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S.C. Supreme Court

THE STATE OF SOUTH CAROLINA
IN THE SUPREME COURT

APPEAL FROM
THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

Appellate Case No. 2013-000529

South Carolina Energy Users Committee, Appellant-Respondent,

v.

South Carolina Electric & Gas Company,
Office of Regulatory Staff, Pamela Greenlaw, Respondents,

and Sierra Club is Respondent-Appellant.

FINAL BRIEF OF RESPONDENT
SOUTH CAROLINA ELECTRIC & GAS COMPANY

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COUNTERSTATEMENT OF QUESTIONS PRESENTED

I.

What is the standard for judging a utility's petition to modify its costs projections under Section 270(E) of the Base Load Review Act?

II.

Are the Commission's factual findings supported by reliable, probative and substantial evidence on the whole record?

III.

Where the Commission found as a fact that construction should continue, is a justiciable controversy presented as to whether the Base Load Review Act does or does not require such a finding in each Section 270(E) costs-update proceeding?

COUNTERSTATEMENT OF THE CASE

On May 15, 2012, respondent South Carolina Electric & Gas Company ("SCE&G") filed with the Public Service Commission of South Carolina ("the Commission") a petition under the Base Load Review Act, S.C. Code Ann. § 58-33-270(E) (Supp. 2012) ("Section 270(E)"). SCE&G sought approval of an updated construction schedule and updated capital costs schedule which included additional capital costs of \$283 million for the construction of two nuclear generating plants underway near Jenkinsville, South Carolina.

The South Carolina Office of Regulatory Staff ("ORS") was made a party to the proceeding in accordance with S.C. Code Ann. § 58-4-30 (Supp. 2012). The petitions of South Carolina Energy Users Committee, the Sierra Club, and Pamela Greenlaw to intervene were granted.

The Commission heard this matter on October 2–3, 2012. On November 15, 2012, the Commission issued Order No. 2012-884, authorizing SCE&G to update its construction schedule and approving approximately \$278 million in updated additional capital costs.

Sierra Club and SCEUC filed petitions for rehearing or reconsideration on November 26, 2012 and November 28, 2012, respectively. On February 14, 2013, the Commission denied both petitions in Order No. 2013-5.

The Sierra Club and SCEUC appealed both Commission orders.

STATEMENT OF FACTS

I. SCE&G's Decision to Choose Nuclear Generation

Base load plants are the most fuel-efficient, reliable and long-lived electric generating units in service today. They run highly loaded twenty-four hours a day for thousands of hours at a time and remain in service for forty to sixty years. Their large generating capacity is the key to their efficiency in converting fuel to electric energy. A small number of base load plants generate most of the electricity used by SCE&G's customers.

By 2005, SCE&G's portfolio of base load plants was stretched thin by load growth,

age, and increasingly stringent environmental regulation. (R. p. 196, lines 4–10, hereafter “R. 196/4–10”.) Accordingly, SCE&G began studies to determine how best to provide additional base load capacity.

Three base load options were available: coal plants, nuclear plants, and combined-cycle natural gas plants. (R. 235/13–15.) SCE&G began modeling each of these options against a range of assumptions concerning future load growth, future fuel prices, and the cost of future carbon regulation. (R. 236/3–7.) In each planning scenario, SCE&G left open a component of future demand which could be met as conditions allowed by energy conservation investment, by wind or solar generation, or by gas-fired peaking units. (R. 235/12 – 236/15.)

These modeling studies consistently demonstrated that coal plants were no longer a competitive option because of likely environmental compliance costs. (R. 698/18 – 699/2.) Combined-cycle gas plants were cost-competitive with nuclear generation only in a few scenarios — those which involved both very low gas prices and zero carbon emission costs. *In re SCE&G*, Order No. 2009-104(A) at 39 (S.C. P.S.C. March 2, 2009). Even in those scenarios, however, adding gas generation was not favored because it would commit three-quarters of SCE&G’s future generation capacity to fossil fuels and would increase SCE&G’s carbon emissions over the life of the plants by 300 million tons. (R. 230/7–9; R. 240/6–9.) Moreover, the gas option would render the system vulnerable to instability in the price of natural gas — among the most volatile of commodity prices — and to the prospect of future carbon regulation. (R. 237/11 – 239/3; R. 694/13–21.)

Nuclear generation had neither of these drawbacks and was the lowest-cost option in almost all the planning scenarios, including the ones most likely to occur.¹ (R. 237/11–17

¹ *In Friends of the Earth v. Public Service Comm’n of South Carolina*, 387 S.C. 360, 369, 692 S.E.2d 910, 915 (2010), the Court reviewed this planning process and observed:

[B]ased on the overwhelming amount of evidence in the record, the Commission’s determination that SCE&G considered all forms of viable
(continued...)

) Moreover, adding nuclear generation would reduce SCE&G's carbon emissions in 2020 to 54% of its 2005 level.² (R. 237/17–20.)

In the earlier appeal by SCEUC, the Court characterized the three-year process for selecting the new units as an extensive study. *South Carolina Energy Users Committee v. South Carolina Public Service Comm'n*, 388 S.C. 486, 490, 697 S.E.2d 587, 589 (2010). In parallel with these studies, SCE&G embarked upon more than two years of negotiations with nuclear plant suppliers, which began with the solicitation of construction proposals in 2005. SCE&G favored the design of the Westinghouse Advanced Passive 1000 (“AP1000”) reactor because of its advanced safety features and its similarity to SCE&G's existing nuclear station, V.C. Summer Unit 1. Order No. 2009-104(A) at 62–63. As the Commission found in 2009, “at the time of selection [the AP1000 unit] was the only one of the competing units that was fully design-certified by the NRC.” Order No. 2009-104(A) at 63; <http://www.nrc.gov/reactors/new-reactors/design-cert/ap1000.html#dcrule>; 71 Fed.Reg. 4464 (1/27/06) (final Design Certification Rule for the AP1000 reactor).³

As it negotiated price terms and other contract terms with Westinghouse Electric

¹(...continued)
energy generation, and concluded that nuclear energy was the least costly alternative source, is supported by substantial evidence.

² The risk of future taxation of carbon is particularly concerning. Based upon the average carbon costs required to be used in future federal rulemaking, inflated to 2017 dollars, the cost of an increase in SCE&G's carbon footprint of 300 million tons over the life of the plants would be nearly \$10 billion, or slightly more than the cost of the Units. “Comparative Economic Analysis of Completing Nuclear Construction or Pursuing a Gas Resource Strategy” (September 27, 2012), Hearing Exh. 9 at 4–5, R. 960–61. In June 2013 the President released the Administration's Climate Action Plan signaling the intent to put in place “tough new rules to cut carbon pollution.” P. 5. <http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf>

³ The 2006 Nuclear Regulatory Commission (“NRC”) design certification incorporated revisions 1 through 15 to the original design application, reflecting changes made during the design review process. As discussed below, in 2008 the NRC issued new regulations that increased the standards nuclear units must meet for aircraft impact resistance. Westinghouse chose to amend the AP1000 design as approved in 2006 to incorporate its response to the new standards. However, the NRC design approval issued in 2006 was final. See <http://www.nrc.gov/reactors/new-reactors/design-cert/ap1000.html#dcrule>

Company and Stone & Webster, Inc., later known as the Shaw Group ("Westinghouse/Shaw"), SCE&G also began collecting data on its anticipated costs as owner in a nuclear construction program, *i.e.*, "owner's costs."⁴ (R. 196/4 – 197/7.) This information came from Westinghouse and other nuclear suppliers, from nuclear industry collaborative groups such as the Nuclear Energy Institute and the Institute of Nuclear Power Operations, as well as from SCE&G's own nuclear operations group with decades of experience at V.C. Summer Unit 1. (R. 401/9–20.)

SCE&G continually refined its cost models during the 2005-2008 period. (R. 197/2–3.) Those models continued to confirm that nuclear generation was the most economical and lowest-risk option for new base load generation. (R. 237/11–13.)

II. The Base Load Review Act

Nuclear construction would be feasible only if SCE&G could finance it. During construction, the Company would have to issue hundreds of millions of dollars of new debt and equity annually to raise the needed capital. Here, SCE&G faced two challenges. The first was how to generate the cash needed to pay debt service while maintaining the Company's financial coverage ratios and cash earnings during the construction period. Without cash revenue to support this new debt and equity, the deterioration of SCE&G's financial ratios would preclude the project.

The Public Service Commission recognized this problem years ago when it authorized utilities to include the financing costs of plants in rates before the plants entered service. This is done by including construction work in progress ("CWIP") in electric rate cases and timing rate cases in staggered intervals during construction. *See, e.g., In re SCE&G*, Order No. 93-465 at 39–41 (S.C. P.S.C. June 7, 1993), where the Commission most-clearly articulates the reasons for permitting this practice. SCE&G used this approach when building its two most-recent base load plants. *In re SCE&G*, Order No.

⁴ Owner's costs are the costs SCE&G will incur for overseeing construction and licensing of the Units and for developing the staff, support facilities, information systems and other resources required to operate the Units. (R. 528/5–18.)

93-465 at 39–41 (S.C. P.S.C. June 7, 1993); *In re SCE&G*, Order No. 2003-38 at 28–30 (S.C. P.S.C. Jan. 31, 2003). These plants, however, took three to five years to build, not ten as is the case for nuclear, and outlays were in the hundreds of millions of dollars, not billions. If this approach were used to support a nuclear construction project, then it would require an annual succession of full electric rate cases during a decade-long construction program. Neither SCE&G nor its investors considered this to be a practical option.

The second challenge facing SCE&G was the threat of protracted litigation over *post-hoc* construction cost disallowances. Investors are sensitive to very small changes in returns. Even relatively small construction cost disallowances can disproportionately damage returns. The threat of retrospective disallowances can discourage investment to the point where nuclear construction becomes impossible.

In response, SCE&G, other electric utilities, and the Electric Cooperatives of South Carolina proposed and the General Assembly adopted the Base Load Review Act (“BLRA” or “the Act”). S.C. Code Ann. §§ 58-33-210 *et seq.* (Supp. 2012). The Act deals with the cash flow problem by allowing annual rate adjustments to cover the financing costs of approved nuclear projects over the course of construction. S.C. Code Ann. § 58-33-280 (Supp. 2012). Under the Act, financing costs — *not the cost of the plant itself* — may be recovered during the period of construction.⁵ The Act deals with the problem of cost disallowances by providing that so long as the utility is constructing the plant within approved cost and schedule projections, challenges cannot be brought thereafter to disallow individual cost items on prudence grounds. S.C. Code Ann. § 58-33-275(C) (Supp. 2012). The entire construction plan and accompanying cost schedules must be approved by the Commission after review by ORS and a contested case hearing, and modifications to those schedules are permitted during the course of construction with Commission approval. S.C. Code Ann. § 58-33-270(E) (Supp. 2012).

⁵ The appellants are incorrect in saying that the Base Load Review Act allows the utility to recover the capital costs of the plant before construction is completed. It does not.

Appellant Sierra Club portrays the BLRA as a radical departure from traditional ratemaking methodology. It is not. The earlier practice of adding CWIP to rate base allows a utility to recover its financing costs on the ongoing construction investment just as the BLRA now does. However, electric rate cases are not designed to provide the focused and intensive prudency reviews which hallmark the BLRA. Not least important, the CWIP method would make it harder if not impossible to win the confidence and support of the financial community — an essential ingredient of success.

III. The Initial BLRA Filings

After two years of intensive negotiation, SCE&G signed an Engineering, Procurement and Construction Agreement (“the EPC Contract”) on May 23, 2008 with Westinghouse/Shaw, calling for the construction of V.C. Summer Units 2 and 3 (“the Units”). On May 30, 2008, SCE&G filed with the Commission a Combined Application for a Certificate of Public Convenience and Necessity and Environmental Compatibility, S.C. Code Ann. §§ 58-33-100 *et seq.* (1976 & Supp. 2012), and a Base Load Review Order for the project. S.C. Code Ann. §§ 58-33-220(6)–(7) (Supp. 2012); § 58-33-260 (Supp. 2012).⁶ (R. 196/10–22.)

ORS thereupon hired additional staff and retained outside experts in nuclear licensing and construction to review the combined application. These experts scrutinized the Company’s cost projections and all other matters presented in the combined application. (R. 197/9–10.) In December 2008, the Commission received evidence from 21 expert witnesses in hearings which produced a transcript of more than 2,000 pages.

In these hearings SCE&G provided the Commission with a comprehensive review of the risk factors attending the project. *In re SCE&G*, Order No. 2009-104(A) at 90–91 (S.C. P.S.C. March 2, 2009); Hearing Exh. SAB-4, Exh. J (R. 933). Those risks included —

⁶ The BLRA envisions filing a BLRA application at the start of construction. That is why the statute provides for the pre-construction siting application to be combined with the initial BLRA application.

- risks related to delays in the issuance of permits by the NRC and other permitting delays;⁷
- risks related to recruiting and hiring staff for the Units;⁸
- risks related to design changes evolving during the course of construction;⁹
- risks related to siting transmission lines, which would only take place later in the project;¹⁰ and
- risks related to major events in the nuclear industry — events akin to the subsequent Fukushima disaster — that could raise safety concerns and might result in additional costs or delays.¹¹

In recognition of the risks related to the project, and to ensure that it placed before the public the full amount of the costs it anticipated for the project, SCE&G included a \$438 million contingency in the cost projections for the project. Order No. 2009-104(A) at 96–97.

At the conclusion of the proceedings, the Commission issued Order No. 2009-104(A) finding that SCE&G had demonstrated the reasonableness and prudence of its cost projections. SCEUC appealed that order and challenged the approval of contingency

⁷ SCE&G told the Commission: “[T]he NRC is in the early stages of the current licensing cycle and potential delays in the NRC licensing process can delay the construction schedule,” and “[a]t this time, the most significant risk related to NRC licensing appears to be . . . the risk of delay in the issuance of the COL, the resulting disruption of the construction schedule, and the increase in construction costs that such a delay would represent” Hearing Exh. SAB-4, Exh. J, pp. 3–4 (R. 923–24).

⁸ “Adding two new AP1000 units to the site will require significant expansion of SCE&G’s existing staff and capabilities. Recruiting, training and retaining the required staff is one of the risks related to operation of the plant.” *Id.* at p. 10 (R. 930).

⁹ “[T]here is engineering work related to the Units that will not be completed until after the COL is issued. Any engineering or design changes that arise . . . are potential risks which could impact cost schedules and construction schedules” *Id.* at p. 6 (R. 926).

¹⁰ “[T]he Company does not plan to design and permit off-site transmission facilities for [the Units] . . . until the later stages of plant construction. This delay will allow the transmission lines to be configured to suit the needs of SCE&G’s transmission system as they may evolve over the course of the construction period. The actual transmission costs associated with the Units will depend on the final routing and design of the transmission facilities, [and] the cost of right of way along the route chosen” *Id.* at p. 10 (R. 930).

¹¹ “[E]vents that are hypothetical and difficult to predict could result in a change in the current level of political, legislative, regulatory and public support for nuclear generation in general or for the Units specifically.” *Id.* at p. 5 (R. 925).

costs. Upon review, this Court held that costs which could not be identified and itemized to specific budget items could not be included in the initial BLRA capital costs forecasts. *South Carolina Energy Users Committee v. South Carolina Public Service Comm'n*, 388 S.C. 486, 495-96, 697 S.E.2d 587, 592-93 (2010). Accordingly, as the Court recognized in the earlier SCEUC appeal, the utility is required to update its construction cost estimates and submit them to the Commission for approval as those itemized costs change during the construction process.¹² *Id.* at 496, 697 S.E.2d at 592–93.

In 2010, SCE&G updated its BLRA cost forecasts to remove the \$438 million contingency amount, while adding \$174 million in itemized costs that it previously would have accounted for using the contingency. (R. 198/19 – 199/3.) The Commission approved those updates by Order No. 2011-345. (R. 199/3–5.) This order was not appealed by any party.

IV. The Current Proceeding

In 2012, SCE&G brought to the Commission \$283 million in additional itemized spending on the project which SCE&G had identified since Order No. 2011-345. Of that amount, \$137.5 million relates to Change Order 16. This change order includes costs related to four events: (1) redesign of the shield building; (2) a licensing delay caused by the shield building redesign; (3) higher strength steel for certain structural modules; and (4) rock conditions at the site not earlier disclosed by standard test drillings. The remaining \$145 million in additional itemized spending includes owner's costs, transmission costs, and other change orders.

A. Events Leading to Change Order 16

1. Shield Building Redesign

¹² The Court's interpretation of the BLRA in the earlier SCEUC appeal has resulted in an enhancement in the frequency and form of Commission oversight of nuclear construction under the BLRA. The Court's decision produced an ongoing scrutiny of the construction process which the Company has embraced, as evidenced by the meticulous showing made to the Commission in this proceeding. Under the BLRA as so interpreted, the transparency and level of scrutiny of this huge construction process is unmatched in any other regulatory regime in the country.

The Westinghouse AP1000 reactor received Final Design Approval from the NRC in 2006. However, before SCE&G, Santee Cooper, and Westinghouse/Shaw signed the EPC Contract in March 2008, the NRC had issued a draft regulation requiring that the shield buildings of nuclear reactors be strengthened to better resist an aircraft impact.¹³ Not until the draft regulation was finalized and design work was undertaken was it possible to judge the scope of the work required to conform the AP1000 reactor to this new standard. The redesign process proved to be more difficult and expensive than expected. (R. 319/11 – 325/13.)

When the EPC Contract was signed, Westinghouse planned to strengthen the shield building by increasing the thickness of its reinforced concrete walls. (R. 319/6–18.) This was a simple and relatively low-cost solution. However, after the final NRC standards were issued and the engineering work had begun, it became clear that walls thick enough to satisfy the revised standards would reduce the internal volume of the containment building to an unacceptable extent. (R. 319/21 – 320/2.) Rather than redesigning the entire nuclear island structure, Westinghouse chose to move to a composite steel design for the shield building. (R. 320/2–4.) In this design, the concrete walls of the shield building are poured between an inner and outer shell of three-quarter inch steel plates. (R. 320/4–5.) Metal studs protruding from the interior wall of the plates are substituted for rebar to reinforce the concrete core. (R. 320/5–7.)

The design, permitting and construction costs of the new shield building design represent by far the largest cost component of Change Order 16. (R. 807/19–20.)

2. *Readjusting the construction schedule because of delay in the issuance of the license*

The redesign of the shield building required NRC review and approval of the composite steel construction. (R. 320/13–15.) The composite steel design was not new.

¹³ Aircraft impact resistance has long been a requirement in the design of shield buildings. The new regulations were intended to increase existing requirements. (R. 319/6–13.)

(R. 320/13–15; R. 388/11–24.) However, U.S. design codes had not yet been issued for it. (R. 320/15–17.) As a result, the NRC treated the design as novel and required an extensive testing program to establish its performance under various loading and stress conditions. (R. 320/18–20.)

The testing program took on a life of its own. (R. 324/3–10.) Each round of testing required fabricating full-sized test panels, filling them with concrete, allowing the concrete to cure for four weeks, subjecting the panels to test loads and stresses, and submitting a report to the NRC. (R. 324/13–18.) Each submission led the NRC to require additional tests. Each testing cycle meant constructing a new set of sample panels, followed by a new round of testing and reporting. (R. 324/6–21.) Testing lasted four years, from 2008 to 2011. (R. 323/19.) The testing and retesting of the shield building design strained relationships between Westinghouse and the NRC staff. (R. 324/21 – 325/2.)

SCE&G and Westinghouse had based the construction schedule for the Units on published NRC guidance that it would take a little more than three years to complete review of changes to the approved AP1000 design and to review SCE&G's site-specific permit application to build the Units at Jenkinsville. At the time the EPC Contract was signed, the NRC estimated that the Combined Operating Licenses ("COL") would be issued in mid-2011. (R. 389–392; R. 846–49.) Accordingly, the scheduling and pricing in the EPC Contract was based on the understanding that the COL would be issued in mid-2011, more than three years after the COL application was filed. (R. 390/13 – 391/23.) Delays related to testing the shield building redesign pushed this date out by approximately nine months. (R. 322/19–21.) The delay in the COL required the construction schedule for the project to be reset. (R. 322/21 – 323/2.) Completion of Unit 2 was delayed by nine months. To offset the cost of Unit 2's delay, and in light of the need to close several older coal units, completion of Unit 3 was advanced. Closing the gap between the Units allowed construction to proceed more efficiently. Overall, the cost of construction rescheduling caused by the COL delay represented a small part of the total amount of Change Order

16.¹⁴

3. *Use of Higher Strength Steel in Modules*

Gary C. Jones, P.E., a highly experienced power plant construction engineer retained by ORS, testified that the changes in design of the structural modules were similar in origin to the changes in design of the shield building. (R. 810/13–22.) During design review, the NRC required the use of higher strength steel in the modules. This process was further complicated by the NRC's refusal to accept the redesign previously approved by it on a preliminary basis. (R. 807–10.) This change resulted in additional design and engineering costs, fabrication costs, and materials expense. (R. 332/5–12.)

4. *Unpredicted Rock Conditions*

The estimated cost of foundations for the Units was based on rock conditions on the site as verified by industry-standard test drillings. (R. 333/14–15.) Upon excavation, it was discovered that in places under Unit 2 the surface of the rock was deeper than revealed by the test drilling. (R. 333/15–21.) This required additional excavation and the placement of more concrete than was originally provided for in the EPC pricing. (R. 333/14–21; R. 334/9–12.)

B. Change Order 16 Negotiations

Westinghouse/Shaw submitted a claim for additional costs incurred in connection with the shield building redesign, the use of higher strength steel in the modules, the construction rescheduling caused by delay in the issuance of the COL, and the cost of additional excavation and fill. (R. 316/4–14.) The EPC Contract permitted Westinghouse/Shaw to recover additional costs resulting from "an order or other action by a governmental authority that is not the result of the negligent or willful acts of the party

¹⁴ Westinghouse/Shaw is in a dispute with other parties concerning these cost matters and so treats the individual cost amounts contained in Change Order 16 as confidential. (R. 318/2–6.)

claiming uncontrollable circumstances.”¹⁵ (R. 321/6–14.) The contract also permitted Westinghouse/Shaw to recover unanticipated costs related to site conditions. (R. 333/14–21.)

SCE&G’s engineers and construction experts audited the additional costs claimed by Westinghouse/Shaw and challenged those found to be unwarranted. In response, Westinghouse/Shaw revised its claim to eliminate challenged costs and reduced its demand to \$188 million. This amount was fully documented. However, SCE&G challenged Westinghouse/Shaw’s contractual right to recover the full amount of its claims related to shield building redesign, use of higher strength steel in modules, and COL delay.¹⁶ (R. 322/4–10; R. 333/4–10.)

SCE&G convinced Westinghouse/Shaw to accept a settlement of \$137.5 million for these claims — 73% of the actual costs verified by SCE&G’s audit. (R. 210/10–12; R. 317/1–6.) The parties agreed to offset \$15.9 million of the original claim by narrowing the gap between the completion of the two Units, allowing Westinghouse/Shaw to improve construction efficiencies. (R. 331/1–10.) The settlement avoided potentially risky and divisive litigation which could have distracted the project team from its crucial duties during construction. (R. 331/14–20.)

Gary Jones, the expert witness retained by ORS, reviewed these costs and the settlement. Mr. Jones had full access to all data and supporting documentation related to

¹⁵ Appellant SCEUC claims that in SCE&G’s 2008 BLRA proceeding, witness Stephen A. Byrne mischaracterized the definition of the term “uncontrollable circumstances” to include only “severe weather, war/sabotage/terrorist attack.” Hearing Exh. J in that proceeding included Chart A (R. 933), entitled “Certain Risks Associated with Construction and Operation of the Facilities” which, under the heading “Uncontrollable Circumstances,” gave examples of such circumstances as “severe weather” and “war/sabotage/terrorist attack.” The EPC Contract includes within the definition of “uncontrollable circumstances” those circumstances caused by an order or action by a governmental authority that is not the result of the negligent or willful acts of the party claiming the uncontrollable circumstance. (R. 321.) The Commission and SCEUC had available to them in the 2008 proceeding the entire EPC Contract containing the full definition of uncontrollable circumstances.

¹⁶ The claim for additional costs from Unit 2 rock conditions was not disputed. (R. 334/3–5.)

the settlement.¹⁷ He testified that the four costs reflected in the settlement were “reasonable and in line with expected values” (COL delay); “reasonable” considering the “scope and complexity of changes” (shield building redesign); “represent a reasonable cost” (structural module strengthening); and “reasonable” (rock conditions). (R. 807/15–16; R. 810/9–12; R. 812/4–6; and R. 813/1–2.)

C. Owner’s Costs

In 2008, there were no existing data on the cost to an owner in building an AP1000 unit. The AP1000 design is new. No new nuclear construction projects have been undertaken in the United States since the 1970’s. SCE&G based its 2008 estimates of owner’s costs on information gathered from nuclear technology suppliers, licensing consultants, industry organizations such as the Nuclear Energy Institute and the Institute of Nuclear Power Operations, other prospective AP1000 owners, and the staff of its own nuclear station, V.C. Summer Unit 1. (R. 567/18 – 568/5.) The initial estimate of owner’s costs was reviewed by ORS and its in-house and outside experts, and was approved by the Commission in the 2008 BLRA proceeding. (R. 568/6–8.)

In the three years following 2008, regulatory and industry standards changed concerning key drivers of owner’s costs. As a result, in 2011, SCE&G identified and itemized additional owner’s costs totaling \$131.6 million. (R. 532.) These are not annual costs but are spread out over the life of the project. The Company presented these additional owner’s costs broken down into sixteen summary budget categories. (R. 532.) The figures in each category were based on “a separate set of schedules that breaks these summarized costs down month-by-month from project inception to date and year-by-year for the period 2013 to 2018.” (R. 533–34.) These schedules, in turn, were based on budgets prepared by each of the 78 individual cost centers that support the project directly.

¹⁷ As to the shield building redesign, Mr. Jones testified: “Several detailed documents and reports representing well over a thousand pages were provided to ORS to justify this cost increase.” (R. 807.) Mr. Jones testified to the same effect regarding structural modules (R. 810), rock conditions (R. 812), and shield building redesign (R. 807).

(R. 533.) These budgets are updated annually and are adopted only after rigorous management review at multiple levels to ensure their reasonableness. (R. 309; R. 530/13.) The Company provided testimony detailing the item-by-item budget reviews that led to the current owner's cost projections, as well as the steps senior management and specially-convened challenge panels took to challenge and verify all budget projections before they were accepted. *Id.*

Supporting documentation for these cost center budget figures included "staffing and training plans, current corporate salary structures, outside services budgets, and other cost center specific budget documents as available." (R. 534.) SCE&G made the budget detail and supporting documentation for each of these cost center budgets available to ORS and any party willing to agree to respect the confidentiality of the supporting information, which included, among other things, individual employee compensation information. To ensure additional transparency, the Company identified and examined nine major cost drivers that account directly for over 80% of the total change in owner's costs.

1. *Emergency Planning/Health Physics*

In 2008, firefighters, health physics workers and other emergency personnel at nuclear stations could perform a broad range of operating duties in addition to their emergency duties. (R. 417/6–9.) Members of a plant fire brigade, for example, could be plant maintenance mechanics who were cross-trained for emergency fire duty. (R. 362/5–17.) In addition, utilities could count on emergency personnel from one unit to assist another unit in an emergency. (R. 417/6–9.)

After Fukushima, the NRC published guidelines that restrict the collateral duties that emergency response personnel can perform. (R. 417/9–18.) Each unit must now be able to respond to emergencies with its own staff for an extended period of time without outside support even from sister units. (R. 417/12–18; R. 437/12–25.) These new regulatory guidelines created the need for 40 additional full-time equivalent employees ("FTEs") for

the project at a cost of \$5.9 million. (R. 418/3–4.)

2. *Operator/Training Margin*

When construction of the Units is complete, SCE&G must have a sufficient number of licensed reactor operators to staff both Units twenty-four hours a day, with allowances for leave and training time. (R. 418/9–18.) The NRC will not allow nuclear fuel to be loaded for acceptance testing until sufficient operators are available for permanent operation. Training and licensing nuclear reactor operators takes three to seven years. (R. 418/16–18.)

Many reactor operators entered the field 30-40 years ago during the last nuclear construction cycle. (R. 419/6–9.) The members of this cohort are beginning to retire. (R. 419/8–9.) Because of changes in the military, a smaller number of candidates with prior nuclear experience are entering the private workforce. (R. 419/9–11.) Moreover, since 2008, the NRC and industry oversight groups have tightened reactor licensing standards and increased the difficulty of licensing exams. (R. 419/15–17.) Failure rates for reactor operator candidates have increased significantly. (R. 419/17–21.)

For these reasons SCE&G has found that it must hire less-experienced candidates and must train them to meet higher licensing standards while facing greater competition to retain them. (R. 419/19–21.) Accordingly, SCE&G has increased the number of reactor operator candidates that will begin training, adding an additional 30 FTEs and \$17.4 million to project forecasts. (R. 420/7–9.)

3. *APOG/Programs/Procedures*

Before fuel can be loaded, the NRC must approve the programs and procedures required for operating and maintaining each unit safely. (R. 420/20–21.) Approximately 100 major programs and 4,200 individual procedures must be developed, documented, and approved for the AP1000 unit. (R. 420/15–19.) Developing these programs requires access to Westinghouse/Shaw's proprietary design information. (R. 421/2–14.)

In 2008, five utilities had applied for AP1000 licenses. (R. 421/2–4.) Those utilities

agreed to share in developing the required programs. (R. 421/2–6.) To date, only SCE&G and the Southern Company have signed EPC contracts, and only utilities that have signed EPC contracts have access to Westinghouse/Shaw's proprietary design information. (R. 421/7–10.) As a result, two utilities rather than five will share in developing these programs and procedures. (R. 421/10–14.) Accordingly, the project will require 22 additional FTEs at a cost of \$15.7 million to complete this work. (R. 422/1–2.)

4. *Timing Variance to Support Craft and Technical Training*

Under NRC and industry requirements, the Units' craft and technical staffs must go through extensive training. (R. 422/7–9.) Those requirements have become increasingly stringent since 2008. (R. 422/5–7.) The previously-noted factors that limit the pool and increase the competition for reactor operator candidates also apply to craft and technical candidates. (R. 422/5–12.)

As a result, SCE&G is accelerating the hiring schedule of craft and technical candidates, giving candidates additional time to complete their training programs and to get hands-on experience during start-up and at V.C. Summer Unit 1 before Units 2 and 3 go into operation. (R. 422/18 – 423/3.) Only three FTEs have been added to the hiring plan but existing positions will be filled earlier, resulting in additional costs to the project of \$15.5 million. (R. 569/5–7.)

5. *Nuclear Construction Oversight and Quality Assurance/Quality Control*

The NRC has emphasized that as licensee under an active COL, SCE&G has an extensive and non-delegable responsibility to ensure that nuclear quality standards are met.¹⁸ Experience with the project to date has shown the value of SCE&G taking a "front

¹⁸ The COLs recently issued to SCE&G and the Southern Company are the first to be issued under the new reactor licensing structure of 10 C.F.R. §§ 52.1 *et seq.* Because the COL represents a combined license to construct and operate the Units, SCE&G is undertaking the construction as a fully licensed operator of these reactors. The NRC monitors SCE&G's quality oversight as a licensee throughout the construction period in lieu of issuing an operating license at the end of construction, as was done in the past.

line” role in ensuring quality and timely work throughout the world-wide procurement chain for the project. (R. 423/16 – 424/3.) To support this level of oversight, SCE&G has added 26 FTEs to the project at a cost of \$8.6 million. (R. 424/5–6.)

6. *Security Contractors*

Security staffing is determined by threat response planning, which could not be completed until the layout of all site buildings and access points was finalized. (R. 425/3–7.) It is also based on evolving regulatory and industry standards concerning the threats that must be considered. (R. 425/7–9.) Threat response planning based on the final site layout has added 20 FTEs to the project at a total cost of \$6.1 million. (R. 425/10–14.)

7. *Safety Data Transfer/Other*

SCE&G has accelerated the plan for receiving engineering and safety/quality control documentation from Westinghouse/Shaw to ensure that complete, organized and usable information is available to its staff during start-up and testing. (R. 424/9–11.) Security staffing must also be increased to protect nuclear safeguards information as it is transferred to SCE&G. (R. 425/13–15.) Additions in this area are partially off-set by reductions in business and finance staffing. This adds three FTEs net to the project at a cost of \$3.1 million. (R. 425/16–18.)

8. *On-Site Facilities*

SCE&G has adjusted owner’s costs by \$7.8 million to provide for the buildings and facilities needed to support the operation of the Units as well as the training and office space of the trainees and project team during the construction period. (R. 537/13–19.) These costs are mainly due to increases in the staff for the project and their accelerated hiring. (R. 538/19 – 539/5.)

9. *Information Technology (“IT”) Roadmap*

Nuclear plant IT infrastructure must accurately document the safety, quality and maintenance history of each significant piece of equipment in the plant, and all scheduled

and preventative maintenance activities undertaken. (R. 536/8–11.) That infrastructure must also prepare and track work schedules, track inventories and administer employee fatigue management and safety rules. (R. 536/3–8.) The documentation for all safety related activities must be available for immediate use and quality control inspection. (R. 536/3–11.)

The 2008 IT budget was based upon the belief that the existing Unit 1 systems and software could be scaled up to meet the needs of Units 2 and 3. (R. 535/3–7.) However, when SCE&G conducted a detailed inventory of the Unit 1 resources in 2011, it became evident that much of the Unit 1 IT infrastructure was not scalable to serve additional units. (R. 535/10–20.)

Upgrading the site's IT infrastructure will result in the addition of \$28.7 million to the cost of the project. (R. 534/16–19.) This amount represents the allocation of the total cost of the upgrades among the three units based on standard allocation formulas. (R. 358/19–20; R. 535/19–20; R. 658/2–14.) Contrary to the appellants' claim, Unit 1 will bear its full allocation of the cost of the project.

D. Transmission Costs

1. Saluda River Transmission Substation

SCE&G will build four new transmission lines to route power from the Units to customers. (R. 468/1–4.) Since 2008, SCE&G has determined that it will be more cost effective to build a new Saluda River Transmission Substation rather than add transformers to the existing Lake Murray substation as originally planned. Engineering reviews determined that it was not feasible to add existing transformers to the Lake Murray substation without an expensive expansion of that facility. The additional cost of the new substation is \$1.6 million — a fraction of the additional cost that would have been incurred by expanding the Lake Murray substation. (R. 480/9–10.)

2. Line Crossings and other upgrades

The final siting of new transmission lines on the V.C. Summer site created line

crossings that raised safety concerns and require a \$3.6 million increase in costs to underground or lower transmission lines. (R. 480/18 – 483/15.) Additional load flow modeling based on updated system data indicated the need to upgrade switch gear and other transmission equipment in multiple locations to keep them within acceptable load limits. (R. 484/6–19.) The additional cost of these upgrades was \$2.1 million. (R. 486/7.)

3. *Siting of New Lines*

Siting of the new transmission line in the Northeast Columbia area resulted in the line being located in areas where right-of-way was more expensive than anticipated in 2008. (R. 487/3–15.) In addition, two local governmental bodies challenged the initial siting of the line. The additional cost of acquiring this right-of-way and settling the claims of the governmental bodies was \$1.4 million. (R. 488/9–18.)

E. Other Change Orders

During the period 2010-2011, SCE&G entered into three change orders predating Change Order 16 that represent approximately \$1.5 million in additional costs.

1. *Cyber-Security*

Events since 2008 have led the NRC to issue more-stringent cyber-security requirements for nuclear plants. (R. 336/4–8.) In 2011, SCE&G and Westinghouse/Shaw agreed to a plan to respond to these requirements in two phases. Phase I involves a review of the equipment and software that will be used to identify cyber-security vulnerabilities. (R. 336/8–11.) Phase II will implement a plan to counteract those vulnerabilities based on the findings of Phase I. (R. 336/8–20.) The Commission approved the \$914,422 cost associated with Phase I but deferred the cost of Phase II until those costs are better defined. Order No. 2012-884 at 66–67 (R. 70–71).

2. *Health Care*

Change Order No. 12 reflects an increase in costs of \$135,573 for Shaw related to the cost of implementing the Health Care and Education Reconciliation Act of 2010. In 2011 Westinghouse had yet to make a similar claim. (R. 337/11–19.) This increased cost

falls under the change of law provision of the EPC Contract. (R. 337/11–14.)

3. *Discharge Piping*

Change Order No. 15 incorporates \$8,250 in costs associated with a redesign of the waste water discharge piping for the Units to provide for gravity drainage. SCE&G requested this change because it results in fewer pumps, motors and other moving parts than the prior design. (R. 338/11–12.) SCE&G made this request before the EPC Contract was signed. The costs of the redesign were not determined until the redesign of the system was complete. (R. 338/8–17.)

* * * * *

The Commission found that none of the proposed modifications of previous BLRA capital cost schedules and the construction schedule were the result of imprudence. Order No. 2012-884 at 66–67 (R. 70–71). ORS supported this conclusion with its expert testimony. (R. 813/5 – 814/15; R. 840/1 – 841/8.)

ARGUMENT

I.

The test for modifying the schedules contained in a base load review order is prudence. If proposed changes in the budget or construction schedule are not the result of imprudence, then the changes are accepted and the schedules are modified accordingly.

When an electric utility seeks to construct a generation plant under the provisions of the Base Load Review Act, it files an application with the Public Service Commission. The applicant sets forth its estimates of the capital costs of the work and the projected construction schedule. It also identifies the “risk factors related to the construction and operation of the plant” Section 58-33-250(8) (Supp. 2012).¹⁹

¹⁹ In its 2008 application, SCE&G identified twenty-six areas of risk accompanying the project — the largest and longest construction project in the State's history — and explained those risks in detail. [Exhibit J to Mr. Byrne's testimony in the
(continued...)]

If the evidence demonstrates the prudence of building the plant together with the utility's cost estimates and projected construction schedule in light of the risks, the Commission issues a base load review order approving the same:

"Base load review order" means an order issued by the commission pursuant to Section 58-33-270 establishing that if a plant is constructed in accordance with an approved construction schedule, approved capital costs estimates, and approved projections of in-service expenses, as defined herein, the plant is considered to be used and useful for utility purposes such that its capital costs are prudent utility costs and are properly included in rates.

Section 58-33-220(4). The order approves the applicant's "anticipated components of capital costs," among other things, as provided in Section 58-33-270(B)(2), quoted in *Friends of the Earth v. Public Service Comm'n of South Carolina*, 387 S.C. 360, 370, 692 S.E.2d 910, 915 (2010).

The General Assembly could have declared that the "anticipated components of capital costs" initially approved could not be changed, but the BLRA would have been useless had it done so. On the contrary, the Act contemplates change in the cost projections. The Act provides both the mechanism and the test for consideration of change:

As circumstances warrant, the utility may petition the commission . . . for an order modifying any of the schedules, estimates, findings, class allocation factors, rate designs, or conditions that form part of any base load review order issued under this section. The commission shall grant the relief requested if, after a hearing, the commission finds: (1) as to the changes in the schedules, estimates, findings, or conditions, that the evidence of record justifies a finding that the changes are not the result of imprudence on the part of the utility

Section 270(E). The relief which the Commission is authorized to grant in a Section 270(E) proceeding is an order modifying the initial base load review order. As the Court observed in *Friends of the Earth*:

Appellant argues the Commission . . . should have prospectively limited the company's ability to make adjustments in the approved schedule or budget [S]ection 58-33-270(E) . . . provides that once a final order by the Commission has been issued, a "utility may petition the commission

¹⁹(...continued)
initial 2008 proceeding, Hearing Exh. SAB-4 in the present proceeding. R. 921-33.]

. . . for an order modifying any of the schedules, estimates, findings, class allocation factors, rate designs, or conditions that form part of any base load review order issued under this section.” Clearly the General Assembly did not contemplate the Commission’s ability to prevent subsequent modification of its orders under the Base Load Review Act, as subsection (E) expressly provides the utility that right.

Id. at 368–69, 692 S.E.2d at 914–15. A similar observation was made in *South Carolina Energy Users Committee v. South Carolina Public Service Comm’n*, 388 S.C. 486, 496, 697 S.E.2d 587, 592 (2010): “[T]he enactment of section 58-33-270(E) . . . reveals that the General Assembly anticipated that construction costs could increase during the life of the project.”

If approved by the Commission, the schedules contained in the new base load review order replace those found in the previous order. The statutory test for modifying the schedules approved in an initial base load review order is clear. The test is “a finding that the changes are not the result of imprudence on the part of the utility” S.C. Code Ann. § 58-33-270(E)(1). “Prudence” in its noun and adjective forms is a word used sixteen times in the Base Load Review Act, yet it is not a defined term since there is no need to give it a special meaning. “Prudence” is universally understood. Under a prudency test, “[t]he standard by which management action is to be judged is that of reasonableness under the circumstances, given what was known or should have been known at the time the decision was made or the action was taken.” *Georgia Power Co. v. Georgia Public Service Comm’n*, 196 Ga. App. 572, 578, 396 S.E.2d 562, 569 (1990).

The appellants’ challenge to the Commission’s finding that the budget changes at issue were not imprudently incurred has no foundation in Section 270(E). Rather, the appellants contend that the Commission should have applied the test for “deviations” from an approved order found in S.C. Code Ann. § 58-33-275(E) (Supp. 2012) (“Section 275(E)”). That section provides:

In cases where a party proves by a preponderance of the evidence that there has been a material and adverse deviation from the approved schedules, estimates, and projections set forth in Section 58-33-270(B)(1) and 58-33-270(B)(2) . . . , the commission may disallow the additional capital costs that result from the deviation, but only to the extent that the failure by the utility

to anticipate or avoid the deviation, or to minimize the resulting expense, was imprudent considering the information available at the time that the utility could have acted to avoid the deviation or minimize its effect.

In a Section 270(E) proceeding such as this one, the utility may seek changes in the approved capital cost schedules and approved construction schedule for the project (among other things). If the request is granted, the approved schedules are modified. By contrast, Section 275(E) applies where the utility is seeking relief based on an existing base load review order and a deviation from it is shown. For example, Section 275(E) would apply where a utility seeks to use a BLRA order to obtain revised rates under Section 280 or general rate relief under S.C. Code Ann. §§ 58-27-810 *et seq.* (Supp. 2012). In fact, these are the two types of proceedings that are specifically identified in other parts of Section 275, *i.e.*, Sections 275(B) and (C), as being proceedings where the terms of a BLRA order are not subject to challenge. Accordingly, Section 275(E) deals with the situation where a party in such a proceeding shows that the approved cost schedules have not been met. In that case, a disallowance of rate relief is permitted if the deviation from the approved cost schedules resulted from the utility's imprudence in failing to anticipate costs. However, only imprudently incurred costs are disallowed.

The Commission rejected the appellants' effort to convert this Section 270(E) "update" proceeding into a Section 275(E) "deviation" proceeding. The Commission is entrusted with administration of the Base Load Review Act. The Commission's interpretation of the statute is entitled to deference unless plainly wrong. "Where an agency is charged with the execution of a statute, the agency's interpretation should not be overruled without cogent reason." *Friends of the Earth v. Public Service Comm'n of South Carolina*, 387 S.C. 360, 371, 692 S.E.2d 910, 916 (2010), quoting *Nucor Steel, a Div. of Nucor Corp. v. South Carolina Public Service Comm'n*, 310 S.C. 539, 543, 426 S.E.2d 319, 321 (1992); *Murphy v. South Carolina Dep't of Health and Environmental Control*, 396 S.C. 633, 723 S.E.2d 191 (2012). Not only is the Commission's interpretation entitled to deference, but the appellants' contrary interpretation is wrong as a matter of law.

The present proceeding was to consider updates to the terms of a base load review order, not to search for deviations from an unmodified order. Section 275(E) does not apply.

In the end, however, it makes no difference. Section 275(E) does not impose a standard different from that of Section 270(E). Under Section 275(E), a cost or schedule deviation may be disallowed if the utility acted in a way that “was imprudent considering the information available at the time” *Id.* Section 275(E) defines that information as “the information available at the time that the utility could have acted to avoid the deviation or minimize its effect.” *Id.* This has always been the standard for judging prudence.

The record is replete with evidence that SCE&G has not acted imprudently. In 2008, the Company identified the risks that it could reasonably foresee. The Commission acknowledged those risks and approved the Company’s application:

As the record . . . indicates, the Company has taken reasonable steps to identify and mitigate risk factors related to this project. The Commission has reviewed the risks of this project as mitigated by SCE&G and has determined that it is reasonable and prudent to assume these risks in light of the risks of reliance on other energy sources to meet customers’ future energy needs.

* * * * *

As the Act envisions, the ORS and the other parties to this case have been given a full opportunity to conduct discovery and present evidence on the prudence of the Company’s decision to proceed with construction. ORS has in fact conducted a thorough investigation of the decision to construct the Units and has employed a diverse panel of well-qualified internal and external experts to do so. For its part, the Company has presented comprehensive and candid testimony concerning its risk assessment and the decision-making process related to these Units.

The Commission’s approval of the reasonableness and prudence of the Company’s decision to proceed with construction of the Units rests on a thorough record and detailed investigation of the information known to the Company and the parties at this time.

Order No. 2009-104(A) at 91–92. Since 2008, there is no evidence that the Company imprudently failed to anticipate or avoid risks or imprudently failed to minimize the resulting cost increases. The evidence proved to the satisfaction of the Commission that the Company met and dealt prudently with each event giving rise to the additional costs at issue in this docket.

The Commission was right to apply Section 270(E), not Section 275(E), even though

in the end it makes no difference. Section 270(E)(1) governs this case. The Court effectively said as much in the earlier appeal, *SCEUC v. SCPSC*, without naming the section. It makes no practical difference, however, since both sections lay down the same standard: **prudence**.

II.

Reliable, probative and substantial evidence on the whole record supports the Commission's findings that the changes requested to the schedules and estimates approved in the initial base load review order and later modifications of that order are not the result of imprudence on the part of the utility.

- A. *The Act does not require the utility at the threshold of construction to predict which of the known risks to the project will materialize, or to project the added costs which may result if such risks are encountered.*

The core contention of appellant SCEUC is stated in the introductory paragraph of its Argument, as follows:

Because the additional capital costs approved by the [Commission] could have been anticipated at the time of SCE&G's 2008 BLRA application, the additional costs are imprudent and the Commission erred in authorizing the utility to recover them in rates.

(Brief of appellant SCEUC at 18.) Put another way, SCEUC's contention is simply this: The cost projections and estimates approved by the Commission in Order No. 2009-104(A) are frozen in every particular where the Company could have anticipated that the actual cost might exceed the initial projections and estimates.

If this were the law, the Base Load Review Act would be a dead letter. It could never be used. But this is not the law, since the Base Load Review Act requires prudence, not clairvoyance. Terms used in the act — "projections" and "estimates" — demonstrate the General Assembly's understanding that it is impossible to know precisely the overall cost of a mammoth construction project or its components at the threshold. The Company's EPC contract with Westinghouse/Shaw went far toward circumscribing the cost of this largest construction project in the history of the State. Nonetheless, absent an expensive premium, no contractor would undertake this ten-year construction project for a totally fixed price, nor could any utility know at the threshold of construction

the precise amount of its owner's costs. This is why the BLRA provides in Section 58-33-270(E)(1) ("Section 270(E)(1)"), as follows:

(E) As circumstances warrant, the utility may petition . . . for an order modifying any of the schedules, estimates, findings, class allocation factors, rate designs, or conditions that form part of any base load review order issued under this section. The commission shall grant the relief requested [*i.e.*, a modification of forecasted cost schedules] if, after a hearing, the commission finds . . . that the changes are not the result of imprudence on the part of the utility

Of course the Company knew that its initial 2008 cost projections and estimates could be exceeded and advised the Commission of the known risks in detail. In recognition of those risks the Company included a \$438 million contingency in its cost projections but the Supreme Court disallowed the contingency as a speculative, un-itemized expense. *South Carolina Energy Users Committee v. South Carolina Public Service Comm'n*, 388 S.C. 486, 697 S.E.2d 587 (2010). Accordingly, SCE&G must identify and itemize specific expenses before seeking their inclusion in the BLRA budget. Simply identifying possible risks that have not yet materialized does not satisfy the standard established by the Court for inclusion in the budget. To be included in the BLRA budget, the risk must materialize in such a way that the Company can identify and itemize the specific costs associated with the risk.

Appellant SCEUC contends that the Company should have anticipated not only the risks but should have predicted which of those risks would materialize and the **cost** resulting from each materialized risk. This claim contradicts the Court's holding in SCEUC's own previous appeal. The evidence before the Commission confirms that the additional costs in question could not have been identified and itemized in the initial proceeding. The Commission found as facts:

Petitioners, on the other hand, would have the Commission rule that utilities are imprudent for not including in their BLRA forecasts costs that were uncertain, hypothetical and unquantifiable at the time those forecasts were made. This position is inconsistent with the judicial interpretation of the BLRA that is reflected in *South Carolina Energy Users Comm. v. South Carolina Pub. Serv. Comm'n*, *supra*.

Under Petitioners' approach, the Commission is invited to rule, among other things, that SCE&G should have included in its 2008 cost forecasts the following:

- i. the effects on contractors' labor costs of the 2010 federal Health Care and Education Reconciliation Act (Change Order 12),
- ii. the impact on nuclear staffing and emergency planning requirements

- of the 2011 Fukushima event (Emergency Planning/Health Physics),
- iii. the impact on equipment and software costs of the recent emergence of cyber-security threats to the electric system (Change Order 14),
 - iv. the possibility that, in the period 2008-2012, the Nuclear Regulatory Commission (NRC) and the industry might increase standards for the licensing and training of nuclear operators and craft workers (Operator Training Margin, Timing Variance to Support Craft),
 - v. the possibility that the economic recession that began in late 2008 would result in other utilities not proceeding with new units and so not sharing common engineering costs for the AP1000 projects (APOG/Plant programs/Procedures),
 - vi. the costs and time required for complying with NRC aircraft impact standards for nuclear reactors that were not issued until 2009 (Change Order 16),
 - vii. the fact that, in 2011-2012, Westinghouse Electric Company, LLC and the Shaw Group decided that stronger steel was required for certain modules in the Units (Change Order 16), and
 - viii. the fact that, after excavation conducted during 2009-2011, rock conditions at the site might be found to be different from what pre-excavation drilling showed (Change Order 16).

The Petitioners' approach would require the Commission to engage in a level of speculation that is incompatible with the purposes and intent of the BLRA. Furthermore, given the speculative nature of the analysis that would be required, Petitioners' interpretation of the BLRA would make the statute very difficult for this Commission to apply in practice.

Order No. 2013-5 at 6–8 (R. 85–87).

This record proved to the Commission's satisfaction that the Company has now properly identified and itemized \$278 million in additional expenses which are now properly included in the BLRA budget. The Commission's findings to that effect are supported by reliable, probative and substantial evidence on the whole record.²⁰ More than that: the Commission's findings are

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Under the Administrative Procedures Act (APA), an appellate court may not substitute its judgment for that of the agency as to the weight of the evidence on questions of fact, but it may reverse when the decision is affected by an error of law. S.C. Code Ann. § 1-23-380(5) (Supp. 2012). "This Court will not overturn a decision by the Commission unless the determination is unsupported by substantial evidence." *Jones v. Georgia-Pacific Corp.*, 355 S.C. 413, 416, 586 S.E.2d 111, 113 (2003)

(continued...)

supported by *all* the reliable evidence and the *only* probative evidence.

B. *The appellants do not challenge the sufficiency of the evidence to support the Commission's factual findings.*

Change Order 16 and the revision of owner's costs comprise the bulk of the change in the schedule of capital costs approved by the Commission in this proceeding. These two elements of the change in the capital costs schedule are the focus of challenge by both appellants.

After scrutiny of SCE&G's evidence by ORS and by the Commission, the Commission accepted and approved the costs update presented here with a small exception, which it deferred to later consideration. The Commission found that none of the changes at issue resulted from imprudence. The Commission's detailed and thorough findings of fact are not challenged by either of the appellants as lacking support by reliable, probative and substantial evidence on the whole record — a standard scarcely acknowledged in the appellants' briefs. The appellants only recite the evidence which they deem counter to the evidence accepted by the Commission and say that the Commission should have gone their way.

A party challenging the factual findings of an administrative agency must do more than attempt to show that the agency could have gone a different way. The challenger must examine and analyze the evidence actually accepted by the agency and must demonstrate that this evidence is insubstantial, or unworthy of credit, or otherwise unreliable. Where the appellants make no effort to show that the Commission's factual findings are unsupported by reliable, probative and substantial evidence on the whole record, their appeal from the agency's findings must fail.

²⁰(...continued)

(citing *Lark v. Bi-Lo, Inc.*, 276 S.C. 130, 276 S.E.2d 304 (1981)).

"Substantial evidence is evidence which, considering the record as a whole, would allow reasonable minds to reach the conclusion that the administrative agency reached to justify its action." *Id.* at 417, 586 S.E.2d at 113 (quoting *Howell v. Pacific Columbia Mills*, 291 S.C. 469, 471, 354 S.E.2d 384, 385 (1987)).

Pollack v. Southern Wine & Spirits of America, 405 S.C. 9, 747 S.E.2d 430 (2013). See generally RANDOLPH LOWELL, SOUTH CAROLINA ADMINISTRATIVE PRACTICE AND PROCEDURE 534–38 (3rd ed. 2013).

Respondent SCE&G could lengthen this brief by refuting the particular criticisms of its conduct by SCEUC, which offered no witnesses of its own, and by countering the anti-nuclear philosophy of the Sierra Club's Dr. Cooper. This is unnecessary, however, since the Statement of Facts in the forepart of this brief marshals the evidence — the reliable, probative and substantial evidence on the whole record — accepted by the Commission. The appellants gainsay that evidence but do not challenge it in any substantive way.

However, SCE&G does wish to respond in detail to the single factual claim given the most emphasis by SCEUC. The appellant contends that SCE&G was at fault in the delay in issuance of the COL, and that this delay “is associated with” — by which SCEUC appears to mean *caused* — the added expense of Change Order 16. The Commission rejected SCEUC's contention, and moreover could not possibly have accepted it. SCE&G did not cause the delay; the redesign of the shield building caused it. Moreover, the delay caused only a small part of the cost of Change Order 16. The facts are these:

In its initial BLRA application in 2008, SCE&G projected the issuance of a COL by the NRC in July 2011, a date consistent with the NRC's own estimate, giving the agency three years to review the COL application. Delay in the issuance of the license was a foreseen risk that SCE&G disclosed to the Commission.²¹ As the Commission ruled in 2009:

The record shows that the risks of proceeding with construction of these Units include licensing and regulatory risks, which include the risk that the NRC or other licensing agencies might delay the project by delaying the issuance of necessary permits or create construction delays.

Order No. 2009-104(A) at 50. Issuance was delayed by about nine months. The COL was issued on March 30, 2012. As a result, completion of Unit 2 was postponed and completion of Unit 3 was accelerated.

²¹ In 2008 SCE&G told the Commission: “[T]he NRC is in the early stages of the current licensing cycle and potential delays in the NRC licensing process can delay the construction schedule,” and “[a]t this time, the most significant risks related to NRC licensing appear to be . . . the risk of a delay in the issuance of a COL, the resulting disruption of the construction schedule, and the increase in construction costs that such a delay would represent” Hearing Exh. SAB-4, Exh. J, pp. 3–4 (R. 923–24).

The applicant for a COL must possess a Section 401 certification under the Clean Water Act before the COL may be issued. The Section 401 certification is based on the Final Environmental Impact Statement ("FEIS") for the project. The FEIS is based in turn upon a review and approval of the Environmental Report for the project. One environmental impact considered among many was the impact of constructing the transmission lines needed to deliver power from the new plants to customers on the grid.²² SCE&G chose to evaluate these impacts based on a standard approach used successfully before by SCE&G and others, and recommended by its expert consultants at Bechtel Corporation. Mr. Byrne explained what happened:

Based on past practice, and on the recommendation of knowledgeable and experienced environmental consultants at Bechtel Corporation, [SCE&G's] Environmental Report identified the county-by-county corridors through which the transmission lines supporting the Units would run, and quantified the environmental impacts of placing the lines in those corridors. The specific location of the lines was left until detailed engineering and siting studies were completed later in the process. This is referred to in the industry as a "macro-corridor" approach. . . .

For reasons SCE&G does not fully understand, in comments filed late in the review process for our Units, the EPA took the position that specific transmission line routes had to be identified, and the environmental impacts of those specific routes had to be assessed before the environmental review could proceed. The Army Corps of Engineers (the "Corps"), which was the lead Federal agency for NEPA issues, had originally accepted SCE&G's macro-corridor approach. But in response to the EPA, the Corps reversed its position. This meant that more than a year into the permitting process, well after scoping had been completed, the review of the application was suspended and SCE&G was required to locate precise routes for the new transmission lines, and was also required to assess the environmental impacts of the new routes before the environmental process could proceed.

²² Transmission line siting is done after construction is well along:

Transmission Siting and Construction - Transmission-related costs are properly considered as part of the capital cost of a plant for the purposes of Base Load Review Act proceedings. However, the Company does not plan to design and permit off-site transmission facilities for VCSNS Units 2 & 3 until the later stages of plant construction. This delay will allow the transmission lines to be configured to suit the needs of SCE&G's transmission system as they may evolve over the course of the construction period. The actual transmission costs associated with the Units will depend on the final routing and design of the transmission facilities, the cost of right of way along the route chosen, the schedule and cost of the right of way acquisition and siting processes, and the cost of transmission construction at the times the lines are built.

Exhibit J to Mr. Byrne's testimony in the initial 2008 proceeding, Hearing Exh. SAB-4 in the present proceeding, p. 10 (R. 930).

In response to scheduling considerations and comments received from several state and federal agencies indicating a strong preference for the use of existing right-of-way corridors for the new transmission lines, SCE&G began to investigate how the Company could use its existing transmission line rights-of way to the maximum extent practicable for the four (4) new SCE&G 230 kV lines associated with Units 2 and 3.

Under the EPC Contract, obtaining the NEPA and Clean Water Act authorizations required for the COL was clearly SCE&G's responsibility. If there had not been a settlement of the claim for cost recovery due to the COL delay, then we expect that Westinghouse/Shaw would have argued that the delay in the Section 401 certification was as much the cause of the COL delay as the delay in approval of DCD [Design Control Document] Revision No. 19 [for shield building redesign]. The timing of the permitting process supports that argument. In response, SCE&G would have argued that the resource agencies considering the Section 401 certification knew there was no urgency to their work as long as the DCD revision process was delayed. SCE&G would have argued that if the DCD Revision No. 19 process had not been delayed, it could have accelerated the Section 401 certification process. In addition, there were other delays in the filing for the Section 401 certification that were due to Westinghouse/Shaw's delays in providing final design documents as to water quality related structures. The point is that these would have been complex and difficult issues to litigate. The expense and risks of litigation would have been significant.

(R. 326/19 – 327/4; 328/11 – 329/4; 474/18 – 475/8; 329/15 – 330/9.)

From this evidence SCEUC claims that the delay in the issuance of the COL was SCE&G's fault. Mr. Byrne testified that Westinghouse would have *argued* that it was, if the parties had not resolved the issue of responsibility for the delay by settling Westinghouse's claim. The claim of fault was unfounded. SCE&G had used the macro-corridor approach without objection in building other base load units. The same approach was used without EPA objection by Southern Company in permitting the new Vogtle Units, which underwent environmental review simultaneously with SCE&G's Units. (R. 379/11–13; R. 386/ 6–9.) Despite the EPA's change in position regarding macro-corridors, the FEIS was approved eleven months before the COL was issued. Having in hand the FEIS, SCE&G and the Corps of Engineers could have accelerated the issuance of the Section 401 certification if necessary, but the Corps saw no need for expedition since the COL was delayed. (R. 384/6–12.) SCEUC's contention that SCE&G was negligent in using the standard approach is without factual foundation and was rejected by the Commission. Order No. 2012-884 at 41–42 (R. 45–46).

SCEUC then appears to contend that the entire expense of Change Order 16 — \$137.5

million — was due to delay in issuing the COL. This is incorrect. The COL delay led to resetting the construction schedule. The schedule change for Unit 2 was a small part of the additional expense embedded in Change Order 16.

On its face, Westinghouse/Shaw was entitled to the full amount of its documented and verified claim of \$188 million for Change Order 16. SCE&G's auditors and engineers had determined that Westinghouse/Shaw had incurred that additional expense due to shield building redesign, modular units strengthening, rescheduling construction on account of COL delay, and unexpected rock conditions. (R. 322.) The last of these four parts of the claim — unexpected rock conditions — was clearly founded in the "unexpected site condition" provisions of the EPC. The first two parts of the claim — redesign and strengthening — directly resulted from an order or other governmental action. (R. 321/9–12.) The third part of the claim — delay in the COL — was a consequence of the shield building redesign, likewise due to governmental action. Westinghouse/Shaw agreed to accept a 27% reduction in its verified expenses in order to resolve the matter and to avoid divisive litigation which would have diverted and wasted the time and collaboration of the key people involved, to the detriment of the project.

The Commission did not — and could not have — accepted SCEUC's claim that SCE&G's imprudence caused the expense of resetting the construction schedule on account of COL delay.

The evidence relied upon by appellant Sierra Club consists entirely of the testimony of Dr. Cooper, an implacable foe of nuclear power. Dr. Cooper's testimony was more in the nature of philosophy than fact. In general terms Dr. Cooper faulted SCE&G for virtually everything it has done over the course of the past eight years in this matter. The Commission did not credit Dr. Cooper's evidence in any respect. The Sierra Club, like its fellow appellant, tells the Court that the Commission should have accepted its evidence, but makes no effort to show that the evidence which the Commission *did* accept is unreliable, insubstantial, or lacks probative value.

No credible challenge could have been mounted under the substantial evidence rule to the thorough factual findings of the Commission. This explains why the appellants complain of those findings but make no effort to show that they are unsupported by reliable, probative and substantial

evidence on the whole record.

III.

The Commission found as a fact that construction should continue. This leaves nothing to decide about whether the Base Load Review Act does or does not require such a finding in each Section 270(E) costs-update proceeding.

Appellant Sierra Club attempts to reopen the Commission's 2009 approval of the Company's decision to build these reactors. The Sierra Club urged the Commission to decide whether it is prudent to continue the work or to abandon it. Whether it was required to do so or not, SCE&G met that challenge and presented the Commission with evidence demonstrating that abandoning the Units would be imprudent. Through its expert witnesses, ORS supported that conclusion. The Commission ruled that it was not legally obliged to reassess the prudence of the project, but nevertheless found as a fact that the work should continue. The Sierra Club contends that the evidence upon which the Commission made that finding is lacking, but the Club does not identify what the evidence lacks. On the contrary, the evidence is compelling.

In the 2008 BLRA proceeding SCE&G compared the cost of nuclear generation to a variety of other generation types under multiple planning scenarios ("the 2008 Study"). In most of these scenarios, including the ones most likely to occur, nuclear generation was the lowest cost alternative. ORS presented evidence from its own staff and from outside consultants with extensive experience in power plant construction and electric system planning who had reviewed the 2008 Study. These witnesses supported the conclusion of the 2008 Study that nuclear was the most cost-effective option. They also supported the view that adding nuclear generation was ultimately justified by the flexibility that a balanced generation system would give the Company to respond to future fuel price and environmental conditions.

Based on this evidence, the Commission found that the decision to construct the Units was prudent. That finding was affirmed by this Court. *Friends of the Earth v. Public Service Comm'n of South Carolina*, 387 S.C. 360, 692 S.E.2d 910 (2010).

In this proceeding, the Sierra Club's witness Dr. Cooper argued that the recent decline in

natural gas prices made it imprudent to complete construction of the Units.²³ Dr. Cooper arrived at this conclusion by attempting to estimate the change that would be produced in the 2008 Study by assuming lower natural gas costs and by eliminating any consideration of carbon emissions costs. Through this factor analysis, Dr. Cooper concluded that natural gas generation enjoyed a levelized cost advantage over nuclear generation of \$200 million yearly. Multiplying \$200 million by the 40-year planning horizon of the Units, Dr. Cooper presented to the Commission his assertion that natural gas had a cumulative advantage over nuclear of \$8 billion.

In response, Mr. Marsh and Dr. Lynch pointed out that changing estimates of fuel and carbon costs do not provide an acceptable basis for stopping and starting base load generation projects. They also showed that Dr. Cooper's analysis failed to consider two key facts:

- Since 2008, the final cost of the Units has declined by \$551 million in future dollars due to lower escalation and financing costs. (R. 239/14–18.)
- The cost to complete the Units in 2012 was lower because 25% of cost of the project has already been paid. (R. 218/20 – 219/1.)

These two factors alone lowered the going-forward cost of the nuclear strategy by \$318 million annually — much more than the \$200 million shift Dr. Cooper estimated by assuming very low

²³ Ironically, the Sierra Club opposes natural gas almost as zealously as it opposes nuclear. For example:

We know that natural gas is a dirty, dangerous fuel that is bad for the climate. Every day the evidence of this becomes clearer. We look forward to a day when the administration sees fracked gas for what it is: a dirty, dangerous fossil fuel of the past and a threat to public health. The same yardstick for [Keystone Pipeline] must also be used with fracked gas. A Presidential Climate Action Plan that doubles down on clean energy cannot also continue our reliance on natural gas. Deepening investments in natural gas will hamper, not assist, transforming our energy system and tackling the daunting climate task ahead.

Statement by Sierra Club's **Beyond Natural Gas** Campaign Director entitled: "Correct Your Course on Natural Gas, Mr. President," June 25, 2013. <http://sierraclub.typepad.com/compass/2013/06/correct-your-course-on-natural-gas-mr-president.html>. The Sierra Club told the Commission that it neither supports nor opposes gas. (R. 176/15–21.) Using natural gas to generate the electricity which will be produced by Units 2 and 3 would dump 300,000,000 tons of CO₂ into the air over their life span. (R. 230/7–9; R. 240/6–9.) Units 2 and 3 will dump **none**. When these two Units come into service, enabling retirement of aging coal plants (R. 295), SCE&G's carbon footprint will be approximately 54% less than it was in 2005. (R. 237/17–20.)

natural gas prices into the future and no carbon costs. (R. 688–90.)

In his surrebuttal testimony, Dr. Cooper insisted that “the Commission needs a new economic analysis of the going forward costs [of completing the Units] to ascertain whether continuing the project is prudent.” (R. 764.) In response, Dr. Lynch prepared and filed a complete new multi-scenario study (the “2012 Study”). The 2012 Study used current gas prices, current government estimates of the social costs of carbon emissions, current costs of completing the Units, current capital costs of gas units, reasonable estimates of the cost of abandoning the Units and terminating contracts, the salvage value of materials and equipment, and other updated factors. (Hearing Exh. 9 (JML-4), R. 955–71.) Dr. Lynch compared the nuclear and natural gas strategies using three variables — natural gas costs, CO₂ costs, and electric demand — with three scenarios for each, producing 27 different scenarios under which to compare nuclear and natural gas. (Hearing Exh. 9 (JML-4), R. 955–71.)

The 2012 Study showed that under all 27 scenarios, completing the Units was the lowest cost alternative. (Hearing Exh. 9 (JML-4), Appendix 4, R. 971.) The scenario most favorable to natural gas involved natural gas price forecasts that were slightly lower than Dr. Cooper’s and zero carbon costs for 40 years. Under that scenario, completing nuclear generation still enjoyed a levelized cost advantage of \$26 million per year over the natural gas alternative. (Hearing Exh. 9 (JML-4), Appendix 4, R. 971.) The 2012 Study found that the most reasonable scenario for planning purposes used gas prices that rose to a level 50% higher than currently projected and assumed a \$30 per ton cost for CO₂. Under this scenario, nuclear enjoyed a levelized cost advantage over natural gas of \$290 million per year. (Hearing Exh. 9 (JML-4), Appendix 4, R. 971.) Under the scenario of 100% higher natural gas prices in the future and \$30 per ton CO₂ costs, the levelized cost advantage of nuclear generation was \$407 million per year for 40 years. (R. 971.)

The 2012 Study showed that nuclear generation remains the lowest cost alternative. The wide variation in costs between scenarios in the 2012 Study also shows that the economics of the gas resource strategy are very sensitive to swings in natural gas prices and CO₂ costs while nuclear is not. (Hearing Exh. 9 (JML-4), R. 955–71.) The Sierra Club’s case against continued construction

depends entirely upon its article of faith that the current forecast price of natural gas is likely to stay close to where it is today for the next sixty years — the life span of these reactors (R. 291) — and that carbon emissions will not be capped or taxed over those decades. This hope is fantastical.

The Commission believed that it was not obliged to revisit the question of whether the base load plants at issue should be built. Nonetheless, the Commission reviewed the extensive evidence on this question and concluded as a matter of fact that continued construction remains prudent and that a suspension of construction would be imprudent.

Under these circumstances, the appellants' contention that the BLRA *requires* the Commission to make a finding of this nature raises no question for consideration by the Court. It would be useless to issue an order requiring the Commission to do something which it already has done.

"An appellate court will not pass on moot and academic questions or make an adjudication where there remains no actual controversy." *Curtis v. State*, 345 S.C. 557, 567, 549 S.E.2d 591, 596 (2001) (citation omitted.) "Moot appeals differ from unripe appeals in that moot appeals result when intervening events render a case nonjusticiable." *Id.* (citation omitted.) "A case becomes moot when judgment, if rendered, will have no practical legal effect upon [the] existing controversy. This is true when some event occurs making it impossible for [the] reviewing Court to grant effectual relief." *Id.* at 567–68, 549 S.E.2d at 596 (quoting *Mathis v. S.C. State Highway Dep't*, 260 S.C. 344, 346, 195 S.E.2d 713, 715 (1973)).

Linda Mc Co., Inc. v. Shore, 390 S.C. 543, 557, 703 S.E.2d 499, 506 (2010.)

CONCLUSION

The Commission's factual findings of no imprudence are well-supported in the evidence and therefore should be affirmed.

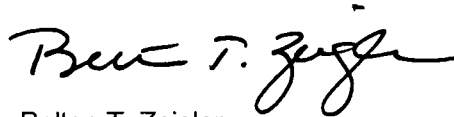
The appellants' contention that the BLRA requires the Commission to revisit the question of whether the plants should be constructed in every Section 270(E) proceeding is moot and nonjusticiable where the Commission found as a fact that construction should continue.

For these reasons, respondent SCE&G asks the Court to affirm the Commission's orders.

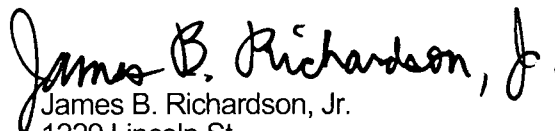
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January 21, 2014.

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JAN 21 2014

THE STATE OF SOUTH CAROLINA
IN THE SUPREME COURT

S.C. Supreme Court

APPEAL FROM
THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

Appellate Case No. 2013-000529

South Carolina Energy Users Committee, Appellant-Respondent,

v.

South Carolina Electric & Gas Company,
Office of Regulatory Staff, and Pamela Greenlaw, Respondents,

and Sierra Club is Respondent-Appellant.

CERTIFICATE OF COUNSEL

I certify that final brief of respondent South Carolina Electric & Gas Company
complies with Rule 211(b), SCACR.



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and Sierra Club is Respondent-Appellant.

CERTIFICATE OF SERVICE

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