

Energy Office Review of South Carolina Electric & Gas Company 2018 Integrated Resource Plan

The ORS Energy Office (Energy Office) pursuant to SC Code Section 58-37-40(C) provides the following evaluation of the South Carolina Electric & Gas Company's (SCE&G) 2018 Integrated Resource Plan (IRP).

SC Code Section 58-37-40(C) states, "The State Energy Office, to the extent practicable, shall evaluate and comment on external environmental and economic consequences of each integrated resource plan submitted and on the environmental and economic consequences for suppliers and distributors."

Through the Energy Office's development of the State Energy Plan, a study committee was established to evaluate South Carolina's IRP process. This committee consisted of diverse representation to include state agencies, conservationists, special interest groups, electric utilities, and electric cooperatives. The committee met frequently to develop [IRP Guidelines](#). On December 15, 2017, the IRP study committee adopted the IRP Guidelines by consensus. These guidelines include best practices to be considered when electric utilities develop annual IRPs. The Energy Office's review of IRPs is based on these guidelines.

On February 28, 2018, SCE&G filed its 2018 IRP with the Energy Office. On May 18, 2018, the Energy Office requested additional information from SCE&G relating to its IRP submittal. SCE&G submitted responses on June 28, 2018. One question referred to the best practices included in the IRP Guidelines.

Energy Office Request:

With reference to the consensus IRP Best Practices Guidelines produced by the State Energy Plan IRP Study Committee, please discuss how SCE&G has addressed each best practice listed below in its 2018 IRP.

SCE&G Response:

SCE&G developed its IRP in accordance with the requirements of S.C. Code Ann. 58-37-40 (2015) and Commission Order No. 98-502. See Commission Order 2018-429 (find that SCE&G IRP meets both the Commission and statutory standards). The IRP Best Practices are suggestions only and are not legally binding. As such, SCE&G did not prepare the 2018 IRP with these guidelines in mind.

During the study committee discussions, the electric utilities agreed to evaluate their current IRP process and incorporate the IRP Guidelines as appropriate. The Energy Office encourages SCE&G to incorporate the IRP Guidelines into future IRPs, as appropriate.

Additionally, the Energy Office encourages SCE&G to:

1. Evaluate more renewable energy, energy storage, energy efficiency, demand side management and purchase scenarios when developing its IRP.
2. Advance strategies that more thoroughly investigate the effects of pending and existing environmental regulations on its generation fleet.
3. Incorporate the industry standard loss of load expectation (LOLE) analysis into future IRPs as a comparison methodology.
4. Consider conducting an independent reserve margin study to validate its current reserve margin policy.

APPENDIX A:
**Overview of Integrated Resource Planning in
South Carolina and Response to Questions**



Overview of Integrated Resource Planning in South Carolina and Response to Questions



SOUTH CAROLINA OFFICE OF REGULATORY STAFF

Overview of Integrated Resource Planning In South Carolina and Response to Questions

June 22, 2018

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Table of Contents

- Purpose**.....2
- Background**3
- ORS Response to Questions**.....5
- Next Steps: State Energy Plan**8
- Attachment List**.....9
 - Attachment A: SCE&G IRP Filings Since 2008 10
 - Attachment B: Energy Office IRP Questions Submitted to SCE&G..... 12
 - Attachment C: Energy Office IRP Best Practices Consensus Document 16

Purpose

This document will provide background information regarding Integrated Resource Plans (IRP) and detail South Carolina Electric & Gas Company's (SCE&G) IRP filing's during the past ten years. In addition, this document will respond to the Legislative Delegation's questions received by the South Carolina Office of Regulatory Staff (ORS) on Thursday May 22, 2018. ORS will supply any additional documents referenced below upon further request.

Background

Statutory Framework

Integrated Resource Plans are defined by S.C. Code Ann. § 58-37-10(2)

“Integrated resource plan” means a plan which contains the demand and energy forecast for at least a fifteen-year period, contains the supplier's or producer's program for meeting the requirements shown in its forecast in an economic and reliable manner, including both demand-side and supply-side options, with a brief description and summary cost-benefit analysis, if available, of each option which was considered, including those not selected, sets forth the supplier's or producer's assumptions and conclusions with respect to the effect of the plan on the cost and reliability of energy service, and describes the external environmental and economic consequences of the plan to the extent practicable. For electrical utilities subject to the jurisdiction of the South Carolina Public Service Commission, this definition must be interpreted in a manner consistent with the integrated resource planning process adopted by the commission. For electric cooperatives subject to the regulations of the Rural Electrification Administration, this definition must be interpreted in a manner consistent with any integrated resource planning process prescribed by Rural Electrification Administration regulations.

All Investor Owned Electric Utilities and the South Carolina Public Service Authority (Santee Cooper) are required to prepare IRPs every three years and update the IRP on an annual basis. S.C. Code Ann. § 58-37-40(A) details the frequency of submission, format for the IRP and compliance determination:

All plans must be submitted every three years and must be updated on an annual basis. The first integrated resource plan of the South Carolina Public Service Authority must be submitted no later than June 30, 1993.

An integrated resource plan may be patterned after the integrated resource planning process developed by the Public Service Commission.

For electrical utilities subject to the jurisdiction of the commission, submission of their plans as required by the commission constitutes compliance with this section.

Public Service Commission Requirements

The Public Service Commission of South Carolina (Commission) requires investor owned electric utilities (IOUs) to submit IRPs and established the IRP filing and reporting procedures to be used by the utilities via Order No. 91-1002 issued on November 6, 1991.

In 1998, the South Carolina Energy Office contracted with Slater & Associates to analyze the IRP process and make recommendations. The result of the analysis was a report published in April 1998 "Analysis and Evaluation of the Integrated Resource Plans of the Investor-Owned and State-Owned Electric Utilities in South Carolina" (Slater Report). Subsequent to the Slater Report, Duke Energy Corporation (now Duke Energy Carolinas) filed a petition with the Commission supported by Carolina Power & Light (now Duke Energy Progress) and SCE&G¹ to request modification of the IRP filing and reporting requirements. Based on the comments filed in the docket, the Commission determined the IRP requirements should be modified.² The Commission required the following set of criteria to be included in future IRP filings:

1. The demand and energy forecast for at least a 15-year period.
2. The supplier's or producer's program for meeting the requirements shown in its forecast in an economic and reliable manner, including both demand-side and supply-side options.
3. A brief description and summary of cost-benefit analysis, if available, of each option, which was considered, including those not selected.
4. The supplier's and producer's assumptions and conclusions with respect to the effect of the plan on the cost and reliability of energy service, and a description of the external, environmental and economic consequences of the plan to the extent practicable.

The IRP filing shall also contain any other information as determined appropriate from time to time by the Commission.

SCE&G IRP Filings

In the past ten years, SCE&G has filed its IRP and/or updates to the IRP with the Commission as required. An overview of SCE&G's IRP filings since 2008 is included as [Attachment A](#).

¹ Docket No. 1987-223-E

² Order 98-502, issued 7/2/98

ORS Response to Questions

Question 1. Did SCE&G consider, as demonstrated in its filed plan, a range of portfolio options for meeting projected energy demand in a cost effective and reliable way? If so, how do the alternative portfolios considered within the plan differ from the company's preferred option?

ORS Response: From review of the 2018 IRP, it is not evident SCE&G considered a range of portfolio options. During the SCE&G Annual Fuel Clause hearing in April 2018,³ SCE&G witness Joe Lynch stated SCE&G looked at combined cycle plants and combustion turbine plants to meet future capacity needs.

Question 2. Does SCE&G use, as demonstrated in its filed plan, optimization software to ensure it is considering least-cost portfolio options that take proper account of reliability and affordability?

ORS Response: From review of the 2018 IRP, it is not evident SCE&G used optimization software. During the SCE&G Annual Fuel Clause review hearing in April 2018,⁴ SCE&G witness Joe Lynch confirmed optimization software was not used by SCE&G to develop the 2018 IRP.

Question 3. Does SCE&G quantify, as demonstrated in its filed plan, how its preferred 15-year plan will impact ratepayers?

ORS Response: The 2018 IRP submitted by SCE&G does not discuss the specific impacts to the ratepayers related to choosing its preferred 15-year plan. However, the 2018 IRP does include the following statement about the potential impact:⁵

*"The resource plan thus constructed represents one possible way to reliably meet the increasing demand of our customers. The Company believes that its supply plan, summarized in the following table, will be as benign to the environment as possible because of the Company's continuing efforts to utilize state-of-the-art emission reduction technology in compliance with state and federal laws and regulations. **The supply plan will also help SCE&G keep its cost of energy service at a minimum** (emphasis added) since the generating units being added are competitive with alternatives in the market."*

³ Docket No. 2018-2-E, transcript pages E 212-216

⁴ Docket No. 2018-2-E, transcript pages E 209, 211-212

⁵ SCE&G 2018 IRP: Docket No. 2018-9-E, p. 41

Question 4. Did SCE&G consider, as demonstrated in its filed plan, whether it has optimized the amount of energy efficiency and demand side management resources on its system to achieve a least-cost planning result for ratepayers?

ORS Response: From review of the 2018 IRP, it is not evident SCE&G considered optimizing demand side management (DSM) and energy efficiency (EE) resources to achieve least-cost planning. The 2018 IRP includes a discussion related to DSM and EE programs and costs. The DSM/EE costs are used by SCE&G in the forecast, but discussion of optimization or the distinct costs per DSM/EE program is not included in the 2018 IRP. SCE&G is required to provide an analysis of costs and benefits of its DSM/EE portfolio on an annual basis through its update to the DSM/EE rider docket.⁶ In addition, the Commission requires SCE&G to conduct quarterly collaborative meetings with stakeholders to discuss the costs, benefits and changes to the programs included in the DSM/EE portfolio.

Question 5. Did SCE&G consider, as demonstrated in its filed plan, whether it has optimized the amount of clean energy resources on its system to achieve a least-cost planning result for ratepayers?

ORS Response: From review of the 2018 IRP, it is not evident SCE&G considered optimizing the amount of clean energy resources to achieve a least-cost planning result.

Question 6. Did SCE&G consider, as demonstrated in its filed plan, whether it would be prudent to retire any existing generation plants to achieve a least-cost planning result for ratepayers?

ORS Response: The 2018 IRP forecast includes the retirements of 85 MW and 25 MW in 2019 and 2020, respectively. These retirements reflect the loss of the Kapstone generator and the expiration of the power purchase contract with Santee Cooper. The 2018 IRP did not demonstrate these retirements were a result of least-cost planning.

Question 7. Over the past ten years, has the Commission ever rejected any component of SCE&G's annual 15-year plan?

ORS Response: The Commission has not rejected any component of SCE&G's annual 15-year plan. The Commission considers SCE&G in compliance with S.C. Code Ann. § 58-37-40 if the Company's filing meets the Commission's requirements for an IRP. Those requirements are detailed on pages 3-4 of this Report.

⁶ Docket No. 2018-42-E

Question 8. Over the past ten years, has the Commission ever voted to approve SCE&G's annual 15-year plan?

ORS Response: The Commission has not voted to approve SCE&G's annual 15-year plan. The Commission considers SCE&G in compliance with S.C. Code Ann. § 58-37-40 if SCE&G's filing meets the Commission's requirements for an IRP. Those requirements are detailed on pages 3-4 of this Report.

Question 9. Over the past ten years, has the Commission ever required SCE&G to revise its 15-year plan to reflect recommendations from intervening parties, including ORS?

ORS Response: The Commission has not required SCE&G to revise its 15-year plan. In 2009, the Commission commented on SCE&G's EE programs and requested an update from SCE&G.⁷

Question 10. Over the past ten years, has ORS ever filed comments on SCE&G's 15-year plan with the Commission? If yes, please identify where these comments can be found.

ORS Response: ORS responded to the SCE&G IRP on two occasions – 2008 and 2011.⁸

ORS Energy Office has not filed comments with the Commission related to SCE&G's 15-year plan. However, in preparation to comment on SCE&G's 2018 IRP, the ORS Energy Office requested information from SCE&G in May 2018. The response from SCE&G was due on June 13, 2018; however, SCE&G requested an extension to respond. The responses are now due on June 29, 2018. Requests pertaining to questions 1, 5 and 6 were addressed in this submission. A copy of the ORS Energy Office questions can be found in [Attachment B](#) to this Report.

⁷ Order 2010-104(A)

⁸ Docket Nos. 2008-196-E and 2011-9-E

Next Steps: State Energy Plan

The ORS Energy Office managed the development of the State Energy Plan, an effort involving more than 130 individuals representing over 60 organizations. As part of this process, eight top tier recommendations were chosen as part of this phase of committees. A study committee was established to evaluate South Carolina's Integrated Resource Planning process. The IRP committee consists of representatives from ORS, the American Association of Retired Persons, Central Electric Cooperative, Coastal Conservation League, South Carolina Department Health and Environmental Control, Duke Energy, Electric Cooperatives of South Carolina, League of Women Voters, Santee Cooper, SCE&G, Southern Environmental Law Center, Southern Alliance for Clean Energy, and Terreni Law Firm.

This group has met on many occasions to collaboratively develop an IRP guideline document. The IRP guideline document includes voluntary best practices to be used by IOU's when developing an IRP and can be found as [Attachment C](#) in this document. These IRP guidelines relate to many of the questions raised by the Legislative Delegation. The IRP guideline document was adopted through a consensus of the IRP committee on December 15, 2017. In addition, the ORS Energy Office submitted questions to SCE&G in order to comment on the 2018 IRP. SCE&G requested an extension of time to respond the ORS Energy Office questions and responses are expected by June 29, 2018.

Attachment List

Attachment A: SCE&G IRP Filings Since 2008

Attachment B: Energy Office IRP Questions Submitted to SCE&G

Attachment C: Energy Office IRP Best Practices Consensus Document

History of SCE&G IRP Filings since 2008

Docket No. 2006-103-E: The Public Service Commission (Commission) filed a notice of hearing for South Carolina Electric & Gas Company (SCE&G or Company) to brief the Commission on their integrated resource plan (IRP). SCE&G requested the notice be held in abeyance as the Company would file direct testimony and present a witness to discuss the Company's IRP during the Base Load Review proceeding in Docket No. 2008-196-E. The Commission granted this request.

Docket No. 2009-9-E: A [notice of hearing](#) was issued by the Commission for SCE&G's 2009 IRP. A revised [notice of hearing](#) was issued by the Commission that scheduled the ex parte briefing on April 14, 2010. Due to the revised date SCE&G presented the Company's 2010 IRP instead of the 2009 IRP.

Docket No. 2010-9-E: The 2010 IRP included the potential demand side management programs developed in accordance with Order 2009-104(A). [Order 2010-124](#) required Commission Staff to schedule an ex parte briefing within sixty days of the receipt of all the Investor Owned Utilities next IRP. An ex parte briefing was already scheduled for the Company's 2010 IRP based on the notice of hearing from Docket No. 2009-9-E. The ex parte briefing for the Company's 2010 IRP was held on April 14, 2010.

Docket No. 2011-9-E: Commission Staff was directed to [schedule](#) an ex parte briefing on SCE&G's 2011 IRP. Southern Alliance for Clean Energy (SACE), Coastal Conservation League (CCL) and Upstate Forever intervened in the Docket. ORS filed a [letter](#) in support of the requests to intervene and their request that the Commission schedule an evidentiary hearing or allowable ex parte briefing to allow them to respond to the filed SCE&G IRP. SCE&G pointed out that the IRP is not a [contested case](#). Intervenors hosted an ex parte on their evaluation of the IRP and SCE&G presented an ex parte update on the IRP and DSM programs. [Order 2012-96](#) was issued which states *"The IRP process is initiated by the annual filing of each electric utility's integrated resource plan, which must conform to the requirements set forth by this Commission in Order No. 1998-502. The process of determining whether the IRP meets these requirements constitutes a proceeding. Going forward the Commission will explicitly make such a determination. In future IRP dockets, intervention requests will be considered by the Commission, and the Commission may determine, at its discretion, whether any additional filings will be required by the utility, in addition to submitting its IRP, and whether any additional filings will be required by any intervenor, in addition to submitting written comments. Upon reviewing the parties' filings, the Commission may also determine, at its discretion, whether further proceedings are appropriate."*

Docket No. 2012-9-E: Sierra Club, SACE, CCL and Upstate Forever intervened in the Docket. [Order 2012-604](#) was issued by the Commission which directed parties in the docket to comment on the request made by the Alliance for Nuclear Accountability pertaining to small modular reactors. An ex parte briefing was requested by SCE&G and the Intervenors. The Commission issued Order [2012-840](#) which states *"Move that this Commission find that, for this present docket, allowable ex parte presentations are the best vehicle for allowing the parties to present their comments, concerns and recommendations to the Commission regarding the 2012 IRP."* Following the Order both the Intervenors and SCE&G presented at the ex parte briefing summarizing their comments on the 2012 IRP.

Docket No. 2013-9-E: SACE, CCL and Upstate Forever intervened but did not file any comments. No ex parte briefing was scheduled and no orders issued.

Docket No. 2014-9-E: SACE and CCL intervened but did not file any comments. No ex parte briefing was scheduled and no orders issued.

Docket No. 2015-9-E – SACE and CCL intervened but did not file any comments. No ex parte briefing was scheduled.

Docket No. 2016-9-E – Columbia Energy, LLC, CCL, South Carolina Solar Business Alliance (SCSBA), South Carolina Solar Development (SCSD), SACE, Southern Current and Upstate Forever intervened in the Docket. An Order granting an extended comment period was issued. Columbia Energy discussed the issue of SCE&G changing coal units to natural gas instead of utilizing Columbia Energy for capacity. Columbia Energy asserted in their [comments](#) that SCE&G is not demonstrating the Company's proposed solutions to meet the systems generation needs are based on least cost for the customers. Other petitioners stated in their comments that energy efficiency and renewables should have been evaluated prior

to conversion of old plants and plans to slash energy efficiency programs.

Docket No. 2017-9-E – Adger Solar, CCL and SACE [intervened](#). SACE and CCL submitted comments requesting the Company adopt best practices that have been put forth by the electric and natural gas resource planning subcommittee in the South Carolina State Energy Plan process.

Docket No. 2018-9-E – CCL, SCSBA, Southeast PowerGen and SACE intervened in the Docket. Southeast PowerGen filed comments questioning the cost benefit analysis of a new combined cycle due to their 511 MW Effingham Facility located in Rincon, GA that is already connected to two transmission substations. SACE and CCL submitted comments requesting the Company adopt best practices that have been put forth by the electric and natural gas resource planning subcommittee in the South Carolina State Energy Plan process.

EO REQUEST: SVW-01

SC ORS ENERGY OFFICE INTEGRATED RESOURCE PLAN INFORMATION REQUEST



DATE: May 18, 2018

TO: Byron Hinson, South Carolina Electric & Gas Company

FROM: Stacey Washington, SC ORS Energy Office

SUBJECT: South Carolina Electric & Gas (SCE&G) 2018 Integrated Resource Plan (IRP)

REQUEST THE FOLLOWING ITEMS BE PROVIDED BY: **June 13, 2018**

Per SC Code of Laws 58-37-40(c) the State Energy Office “shall evaluate and comment on external environmental and economic consequences of each integrated resource plan submitted.” The SC ORS Energy Office requests the following items to assist with its evaluation of SCE&G’s 2018 IRP:

1. Please provide the supporting data, documents, spreadsheets, etc., used to determine SCE&G’s total territorial energy sales and its average rate of growth of 1.1%.
2. Please provide the supporting data, documents, spreadsheets, etc., used to determine SCE&G’s firm territorial summer peak demand and winter peak demand increase of 1.2% and 0.8%, respectively.
3. Please explain the impact of SCE&G’s annual system peak alternating between summer and winter on its ability to effectively provide a 15-year forecast.
4. Does SCE&G consider its system as summer peaking or winter peaking? Please explain.
5. Please discuss and quantify the energy savings that were removed from the class numbers and combined with the federal lighting efficiency effects. How does this change compare to energy efficiency impacts in SCE&G’s 2017 IRP?
6. Please provide the supporting data, documents, spreadsheets, etc., used to determine SCE&G’s 1.4% per year growth rate.
7. Please provide SCE&G’s criteria used to determine its least cost strategy for securing additional Demand Response (DR) in lieu of building a new generating facility. Specifically, please address why SCE&G has limited its DR program to approximately 270 MWs.
8. What additional pending state and federal energy and environmental legislation, aside from the Clean Power Plan, was considered when developing the 2018 IRP?
9. Please discuss any known or anticipated generation fleet modifications (or alternatives) necessary to comply with EPA requirements¹, such as National Ambient Air Quality Standards. Please identify each modification by the plant and unit(s).

¹ <https://www.epa.gov/laws-regulations/regulatory-agendas-and-regulatory-plans>

EO REQUEST: SVW-01

10. Please discuss SCE&G's plan to expand residential AMI metering over the planning life of its 2018 IRP.
11. Please provide further explanation of SCE&G's Winter Peak Clipping Program.
12. Please provide, in Excel format, a comparison detailing the costs of using the Fairfield Pumped Storage (FPS) for load following as compared to revenues that could be generated from using FPS to secure inner-day sales transactions. In addition, please clarify the point that because of FPS's "supply side capability, a similar capability on the demand side, such as a time of use rate, would be less valuable on SCE&G's system than on many other utility systems."
13. Please discuss in general the additions and deletions to SCE&G's 2018 IRP directly attributable to the abandonment of VC Summer (VCS) Units 2 & 3.
14. Please identify additions/changes in SCE&G's 2018 IRP (by page number and paragraph) directly attributable to the abandonment of VCS Units 2 & 3.
15. Please provide a generation resource mix pie-chart for the years 2023 and 2032.
16. Please provide a capacity resource mix pie-chart for the years 2023 and 2032.
17. Please provide the supporting data, documents, spreadsheets, etc., used to determine SCE&G's summer and winter reserve margin targets. Please determine SCE&G's winter peaking reserves target using the industry standard loss of load expectation (LOLE) methodology. Also, please provide a copy of SCE&G's 2017 reserve margin study.
18. Please address the contribution Act 236 has provided to the summer and winter reserve margins, and the projected impact over the next 15-year planning cycle.
19. SCE&G intends to seek relicensing of the Parr Hydroelectric Project. Did SCE&G perform any modeling to evaluate the increase or decrease in energy production from Parr? If so, please provide the modeling results. Also, with the abandonment of VCS Units 2 & 3, please discuss any changes to the Parr back-up power supply for VCS Unit 1, as it relates to the Parr relicensing.
20. SCE&G's four load management programs are discussed in the 2018 IRP. This discussion does not describe any scenarios based on changes to these load management programs. For example, did SCE&G evaluate the effect of additional or different Time of Use (TOU) Rate options/programs such as an Electric Vehicle TOU program? Please provide any documents regarding load management program evaluation and alternatives.
21. SCE&G's supply resources are listed in a table in the 2018 IRP. Solar is listed, but each utility-scale facility is not listed individually. Please provide a list of SCE&G's utility-scale facilities and include such facilities in future IRPs.
22. Does SCE&G have any specific projects that are in process that include renewables and alternatives other than solar? This can include electric vehicle initiatives, wind, energy storage, combined heat and power, grid modernization, etc. Please provide a list of projects, pilots, requests for proposals, etc., and explain how they are reflected in the forecast.
23. Did SCE&G model scenarios for additional assets, beyond those shown, such as solar, hydroelectric, and small modular reactors? Additionally, were increases or decreases in demand response, and increases or decreases in energy efficiency programs modeled? If so, please share the scenarios that were modeled.
24. Please provide a list of the projected retirements, and the reason for each retirement.

EO REQUEST: SVW-01

With reference to the consensus IRP Best Practices Guidelines produced by the State Energy Plan IRP Study Committee, please discuss how SCE&G has addressed each best practice listed below in its 2018 IRP.

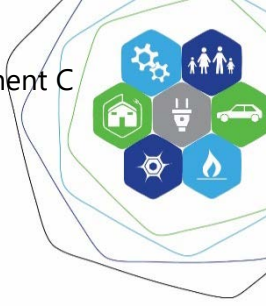
IRP Best Practices:

1. Each utility should analyze multiple resource portfolios that consider a range of supply-side and demand-side resources including DSM and renewable energy (RE) resource options. A modeling process should incorporate cost-effective DSM and RE options available to meet both capacity and energy needs and reflects a utility's most recent DSM suite of programs.
2. The IRP analysis should include, at minimum, alternative DSM and RE portfolios of at least one high and one low DSM and at least one high and one low RE portfolio and should contain a diverse mix of DSM and RE measures, and the associated cost assumptions used for each of the portfolios. The measures and portfolios included may be generic in nature and utilities would not necessarily make any representation that they are attainable or meet cost effectiveness tests.
3. Each utility should expand its evaluation to establish a set of scenarios and/or sensitivities to analyze the robustness of each resource portfolio. The scenarios and/or sensitivities should reasonably capture the range of key variables affecting the utility's plan. The IRP should describe each scenario and/or sensitivity. Scenarios and/or sensitivities should explore uncertainties in fuel prices and load growth. As appropriate, other uncertainties such as carbon and technology costs should also be explored.²
4. The IRP must list the expected retirement date for each unit planned to retire within the 15-year IRP analysis period, and describe any substantial conditions on which the retirement date depends. The IRP must also list the license expiration date for each unit as appropriate. If a unit does not have an expected retirement date, the IRP must provide a supporting explanation.
5. The IRP must present appropriate economic and environmental metrics for all portfolios across all scenarios and/or sensitivities and confirm that each portfolio is compliant with all local, state and federal environmental laws and regulations.
 - a. Economic outcome metrics at minimum must include the present value of the system incremental revenue requirements. These metrics should also show the absolute difference and percentage difference in the economic costs of the various portfolios as compared to the base case.
 - b. Environmental outcome metrics at minimum must include air emissions. Other environmental outcome metrics such as water withdrawals, water consumption, and coal ash production should be evaluated as appropriate. These metrics should also show

² Each resource portfolio should be analyzed across all scenarios and/or sensitivities, and scenarios and/or sensitivities should be kept consistent for each resource portfolio. For example, a utility develops Resource Portfolios A, B, and C, and scenarios and/or sensitivities X, Y, and Z. The utility should model Resource Portfolio A under each scenario and/or sensitivity – scenarios and/or sensitivities X, Y, and Z – and also should model Resource Portfolios B and C under each of the same scenarios and/or sensitivities – scenarios and/or sensitivities X, Y, and Z. Thus the scenario and/or sensitivity assumptions are kept constant when evaluating each resource portfolio, so that the modeling results for the different resource portfolios can be meaningfully compared. Finally, only portfolios and scenarios and/or sensitivities that serve the same gross load obligation before DSM can be meaningfully compared within an IRP.

the absolute difference and percentage difference in the environmental outcomes of the various portfolios as compared to the base case.

6. The IRP must select one plan which the utility offers as a reasonable way to meet system load requirements, and must discuss that choice based on relevant economic and regulatory factors, as well as any substantial regulatory or market assumptions that also influence the selection.
7. The IRP must provide the following analysis input assumptions for each year of the analysis including for all years beyond the 15-year planning period. These assumptions must be provided for each scenario and/or sensitivity, with a description of which assumptions were varied within each scenario and/or sensitivity. Each utility must use reasonable assumptions. Data sources must be indicated and forecast methodologies must be described.
 - a. System sales
 - b. System summer and winter peak demand
 - c. Delivered fuel prices
 - d. Emissions price (e.g. CO₂)
 - e. Technology costs for each technology modeled
 - f. Price of purchased power alternatives including economy purchases (energy and capacity, QF and non-QF)
8. The IRP must separately identify the expected energy and capacity impacts of DSM programs and of customer-owned distributed generation. This only refers to assumed future DSM and distributed generation impacts.
9. The IRP must identify the amount of existing purchased capacity reflected in the resource plan, including where possible resource type, energy and demand contributions, and contract duration.
10. The IRP should indicate data sources and describe analytical methodologies used to derive any major assumptions not otherwise addressed, such as reserve margin requirements, resource integration needs and costs, and resource dependable peak capacity assumptions.
11. The IRP must provide a brief overview of any major trends, uncertainties, challenges, or new technologies that are likely to impact the utility and its customers that are not otherwise described.
12. The IRP must include a list and description of existing and potential DSM programs.
13. For informational purposes only, each utility should include in its IRP, or in an appendix to the IRP, a reference to the resource portfolio, the scenario and/or sensitivity, and the unit retirement assumptions that will be used to derive the utility's avoided costs that are used in DSM program evaluation, QF power purchase rates, and any other tariffs that apply avoided cost concepts. This data is expected to reflect information already provided from items #1-12, and the utility may caveat its response by noting that actual avoided cost inputs can be subject to change due to updated price forecasts and/or other new information including by not limited to Commission directives in other dockets.



IRP Guidelines

Purpose

The purpose of this document is to outline the process, as proposed by the Integrated Resource Plan (IRP) Subcommittee, that utilities would use when developing and filing their IRP.

These guidelines are intended to support SC Code of Laws 58-37-40(c), which states, “The State Energy Office, to the extent practicable, shall evaluate and comment on external environmental and economic consequences of each integrated resource plan submitted and on the environmental and economic consequences for suppliers and distributors.”

Although the IRP development process incorporates utility energy efficiency programs, renewable energy plans, and fuel costs – for investor owned utilities (IOUs) specifically – they are evaluated by the Public Service Commission (Commission) under separate dockets. The IRP is for planning purposes; other dockets are for cost recovery.

Background

The IRP Subcommittee was developed in response to the Energy Plan IRP recommendation. The recommendation is as follows:

Integrated Resource Planning Process

Challenge: Ensure that electric utility IRPs clearly demonstrate and reflect access to energy supplies at the lowest practical environmental and economic cost and that demand-side options are pursued wherever economically and environmentally practical.

Background: Electric utility IRPs vary. A robust analysis is important to accurately demonstrate the lowest practical environmental and economic cost for consumers statewide. This analysis should consider economic and environmental metrics; a minimum set of alternative resource portfolios; a minimum set of alternative scenarios for analysis; joint dispatch of generating resources; and coordinating the construction of new electricity generation.

Approach: The Energy Office should establish a committee to study matters related to the IRP process including the costs and benefits that can be achieved by changes to the IRP process. The study committee should consist of representatives from investor-owned utilities, Santee Cooper, the electric cooperatives, conservationists, and other interested stakeholders.

IRP Statute

SECTION 58-37-40. Integrated resource plans.

(A) Electrical utilities and the South Carolina Public Service Authority must prepare integrated resource plans. The South Carolina Public Service Authority and electrical utilities regulated by the Public Service Commission must submit their plans to the State Energy Office. The plan submitted by the South Carolina Public Service Authority must be developed in consultation with electric cooperatives and municipally-owned electric utilities purchasing power and energy from the authority and must include the effect of demand-side management activities of electric cooperatives and municipally-owned electric utilities which directly purchase power and energy from the authority or sell power and energy which the authority generates. All plans must be submitted every three years and must be updated on an annual basis. The first integrated resource plan of the South Carolina Public Service Authority must be submitted no later than June 30, 1993. An integrated resource plan may be patterned after the integrated resource planning process developed by the Public Service Commission. For electrical utilities subject to the jurisdiction of the commission, submission of their plans as required by the commission constitutes compliance with this section. Nothing in this subsection may be construed as requiring interstate natural gas companies whose rates and services are regulated only by the federal government or gas utilities subject to the jurisdiction of the South Carolina Public Service Commission to prepare and submit an integrated resource plan.

(B) Electric cooperatives and municipally-owned electric utilities must submit integrated resource plans to the State Energy Office whenever they are required by federal law to prepare these plans or if they plan to acquire, by purchase or construction, ownership of additional generating capacity greater than twelve megawatts per unit. An integrated resource plan must be submitted to the State Energy Office by an electric cooperative or municipally-owned electric utility twelve months before the acquisition, by purchase or construction, of additional generating capacity in excess of twelve megawatts per unit. For an electric cooperative, submission to the State Energy Office of its plan in a format complying with the then current Rural Electrification Administration regulations constitutes compliance with this section.

(C) The State Energy Office, to the extent practicable, shall evaluate and comment on external environmental and economic consequences of each integrated resource plan submitted and on the environmental and economic consequences for suppliers and distributors.

(D) The State Energy Office shall coordinate the preparation of an integrated resource plan for the State and shall coordinate with regional groups, including the Southern States Energy Board.

(E) The State Energy Office must not exercise any regulatory authority with regard to the requirements set forth in this chapter.

Timeframe

The IOUs must file a 15-year IRP every three years with the Commission, and must file a short-term action plan (STAP) with the Commission in each of the intervening two years between the filing of the detailed 15-year plans. The South Carolina Public Service Authority (Santee Cooper) must file its 15-year IRP every three years and a STAP in each of the intervening two years with the State Energy Office.

Public Participation

The IOUs and Santee Cooper must each hold at least one public engagement sessions which provides utilities an opportunity to share and discuss changes to their IRPs with interested parties every three years as part of the IRP process. The utilities will consider the public input from these meetings during the development of the IRP. At least 30 days prior to holding an engagement session, each utility must notify the public through methods such as news publications, bill inserts, customer email lists, and social media information about the location and time of said engagement session. This notification must include a summary of anticipated changes (including, but not limited to: description of its proposed planning and modeling methodology, its model inputs, its draft resource portfolios, and its draft scenarios and/or sensitivities). An ORS representative must attend each public engagement session. Each utility required to submit an IRP must include with its submission a summary of the engagement session including comments received and appropriate responses.

Best Practices

Through a collaborative process including the SC Energy Office, conservationists, utilities and other interested parties, the following IRP best practices were developed.

Statement of purpose: The purpose of the best practices is to provide guidelines for the preparation of an IRP in order to encourage comparability and consistency among electric utilities.

Definitions:

- Best Practices – A process that promotes the most cost effective and energy efficient methods, considering uncertainties, to encourage their adoption and use by South Carolina utilities.

- Demand-side management (DSM) – DSM encompasses all energy efficiency measures and all demand response measures
- Integrated Resource Plan – A utility’s resource plan for meeting forecasted annual peak and energy demand, plus some established reserve margin, through a combination of supply-side and demand-side resources over a specified future period. It is developed and planned based on the available information and situation at one point in time.
- Resource portfolio – a year-by-year schedule of system additions and retirements chosen by utility management, encompassing traditional generation units, DSM programs and renewable energy resources.
- Scenario – a collection of assumptions about future circumstances that utility management does not control, such as fuel prices, gross load obligations, technology costs, policy and regulations.
- Sensitivity – variation of an isolated assumption while holding all other assumptions constant, in order to understand the importance of the assumption of interest to the results.

Best Practices:

1. Each utility should analyze multiple resource portfolios that consider a range of supply-side and demand-side resources including DSM and renewable energy (RE) resource options. A modeling process should incorporate cost-effective DSM and RE options available to meet both capacity and energy needs and reflects a utility’s most recent DSM suite of programs.
2. The IRP analysis should include, at minimum, alternative DSM and RE portfolios of at least one high and one low DSM and at least one high and one low RE portfolio and should contain a diverse mix of DSM and RE measures, and the associated cost assumptions used for each of the portfolios. The measures and portfolios included may be generic in nature and utilities would not necessarily make any representation that they are attainable or meet cost effectiveness tests.
3. Each utility should expand its evaluation to establish a set of scenarios and/or sensitivities to analyze the robustness of each resource portfolio. The scenarios and/or sensitivities should reasonably capture the range of key variables affecting the utility’s plan. The IRP should describe each scenario and/or sensitivity. Scenarios and/or sensitivities should explore uncertainties in fuel prices and load growth. As

appropriate, other uncertainties such as carbon and technology costs should also be explored.¹

4. The IRP must list the expected retirement date for each unit planned to retire within the 15-year IRP analysis period, and describe any substantial conditions on which the retirement date depends. The IRP must also list the license expiration date for each unit as appropriate. If a unit does not have an expected retirement date, the IRP must provide a supporting explanation.
5. The IRP must present appropriate economic and environmental metrics for all portfolios across all scenarios and/or sensitivities and confirm that each portfolio is compliant with all local, state and federal environmental laws and regulations.
 - a. Economic outcome metrics at minimum must include the present value of the system incremental revenue requirements. These metrics should also show the absolute difference and percentage difference in the economic costs of the various portfolios as compared to the base case.
 - b. Environmental outcome metrics at minimum must include air emissions. Other environmental outcome metrics such as water withdrawals, water consumption, and coal ash production should be evaluated as appropriate. These metrics should also show the absolute difference and percentage difference in the environmental outcomes of the various portfolios as compared to the base case.
6. The IRP must select one plan which the utility offers as a reasonable way to meet system load requirements, and must discuss that choice based on relevant economic and regulatory factors, as well as any substantial regulatory or market assumptions that also influence the selection.
7. The IRP must provide the following analysis input assumptions for each year of the analysis including for all years beyond the 15-year planning period. These assumptions must be provided for each scenario and/or sensitivity, with a description of which assumptions were varied within each scenario and/or sensitivity. Each utility

¹ Each resource portfolio should be analyzed across all scenarios and/or sensitivities, and scenarios and/or sensitivities should be kept consistent for each resource portfolio. For example, a utility develops Resource Portfolios A, B, and C, and scenarios and/or sensitivities X, Y, and Z. The utility should model Resource Portfolio A under each scenario and/or sensitivity – scenarios and/or sensitivities X, Y, and Z – and also should model Resource Portfolios B and C under each of the same scenarios and/or sensitivities – scenarios and/or sensitivities X, Y, and Z. Thus the scenario and/or sensitivity assumptions are kept constant when evaluating each resource portfolio, so that the modeling results for the different resource portfolios can be meaningfully compared. Finally, only portfolios and scenarios and/or sensitivities that serve the same gross load obligation before DSM can be meaningfully compared within an IRP

must use reasonable assumptions. Data sources must be indicated and forecast methodologies must be described.

- a. System sales
 - b. System summer and winter peak demand
 - c. Delivered fuel prices
 - d. Emissions price (e.g. CO₂)
 - e. Technology costs for each technology modeled
 - f. Price of purchased power alternatives including economy purchases (energy and capacity, QF and non-QF)
8. The IRP must separately identify the expected energy and capacity impacts of DSM programs and of customer-owned distributed generation. This only refers to assumed future DSM and distributed generation impacts.
 9. The IRP must identify the amount of existing purchased capacity reflected in the resource plan, including where possible resource type, energy and demand contributions, and contract duration.
 10. The IRP should indicate data sources and describe analytical methodologies used to derive any major assumptions not otherwise addressed, such as reserve margin requirements, resource integration needs and costs, and resource dependable peak capacity assumptions.
 11. The IRP must provide a brief overview of any major trends, uncertainties, challenges, or new technologies that are likely to impact the utility and its customers that are not otherwise described.
 12. The IRP must include a list and description of existing and potential DSM programs.
 13. For informational purposes only, each utility should include in its IRP, or in an appendix to the IRP, a reference to the resource portfolio, the scenario and/or sensitivity, and the unit retirement assumptions that will be used to derive the utility's avoided costs that are used in DSM program evaluation, QF power purchase rates, and any other tariffs that apply avoided cost concepts. This data is expected to reflect information already provided from items #1-12, and the utility may caveat its response by noting that actual avoided cost inputs can be subject to change due to updated price forecasts and/or other new information including by not limited to Commission directives in other dockets.

Filing

The IOUs will file their IRP with the Commission. Upon annual filing and the establishment of an IRP docket, interested parties may intervene and comment. The utilities are encouraged to respond to intervenors and public comments. A common question/theme can have one response. If necessary, the parties may jointly request that the Commission hold a hearing. The utilities, through their IRPs will:

- 1) Publicly report to the Commission the substance of the discussion at public engagement sessions, including public feedback, recommendations, and comments;
- 2) Include responses to intervenors and comments.

After considering the IRP, public comments, intervenor comments, and utility responses, the committee respectfully requests the Commission consider filing an order accepting, denying, or modifying the methodology, model inputs, range of resource portfolios, and range of scenarios and/or sensitivities contained in the IRP. The Commission may also consider recommending that further methods, inputs, portfolios, scenarios, or sensitivities be explored. Additionally, the Commission may also consider directing the utility to respond to intervenors and comments where the response is inadequate. Approval of methods, inputs, portfolios, scenarios, and sensitivities does not constitute approval of the IRP as a whole.

Per SC Code of Laws 58-37-40, Santee Cooper will submit its IRP to the State Energy Office, which may request additional information concerning comments where the response is inadequate.