email list is not being made public

Meeting Protocols

The value of this process is in your participation … please ask questions!

1. Why are we using this format?
2. Use the **Q&A** for comments or questions during the presentation – we have a team of people helping to answer your questions
3. "**Raise Hand**" if you would like the chance to speak, we will get to you ASAP – we will open your mic when we can find the right spot

Note: we are not using the Chat function; it is disabled

Why are we here today?

Kickoff Santee Cooper's 2023 IRP Process

- Discuss integrated resource planning processes
- Recap Santee Cooper resource planning work since 2019
- Outline proposed process for the 2023 IRP
- Begin collaborating with you, our stakeholders

To answer your questions and get your input

2023 IRP Stakeholder Meetings

Meeting #1

March 1, 2022

Stakeholder Process & Santee Cooper Resource Planning

Meeting #2

April/May 2022

Discussion of Major Assumptions, Sensitivities, and Portfolios

Meeting #3

May/June 2022

Review of Adopted Major Assumptions and Sensitivities

Meeting #4

[TBD]

IRP Preliminary Results

Meeting #5

[TBD]

IRP Final Results

IRP Filing with Commission
Proposed: May 15, 2023

Meeting content will be adjusted to reflect further discussions needed with stakeholders. The outline above is our starting point.

Agenda

✔	Welcome
9:10	Opening Remarks
9:20	Introductions
9:30	Company Overview
10:15	Overview of IRP Process
10:30	BREAK
10:45	Previous Resource Planning Studies
11:15	Current Resource Position
12:15	LUNCH BREAK
1:30	Current Resource Position (cont'd)
2:30	BREAK
2:45	2023 IRP Timeline and Introduction to Modeling Approach
3:15	Next Steps

Opening Remarks

Charlie Duckworth
Acting President and CEO
Santee Cooper

Opening Remarks

- Welcome, we are glad you are here
- The IRP process is a critical step and needs your involvement
- There is a great deal of change in the industry that we all need to consider
- We have laid out a plan and process; and have assembled a team that we believe will result in great stakeholder involvement and produce a strong IRP
- We want to work with you and are committed to being transparent with you throughout the process
- Would also like to recognize the participation of Central Electric Power Cooperative and our municipal customers as part of our IRP process
- Thank you

Introductions

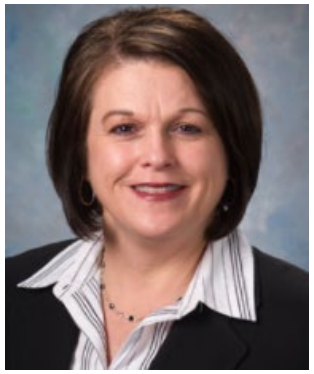
Stewart Ramsay
Meeting Facilitator
VANRY Associates

Today's Presenters

Rahul Dembla
Senior Director, Financial & Resource Planning
Santee Cooper

Eileen Wallace
Senior Manager, Resource Planning
Santee Cooper

Greg McCormack
Senior Manager, Financial Forecast
Santee Cooper



Patricia Housand
Manager, Program Development
Santee Cooper

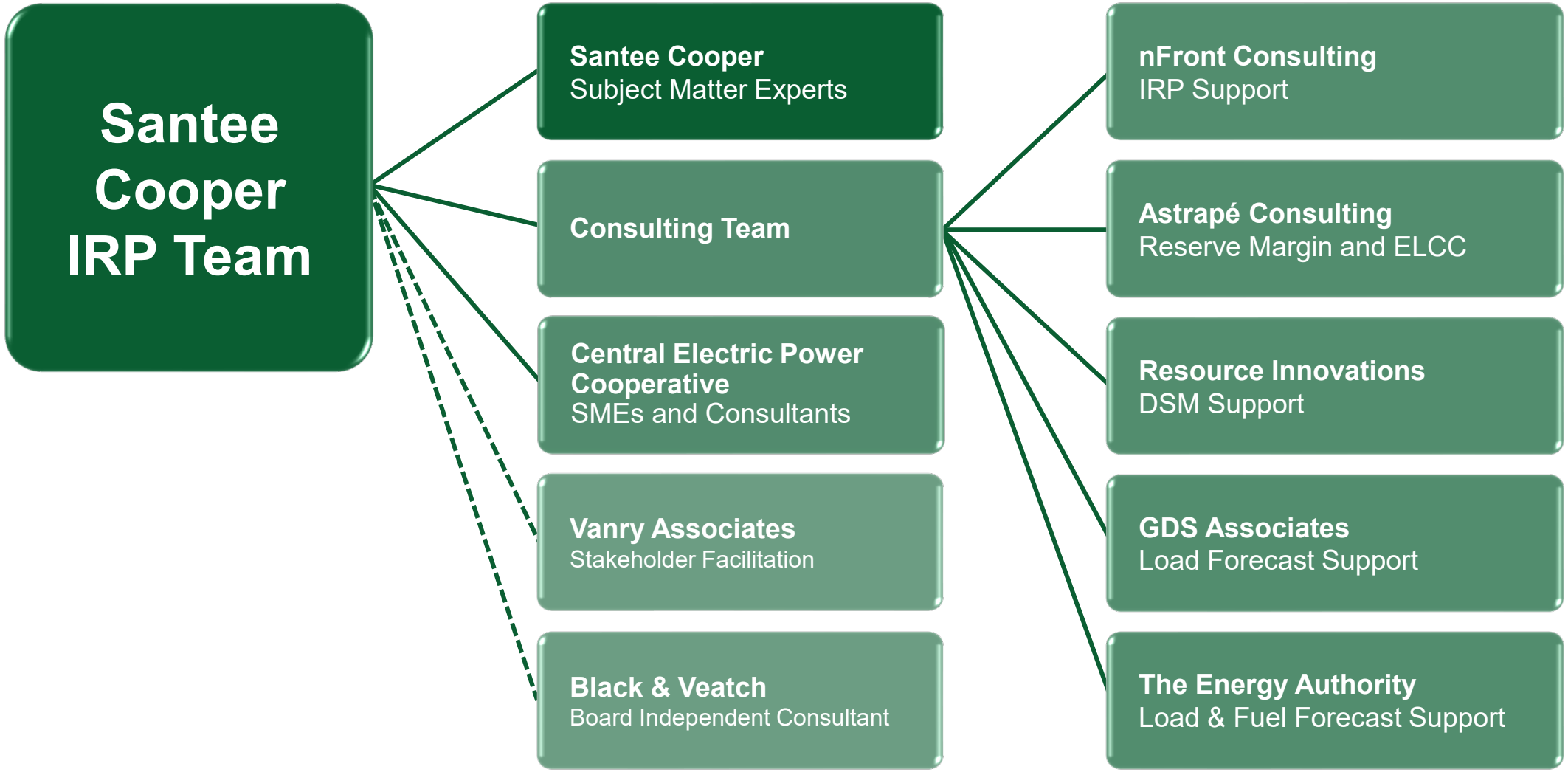
Stewart Ramsay
Meeting Facilitator
VANRY Associates

Bob Davis
Executive Consultant
nFront Consulting

Jacob Thomas
Principal
GDS Associates

Jim Herndon
Vice President, Utility Services
Resource Innovations

Santee Cooper IRP Support




Overview of
Registered
Stakeholders

Company Overview

Rahul Dembla
Senior Director, Financial & Resource Planning
Santee Cooper

Santee Cooper Overview

Our Business

- An electric and water utility headquartered in Moncks Corner, South Carolina
- Owned by the State of South Carolina
- One of the nation's largest public power utilities ~$1.6 billion annual revenues (2020)
- Retail and wholesale provider serving over 2 million South Carolinians
- Largest customer is Central Electric Power Cooperative; providing approximately 60% of Santee Cooper's revenues
- Board established retail rates to ensure cost recovery and financial integrity

Our Mission and Focus

…to be a leading resource for improving the quality of life for all South Carolinians

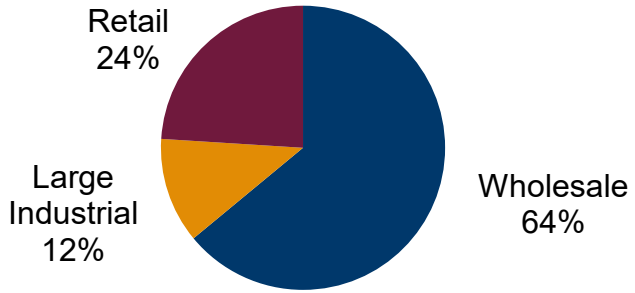
Our Business Model

- As a public enterprise, we seek to provide our owners (the people of South Carolina) with returns in the form of:
  - Low-Cost and Reliable Electricity
  - Water Management and Services
  - Economic Development
  - Environmental Stewardship
  - Broadband
- We issue debt and do not have equity shareholders

Customers

Santee Cooper provides power to a diverse group of customers, directly or indirectly serving two million South Carolinians

Revenue by Customer Category (2020)



Central (60% of Revenues)

- Central Electric Power Cooperative, Santee Cooper's largest customer, provided approximately 60% of Santee Cooper's revenues in 2020.

Other Wholesale (4% of Revenues)

- City of Georgetown
- City of Bamberg
- Town of Waynesville
- City of Seneca
- Piedmont Municipal Power Agency
- Alabama Municipal Electric Authority

Retail (24% of Revenues)

- Santee Cooper's direct-serve customers include 194,000 retail customers in Berkeley, Georgetown and Horry counties as well as 27 large industrial and military customers

Growing Retail Customer Base

(# customers)	Residential	Commercial & Small Industrial
2016	147,447	29,301
2017	151,044	29,614
2018	154,586	30,530
2019	158,032	31,145
2020	163,205	30,725

Industrial (12% of Revenues)

- Santee Cooper's large industrial customers have contract terms that include minimum demand charge and extended notice requirements that mitigate termination risk

Large Industrial Customers Summary

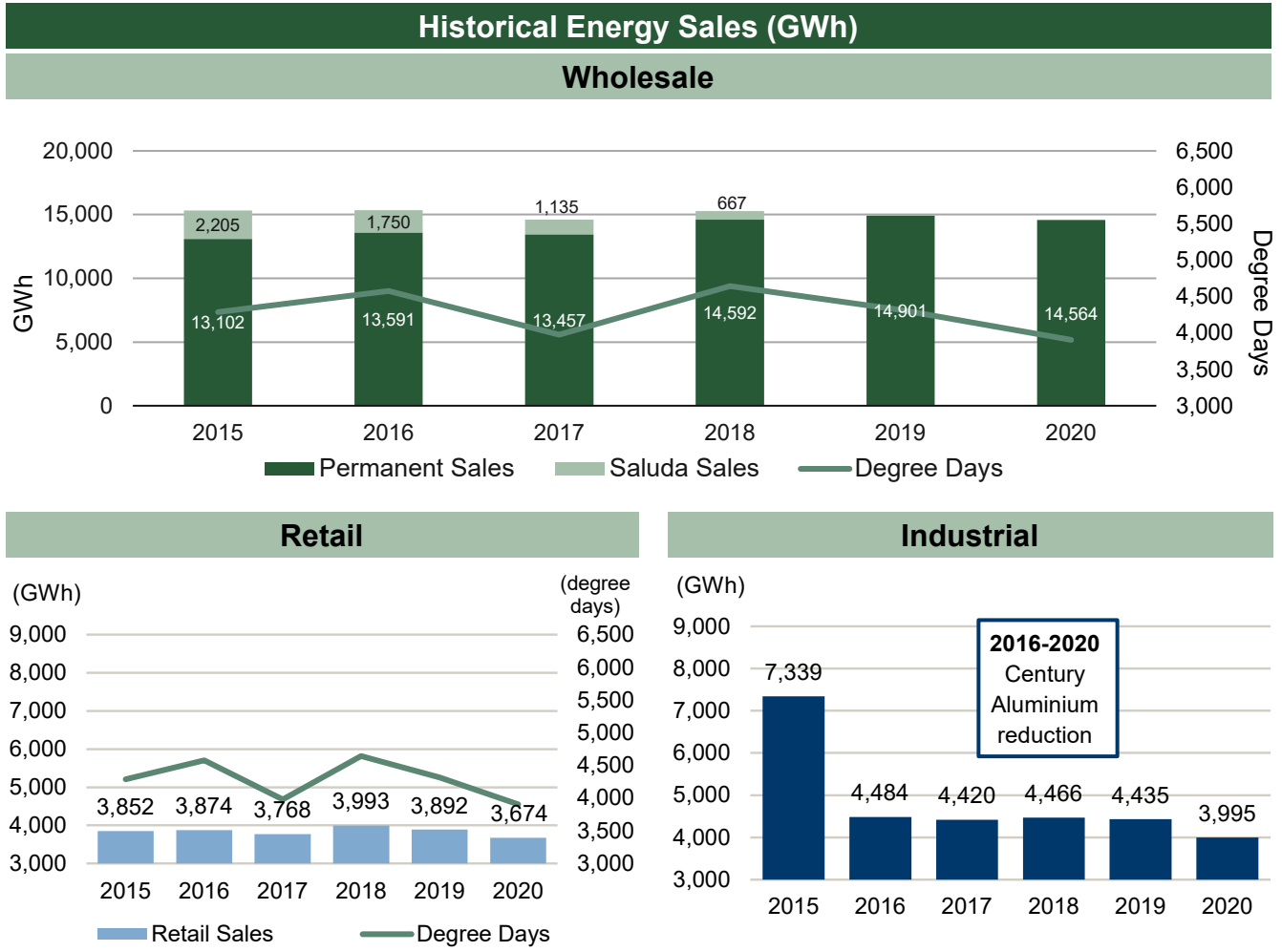
Company	Industry	% of Revenue	Customer Since
Nucor	Steel	4.8%	1996
Century	Aluminum	1.3%	1980
Amoco	Chemical	1.1%	1977

Key Provisions of the Coordination Agreement with Central

- Long-term contract through at least 2058
- Joint planning of future resources
  - Santee Cooper and Central coordinate on joint planning for future resources
  - Identified future resources may become Proposed Shared Resources (PSR)
- Central's right to opt-in or opt-out of a PSR
  - Central may opt-in to an identified PSR
  - If Central opts out, both parties must provide non-shared resources with capacity and capabilities equal to their load ratio share of the PSR
- Joint dispatch of shared resources
  - Non-shared resources can be pooled or non-pooled
  - Santee Cooper is responsible dispatching shared and pooled non-shared resources to serve the combined system loads

Energy Sales

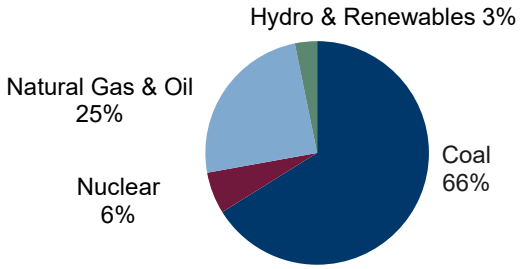
- The transition of a portion of Central's load (Saluda) and Century Aluminium's production decline and partial load reduction have impacted Santee Cooper's overall sales
- Saluda load fully transitioned off by 2019
- Sales remain strong despite impacts of milder weather, COVID, and conservation program initiatives



Power Supply

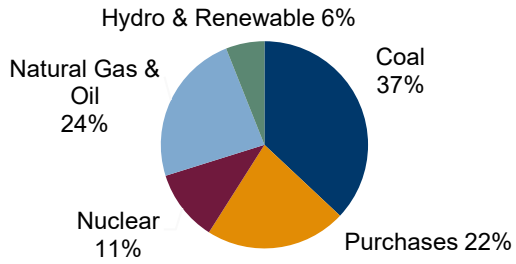
Current Generation Sources

2020 Owned Capacity (MW)[1]



5,338 MW

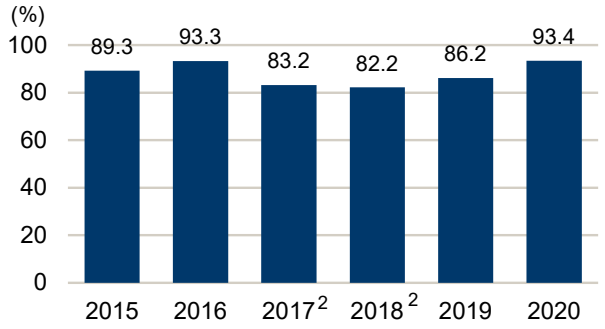
2020 Fuel Mix (GWh)



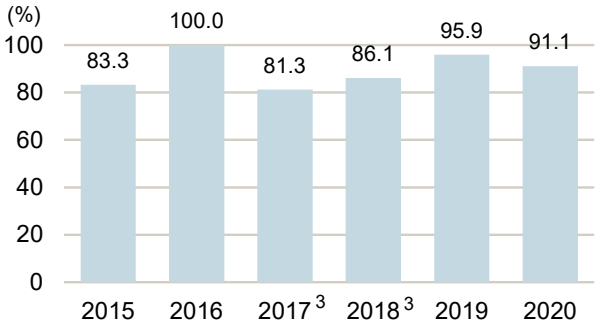
23,201 GWh

Base Load Availability

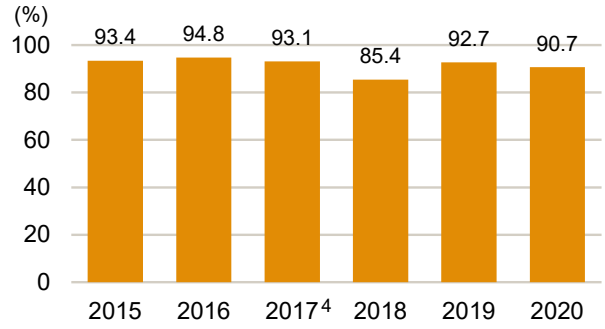
Coal



Nuclear

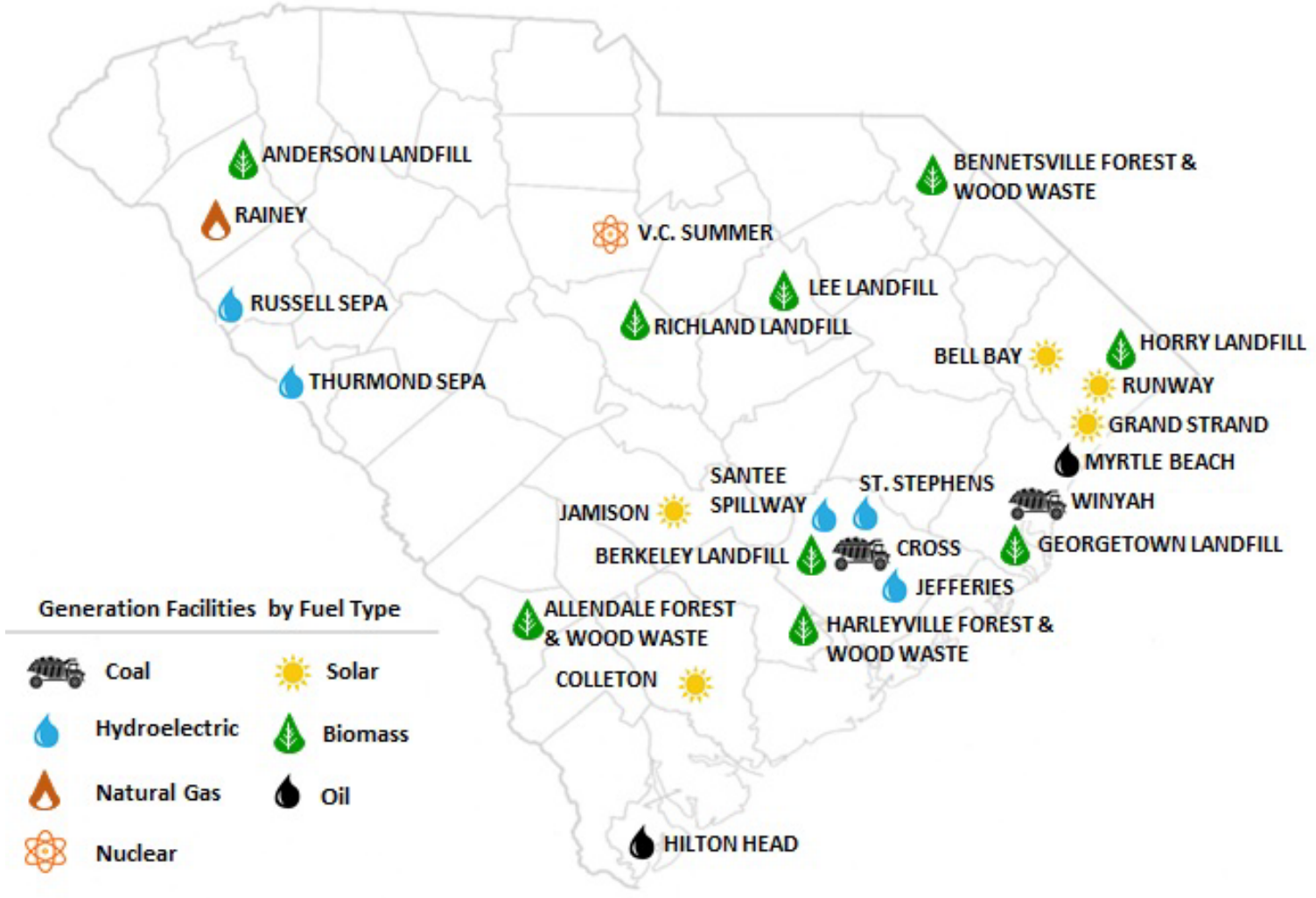


Gas



1. Based on winter capacity ratings; does not include SEPA, Buzzard's Roost, and St Stephen hydro.
2. Cross Unit 2 was in an inactive state during 2017 and 2018. Reflects a 2018 outage at Cross for upgrades related to upcoming environmental regulations, and two forced outages at Cross 4 and Winyah 1 that were anomalies.
3. Fall 2015 - 61 days for scheduled refueling outage; Spring 2017 - 54 days for scheduled refueling outage; Fall 2018 – 50 days for scheduled refueling outage.
4. 2018- Rainey units experienced turbine/generator outages.

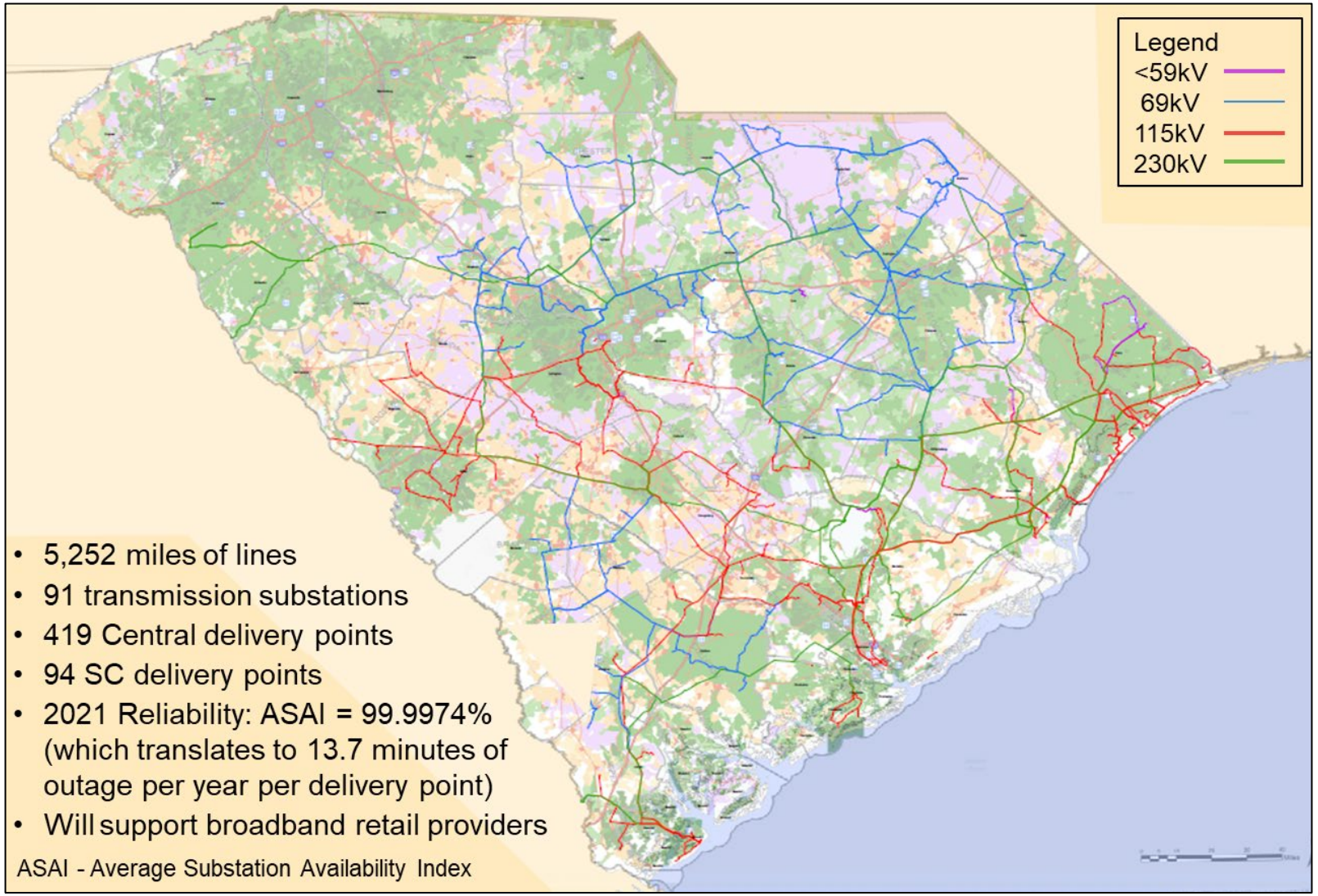
Existing Generating Resources
Owned and Purchased Resources



New Utility Scale Solar

- New QF contracts totaling approximately 280 MW by 2023
- Competitive RFP procurement process commenced June 5, 2020
  - 425 MW of solar power contracted by Central and Santee Cooper
    - Expect commercial operation by late 2023
    - Central is direct counterparty for its 72.5% share
  - Fixed-price arrangements: pay only for energy produced, no added debt

Transmission



Distribution

- Distribution
  - 3,069 miles of lines; 59 substations
  - Reliability as measured by the System Average Interruption Duration Index (SAIDI)[1] was 20.7 minutes in 2021[2]
  - Using data reported to and compiled annually by the U.S. Energy Information Administration (EIA)[3], Santee Cooper's reliability ranks in the top 2% nationally when compared to IOUs and Co-ops

[1] SAIDI depicts the average minutes of outage per customer per year.

[2] Santee Cooper 2021 SAIDI calculation = 4,004,525 customer minutes of interruption ÷ 193,006 customers = 20.7 minutes per customer

[3] This information is reported by electric utilities to the EIA on Form EIA-861 and is compiled by the EIA in an Excel spreadsheet and is posted at the EIA website.

Water Systems

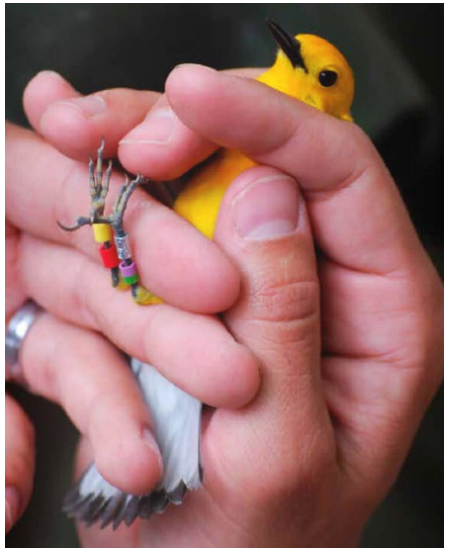
- Santee Cooper's two water systems provide safe drinking water and help drive economic development in rural areas.
- Lake Moultrie
  - Berkeley, Goose Creek, Moncks Corner and Summerville
  - >200,000 consumers, growing
  - 40 million gallons per day (mgd), 20 miles of pipeline
- Lake Marion
  - ~3,000 consumers, aggressive growth plan
  - Berkeley, Calhoun, Dorchester, Orangeburg, Santee
  - 8.5 mgd, 47 miles of pipeline

Economic Development

- Statutory responsibility (S.C. Code §58-31-55)
- With the state's electric cooperatives and other economic development entities, we've helped bring more than $17.2 billion in investment and more than 85,000 new jobs to South Carolina since 1988
  - Volvo, Google, Nucor, Samsung, Century
- Property and land
  - Commerce parks including Camp Hall
  - Programs to help partners develop industrial buildings, etc.
- Low rates, reliability = key tools

Environmental Stewardship

- Beneficial Reuse of Ash, Gypsum
- GOFER used motor oil collection
- Old Santee Canal Park
- Wetlands restoration
  - Camp Hall protecting 1,265 acres; planting of native hardwood seedlings on 465 acres underway
  - Grainger station site: 380 acres, including former restored ash ponds
- Pollinator pathways
  - Camp Hall
  - Jamison Solar Farm
  - Right-of-way paths



Overview of IRP Process

Eileen Wallace
Senior Manager, Resource Planning
Santee Cooper

What is an IRP?

- Integrated Resource Plans
- Explain how an electric utility plans to meet the projected load of its customers
- Balance multiple objectives including system reliability, environmental responsibility, cost impacts and risks

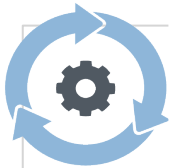
IRP Key Components

Long-term view

- Forward looking
- Long-lived assets
- Time to develop

Impartial evaluation of resources

- Traditional and advanced technologies
- Supply-side and demand-side
- Cost to serve load
- Environmental impacts



Continuous planning process

- Flexible plans
- Adjust and improve as conditions change

Uncertainty and risks

- Load growth
- Fuel prices
- DSM plans
- Environmental regulations

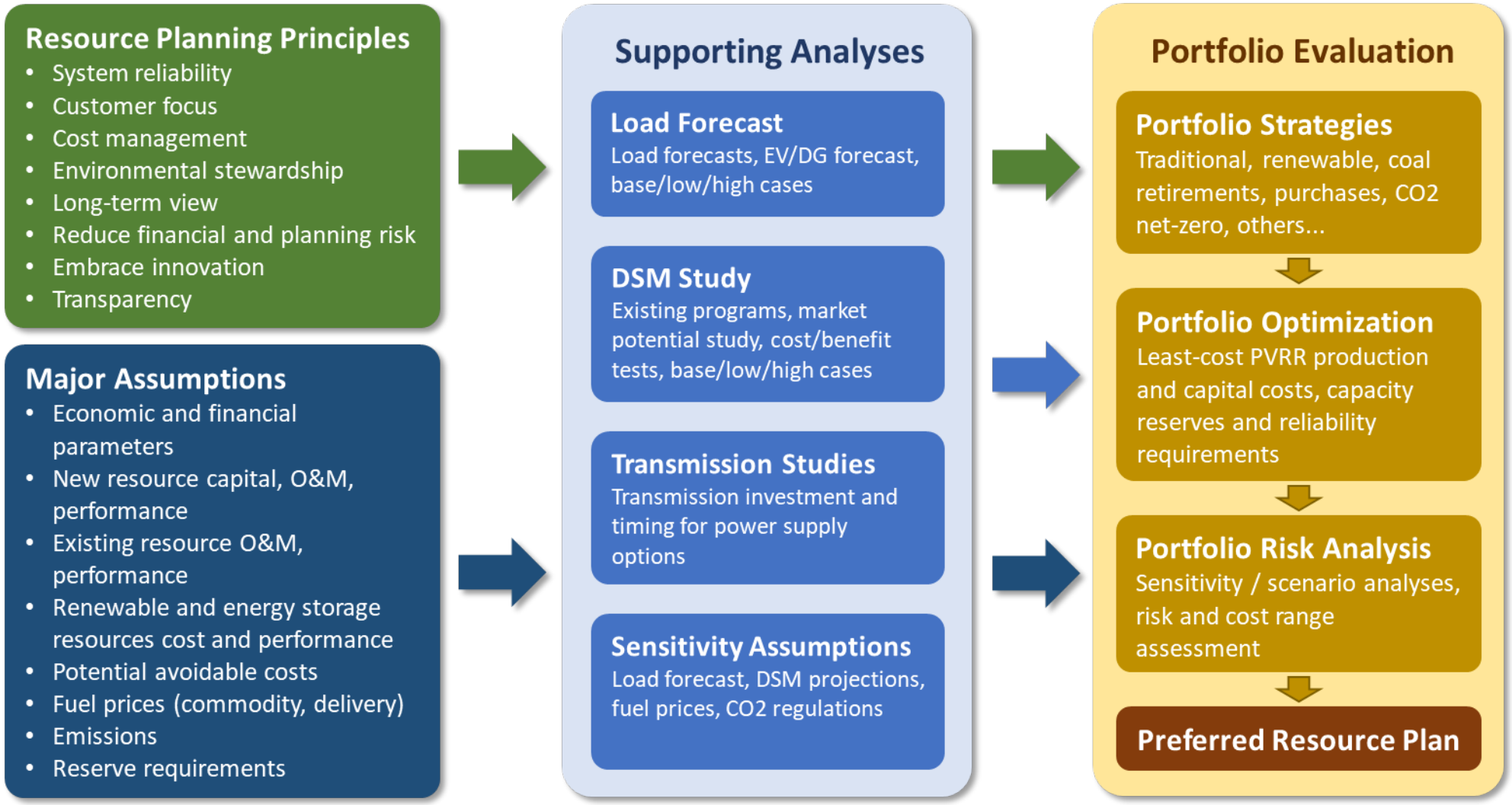
Transparency of process

- Engage with stakeholders
- Inform decision-makers and regulators
- Confidence in decisions

Analytics

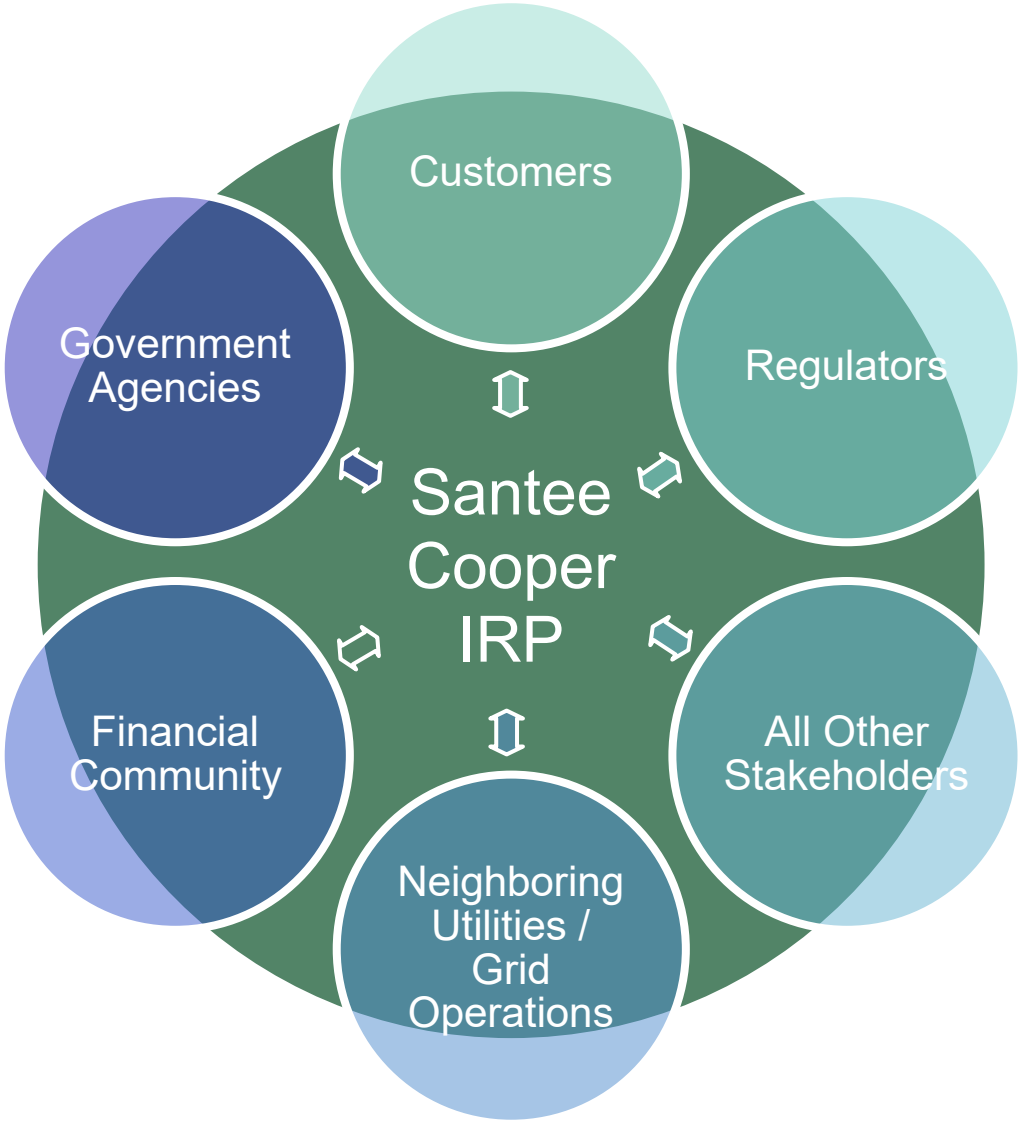
- Identify resource needs
- Market and economic inputs
- Resource characteristics
- Simulation of portfolio costs and risks

IRP Process


Resource Planning Principles
• System reliability
• Customer focus
• Cost management
• Environmental stewardship
• Long-term view
• Reduce financial and planning risk
• Embrace innovation
• Transparency
Major Assumptions
• Economic and financial parameters
• New resource capital, O&M, performance
• Existing resource O&M, performance
• Renewable and energy storage resources cost and performance
• Potential avoidable costs
• Fuel prices (commodity, delivery)
• Emissions
• Reserve requirements
Supporting Analyses
Load Forecast
Load forecasts, EV/DG forecast, base/low/high cases
DSM Study
Existing programs, market potential study, cost/benefit tests, base/low/high cases
Transmission Studies
Transmission investment and timing for power supply options
Sensitivity Assumptions
Load forecast, DSM projections, fuel prices, CO2 regulations
Portfolio Evaluation
Portfolio Strategies
Traditional, renewable, coal retirements, purchases, CO2 net-zero, others...
Portfolio Optimization
Least-cost PVRR production and capital costs, capacity reserves and reliability requirements
Portfolio Risk Analysis
Sensitivity / scenario analyses, risk and cost range assessment
Preferred Resource Plan

IRP Impacts

IRPs have impacts on and are impacted by multiple stakeholders



15-minute Break

Santee Cooper
Previous Resource Planning Studies

Bob Davis
Executive Consultant
nFront Consulting

Previous Resource Planning Studies and Activities

Resource Planning is a continuous process and provides a framework to execute near-term resource activities and maintain flexibility to adapt long-term plans

2019 Reform Plan

- Submitted to the South Carolina General Assembly on November 25, 2019
- New Resource Direction

2020 IRP

- Filed with the State Energy Office on December 23, 2020
- Collaboration with Central
- Confirmed resource direction of Reform Plan
  - Winyah's retirement in late 2020s
  - 1,500 MW of solar
  - NG capacity to replace retired coal and integrate renewables
  - Advanced technologies (storage)

Plan/Execute Near Term Resource Actions

Winyah Retirement

- Winyah Unit 4 idled winter of 2020/2021
- Board-approved decision to retire all units by December 31, 2028

Solar PPAs

- Central and Santee Cooper executed power purchase agreements for 425 MW of Solar

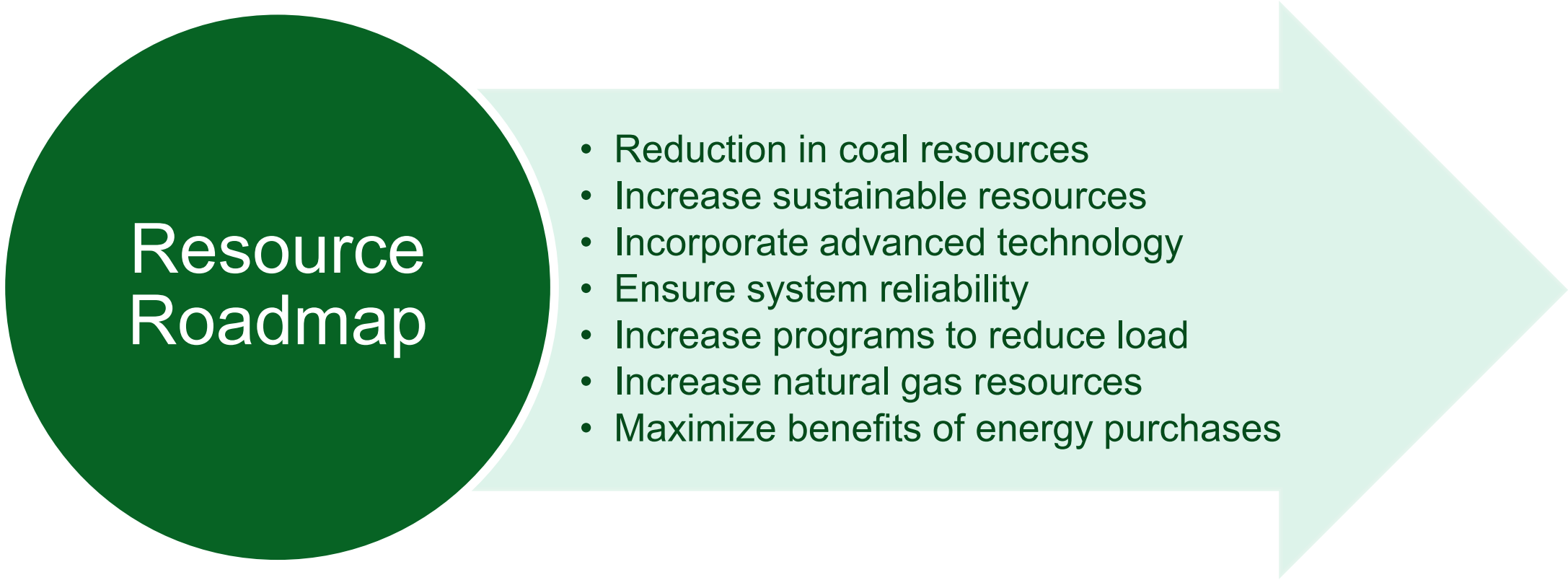
2021 Diligence (Late 2020s Resource)

- Central and Santee Cooper joint analysis related to late 2020s resource need following Winyah retirement
- Meet contractual obligation to issue Proposed Shared Resource

Santee Cooper Resource Planning Principles

RELIABILITY	Operate and plan the Santee Cooper system to ensure that all retail and wholesale customers are provided reliable electric power — reliability is the number one product of any electric utility
CUSTOMER FOCUS	Provide safe, reliable, and affordable power, and provide customers with new opportunities as markets change
COST MANAGEMENT	Develop resource plans that provide effective cost management over the long-term
ENVIRONMENTAL STEWARDSHIP	Responsibly manage the environmental impact of Santee Cooper operations
LONG-TERM VIEW	Develop a long-term resource strategy to ensure resource diversity, flexibility and optionality over a wide range of possible future conditions
REDUCED FINANCIAL & PLANNING RISK	Develop resource plans that readily adapt as future conditions change and, when possible, add resources in increments that closely match resources to needs reducing commodity and price risk
EMBRACE INNOVATION	Identify potential developing technologies and incorporate in resource plans when reasonable and cost-effective
TRANSPARENCY	Engage customers, stakeholders, Board Members, and elected officials in a transparent resource planning process that is responsive to questions and input

Resource Roadmap – 2019 Reform Plan



2020 Integrated Resource Plan

- In accordance with Act 62 of 2019, Santee Cooper submitted its triennial Integrated Resource Plan (IRP) to the State Energy Office on December 23, 2020 (did not require the Commission's approval)
- A copy of the Santee Cooper 2020 IRP can be viewed on the Santee Cooper and the State Energy Office websites

  https://www.santeecooper.com/About/Increasing-Value/ORS-Reports/_pdfs/Dec-23-Signed-Filed-IRP.pdf

  http://energy.sc.gov/files/view/Santee Cooper Dec 23 Signed Filed IRP.pdf

2020 Integrated Resource Plan

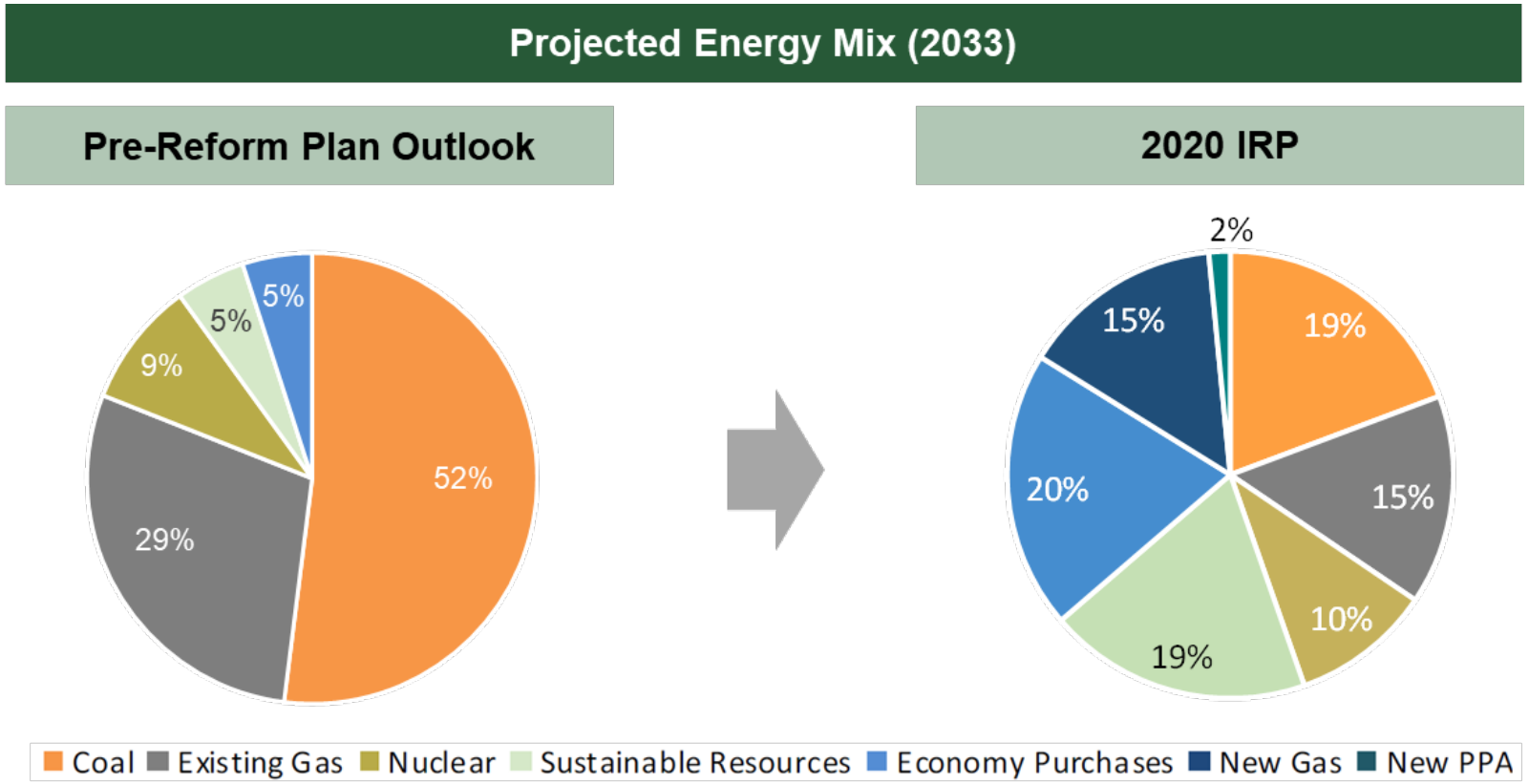
- The Santee Cooper 2020 IRP addressed topics required by Act 62
  - Long-term forecast of loads, including reasonable scenarios
  - Documentation of proposed traditional and renewable generating resources
  - Summary of transmission system investments
  - Evaluation of multiple resource portfolios for cost and reliability, including sensitivity analyses for renewable resources, DSM, resource retirements, fuel prices, and environmental regulations
  - Information on current resources and plans for future capacity needs, including initiatives for peak demand reductions

2020 IRP – Preferred Resource Plan Summary

Resource Roadmap	2020 Resource Plan
Retire Coal	▪ Phased retirement of Winyah Generating Station by 2027 ▪ Install quick-start units at a site near the Conway substation
Increase Solar	▪ Phased solar PV implementation: 500 MW from RFP by 2023; 1,000 MW by 2026; 1,500 MW by 2032
Incorporate Advanced Technology	▪ Phased battery energy storage implementation: 50 MW in 2026; 100 MW by 2033; 200 MW by 2036 ▪ Phased implementation provides benefits from technology improvements and lower future costs
Increase Natural Gas Resources	▪ New natural gas CC/CT resource (550 MW) targeted for 2027 ▪ Favorable economy purchase prices are anticipated to result in a greater proportion of the energy mix over the study horizon ▪ Long-term PPA purchases sized to meet demand (2031-2040)
Encourage Conservation & Demand Response	▪ Existing Santee Cooper and Central DSM/conservation plans ▪ Additional demand response implementation

2020 IRP – Energy and Technology Diversity

2020 IRP incorporates new technology and improves fuel diversity



2020 IRP Preferred Resource Plan results in over a 50% reduction of carbon dioxide emissions since 2005

2020 IRP – Recent Activities

Winyah Retirement

- Winyah Unit 4 idled as of the winter of 2020/2021
- Board-approved decision to retire all units by December 31, 2028

Solar PPAs

- Central and Santee Cooper jointly executed Power Purchase Agreements for 425 MW of Solar
  - Five projects with four separate counterparties
  - Central is direct counterparty for its 72.5% share from each project

2021 Diligence Related to Late 2020s Resource Need

- Planning studies conducted to maintain options on future resource decisions, including timely retirement of Winyah and implementation of new replacement resources
- Central and Santee Cooper joint analysis related to late 2020s resource need following Winyah retirement
- Meet contractual obligation to issue Proposed Shared Resource (PSR)
  - PSR issued in January 2022 for 2x1 NGCC at Winyah site

Actions or commitments related to future resources, including the late 2020s resource, will be guided by results of the 2023 IRP and stakeholder input

Summary of 2021 Diligence Analysis

Changing Conditions from 2020 IRP

- Santee Cooper and Central load forecasts
- Cost estimates for transmission system upgrades
- Generating technology cost assumptions
- Assumptions for NG firm reservation charges

Winyah is the Preferred Site

Electric Transmission

- Transmission already exists - minimal construction risk
- $350-750 million cost savings versus other sites

Natural Gas Transportation

- Based on feedback received, getting gas to Winyah is feasible

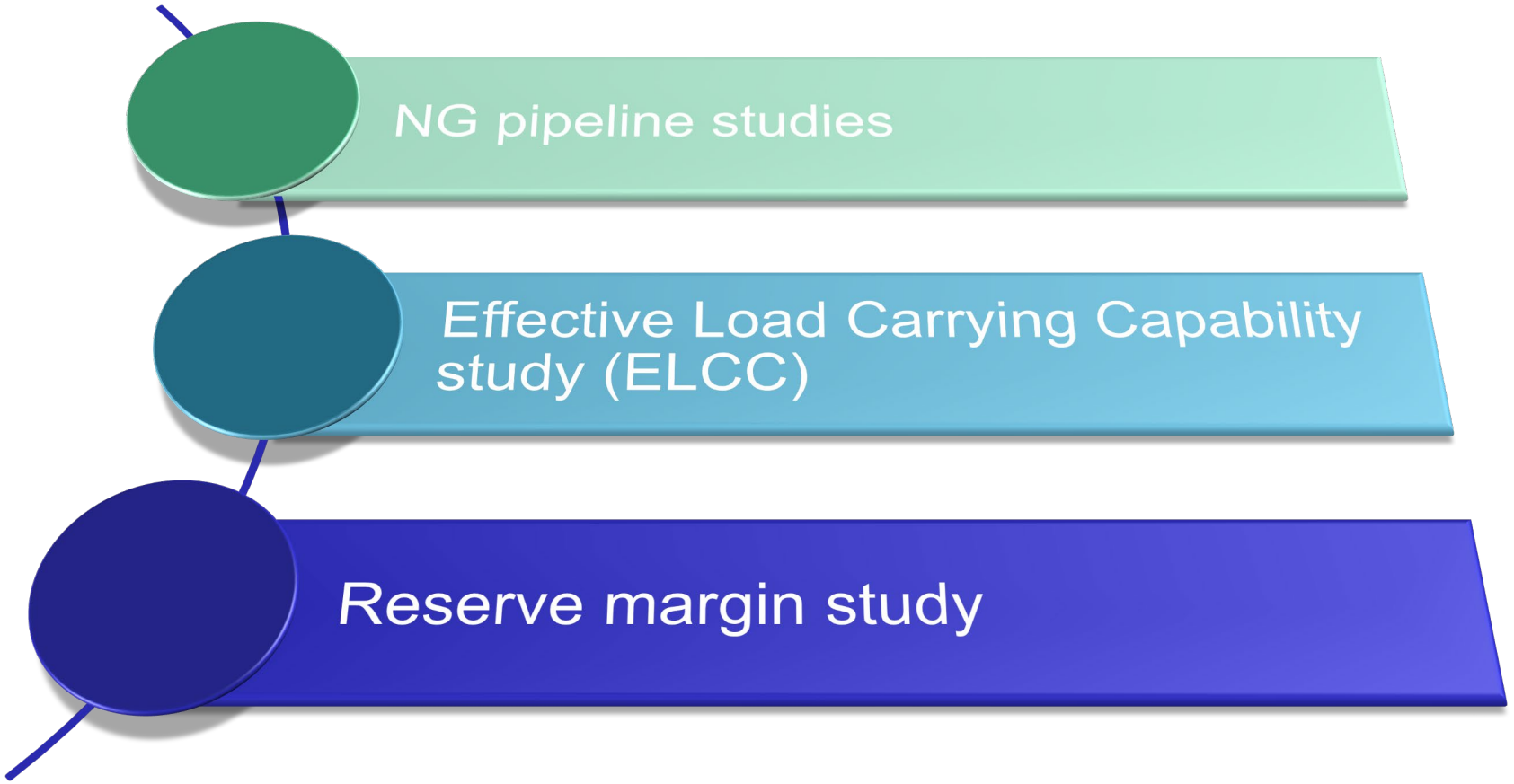
- Lowest projected overall cost (including cost of transmission and NG reservation)
- Proximity to load provides reliability benefits and supports greater imports
- Brownfield site (expected to be easier to permit and construct)
- Less local economic disruption

Portfolio with 2x1 NGCC is Preferred

- Lowest projected cost under most scenarios / sensitivities
- Improves fuel diversity (better alignment with neighboring systems)
- Reduced coal reliance, lower CO2 emissions, reduced exposure to future environmental regulations
- Enhanced flexibility and ability to integrate variable renewable resources
- Enhanced portfolio efficiency reducing sensitivity to fuel prices

Actions or commitments related to future resources, including the late 2020s resource, will be guided by results of the 2023 IRP and stakeholder input

Other Studies Currently in Progress



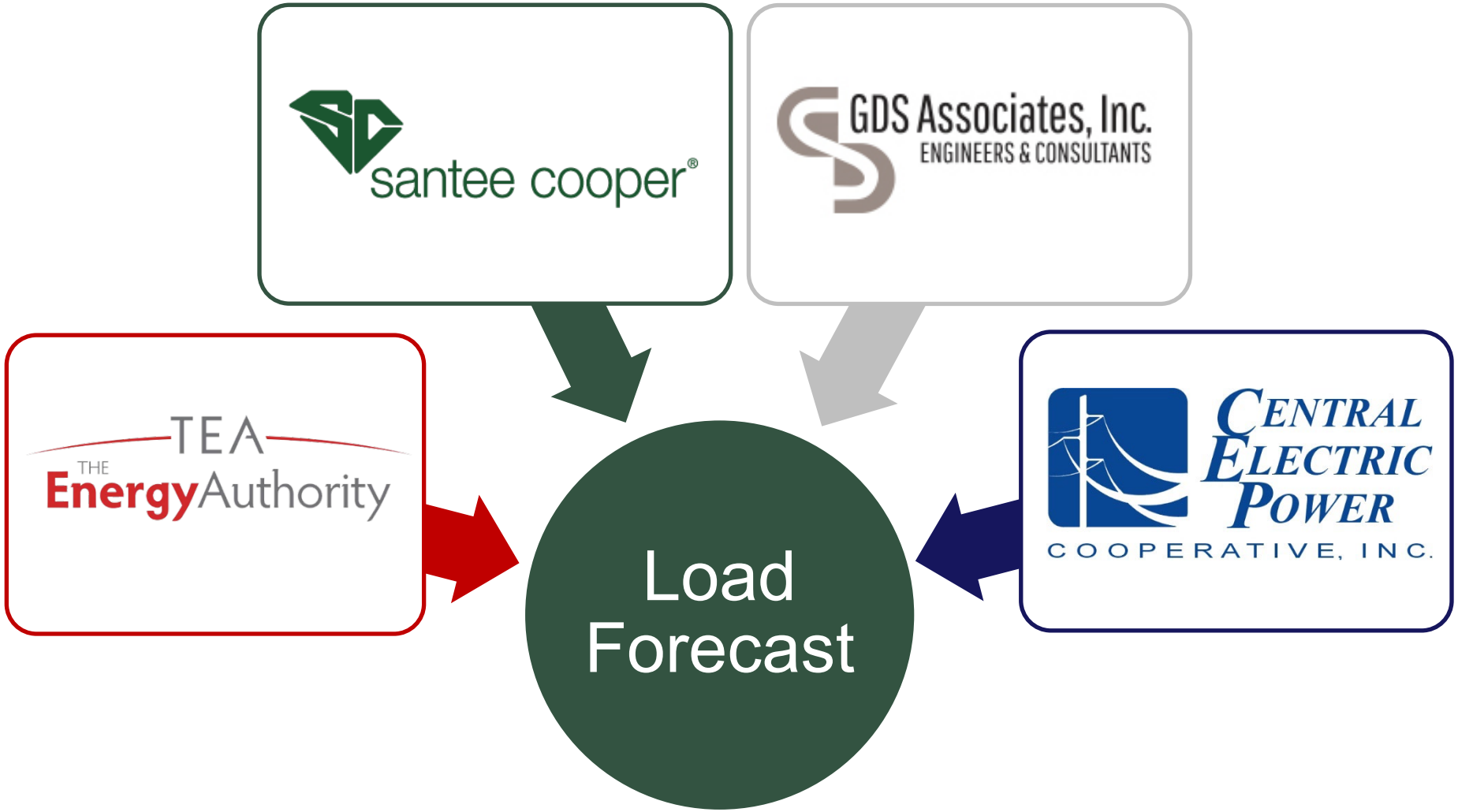
Santee Cooper
Current Resource Position

Santee Cooper - Current Resource Position
Load Forecast

Greg McCormack
Senior Manager, Financial Forecast
Santee Cooper

Jacob Thomas
Principal
GDS Associates

Load Forecasting Team

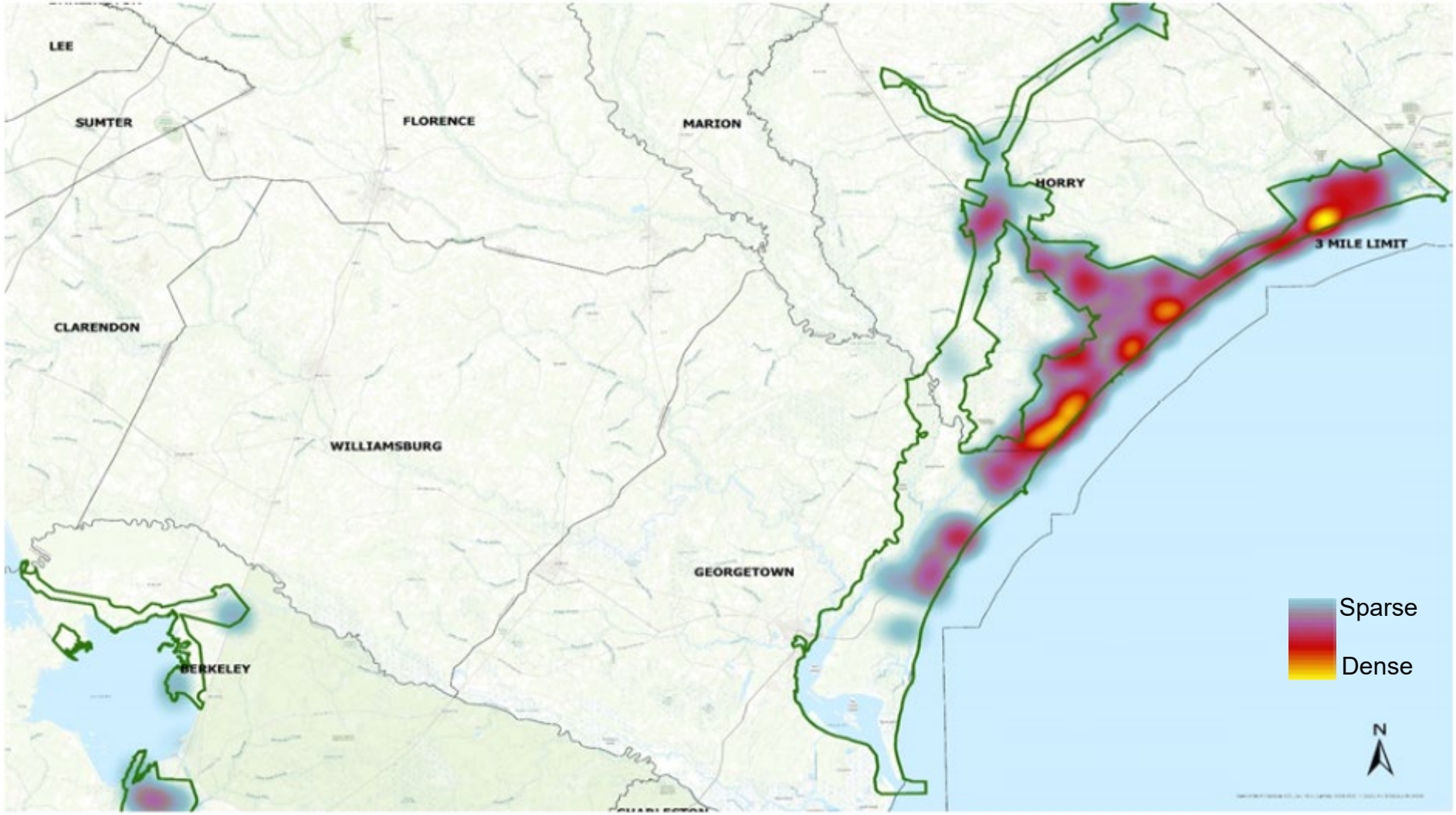


Customer Groups

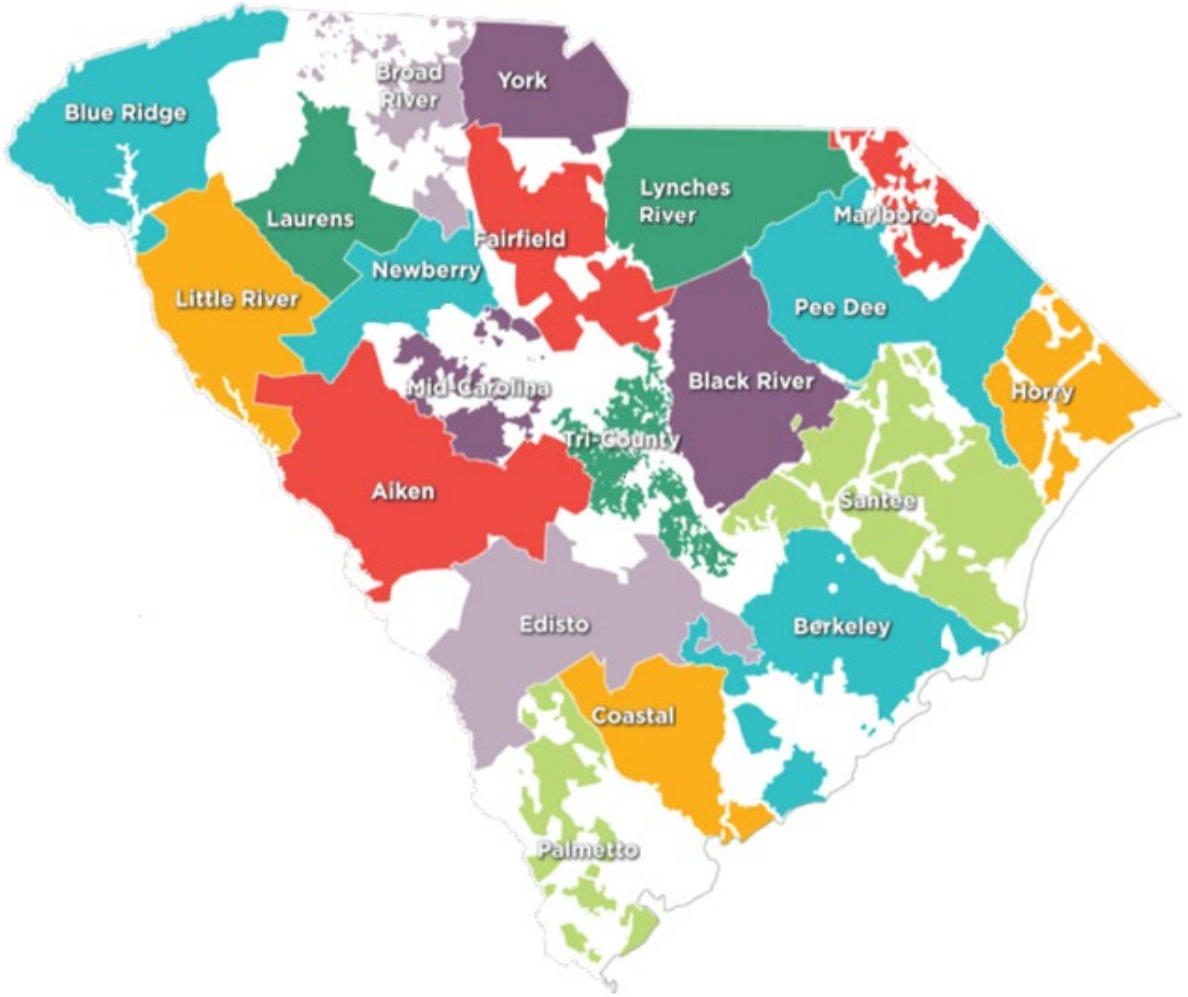
Class	Customer Segment Composition	Originator
Distribution System Residential and Commercial	▪ Approximately 197,000 direct served accounts, comprising 15% of system	GDS
Industrial	▪ 28 large industrial customers served directly by Santee Cooper, comprising 24% of the system	Santee Cooper
Central	▪ Wholesale customer serving 20 retail cooperatives, comprising 58% of system	Central
Off-system and Municipal Sales	▪ Wholesale sales to Bamberg, Georgetown, PMPA, Seneca, AMEA (AL), and Waynesville (NC) ▪ Sales to PMPA are on a partial requirements basis ▪ Off-system sales comprise 3% of system	Santee Cooper, GDS, and Customer

Note: Percentiles based on 2022 forecasted system energy.

Distribution Service Territory and Customer Density



Central Electric Power Cooperative Service Territory



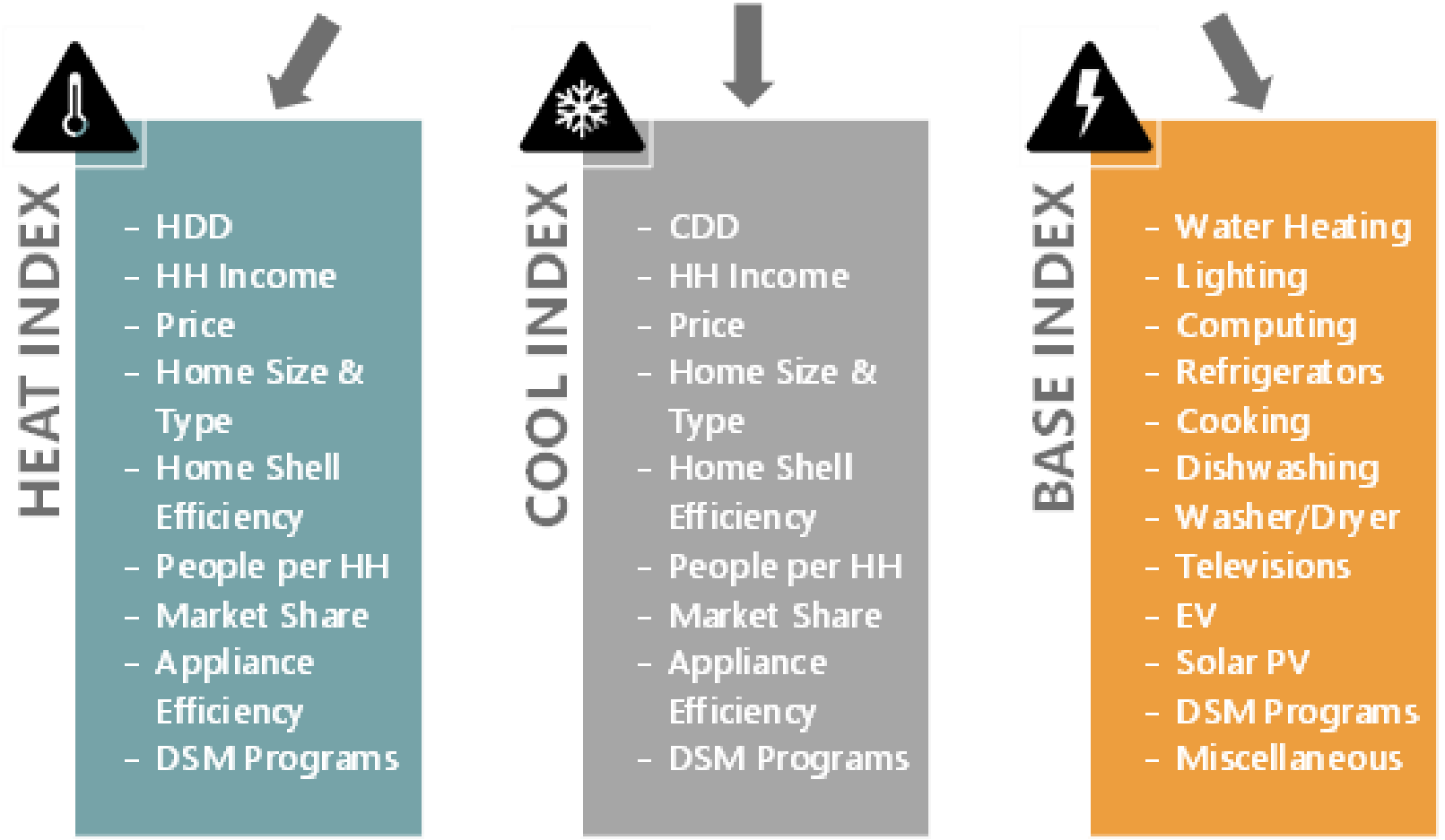
Note: Blue Ridge, Broad River, Laurens, Little River, and York are outside the Santee Cooper balancing authority.

Forecasting Methods

- Distribution System - Residential and Commercial
  - Statistically adjusted end-use models
  - Multiple regression analysis
  - Refined through discussion with distribution system staff
- Industrial
  - Basis is contractual agreement and historical consumption
  - Refined using input from customers regarding future operations
- Central Electric Power Cooperative
  - Prepared by Central staff
  - Statistically adjusted end-use models
  - Refined through discussion with local Cooperatives
- Off-system and Municipal
  - Various methods depending on customer

Statistically Adjusted End-Use Models

$$kWh = \beta_1 Heat_{Index} + \beta_2 Cool_{Index} + \beta_3 Base_{Index} + \varepsilon$$



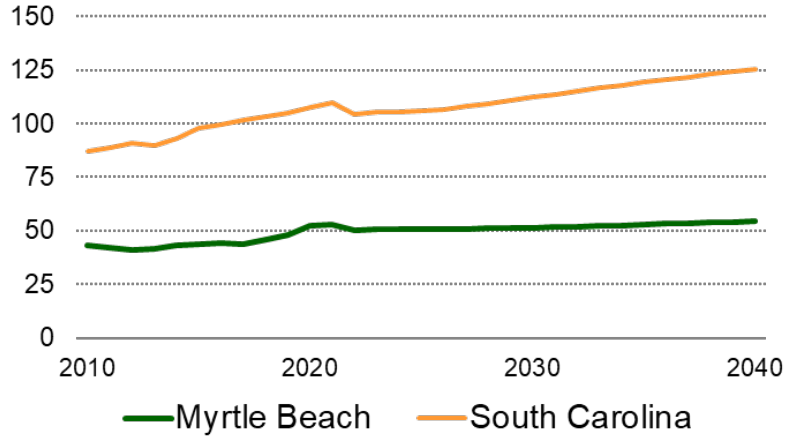
Key Assumptions & Sources

Assumption	Santee Cooper Source	Central Source
Economic Forecast	Moody's Analytics	IHS Markit
Appliance Market Share	Customer Surveys	Customer Surveys
Appliance Efficiency	EIA 2021 AEO[1]	EIA 2021 AEO[1]
Housing Characteristics	Surveys/AEO/RECS[2]	Surveys/AEO/RECS[2]
Weather	20-year average	30-year average
Price of Electricity	Santee Cooper	Central

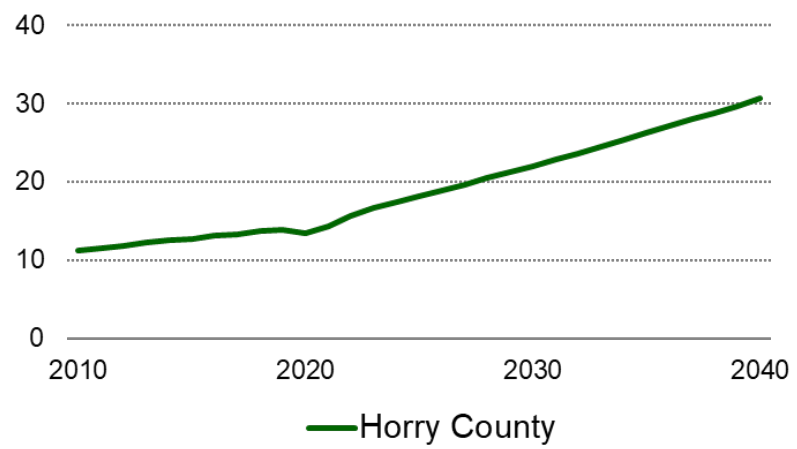
1. AEO means Annual Energy Outlook.
2. RECS means Residential Energy Consumption Survey.

Moody's Economic Forecast (2021)

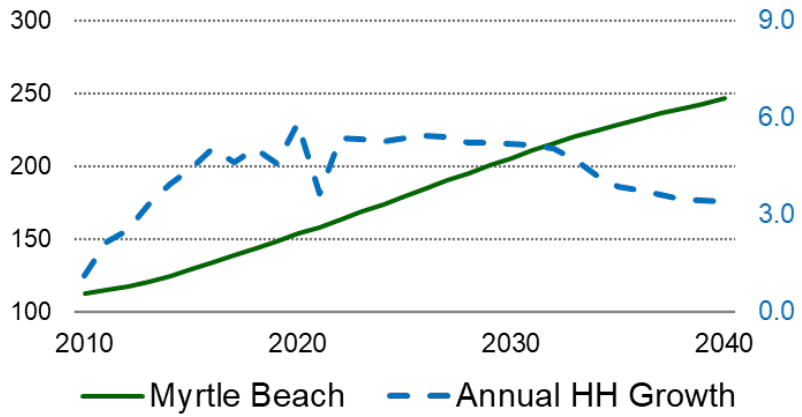
Median Household Income ($2012, 000s)



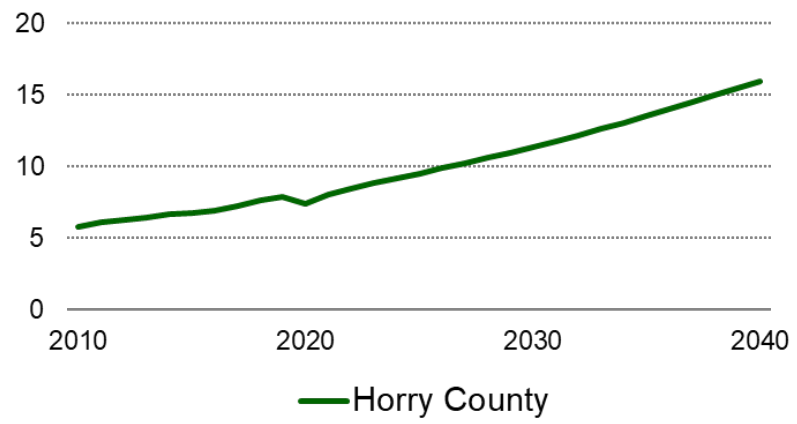
Gross Area Product ($2012, Billions)



Number of Households (000s)



Retail Sales ($2012, Billions)



Note: Actuals through 2020

2021 Forecast Results (2021-2040)

Forecast Drivers

- Growth in Residential and Commercial sales will be driven by growth in customers but constrained by declining energy consumption per customer.
- Population growth in the Santee Cooper and Central service areas is higher than the national average as migration to South Carolina from other areas is strong; which impacts energy sales and peak demand
- The operating efficiencies of electric motors and appliances will continue increasing over the next 20 years, resulting in lower average electricity consumption per customer

2021 Forecast Results (2021-2040)

Compound Average Annual Growth

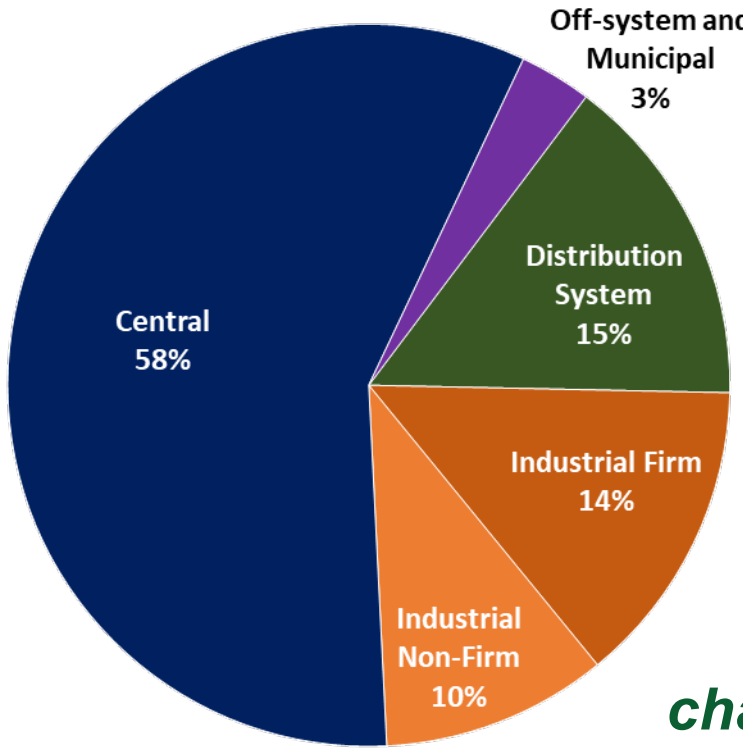
	Energy Requirements	*Summer Peak Demand*	*Winter Peak Demand*
Distribution[1]	1.0%	0.9%	0.9%
Industrial[2]	0.4%	0.1%	1.6%
Municipal and Off-System[3]	-8.0%	-10.9%	-9.2%
Central	0.9%	1.1%	1.0%
Total System	**0.7%**	**0.6%**	**0.8%**

1. *Growth rates for Distribution classes are net of DSM impacts.*
2. *Energy includes firm and non-firm; demand includes firm only.*
3. *Reflects impact of contracts projected to end during the period of the forecast. CAGR would be -0.1% for all metrics if excluding those customers.*

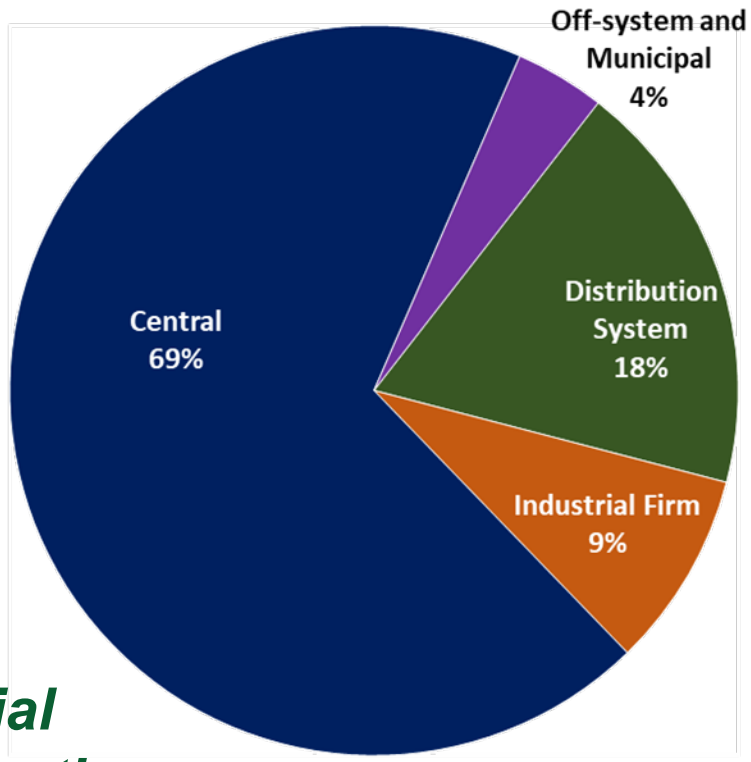
2021 Forecast Results (2021-2040)

2022 System Energy & Peak Demand

Energy: 27,059 GWh



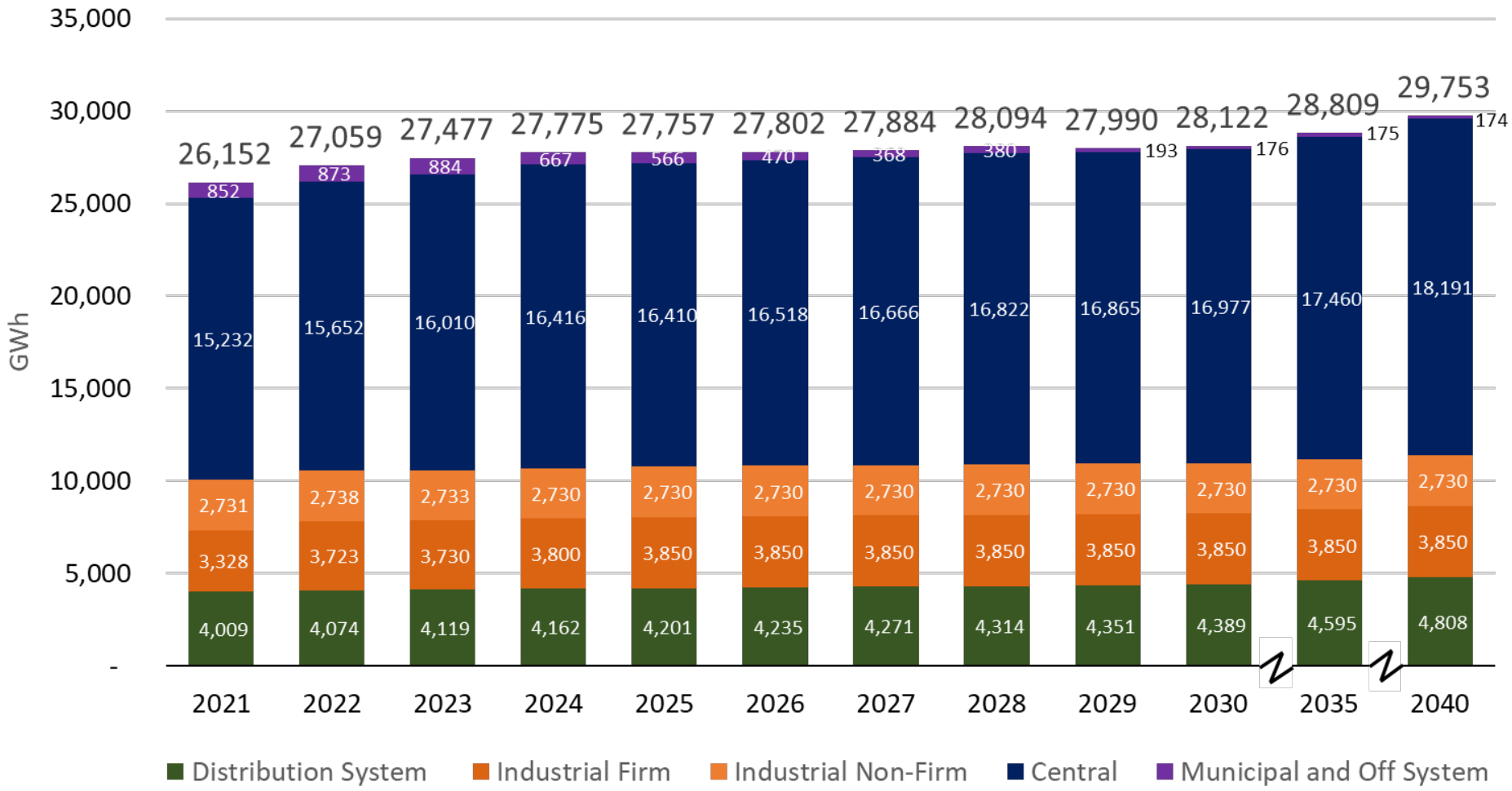
Winter Demand: 5,022 MW



No significant change in territorial load proportions over the 20-year horizon

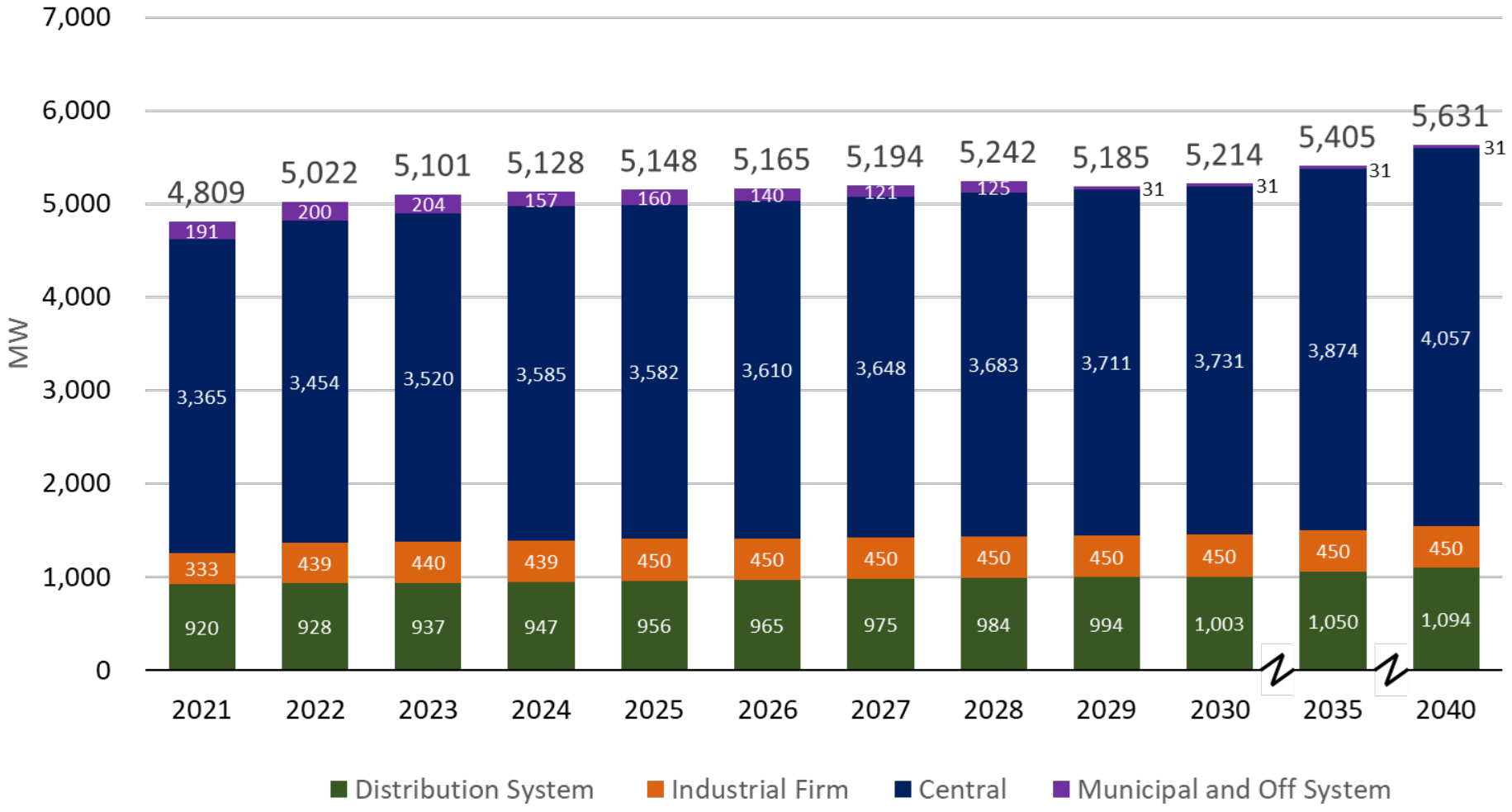
2021 Forecast Results (2021-2040)

System Energy Forecast



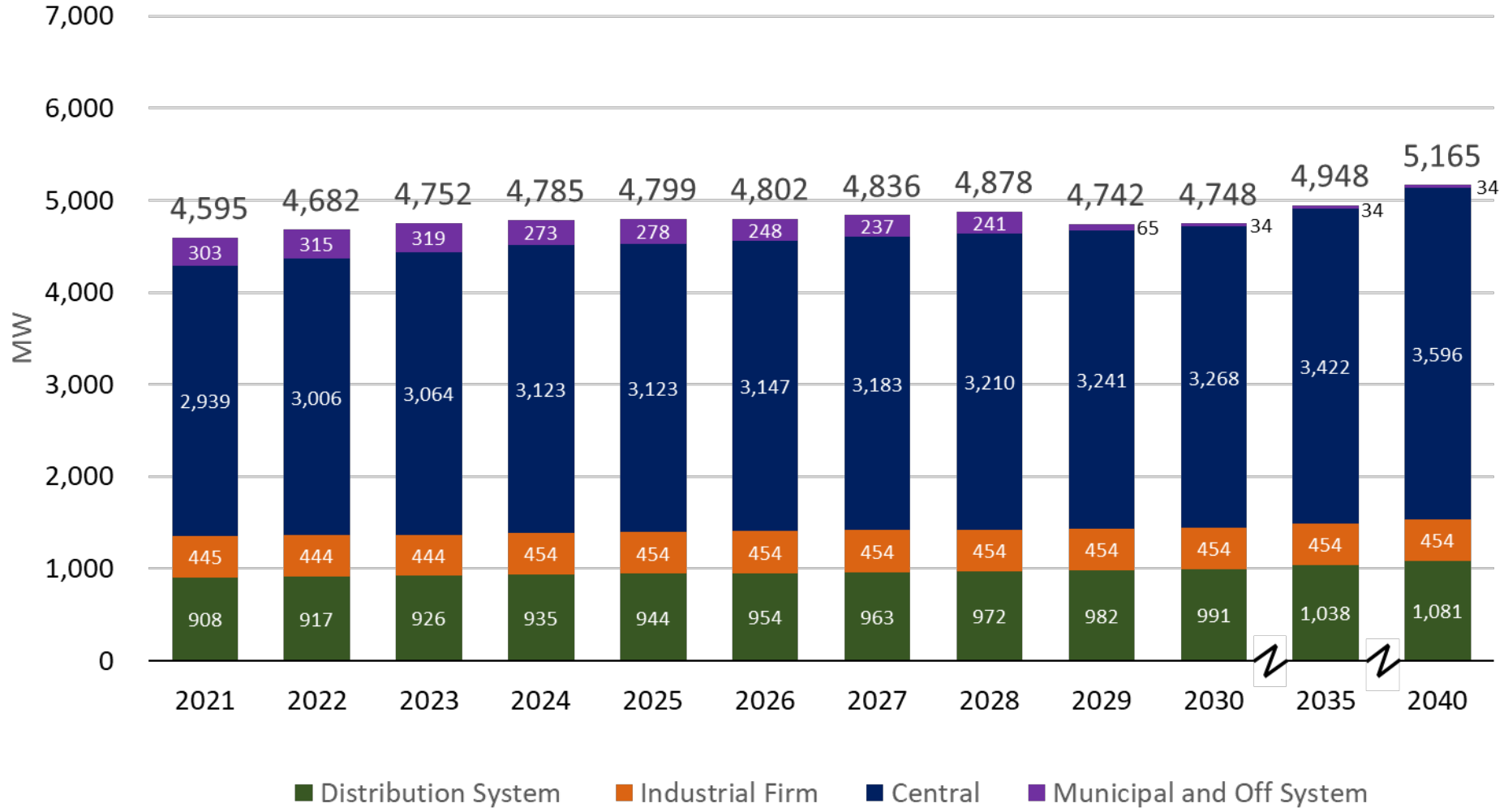
2021 Forecast Results (2021-2040)

System Peak Demand - Winter



2021 Forecast Results (2021-2040)

System Peak Demand - Summer



2022 Forecast Schedule and Process Update

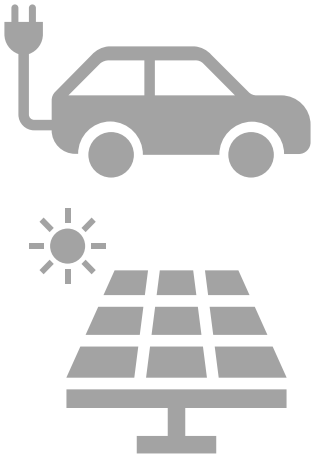
January - April
- Information gathering
- Analyze and prepare data

March - April
- Moody's Economic data is available
- EIA Annual Energy Outlook is available

May
- Finalize base forecast

May - June
- Finalize sensitivities

- Similar approach and data sources as prior forecasts
- Potential changes being evaluated
  - Explicit projection of electric vehicle load
  - Explicit projection of rooftop solar



Lunch Break – 1 hour 15 minutes

Santee Cooper - Current Resource Position
Demand-Side Management (DSM) Programs

Patricia Housand
Manager, Program Development
Santee Cooper

Jim Herndon
Vice President, Utility Services
Resource Innovations

Demand-Side Management (DSM)

Modifying How Customers Use Energy on Their Side of the Meter

1. **Energy Efficiency Programs:** Objective is to reduce overall energy usage by encouraging customers to upgrade to higher efficiency equipment and/or install other energy-saving measures.
2. **Demand Response Programs:** Objective is to reduce participants' demand for electricity when Santee Cooper's system demand for electricity is at its highest.
3. **Beneficial Electrification Programs:** Objective is to save consumers money over time; benefit the environment and reduce greenhouse gas emissions; improve product quality or consumer quality of life; or foster a more robust and resilient grid.[1]

_____

1. *Beneficial Electrification League www.beneficialelectrification.com*

Program Offering – Energy Efficiency

Overview of Past Activities

Energy Efficiency Portfolio for Santee Cooper's Distribution System (Residential & Commercial Customers)

2020 Plan - "Reduce the Use"

- Huge success:
  209 GWh of customer energy savings two years ahead of schedule[1]

REDUCE™ THE USE South Carolina

2030 Plan – "empowersc"

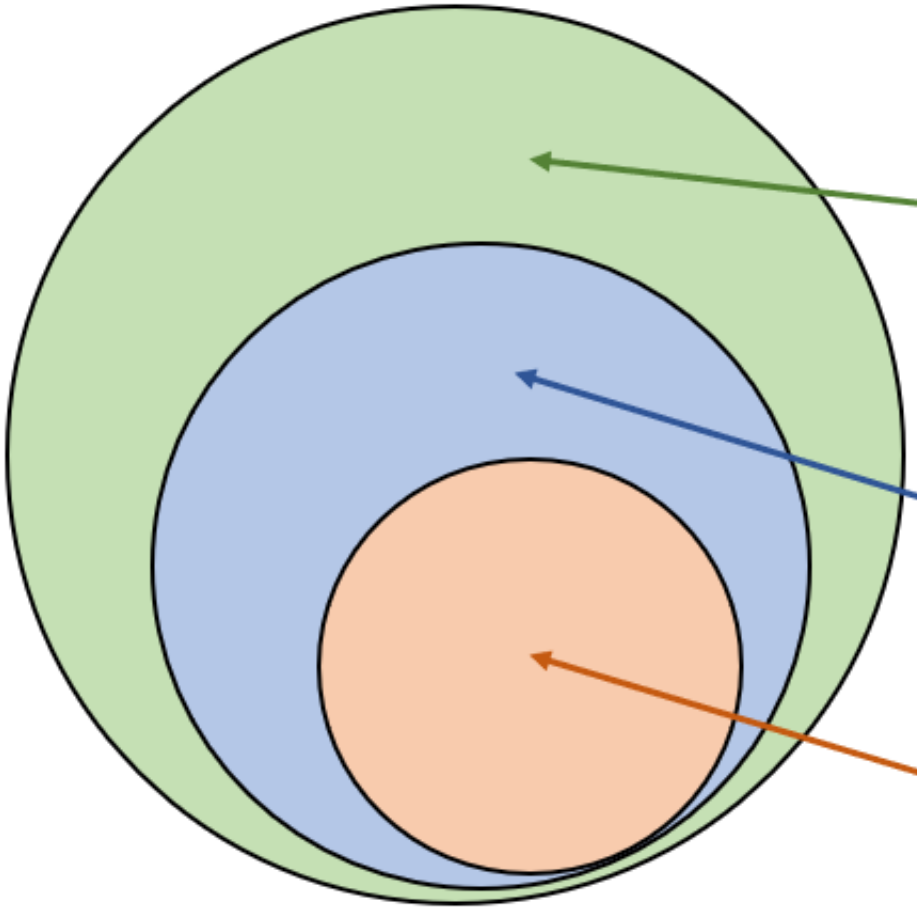
- Completed market baseline assessment and Energy Efficiency Market Potential Study
- Identified measures and savings goals for the 2030 Plan

empowersc The Power is Yours

1. *Historical savings are reflected in Load Forecast for Distribution System.*
2. *Projected savings are reflected in Load Forecast for Distribution System.*

Energy Efficiency

Market Potential Study Approach



Technical Potential

The theoretical maximum amount of energy and capacity that could be displaced by efficiency, regardless of cost and other barriers that may prevent the installation or adoption of an energy efficiency measure.

Economic Potential

The amount of energy and capacity that could be reduced by efficiency measures that pass a cost-effectiveness test.

Achievable Potential

The energy savings that can feasibly be achieved through program and policy interventions.

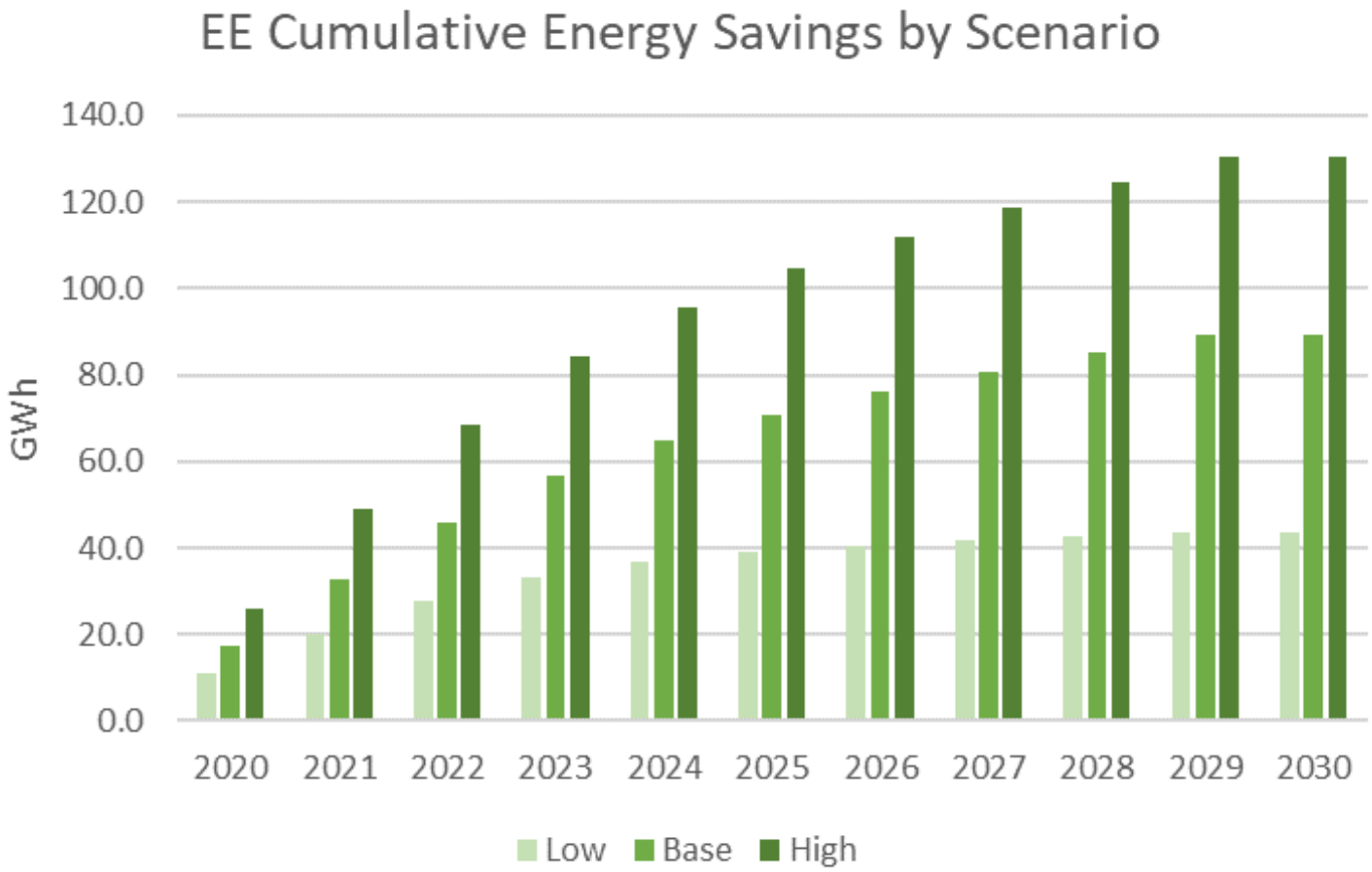
Energy Efficiency

Market Potential Study Description

- Market Potential Study performed by Resource Innovations in 2019
  - Evaluated the potential of energy efficiency resources to reduce energy consumption
  - Economic screening based on Total Resource Cost (TRC) test
- Included 256 unique EE measures totaling 7,938 permutations
- MPS produced results under three scenarios
  - Low: current EE program portfolio if Santee Cooper made no changes to its program offerings
  - Base: Santee Cooper expanded its offering to include new EE measures
  - High: offers the new EE measures as in the Base scenario with increased incentives capped at 75% of incremental cost of measures
- Santee Cooper selected the base scenario for its 2030 Plan, which is reflected in the 2021 Load Forecast

Energy Efficiency

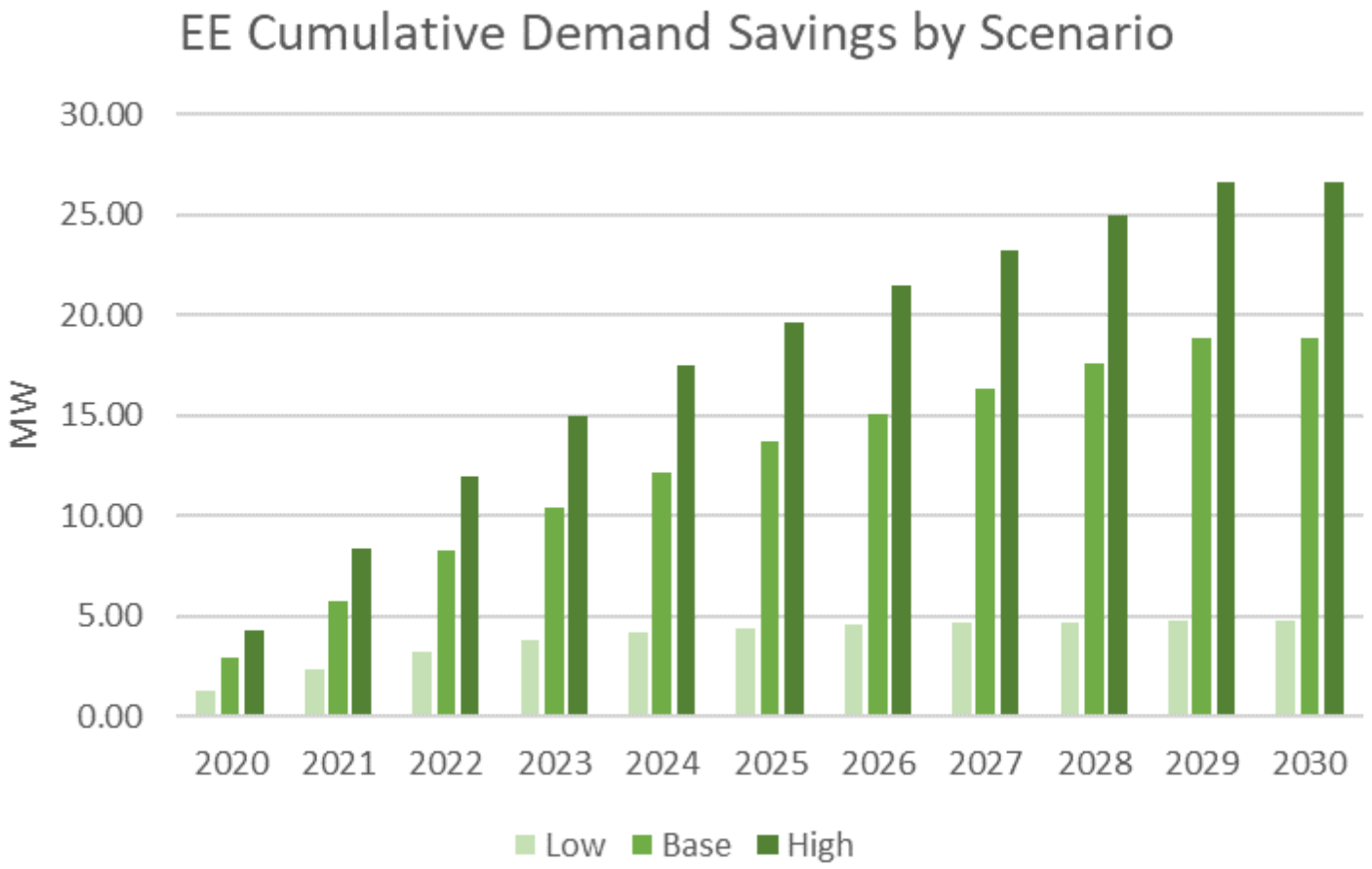
Market Potential Study Energy Savings Projections



Base = 2030 Plan's Projected Savings

Energy Efficiency

Market Potential Study Demand Reduction Projections



Base = 2030 Plan's Projected Savings

Energy Efficiency

2030 Plan Goal

2017: Baseline Assessment
2019: Market Potential Study

Projected Savings Commercial
45 GWh

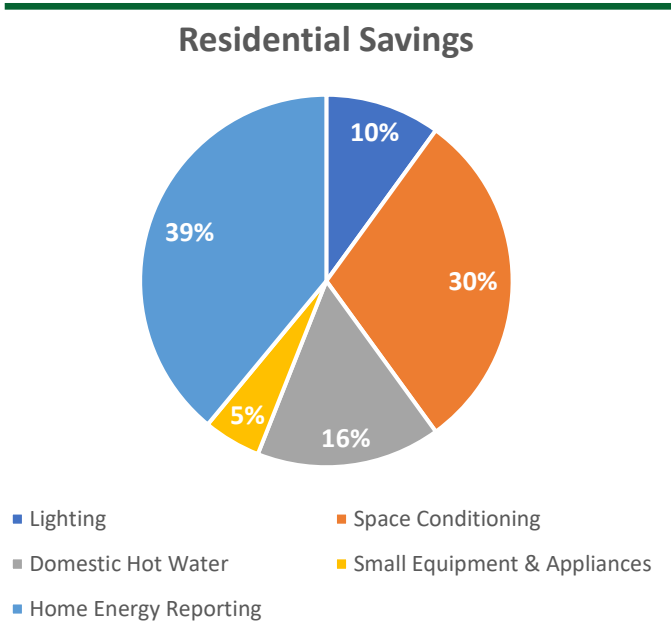
Projected Savings Residential
44 GWh

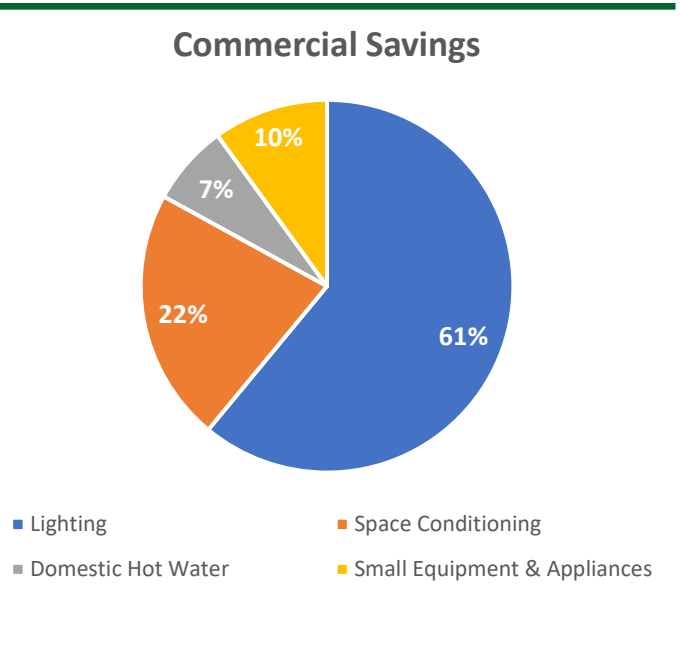
Projected Savings Total
89 GWh

2030 MPS Projected Savings **89 GWh**

2019 Projected Savings **11 GWh**

Total Savings by 2030
100 GWh





Energy Efficiency

Current Program Offerings

Program	Targeted End Uses
Residential	
On-Site Energy Assessments	Energy Assessments, House Call Kits and LEDs
Smart Energy Existing Home	Central Heating & Cooling Systems, Heat Pump Water Heater, Duct Replacement, Pool Equipment, LEDs, and ENERGY STAR® Appliances
Smart Energy New Home	Central Heating & Cooling Systems, Heat Pump Water Heater, Duct Replacement, Pool Equipment, LEDs, and ENERGY STAR® Appliances
Smart Thermostats	Qualifying Smart Thermostats
Commercial	
On-site Energy Assessments	Rate Assessments and Energy Assessments
Commercial Prescriptive	Lighting, Central Heating & Cooling Systems, Refrigeration, ENERGY STAR® Appliances, Domestic Hot Water, and Pumps & Motors
Small Business Energy Saver	Lighting, Central Heating & Cooling Systems, and Refrigeration
Smart Thermostats	Qualifying Smart Thermostats

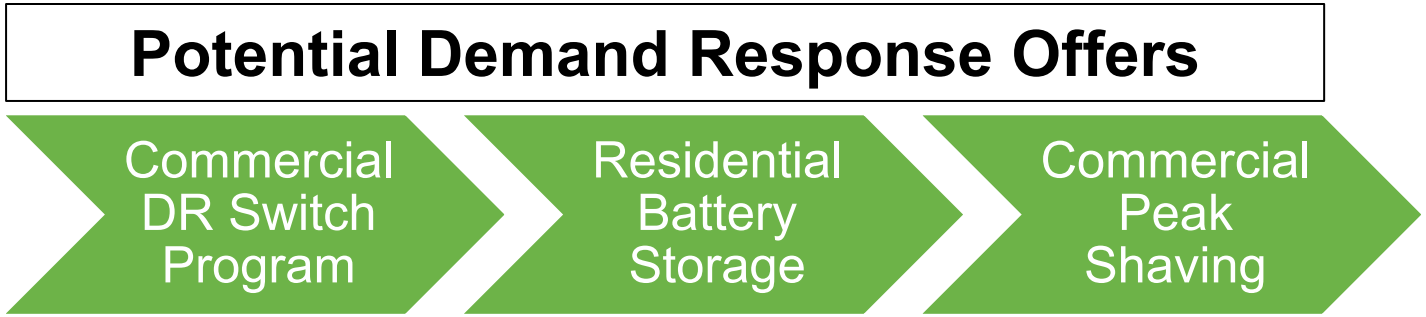
Energy Efficiency

Next Steps

- Santee Cooper will work with Resource Innovations to update the 2019 MPS using the Utility Cost Test (UCT)
- Santee Cooper will compare the results of these two versions of the MPS and update future savings goals accordingly

Program Offerings
Demand Response

- Just launched a residential switch pilot program
  - Targeting electric space and water heating end uses
  - Uses Category M1 cellular for communication between switch and distributed energy resource management system (DERMS)
  - Goal for program is to have 35 MW of dispatchable demand response capability by 2027 and 44 MW by 2035
- Developing conservation voltage reduction system, currently capable of reducing peak by 18 MW
- Current plans reflect development of 104 MW of DR by 2037 for both Santee Cooper and Central



Program Offerings
Beneficial Electrification

- Existing Programs to support Electric Vehicle adoption
  - **Residential EV Charger Program:** Customers can receive a rebate of up to $500 for installation of a qualifying level 2 charger
  - **EV Grant Program:** Customers can apply for a grant with projects that support and encourage EV adoption
  - **Santee Cooper Fleet Vehicle Change Out:** End-of-life fleet vehicles are replaced with EV option as driving patterns and EV availability allow
  - **Santee Cooper Workplace Charging Program:** Chargers have been installed on Santee Cooper properties to facilitate EV fleet adoption and encourage employee EV purchases
- Other Electric Vehicle Efforts
  - Established Task Force to continue to evaluate other ways for Santee Cooper to support EV adoption
  - Participation in key stakeholder groups within state to develop deliverables associated with Act 46 plus other EV stakeholder groups throughout Southeast region (auto manufacturers, fleet owners, etc.)

Santee Cooper - Current Resource Position
Existing Resources

Eileen Wallace
Senior Manager, Resource Planning
Santee Cooper

Owned Generating Resources

	Generating Station	Unit #	Service Date	Fuel Type	Technology	Winter Rating (MW)	% of 2021 System Load
	**Cross** Pineville, SC	1	1995	Coal	ST	585	29%
		2	1983	Coal	ST	570	
		3	2007	Coal	ST	610	
		4	2008	Coal	ST	615	
	**Rainey** Iva, SC	1	2002	NG	CC	520	20%
		2A, 2B, 3-5	2002 - 2004	NG	CT	630	
	**Winyah** Georgetown, SC	1	1975	Coal	ST	280	12%
		2	1977	Coal	ST	290	
		3	1980	Coal	ST	290	
		4	1981	Coal	ST	290	
	**Summer Nuclear Unit 1** Jenkinsville, SC	1	2083	Uranium	NUC	322	9%
	**Jefferies,** Lake Moultrie	1-4, 6	1942	Water	Hydro	140	1%
	Spillway, Lake Marion	-	1950	Water	Hydro	2	
	**Landfill Gas** (multiple sites)	-	2001 - 2011	LFG	CT, IC	29	0.2%
	**Myrtle Beach**	1-5	1962 - 1976	Oil/NG	CT	65	0.002%
	Hilton Head	1-3	1973 - 1979	Oil	CT	100	
	Total Capacity					5,338	

Winyah Retirement Plan

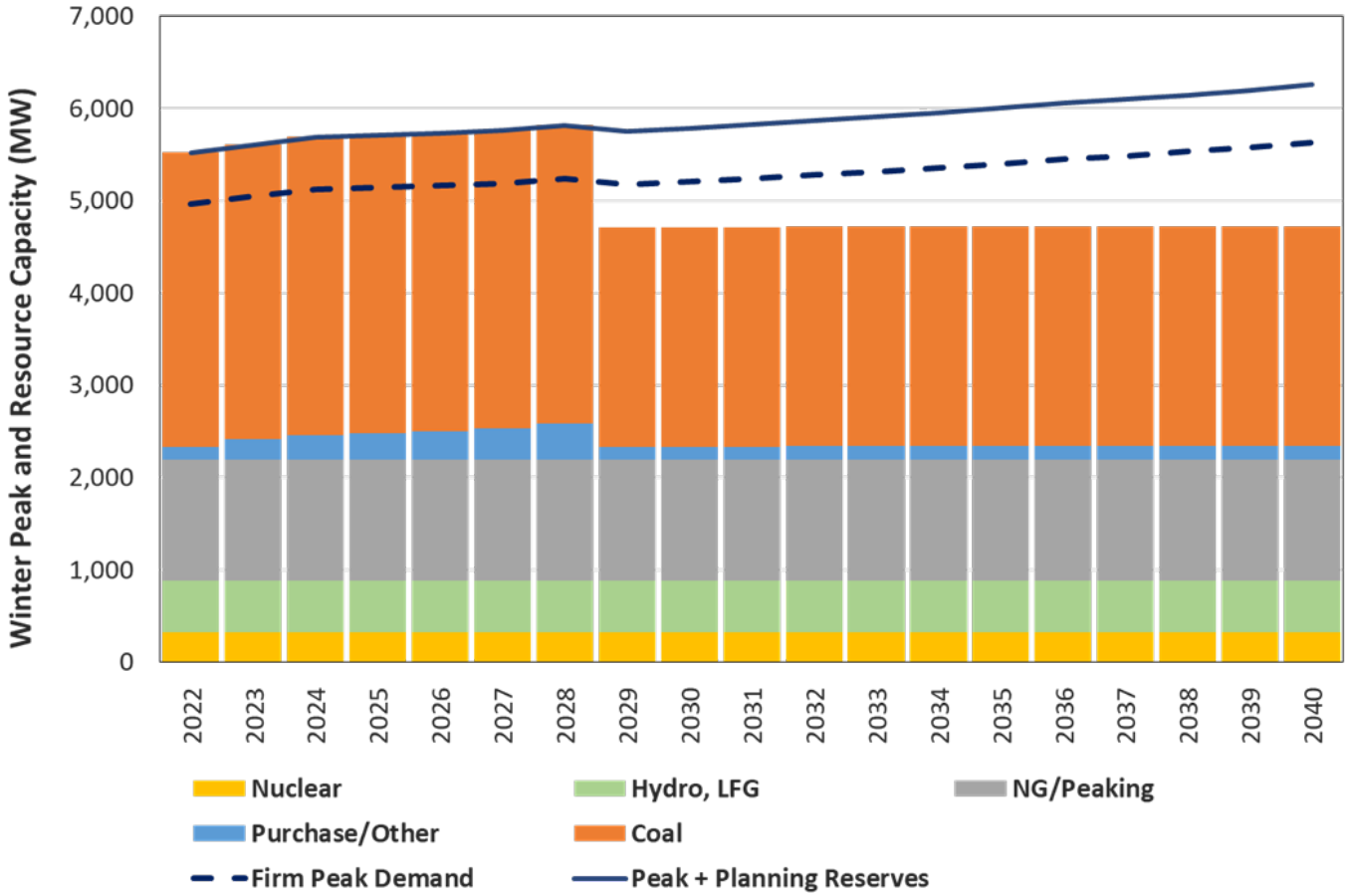
Winyah phased retirement is a major component in Santee Cooper achieving its Resource Planning Principles

- Reduces carbon footprint and improves resource diversity by replacing coal with lower emitting gas resources and solar/storage
  - Portfolio, including a Winyah retirement, achieves over 50% reduction in CO2 emissions relative to 2005
- Cost savings resulting in stable rates for over a decade
- Reduced reliance on coal provides a hedge against future carbon tax or regulation
- Lowers financial and planning risks and maximizes flexibility by following a phased approach to retirement and subsequent acquisition of replacement capacity, when needed
- Phased approach to enable smooth workforce transition by taking advantage of retirements and natural attrition

Resource Planning Principles
Ensuring Reliability
Customer Focus
Cost Management
Environmental Stewardship
Long-Term View
Reducing Financial & Planning Risk
Embracing Innovation
Transparency

Current Resource Planning Position
Supply / Demand Balance

Following retirement of Winyah, 1,045 MW of capacity is needed by winter of 2029, increasing to over 1,500 MW by 2040



15-minute Break

Santee Cooper 2023 IRP Timeline and Introduction to Modeling Approach

Bob Davis
Executive Consultant
nFront Consulting

2023 IRP Stakeholder Meetings

Meeting #1

March 1, 2022

Stakeholder Process & Santee Cooper Resource Planning

Meeting #2

April/May 2022

Discussion of Major Assumptions, Sensitivities, and Portfolios

Meeting #3

May/June 2022

Review of Adopted Major Assumptions and Sensitivities

Meeting #4

[TBD]

IRP Preliminary Results

Meeting #5

[TBD]

IRP Final Results

IRP Filing with Commission
Proposed: May 15, 2023

Meeting content will be adjusted to reflect further discussions needed with stakeholders. The outline above is our starting point.

Resource Planning is a Continuous Process

- Act 90 requires Santee Cooper to file IRPs with the Commission every three years
- Once a triennial IRP is approved by the Commission, Santee Copper will file annual updates with the Commission
- IRPs will be created with input from stakeholders, including input on major assumptions, sensitivities, and portfolios
- IRPs minimally address a 15-year plan of resources to meet Santee Cooper's demand and energy requirements, based on at least a 20-year study period of costs and risks
- Modeling and analysis culminates in a preferred resource plan or portfolio

What are the goals of an IRP

What is a Preferred Plan or Portfolio?

A *preferred resource portfolio* means the utility's selected long term supply-side and demand-side resource plans that safely, reliably, efficiently, and cost-effectively meets the projected load of its customers, considering environmental responsibility, risks and uncertainty.

An IRP should satisfy the following evaluation criteria:

- Resource adequacy and capacity to serve forecast demand requirements
- Cost and affordability
- Compliance with applicable state and federal environmental regulations
- Power supply reliability
- Assessment of risks
- Diversity of generation supply
- Other conditions the Commission determines to be in the public interest

Introduction to 2023 IRP Approach and Modeling Tools

Solicit stakeholder input on major assumptions, sensitivities, and portfolios

Identify optimum resource expansion plans for multiple portfolio strategies

Evaluate portfolios for risk through sensitivity analyses

Preferred portfolio

- Previously used the Capacity Expansion simulation model, licensed by Hitachi/ABB
- Converting to the EnCompass simulation model, licensed by Anchor Power
- EnCompass provides for an integrated assessment of resource expansion optimization and detailed simulation of resource commitment and dispatch

Introduction to 2023 IRP
Discussion of Major Assumptions

IRP Assumptions

- Load forecast
- Fuel price forecast
- DSM plans and forecasts
- Environmental regulations/costs
- Planning reserve requirements
- Supply-side resource options
- Renewable resource options
- Alternative fuel sources
- Economic and financial

Please share your thoughts, including potential data sources.

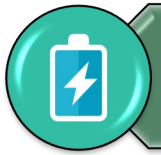
Assumptions will be discussed in detail at the next stakeholder meeting.

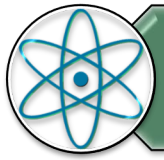
Introduction to 2023 IRP
Potential Utility-scale Resource Options


Conventional generating resources (CC, CT, IC)


Solar PV


Wind turbine


Energy storage


Small nuclear reactor


Others?

Please share your thoughts, including potential data sources.

Assumptions will be discussed in detail at the next stakeholder meeting.

Introduction to 2023 IRP
Sensitivities and Example Portfolios

Sensitivities

- Load forecast
- Fuel price forecast
- DSM plans/forecasts
- Environmental costs

Example Portfolios

- Economically optimized resource plan
  - consider all resource options
- Future coal retirements
  - Cross retirements in 2030's
- Net-zero CO2 by 2050
  - required by Act 90
- Stakeholder recommendations

Please share your thoughts on portfolios to be evaluated for the IRP.

Portfolios will be discussed in detail at the next stakeholder meeting.

Next Steps

Stewart Ramsay
Meeting Facilitator
VANRY Associates

In closing…

Any questions we haven't answered today?

- Comments can also be sent to:
  - irp@santeecooper.com - for thoughts and input on the IRP analysis
  - stewart@vanry.com - for thoughts and input on meeting structure and engagement
  - Comments should be submitted by end of March to be considered for the next stakeholder meeting
- Meeting summary and other materials will be posted and made available at www.santeecooper.com/IRP

Next Steps

- Post Meeting Survey
- Stakeholder Session #2
  - Discussion of Major Assumptions, Sensitivities, and Portfolios
  - Targeting late April 2022

Thank you!

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

Please complete our survey
that will appear in your browser as you leave the meeting

Appendix

Acronyms Used in the Presentation

- AEO: Annual Energy Outlook
- AMEA: Alabama Municipal Electric Authority
- ASAI: Average substation availability index
- CAGR: compound annual growth rate
- CC: combined cycle
- CDD: cooling degree day
- CO2: carbon dioxide
- Co-op: electric cooperative
- CT: combustion turbine
- DERMS: distributed energy resource management system
- DG: distributed generation
- DR: demand response
- DSM: demand-side management
- EE: energy efficiency
- EIA: Energy Information Administration
- ELCC: effective load carrying capability
- EV: electric vehicle
- GOFER: Give Oil for Energy Recovery
- GWh: gigawatt-hour
- HDD: heating degree day
- HH: household
- IC: internal combustion (engine)
- IRP: integrated resource plan
- kV: kilovolt
- kWh: kilowatt-hour
- LED: light-emitting diode
- LFG: landfill gas
- mgd: millions of gallons per day
- MPS: market potential study
- MW: megawatt
- MWh: megawatt-hour
- NG: natural gas
- NGCC: natural gas combined cycle
- NUC: nuclear (resource)
- O&M: operations and maintenance
- PMPA: Piedmont Municipal Power Agency
- PPA: power purchase agreement
- PSR: Proposed Shared Resource
- PV: photovoltaic
- PVRR: present value revenue requirement
- QF: qualifying facility
- RECS: Residential Energy Consumption Survey
- RFI: request for information
- RFP: request for proposals
- SAIDI: system average interruption duration index
- SEPA: Southeastern Power Administration
- SME: subject matter expert
- ST: steam turbine
- TRC: total resource cost (test)
- UCT: utility cost test