February 27, 2009

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	
SOUTH CAROLINA ELECTRIC AND	)	
GAS COMPANY	)	Docket Nos. 52-027 COL
	)	52-028 COL
(Virgil C. Summer Nuclear Station	)	
Units 2 & 3)	)	
	)	
	)	

BRIEF ON APPEAL OF SIERRA CLUB AND FRIENDS OF THE EARTH

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1. THE LICENSING BOARD ERRED IN REJECTING THE STANDING OF FRIENDS OF THE EARTH TO REPRESENT THE INTERESTS OF ITS MEMBERS LIVING IN THE VICINITY OF THE SUMMER SITE.

The Sierra Club is the oldest and largest non-profit grassroots environmental organization in the world with some 750,000 members, 65 Chapters, over 400 local groups. The South Carolina Chapter has nine local groups with some 5,800 members across the state. The Club's mission is to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives. The Club and its members actively promote safe energy solutions including energy efficiency and renewable energy resources to combat the climate crisis. The organization has been actively involved in a variety of issues involving nuclear power production and waste disposal in South Carolina. The South Carolina Chapter of the Club has offices and meeting space at 1314 Lincoln Street #211, Columbia, South Carolina 29301. Many of its members are customers of SCE&G who live, work, recreate and use natural resources near the existing Summer nuclear plant and the site of the proposed Summer reactors. Petition to Intervene and Request for hearing, p. 3.

Friends of the Earth is a non-profit environmental advocacy organization with members in all the 50 states including South Carolina and its headquarters in Washington, DC. FoE is affiliated with Friends of the Earth International, the world's largest environmental advocacy network with member organizations in 70 countries.

FoE has worked for over 38 years to promote a healthy and just world and has been a leading advocate for safe and sustainable energy. It has worked to show how it is possible to shift the U.S. and global economies to a cleaner energy basis, using the latest in efficiency improvements, along with renewable energy sources such as wind, geothermal, and solar power. Members of FoE are ratepayers of SCE&G and neighbors of the site of the proposed nuclear facility. Petition to Intervene and Request for hearing, pp. 3-4.

Without objection from either SCE&G or the NRC Staff, the Licensing Board approved the representational standing of Sierra Club to represent the interests of its members based upon the signed declarations of several of its members who live in proximity to the proposed facility. However, the Board rejected the representational standing of Friends of the Earth (FOE), finding that "(N)one of the affidavits from individuals living in the vicinity of the Summer site, submitted with the original Petition to Intervene and all of which are in substantially the same form, makes any mention of FOE or states that FOE is authorized to represent the affiant's interests." LBP-09-02, Slip Op., p. 4, fn 18. To the contrary, the declarations of both Leslie A. Minerd and Thomas W. Clements, accompanying the Petition to Intervene state that each is a member in good standing of Friends of the Earth. Moreover, the Declaration of Mr. Clements states, further, that he is "employed as the Southeast Nuclear Campaign Coordinator of Friends of the Earth." There is simply no doubt that these FOE members, whose Declarations were captioned with references to this proceeding and were filed with the Sierra and FOE joint Petition to Intervene, intended to authorize FOE to represent their interests in this matter, despite the inadvertent omission by the FOE

declarants of express words of authorization.

While both SCE&G and the NRC Staff noted the omission and objected to FOE representational standing; the NRC Staff observed, appropriately, that "the only deficiency can be simply cured without significant prospect for controversy;" that the "parties have had a fair opportunity to challenge the sufficiency of the affidavits;" and that , therefore, the NRC Staff "would not object to the standing of Friends of the Earth if either or both of the already submitted affidavits from Friends of the Earth members were amended to clearly authorize Friends of the Earth to represent their interests in this proceeding." NRC Staff answer, p. 13. Such amended Declarations, expressly authorizing FOE representation of its members were duly filed. Supplemental Declarations of Leslie A. Minerd and Thomas W. Clements. Nevertheless, the Licensing Board summarily rejected FOE standing, ruling that "(W)hile FOE attempted to cure these deficiencies in its reply by attaching relevant affidavits, that effort is unavailing because it 'is not acceptable in NRC practice for a petitioner to claim standing based on vague assertions, and when that fails, to attempt to repair the defective pleading with fresh details offered for the first time in (its reply),' citing Entergy Nuclear Operations, Inc. & Entergy Nuclear Palisades, LLC (Palisades Nuclear Plant) CLI-08-19, 68 NRC ___ (Slip Op. At 5) Aug. 22, 2008).

Such a conclusion, on these facts, would honor form over substance and work the injustice of denying FOE the right to protect its members' acknowledged interests in this matter. No such specifications for the demonstration of standing, nor restrictions on pleadings are stated in the Commission's Rules of Practice. 10 C.F.R. § 2.309, "Hearing requests, petitions to intervene, requirements for standing, and contentions."

There has been no suggestion of vagueness in the subject standing claims. This COL proceeding is in its earliest stage with a Final Safety Evaluation Report not expected until February 18, 2011 and a Final Environmental Impact Statement not scheduled to be issued until February, 3 ,2011. Http://www.nrc.gov/reactors/new-reactor/col/summer.html. Receipt and consideration of this narrowly supplemented standing declaration will work no delay to the course of this case. In the absence of any showing or finding of prejudice to any party, or delay to the proceeding; and, having now fully demonstrated the requisite authority to represent the interests of its members living in the vicinity of the proposed facility, the Commission should recognize the representational standing of Friends of the Earth to participate in this proceeding.

. Pursuant to 10 C.F.R. § 2.309, a request for hearing or petition to intervene is required to address (1) the nature of the petitioner's right under the Atomic Energy Act ("AEA") to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order that may be entered in the proceeding on the petitioner's interest.

Here, the granting of a combined operating license ("COL") to SCE&G would permit the construction and operation of two nuclear reactors on the Summer site in Fairfield County, South Carolina. The Sierra Club and FoE's members seek to protect their lives, health and safety and economic interests as customers and ratepayers of SCE&G by opposing the issuance of a COL to SCE&G. The Sierra Club and FoE seek to ensure that no COL is issued by the Commission unless SCE&G demonstrates full compliance with the AEA, the National Environmental Policy Act ("NEPA") and all other

applicable laws and regulations.

2. THE LICENSING BOARD ERRED IN REJECTING THE ADMISSIBILITY OF THE CONTENTIONS ADVANCED BY SIERRA CLUB AND FRIENDS OF THE EARTH.

The Licensing Board reviewed the three contentions which Sierra and FOE seek to litigate in this proceeding; deemed no part of any contention admissible; and, therefore, denied their joint Petition to Intervene and Request for Hearing. Order, LBP-09-02, Slip Op. p. 28.

The Sierra Club and FoE set forth with particularity their proposed contentions. For each contention, the Sierra Club and FoE demonstrate that the issues raised are within the scope of the proceeding, that the issues are material to the Commission's licensing responsibilities, and that there exists a genuine dispute between the petitioners and the licensee. In its contentions, the Sierra Club and FoE present the specific issues of law or fact to be raised, the bases for the contentions and statements of fact or expert opinion in support of the contentions. For each of the contentions, the legal considerations included in the section above are also incorporated. Sierra and FOE raise the following three contentions:

Contention 1 (AP 1000 Deficiencies),

Contention 2 (Aircraft attacks),

Contention 3 (Need for Power, Cost of Action and Alternatives).

Contention 1 (AP1000 Deficiencies).

> The COLA is incomplete at this time because many of the major safety components and procedures proposed for the Summer reactors are only conditionally designed at best. In its COLA, SCE&G has adopted the AP1000 DCD Revision 16 which has not been certified by the NRC and with the filing of Revision 17 by Westinghouse, Revision 16 will no longer be reviewed by the NRC Staff. SCE&G is now required to resubmit its COLA as a plant-specific design or to adopt Revision 17 by reference

and provide a timetable when its safety components will be certified. Either the plant-specific design or adoption of AP1000 Revision 17 would require changes in SCE&G's application, the final design and operational procedures. Regardless of whether the components are certified or not, the COLA cannot be reviewed without the full disclosure of all designs and operational procedures.

Contention 2 (Aircraft crashes).

SCE&G's ER, Chapter 7, "Postulated Accidents," fails to satisfy NEPA and the NRC rules because it does not address the environmental impacts of a successful attack by either the accidental or deliberate and malicious crash of a fuel-laden and/or explosive-laden aircraft and resulting severe accidents of the aircraft's impact and penetration on the facility. SCE&G is required to identify and incorporate into the design those design features and functional capabilities that avoid or mitigate, to the extent practicable and with reduced reliance on operator actions, the effects of the aircraft impact on the key safety functions, such as core cooling capability, containment integrity, spent fuel cooling capability and spent fuel pool integrity.

Contention 3 (Need for Power, Cost of Action and Alternatives).

Contrary to the requirements of the National Environmental Policy Act and 10 C.F.R. § 51.45 the Applicant's Environmental Report (ER) fails to adequately discuss the impacts of the proposed action and alternatives in proportion to their significance; fails to discuss alternatives with sufficient completeness to aid the Commission in developing and exploring "appropriate alternatives to recommended courses of action" in this "proposal which involves unresolved conflicts concerning alternative uses of available resources;" fails to adequately present the environmental impacts of this proposal and the alternatives in comparative form; fails to adequately discuss the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity with respect to this proposal and alternatives; fails to adequately discuss irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented; fails to include an adequate analysis that considers and balances the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects; fails to include analyses which, to the fullest extent practicable, quantify the various factors considered or adequately discuss important qualitative considerations or factors that cannot be quantified; and fails to contain sufficient data to aid the Commission in its development of an independent analysis in the following particulars:

A. With respect to Chapter 8 of the ER, "Need for Power," the Applicant completely dismisses the current economic crisis and recent reductions in its sales, and has conducted no sensitivities of its load forecast to try to capture the possible effects of a recession, including the possibility of a long and deep economic downturn.

B. With respect to Chapter 9 of the ER, "Proposed Action Alternatives," the Applicant almost completely ignores demand-side management, undervaluing opportunities for cost-effective energy efficiency and demand response or load management.

C. With respect to Chapter 9 of the ER, "Proposed Action Alternatives," the Applicant ignores the potential contribution of renewables to an overall sustainable and economic portfolio, and does not take into account significant improvement in unit costs and operations of renewables in recent years and as projected to continue.

D. With respect to Chapter 9 of the ER, "Proposed Action Alternatives," the Applicant fails to properly evaluate the risk of choosing a single technology and two extremely large construction projects in lieu of a more modular approach made up of a greater variety of resource options allowing a greater opportunity to change course during implementation of the plan, in the event that risks, known to be potential and those that are not now foreseeable, develop into real difficulties during implementation, and in the event that other superior opportunities become realistic.

E. With respect to Chapter 10 of the ER, "Proposed Action Consequences," the Applicant underestimates the impact of its proposed construction and operation on vulnerable customers via rate increases.

F. With respect to Chapter 10 of the ER, "Proposed Action Consequences," the Applicant's cost estimate for construction and operation fails to take into account recent rapid increases in the cost of inputs for construction.

G. With respect to Chapter 10 of the ER, "Proposed Action Consequences," the Applicant's cost estimate for construction and operation is based on an unrealistic schedule, and assumes a settled and approved design for its proposed AP1000, which has not yet been established and for which there is no firm date for Commission determination.

A contention is admissible when it meets the requirements in 10 C.F.R. § 2.309(f)(1):

> (1) A request for hearing or petition for leave to intervene must set forth with particularity the contentions sought to be raised. For each contention, the request or petition must:
>
> (i) Provide a specific statement of the issue of law or fact to be raised or controverted;

(ii) Provide a brief explanation of the basis for the contention;

(iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;

(iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;

(v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue; and

(vi) Provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact. This information must include references to specific portions of the application (including the applicant's environmental report and safety report) that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief.

The purpose of the contention rule is to, "focus litigation on concrete issues and result in a clearer and more focused record for decision." 69 Fed. Reg. at 2202; *see also Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 553-54 (1978); *BPI v. AEC*, 502 F.2d 424, 428 (D.C. Cir. 1974). The purpose for the basis requirements is: (1) to assure that the contention raises a matter appropriate for adjudication in a particular proceeding; (2) to establish a sufficient foundation for the contention to warrant further inquiry into the assertion; and (3) to put other parties sufficiently on notice of the issues so that they will know generally what they will have to defend against or oppose. *Peach Bottom*, ALAB-216, 8 AEC at 20-21; *Ariz. Pub. Serv. Co., et al.* (Palo Verde Nuclear Generating Station, Units 1, 2 and 3), LBP-91-19, 33 NRC 397,

400 (1991). The three contentions submitted by Sierra and FoE amply meet these requirements; raise significant safety and environmental issues supported by substantial information and expert opinion; are material to the NRC's licensing decision and should be admitted for adjudication.

As the Commission has stated regarding the contention-filing stage, "[t]he protestant must make a *minimal* showing that material facts are in dispute, thereby demonstrating that an 'inquiry in depth' is appropriate." Final Rule, Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168 at 33,171 (August 11, 1989). (emphasis added), citing *Connecticut Bankers Association v. Board of Governors,* 627 F.2d 245, 251 (D.C. Cir. 1980). The Commission also stated there that "the quality of the evidentiary support provided at the summary disposition stage is expected to be of a higher level than at the contention filing stage." *Id.*

Thus, the NRC Staff, SCE&G and the Licensing Board misapprehend these requirements, generally, where they insist on a dispositive standard of proof for a contention or its bases, rather than the appropriate pleading and basis standard appropriate at this stage of the proceeding. A COL is authorization from the NRC to construct and operate a nuclear power plant at a specific site. Before issuing a COL, the NRC staff is required to complete safety and environmental reviews of the application in compliance with the AEA and NEPA. The Sierra Club and FoE seek to intervene because operation of the two proposed nuclear reactors would endanger the health and safety and economic interests of its members and other people living within 50 miles of the proposed reactors. The costs and risks of the proposed reactors are

unnecessary and wholly out of proportion to any possible benefit; and the energy services to be provided by the project can be supplied by alternative means that are cheaper and pose less environmental impact.

A. CONTENTION 1 (AP 1000 DEFICIENCIES).

SCE&G and the Staff argued and the Licensing Board agreed that Contention 1 should be rejected because it challenges NRC policy regarding the conduct of COLA proceedings.

Contention 1 is a "classic" contention of omission, which may be raised by "alleging that certain necessary safety-related steps or analyses have not been taken. . " *Shaw AREVA MOX Services* (Mixed Oxide Fuel Fabrication Facility), LBP-07-14, 66 NRC 169, 206 (2007) ("LBP-07-14").

Contention 1 demonstrates that the Summer COLA is deficient with respect to certain specific design components, because it fails to demonstrate the fulfillment of two necessary procedural steps that must be taken before the adequacy of the Summer COLA to satisfy NRC safety and environmental regulations may be meaningful reviewed or determined with respect to those components. First, the design features listed in the contentions have not been conclusively approved in the separate design certification rulemaking proceeding that has been designated by the Commission for their resolution. *See* Final Policy Statement, Conduct of New Reactor Licensing Proceedings, 73 Fed. Reg. 20,963, 20,972-73) (April 17, 2008) ("Policy Statement"). Second, the final AP 1000 design, as certified and as potentially modified

through the design certification process, has not been adopted by SCE&G. *Id.* at 20,973. Unless and until these procedural steps have been taken, SCE&G's COLA remains inadequate with respect to the design components listed in Contention 1. Therefore the contention is admissible, and may be resolved or dismissed as moot only if and when SCE&G can demonstrate that the two procedural steps have been fulfilled. *See* LBP-07-14:

> Responding that the actions will be taken later does not defeat the contention for prematurity. Instead, it merely sets the stage for facility proponents later to bring forward, as they routinely do, a solution that allegedly cures the deficiency; they then move to dismiss the contention, triggering in turn a period during which the Petitioners can amend the original contention to challenge the solution's substance."

66 NRC at 206 (citing *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 and 2), CLI-02-28, 56 NRC 373, 382-83 (2002).

A different panel of the ASLB recently admitted a virtually identical contention and confirmed its consistency with the Commission's Policy Statement. *Progress Energy Carolinas, Inc.* (Combined License Application for Shearon Harris Nuclear Power Plant, Units 2 & 3), LBP-08-21, 68 NRC __ (October 30, 2008) ("LBP-08-21"). The ASLB admitted the contention with respect to "the specifically identified omissions" that were delineated in the contention, referred the specific omissions raised by the contention to the Staff, and held litigation of the contention in abeyance pending completion of the design certification rulemaking. *Id.,* slip op. at 9. As the ASLB explained in admitting the contention:

> We find that Petitioners' Contention TC-1 is not a challenge to the AP1000 design review process, but rather a challenge to the Application itself.

This situation has been directly contemplated by the Commission. In CLI-08-15 [an earlier decision by the Commission refusing to hold the *Shearon Harris* licensing proceeding in abeyance pending certification of the amended AP1000 design], the Commission directed Petitioner and, indirectly, this Board that if Petitioner identified specific omissions in the COLA, those omissions should be addressed in a contention to this Board which, in turn, "should refer such a contention to the staff for consideration in the design certification rulemaking, and hold that contention in abeyance, if it is otherwise admissible." Memorandum and Order, CLI-08-15, 68 NRC __, __ (slip op. at 4) (citing to the Final Policy Statement on the Conduct of New Reactor Licensing Proceedings, 73 Fed. Reg. 20,972 (Apr. 17, 2008)). In the Commission's Final Policy Statement, they explained the process as follows:

> We believe that a contention that raises an issue on a design matter addressed in the design certification application should be resolved in the design certification rulemaking proceeding, and not the COL proceeding. Accordingly, in a COL proceeding in which the application references a docketed design certification application, the licensing board should refer such a contention to the staff for consideration in the design certification rulemaking, and hold that contention in abeyance, if it is otherwise admissible.
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> 73 Fed. Reg. at 20,972.

Here, the contention does not challenge a design matter related to the AP1000 DCD to the extent previously certified, for if it did it would clearly be an impermissible challenge to agency regulations. Rather, Petitioner has set forth facts indicating specific omissions from the COLA that fall within the scenario contemplated by the Commission. We find both Applicant and Staff to have failed to provide information regarding whether or not the asserted omitted material was indeed omitted in the COLA, nor did either provide information indicating whether such allegedly omitted information is required to be in a COLA. Thus, we find Petitioner's asserted omissions to be uncontroverted, and therefore admissible.

Id., slip op. at 8-9 (emphasis added). The ASLB's reasoning is equally applicable in this case. The "scenario contemplated by the Commission" is that COLAs may not receive final approval until the designs on which they rely have been certified and adopted or modified by the COL applicants. 73 Fed. Reg. at 20,972-73. A COLA that references un-certified design elements is therefore deficient as a matter of law

with respect to its omission of information regarding the certification of those components. While it may be appropriate to hold the contention in abeyance pending the completion of the certification process or adoption of a modified design by SCE&G, it is not appropriate to dismiss the contention.

Nothing about the Contention challenges SCE&G's right to submit a COLA that references an un-approved design certification application, however. What the contention *does* challenge is the adequacy of such a COLA to support a meaningful licensing review and meet the requirements for the issuance of a license. As the Policy Statement makes clear, a COLA may not be issued unless and until the certification rule for the underlying design has been issued. 73 Fed. Reg. at 20,973. The only exception to this requirement is where "the applicant requests that the entire application be treated as a 'custom' design,'" a circumstance that does not exist here. *Id.*

B. CONTENTION 2 (AIRCRAFT CRASHES).

NRC regulations for the implementation of the AEA provide that a nuclear power plant must be designed against accidents that are "anticipated during the life of the facility." 10 C.F.R. § 50.34(a)(4) provides that a construction permit application for a nuclear power plant must include:

> a preliminary analysis and evaluation of the design and performance of structures, systems, and components of the facility with the objective of assessing the risk to public health and safety resulting from operation of the facility and including determination of the margins of safety during normal operations and transient conditions anticipated during the life of the facility, and the adequacy of structures, systems, and components provided for the prevention of accidents and the mitigation of the consequences of accidents.

SCE&G's COLA for the proposed Summer reactors does not assess the consequences of an aviation attack and the resulting impact, penetration, explosion and fire. The potential for accidents caused by deliberate malicious actions and the resulting equipment failures is not only reasonably foreseeable, but is likely enough to qualify as a design-basis threat ("DBT"), i.e., an accident that must be designed against under NRC safety regulations.[1]

The Commission by order dated February 25, 2002, initiated rulemaking to require all operating power reactor licensees to develop and adopt mitigative strategies to cope with large fires and explosions from any cause, including beyond-design-basis aircraft impacts.[2] In response and to fulfill its Congressional mandate under Section 651 of the Energy Policy Act of 2005, the NRC initiated and completed a review of its Design Basis Threats.[3] The purpose of the rulemaking was to see if the nuclear plants were safe from attacks because "the need for enhancement was recognized due to the escalation of domestic threat levels." On January 29, 2007, the Commission disapproved the recommended rulemaking but directed the NRC Staff to further revise reactor security regulations. On February 17, 2009, the Commission acted to adopt a final rule on this subject, yet to be published in the Federal Register. SECY-08-0152 –

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[1] John Large, "The Implications of 11 September for the Nuclear Industry," presented at Nuclear Terrorism, Disarmament Forum, page 35; www.largeassociates.com/terrorismUNDisarmament.pdf

[2] 67 F.R. 9792 (March 4, 2002).

[3] " Final Rulemaking to Revise 10 C.F.R. § 73.1, Design Basis Threat (DBT) Requirements," SECY-06-0219, October 30, 2006.

"Final Rule – Consideration of Aircraft Impacts for New Nuclear Power Reactors," (RIN 3150-AI19).

Despite the much-discussed acknowledgment by the NRC and other federal agencies that nuclear power plants are potential targets for attack, the Commission still had not addressed active protection measures against aviation attacks as it considered the "passive measures already in place . . . are appropriate for protecting nuclear facilities from an aerial attack."[4] The 9th Circuit Court of Appeals held this position to be unreasonable and required the NRC to investigate aviation threats.[5] In an issue brief, the Union of Concerned Scientists rebutted the NRC's position that "nuclear power plants are inherently robust structures that our studies show provide adequate protection in a hypothetical attack by an airplane."[6] All of the studies conducted by the NRC and outside parties have shown that nuclear reactors cannot withstand aviation attacks, and that attacks on containment structures and spent fuel pools can be devastating.

After further review and comment, the NRC then published a proposed rule that would have required applicants to assess the effects of the impact of a large, commercial aircraft on the nuclear power facility.[7] Based on the assessment, the applicant would have been required to include in its application a description and

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[4] *Ibid*., page 4.

[5] *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006), cert. den. 549 US ___ (06-466, January 16, 2007).

[6] Lochbaum, "The NRC's Revised Security Regulations," February 1, 2007. Available at www.ucsusa.org-20070201-ucs-aircraft-fire-hazards.pdf

[7] 72 F.R. 56287 (October 3, 2007).

evaluation of design features, functional capabilities, and strategies to avoid or mitigate, to the extent practicable, the effects of the aircraft impact with reduced reliance on operator actions. Both applicants, such as SCE&G herein, and vendors, such as Westinghouse for its AP1000 design, would be required to assess the risks from aviation attacks and demonstrated that the reactor design could safely handle them.

In the "Final Rule – Consideration of Aircraft Impacts for New Nuclear Power Reactors (RIN 3150-AI19)," SECY-08-0152 (October 15, 2008), (the "Final Rule"), the NRC staff is now seeking approval of final amendments to the NRC regulations that would require applicants for new nuclear power reactors to perform a design-specific assessment of the effects of the impact of a large, commercial aircraft. The applicant would be required to identify and incorporate into the design those design features and functional capabilities that avoid or mitigate, to the extent practical and with reduced reliance on operator actions, the effects of the aircraft impact on the following key safety functions:

- core cooling capability
- containment integrity
- spent fuel cooling capability
- spent fuel pool integrity

In addition, these amendments contain requirements for control of changes to any design features or functional capabilities credited for avoiding or mitigating the effects of an aircraft impact.

The NRC Staff memo on the Final Rule describes the lengthy process undertaken to reach the current rule. The safety-related basis for the rule is that:

> The impact of a large, commercial aircraft is a beyond-design-basis event and the NRC's requirements that apply to the design, construction, testing, operation, and maintenance of design features and functional capabilities for design basis events will not apply to design features or functional capabilities selected by the applicant solely to meet the requirements of this rule. The objective of this rule is to require nuclear power plant designers to perform a rigorous assessment of design features and functional capabilities that could provide additional inherent protection to avoid or mitigate, to the extent practical and with reduced reliance on operator actions, the effects of an aircraft impact.[8]

The Final Rule relocates security-related provisions of 10 C.F.R. Part 73 to a new paragraph (hh) in 10 C.F.R. § 50.54, "Conditions of Licenses," in a supplement to the power reactor security requirements proposed rule.[9] As proposed, applicants for new nuclear power reactors will be required to incorporate into their design additional practical features that would avoid or mitigate the effects of an aircraft impact. This assessment would have applicants and reactor designers incorporate practical measures at an early stage in the design process.

Specific to this contention, the ability of the proposed Summer reactors to withstand aviation attacks has not been demonstrated in the COLA. Even absent the adoption of the Final Rule 10 C.F.R. § 51.53 requires that the license renewal applicant consider alternatives to mitigate severe accidents if the staff has not previously evaluated SAMAs for the applicant's plant in an EIS or related supplement or in an environmental assessment. The purpose of this consideration is to ensure that plant changes, i.e., structural fortifications, hardening of vital safe shutdown systems and

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[8] Rulemaking Issue Affirmation, October 15, 2008. ADAMS Accession No. ML08105227; Enclosure 1 at ML080420262.

[9] 73 F.R. 19443 (April 10, 2008).

hardware, procedures and training, with the potential for improving severe-accident safety performance are identified and evaluated. The Summer ER does not provide information that allows the NRC staff to consider reasonable alternatives for avoiding or reducing the environmental impacts of this class of threats and accidents. This is a serious omission in the COLA.

Therefore, the COLA for the proposed Summer reactors cannot be approved without a full assessment of the threats from aviation attacks and a demonstration that the SAMAs required to prevent or mitigate the impacts from those attacks will be implemented. The unpalatable likelihood of an intentional aircraft crash into a nuclear plant has to be considered and accounted for; the proposed Summer reactors are ill-equipped to safely handle this threat. The Licensing Board erred in rejecting this contention.

C. CONTENTION 3 (NEED FOR POWER, COST OF ACTION AND ALTERNATIVES)

In this contention Sierra and FoE challenge the adequacy of SCE&G's submissions in its Environmental Report ("ER") respecting the need for power reflected in the load forecasts for the service territory to be served by the proposed plant- the benefit of the proposed action- as well as the costs of the proposed plant and its energy output; and the availability of cost effective, feasible, alternatives including energy efficiency or demand side management measures as well as alternative energy production sources. In support of this contention Sierra and FoE cite extensively to the deficient elements of the ER, to extrinsic facts from authoritative sources regarding the issues involving the Applicant and its South Carolina territory and regarding its

proposed plant and alternatives. In addition, this contention is extensively supported by the expert opinion evidence of former New Hampshire Public Utilities Commissioner and electric utility expert Nancy Brockway. Brockway Declaration, *passim*.

By its rejection of this contention the Licensing Board would disavow the Commission's promise to fully consider the need for the proposed project as well as available alternatives posing less environmental cost as required by NEPA.

In this combined operating licensing proceeding, the cost and benefits of the proposed Summer reactors as compared to the costs and benefits of alternatives are to be addressed in accordance with the Commission's representations. *Environmental Law and Policy Center v. NRC*, 470 F.3d 676 (7th Cir. 2006). In the *Environmental Law and Policy Center* case, the Court held that "NEPA requires an agency to 'exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project' and to look at the general goal of the project rather than only those alternatives by which a particular applicant can reach its own specific goals." *Id., citing Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664 (7th Cir. 1997). The Court held that the NRC properly approved the license there, but only after a comprehensive and independent review of a full-fledged study of alternatives in the ER. The Court, also, excused the NRC's refusal to consider energy efficiency alternatives to the plant at issue on the narrow grounds that the utility there was a wholesale supplier which was 'in no position to implement such measures" Slip Op at 13. Such is not the case here.

Here, contrary to this Commission's commitment, the Licensing Board so narrowed the proposed action to be considered, by adopting the applicant's stated

purpose, as to eliminate the consideration of any alternatives. Order, LBP-09-02, Slip Op. p. 24.

By uncritically accepting the applicant's narrow definition of the project as providing "2000 megawatts of base-load electrical generation" the Board eliminates any fair consideration of the need for that capacity or the alternative means of providing for South Carolina's energy future. By deferring to the Applicant's narrow definition of the proposed project as its commercial prerogative, the Licensing Board ignores the extensive commitment of public resources in the form of federal loan guarantees potentially supporting this nuclear project. Brockway Declaration at 14; SCANA Q4 Earnings Call Transcript, February 12, 2009, p. 2. Http://sekingalpha.com/article/120292-scana-q4-2008-earnings-call-transcript?page=1

To accept the dismissal from consideration of issues of need for power and alternatives the Licensing Board would have the Commission reverse its decision of September 23, 2003 , in which the Commission denied the petition of the Nuclear Energy Institute (NEI) to eliminate consideration of the need for the proposed plant and alternatives as part of the review under the National Environmental Policy Act of 1969 (NEPA). 68 Fed. Reg. 55905. Rejection of these detailed and well-founded contentions would amount to a retreat from that Commission decision. In its September 23, 2003 ruling, 68 FR 59905, the Commission rejected NEI's request that the NRC amend its regulations "to remove requirements that applicants and licensees analyze, and the NRC evaluate, alternative energy sources and the need for power with respect to the siting, construction, and operation of nuclear power plants." In short, the Commission stated that it was denying the petition because

> the NRC must continue to consider alternative energy sources and the need for power to fulfill its responsibilities under the National Environmental Policy Act of 1969, as amended (NEPA).[10]

Petitioners argue that the Applicant's Environmental Report (ER) fails generally to adequately discuss the impacts of the proposed action and alternatives in proportion to their significance.

Former New Hampshire Public Utilities Commissioner and energy resources expert consultant Nancy Brockway has over twenty-five (25) years experience in the regulation of electric utilities including the regulatory review and response to utility resource planning proposals and the regulatory response to nuclear power plant cost recovery issues. Ms. Brockway has extensive experience in 'demand side management' or energy efficiency programs applicable to electric utilities as well as the review of the forecast need for generating capacity and the alternatives for meeting energy supply needs. She has provided expert testimony in more than thirty (30) utility regulatory proceedings, including, most recently, before the South Carolina Public Service Commission on the need for power, costs, and alternatives to the proposed V.C Summer Nuclear Station, Units 2 and 3, which is the subject of this proceeding. Ms. Brockway's qualifications to offer expert opinion evidence addressing the issues raised by this contention are extensive. Brockway Declaration at ¶ 6.

[10] 68 FR 59905.

Sierra and FOE contend that the Applicant's load forecast is out of date and fails to account for the extraordinary economic reversals beginning in 2008, which will dampen load significantly.

> The worsening economy has already been felt in South Carolina's electricity sales.
> Both Duke Energy – Carolinas and SCE&G have announced that sales slacked off in the second half of 2008.
> Even before the current economic crisis, between its 2007 and 2008 Annual Plan (Integrated Resource Plan) filed with the South Carolina PSC, Duke had reduced its load forecasts for the 2016 and 2019 years between 3% and 6% (depending on the forecast year and whether the forecast was for energy or peak demand).
> Nationally, electricity usage was found by Tudor Pickering Holt to have dropped by 3% in the five weeks leading up to November 25, 2008 (mid October - late November 2008), compared to weather-based models.
> SCE&G has refused to consider revising its load forecast to take into account the recent downturn in the state and national economy. In testimony before the South Carolina Public Service Commission, the Company witnesses said they consider the recent events a normal dampening of business activity, they believe load reductions in their service area to be driven by the impact of high oil prices on disposable income, and they see no need to revise their long term forecast.
>
> Brockway Declaration at ¶¶ 26-31.

> SCE&G's need-for-power evaluation as filed with this Commission is unresponsive in forecasting a major source of uncertainty, that is, the current economic downturn. For this reason alone, it is unreliable and overstates the timing of the need for additional generation of any kind…. The major reason that SCE&G's load forecasts are unreliable is that they fail to take into account the likely impact of the recent economic downturn in the United States and in South Carolina.
>
> Brockway Declaration at ¶¶ 10, 17.

Sierra and FOE also assert that the Applicant failed to assess its demand side management (DSM) alternatives in a balanced, systematic and comprehensive manner. [Brockway Declaration at 8]:

> SCE&G …dismisses the possibility of alternatives to building two new nuclear generating plants, and undervalues the alternatives. In particular, SCE&G does not take demand side management … seriously, and overstates the risks associated with such resources, even as it understates the uncertainties associated with its chosen resource plan. As a result, SCE&G's resource plan is flawed and does not support its conclusion that Summer Units 2 and 3 represent the least cost and most reliable plan to provide resources for its customers…With respect to demand side management, SCE&G utterly dismisses the potential for DSM to produce resource benefits for customers and reduce the need or push off the timing of desirable generation additions….In its Environmental Report, SCE&G's discussion of demand side management …names what it calls conservation programs and load management programs, whereas the conservation programs are not well-designed and will not achieve significant efficiency as currently designed (regardless of budget).
>
> [Brockway Declaration at ¶¶ 34-36].

To dispense with a red herring raised by the NRC Staff and SCE&G and embraced by the Licensing Board, the fact that the ER has pages of discussion on a topic does not rebut a claim that the Application dismisses a particular resource. Similarly, the fact that the Applicant has reviewed and discarded various alternatives does not rebut an assertion that the Applicant has not considered those alternatives in a "balanced, systematic, and comprehensive manner."

The problem is that SCE&G found every reason to be skeptical of the potential of DSM, and made no real effort to determine how much customer need could be met with DSM. As a result, SCE&G seriously underestimated its incremental DSM potential, and unreasonably overestimated the amount of future resources that would need to be met by generation.

Independent analysis confirms the significant potential for energy efficiency gains in SCE&G's South Carollina service area.

> The South Carolina Climate, Energy and Commerce Committee (CECAC), established by the Governor of South Carolina, and comprising representatives of all key energy-using and energy-producing sectors in the state, agreed in a report issued in July 2008 that 5% of the state's energy needs could be met with energy efficiency resources by 2020, at a savings of almost $600 million, net present value. . . . .
> The CECAC produced a supply curve of low- and no-carbon resources in South Carolina, which shows that energy efficiency could eliminate up to 8 percent of net GHG in 2020, at a net cost ***savings*** relative to the generation alternative.

Brockway Declaration at ¶¶ 46, 49. See, e.g., the discussion of energy efficiency recommendations in Appendix G, available at http://www.scclimatechange.us/ewebeditpro/items/O60F19057.pdf;

As the Brockway Declaration states, no single alternative should be expected or required to meet all the Applicant's needs by itself:

> …all possible alternatives must be identified, and alternate scenarios, consisting of various mixes of resources and timing of resources, must be modeled to examine their net present value, given a variety of input assumptions. [11]

The Licensing Board places undue weight on the Applicant's claim that it needs "baseload generation" and only baseload generation. The Board fails to acknowledge Sierra and FOE's claims and supporting expert opinion evidence that the Applicant has failed in its ER to determine its

[11] Brockway Declaration at ¶ 56.

reasonably likely load requirements net of these modular, alternative options, before making the commitment of billions of dollars to the one nuclear option.

In its Response SCE&G dismisses the offshore wind alternative described in the Brockway Declaration at ¶¶ 61-67, citing among other things its ER discussion of problems with *onshore* wind power.[12] Staff recites the justifications given in the ER for rejecting the wind option, without explaining why the recitation does not show the presence of a material factual dispute.[13] Similarly, SCE&G and NRC Staff write off Petitioners' arguments that solar power should be considered as an alternative to the building of the two units, reciting the reasons the Applicant rejected the option as if they disposed of the contention. The Licensing Board does not even pause to consider these disputed claims; but, again, summarily dismisses consideration of renewable alternative power sources as irrelevant to the artificially narrow project purpose of providing base-load power. Order, LBP-09-02, Slip Op. p. 24.

More importantly, the NRC Staff, SCE&G and the Licensing Board take the position that the sole purpose for the units is limited to supplying baseload power, and that neither wind nor solar are baseload forms of power.[14] *Ipso facto,* they argue, Applicant did not need to include them in

[12] SCE&G Response to Petition, at p. 64, citing ER, at 9.2-8.

[13] Staff Response to Petition, at pp. 64-65.

[14] See, e.g., SCE&G Response to Petition, at p 66; Staff Response to Petition at p.70 .

its modeling, according to SCE&G and NRC Staff. They rely on the view that the utility's determination of its needs should be accorded great weight,[15] and that the Applicant has determined that it needs "baseload" power. The Commission visited the topic of the owner's preferences in its decision denying the NEI application for elimination of the need portion of the NEPA review. The Commission did affirm that "ordinarily" it will give substantial weight to "a properly-supported statement of purpose and need by an applicant and/or sponsor of a proposed project in determining the scope of alternatives to be considered by the NRC."[16] However, the Commission cautioned that an applicant "will not be permitted to narrow the objective of its action artificially and thereby circumvent the requirement that relevant alternatives be considered,'' citing *City of New York* v. *Department of Transportation,* 715 F.2d 732, 743 (1983).[17] As the Commission also reaffirmed:

> alternatives to the construction of a nuclear power plant must be considered before the environmental impacts of construction are realized.[18]

Contrary to the Licensing Board's conclusions, this is not one of those situations that may exist, in which the Applicant will "be able to establish, consistent with NEPA and

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[15] See, e.g., SCE&G Response to Petition, at p. 50, 2003 Rulemaking Petition Denial, 68 Fed. Reg. at 55,909, citing (*quoting Hydro Res., Inc.*, CLI-01-4, 53 NRC 31, 55 (2001) (*citing Citizens Against Burlington*, 938 F.2d at 197, *cert. denied*, 502 U.S. 994 (1991)). See also Staff Response to Petition at p. 66.

[16] Ruling Denying Rulemaking Petition, 68 Fed. Reg. 55905 (September 23, 2008), at 55909.

[17] *Id., at* 55910 – 55911.

[18] *Id, at 5510.*

current judicial precedents, a narrow statement of purpose and need for the project sufficient to justify excluding from the EIS a consideration of non-nuclear alternative energy sources."[19] Rather, eliminating all non-baseload alternatives from consideration arbitrarily narrows SCE&G's objective in building the two units at issue in this case.

Baseload generation is a form of generation that runs nearly continuously, with a very high load factor. As the Applicant's ER describes:

> Baseload capacity is… the most expensive to build, takes the most time to start up and shut down, and is the least expensive to operate for extended periods of time. Peaking units are … the least expensive to build, can be quickly started or stopped, and are the most expensive to operate for extended periods. Characteristics of intermediate capacity fall between the other two.[20]

Also, DSM resources can meet peak load needs and energy needs, or both, depending on the DSM resource in question. Brockway Declaration at ¶ 56.

While neither the ER nor the Licensing Board discuss the underlying question of "why baseload only?" in any depth, one can see from the Applicant's definitions of the forms of generation that the primary driver of the choice of capacity type is economics. It is unreasonable to decide "ex ante" that two large baseload units are needed. The Applicant itself recognized that baseload was not its only objective in new resources, since it used various forms of scenario modeling to determine what mix of generation forms, sizes, and on-line dates to choose.[21] However, it did not properly reflect the alternatives to its proposed central station baseload generation plant.

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[19] *Id.*

[20] ER at 8.1-5.

[21] E.R. at 9.2.2.12.

The Applicant itself (somewhat stingily) expressed a view in agreement with Petitioners in its ER, to the effect that even though individual alternatives might not be sufficient on their own to provide the capacity that the two proposed units would provide, "…it is conceivable that a mix of alternatives might be cost effective…"[22]

Finally, the failure to consider a more modular approach to adding resources renders the ER inadequate to capture the relevant considerations in choosing a resource acquisition objective. To adequately assess such a modular approach, the Applicant should construct various scenarios for modeling that reflect (a) a post-financial-crisis forecast of energy and peak requirements, (b) all reasonable generation options even if not baseload, c) the impacts on ability to obtain adequate electricity given rate impacts of (d) an updated and more realistic estimate of the costs of construction of the two AP1000s. A key benefit of the modular approach, which should be reflected in such an assessment, is the opportunity a modular approach would provide the Applicant to avert making a commitment to two large central station plants of an uncertain design whose costs are at least equal to the utility's net worth.

With respect to the human environment, NRC Staff dismisses the idea that inability to pay for adequate electricity would constitute an adverse impact on the human environment.[23] Staff and SCE&G argue that there is no environmentally preferable alternative to the project, but that argument assumes the very issues to be decided in the NEPA review.

[22] E.R. at 9.2.2.12.
[23] E.g., Staff Response to Petition, at p. 79.

Considering only the Applicant's underestimated cost for the plants, the Applicant expects rates to increase 40% as a result of construction. *A fortiori* rates will be considerably higher as the estimate is adjusted to a higher, more reasonable level.

Commissioner Brockway, with over 25 years experience in state utility regulation, including many years representing consumers (and particularly low-income and other vulnerable consumers) on rate issues before state regulators, opined that even a 40% rate increase would constitute rate shock, and produce hardship for many, "especially those of lower incomes and marginal profitability."[24]

SCE&G and the Staff both argue based on a recent Licensing Board decision that a cost-benefit analysis of the project is not required where the Applicant's alternatives analysis indicates that there is an environmentally preferable alternative.[25] There is no dispute that building any 1,117 mW central station generation units will have environmental impacts that must be considered. In addition to impacts on the natural environment, and as discussed above, the shear cost of such investments, as reflected in rates, will produce adverse impacts on the human environment.

The alternatives dismissed by the Applicant have low environmental footprints. DSM actually reduces energy use, and thus generation emissions. The load management component of DSM also helps to avert the need for construction and its impacts. Wind, especially the off-shore wind cited by Petitioners, produces no emissions. Solar power produces no emissions.

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[24] Petition at ¶ 44. Note Brockway's reference to "profitability," which brings into the analysis the question of the ability of businesses to stay open and continue offering employment, at least at anticipated levels, in South Carolina if such high rate increases are incurred.

[2525] SCE&G Response to Petition at p. 73, and Staff Response to Petition at p. 72. citing LBP-08-21, slip op. at 25.

Thus, an alternative, modular plan (reflecting an updated demand forecast, reasonable DSM assumptions, and inclusion of wind, solar and purchased power opportunities) may emerge as an environmentally preferable alternative upon the conduct of an effective environmental review. The present ER fails to adequately assess these subjects in the required systematic, thorough or comprehensive manner.

Until the costs and risks of the proposed Summer reactors and the alternatives are fairly and completely presented, the NRC staff will not be able to complete its EIS. The Petitioners' contention should be admitted.

CONCLUSION

The Petitioners Sierra Club and Friends of the Earth request that the Order of the Licensing Board be overturned and their petition to intervene and request for hearing be granted.

Respectfully submitted this 27th day of February 2009.

Signed (electronically) by Robert Guild
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CERTIFICATE OF SERVICE

I hereby certify that copies of this BRIEF ON APPEAL OF SIERRA CLUB AND FRIENDS OF THE EARTH was served on the following via email and via the EIE system:

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