DIRECT TESTIMONY OF

KEVIN B. MARSH

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2008-196-E

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.

A. My name is Kevin B. Marsh and my business address is 1426 Main Street, Columbia, South Carolina. I am President and Chief Operating Officer of South Carolina Electric & Gas Company ("SCE&G" or the "Company").

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A. I am a graduate, magna cum laude, of the University of Georgia, with a Bachelor of Business Administration Degree. Prior to joining SCE&G, I was employed by the public accounting firm of Deloitte & Touche. I joined SCE&G in 1984 and have served as Controller, Vice President of Corporate Planning, and from 1996 to 2006 I served as Senior Vice President and Chief Financial Officer of SCE&G and SCANA. As Vice President of Corporate Planning for SCE&G, I oversaw the planning effort that resulted in construction of SCE&G's Cope Station coal-fired

generating plant in the 1991-1996 time period. From 2001-2003, while serving as CFO of SCE&G and SCANA, I also served as President and Chief Operating Officer of PSNC Energy. In May of 2006, I was named President and Chief Operating Officer of SCE&G.

Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION IN THE PAST?

A. Yes. I have testified in a number of different proceedings, including:

a) The 1986 proceedings to place in rates the last increment of investment subject to the electric capacity phase-in plan that was adopted when V. C. Summer Nuclear Station ("VCSNS") Unit 1 was placed in service in 1984;

b) The 1991 and 1992 proceedings to site the Cope Generating Station and to place the initial investment in it into electric rates; and

c) The proceedings to place into electric rates the Company's investment in the Urquhart Repowering Project (2002) and the Jasper Generating Station (2004).

Q. WHAT SUBJECTS DO YOU DISCUSS IN YOUR TESTIMONY?

A. My testimony discusses how SCE&G's leadership assessed the needs of its system for new base load capacity in the 2016-2019 time frame and how the Company evaluated the options available to meet those needs. My testimony also discusses the decision to partner with the South Carolina Public Service Authority ("Santee Cooper") to construct two new AP1000

units as VCSNS Units 2 & 3. I will show how this decision supports the needs and interests of the people SCE&G serves, and how it is consistent with SCE&G's long-standing commitment to function as an integrated electric utility that is willing to bear the risk of building the principal base-load units that serve its customers. My testimony discusses how SCE&G has evaluated the risks of nuclear construction and the challenges SCE&G faces in constructing and financing these units. My testimony also introduces the testimony of the other Company's witnesses in this case.

SCE&G WITNESSES

Q. WHO ARE THE OTHER WITNESSES THAT WILL PROVIDE DIRECT TESTIMONY FOR SCE&G?

A. The other SCE&G witnesses providing direct testimony are:

1. **Jimmy E. Addison**, Senior Vice President and Chief Financial Officer of SCANA and SCE&G. Mr. Addison will present an overview of the financial position of SCE&G and will discuss the capital requirements of building VCSNS Units 2 & 3 and the rate impacts of those expenditures of capital; the importance to the financial community of the Base Load Review Act and the order in this proceeding; and SCE&G's financial ability to sustain the investment required to build the units successfully. Mr. Addison will also present the return on equity established

in SCE&G's last base rate proceeding as the return on equity to apply in establishing revised rates in this proceeding.

2. **Stephen A. Byrne**, Senior Vice President for Generation and Chief Nuclear Officer of SCE&G. Mr. Byrne will discuss the selection of nuclear units as the preferred technology to meet SCE&G's need for base load generation and will review the selection and advantages of the Jenkinsville site; the choice of Westinghouse AP1000 units; and the choice of Westinghouse/Stone & Webster as the contractors to build those units. Mr. Byrne will also present and explain the structure of the Engineering, Procurement and Construction Agreement (the "EPC Contract"), and the contingencies contained in the Combined Application in this proceeding. He will explain how the Company will manage the VCSNS Units 2 & 3 construction project and oversee the EPC contractors. Mr. Byrne will review and explain risk factors related to the construction program; issues related to spent fuel storage and disposal, and decommissioning; the Nuclear Regulatory Commission ("NRC") permitting process; and the overall construction schedule for the Units.

3. **Dr. Joseph M. Lynch**, Manager of Resource Planning, SCANA Services, Inc. Dr. Lynch will sponsor the studies that establish the need for additional base load generation in the 2016 time period, and that establish the relative economics of nuclear and non-nuclear generation

alternatives. He will also review the process by which generation alternatives are reviewed by the Company.

4. **David K. Pickles,** Vice President, ICF International, Mr. Pickles will testify concerning energy efficiency and load management issues as well as SCE&G's comprehensive energy efficiency and demand side management review and evaluation initiative for 2009.

5. **Stephen E. Summer**, Senior Environmental Specialist, SCANA Services, Inc. Mr. Summer will provide an overview of environmental permits required for VCSNS Units 2 & 3 and the seismic and environmental studies conducted at the site. His testimony will establish the Company's ability to conform to the applicable environmental laws and regulations related to the Units.

6. **Robert B. Whorton,** Senior Engineer, SCE&G. Mr. Whorton will testify concerning seismic, geotechnical and geological conditions at the Jenkinsville site.

7. **Steven H. Connor,** Tetra Tech, NUS, Inc., Project Manager. Mr. Connor will sponsor the environmental report establishing the environmental suitability of the Jenkinsville site for new nuclear generation units and will present a synopsis of the extensive site characterization studies and other site and environmental information filed with the NRC in the Combined Operating License Application (the "COLA").

8. **E. Elizabeth Best**, Director of Financial Planning & Investor Relations, SCANA Services, Inc. Ms. Best will sponsor the financial and cost projections related to the VCSNS Units 2 & 3 construction program, including the inflation indices and contingency amounts included in those projections. Ms. Best will present the capital structure and cost of capital for SCE&G and schedules of anticipated capital expenditures during the construction period. She will also sponsor the current estimates of in-service expenses for each unit after start-up.

9. **Kenneth R. Jackson**, Vice President, Regulatory Matters, SCANA Services, Inc., Mr. Jackson will sponsor the tariff sheets for the initial rate increase. He will present the rate design and the peak demand allocators as well as other information on which the revised rates request in this proceeding are based.

10. **Hubert C. Young, III,** Manager, SCE&G Transmission Planning, SCE&G. Mr. Young will present the transmission interconnection studies that have determined the transmission facilities that SCE&G will be required to build to connect VCSNS Units 2 & 3 to the transmission grid, and will present the cost estimates for those facilities.

OVERVIEW OF SCE&G'S GENERATING SYSTEM

Q. PLEASE GIVE A SHORT DESCRIPTION OF SCE&G'S ELECTRIC SERVICE TERRITORY AND GENERATING FACILITIES.

A. SCE&G operates an integrated electric utility system that serves over 640,000 customers in 24 counties in central and southern South Carolina. SCE&G owns and/or operates ten (10) coal-fired fossil fuel units (2,484 MW), one (1) cogeneration facility (90 MW), eight (8) combined cycle gas turbine/steam generator units (gas/oil fired, 1,319 MW), eighteen (18) peaking turbines (347 MW), five (5) hydroelectric generating plants (227 MW), and one pump storage facility (576 MW). The total net non-nuclear summer generating capability rating of these facilities is 5,043 megawatts. In addition, SCE&G operates the V.C. Summer Nuclear Station ("VCSNS Unit 1" or "Summer Station") which it owns jointly with the South Carolina Public Service Authority or Santee Cooper. Summer Station was originally rated to generate 900 MW but over the years SCE&G and Santee Cooper have invested capital to increase the net dependable output of the plant to 966 MW on a sustained, reliable basis. Combining SCE&G's fossil-hydro capacity with its two-thirds interest in VCSNS Unit 1, the total net generating capability of all SCE&G facilities is 5,687 MW. When our South Eastern Power Authority contracts (33MWs) and a long-term purchase (25 MWs) from Santee Cooper are considered, our total supply capacity is 5,745 MWs.

Q. WHAT WAS SCE&G'S PEAK DEMAND AND RESERVE MARGIN IN 2007?

A. In 2007, SCE&G's peak demand was 5,248 MW including a 250 MW firm sale to the North Carolina Electric Membership Corporation which when compared to the Company's net generating capability provides for a reserve margin of approximately 9%.

Q. HOW MUCH ELECTRICITY WAS GENERATED BY SCE&G IN 2007?

A. In 2007, SCE&G generated 26,242,850 megawatt hours of energy. Of this energy, the fossil steam plants generated 65%, the nuclear plant generated 18%, the combined cycle natural gas units generated 12%, and the gas peaking turbines and hydro facilities generated 5%.

IDENTIFICATION OF THE NEED FOR NEW BASE LOAD CAPACITY

Q. PLEASE DESCRIBE THE PROCESS BY WHICH SCE&G IDENTIFIED THE NEED FOR NEW BASE LOAD GENERATION IN THE 2016-2019 TIME PERIOD.

A. As the Commission is aware, SCE&G's resource planning department, which is headed by Dr. Lynch, regularly monitors the growth of customer requirements on SCE&G's electric system and evaluates the potential means of fulfilling those requirements. In its 2006 Integrated Resource Plan, SCE&G discussed the need for additional generation

resources on its system in the 2016-2019 time period. Given the amount of the load growth that had occurred on SCE&G's system in the past decade and the declining percentage of base load generation in SCE&G's generation mix, the Company determined that the requirements for new generation should be met by building additional base load generation capacity.

Q. PLEASE DEFINE BASE LOAD GENERATION.

A. Base load plants are fuel efficient generating units that are designed and intended to run for extended periods of time and at high capacity factors, *i.e.,* thousands of hours a year. These 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. In 2007, base load plants generated over 80% of SCE&G's energy.

Q. WHAT TYPES OF PLANTS DO YOU CONSIDER TO BE BASE LOAD UNITS?

A. Base load plants are typically either coal or nuclear fired plants. These plants have relatively low fuel costs per kilowatt hour (KWH) of electricity generated, but are more expensive to build than intermediate and peaking units.

Q. WHAT NEEDS ARE MET BY INTERMEDIATE AND PEAKING UNITS?

A. Intermediate and peaking units, supplemented by hydroelectric plants and alternative energy sources, supply customers with the less than 20% of energy and capacity that is not supplied by base load plants. While intermediate and peaking units have lower capital costs than base load plants, these plants typically have higher fuel costs and are intended to run fewer hours per year than base load plants.

Q. WHAT KINDS OF PLANTS ARE BUILT TODAY AS INTERMEDIATE AND PEAKING UNITS?

A. Most intermediate plants built today are combined cycle natural gas plants. These plants include natural gas fired internal combustion turbines that power electric generators and are coupled with heat recovery boilers and steam turbines to recover energy from the exhaust stream of the gas turbines.

Most peaking plants built today are simple cycle gas plants. These are internal combustion gas turbines without heat recovery boilers. The lack of a heat recovery boiler makes these plants less expensive and easier to build than combined cycle plants, but limits their fuel efficiency.

Q. WHAT HAS CREATED THE NEED FOR BASE LOAD GENERATION ON SCE&G'S SYSTEM IN THE 2016-2019 PERIOD?

A. The need for additional base load generation on SCE&G's system is the result of growth and development in the Company's service territory, which includes a number of the most rapidly growing areas of South Carolina, particularly the areas near Charleston, Beaufort, Northeast Columbia and Lexington. While energy use by some traditional industrial energy users like textile manufacturers has declined, our State's economy has continued to grow in other areas of industry and manufacturing. In addition, residential, commercial and retirement growth continues at a rapid pace.

Q. CAN YOU QUANTIFY THIS GROWTH FROM AN ELECTRIC PERSPECTIVE?

A. Yes. Over the past twelve years, SCE&G has added approximately 149,000 new customers, which amounts to a 31% percent increase in our customer base over that period. During that period, net of retirements, SCE&G installed 2,413 miles of new overhead line, 3,014 miles of new underground line, 86,065 new distribution transformers and 139,988 new service poles to serve customers on its system.

Q. WHAT IS YOUR VIEW OF THE PROSPECTS FOR CONTINUED GROWTH IN SCE&G'S TERRITORY?

A. Recent economic uncertainties notwithstanding, central and coastal South Carolina continue to be very attractive places for new residential and commercial growth. The southeastern United States is one of the most rapidly growing regions in the United States. Within our region, the attractiveness of South Carolina for potential growth has increased as other Southern states like Florida and North Carolina have become more crowded and land and construction have become more expensive. Florida in particular has suffered recently from its exposure to hurricanes. We believe that over the medium to long term, growth will continue in South Carolina at rates that are consistent with past rates of growth. As the electric service provider to approximately one-fourth of the customers in the State, SCE&G is responsible for ensuring that sufficient electric power is available on its system to serve both new and existing customers as this growth proceeds.

Q. WHAT PREDICTIONS OF FUTURE GROWTH HAS THE STATE OF SOUTH CAROLINA MADE?

A. According to the *Global Insights,* South Carolina's population will grow by over 10% between 2008 and 2016. Specific county growth rates include:

AREA	2008	2016	Percent Change	2019	Percent Change
Aiken County, SC	154,370	168,020	8.8%	173,200	12.2%
Beaufort County, SC	151,230	179,300	18.6%	187,270	23.8%
Charleston County, SC	345,780	368,590	6.6%	381,230	10.3%
Dorchester County, SC	129,090	156,830	21.5%	163,970	27.0%
Lexington County, SC	248,330	279,290	12.5%	290,120	16.8%
Richland County, SC	364,160	402,510	10.5%	416,180	14.3%
South Carolina	**4,487,540**	**4,945,900**	**10.2%**	**5,106,000**	**13.8%**

To keep pace with this growth and to meet its service obligations, SCE&G will have to add significant new generation capacity to its electrical system.

EXISTING RESOURCES

Q. WHEN DID SCE&G LAST ADD BASE LOAD GENERATION TO ITS SYSTEM?

A. SCE&G last added base load generation to its electric system when Cope Station went into commercial operation in 1996. Cope Station is a 420 MW pulverized coal plant located in Orangeburg County.

Q. HOW HAS CUSTOMER DEMAND ON SCE&G'S SYSTEM CHANGED SINCE THAT TIME?

A. Since 1996, energy use on SCE&G's system has grown by 5,880 gigawatt hours (GWH) or 31%. By 2016, energy use on the system is forecasted to have grown by an additional 2,499 GWH, for a total growth of 44% since Cope entered service. By 2019, energy use is forecasted to

have grown by an additional 1,671 GWH for a total growth of 53% since Cope entered service.

Q. WHAT MODELING AND FORECASTING WAS DONE TO QUANTIFY SCE&G'S NEED FOR ADDITIONAL BASE LOAD GENERATION IN THE 2016-2019 PERIOD?

A. Extensive modeling and forecasting had been done over a number of years that identified the need for additional base load generation in the 2016-2019 time period. Dr. Lynch will testify in more detail concerning the modeling and forecasting that his department regularly conducts of SCE&G's territorial demand and options for serving it. He will also testify concerning the specific modeling and forecasting that led his group to identify the need for additional base load capacity in the 2016-2019 time period and validated the fact that two Westinghouse AP1000 units, constructed in partnership with Santee Cooper, were the most appropriate and prudent means to meet that need.

Q. WHAT EXPERIENCE DOES DR. LYNCH HAVE IN FORECASTING ELECTRIC LOADS ON SCE&G'S SYSTEM?

A. Dr. Lynch has more than 30 years experience in forecasting electric use on SCE&G's system and he and his staff know SCE&G's system, service territory and customer needs very well. As a member of the SCE&G leadership team, I have worked with Dr. Lynch's group extensively for over 15 years. I have found his group's work to be

technically accurate and to reflect excellent judgment and a great deal of experience concerning how best to meet the needs of SCE&G's system and customers.

Q. HOW DOES DR. LYNCH'S CONCLUSION CONCERNING THE NEED FOR BASE LOAD GENERATION COMPARE WITH YOUR OPERATING KNOWLEDGE OF SCE&G'S SYSTEM?

A. Dr. Lynch's determination that additional base load capacity is needed in the 2016 – 2019 period comports well with the Company's understanding of its operational needs and the current status of its generation fleet. Considering the recent and continuing growth in our territory, and the 12-year period since base load generation was last added to our system, it is entirely logical that SCE&G would be considering adding 614 MW of base load capacity in 2016, and an additional 614 MW in 2019.

Q. PLEASE EXPLAIN.

A. As indicated above, SCE&G last added a base load unit to its system 12 years ago. In the ensuing years, SCE&G has met increased load through the addition of intermediate and peaking generation resources to the system. Specifically, SCE&G added the 852 MW Jasper Station combined cycle unit to its system in 2004, and repowered Urquart Units 1 & 2 from coal to natural gas in 2002. The Urquart repowering added 317 MW of net new capacity to the system.

While these are efficient and valuable plants, they do not have the low fuel costs associated with true base load plants. As load has grown, SCE&G has been required to rely increasingly on these intermediate plants, and on its fleet of aging coal fired units to meet customers' demands.

Q. CAN YOU QUANTIFY THESE CHANGES?

A. Yes. The percentage of base load capacity on SCE&G's system declined from over 75% to 56% during the period 1996-2007. Nonetheless, during 2007, the 56% of our generation capacity represented by base load plants generated over 80% of the energy used on SCE&G's system. Going forward, the percentage of system capacity that is base load capacity will drop to 45% by 2020 unless SCE&G builds new base load capacity to meet forecasted demand growth.

Q. WHAT IS THE AGE OF SCE&G'S BASE LOAD GENERATION ASSETS?

A. Sixty-four percent (64%) of SCE&G's 3,218 MW of base load capacity, or 2,064 MW, consists of coal plants that were built between 1953 and 1973. These plants are on average more than 40 years old today and they will be on average more than 50 years old by 2019. Unless newer base load resources are added to the generation mix, SCE&G will have to rely on these older plants more and more intensely in future years.

1 **Q. MR. MARSH, YOU HAVE REVIEWED THE LOAD FORECASTS**
2 **WHICH IDENTIFY THE NEED FOR NEW BASE LOAD**
3 **CAPACITY IN THE 2016-2019 PERIOD. WHAT IS YOUR**
4 **OPINION CONCERNING THEM?**
5 A. I believe that these forecasts are accurate and reliable based on the
6 information available today. These studies forecast a forward-looking retail
7 demand growth of 1.7% annually compared to an historical growth rate in
8 2.5% range. This forecast reflects significant demand reductions due to
9 anticipated improvements in the efficiency of lighting and appliances
10 mandated by the Federal Government as well as the expiration of contracts
11 for sales to wholesale customers. These growth forecasts do not include
12 potential increases in demand due to new technologies like electric
13 automobiles. To the extent there is any bias in these studies, that bias
14 would be that the load growth projections contained in them are reasonably
15 conservative because they project a lower growth in system load that could
16 be justified under other, equally reasonable assumptions.
17 **Q. IN YOUR OPINION, IS IT APPROPRIATE TO BASE A DECISION**
18 **TO BUILD NEW BASE LOAD GENERATION ON STUDIES THAT**
19 **TEND TOWARD CONSERVATISM IN FORECASTING**
20 **GROWTH?**
21 A. Yes, I believe that it is prudent to base the decision to build new base
22 load generation on a forecast that tends towards conservatism because of

the long lead-times involved in permitting and siting base-load generation and the options that exist for responding to faster-than-expected load growth during the period by making off-system purchases or building additional peaking generation.

THE SELECTION OF NUCLEAR UNITS TO MEET BASE LOAD REQUIREMENTS

Q. WHEN DID SCE&G BEGIN TO EVALUATE ITS OPTIONS FOR ADDING NUCLEAR GENERATION IN THE 2016-2019 TIME PERIOD?

A. SCE&G began the process of evaluating nuclear generation load options in the 2005 time period.

Q. WHEN WAS THE DECISION REQUIRED TO BE MADE?

A. SCE&G determined that to meet its forecasted requirements for new base load generation it would need to make a decision as to the viability of constructing nuclear generation in the 2006-2008 time period. SCE&G has access to good information about the cost and feasibility of gas and coal facilities. As a result, the focus of the evaluation that SCE&G began in 2005 was to develop a comparable understanding of the costs and feasibility of new nuclear capacity. This was particularly important given the increasing cost of environmentally compliant coal units, the likelihood of CO_2 regulation, and the increasing volatility of natural gas prices. As

1 SCE&G refined its understanding of new nuclear generation, it compared
2 that information with information already available to it concerning the cost
3 and risks of the coal and natural gas alternatives.

4 **Q. WHAT DID SCE&G CONCLUDE?**

5 A. After several years of intensive study, evaluation and negotiation, in
6 May of 2008 SCE&G decided to proceed with the construction of two new
7 AP1000 nuclear units that it will build in partnership with Santee Cooper.
8 This decision was made after careful analysis of the data and analysis that
9 our joint leadership team, including Santee Cooper, believed to be relevant
10 and after intensive negotiations with the Westinghouse/Stone & Webster
11 consortium to ensure a reasonable price and reasonable terms for the
12 construction project.

13 **Q. PLEASE DESCRIBE HOW THE AP1000 UNIT WAS SELECTED.**

14 A. As Mr. Byrne will describe in more detail, in the 2005 time frame
15 SCE&G's new nuclear deployment team solicited detailed information
16 from the leading providers of nuclear generation units about the cost,
17 characteristics and regulatory status of their designs. The available units
18 were ranked based on both technical/regulatory and financial criteria. An
19 initial selection of the Westinghouse AP1000 unit was made based on a
20 number of factors which included its size, its passive design, its operational
21 similarity to the existing VCSNS Unit 1, the fact that the NRC had issued a

nuclear design license for the unit, and the fact that there were opportunities to collaborate with other utilities in the licensing and engineering process.

The initial selection of AP1000 units was made in 2005-2006. During 2006, SCE&G began negotiations with the consortium of Westinghouse/Stone & Webster for two AP1000 units. Those negotiations concluded in May of 2008 with the signing of the EPC Contract.

Q. WHY DID SCE&G DECIDE ON TWO UNITS SHARED WITH SANTEE COOPER RATHER THAN ONE UNIT?

A. Due to economies of scale and construction efficiencies, two units built in sequence are cheaper per kilowatt (KW) of capacity than is a single unit. In addition, by separating the commercial operation dates of the two units by thirty-three months SCE&G is better able to match the new generation capacity to the growth in load on its system. Because two full units would be more than SCE&G would need itself, the Company sought a joint venture partner to share the capacity and the cost. We believe Santee Cooper is an ideal partner to take a 45% share in the costs and capacity of each unit.

Q. WHY IS SANTEE COOPER A GOOD PARTNER FOR THIS PROJECT?

A. There are a number of reasons why Santee Cooper is such a good partner for this project.

- Santee Cooper needs the energy these units can generate due to growth on its system.
- SCE&G and Santee Cooper jointly built VCSNS Unit 1 in the 1970s and early 1980s and now have a 26 year history of successfully operating that unit as joint owners. In fact, Santee Cooper already owns a one-third interest in Unit 1 and many of the facilities that will jointly support both the new and existing units.
- Santee Cooper is an agency of the State of South Carolina, with a solid credit rating, and brings great financial strength to the project.

Q. BETWEEN SCE&G AND SANTEE COOPER, WHAT PERCENTAGE OF SOUTH CAROLINA'S ELECTRIC CUSTOMERS WILL BE SERVED BY THESE NEW UNITS?

A. By our calculation, almost 60% of the electric customers in South Carolina are served either directly by SCE&G and Santee Cooper or are served by electric cooperatives or municipal electric suppliers that receive wholesale service from us.

Q. PLEASE EXPLAIN HOW YOU CAME TO NEGOTIATE WITH A CONSORTIUM OF WESTINGHOUSE AND STONE & WEBSTER.

A. Before our negotiations with Westinghouse began, Westinghouse had entered into an arrangement with Stone & Webster under which AP1000 units built in the United States would be engineered and constructed by a consortium of the two companies. SCE&G believed there

1 to be significant benefits to this arrangement and did not object to it in the
2 negotiations with Westinghouse.

3 **Q. WHY DID THIS ARRANGEMENT SEEM BENEFICIAL TO**
4 **SCE&G?**

5 A. Stone & Webster is a very competent and experienced engineering
6 and construction contractor for large construction and power generation
7 projects, and built many of the nuclear units in service today. In addition,
8 having a single construction company build multiple AP1000 units makes
9 sense because it allows all owners of these units to benefit from the
10 expertise Stone & Webster gains in the engineering and construction of
11 multiple AP1000 units.

12 **Q. WHAT OTHER UTILITIES ARE CONSIDERING AP1000 UNITS?**

13 A. Duke Energy, Florida Power and Light, TVA, Progress Energy and
14 Southern Company are considering the construction of AP1000 units for a
15 total of 14 such units counting VCSNS Units 2 & 3. Westinghouse will
16 provide the technology for four AP1000 units being built in China.

17 **Q. WHAT WAS THE PRINCIPAL ALTERNATIVE SCE&G**
18 **CONSIDERED TO NEW NUCLEAR GENERATION?**

19 A. While the specific generation need that SCE&G identified in the
20 2016-2019 period was for base load generation, SCE&G also considered an
21 intermediate gas-fired combined cycle plant as an alternative to a base load
22 coal or nuclear plant. An intermediate plant does not fit SCE&G's needs as

well as a base load plant, but from a pure cost perspective, a combined cycle gas plant was most competitive with nuclear generation, and was the principal alternative against which the nuclear plant was evaluated.

Q. HOW DID COAL FIGURE INTO THIS ANALYSIS?

A. A new coal plant was not competitive with combined cycle gas generation primarily due to the cost of constructing a fully environmentally-compliant coal plant as well as the cost of coal, and the potential costs associated with CO_2 emissions. As Dr. Lynch will testify, coal is competitive with nuclear only with the assumption that there is no cost associated with CO_2 emissions. That is not a reasonable assumption in today's political and environmental climate and considering the life-span of base load units. Even when CO_2 costs are assumed to be very low, combined cycle gas generation still emerges as more competitive than coal.

Q. HOW DID RENEWABLE OR ALTERNATIVE ENERGY SOURCES FIGURE INTO THIS ANALYSIS?

A. Alternative energy sources such as wind, solar, biomass and landfill methane may play a very useful role in supplementing base load generation resources on our system. I do not want to minimize the future role renewable resources may play in supplying South Carolina's future energy needs. But it was our conclusion that at this time, SCE&G could not prudently rely on them as a substitute for new base load generation to meet our customers' needs in the 2016-2019 time period.

Q. PLEASE EXPLAIN.

A. Landfill methane resources are limited in South Carolina. Landfill methane units are capable of providing only a very small amount of power per landfill. And the number of suitable landfills in our area is limited. In addition, Santee Cooper is actively developing many of the resources that are available. Biomass resources, principally forest industry wastes, are available but not in quantities sufficient to meet a significant percent of SCE&G's generation needs.

Because of weather and atmospheric conditions, South Carolina and surrounding areas are not well suited either for wind or solar generation. In South Carolina, attractive wind resources exist chiefly off-shore. In our opinion, the technology to harness off-shore wind resources is still not fully mature. And the cost and permitting issues surrounding off-shore wind resources make them economically difficult to justify. In addition, wind and solar generation is not "dispatchable." *i.e.,* the weather decides when and how much energy is produced by these resources, not the needs of our customers or the operators in our control room. As Dr. Lynch will testify, to replace the energy from VCSNS Units 2 & 3 using solar or wind resources would require either 96 square miles of solar panels or 2,284 individual 3MW wind turbines installed off the South Carolina coast. As a single wind farm, the 2,284 individual wind turbines would cover 188

square miles or the entire length of the South Carolina coast three wind turbines deep.

Such facilities would be prohibitively expensive and would replace only the energy represented by VCSNS Units 2 & 3 since wind and solar operate only about 20-35% of the time. Dispatchable back-up capacity would still need to be provided when weather or atmospheric conditions were not suitable for wind or solar generation.

Q. WHAT ROLE DOES DEMAND SIDE MANAGEMENT PLAY IN THESE ANALYSES?

A. As Dr. Lynch will testify, SCE&G has been very successful in managing its peak load through interruptible service riders, standby generator programs, and similar programs. These peak shifting or peak shaving programs are reducing our peak loads by as much as 4% which exceeds the industry average of 2-3%. The Fairfield Pumped Storage unit allows SCE&G to serve another 576 MW of peak demand for energy using off-peak generation. The resulting peak demand savings are already incorporated in the relevant demand forecasts on which the need for new base load generation is based. And for reasons Dr. Lynch will explain, peak shifting programs have reached a point of diminishing returns given the needs and load shape of our electric system.

In addition, as mentioned above, the analyses performed by Dr. Lynch's group already include substantial reductions in assumed future

demand from new lighting efficiency mandates and appliance efficiency mandates that are being imposed by the Federal Government. SCE&G's experience during the 1970s and 1980s was that the greatest energy efficiency savings from DSM programs at the time came from governmentally-mandated efficiency programs such appliance efficiency standards and improvements in building codes.

Furthermore, in light of greater customer and societal interest in energy efficiency, SCE&G has recently expanded its energy efficiency focus, and as the Company's witness David Pickles will testify, is conducting a comprehensive review of potential programs and offerings. The Company plans to complete that review and bring the results to the Commission for implementation in mid-2009. As a company, we are committed to implementing those programs that provide a reasonable assurance of verifiable benefits to customers and the system. We believe that such programs will be identified through the current analysis and will be successfully implemented.

At present, we cannot be certain of the full impact on energy growth of the new lighting and appliance efficiency standards as supplemented by programs that emerge from the Company's energy efficiency evaluation. However, as Dr. Lynch will testify, the current generation resource plan contains ample room to accommodate the future efficiency savings from governmental or SCE&G programs within the range of reasonable

expectations of success. Energy efficiency is important for many reasons, and should be actively pursued. The resulting efficiency savings can be accommodated in our current resource plan but are not a reasonable or prudent substitute for building the base load generation SCE&G will require in the 2016-2019 time period.

Q. IN THE END, WHY DID SCE&G PICK NUCLEAR GENERATION OVER COMBINED CYCLE GAS GENERATION?

A. Dr. Lynch's group compared the long run costs to our customers of nuclear capacity, based on the construction costs established in the EPC Contract negotiations, with the cost of combined cycle gas generation under a number of sets of assumptions. Those assumptions concerned the future environmental cost of CO_2 emissions, future natural gas costs, future coal costs and future uranium costs. Nuclear capacity was the preferable alternative from a pure price standpoint in the reference case, which reflects the reasonable and conservative assumptions concerning future costs. The reference case shows nuclear is the preferred option from a cost standpoint even assuming relatively low charges for CO_2 emissions (only $15 per ton in the reference case). Gas has a cost advantage over nuclear only if the studies assume no or a very low cost for CO_2 emissions over the planning horizon or very low gas prices. Neither of these conditions appears very likely over the life of a base load plant.

Q. HOW DID NUCLEAR GENERATION PERFORM IN VARIATIONS FROM THE REFERENCE CASE FOR EVALUATING FUTURE COSTS?

A. As Dr. Lynch will testify, nuclear generation proved to be preferable to combined cycle gas generation in most of the more probable variations of the reference case, *i.e.,* scenarios involving higher than anticipated gas prices, higher than anticipated carbon prices, and higher than anticipated coal prices. In fact, nuclear generation proved to be the most beneficial option in precisely those scenarios where the costs of operating SCE&G's other generating units would be highest and the availability of lower cost nuclear power would be of most benefit to customers. Conversely, in those analyses where nuclear generation was a higher cost alternative, the costs of operating existing coal and gas plants would be lower than anticipated and these lower costs would serve to hold overall generation costs down.

Q. WHAT DO THESE RESULTS MEAN ABOUT RISK DIVERSITY FOR SCE&G'S GENERATION SYSTEM?

A. Building nuclear capacity diversifies SCE&G's exposure to increasingly volatile and globalized fossil fuel markets as well as risks related to the future environmental costs associated with CO_2 emissions. The price and environmental risks related to fossil fuels are among the most serious risks that SCE&G and its electric customers face. Adding more gas or coal capacity to meet base load needs in the 2016-2019 period would

increase SCE&G's exposure to those risks. As Dr. Lynch's testimony indicates, if SCE&G were to meet its 2016-2019 capacity needs with natural gas, its generation mix would be 79% fossil fuel based in 2020.

On the other hand, by building new nuclear generation, SCE&G will reduce exposure to those risks. The Company will pay capital costs which, although significant, are largely defined today in the EPC Contract, and will be fully quantified when construction is complete.

Q. HOW SIGNIFICANT A RISK IS GAS AND COAL PRICE VOLATILITY?

A. With specific reference to natural gas generation, volatility in natural gas markets has grown dramatically in recent years. The natural gas market is becoming more globalized as the United States imports more Liquefied Natural Gas ("LNG") to meet demand for natural gas. Over time, this trend may make global LNG markets more and more susceptible to price increases due to global energy demand and global competition for energy resources.

As Dr. Lynch will testify, the volumes of natural gas that are needed to replace the energy that would be generated by two nuclear units is nearly ten times the volume of gas that SCE&G currently supplies to its residential gas customers. Considering the volumes of natural gas required to generate electricity, at this time, we consider it risky and unadvisable to rely on this fuel to meet base load generation requirements where other reasonable

alternatives exist. As to coal prices, volatility in those markets has grown dramatically in recent months, as global competition for coal has caused the United States' net coal exports to increase dramatically. In July of 2008, spot prices for coal which rarely exceeded $50 per ton three years ago have exceeded $150 per ton. These developments seem to signal the globalization of U.S. coal markets, with the price volatility that seems to go along with such a change.

Q. WHAT ARE THE ENVIRONMENTAL ISSUES RELATED TO COAL AND GAS GENERATION?

A. Compared to combined cycle gas units, the two nuclear units proposed here will avoid approximately 510 million tons of CO_2 emissions over their 60 year lives. Compared to coal units, they will avoid approximately 1 billion tons of CO_2 emissions. In fact, by adding this base load nuclear capacity to the system, SCE&G is forecasted to reduce its annual carbon emissions by 21%. The savings in SOx and NOx emissions, while smaller in volume, are nonetheless substantial.

Q. WHAT THEN ARE THE RISKS FROM CHOOSING NUCLEAR GENERATION TO MEET SCE&G'S 2016-2019 BASE LOAD REQUIREMENTS?

A. The risks from choosing nuclear generation to meet the 2016-2019 requirements are outlined in Exhibit J to the Application.

- Mr. Byrne will discuss technical and safety issues at greater length. As he indicates, given the nuclear industry's record of safe operations, the technological and engineering advances reflected in current nuclear plant designs, and the options for dry fuel storage of wastes, SCE&G does not see safety, technical issues, or waste disposal issues as being unmanageable risks related to nuclear construction at this time.
- Mr. Addison will discuss the financial risks related to the nuclear construction project. As he indicates, while the investment community is very interested in the outcome of these proceedings, we believe that if the Commission supports SCE&G's request for a Base Load Review Order along the lines of the Application, financial markets will provide SCE&G with access to the capital required to build these plants on reasonable terms. Important to the investment community's assessment of the risks of this venture will be the Commission's response to the contingencies included in the Combined Application in this matter, which relate to both schedule and price. We believe that with an appropriate order in this proceeding, the financial risk from construction of VCSNS Units 2 & 3 is manageable.
- Fuel risks for nuclear generation are modest, not because prices for uranium and fuel components may not rise in the future, but because nuclear fuel costs are so low as a percentage of total nuclear power costs. Fuel costs typically represent less than 10% of the total cost per

kWh of nuclear power. Given these percentages, it takes a dramatic rise in nuclear fuel costs to create a modest rise in total nuclear generation costs. That said, SCE&G is not aware of any significant constraint on either uranium supplies or the availability of fabrication capacity for fuel assemblies that would indicate the possibility of major price increases for fuel.

- As Mr. Summer, Mr. Connor and Mr. Whorton will testify, the environmental risks and seismic risks associated with VCSNS Units 2 & 3 have been thoroughly studied and assessed and are not significant. SCE&G's 26 year history of successful nuclear operations at the site gives practical support to this conclusion.
- Given the degree of regulatory oversight already given to the AP1000 design, we believe that NRC licensing risk is manageable, and expect a reasonable schedule to be issued for SCE&G's licensing review.
- Construction delays and regulatory or legal changes could jeopardize SCE&G's receipt of Federal Production Tax Credits related to the units. In addition, SCE&G and Santee Cooper have planned to receive a full allocation of credits. However, if final tax regulations and determinations preclude Santee Cooper's and public power entities' eligibility for the credits, SCE&G and Santee Cooper have agreed to share the value of the credits they receive subject to PSC approval. If

Santee Cooper is not allocated credits, SCE&G could receive less than its full anticipated amount of credits.

Q. WHAT THEN ARE THE PRINCIPAL RISKS FROM THE VCSNS UNITS 2 & 3 CONSTRUCTION PROJECT?

A. In our view, the principal risks of nuclear generation are risks related to the construction of the units themselves, specifically the price and schedule risks of the construction project.

Q. HOW HAS SCE&G ADDRESSED THESE RISKS?

A. SCE&G has mitigated these price and schedule risks by selecting a nuclear technology that is well advanced in the NRC licensing process. We are siting VCSNS Units 2 & 3 at a location where the Company has successfully conducted nuclear operations for decades and which is well studied and understood environmentally and geologically and where existing transmissions is located. We have chosen a competent nuclear system supplier and construction contractor to build the units. In the EPC Contract with Westinghouse/Stone & Webster, we have negotiated the greatest amount of price certainty we believe to be reasonably possible consistent with our interest in a low price. And we have built incentives and penalties into that contract for the contractors to meet their cost and schedule commitments.

1 **Q: PLEASE ELABORATE.**

2 A. Throughout the EPC Contract negotiations, which Mr. Byrne will
3 explain in more detail, SCE&G pressed Westinghouse/Stone & Webster for
4 as much price and schedule certainty as could be reasonably obtained
5 without unduly adding to the expense of the units. The AP1000 units
6 clearly are best suited for SCE&G's needs and the needs of the Jenkinsville
7 site, in terms of size and technology.

8 Those advantages aside, the SCE&G leadership team was not
9 willing to proceed with nuclear licensing and construction without a
10 reasonable target price from Westinghouse/Stone & Webster and
11 reasonable and contractually binding assurances as to price and schedule.
12 Obtaining those assurances was the principal reason the negotiations with
13 Westinghouse/Stone & Webster lasted over two years.

14 **Q: WHAT DID SCE&G DO TO OBTAIN REASONABLE**
15 **ASSURANCES OF PRICE AND SCHEDULE FROM**
16 **WESTINGHOUSE/STONE & WEBSTER?**

17 A. SCE&G pressed for price assurances at all stages of the negotiations
18 and took its concerns to the highest levels of Westinghouse, its parent
19 company Toshiba Corp., Stone & Webster, and its parent company the
20 Shaw Group, at the appropriate times. As part of the open book pricing
21 process, our engineers and construction experts carefully reviewed

Westinghouse/Stone & Webster's pricing information, which was contained in the AP1000 "price book" and supporting documentation.

This pricing information was considered very confidential by Westinghouse and was provided to us on the condition that the price books be returned at the end of the negotiations and that the supporting data be reviewed on site at Westinghouse facilities only. This set of documents detailed each element of cost underlying Westinghouse/Stone & Webster's cost estimates for the plants, including its estimates of equipment, labor and materials necessary to each part of the plant and construction effort, as well as the prices it had obtained from other suppliers for major items of equipment.

The price information that Westinghouse/Stone & Webster provided was helpful in verifying that SCE&G had negotiated as favorable a price as SCE&G's was likely to achieve. But let me emphasize that Westinghouse/Stone & Webster cost information was not the basis on which the AP1000 technology was ultimately selected. In the end, the decision to construct AP1000 units was not based on Westinghouse/Stone & Webster's cost information, but on the price and price certainty Westinghouse/Stone & Webster offered and how that price conformed to SCE&G's needs and compared to the alternatives available from other vendors and other technologies.

Q. DID SCE&G EVER BREAK OFF NEGOTIATIONS WITH THE CONSORTIUM?

A. Yes. As Mr. Byrne will testify, SCE&G broke off negotiations with Westinghouse/Stone & Webster in late 2006 to reassess its initial technology selection and to refresh its information concerning the pricing and price certainty available from other suppliers. We went back to all the original potential vendors and asked them to update their proposals. The evaluation of updated responses demonstrated that the AP1000 was still the preferred unit and that Westinghouse/Stone & Webster's pricing, price certainty commitments and price terms were in line with the market and the options available from other vendors.

Q. DO YOU BELIEVE THAT SCE&G RECEIVED APPROPRIATE PRICE AND SCHEDULE COMMITMENTS FROM WESTINGHOUSE/STONE & WEBSTER?

A. Yes, I believe that the EPC Contract with Westinghouse/Stone & Webster does contain appropriate price and schedule guarantees and a reasonable overall cost for a project of this scope. Under the EPC Contact, more than half the contract price falls either in the category of fixed price items or a firm price items which have either fixed or indexed escalators. Fixed price and fixed escalation items include the major equipment components of the plant. Craft wages, construction materials and consumables, and non-nuclear buildings are the principal items that are not

fixed or firm priced, and an additional percentage of these costs will be offered to SCE&G at a fixed price in the coming months.

As to the non-fixed, non-firm elements of the contract, the contract contains a target price, and Westinghouse/Stone & Webster is at risk for a substantial percentage of the agreed-to profit or costs where they have exceeded that target price. By the same token, if Westinghouse/Stone & Webster completes the project below the target price, they are allowed to keep the majority of the savings. We believe that this structure gives the consortium a significant incentive to bring the project in below budget.

Q. HOW WILL SCE&G MANAGE PRICE AND SCHEDULE RISK GOING FORWARD?

A. As Mr. Byrne will testify, SCE&G is assembling a team of engineering and construction personnel, with accounting and administrative support, to monitor all aspects of the construction process and to ensure that the EPC contract is administered as intended. The business processes and structures for this oversight group are being formalized at this time. In all, we estimate more than 50 people will be assigned to this task. At the center of this structure will be a dedicated group of SCE&G personnel that will monitor each aspect of the construction process on a day-to-day basis and will report progress, issues and variances to an executive steering committee that includes me as SCE&G's president, and a senior executive from Santee Cooper and to the SCANA board of directors. This project

will be monitored on a sustained and continuous basis by all levels of the reporting chain as well as dedicated personnel from the Office of Regulatory Staff and multiple dedicated NRC inspectors.

SCE&G'S PHILOSOPHY OF UTILITY OPERATIONS

Q. MR. MARSH, HOW DOES THE DECISION TO PROCEED WITH CONSTRUCTION OF VCSNS UNITS 2 & 3 FIT WITH SCE&G'S PHILOSOPHY OF UTILITY OPERATIONS AS PRESENTED TO THIS COMMISSION IN PAST PROCEEDINGS?

A. In past proceedings, SCE&G has demonstrated to the Commission that it is guided by a philosophy of utility operations that includes the following points:

- **Vertically Integrated Utility Operations** -- SCE&G believes that the Company can best provide reliable, reasonably-priced electric service to its customers if it owns, maintains and operates the base load units which serve them. For that reason, SCE&G has consistently sought to remain a vertically integrated electric utility that owns and maintains its own generation resources. The Company relies on the market and on third parties for short-term and peaking capacity, and for economy and supplemental energy. Otherwise it seeks to own the key assets on which it and its customers depend for reliable and reasonably priced electric service.

- **Commitment to Build What Is Needed** -- With the commitment to owning its own generation resources goes the obligation to build and finance the plants that the system needs when the system needs them. This means accepting the risks of building plants even in unfavorable economic and market conditions. For example, SCE&G built the Cope Plant at a time (1992-1996) when no other investor-owned utilities were willing to build base load generation for fear that deregulation would result in "stranded investment." But SCE&G's system needed additional base load generation and the Company took responsibility to build it. In fact, to my knowledge, Cope was the only investor-owned base load plant completed in the mid-1990s and has been a key resource for serving customers since it was completed. It has been recognized as being among the most reliable and efficient plants in the United States. At today's prices, replacing Cope would cost several times what SCE&G paid for it.
- **Reducing Financial Costs and Risks through Regulatory Transparency** -- From a financial perspective, SCE&G was able to finance the Cope plant successfully in the face of skeptical financial markets because of the early prudency review that it received from this Commission. The Company came to the Commission in 1992, when construction was just beginning, and asked for a full prudency review. The Company sought and the Commission approved staged increases

during the construction period to allow the Company to recover its cost of capital associated with construction spending to reduce ultimate costs to customers. The resulting Cope order was a model for the early prudency reviews and interim rate adjustments written into the Base Load Review Act. In many ways, this proceeding is a continuation of the approach that the Company proposed and the Commission adopted in the Cope proceedings.

- **Sticking to What We Know --** SCE&G has been guided in recent decades by the principle of sticking to what it knows and does well, an approach one investment analyst labeled "plain vanilla" utility operations. In proposing to build VCSNS Units 2 & 3, the Company is proposing to build its new nuclear units on a site where it has operated a nuclear plant successfully for more than 26 years; the units are updated versions of the unit currently operating on that site; the principal suppliers will be the same company that supplied VCSNS Unit 1; and SCE&G's partner in this venture, Santee Cooper, is the same entity with which it has successfully partnered in operating VCSNS Unit 1 for the last 26 years.

In important respects, SCE&G's decision to build VCSNS Units 2 & 3 is a continuation of relationships and activities that SCE&G has successfully managed for decades.

CONCLUSION

Q. IN SUMMARY, WHY IS SCE&G PROPOSING TO PROCEED WITH CONSTRUCTION OF TWO AP1000 NUCLEAR UNITS?

A. As a public utility, SCE&G has an obligation to make reliable, safe and reasonably priced power available to both new and existing customers as our service territory develops. To meet that obligation effectively, SCE&G must add new base load generation in the 2016-2019 time period. For all the reasons set forth above, the logical, prudent and responsible means to meet that need is to proceed with licensing and construction of two Westinghouse AP1000 nuclear units in partnership with Santee Cooper.

Q. WHAT ARE YOU ASKING THIS COMMISSION TO DO?

A. SCE&G respectfully requests that the Commission issue a combined order under the Base Load Review Act, and the Siting Act:

1. Approving the Combined Application in this matter;
2. Granting a certificate of public convenience and necessity authorizing SCE&G to proceed with construction of VCSNS Units 2 & 3;
3. Determining, as provided in the Base Load Review Act, that VCSNS Units 2 & 3 will be conclusively deemed to be prudently constructed and used and useful for utility purposes (a) so long as they are constructed in accordance with the price estimates, with inflation factors and contingencies, that are contained in Exhibit F and Paragraphs 10,

13-16 of the Combined Application; and (b) so long as they are completed in accordance with the scheduled completion dates with contingencies, specified in Paragraphs 8 and 9 of the Combined Application;

4. Authorizing the Company to put into effect the revised rates as set forth in Exhibit N of the Combined Application for service rendered on or after May 1, 2009; and
5. Authorizing other relief as required.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.