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STATE OF SOUTH CAROLINA

(Caption of Case)

Combined Application of South Carolina Electric and Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility in Jenkinsville, South Carolina

BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

COVER SHEET

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DOCKET/NDI NUMBER: 2008 - 196 - E

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DOCKETING INFORMATION (Check all that apply)

☐ **Emergency Relief demanded in petition**

☐ **Request for item to be placed on Commission's Agenda expeditiously**

☐ **Other:**

INDUSTRY (Check one)	NATURE OF ACTION (Check all that apply)		
☒ Electric	☐ Affidavit	☐ Letter	☐ Request
☐ Electric/Gas	☐ Agreement	☐ Memorandum	☐ Request for Certification
☐ Electric/Telecommunications	☐ Answer	☐ Motion	☐ Request for Investigation
☐ Electric/Water	☐ Appellate Review	☐ Objection	☐ Resale Agreement
☐ Electric/Water/Telecom.	☐ Application	☐ Petition	☐ Resale Amendment
☐ Electric/Water/Sewer	☐ Brief	☐ Petition for Reconsideration	☐ Reservation Letter
☐ Gas	☐ Certificate	☐ Petition for Rulemaking	☐ Response
☐ Railroad	☐ Comments	☐ Petition for Rule to Show Cause	☐ Response to Discovery
☐ Sewer	☐ Complaint	☐ Petition to Intervene	☐ Return to Petition
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☐ Transportation	☐ Discovery	☐ Prefiled Testimony	☐ Subpoena
☐ Water	☐ Exhibit	☐ Promotion	☐ Tariff
☐ Water/Sewer	☐ Expedited Consideration	☒ Proposed Order	☐ Other:
☐ Administrative Matter	☐ Interconnection Agreement	☐ Protest	
☐ Other:	☐ Interconnection Amendment	☐ Publisher's Affidavit	
	☐ Late-Filed Exhibit	☐ Report	

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BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 2008-196-E

FEBRUARY __, 2009

IN RE:

Combined Application of South Carolina Electric & Gas Company for Approval of a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility in Jenkinsville, South Carolina.	)	**PROPOSED BASE LOAD REVIEW ORDER SUBMITTED BY THE SOUTH CAROLINA OFFICE OF REGULATORY STAFF**

I.

INTRODUCTION

This matter comes before us on South Carolina Electric & Gas Company's ("SCE&G's" or "the Company's") Application filed May 31, 2008 for Approval of a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a two unit ("MW") nuclear facility totaling 2,234 net megawatts to be located at the V.C. Summer Nuclear Station site near Jenkinsville, South Carolina ("Application"). The nuclear facility as set forth in the Application will consist of Unit 2 and Unit 3 each rated at 1,117 MW. The Application was filed pursuant to the provisions of the Utility Facility Siting and Environmental Protection Act, S.C. Code Ann. § 58-33-10 *et seq.* (2007) ("Siting Act") and the Base Load Review Act ("BLRA"), S.C. Code Ann. § 58-33-210, *et seq.* (2007).

In its Application, SCE&G sought approval to construct a facility comprising two Westinghouse AP1000 Advanced Passive Safety Power ("AP1000") Plants in Jenkinsville, South Carolina. The AP1000 plants will be located adjacent to and approximately one mile southwest of the present 966 MW Westinghouse reactor at the V.C. Summer Nuclear Station ("VCSNS") and will utilize the existing Parr and Monticello Reservoirs. The units will be jointly owned by SCE&G and the South Carolina Public Service Authority ("Santee Cooper").[1] SCE&G will own 55% of the facility and its output while Santee Cooper will own 45% of the facility and output, resulting in 1,228 MW or 55% of the total expected capacity of 2,234 MW for the two units being made available to SCE&G. SCE&G's Application states the capacity factor for the units when adjusted for refueling and maintenance outages will be in excess of 90%.

This is SCE&G's first Application pursuant to the Base Load Review Act. In its Application, SCE&G makes additional requests as follows: SCE&G requests a thirty (30) month schedule contingency applicable to all milestones reflected in Application Exhibit E ("milestone schedule") and to the substantial completion dates of April 1, 2016 for Unit 2 and January 1, 2019 for Unit 3. *See* Application Paragraph 9. Included with the thirty (30) month schedule contingency, SCE&G also requests authorization to adjust the schedule of capital costs provided in Application Exhibit F to reflect any contingency-related changes in the milestone schedule. Id. In paragraph 14 of its Application, SCE&G requests approval of the total amount of project contingency set forth in Exhibit F and to allow use of the contingency at such times and in such amounts as required during the course of construction of Unit 2 and Unit 3. In paragraph 15 of

[1] This Commission does not have jurisdiction over Santee Cooper. (See SCE&G v. S.C. Public Service Authority, 215 S.C. 193, 54 S.E.2d 777 (1949).

its Application, SCE&G requests a twenty-four (24) month capital cost schedule contingency, such that if construction or component manufacturing work can be accelerated, SCE&G may accelerate its capital cost payments to reflect the accelerated schedule.

On June 13, 2008, the Commission instructed SCE&G to publish a Notice of Filing and Hearing in newspapers of general circulation in the area affected by the Company's Application. The Notice of Filing and Hearing indicated the nature of the Company's Application and advised all interested parties desiring participation in the scheduled proceeding of the manner and time in which to file appropriate pleadings. The Company was also required to directly notify all customers affected by the Application. On June 18, 2008, the Company requested an extension to publish the Notice of Filing and Hearing and to notify customers. The Commission granted the extension. In accordance with the extension, the Company furnished affidavits on July 31, 2008 demonstrating that the Notice of Filing and Hearing was duly published in accordance with the Commission's instructions and certified that a copy of the Notice of Filing and Hearing was mailed to each affected customer.

Petitions to Intervene were received by CMC Steel South Carolina f/k/a SMI Steel South Carolina ("CMC"), the South Carolina Energy Users Committee ("SCEUC"), Friends of the Earth ("FOE"), Ms. Maxine Warshauer, Mr. Samuel Baker, Ms. Pamela Greenlaw, Ms. Ruth Thomas, Mr. Joseph Wojcicki, Mr. Lawrence Newton, and Ms. Mildred A. McKinley.

Statutory parties to the matter were the South Carolina Office of Regulatory Staff ("ORS"), the South Carolina Department of Health and Environmental Control ("DHEC"), the South Carolina Department of Natural Resources ("DNR"), and the South Carolina Department of Parks, Recreation and Tourism ("PRT"). The Town of Jenkinsville was listed as a party pursuant to S.C. Code Ann. § 58-33-140.

The public hearing was held in the hearing room of the Commission and began Monday, December 1, 2008 and concluded Wednesday, December 17, 2008. The Honorable Lib Fleming, Madame Chairman of the Public Service Commission, presided. Participants in the hearing included SCE&G, ORS, SCEUC, FOE and five *Pro Se* Intervenors. SCE&G was represented by K. Chad Burgess, Esq., Belton T. Zeigler, Esq., and Mitchell M. Willoughby, Esq. ORS was represented by Nanette S. Edwards, Esq. and Shannon Bowyer Hudson, Esq. SCEUC was represented by Scott Elliott, Esq. FOE was represented by Robert Guild, Esq. *Pro Se* Interveners appearing were Ms. Maxine Warshauer, Ms. Pamela Greenlaw, Mr. Joseph Wojcicki, Mr. Lawrence Newton and Ms. Mildred A. McKinley.

SCE&G presented the direct testimony of Kevin B. Marsh, President and Chief Operating Officer; Stephen A. Byrne, Senior Vice President; Jimmy E. Addison, Senior Vice President and Chief Financial Officer; E. Elizabeth Best, Director of Financial Planning and Investor Relations; Dr. Joseph M. Lynch, Manager of Resource Planning; David K. Pickles, Southern Region Vice President for the Energy Efficiency Practice of ICF International; Steven J. Connor, Tetra Tech NUS, Inc. Project Manager; Stephen E. Summer, Senior Environmental Specialist; Robert B. Whorton, Senior Engineer; Hubert C. Young, III, Manager of Transmission Planning; and, Kenneth R. Jackson, Vice President, Regulatory Matters. Mr. Connor, Mr. Summer, and Mr. Whorton testified as a panel pursuant to a request from SCE&G and without objection from any party. Rebuttal testimony was filed by Mr. Byrne, Mr. Addison, Mr. Lynch and Mr. Jackson.

ORS presented, pursuant to Commission Order. No. 2008-724, the direct panel testimony of independent hired consultants consisting of: Dr. Zhen Zhu, Economist; George W. Evans, Electric Utility Modeling Tool Expert; Dr. William R. Jacobs, Nuclear Engineer; Jerry Smith, Engineer and Transmission Expert; and Mark Crisp, Engineer and Engagement Director for the

panel. ORS also presented the direct testimony of Dr. Douglas H. Carlisle, Jr., ORS Economist; Malini Gandhi, CPA and ORS Deputy Director of Auditing; and A. Randy Watts, ORS Electric Department Program Manager.

FOE presented the direct and rebuttal testimony of Nancy Brockway. SCEUC presented the direct testimony of Kevin W. O'Donnell. With Commission permission, Ms. Greenlaw presented on behalf of Ms. Thomas the direct and rebuttal testimony of Dr. Ronald P. Wilder.

The hearing was made open for public witness testimony during the morning of Monday, December 1 and during the evening of Wednesday, December 3. Approximately twenty-nine members of the public provided testimony. During the December 1 public witness testimony session, Mr. Lawrence Newton voluntarily opted to relinquish his status as an intervenor and provided public testimony.

II.

FINDINGS OF FACT

Based upon the Application, the testimony, and exhibits received into evidence at the hearing and the entire record of these proceedings, the Commission makes the following findings of fact:

1. SCE&G is a corporation duly organized and existing under the laws of the State of South Carolina, with its principal offices at 1426 Main Street, Columbia, South Carolina 29201. The Company is engaged in the business of generating, transmitting, and delivering electricity, and providing electric service to public and private energy users for compensation. SCE&G operates an integrated electric utility system that services over 643,000 customers in 24 counties in central and southern South Carolina. SCE&G's service territory includes the metropolitan areas of Charleston, Columbia, Beaufort, and Aiken and many other smaller cities

and towns, and rural areas in South Carolina. SCE&G's retail electric operations in South Carolina are subject to the jurisdiction of the Commission pursuant to S.C. Code Ann. § 58-27-10, *et. seq.*

2. SCE&G established need for additional base load generation for the years 2016 and 2019.

3. SCE&G's decision to proceed with construction of the nuclear plants is prudent and reasonable considering the information available to the utility.

4. SCE&G has satisfied the requirements of S.C. Code Ann. § 58-33-160 of the Siting Act.

5. The anticipated construction schedule set forth in Application Exhibit E (also referred to as the "milestone schedule") is accepted with the following modifications: SCE&G is granted a thirty (30) month schedule contingency applicable to all milestones reflected in Application Exhibit E and to the substantial completion dates of April 1, 2016 for Unit 2 and January 1, 2019 for Unit 3 provided no cost overruns occur. However, once a cost overrun occurs, SCE&G must consult with ORS to continue utilizing the 30 month contingency for the remaining milestone schedule. The Commission is to be notified in this event. SCE&G is also granted the authority to accelerate the milestone schedule by 24 months. S.C. Code Ann. § 58-33-270(B)(1).

6. The anticipated components of capital costs of $4,534,747,000 and the anticipated schedule for incurring them, including contingencies, is set forth in Application Exhibit F. (See Hearing Exhibit 37. The removal of AFUDC from the total number in Hearing Exhibit 37 results in the capital costs of $4,534,747,000.) SCE&G is granted a twenty-four (24) month capital cost schedule contingency, such that if construction or component manufacturing work

can be accelerated, SCE&G can accelerate its payments to reflect the accelerated schedule. SCE&G is also granted the ability to delay payment for capital costs by 30 months to comport with the approved 30 month milestone schedule deviation. Lastly, approval is granted to allow use of the total contingency dollars at such times and in such amounts as required during the course of construction of Unit 2 and Unit 3. S.C. Code Ann. § 58-33-270(B)(2).

7. The inflation indices as set forth by the Company in Application Exhibit I are appropriate. S.C. Code Ann. § 58-33-270(B)(6).

8. The choice of the specific type of units and major components of the AP 1000 set forth in Application Exhibits A and D are appropriate. S.C. Code Ann. § 58-33-270(B)(4).

9. The qualification and selection of principal contractors and suppliers for construction of the plant set forth in Application Exhibits B and D are deemed appropriate for the construction of the AP 1000 units. S.C. Code Ann. § 58-33-270(B)(5).

10. The return on equity of 11%, established in Commission Order No. 2007-855, is in conformity with S.C. Code Ann. § 58-33-220(16).

11. The rate design and class allocation as modified herein and approved by the Commission are appropriate. S.C. Code Ann. § 58-33-270(D).

12. The requested revised rates reflecting the utility's current investment in the plant and rate schedules approved by the Commission and the modifications thereto as described herein are appropriate and should be adopted. S.C. Code Ann. § 58-33-270(C).

III.

EVIDENCE AND CONCLUSIONS

The evidence and conclusions supporting the findings of the Commission in this matter are as follows:

A. EVIDENCE AND CONCLUSIONS CONCERNING THE COMPANY'S BUSINESS AND LEGAL STATUS

(FINDING OF FACT NO. 1)

The evidence supporting the finding concerning the Company's business and legal status is contained in the Company's Application (SCE&G Application at p. 2) and in prior Commission Orders and docket files of which the Commission takes judicial notice. This finding of fact is informational, procedural, and jurisdictional in nature. This finding of fact is uncontested.

B. EVIDENCE AND CONCLUSIONS CONCERNING THE COMPANY'S NEED FOR ADDITIONAL BASE LOAD

(FINDING OF FACT NO. 2)

The evidence supporting the Company's need for additional base load is set forth in Exhibits G and H to the Application, in testimony and exhibits provided by SCE&G witnesses Marsh and Lynch and in testimony and exhibits provided by ORS panel witnesses Zhu, Evans and Crisp.

SCE&G witness Marsh defined base load generation plants as fuel efficient generating units designed and intended to run for extended periods of time and at high capacity factors, i.e., thousands of hours a year. (Tr. Vol. 2, Marsh at 151.) Base Load plants supply the bulk of customers' needs for both electric energy and capacity year in and year out and are the foundation on which an electric system operates. (Tr. Vol. 2, Marsh at 151.) Base load plants are intended to run at least 65-75% in a given year and are typically either coal or nuclear fired plants. (Hearing Exhibit 12, JML-2.) Coal and nuclear plants have relatively low fuel costs per kilowatt hour ("kWh") of electricity generated, but are more expensive to build than intermediate

and peaking units. (Tr. Vol. 2, Marsh at 151.) Marsh testified that in 2007 base load plants generated over 80% of SCE&G's energy. (Tr. Vol. 2, Marsh at 151.) In contrast, intermediate and peaking units supply less than 20% of energy. (Tr. Vol. 2, Marsh at 152.) Intermediate units (typically combined cycle natural gas plants) and peaking units (typically simple cycle gas plants) generally have lower capital costs than base load plants, but have higher fuel costs and are intended to run fewer hours per year than base load plants. (Tr. Vol. 2, Marsh at 152.)

In determining that additional base load was needed, Marsh testified the Company considered the amount of load growth that had occurred on SCE&G's system in the past decade as well as the declining percentage of base load generation in SCE&G's generation mix. (Tr. Vol. 2, Marsh at 151.) Marsh testified that *Global Insight, Inc.* predicts South Carolina's population will grow by over 10% between 2008 and 2016 (Tr. Vol. 2, Marsh at 154.) *Global Insight, Inc.* is a well-known and reputable company that provides economic, financial and other analyses and forecasts. (Zhu Testimony at p. 8, lines 6-7.) Base load was last added to SCE&G's electric system approximately twelve years ago in 1996 when Cope Station, a 420 MW pulverized coal plant located in Orangeburg County, began commercial operation. (Tr. Vol. 2, Marsh at 155.) Marsh testified that over the past twelve years, new customer growth has added an additional 31% to its customer base. (Tr. Vol. 2, Marsh at 153.) As load has grown, SCE&G has been required to rely increasingly on intermediate plants and on its aging coal fired units to meet customer demand. (Tr. Vol. 2, Marsh at 158.) Sixty-four percent (64%) of SCE&G's 3,218 MW of base load capacity, or 2,064 MW, consists of coal plants built between 1953 and 1973. (Tr. Vol. 2, Marsh at 158.) The coal plants are, on average, more than 40 years old today and will be more than 50 years old by 2019. (Tr. Vol. 2, Marsh at 158.) Mr. Marsh testified that

unless newer base load resources are added to the generation mix, SCE&G will have to rely more intensely on these older coal plants. (Tr. Vol. 2, Marsh at 158.)

SCE&G witness Lynch also testified that for SCE&G's system, much of its growth in energy results from new customers as opposed to an increase in consumption by existing customers. (Tr. Vol. 6, Lynch at 1353.) For example, residential consumption increased by 39% over the last 10 years while consumption per customer increased only 9%. (Tr. Vol. 6, Lynch at 1353.) Seventy-five percent (75%) of the energy growth in the residential sector is the result of customer growth. (Tr. Vol. 6, Lynch at 1353.) Lynch states the commercial sector has similar results. (Tr. Vol. 6, Lynch at 1353.)

In determining need, SCE&G forecasted total energy sales growth and peak demands. Over the next 15 years, from 2008 to 2022, total energy sales growth is forecast to grow an average of 1.3% per year, and the firm territorial summer peak and winter peak demands are projected to increase at 1.7% per year. (Zhu testimony, p. 3 at lines 5-8). The forecast of territorial sales and summer peak demand are lower than the historical growth rate of sales and summer peak demand due to higher energy efficiency requirements for light bulbs, higher energy efficiency requirements for air conditioners and a reduction of wholesale customers. (Zhu testimony, p. 4 at lines 1-11 and Tr. Vol. 5, Lynch at 1334.) ORS panel witness Dr. Zhu testified that SCE&G's forecasts of total energy sales growth rate and summer peak demand growth rate are similar to those of other utilities in the region. (Zhu testimony, p. 3 at lines 11-13.) In addition, Dr. Zhu testified that SCE&G's forecasting methods are consistent with industry norms and appear to be reasonable. (Zhu testimony, p. 7 at lines 4-10. See also ORS panel witness Crisp testimony, p. 98 at lines 8-9.) Dr. Zhu found SCE&G's load forecast

conservative and likely to underestimate future load growth. (Zhu testimony, p. 7 at lines 21-22.)

ORS panel witness Evans testified that a comparison of SCE&G's existing base load generation capabilities with the 2016 load duration curve shows that SCE&G will need additional base load generation by 2016. (Tr. Vol. 8, Evans at 2000 and Hearing Exhibit 20, GWE-1.) The Company provides for the reliability of its electric service by maintaining a reserve margin of supply capacity. (Tr. Vol. 5, Lynch at 1338.) SCE&G's resource planning department, headed by Dr. Lynch, monitors the growth of customer requirements on SCE&G's electric system and evaluates the potential means of fulfilling those requirements. (Tr. Vol. 2, Marsh at 150.) Dr. Lynch testified that SCE&G has historically maintained a planning supply capacity reserve margin target range of 12-18% of firm peak demand. (Tr. Vol. 6, Lynch at 1338.) Dr. Lynch testified that this range of reserves covers supply side risk, the risk of some generating capacity being down-rated or forced off-line, and demand side risk defined as the risk of experiencing higher loads than expected because of abnormal weather or forecast error. (Tr. Vol. 6, Lynch at 1338.) Dr. Lynch further testified that it must maintain a minimum reserve of 12% of its firm peak demand to reliably serve its customers. (Tr. Vol. 6, Lynch at 1339.) ORS panel witness Evans testified that SCE&G's reserve margin range of 12% to 18% is reasonable when compared to other local utilities. (Tr. Vol. 8, Evans at 2001.) Exhibit G to the Application shows that without the addition of any supply to its existing long term resources, SCE&G's reserve margin would be below its current target range and fall to 2% by 2016. The proposed addition of 614 MW in 2016 and 614 MW in 2019 have projected reserve margins of 13% and 16.8%, respectively. (Exhibit G to the Application.)

The Commission finds that the Company will need additional base load in the 2016 and 2019 time frame to ensure adequate supply. In addition, the Commission finds that an additional 614 MW in 2016 and 2019 will allow the Company to maintain an adequate reserve margin.

C. EVIDENCE CONCERNING THE COMPANY'S DECISION TO PROCEED WITH CONSTRUCTION OF THE NUCLEAR UNITS IS PRUDENT AND REASONABLE CONSIDERING THE INFORMATION AVAILABLE TO THE UTILITY

(FINDING OF FACT NO. 3)

The Company's decision to proceed with construction of the AP1000 nuclear units is prudent and reasonable considering the information available. Evidence supporting the Company's need for additional base load generation is set forth in Finding of Fact No. 2 above. In determining the best way to meet its base load generation need, the Company primarily focused its analysis on seven types of generation before determining nuclear is the best available option. The seven types of generation reviewed are: 1) solar, 2) wind, 3) landfill gas, 4) biomass, 5) natural gas, 6) coal and 7) nuclear. (Tr. Vol. 6, Lynch at 1339.) Each of these seven types of generation as well as demand side management ("DSM") which encompasses demand response and energy efficiency are discussed below. Nuclear, the generation method approved by this Commission, is discussed first.

Nuclear

With respect to reviewing the Company's Application and proposal to build two nuclear units, ORS hired independent consultants who testified as a panel. ORS panel witness Crisp, as the team's leader, testified that ORS asked the team to provide a technical review of the Company's application and to provide a recommendation considering ORS's duty to represent

the public interest. (Tr. Vol. 8, Crisp at 2127-2128.) ORS panel witness Crisp testified that the team did not take a position to represent any one particular demographic group, any one customer group, or any one intervenor group. (Tr. Vol. 8, Crisp at 2127-2128.) ORS panel witness Crisp also testified that the team has no vested interest in SCE&G, Westinghouse, Shaw/Stone & Webster or the AP 1000. (Tr. Vol. 8, Crisp at 2163.) Crisp noted the team's purpose was to provide a third-party evaluation of the Company's application and to deliver the team's unbiased opinion and recommendation to ORS and the Commission. (Tr. Vol. 8, Crisp at 2127-2128 and 2164.) The panel's findings are that nuclear is the best option from which to meet base load need.

FOE witness Brockway disagreed and testified that DSM deserved more consideration as DSM planning was inadequate and lacking by the Company. (Tr. Vol. 3, Brockway at 363 and 364.)

After completing the analysis of all available options, SCE&G witness Kevin Marsh testified that nuclear was the superior option to provide the lowest cost to customers over the long run. (Tr. Vol. 3, Marsh at 331.) Specifically, SCE&G's Application states that nuclear facilities are the most economical form of generation to add under reasonable future assumptions, to meet the need for base load capacity, to protect the environment as non-emitting resources, to mitigate exposure to the cost of complying with future environmental regulations, and to support the need for fuel diversity in SCE&G's capacity mix. (Hearing Exhibit 12, JML-2, Application Exhibit H.) In addition and as testified to by SCE&G's Dr. Lynch, the nuclear facilities are expected to have a high capacity factor of 92%. (Tr. Vol. 6, Lynch at 1372.) Dr. Lynch also testified that the addition of nuclear facilities will allow the Company to be in a position to retire some of its aging base load coal plants. (Tr. Vol. 6, Lynch at 1392.)

South Carolina Governor Mark Sanford supports nuclear as producing affordable power and as aiding efforts to reduce emissions from power generation. (Tr. Vol. 6, Addison at 1247 and Hearing Exhibit 9.) Governor Sanford's support is shown via Hearing Exhibit 9 in a letter dated May 3, 2007 from Governor Sanford to Senator Glenn McConnell. In this letter Governor Sanford writes in part:

> As is always the case with legislation, this bill [the South Carolina Base Load Review Act] offers both positives and negatives, but they are magnified in this instance. In short, this bill has direct implications that go well beyond the bill itself to our statewide energy policy and its ramifications for economic development and the environment. In weighting these things, I believe the balance falls slightly in favor of the positives, because it increases the odds of nuclear power, and I further believe nuclear power is important in producing affordable power and in aiding efforts to reduce emissions from power generation.
>
> Let me be clear. If this legislation was simply a means to help finance the construction of nuclear power plants for additional base load capacity in South Carolina, I would have signed it. Nuclear power plants will allow us to meet growing energy demands here without increasing emissions or harmful byproducts of coal-fired plants. (Hearing Exhibit 9 and Tr. Vol. 6, Addison at 1246 and 1247.)

With respect to costs, SCE&G analyzed scenarios which assumed high nuclear fuel prices, low gas prices and no carbon ("CO2") regulation. (Composite Hearing Exhibit 12, JML-2.) Scenarios were run assuming legislation establishes carbon costs at $15 and $30/ton.

(Composite Hearing Exhibit 12, JML-2.) The nuclear option was shown to be the least costly. (Tr. Vol. 6, Lynch at 1392 and Composite Hearing Exhibit 12, JML-2) Dr. Lynch testified that only under the scenarios of low gas prices or no CO2 regulation does the gas or coal option become less expensive for customers. (Tr. Vol. 6, Lynch at 1392.) ORS panel witness Evans verified the scenarios used by SCE&G. (Tr. Vol. 8, Evans at 2003-2004.)

With respect to construction and costs of the nuclear units, SCE&G signed a firm engineering, procurement and construction contract ("EPC contract") with Westinghouse Electric Company, LLC ("Westinghouse") and Stone & Webster, Inc. ("Stone & Webster") during May, 2008. (Tr. Vol. 3, Marsh at 326.) Pursuant to the EPC contract, Westinghouse/Stone & Webster will provide the engineering design, procure the required materials, and construct two AP 1000 nuclear units by 2016 and 2019, respectively. (Tr. Vol. 8, Jacobs at 2026 and Tr. Vol. 8, Crisp at 1904.)

FOE argued that the costs are understated and that the risks for further increases are not adequately captured. (Tr. Vol. 3, Brockway at 364.) FOE further points to an October 2, 2008 U.S. Department of Energy ("DOE") news release wherein it estimated that construction of 21 nuclear reactors in the U.S. would cost $188 billion, or approximately $9 billion per unit. (Tr. Vol. 3, Brockway at 388.) FOE acknowledges the DOE estimate was independent of the reactors in this case; however, FOE points out that the DOE estimate per unit is far above the $9.8 billion presented by SCE&G for two units. (Tr. Vol. 3, Brockway at 388.) Contrary, to FOE's contentions, the actual base price without escalators, contingencies and AFUDC is less. SCE&G witness Addison testified that the base price of the project is $4,534,747,000. (See Hearing Exhibit 37. AFUDC is shown in Hearing Exhibit 37.) Further, SCE&G witness Marsh testified that over 50% of the contract price is either firm or firm with a set escalation applied. (Tr. Vol.

3, Marsh at 340.) FOE admitted to not having reviewed the entire EPC contract. (Tr. Vol. 3, Brockway at 473.) In addition, SCE&G witness Byrne testified there are cost savings due to the readiness of the site as it already contains one nuclear unit. (Tr. Vol. 3, Byrne at 336.) ORS panel witness Jacobs testified that the EPC contract reasonably attempts to equitably balance the risks between all parties. (Tr. Vol. 8, Jacobs at 2033 and Tr. Vol. 8, Crisp at 1912-1913 and 1916.) ORS panel witness Crisp indicates that the categories with the most significant risk exposure are (1) actual labor costs and (2) activities associated with the permitting, NRC licensing, startup and transmission projects. (Tr. Vol. 8, Crisp at 1913.) Notwithstanding the risks, Mr. Crisp testified that based on his review of the cost parameters, cost containment procedures, budget and schedule that SCE&G's estimated costs of the nuclear units are reasonable and justified. (Tr. Vol. 8, Crisp at 1913.) FOE witness Brockway acknowledged that a new nuclear plant may be less expensive than placing capital additions in a coal plant. (Tr. Vol. 3, Brockway at 526.)

FOE suggested that the Commission condition approval on a prohibition of recovery above the projected $6.313 billion proposed cost. (Tr. Vol. 3, Brockway at 367.) It should be noted that both SCE&G and ORS agree that pursuant to the BLRA, if the price of the units change above the dollars presented by SCE&G, then SCE&G would be required to return to the Commission for approval on the additional cost. (Tr. Vol. 3, Marsh at 339 and Tr. Vol. 8, Crisp at 1957.)

FOE argued the current economic climate is not suitable for nuclear power plants. (Tr. Vol. 3, Brockway at 364.) However, FOE also stated that nuclear was viable, but a larger company should proceed instead of SCE&G because of its size and lack of financial depth. (Tr. Vol. 3, Brockway at 490.) SCE&G witness Jimmy Addison noted that the nuclear renaissance

likely would not be happening without federal backing and incentives which encourage Wall Street financial backing. (Tr. Vol. 6, Addison at 1142 and 1143.) However, Mr. Addison notes that nuclear is a competitive option even without incentives. (Tr. Vol. 6, Addison at 1155.) FOE witness Brockway acknowledged that if the Commission approves SCE&G's application then Wall Street will likely provide financing for the project. (Tr. Vol. 3, Brockway at 520-521.) Further and notwithstanding FOE's earlier arguments, FOE witness Brockway testified that it is possible that nuclear may be the best for South Carolina and that, to her, the South Carolina Legislature indicates nuclear is the best answer. (Tr. Vol. 3, Brockway at 480.) FOE further acknowledged that nuclear has a clean footprint. (Tr. Vol. 3, Brockway at 525.)

Coal

SCE&G's evaluation of a coal plant showed that coal was not an optimal choice due to the significant risk associated with coal because of likely carbon legislation that will require significant and expensive retrofits to coal plants. (Tr. Vol. 3, Marsh at 331.) As discussed with natural gas below, coal is also subject to price volatility risk. (Tr. Vol. 3, Marsh at 331.)

Intervenor Ms. Ruth Thomas's witness, Dr. Ronald Wilder, testified that nuclear is less cost effective than coal. (Tr. Vol. 6, Wilder at 1279.) In support of this statement, Dr. Wilder testified that many years have passed since the last nuclear reactor was constructed and that due to the length of time, it will be comparable to starting with a new design and technology as opposed to having the benefit of a learning curve where knowledge on the technology has been widely dispersed. (Tr. Vol. 6, Wilder at 1283 and 1288.) However, Dr. Wilder notes that the avoidance of carbon costs associated with coal is an advantage of nuclear. (Tr. Vol. 6, Wilder at 1280.) Dr. Wilder also acknowledged that he had not analyzed SCE&G's entire generation structure. (Tr. Vol. 6, Wilder at 1308.) In addition, Dr. Wilder acknowledged that if he were a

Commissioner, he would have a hard time approving a new coal-fired plant. (Tr. Vol. 6, Wilder at 1308.) Notwithstanding nuclear not having emissions, Dr. Wilder advocated what he viewed as less risky alternatives, such as an increase in conservation incentives, along with postponing the decision to proceed with the AP 1000 technology until others have reached greater experience with it. (Tr. Vol. 6, Wilder at 1290.)

FOE witness Brockway testified that she felt sure that SCE&G will eventually be required to put a great deal of investment into its existing coal plants to not only upgrade them, but to also sequester carbon. (Tr. Vol. 3, Brockway at 526.) FOE witness Brockway further testified that SCE&G's coal plants lives' can be extended considerably if more capital additions are added and noted that environmental regulations will force SCE&G to place a lot of money into its coal plants if SCE&G wishes to keep the coal plants open. (Tr. Vol. 3, Brockway at 526.) FOE witness Brockway concluded that a new nuclear plant may be less expensive. (Tr. Vol. 3, Brockway at 526.)

Natural Gas

SCE&G's evaluation of a combined cycle gas plant showed that natural gas was not an optimal choice for base load due to the risks associated with the volatility in price of natural gas. (Tr. Vol. 3, Marsh at 332.) In addition and because of gas price volatility, natural gas plants are not traditionally used for base load supply. (Tr. Vol. 2, Marsh at 152.) SCE&G witness Marsh also testified that to add another natural gas plant would place over 40% of SCE&G's generation assets in natural gas placing the Company at risk for natural gas price fluctuations. (Tr. Vol. 3, Marsh at 331.) We find that a natural gas plant is neither appropriate for SCE&G's generation mix at this time nor appropriate for base load.

Solar

The Company's analysis of solar power concluded that solar is not a sufficient option due to its low capacity factor. (Tr. Vol. 3, Marsh at 333.) In addition, the Company testified that solar facilities are too expensive to construct for the amount of electricity generated. (Tr. Vol. 6, Lynch at 1339.) ORS panel witness Evans also testified that solar panels are costly. (Tr. Vol. 8, Evans at 2141.) Photovoltaic systems cost about $4,000-$6,000 per KW and a solar thermal power plant costs about $3,600 per KW. (Tr. Vol. 6, Lynch at 1339.) In addition to the cost, solar power can only achieve a low-capacity factor of approximately 15-20% in South Carolina. (Tr. Vol. 6, Lynch at 1339.) While there is no fuel cost involved with solar energy, the small amount of energy produced by the plant would not be sufficient to overcome the very high capital costs. (Tr. Vol. 6, Lynch at 1339.) The Company's Application states that it would take approximately 10,276 MWs of solar panels covering 61,656 acres or 96.3 square miles to produce an amount of electric energy equivalent to that of 2,234 MWs of nuclear capacity represented by the two plants under question. (Tr. Vol. 6, Lynch at 1373 and Application Exhibit H, page 4 of 11.)

In addition to these limitations, solar power is not dispatchable. (Tr. Vol. 6, Lynch at 1340.) The energy output of the plant is wholly dependent upon energy from the sun, and the hourly profile of the sun's energy throughout the day is not a perfect match to the hourly profile of SCE&G's load. (Tr. Vol. 6, Lynch at 1340.) In particular the sun shines strongest in the summer around noon and 1pm. (Tr. Vol. 6, Lynch at 1340.) However, SCE&G's peak usage is always after 2pm and before 6pm with the peak occurring after 4pm about 60% of the time. (Tr. Vol. 6, Lynch at 1340.) After 4pm a solar panel will only generate about 20% of its rated capacity thus significantly impacting the capacity of the plant when it would be needed most.

(Tr. Vol. 6, Lynch at 1340.)

FOE witness Brockway testified that the Company undervalues solar. (Tr. Vol. 3, Brockway at 364.) Ms. Brockway acknowledged that renewable sources of power have historically been more expensive than fossil fuel generation and have produced power at higher costs than nuclear operating costs; however, Ms. Brockway notes that the costs of alternative forms of power generation are continuing to come down as society puts more resources into their development. (Tr. Vol. 3, Brockway at 376.) Ms. Brockway points to neighboring utility, Duke Energy, as having announced a proposal to invest $100 million to install photovoltaic solar panels at up to 850 sites in North Carolina suggesting there is more potential for such a resource in South Carolina than SCE&G considers viable. (Tr. Vol. 3, Brockway at 376.) Dr. Lynch notes in his rebuttal testimony that Duke Energy recently announced that it was scaling back its solar project to invest only $50 million rather than its initially projected $100 million. (Tr. Vol. 6, Lynch at 1375.) In addition, Dr. Lynch states that North Carolina has implemented a renewable portfolio standard which mandates that the state's electric utilities obtain a percentage of their energy from renewable sources. (Tr. Vol. 6, Lynch at 1375.) As of today's date, there is no similar mandate in South Carolina. Duke Energy's current proposal will have the potential to supply a total of 32.2 MW on its 21,000 MW system, or approximately 0.15% of its electric generation needs. (Tr. Vol. 6, Lynch at 1375 and 1376.) (The 32.2 MW consists of a plan to purchase 16 MWs of photovoltaic ("PV") capacity and invest $100 million to acquire 16.2 MWs of additional PV capacity.) (Tr. Vol. 6, Lynch at 1375.)) In contrast, SCE&G has established a need for 1,228 MW. Dr. Lynch also testifies that FOE ignores the significant cost associated with solar. (Tr. Vol. 6, Lynch at 1376.) Dr. Lynch testifies that a $100 million investment to build 16.2 MWs of solar power represents a cost of more than $6,000 per KW for a resource with

only an 18.2% capacity factor. (Tr. Vol. 6, Lynch at 1376.) FOE disputes this assertion stating that the net present value of operations and capital addition costs must be considered in contrast to solar which costs virtually nothing to operate. (Tr. Vol. 3, Brockway at 415.) FOE also states that the cost of solar installations continues to come down as further research and greater commercialization of the technology continues. (Tr. Vol. 3, Brockway at 415.)

Although FOE states that the cost of solar installations continue to come down, FOE witness Brockway acknowledges that a study prepared by her entitled "Delaware's Electric Future: Re-regulation Options and Impacts" states that solar is the most expensive way to generate electricity. (Tr. Vol. 3, Brockway at 482 and 486.) The study states, "PV solar's cost of energy ranges from 31 cents a kWh to over 44 cents a kWh. This is five or six times as expensive as coal generation." (Tr. Vol. 3, Brockway at 486 and 487.) FOE witness Brockway's study also states that PV solar has a low capacity factor ranging from 11% to 24% because PV solar produces power only when the sun allows. (Tr. Vol. 3, Brockway at 487.)

Both the Company and FOE agree that central-station arrays for concentrating solar energy are not suitable for South Carolina with present technology. (Tr. Vol. 3, Brockway at 375 and 376 and Tr. Vol. 6, Lynch at 1375.) SCE&G noted it is currently purchasing power from three customers on its system who have installed solar panels. (Tr. Vol. 6, Lynch at 1340.) The Commission encourages the Company to embrace renewable resources; however, the Commission finds that for purpose of meeting base load generation requirements, solar power is not a viable base load generation option due to the cost, lack of dispatchability, low capacity factor and evolving solar technology.

Wind Generation: On-Shore and Off-Shore

SCE&G and ORS testified that wind power is not a viable option in South Carolina. (Tr. Vol. 6, Lynch at 1340 and Tr. Vol. 8, Evans at 2140.) Like solar, wind facilities have low capacity factors. (Tr. Vol. 3, Marsh at 333.) Dr. Lynch testified that current wind turbine technology requires average wind speeds of approximately 7.5 meters/second ("m/s") to operate and about 12-14 m/s to reach maximum power output. (Tr. Vol. 6, Lynch at 1340 and 1341.) South Carolina's on-shore wind averages less than 5.5 m/s and does not have sufficient strength to make wind a feasible option. (Tr. Vol. 6, Lynch at 1342 and Composite Hearing Exhibit No. 12, JML-5.) Dr. Lynch acknowledged that wind blows strong enough in some states, such as Texas and California, to make wind power a viable option. (Tr. Vol. 6, Lynch at 1341.) Dr. Lynch also noted that some states have mandated the installation of wind turbines whether economical or not. (Tr. Vol. 6, Lynch at 1341.) South Carolina does not have a similar mandate.

ORS panel witness Evans testified to being a proponent and big supporter of wind power and noted that he testified in Oklahoma on behalf of three wind farms which are currently producing power. (Tr. Vol. 8, Evans at 2140.) Evans testified that South Carolina, however, is different from Oklahoma because the wind does not blow hard enough or consistently enough for wind power to make economic sense. (Tr. Vol. 8, Evans at 2140.) Evans testified there could possibly be enough wind offshore. (Tr. Vol. 8, Evans at 2140.) Evans noted that wind does not produce power when customers want power. (Tr. Vol. 8, Evans at 2140.) Evans testified that "wind power just comes and goes as the wind blows, not when customers request energy." (Tr. Vol. 8, Evans at 2140.) The lack of predictability is an operational problem for utilities. (Tr. Vol. 8, Evans at 2140.)

With respect to off-shore wind power, Dr. Lynch noted several uncertainties: the costs of building and maintaining a power plant and transmission facilities off-shore, the fact that there are no off-shore wind turbines in areas prone to hurricanes, and a low capacity factor. (Tr. Vol. 6, Lynch at 1343.) SCE&G's 2007 Integrated Resource Plan stated that wind generation is not economical within the SCE&G service territory due to high capital costs and limited energy production caused by low winds. (Tr. Vol. 6, Lynch at 1368.) SCE&G's Application notes that 6,852 MWs of wind turbines covering 120,192 acres, or if located off-shore, three rows covering the length of the South Carolina coast, would be needed to produce the amount of electric energy equivalent to that of 2,234 MWs of nuclear capacity represented by the two plants under question. (Tr. Vol. 6, Lynch at 1373 and Application Exhibit H, page 4 of 11.)

Dr. Lynch compared wind power to solar power as being an undependable source of generation since wind can produce power only when the wind blows and wind power is not dispatchable. (Tr. Vol. 6, Lynch at 1341.) Because of these limitations, Dr. Lynch noted that about 90% of the capacity from a wind farm is typically backed up with some other form of generation such as quick start peaking turbines meaning that only 10% of the capacity of a wind power plant is considered firm. (Tr. Vol. 6, Lynch at 1342.) An example provided by Dr. Lynch is that a 1,000 KW wind farm would need about 900 KWs of gas fired combustion turbine capacity to backup the wind capacity. (Tr. Vol. 6, Lynch at 1342.) To show the unreliability of wind power in South Carolina, SCE&G superimposed the hourly wind speed measurements taken at the V.C. Summer Nuclear Site in Fairfield County – where the AP 1000 units are proposed – on a typical power curve of a wind turbine. (Tr. Vol. 6, Lynch at 1372.) The power curve utilizing wind resources in South Carolina shows that a wind generating facility will only achieve a capacity factor of approximately 9.3% whereas a nuclear plant will achieve a capacity

factor of approximately 92%. (Tr. Vol. 6, Lynch at 1372.) In addition, the average wind speeds are 3 m/s for a typical summer day at the V.C. Summer Nuclear Station between 2 p.m. and 6 p.m. when SCE&G's system reaches its peak demand. (Tr. Vol. 6, Lynch at 1372.) Wind speeds of 3 m/s are insufficient to produce any amount of wind power. (Tr. Vol. 6, Lynch at 1373 and Composite Hearing Exhibit 13, JML-7.)

SCE&G states that the output from a wind turbine is always lower that its capacity. (Tr. Vol. 6, Lynch at 1371.) FOE agrees that the power available from a wind turbine is often much lower than its nameplate capacity. (Tr. Vol. 3, Brockway at 374.) In addition, FOE witness Brockway confirmed that she prepared a document entitled "Delaware's Electric Future: Re-regulation Options and Impacts" wherein it stated:

> Wind generators only operate when there is wind. They cannot be relied on to be available and produce a set amount exactly when the system's needs for energy are at their peak. In fact, they produce a greater amount in cooler, off-peak months when there is more wind. Their capacity factors run between 20 and 40 percent. By contrast, a base-load coal plant can reach a capacity factor of over 80 percent. (Tr. Vol. 3, Brockway at 482-483.)

FOE witness Brockway testified that the above numbers – based on 2007 information -- would still likely be in the same ranges as set forth in the report. (Tr. Vol. 3, Brockway at 483-484.)

Nevertheless, FOE argues that wind should not be outright rejected as an option and notes a South Carolina Coastal Wind Resource Assessment is being done by Santee Cooper, Clemson University and Coastal Carolina University. (Tr. Vol. 3, Brockway at 374.) FOE also

disagrees with the Company's wind transmission concerns since two major load centers, Beaufort and Charleston, are on the coast and disagrees with the concerns that off shore wind would cause additional transmission costs. (Tr. Vol. 3, Brockway at 375.) FOE states that other utilities are including wind in their generation portfolios and that it should be included for SCE&G. (Tr. Vol. 3, Brockway at 374 and 375.)

With respect to the South Carolina Coastal Wind Resource Assessment, SCE&G responded that the data collection on wind for an assessment is insufficient for a company to begin constructing a wind turbine. (Tr. Vol. 6, Lynch at 1370.) SCE&G further noted that there are currently no wind turbines anywhere off the coast of the United States. (Tr. Vol. 6, Lynch at 1370.) However, SCE&G is aware of a purchase agreement between Delmarva Power & Light and the Bluewater Wind Project for off-shore wind electricity generation and that Delmarva Power & Light reported that the cost of the wind generation is not economical compared to the cost of other generation in its portfolio. (Tr. Vol. 6, Lynch at 1370.)

With respect to FOE's testimony that other utilities are including wind in their generation, SCE&G responds that FOE failed to mention that most of the wind capacity is being added in what has become known as the "wind corridor" of the country where wind speeds are consistently high. (Tr. Vol. 6, Lynch at 1370.) A map by the U.S. Department of Energy's National Renewable Energy Laboratory showing wind speeds across the country shows that South Carolina is not in the wind corridor and does not have adequate wind resources. (Tr. Vol. 6, Lynch at 1372 and Composite Hearing Exhibit No. 13, JML-6.) ORS panel witness Evans agrees with this statement and stated he is a proponent of wind energy, but that wind energy in South Carolina is not viable. (Tr. Vol. 8, Evans at 2140.)

The Commission agrees with the assessment of SCE&G and ORS that wind generation, even if coupled with another source of generation or conservation, is not a viable option to meet base load generation needs due to the lack of wind in South Carolina, lack of dispatchability, the low capacity factor and the costs to obtain comparable energy from a nuclear plant.

Landfill Gas

SCE&G's Dr. Lynch testified that landfill gas plants would be economical to employ on its system, but landfill gas plants would not be a viable base load generation source because the plants are generally small and produce only about 5 to 10 MW per plant, (Tr. Vol. 6, Lynch at 1343.) Dr. Lynch noted that many locations have already been captured by Santee Cooper which has four sites producing a total of approximately 25 MW. (Tr. Vol. 6, Lynch at 1343.) Dr. Lynch also testified that there is not enough landfill capacity in the state to displace the MW output by the two planned nuclear units. (Tr. Vol. 6, Lynch at 1344.) Although not appropriate for base load generation, Dr. Lynch stated that SCE&G is looking to add landfill gas plants. (Tr. Vol. 6, Lynch at 1343.) The other parties did not dispute this testimony. The Commission agrees that landfill gas plants are not appropriate as a base load generating facility.

Biomass

SCE&G's Dr. Lynch testified that biomass facilities are not economically competitive with traditional sources of power and that biomass facilities cannot produce the amount of MWs needed by SCE&G to meet base load requirement. (Tr. Vol. 6, Lynch at 1344 and 1345.) In supporting his testimony, Dr. Lynch further testified that the construction cost of a typical biomass plant averages approximately $2,700 per KW with a heat rate of 13,000 for the typical biomass plant. (Tr. Vol. 6, Lynch at 1344.) Dr. Lynch also referred to the La Capra Associates feasibility study commissioned by Central Electric Cooperative. (Tr. Vol. 6, Lynch at 1345.) In

its study, La Capra Associates reported that South Carolina can realistically produce only approximately 491 MWs from biomass fuels. (Tr. Vol. 6, Lynch at 1344.) Clemson University also performed a similar study for biomass which estimated the South Carolina biomass potential to be about 400 MW. (Tr. Vol. 6, Lynch at 1345.) SCE&G serves 27% of the state and if it could capture its entire pro rata portion of biomass generation estimated to be available, SCE&G could generate 132 MW. (Tr. Vol. 6, Lynch at 1345.) While biomass is not a viable option to meet SCE&G's total base load need, SCE&G did testify that if SCE&G is able to take advantage of the 132 MW, it could incorporate it into its resource plan and displace some purchased power contracts. (Tr. Vol. 6, Lynch at 1345.) The other parties did not dispute SCE&G's testimony. SCE&G established a need for a total of 1,228 MW and the Commission finds that a biomass facility is not an appropriate replacement for the planned AP 1000 units.

Demand Side Management

FOE witness Brockway testified that SCE&G did not employ proper DSM planning and has not undertaken significant DSM initiatives. (Tr. Vol. 3, Brockway at 364 and 379-380.) FOE defines significant DSM initiatives as initiatives that are calculated to save and have saved significant amounts of electricity usage, including usage on peak. (Tr. Vol. 3, Brockway at 380.) FOE argues that SCE&G does not justify its apparent determination that as of 2009 it will have exhausted all demand-reduction potential via DSM. (Tr. Vo. 3, Brockway at 377.)

SCE&G witness Lynch responded that in order to explain the Company's position, it is necessary to separately consider the two components of DSM: demand response and energy efficiency. (Tr. Vol. 6, Lynch at 1376.) Demand response programs, which are also known as load management programs, are designed to lower system demands for short periods of time, i.e. for a few hours, usually during times of high demands on the system. (Tr. Vol. 6, Lynch at

1376.) Lynch cites examples of demand response programs as being interruptible load programs and direct load control of customer appliances. (Tr. Vol. 6, Lynch at 1376.) On the other hand, Lynch notes that energy efficiency programs tend to reduce customer consumption throughout a season or throughout the year. (Tr. Vol. 6, Lynch at 1377.) Examples cited include high efficiency appliances and increased insulation. (Tr. Vol. 6, Lynch at 1377.) Lynch testified that while energy efficiency programs also reduce peak demands, it is not these programs main effect or primary purpose. (Tr. Vol. 6, Lynch at 1377.)

With respect to having exhausted all demand-reduction potential, SCE&G witness Lynch testified that to further reduce the Company's need for capacity would require customers to agree to have their service interrupted for extensive periods of time during the summer peaks. (Tr. Vol. 6, Lynch at 1377.) Lynch testified that SCE&G's demand response capacity represents approximately 4% of its firm peak. (Tr. Vol. 6, Lynch at 1347. See also Composite Hearing Exhibit 12, JML-2.) The average in the United States is between 2% and 3%. (Tr. Vol. 6, Lynch at 1347. See also Composite Hearing Exhibit 12, JML-2.) Lynch further testified that SCE&G attempts to run its system at the low end of its reserve margin range, 12%, in order to keep its rates as low as possible. (Tr. Vol. 6, Lynch at 1348.) Lynch noted that a demand response program is typically less reliable than generating capacity and with a low reserve; SCE&G would not be comfortable replacing additional capacity with demand response. (Tr. Vol. 6, Lynch at 1348.)

With respect to energy efficiency, SCE&G has two categories of energy efficiency programs: Customer Information Programs and Energy Conservation Programs. (Tr. Vol. 6, Lynch at 1349.) Customer Information Programs include the Annual Energy Campaign where SCE&G educates its customers on energy efficiency and the WEB-Based Information and

Services Programs where customers may analyze individual consumption patterns as well as how weather impacts the cost of electricity. (Tr. Vol. 6, Lynch at 1350.) Lynch testified that 174,000 customers are registered for WEB access, 50,000 residential customers receive service under the Energy Conservation Rate, 20% of commercial consumption is provided under time-of-use or real-time-pricing rates and that the demand response component has elicited more than 200 MWs. (Tr. Vol. 6, Lynch at 1350-1351.) SCE&G DSM expert Pickles testified that DSM programs in warm weather states average a 0.36% reduction in total system retail energy sales annually. (Tr. Vol. 7, Pickles at 1564 and Tr. Vol. 6, Lynch at 1357.) Nationally, active DSM programs experience an average of a little more than 0.5% in annual energy sales reductions. (Tr. Vol. 7, Pickles at 1564 and Tr. Vol. 6, Lynch at 1357.) In addition, Lynch testified that the Company is taking measures to expand its portfolio of programs by establishing a DSM Department and hiring a consulting firm with expertise in the area of energy efficiency. (Tr. Vol. 6, Lynch at 1351-1352.) DSM expert Pickles testified that DSM programs may reduce the need for future purchased power contracts or other types of capacity. (Tr. Vol. 7, Pickles at 1564.) However, Lynch stated that expanded energy efficiency efforts would not affect SCE&G's decision to build the two nuclear plants and that even with energy reductions of 0.50%, the nuclear decision remains the best alternative. (Tr. Vol. 6, Lynch at 1352 and 1382 and Tr. Vol. 7, Pickles at 1564.) DSM expert Pickles supported Lynch's statement that DSM programs will not eliminate the need for the plants. (Tr. Vol. 7, Pickles at 1564.)

FOE argues that the Company should ask whether additional DSM could contribute to a plan that could replace the 1,229 MW of nuclear power the Company has decided is the best option. (Tr. Vol. 3, Brockway at 377-378.) For instance, FOE uses California in an example stating California has held its per capita consumption of electricity to roughly 7,000 kWh from

1975 through 2004, compared to the growth from 8,000 kWh to 12,000 kWh in the national average electricity consumption over the same period. (Tr. Vol. 3, Brockway at 378.) SCE&G responded that FOE failed to mention the price for power in California has increased at a faster rate than the national average and that today the residential price for power is more than 30% higher than the national average. (Tr. Vol. 6, Lynch at 1380.) SCE&G compared a yearly bill for a single family residence under its rates assuming yearly usage of 18,500 kWh with a yearly bill in California assuming the same usage. (Tr. Vol. 6, Lynch at 1380.) A customer in SCE&G's territory would pay approximately $2,064 yearly under SCE&G's current approved rates while a California customer would pay approximately $4,258 under Pacific Gas & Electric rates, $3,171 under Southern California Edison rates and $3,628 under San Diego Gas & Electric rates. (Tr. Vol. 6, Lynch at 1380-1381.) SCE&G asserted that with such higher rates, more DSM programs can be cost justified. (Tr. Vol. 6, Lynch at 1381.) During the hearing on this matter, FOE witness Brockway agreed that California historically has had higher rates and continues to have higher rates. (Tr. Vol. 3, Brockway at 504.) SCE&G also asserted that California's levelized electricity consumption is likely to be as much the result of high costs for electricity as the effectiveness of DSM programs. (Tr. Vol. 6, Lynch at 1381.) FOE witness Brockway acknowledged that many of the utilities with reductions in energy sales attributable to DSM savings have residential prices for energy that are significantly higher than the average retail price in South Carolina. (Tr. Vol. 3, Brockway at 478. See also Composite Hearing Exhibit 1, Exhibit NB-3.)

Mrs. Brockway's Exhibit NB-3 shows annual DSM Energy Savings but fails to reflect the incremental effects for both energy and peak demand impact. (See Hearing Exhibit 25

showing peak demand reduction from DSM). Incremental effects are impacts on energy and peak demand from new programs and new customers.

SCE&G witness Lynch testified that SCE&G has evaluated existing alternatives and will evaluate new alternatives as they become available. (Tr. Vol. 6, Lynch at 1374.) Lynch testified that SCE&G's evaluation process considers how each alternative for generation enhances the Company's portfolio mix. (Tr. Vol. 6, Lynch at 1374.) Lynch notes, though, that for the Company's current needs, the evaluation process reflects that alternatives are neither economical nor reliable and therefore do not yield a superior portfolio. (Tr. Vol. 6, Lynch at 1374.) In fact, Lynch testified that if the Company's energy efficiency programs are exceptionally effective and energy demand drops significantly, SCE&G would be able to use the new nuclear capacity to reduce its reliance on fossil fuels by avoiding the use of its peaking facilities and may be able to retire one or more of its coal plants without replacing the base load capacity. (Tr. Vol. 6, Lynch at 1353.) In sum, Lynch testified that the growing demand for electricity simply cannot be met through existing alternative generation and the addition of new nuclear base load facilities is required to safely and reliably serve the Company's customers. (Tr. Vol. 6, Lynch at 1374.)

Conclusion

Considering all testimony and evidence, this Commission concludes that the construction of the two nuclear AP 1000 units is prudent and reasonable to meet future generation needs. Nuclear is shown to have the highest capacity factor, to leave no greenhouse gas footprint as to generating capacity, to not be nearly as subject to fuel price volatility and to be the most economical option for SCE&G customers. Further, Nuclear power generation has played a significant role in keeping this State's electric rates affordable and service reliable. If South Carolina is to realistically prepare for a greenhouse gas constrained economy, increased nuclear

capacity must be utilized. Nuclear capacity is set to be an integral priority in satisfying future demand in South Carolina while reducing green house gas levels. For these reasons, SCE&G's request to build two new nuclear reactors in the form of AP 1000 units is approved. SCE&G's approved ownership is 55% of the plant and output which is 1,228 MW and Santee Cooper's ownership is 45% of the plant and output which is 1,006 MW. Any change in the ownership interest, sharing of the costs or control as set forth herein is subject to approval of this Commission.

The Commission finds that no combination of demand side management programs can overcome the need for the nuclear units; however, the Commission is persuaded by testimony in this case that more should be done to promote DSM programs. Further, under the authority of the South Carolina Energy Conservation and Efficiency Act of 1992, this Commission is fully exploring opportunities, procedures and regulations that will encourage more extensive conservation and energy efficiency measures. Our State needs to do more to promote and encourage adoption of energy efficiency and conservation measures, which can be a timely and economical means to reduce immediate demand for electricity. In addition to looking for ways to increase electricity production, South Carolina must make serious efforts to promote conservation and energy efficiency. SCE&G witness Pickles testified that SCE&G is currently performing a DSM study that it expects to be completed by mid-2009. SCE&G is required to file the results and recommendations from that study by June 30, 2009, at which time the Commission will open a new docket to explore improvements to SCE&G's DSM programs. While the Commission finds that SCE&G's forecasts are accurate and show a need best met by nuclear generation, the Commission expects SCE&G to take advantage of any renewable generation, DSM program opportunities or any combination thereof to offset purchased power

contracts or existing generation which negatively impacts the environment provided there is no increased cost to SCE&G's customers. In addition, SCE&G is expected to encourage and promote cost effective conservation and energy efficiency. These matters along with whether the integrated resource planning process should be revised will be further explored when SCE&G files the results of its DSM study with the Commission.

D. EVIDENCE SHOWING SCE&G HAS SATISFIED THE REQUIREMENTS OF S.C. CODE ANN. § 58-33-160 OF THE SITING ACT

(FINDING OF FACT NO. 4)

Evidence and conclusions concerning SCE&G's need for the facility is set forth in Section B above, Finding of Fact No. 2.

Evidence regarding the probable environmental impact is found in the testimony and exhibits of SCE&G witness Steve Connor and Steve Summer as well as ORS panel witness Crisp.

Composite Hearing Exhibit No. 30, Exhibit P to the Application also labeled as Exhibit SJC-2, sets forth a summary of the Environmental Report ("ER"). The ER relates to the permitting, construction and placing into service the two AP 1000 units and also summarizes the geological, geotechnical and seismic information contained in the Nuclear Regulatory Commission ("NRC") Combined Operating License Application for the units. The Environmental Report was prepared under the direction of SCE&G witness Steve Connor as a required element of the Combined Operating License Application filed by SCE&G with the Nuclear Regulatory Commission and constitutes a comprehensive environmental assessment and analysis of the environmental impacts. (Tr. Vol. 10, Connor at 2414 and 2417.) Composite Hearing Exhibit 30, Exhibit SJC-3, contains the full Environmental Report.

SCE&G witness Connor testified that the nuclear site receives environmental regulatory oversight at the federal level by the NRC and at the state level by the S.C. Department of Health and Environmental Control ("DHEC"). (Tr. Vol. 10, Connor at 2415.) A listing of all approvals, permits and authorizations required for preconstruction and construction activity can be found in Tables 1.2-2 and 1.2-3 of the ER. (Tr. Vol. 10, Connor at 2419.) From this Commission, a certificate of environmental compatibility must be granted. (S.C. Code. Ann. § 58-33-160 and Tr. Vol. 10, Connor at 2419.)

Environmental Impacts Related to Construction S.C. Code Ann. § 58-33-160(1)(b)

SCE&G witness Connor testified that preconstruction activities will include activities such as site exploration, site clearing and grading, the installation of stormwater and erosion control devises, erection of fences and access control measures, excavation, erection of support building such as workshops, and the installation of infrastructure like additional utility lines. (Tr. Vol. 10, Connor at 2419.) These activities are described in the ER in Sections 1.2.2 and 3.9.1. (Tr. Vol. 10, Connor at 2419.) Construction activities involve the actual construction of the nuclear plant and associated facilities. (Tr. Vol. 10, Connor at 2419.) These activities are described in the ER in Sections 3.9.2 and 4. (Tr. Vol. 10, Connor at 2419.) SCE&G witness Connor further testified that construction is scheduled to begin upon issuance of the federal combined operating license ("COL") which is expected mid-2011. (Tr. Vol. 10, Connor at 2419.)

Regarding air emissions, SCE&G witness Connor testified that the expected air emissions during the construction stage are both temporary and minor. (Tr. Vol. 10, Connor at 2422.) Impacts on air quality include air emissions from the construction and operation of an on-site concrete batch plant, the operation of portable generators or similar equipment and the operation

of equipment generally. (Tr. Vol. 10, Connor at 2422.) SCE&G witness Connor testified that air emissions associated with the transportation of concrete will be greatly reduced by the ability to mix the concrete on-site. (Tr. Vol. 10, Connor at 2422.) Fugitive air emissions, such as dust from dirt roads or from loading dirt in a truck, will be addressed through the implementation of "best management practices" during the construction process. (Tr. Vol. 10, Connor at 2422.) SCE&G witness Connor testified that a dust control plan and mitigation measures will be developed before construction and implemented during the construction phase. (Tr. Vol. 10, Connor at 2422.) Air quality considerations may be found in Section 4.4.1.3 of the ER. (Tr. Vol. 10, Connor at 2421.)

Regarding water quality, SCE&G witness Connor testified that water quality impacts are expected to be small. (Tr. Vol. 10, Connor at 2422.) Connor further testified that pursuant to a DHEC requirement, SCE&G will develop a stormwater pollution prevention plan. (Tr. Vol. 10, Connor at 2423.) If DHEC approves the plan, it will then issue a permit requiring the water quality standards of the receiving streams be maintained and not impaired. (Tr. Vol. 10, Connor at 2423.) Water quality impacts may be found in Section 4.2 and 4.3 of the ER. (Tr. Vol. 10, Connor at 2423.)

Regarding wetlands, SCE&G witness Connor testified that wetlands impacts are expected to be minimal. (Tr. Vol. 10, Connor at 2424.) Connor noted that less than one acre of wetlands will need to be filled, but will not be done without appropriate approvals from DHEC and the U.S. Army Corps of Engineers. (Tr. Vol. 10, Connor at 2424.) Wetland impacts are addressed in Sections 2.2, 2.4 and 4.3 of the ER. (Tr. Vol. 10, Connor at 2424.)

Regarding water quality, SCE&G witness Connor testified there will be minimal impact on water quality. (Tr. Vol. 10, Connor at 2424.) Connor noted that during most of the

construction for the first nuclear unit, water will be supplied by the Jenkinsville water system, but that water may also be drawn from the Monticello Reservoir. (Tr. Vol. 10, Connor at 2424.) Connor concluded by testifying that water use during construction is significantly less than during plant operations. (Tr. Vol. 10, Connor at 2424-2425.) Water quality is addressed in Sections 2.3 and 4.2 of the ER.

With regard to solid waste, SCE&G witness Connor testified that debris from the construction will be deposited in a permitted landfill or disposal facility and that reasonable steps will be taken to recycle material. (Tr. Vol. 10, Connor at 2425.)

With regard to fish and wildlife, SCE&G witness Connor testified that impacts are expected to be small. (Tr. Vol. 10, Connor at 2426.) No threatened or endangered species was found on the site or in the Parr or Monticello Reservoirs. (Tr. Vol. 10, Connor at 2425.) Connor testified that there are two bald eagle's nests located approximately 1.7 and 1.8 miles from the facility. (Tr. Vol. 10, Connor at 2425.) Bald eagles are not listed as an endangered species, but are nevertheless protected bird under federal and state law. (Tr. Vol. 10, Connor at 2425.) Connor testified that construction will not impact the eagles or their habitat. (Tr. Vol. 10, Connor at 2426.) Any displacement of wildlife is expected to be minimal relative to wildlife populations in the vicinity. (Tr. Vol. 10, Connor at 2423.) Impacts to fish and wildlife are addressed in Section 4.3 of the ER.

With regard to plant life, SCE&G witness Connor testified that no threatened or endangered plants are present on the site and that the construction will not reduce the existing diversity of plants. (Tr. Vol. 10, Connor at 2426.) Plant life is addressed in Section 2.4 and 4.3 of the ER.

With regard to other environmental considerations, SCE&G witness Connor testified that a benefit of this construction site is that it is the site of an existing nuclear plant which has been determined to be acceptable from a geological and environmental perspective. (Tr. Vol. 10, Connor at 2427.) Notwithstanding the site previously went through an evaluation, Connor testified that additional studies confirmed the original findings that the site is geologically and seismologically acceptable. (Tr. Vol. 10, Connor at 2427.)

With regard to properties listed on the National Register of Historic Places, SCE&G witness Connor testified none are on SCE&G property. (Tr. Vol. 10, Connor at 2427.) Accordingly, Connor testified the construction impact will be small. (Tr. Vol. 10, Connor at 2427.) Although the site does not have properties on the National Register, a monument and grave are located on the site. These two areas are fenced and will not be impacted by the construction or operation. (Tr. Vol. 10, Connor at 2427.)

With regard to the increased traffic on the roads, SCE&G witness Connor testified that SCE&G will coordinate and cooperate with the S.C. Department of Transportation to ease any traffic flow issues. (Tr. Vol. 10, Connor at 2427-2428.) Traffic impact is discussed in the ER in Section 4.4.2.2.4. (Tr. Vol. 10, Connor at 2428.)

With regard to radiation exposure for construction workers, SCE&G Connor testified that exposure will be well below the regulatory limits. (Tr. Vol. 10, Connor at 2428.) Table 4.5-2 and 4.5-3 of the ER shows the estimated annual dose to be 1.1 in comparison to the dose limit of 100 and the annual total body dose of 1.1 in comparison to the dose limit of 25. (Tr. Vol. 10, Connor at 2428.)

SCE&G witness Connor affirmed that SCE&G will conform to all applicable federal, state and local environmental laws. (Tr. Vol. 10, Connor at 2427-2428.) Connor also testified that SCE&G will be monitoring environmental compliance. (Tr. Vol. 10, Connor at 2429.)

In summary, SCE&G witness Connor testified that the overall construction impact on the environment will be small. (Tr. Vol. 10, Connor at 2430.) Using NRC terminologies and content requirements set forth in 10 C.F.R. Part 51, environmental impacts are analyzed and defined as small, moderate or large. (Tr. Vol. 10, Connor at 2418.) SCE&G witness Connor testified that a "small" impact is defined as one for which the environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. (Tr. Vol. 10, Connor at 2431.) Of the categories examined and discussed above, all are described as having a small impact except for the transportation category which is described as moderate to large. (Tr. Vol. 10, Connor at 2431.) See also Table 10.1-1 of the ER.)

Environmental Impacts due to Plant Operation S.C. Code Ann. § 58-33-160(1)(b)

With regard to operation of the facility, SCE&G witness Connor testified that the minimal environmental impacts already present with the operation of the existing nuclear unit will increase by a proportionate amount. (Tr. Vol. 10, Connor at 2432.)

Regarding air emissions, SCE&G witness Connor testified the impact of the operation of the nuclear unit will be negligible in comparison to other proven means of base load generation. (Tr. Vol. 10, Connor at 2433.) Connor testified that when compared to coal and gas emissions, nuclear is superior with the least emissions of criteria pollutants, greenhouse gases, and hazardous air pollutants. (Tr. Vol. 10, Connor at 2434.) Connor further testified operation of the cooling towers will result in some particulate matter emissions, but these emissions will not

escape the property boundary. (Tr. Vol. 10, Connor at 2434.) The radiological emissions are below the "as low as reasonably achievable" goals established by the NRC, which Connor testified, is the most stringent goal established by the NRC. (Tr. Vol. 10, Connor at 2435.) The non-radiological emissions qualify as minor air emissions sources. Air quality impacts related to operation are discussed in Sections 5.5.1.3 and 5.8.1.2 of the ER. (Tr. Vol. 10, Connor at 2435.)

Regarding water quality, SCE&G witness Connor testified the facility will use water from the Monticello Reservoir for its cooling system and plant operations. (Tr. Vol. 10, Connor at 2435.) A water treatment plant will also be located at the site. (Tr. Vol. 10, Connor at 2435.) Connor further testified the wastewater discharges to Parr Reservoir will include cooling tower blowdown, permitted wastewater from auxillary systems, sanitary wastewater, and stormwater runoff. (Tr. Vol. 10, Connor at 2435.) Connor noted the cooling tower blowdown is cooling water that has been chemically treated and may contain residual traces of treatment chemicals. (Tr. Vol. 10, Connor at 2435.) A majority of the wastewater will be discharged into the Parr Reservoir while a small amount will be discharged from the water treatment plant back to the Monticello Reservoir. (Tr. Vol. 10, Connor at 2436.) Connor concluded by testifying that SCE&G will monitor and report the effluent discharge levels in support of its obligation to ensure that all applicable permit conditions are met. (Tr. Vol. 10, Connor at 2436.) Water quality impacts are described in Sections 5.2.3, 5.3.2. and 5.5.1.1 of the ER. (Tr. Vol. 10, Connor at 2436.)

With regard to water quantity, SCE&G witness Connor testified that only surface water, not groundwater, will be withdrawn for the operational use by Units 2 and 3. (Tr. Vol. 10, Connor at 2436.) Water withdrawn for makeup to the circulating water system will be supplied

at an approximate rate of 81cubic feet per second ("cfs") during normal operations. (Tr. Vol. 10, Connor at 2437.) Water for the treatment plant will be withdrawn for the two new units at an approximate rate of 2.2 cfs during normal operations. (Tr. Vol. 10, Connor at 2437.) Figure 5.2-1 of the ER provides a diagram of the water use. (Tr. Vol. 10, Connor at 2437.) Water returned to the Parr Reservoir and the Broad River will not be lost to downstream uses or downstream aquatic communities. (Tr. Vol. 10, Connor at 2437.) In addition, FERC has imposed a minimum downstream flow rate which contributes to the protection of downstream uses that must be maintained, regardless of the use of the water by the facility. (Tr. Vol. 10, Connor at 2437.) Notwithstanding this requirement, the Monticello Reservoir provides SCE&G the capability of operating the facility without impacting the downstream flow of the Broad River. (Tr. Vol. 10, Connor at 2438.) Connor testified that SCE&G theoretically could operate all three nuclear units for approximately two and one-half (2½) months at full capacity, relying only on the resources offered by the Monticello Reservoir, thereby avoiding any adverse downstream flow impacts. (Tr. Vol. 10, Connor at 2438.)

With regard to operational impact to fish, SCE&G witness Connor testified the impact of operations is small. (Tr. Vol. 10, Connor at 2438-2439.) Connor noted that a potential impact could be from the discharge of heated effluent, but evaluations show that only a very small portion of the Parr Reservoir will be affected. (Tr. Vol. 10, Connor at 2439.) Because a small portion of the Parr Reservoir will be affected, Connor testified that most of the reservoir will remain unaffected and the plume will not create a barrier to upstream or downstream movement of fish. (Tr. Vol. 10, Connor at 2439.)

With regard to wildlife, SCE&G witness Connor testified that the operational impact will be small. (Tr. Vol. 10, Connor at 2439.) Connor noted the closest natural habitat will be over 600 feet away and the noise level is below the level that would startle or frighten wildlife. (Tr. Vol. 10, Connor at 2439.)

With regard to non-radioactive solid waste created by the operation of the facility, SCE&G witness Connor testified that the presence of additional workers will add to the current solid waste volume. (Tr. Vol. 10, Connor at 2440.) Connor testified the current practices utilized for the existing nuclear unit will be adapted for use at the new units. (Tr. Vol. 10, Connor at 2440.)

With regard to radioactive solid waste, SCE&G witness Connor testified the facility operations should not result in any high-level or transuranic radioactive wastes. (Tr. Vol. 10, Connor at 2440.) If so, Connor testified the U.S. Department of Energy will dispose of the fuel. (Tr. Vol. 10, Connor at 2440.) The facility, however, will generate low-level radioactive waste and spent nuclear fuel ("SNF"). (Tr. Vol. 10, Connor at 2440.) Connor stated the procedures and disposal methods currently utilized for the radioactive waste disposal of the existing nuclear unit will also be utilized for the new units. (Tr. Vol. 10, Connor at 2440.) Low-level radioactive waste is stored on-site on an interim basis before being shipped to a permanent disposal facility. (Tr. Vol. 10, Connor at 2440.) FOE challenged the storage facilities by arguing there is no long-term storage solution. (Tr. Vol. 10, Connor at 2591.) FOE also argued that Yucca Mountain, the government's planned storage site for spent fuel, will likely not come to fruition. (Tr. Vol. 10, Connor at 2591.) SCE&G witness Connor testified that until the federal government takes possession of the spent fuel, SCE&G will store the spent fuel as it currently does with its existing unit by utilizing spent fuel pools and dry cask storage. (Tr. Vol. 10, Connor at 2591 and 2592.)

FOE questioned the safety of utilizing dry cask storage for a number of years. (Tr. Vol. 10, at 2598.) SCE&G witness Connor responded by stating the dry cask storage facilities will be maintained. (Tr. Vol. 10, Connor at 2598.)

With respect to the impact on public health and the environment, SCE&G witness Connor testified that based on his experience and based on the scientific literature, the impact of radiation to public health and the environment from the operations of nuclear power plants is significantly lower than what people may be exposed to in their everyday lives. (Tr. Vol. 10, Connor at 2442.) Connor testified that scientific literature overwhelmingly supports the conclusion that there is no causative association between proximity to nuclear power plants and increases in cancer rates. (Tr. Vol. 10, Connor at 2442.) Attached as Composite Hearing Exhibit 30 (SJC-4) is a copy of two peer-reviewed scientific studies demonstrating that there is no causal link between cancer and proximity to a nuclear plant. (Tr. Vol. 10, Connor at 2442.) FOE disputed Connor's testimony and pointed to studies and articles that show there are higher cancer and leukemia rates near nuclear plants. (Tr. Vol. 11 at 2632-2634.) Connor responded that he was not familiar with the articles and studies or the respective authors cited by FOE and that the studies of which he is aware show no correlation in over thirty years of study. (Tr. Vol. 11, Conner at 2634.) Connor also testified that given the safety record and results of radiological monitoring reports for the existing nuclear unit, there is no reason to believe that a different conclusion would be warranted here. (Tr. Vol. 10, Connor at 2442-2443.) Lastly, Connor noted that SCE&G has submitted reports to the NRC which give serious consideration to the issue of radiation exposure. (Tr. Vol. 10, Connor at 2444.) The analyses and considerations include the different pathways of radiation exposure, such as direct, airborne, waterborne, aquatic, and ingested. (Tr. Vol. 10, Connor at 2444.) Connor testified that the exposures fell well within the

regulatory limits. Tables 5.4-7 and 5.4-8 of the ER address these analyses and considerations. (Tr. Vol. 10, Connor at 2444.)

With regard to the site's geology and seismological characteristics, SCE&G witness Whorton testified that the site is well-suited for the two new nuclear units. (Tr. Vol. 10, Whorton at 2531 and 2534.) Whorton further testified the seismic design in the plants exceeds the earthquake potential at the site. (Tr. Vol. 10, Whorton at 2534.)

With regard to monitoring the operations to minimizes environmental impacts, SCE&G witness Connor testified that the licenses and permits required for operation of the plant carry extensive monitoring and reporting requirements. (Tr. Vol. 10, Connor at 2446.) He further testified the overall operations of the facility will be subjected to significant monitoring and reporting requirements by federal and state agencies as well as significant direct government oversight. (Tr. Vol. 10, Connor at 2446.) ORS will conduct monitoring pursuant to the BLRA. S.C. Code Ann. § 58-33-277(B).

In summary, SCE&G witness Connor testified that the overall operational impact on the environment will be small. (Tr. Vol. 10, Connor at 2447.) Using NRC terminologies and content requirements set forth in 10 C.F.R. Part 51, environmental impacts are analyzed and defined as small, moderate or large. (Tr. Vol. 10, Connor at 2418.) SCE&G witness Connor testified that a "small" impact is defined as one for which the environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. (Tr. Vol. 10, Connor at 2431 and 2448.) Of the categories examined and discussed above, all are described as having a small impact except for the transportation category which is described as small to moderate. (Tr. Vol. 10, Connor at 2448.) The

transportation impact is lower during operation than during construction. (Tr. Vol. 10, Connor at 2448.)

Justification of the Impact of the Facility Considering the State of Available Technology and the Nature and Economics of the Various Alternatives and Other Pertinent Considerations S.C. Code Ann. § 58-33-160(1)(c)

The justification of the impact of the nuclear plants is set forth in Finding of Fact No. 3. The Commission finds that among the available alternatives, nuclear is the best option to meet base load needs with the least impacts to the environment.

System Economy and Reliability S.C. Code Ann. § 58-33-160(1)(d)

The findings showing nuclear will best serve SCE&G's system in terms of both economy and reliability are set forth in Finding of Fact No. 3. The Commission finds that nuclear is the most appropriate addition to serve SCE&G's system.

Reasonable Assurance of Compliance with State and Local Laws and Regulations S.C. Code Ann. § 58-33-160(1)(e)

Composite Hearing Exhibit 2 at Chart B, pages 1-3 (SAB-7, Application Exhibit J) lists and describes all major non-NRC permits, licenses, and authorizations SCE&G must obtain. No party challenged the information regarding SCE&G's compliance with permitting, licensing and authorization requirements. SCE&G witness Byrne testified SCE&G's nuclear deployment team, which he supervises, has carefully reviewed and considered all requirements and conditions that must be met to receive a COL for the two nuclear units. (Tr. Vol.3, Byrne at 605.) ORS has monitoring and review authority under the BLRA and this Commission must approve any changes that occur to the information set forth in SCE&G's Application.

Accordingly, this Commission finds that SCE&G has put forth reasonable assurance that it will comply with all State and local laws and regulations.

In conclusion, this Commission finds that the proposed nuclear facility will have an overall small impact to the environment.

Public Convenience and Necessity Require the Construction S.C. Code Ann. § 58-33-160(1)(f)

As shown in Finding of Fact No. 2, SCE&G has demonstrated a need for new base load generation. Finding of Fact Nos. 3 and 4 show that nuclear is the most appropriate means by which to meet base load need. Collectively, the record shows that public convenience and necessity are best met by the construction of two nuclear facilities.

Location of the Facility S.C. Code Ann. § 58-33-160(2)

S.C. Code Ann. § 58-33-160(2) provides the Commission authority to modify the location of the proposed nuclear facilities. SCE&G's Application states the proposed site at Jenkinsville is the same location where an existing SCE&G nuclear unit operates. Further, four site evaluation studies conducted over 25 years consistently show Jenkinsville as being the most suitable. (Tr. Vol. 3, Byrne at 551.) The Commission finds no need to modify the location. SCE&G testified to significant cost savings by virtue of utilizing a site that already has an operating nuclear unit. (Tr. Vol. 3, Byrne at 566-567.) In addition, it should be noted that this site was proven suitable when the existing unit was approved. (Tr. Vol. 10, Summer at 2479.) SCE&G also testified that it was able to negotiate construction savings which are reflected in the total EPC contract price. (Vol. 2, Marsh at 177-179 and Tr. Vol. 3, Byrne at 326.) Intervenor Wojcicki argued for a location along the Atlantic Ocean so that ocean water could be used; however, there was compelling evidence against this proposal. SCE&G and ORS both noted the dense population along the coast would require SCE&G negotiating property purchases on which

to build the units, the transmission expenses would likely increase, and the proposed unit, the AP 1000 is not designed to use ocean water. (Tr. Vol. 8, Crisp at 2158-2159 and Tr. Vol. 12, Young at 2807.) ORS panel witness Crisp testified that to move the location of the nuclear units would add significant costs. (Tr. Vol. 9, Crisp at 2234.) The coastal area is also more subject to hurricanes. In summary, the Commission approves the location of the facility as proposed in the Company's application.

E. EVIDENCE AND CONCLUSIONS CONCERNING THE COMPANY'S PROPOSED CONSTRUCTION SCHEDULE

(FINDING OF FACT NO. 5)

S.C. Code Ann. § 58-33-270(B)(1) requires this Order to establish the anticipated construction schedule for the plants including contingencies. SCE&G witness Byrne and ORS panel witness Crisp testified to the anticipated construction schedule ("the milestone schedule") set forth in Application Exhibit E. (Composite Hearing Exhibit 2, Exhibit SAB-5). Application Exhibit E sets forth a milestone construction schedule for the two AP 1000 reactors to be used by the Commission and ORS. Specifically, SCE&G proposes the schedule for use by ORS in evaluating the progress of construction for the two units. The milestone schedule sets forth a completion date for the first unit of April 1, 2016 and the second unit of January 1, 2019 and shows milestones by year and quarter. Much testimony was also elicited regarding Exhibit E to the EPC contract. Exhibit E to the EPC contract is a very specific, day-to-day construction schedule known as the General Project Schedule. (Tr. Vol. 3, Byrne at 581.) See also Composite Hearing 2, Exhibit SAB-3, Part Three.) SCE&G witness Byrne and ORS witness Crisp testified that the General Project Schedule would be necessary for a site construction manager. (Tr. Vol. 3, Byrne at 581 and Tr. Vol. 8, Crisp at 2122, 2268-2269. See also

Composite Hearing 2, Exhibit SAB-3, Part Three.) For purposes of regulatory monitoring pursuant to this Order and the BLRA, the Commission establishes the milestone schedule (Exhibit E to the Application) as the schedule to be utilized for monitoring purposes. Any deviations from the milestone schedule must receive approval by the Commission. The Commission finds that the General Project Schedule is not suitable for regulatory monitoring; however, the Commission reserves its right to request a copy of the General Project Schedule. In addition, the Company will make available the General Project Schedule to ORS upon request.

Notwithstanding the completion dates of April 1, 2016 and January 1, 2019, SCE&G requested a 30 month construction contingency to be applied to the milestone schedule. (Tr. Vol. 3, Byrne at 623.) SCE&G requested the 30 month contingency to allow up to a 30 month delay to all portions of the milestone construction schedule before Commission review is required. (Tr. Vol. 3, Byrne at 623.) A 30 month contingency would effectively allow completion of the two units to be pushed to the end of 2019 for the first unit and to 2022 for the second unit before Commission review is sought. SCE&G witness Byrne testified the Company is requesting the construction contingency in the event the NRC is unable to issue the COL as expected. (Tr. Vol. 3, Byrne at 623.) The COL is a required prerequisite before construction can begin; therefore, any delay in the issuance of the COL will necessitate a delay in construction. (Tr. Vol. 3, Byrne at 623.) Byrne testified that other schedule concerns involve major components being lost in transit or delay due to catastrophes or disasters at the place of manufacture or plant site. (Tr. Vol. 3, Byrne at 623.) Byrne testified that a delay of up to 30 months, while highly unlikely, would not be inconceivable. (Tr. Vol. 3, Byrne at 623.)

ORS presented a different schedule contingency option for consideration and testified to having concerns for an outright 30 month contingency for the duration of the construction. (Tr.

Vol. 8, Crisp at 2125.) Instead of agreeing with SCE&G's requested 30 month schedule contingency, ORS presented testimony limiting the Company's request. However, ORS panel witness Crisp did note that it would be beneficial to everyone if the Company had some flexibility in the milestone schedule. (Tr. Vol. 9, Crisp at 2281.) As a modification to the Company's request, ORS witness Crisp presented the following schedule contingency option:

> If SCE&G exceeds the proposed construction schedule contained in Exhibit E of the Application by 15 months or more, up to the maximum of 30 months, and if SCE&G exceeds cost projections, including the increases allowed in the projections by percentage increases in the Handy-Whitman Index and the application of allowed cost contingencies, then further use of the 30-month construction schedule contingency must be reviewed by ORS prior to SCE&G implementing the schedule adjustment. If ORS and SCE&G do not reach agreement regarding the change in schedule and/or cost projections within 30 days of SCE&G's written request to ORS, then SCE&G, at its option, may seek Commission approval of the requested changes. (Tr. Vol. 8, Crisp at 1907.)

The Commission interprets ORS's option as permitting SCE&G to utilize a 30 month construction schedule deviation unless during the deviation there is a cost higher than put forth by SCE&G in its Application. At that time, SCE&G must seek permission from ORS to utilize any further 30 month contingency, and if no agreement can be reached then SCE&G may seek Commission approval of the requested changes. This option allows SCE&G to utilize the 30 month contingency provided no cost overruns occur; however, once the Company exceeds cost projections, including the increases allowed in the projections by percentage increases in the

Handy-Whitman Index and the application of allowed cost contingencies, SCE&G must consult with ORS to continue utilizing the 30 month contingency for the remaining milestone schedule. The Commission is to be notified in this event. The Commission is mindful that this option may reduce modification requests, particularly if the same milestone needs more than one schedule adjustment.

Lastly, with respect to construction schedule contingencies, the Company requested the ability to accelerate construction by 24 months in the event items are constructed earlier than expected, if NRC licensing takes less time, if weather and site conditions are more favorable than expected or if other circumstances allow earlier construction. (Tr. Vol. 3, Byrne at 624.) There was no opposition to this request. ORS panel witness Crisp testified that such an opportunity could present cost savings and would be in the best interest of SCE&G's customers. (Tr. Vol. 8, Crisp at 1908.)

This Commission finds that the milestone schedule, Exhibit E to the Application, is the appropriate construction schedule from which to monitor progress of the construction. With regard to the Company's requested 30-month schedule contingency, the Commission finds the Company's reasoning for the request compelling; however, this Commission is wary of what amounts to essentially a slide in the construction of two and a half years. For this reason, we grant ORS's option which for all intents and purposes allows SCE&G to utilize a 30-month delay as a trial basis. Once the Company exceeds cost projections, including the increases allowed in the projections by percentage increases in the Handy-Whitman Index and the application of allowed cost contingencies, the trial basis for the 30 month delay ends and SCE&G must seek approval to continue utilizing the 30 month slide on its milestone schedule. The Commission hereby grants a 30-month contingency to the milestone schedule; however,

once a cost overrun as described above occurs, continued use of the 30-month contingency will be discussed with ORS and the Commission will be promptly notified on whether a modification to this Order is warranted to continue or discontinue the 30-month contingency. The Company is reminded that any costs outside of those presented in its Application are to be presented to ORS for review and to the Commission. The request to accelerate the milestone schedule by 24 months is granted as construction acceleration will likely result in cost reductions to the project.

F. EVIDENCE AND CONCLUSIONS CONCERNING THE COMPANY'S CAPITAL COSTS, THE SCHEDULE FOR INCURRING CAPITAL COSTS AND RELATED CONTINGENCIES

(FINDING OF FACT NO. 6)

S.C. Code Ann. § 58-33-270(B)(2) requires this Commission to establish in its Order the anticipated components of capital costs, the anticipated schedule for incurring capital costs and any contingencies. SCEUC's counsel argued that any contingencies must be related solely to schedules not finances; however, the Commission's plain reading of the statute results in a different finding by the Commission. This Commission finds that the BLRA does allow for financial contingencies. SCE&G witnesses Addison, Best and Byrne provided testimony on capital costs and the related schedule. ORS panel witness Crisp also provided testimony on capital costs.

The anticipated components of capital costs of $6,313,376,000 and the anticipated schedule for incurring them, including contingencies, is set forth in Application Exhibits F. Application Exhibit F lists all amounts in 2007 dollars. Of the $6,313,376,000 capital costs, $1,514,340,000 represents contingency dollars and inflation estimates, and $264,289,000 represents capitalized interest in the form of Allowance for Funds Used During Construction

("AFUDC"). Removing these amounts, the base capital cost of the two nuclear units is $4,534,747,000. (Hearing Exhibit 37 includes the AFUDC of $264,289,000.) Based on the evidence discussed below, Application Exhibit F is hereby accepted as the schedule of capital costs.

SCE&G witness Addison testified that SCE&G will own 55% of the two plants and Santee Cooper will own the remaining 45%. (Tr. Vol. 13, Addison at 2917-2918.) Addison also testified that if the Company exceeds the dollar amount of $4,534,747,000 for its 55% share of the two nuclear units, then SCE&G would be required to return to the Commission to seek a modification of this Order. (Tr. Vol. 13, Addison at 2952.) Witness Addison also clarified that SCE&G's and Santee Coopers EPC contract for two units contains a negotiated quantity discount. (Tr. Vol. 13, Addison at 2918.) Addison testified that the approval of something other than SCE&G's request will likely cost more as the benefit of the quantity discount will be lost. (Tr. Vol. 13, Addison at 2918.) With respect to the negotiated contract price for the two nuclear units, ORS panel witness Crisp, who has experience in building plants around the world, testified that SCE&G negotiated a favorable price. (Tr. Vol. 9, Crisp at 2234 and 2285.)

With respect to the capital costs, SCE&G witness Best testified the capital costs include construction costs; transmission costs and AFUDC costs. (Tr. Vol. 7, Best at 1630.) Plant costs are broken into eight categories which are described below:

1) Fixed costs with adjustment – These costs are fixed per the EPC Contract and inflation is not applied. (Tr. Vol. 8, Crisp at 1910 and Jacobs at 2032.) ORS panel witness Crisp testified that contingency risk is principally related to change orders and is predicted to be low. (Tr. Vol. 8, Crisp at 1910.)

2) Firm costs with fixed adjustment A – These costs have a fixed escalation of a specified percentage applied as part of the EPC contract. (Tr. Vol. 8, Crisp at 1911 and Jacobs at 2032.) No inflation index is applied. ORS panel witness Crisp testified that contingency risk is principally related to change orders and is predicted to be low. (Tr. Vol. 8, Crisp at 1911.)

3) Firm costs with fixed adjustment B – These costs have a fixed escalation of a specified percentage applied as part of the EPC contract. (Tr. Vol. 8, Crisp at 1911 and Jacobs at 2032.) No inflation index is applied. ORS panel witness Crisp testified that contingency risk is principally related to change orders and is predicted to be low. (Tr. Vol. 8, Crisp at 1911.) ORS witness Crisp further testified the specified percentage is composed of two parts: 1) an inflation escalator equal to the adjustment percentage in "Firm with Fixed Adjustment A," and 2) a small additional factor that is designated a nuclear industry administration adjustment to compensate Westinghouse for undertaking the project. (Tr. Vol. 8, Crisp at 1911 and Jacobs at 2032.)

4) Firm costs with Indexed Adjustment – Escalation for this schedule of costs is applied periodically under the EPC Contract based on the Handy-Whitman All Steam & Nuclear Generation Plant Index, South Atlantic Region ("Handy-Whitman Index"). (Tr. Vol. 8, Crisp at 1911 and Jacobs at 2032.) Crisp testified that the Handy-Whitman Index, an industry standard, is a reasonable tool for calculating cost adjustments. (Tr. Vol. 8, Crisp at 1911-1912.) ORS panel witness Crisp testified contingency risk is predicted to be low. (Tr. Vol. 8, Crisp at 1911.)

5) Actual Craft Wages – These costs are paid at actual costs and are escalated based on the Handy-Whitman Index in order to establish a base estimate for planning purposes. (Tr. Vol. 8, Crisp at 1912 and Jacobs at 2032.)

6) Non-Labor Costs – These costs are paid at actual costs and are escalated based on the Handy-Whitman Index in order to establish a base estimate for planning purposes. (Tr. Vol. 8, Crisp at 1912 and Jacobs at 2032.)

7) Time & Materials – These costs are paid at actual costs and are escalated based on the Handy-Whitman Index in order to establish a base estimate for planning purposes. (Tr. Vol. 8, Crisp at 1912 and Jacobs at 2032.)

8) Owners Costs – These costs consist of transmission and project target estimates. Transmission costs are paid at actual costs and are escalated based on the Handy-Whitman Transmission Index in order to establish a base estimate for planning purposes. (Tr. Vol. 8, Crisp at 1912.) Project target estimates are paid at actual costs and are escalated using the Gross Domestic Product Chained Price Index. (Tr. Vol. 7, Best at 1642.) Transmission costs are treated as a separate line item and are further discussed below.

Transmission costs, including contingencies and escalations, are expected to be $638,000,000 or about 10% of the total cost of the project. (Tr. Vol. 8, Smith at 2065 and 2066.) ORS panel witness Smith testified as to the Company's transmission planning studies and projects. ORS panel witness Smith testified that the Company utilized sound methods and industry standards to develop the proposed transmission projects and that the projects will be necessary. (Tr. Vol. 8, Smith at 2066.) AFUDC is an amount representing the capitalized interest incurred during the construction of the plant and transmission facilities, calculated in

accordance with regulatory accounting principles and provisions of the BLRA. (Tr. Vol. 7, Best at 1630.) Best also testified that inflation dollars were added since the base costs were calculated in 2007 dollars. (Tr. Vol. 7, Best at 1632.) Composite Hearing Exhibit 16 containing Application Exhibit I shows the various indices and inflation calculations to be applied to the 2007 dollars. ORS panel witness Crisp testified the indices and inflation calculations are appropriate. (Tr. Vol. 8, Crisp at 1912 and 1913.) Further discussion on the inflation indices is included in Finding of Fact No. 10 of this Order.

With respect to contingencies related to capital costs, the Company requested three contingencies related to capital costs. The Company requested: 1) the ability to treat the total contingency dollars as a single pool of funds, 2) the ability to accelerate payments by 24 months in the event items are constructed earlier than expected, and 3) the ability to delay payments by 30 months to comport with the 30 month construction milestone schedule deviation request. (See paragraphs 9, 14 and 15 of the Application.) SCE&G witness Byrne testified these contingencies serve to assure investors that even if there are reasonable deviations from the price and schedule projections contained in the Application, the financial assurances granted by this Order will not be put in jeopardy and the revised rates filings on which the financial plan is based will not be put in doubt. (Tr. Vol. 4, Byrne at 922.) Each of these contingency requests are discussed below.

The Company requested the ability to treat the total contingency dollars as a single pool of funds. (Tr. Vol. 4, Byrne at 921 and Tr. Vol. 13, Addison at 2947.) SCE&G witnesses Byrne and Best testified the contingency dollars were based on SCE&G's assessment of the potential for actual costs to be greater than the forecasted costs based on such things as the necessity for change orders, delays due to weather, delays in receiving licenses and permits, actual inflation

exceeding applicable indices, and estimates of the units of time and materials used to price the project that understate actual requirements. (Tr. Vol. 3, Byrne at 621 and Tr. Vol. 7, Best at 1632.) Byrne further testified the assessments were not based on formulas but were based on sound engineering judgment. (Tr. Vol. 4, Byrne at 621.) With respect to the Company's request to treat the contingency dollars as a single pool, the Company would apply the contingencies on an as-needed basis with any contingencies not used as set forth in Exhibit F to be carried over to the next year. (Tr. Vol. 4, Byrne at 621-622.) Byrne also testified the Company's request would also allow the contingency payments to be accelerated. (Tr. Vol. 4, Byrne at 622.) Byrne concluded by testifying that the Company's request would not change the overall cost of the project, but would allow for greater administrative flexibility as the contingency funds could be moved and used as needed. (Tr. Vol. 4, Byrne at 622.) ORS did not object to this request since the BLRA gives ORS the authority to review expenditures on an ongoing basis. (Tr. Vol. 8, Crisp at 1908.) At a minimum, SCE&G must provide quarterly reports to ORS detailing expenditures. (Tr. Vol. 8, Crisp at 1908.) SCEUC's counsel appeared to argue the contingencies were double counted, but did not present any testimony to support this argument. The Company denied double counting and this Commission finds no evidence of double counting. We hereby grants the Company's request to treat the total contingency dollars of $132,610,000 as a single pool of funds since this amount will be monitored by ORS and granting the request will allow flexibility without increasing the project's cost.

The Company requested the ability to accelerate payments by 24 months in the event items are constructed earlier than expected. (Tr. Vol. 3, Byrne at 624 and Tr. Vol. 4, Byrne at 922.) Specifically, SCE&G witness Byrne noted this contingency allows payment in the event construction is accelerated if NRC licensing takes less time than expected, if weather and site

conditions are more favorable, if components are completed earlier or if other favorable construction circumstances exist. (Tr. Vol. 4, Byrne at 624.) ORS did not object to this request. (Tr. Vol. 8, Crisp at 1908.) This Commission grants SCE&G the ability to accelerate capital payments by 24 months since doing so will result from accelerated construction which will be in the best interest of the rate payers.

The Company requested the ability to delay payments by 30 months to comport with the 30 month construction milestone schedule deviation request. (Tr. Vol. 3, Byrne at 623 and Tr. Vol. 4, Byrne at 922.) The 30 month construction milestone schedule deviation request is discussed in Finding of Fact No. 5. In Finding of Fact No. 5, the Commission granted SCE&G the authority to delay construction milestones by 30 months with certain modifications and in keeping with that grant, this Commission also grants the Company the ability to delay payment so that payment will mirror any milestone delay.

In summary, the Commission finds that Application Exhibit F is the appropriate capital cost schedule for the construction of the two nuclear units. The testimony put forth by the Company and ORS shows that considerable time and research went into developing and negotiating the capital costs as accurately as possible given the information available. Further, the Commission grants SCE&G's request to treat the contingency dollars as a single pool of funds, grants SCE&G's request to accelerate capital payments by 24 months and grants SCE&G the authority to delay capital payments by 30 months to comport with the Commission's granting of a 30 month milestone construction schedule delay.

G. EVIDENCE AND CONCLUSIONS CONCERNING INFLATION INDICES

(FINDING OF FACT NO. 7)

S.C. Code Ann. § 58-33-270(B)(6) requires the Order set forth the inflation indices used by the utility for costs of plant construction, covering major cost components or groups of related cost components. The statute further states that each utility shall provide its own indices, including: the source of the data for each index, if the source is external to the company, or the methodology for each index which is compiled from internal utility data, the method of computation of inflation from each index, a calculated overall weighted index for capital costs, and a five-year history of each index on an annual basis.

Application Exhibit I (Composite Hearing Exhibit 16, EEB-2) sets forth the inflation indices used by the Company in determining the capital costs it expects to pay as well as the sources of the date for each inflation index and a five-year history of each index on an annual basis.

Finding of Fact No. 6 sets forth the cost categories and the inflation index, if applicable, used to calculate the total cost. The inflation indices used are: 1) the Handy-Whitman Index and 2) the Gross Domestic Product Chained Price Index. The Handy-Whitman Index is used to calculate different types of utility construction. (Tr. Vol. 7, Best at 1639.) For purposes of the Application, SCE&G utilized the All Steam, All Steam & Nuclear or All Transmission Handy-Whitman Indices. (Tr. Vol. 7, Best at 1674.) ORS panel witness Crisp testified that the Handy-Whitman Index, an industry standard, is a reasonable tool for calculating cost adjustments and is a very appropriate tool for this project. (Tr. Vol. 8, Crisp at 1911-1912.) SCE&G witness Best testified the most recent Handy-Whitman one-year index change is used to escalate costs for 2008 and the most recent five-year average of this index is used to escalate costs for 2009 and

beyond. (Tr. Vol. 7, Best at 1641.) The Gross Domestic Product Chained Price Index is a commonly-used general escalation index published by the U.S. Government. (Tr. Vol. 7, Best at 1642.) As with the Handy-Whitman Index, the more recent one-year factor in the Gross Domestic Product Chained Price Index is used to escalate costs for 2008 and the most recent five-year average is used to escalate costs for 2009 and beyond. (Tr. Vol. 7, Best at 1641.) There was no evidence disputing the validity of these indices and we hereby approve their use.

Two cost categories, Firm with Fixed Adjustment A and Firm with Fixed Adjustment B contain escalators based upon a fixed percentage. The fixed percentage was the result of negotiations with Westinghouse and are part of the EPC contract. These are also discussed in Finding of Fact No. 6. ORS panel witness Crisp testified that SCE&G, through the EPC contract and its negotiated fixed adjustment rate, established cost controls to protect against price escalation in materials. (Tr. Vol. 8, Crisp at 1912-1913.) SCEUC counsel appeared to argue that escalators were calculated twice in determining the final cost; however, no testimony was put forth proving this and the Commission finds no evidence for this argument. This Commission approves the negotiated fixed percentages for use in calculating the appropriate cost categories in the EPC contract.

H. EVIDENCE AND CONCLUSIONS CONCERNING THE SPECIFIC TYPE OF UNITS AND MAJOR COMPONENTS OF THE AP 1000

(FINDING OF FACT NO. 8)

The Company in its Application at Paragraph 6 states that it selected Westinghouse AP1000 technology based on a number of features including: (1) the quality and safety of the design; (2) the standardized nature of the design; (3) the size and life-cycle economics of the Units; (4) the similarity of the Units' operating characteristics with those of the existing unit at

VCSNS; and (5) Westinghouse's experience and proven track record as a designer and manufacturer of nuclear systems and components.

The reactor technologies considered by the Company were the AP1000, the General Electric Economic Simplified Boiling Water Reactor ("ESBWR") and the Areva Evolutionary Power Reactor ("EPR"). (Tr. Vol. 3, Byrne at 562; Tr. Vol. 8, Dr. Jacobs at 2024.)

Company witness Mr. Stephen A. Byrne, Senior Vice President of Generation and Chief Nuclear Officer, testified that the Company identified and used seven technical evaluation criteria to select the AP1000 units. The evaluation criteria and weighting factors for each were as follows: Ability to Meet Desired Schedule – 25%; Design Features – 20%; Equipment Attributes – 15%; Regulatory Risks to Obtaining COL – 15%; Construction/Organization Attributes – 10%; Long Term O&M Considerations – 5%; and Collaboration Opportunities and Preferences – 10%. (Tr. Vol. 3, Byrne at 563-564.) Using these evaluation criteria the Company determined that the Westinghouse AP1000 technology is the most suitable technology for the Company's needs. (Tr. Vol. 3, Byrne at 564.) Mr. Byrne stated that the principal advantages of the AP1000 technology were found in the areas of Licensing, Ability to Meet Schedule, Cost, Collaboration Opportunities and Technology Preference. (Tr. Vol. 3, Byrne at 564.) The major detractions to the EPR included the larger size of the units; the increased amount and complexity of nuclear safety equipment; and the associated costs of using the active safety design. (Tr. Vol. 3, Byrne at 565.) The major detractions to the ESBWR included the larger size of the unit and the change to a boiling water reactor. (Tr. Vol. 3, Byrne at 566) The Company's nuclear operating experience is with a pressurized water reactor. (Tr. Vol. 3, Byrne at 566.)

Dr. William R. Jacobs, Ph.D, Vice President of GDS Associates, Inc., testified on behalf of ORS that in his opinion the Company conducted a thorough and detailed evaluation of the

existing reactor technologies before selecting the AP 1000 for the new reactors. Dr. Jacobs has more than thirty years of experience in the electric power industry including more than twelve years of power plant construction and start-up experience. (Tr. Vol. 8, Dr. Jacobs at 2019.)

Dr. Jacobs testified that the Company's choice of the AP1000 as the reactor technology for Unit 2 and Unit 3 is reasonable and prudent. (Tr. Vol. 8, Dr. Jacobs at 2025.) He noted that the Company identified a preference for a pressurized water design given the Company's experience at the V.C. Summer Unit 1 and for a passive technology due to the simplified plant design. (Tr. Vol. 8, Dr. Jacobs at 2024.)

While no party testified in support of an alternative reactor technology, Ms. Brockway on behalf of FOE stated her concern that the Company places itself and its customers at great risk by using the "as-yet-unfinished AP1000 design." (Tr. Vol. 3, Brockway at 430.) Mr. Marsh, President and Chief Operating Officer of the Company, refutes this argument stating that the plant has been certified by the NRC and that the pending revisions are enhancements to the existing design. (Tr. Vol. 3, Marsh at 334). Mr. Byrnes testified that Revisions 1-15 have been approved by the NRC and that he sees no problems with obtaining the approvals of the later revisions in time to meet the construction schedule in the EPC contract. (Tr. Vol. 3, Byrne at 635.) Dr. Jacobs also testified that the design is finalized to the point that the probabilistic risk assessment (PRA) can be calculated which is a condition precedent to design certification. (Tr. Vol. 8, Dr. Jacobs at 2081-2082.)

Witness Wilder also expressed similar concerns that there would be a significant learning curve with the AP1000. (Tr. Vol. 6, Wilder at 1283 and 1288.) Dr. Jacobs testified in response to Commissioners' questions that the lessons learned over the last fifteen to twenty years will be applicable to the new generation of plants; and thus, no dramatic learning curve is expected. (Tr.

Vol. 8, Dr. Jacobs at 2183.) Additionally, he noted that while the AP1000 is a next generation reactor (a Generation III+ reactor design certified by the NRC on January 27, 2006), the actual power generation portion of the plant (i.e. the reactor plant, the turbine generator plant, and the auxiliaries) is very similar to the current generation of plants. (Tr. Vol. 8, Dr. Jacobs at 2023; 2183-2184.) By using the pressurized water reactors, the Company is utilizing the operating experience it has built with V.C. Summer Unit 1 and will have the benefit of collaborating with neighboring electric utilities who have indicated a preference for the AP1000. (Tr. Vol. 8, Dr. Jacobs at 2187-2188.) Testimony provided by Mr. Byrnes and Dr. Jacobs reveals that as many as fourteen AP1000 units are proposed for construction in the Southeast. (Tr. Vol. 3, Byrne at 570 and Tr. Vol. 8, Jacobs at 2028.)

We find based on the testimony and evidence that the selection of the AP1000 is reasonable. The Company selected a unit that is based on technology with which it has operating experience and has plans to share the training and experience with those electric utilities that construct AP1000 units.

I. EVIDENCE AND CONCLUSIONS CONCERNING THE QUALIFICATION AND SELECTION OF PRINCIPAL CONTRACTORS AND SUPPLIERS FOR CONSTRUCTION OF THE AP 1000 UNITS

(FINDING OF FACT NO. 9)

S.C. Code Ann. § 58-33-270(B)(5) requires the Commission in its Order to establish the qualification and selection of the principal contractors and suppliers for construction of the plant. SCE&G witness Byrne and ORS panel witnesses Crisp and Jacobs provided testimony on the principal contractors and suppliers. ORS panel witness Jacobs, a nuclear engineer, with more than thirty years of experience in the electric power industry provided detailed testimony

regarding the principal contractors. Composite Hearing Exhibit 2 containing Application Exhibits B and D also provide information on the contractors and suppliers.

SCE&G, for itself, and as agent for Santee Cooper signed an EPC Contract with a consortium consisting of Westinghouse and Stone and Webster, Inc., a subsidiary of the Shaw Group, to build two Westinghouse AP1000 Advanced Passive Safety Power Plants. (Tr. Vol. 8, Jacobs at 2026.) In 2006, Toshiba Corporation acquired Westinghouse from British Nuclear Fuels Limited and subsequently sold a 20 percent share to The Shaw Group. (Tr. Vol. 8, Jacobs at 2026.) The Shaw Group is a minority owner (20% stake) of Westinghouse and wholly owns Stone & Webster. (Tr. Vol. 8, Jacobs at 2029.) Thus, a relationship between Westinghouse and Stone & Webster would be expected. (Tr. Vol. 8, Jacobs at 2029.) Stone & Webster, a 110 year old company, like Westinghouse, has been involved with design, construction and maintenance of nuclear power plants since the earliest days of commercial nuclear power, beginning with the Shippingport reactor in 1957. (Tr. Vol. 8, Jacobs at 2029.) Stone & Webster was also involved in the Parr Experimental Reactor construction. (Tr. Vol. 8, Jacobs at 2029.)

Westinghouse has been a major supplier of commercial nuclear power plant generation from the industry's beginning and is currently the primary designer of nuclear power plants in the U.S. (Tr. Vol. 8, Jacobs at 2027.) Westinghouse designs power plants for the navy and is responsible for providing the design basis for almost 50% of the world's operating nuclear reactors. (Tr. Vol. 8, Jacobs at 2027-2028.)

The AP1000 nuclear plant is offered only on an EPC basis with Westinghouse providing the reactor design and Stone and Webster acting as the engineer and construction manager for the project. (Tr. Vol. 8, Jacobs at 2026.) Thus, selection of the AP1000 reactor design was also, in effect, selection of Westinghouse and Stone and Webster as the consortium members. (Tr.

Vol. 8, Jacobs at 2026.) Westinghouse designed SCE&G's existing nuclear plant in Jenkinsville. (Tr. Vol. 8, Jacobs at 2028.)

ORS panel witness Jacobs concluded that the consortium of Westinghouse and Stone & Webster have the experience and technical ability to build V.C. Summer Units 2 and 3 and their selection as primary contractors is reasonable and prudent. (Tr. Vol. 8, Jacobs at 2030.)

With respect to other contractors and suppliers, a list can be found in Composite Hearing Exhibit 18, Exhibit MWC-1. (Tr. Vol. 8, Crisp at 1900.) Some of the major suppliers are Caterpillar Inc., Chicago Bridge & Iron Company, Siemens Corporation, Ansaldo Camozzi, and Toshiba Corporation. (Tr. Vol. 8, Crisp at 1900.)

ORS panel witness Crisp further testified that The Westinghouse Quality Management System ("QMS") is the basis for the evaluation and selection to the Westinghouse qualified supplier list. (Tr. Vol. 8, Crisp at 1901.) The QMS also provides for on-site supplier audits in accordance with ASME NQA-1 (American Society of Mechanical Engineers Standards and Performance Test Codes; NQA-1 is the Quality Assurance Requirements for Nuclear Facility Applications and Audits). (Tr. Vol. 8, Crisp at 1901.) The Westinghouse QMS program is a process of evaluation and approval of all suppliers of safety-related products and services. (Tr. Vol. 8, Crisp at 1901.) The suppliers are evaluated annually and audited every three years, even suppliers that carry the ASME national accreditation. (Tr. Vol. 8, Crisp at 1901.) Westinghouse also maintains documentation on all acceptable suppliers. (Tr. Vol. 8, Crisp at 1901.)

Lastly, ORS panel witness Crisp testified the EPC contract provides SCE&G with the final and absolute decision on suppliers and equipment. (Tr. Vol. 8, Crisp at 1902.) Article 5 of the EPC contract addresses SCE&G's rights to access and audit subcontractors' facilities, participate in subcontractor audits and to participate in observation and hold points during

manufacturing. (Tr. Vol. 8, Crisp at 1902.) The EPC contract also provides SCE&G with authority to require subcontractors to change manufacturing processes to correct deficiencies and the final authority to "stop work" in order to properly resolve any issue. (Tr. Vol. 8, Crisp at 1902.)

Based on the independent evaluation of ORS panel witnesses Jacobs and Crisp, this Commission finds that Westinghouse and Stone & Webster are qualified as principal contractors and deemed appropriate for the construction and that the EPC contract provides sufficient protection to SCE&G for the performance of other suppliers and contractors.

J. EVIDENCE AND CONCLUSIONS CONCERNING THE 11% RETURN ON EQUITY

(FINDING OF FACT NO. 10)

Mr. Jimmy E. Addison, Senior V.P. and Chief Financial Officer, testified in support of the Company's request for the 11% return on equity to apply to revised rates filings related to VCSNS Units 2 and 3. (Tr. Vol. 4, Addison at 924.) Dr. Douglas H. Carlisle testified on behalf of ORS that the Commission set SCE&G's return on equity at 11% in Order No. 2007-855 dated December 14, 2007. (Tr. Vol. 9, Carlisle at 2325.) The Base Load Review Act provides that the utility may, at its option, use the return on equity established in its most recent general rate proceeding provided that the order was issued no more than five years prior to the date of the filing of its baseload application. (S.C. Code Ann. § 58-33-22(16)). We note that no party presented evidence in support of establishing a different return on equity or challenged the Company's request; and, in conformance with the provisions of S.C. Code Ann. § 58-33-220(16), we find that the appropriate return on equity to be used for computing rate revisions is 11%.

K. EVIDENCE AND CONCLUSIONS CONCERNING RATE DESIGN AND CLASS ALLOCATION FACTORS USED IN CALCULATING REVISED RATES (FINDING OF FACT NO. 11)

In establishing revised rates, all factors, allocations, and rate designs shall be as determined in the utility's last rate order or as otherwise previously established by the Commission, except that the additional revenue requirement to be collected through revised rates shall be allocated among customer classes based on the utility's South Carolina firm peak demand data from the prior year. (S.C. Code Ann. § 58-33-270(D)).

Mr. A. Randy Watts, on behalf of ORS, testified that the Company's rate designs are consistent with the Company's last rate case Order No. 2007-855; and that while the Company utilized South Carolina summer 2007 coincident class peaks to determine the appropriate percentage to apply to Residential, Small General, Medium General, and Large General Service class categories, the Company failed to allocate any system costs or revenue requirement to the wholesale jurisdiction resulting in an overstatement of the revenue requirement to the South Carolina retail class. (Tr. Vol. 9, Watts at 2354-2355.) Mr. Jackson on behalf of the Company and Mr. O'Donnell on behalf of Intervenor SCEUC concurred that the Company had failed to allocate a portion of the additional revenue requirement to its wholesale customers (Tr. Vol. 12, Jackson, at 2744; Tr. Vol. 6, O'Donnell at 1316.) Based on the Company's summer 2007 coincident peak, the resulting allocations to retail and wholesale are 94.33% and 5.67%, respectively. (Tr. Vol. 9, Watts at 2355.) The additional retail revenue requirement should be allocated among the South Carolina retail classes based on each class's contribution to the Company's South Carolina 2007 firm peak demand. (Tr. Vol. 9, Watts at 2356.)

We find that the Company's proposed rate design and class allocation factors, modified to appropriately include the wholesale jurisdiction, are just and reasonable and comply with S.C. Code Ann. § 58-33-270(D) of the Base Load Review Act.

L. EVIDENCE AND CONCLUSIONS CONCERNING THE REQUESTED REVISED RATE SCHEDULES

(FINDING OF FACT NO. 12)

The revised rate schedules admitted without objection as Hearing Exhibit 36 are approved as just and reasonable and properly reflect the Company's current investment in the plant as of June 30, 2008. S.C. Code Ann. § 58-33-270(C) of the Act provides that if revised rates are requested, initial revised rates shall reflect the utility's current investment in the plant using the standards set forth in S.C. Code Ann. § 58-33-280(B). S.C. Code Ann. § 58-33-280(B) provides that the utility must be allowed to recover its weighted average cost of capital applied to all or part of the outstanding balance of Construction Work In Progress ("CWIP") as of a specified date. The Company selected the date, June 30, 2008, stating that the BLRA allows the Company to specify the date for each revised rates filing on which the outstanding balance of CWIP shall be measured. *See* Application at Paragraph 21.

ORS Witness Mrs. Malini Gandhi testified that based on ORS's examination of the books and records of the Company, the total additional revenue requirement is $8,271,484, with a resulting retail service class revenue increase of $7,802,491. (Tr. Vol. 9, Gandhi at 2335.)

These amounts were calculated using total Company CWIP of $65,960,797, as reviewed and examined by ORS audit staff, through June 30, 2008. (Tr. Vol. 9, Gandhi at 2335.) Applying the updated grossed up tax cost of capital of 12.54% supplied by Dr. Carlisle in Hearing Exhibit 26, Mrs. Gandhi determined the additional revenue requirement is $8,271,484. (Tr. Vol. 9,

Gandhi at 2335.) [2] Applying the allocation factor for retail operations of 94.33% provided by Mr. Watts, the retail service class revenue increase is $7,802,491. Mr. Jackson testified the Company will apply the incremental revenue requirement of $7,800,664, as adjusted for rounding, to compute retail rates. (Tr. Vol. 12, Jackson at 2746.)

We find that applying the additional revenue increase of $7,800,664 to the retail service class and using the appropriate allocation factors, the Residential class will have an average increase in rates of 0.43%, the Small General Service class will have an average increase in rates of 0.39%, the Medium General Service Class will have an average increase in rates of 0.41% and the Large General Service Class will have an average increase in rates of 0.34% (See Hearing Exhibit 36, KRJ-3). To put this in context, a residential customer using 1,000 kWh per month would see an increase of approximately $0.48 per month. (Tr. Vol. 12, Jackson at 2879.) Based on the projections in Exhibit M, a residential customer using 1,000 kWh per month would pay $155.00 per month in 2020. (Tr. Vol. 12, Jackson at 2880 and 2883.)

Lastly, SCE&G witness Jackson noted that with respect to basic facilities charges, it has been the Company's practice in rate proceedings to adjust basic facilities charges for retail electric service in even increments, typically of $0.50 or more. (Tr. Vol. 12, Jackson at 2839.) There is no current request to increase basic facilities charges and the revised rate sheets show no such change. (Tr. Vol. 12, Jackson at 2839 and Hearing Exhibit 36.) Accordingly, there are no adjustments to basic facilities charges at this time. The Commission will address any proposed changes to the basic facilities charges when raised in a future proceeding.

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[2] The Company's application included a capital structure and cost of capital based on a snapshot of December 31, 2007. Using updated information, the appropriate weighted average cost of capital at June 30, 2008 is 8.77%. (Tr. Vol. 9, Carlisle at 2323.)

Based on the testimony and evidence in the record, we find that the proposed revised rate schedules set forth in Hearing Exhibit 36, KRJ-4 are just and reasonable and shall be the initial revised rates effective thirty days following the date of the issuance of this Order.

IV. DECREE

IT IS THEREFORE ORDERED THAT:

1. The Combined Application of South Carolina Electric & Gas Company to construct, operate and own 55% of the plant and output of two AP 1000 nuclear units with a total expected capacity of 2,234 MW to be located at the V.C. Summer Nuclear Station site near Jenkinsville, South Carolina is hereby approved. SCE&G's approved ownership is 55% of the plant and output which is 1,228 MW and Santee Cooper's ownership is 45% of the plant and output which is 1,006 MW. Any change in the ownership interest, sharing of the costs or control as set forth herein is subject to approval of this Commission.
2. A certificate of Environmental Compatibility and Public Convenience and Necessity is granted for construction of the two units;
3. SCE&G is required to file the results and recommendations from its DSM study by June 30, 2009, at which time the Commission will open a new docket to explore improvements to SCE&G's DSM programs. The Commission expects SCE&G to take advantage of any economic renewable generation, DSM program opportunities or any combination thereof to offset purchased power contracts or existing generation which negatively impacts the environment provided there is no increased cost to SCE&G's customers. In addition, SCE&G is expected to encourage and promote economic conservation and energy efficiency.

4. The anticipated construction schedule set forth in Application Exhibit E is hereby accepted as the milestone schedule with the following modifications: SCE&G is granted a thirty (30) month schedule contingency applicable to all milestones reflected in Application Exhibit E and to the substantial completion dates of April 1, 2016 for Unit 2 and January 1, 2019 for Unit 3. However, once the Company exceeds cost projections, including the increases allowed in the projections by percentage increases in the Handy-Whitman Index and the application of allowed cost contingencies, continued use of the 30-month contingency will be reviewed with ORS on whether the 30 month contingency may be continued. The Commission is to be notified of any request to modify the contingency. SCE&G is also granted the authority to accelerate the milestone schedule by 24 months.
5. The anticipated components of capital costs of $4,534,747,000 and the anticipated schedule for incurring them, including contingencies, as derived from Application Exhibits F are approved. SCE&G is granted a twenty-four (24) month capital cost schedule contingency, such that if construction or component manufacturing work can be accelerated, SCE&G can accelerate its payments to reflect the accelerated schedule. SCE&G is also granted the ability to delay payment for capital costs by 30 months to comport with the approved 30 month milestone schedule deviation. Lastly, approval is granted to allow use of the total contingency dollars at such times and in such amounts as required during the course of construction of Unit 2 and Unit 3.
6. The return on equity for revised rates calculations shall be 11% as established in Commission Order No. 2007-855.

7. The rate design and class allocation factors, modified to appropriately include the wholesale jurisdiction, are hereby approved.

8. The proposed revised rate schedules set forth in Hearing Exhibit 36, Exhibit KRJ-4 are just and reasonable and shall be the initial revised rates effective thirty days following the date of the issuance of this Order. Further, no changes or adjustments are made to the basic facilities charge at this time.

BY ORDER OF THE COMMISSION:

_____

Elizabeth E. Fleming, Chairman

ATTEST:

_____

John E. Howard, Vice-Chairman

BEFORE

THE PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

DOCKET NO. 2008-196-E

IN RE: Combined Application of South Carolina Electric and Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity and for a Base Load Review Order for the Construction and Operation of a Nuclear Facility in Jenkinsville, South Carolina	)))))	**CERTIFICATE OF SERVICE**

This is to certify that I, Chrystal L. Morgan, have this date served one (1) copy of the **PROPOSED ORDER** in the above-referenced matter to the person(s) named below by causing said copy to be deposited in the United States Postal Service, first class postage prepaid and affixed thereto, and addressed as shown below:

Lawrence P. Newton
57 Grove Hall Lane
Columbia, SC, 29212

Robert Guild, Esquire
Friends of the Earth
314 Pall Mall
Columbia, SC, 29201

Ruth Thomas
1339 Sinkler Road
Columbia, SC 29206

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John V. Walsh, Deputy State Hwy Engineer
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Columbia, SC 29221

David Owen
SC Forestry Commission
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Honorable Gregery Ginyard, Mayor
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Or by Email Service to the parties named below:

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Chrystal L. Morgan

Chrystal L. Morgan

January 30, 2009
Columbia, South Carolina