

August 4, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE SECRETARY

_____)	
In the Matter of)	
PROGRESS ENERGY CAROLINAS, INC.)	Docket Nos. 52-022 COL
)	52-023 COL
(Shearon Harris Nuclear Power Plant,)	
Units 2 and 3))	
_____)	

PETITION FOR INTERVENTION AND REQUEST FOR HEARING
BY THE NORTH CAROLINA WASTE AWARENESS AND REDUCTION NETWORK

PURSUANT TO 10 C.F.R. § 2.309, 10 C.F.R. § 52.21 and a notice published by the Nuclear Regulatory Commission (“NRC” or “Commission”) at 73 F.R. 31899 on June 4, 2008,¹ now comes the North Carolina Waste Awareness and Reduction Network, Inc. (“NC WARN”), by and through the undersigned counsel, with a petition for leave to intervene and request for a hearing in the above-captioned matter. As demonstrated below, NC WARN has representational standing through its members to make this request.

This petition sets forth with particularity the contentions that NC WARN seeks to raise at a hearing on the fundamental flaws in the combined operating license

¹ ADAMS Accession No. ML081780128. The application documents are available at www.nrc.gov/reactors/new-licensing/col/harris.html#refDocuments

application (“COLA”) submitted by Progress Energy Carolinas, Inc. (“Progress Energy”) formerly Carolina Power & Light Company. Those contentions are that:

- a. The design and operating procedures are not in the COLA.
- b. Progress Energy’s track record of fire violations at the existing Harris reactor is suspect.
- c. The COLA does not consider aircraft attacks and/or the impacts of fires from aircraft attacks.
- d. The proposed Harris reactors depend on dangerous high-density spent fuel pools.
- e. Uranium is not a reliable fuel.
- f. Progress Energy has underestimated the cost of the proposed Harris reactors.
- g. The COLA does not address the carbon footprint of the reactor cycle.
- h. The COLA does not fully address the water requirements of the proposed reactors.
- i. The emergency planning for the proposed reactors is deficient.
- j. The problem of the disposal of high-level waste has not been resolved.

DESCRIPTION OF THE PROCEEDING

This proceeding concerns the COLA for the proposed Shearon Harris Nuclear Power Plant, Units 2 and 3 (“Harris”) filed pursuant to 10 C.F.R. Part 52 Subpart C by Progress Energy on February 18, 2008. A qualified acceptance of the application for docketing

by the NRC was sent to Progress Energy on April 17, 2008.² Notice of hearing and opportunity to petition for leave to intervene was published in 73 F.R. 31899 on June 4, 2008. The COLA incorporates by reference 10 C.F.R. § 52 Appendix D which includes the Westinghouse AP1000 pressurized water reactor Design Control Document (“DCD”) Revision 16.³ The AP1000 DCD Revision 16 remains subject to an ongoing NRC rulemaking under Docket No. 52-006.

STANDING OF PETITIONER

NC WARN is a grassroots nonprofit organization using science and activism to reduce hazards to public health and the environment from nuclear power and other polluting electricity production. It has more than 1,000 members and supporters in North Carolina, and many who reside near the existing Harris nuclear reactor and the site of the proposed Harris reactors. Its address is Post Office Box 61051, Durham, North Carolina 27715-1051. The organization recently participated in the relicensing of the existing Harris reactor Unit 1 and various rulemaking proceedings before the NRC; it has also brought emergency petitions pursuant to Section 2.206 on safety matters. On several occasions, representatives of NC WARN have provided comments to the NRC staff on the licensing process and scoping for the review of the COLA for the proposed Harris reactors.

Pursuant to 10 C.F.R. § 2.309, a request for hearing or petition for leave to

² ADAMS Accession No. ML081070226.

³ The AP1000 DCD Revision 16 reference documents are available at www.nrc.gov/reactors/new-licensing/col/harris.html#refDocuments

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.

Other standing requirements are found in NRC case law.⁴ As summarized by the Atomic Safety and Licensing Board ("ASLB"), these standing requirements are as follows:

In determining whether a petitioner has sufficient interest to intervene in a proceeding, the Commission has traditionally applied judicial concepts of standing. See *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-83-25, 18 NRC 327, 332 (1983) (citing *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610 (1976)). Contemporaneous judicial standards for standing require a petitioner to demonstrate that (1) it has suffered or will suffer a distinct and palpable harm that constitutes injury-in-fact within the zone of interests arguably protected by the governing statutes (e.g., the Atomic Energy Act of 1954 (AEA), the National Environmental Policy Act of 1969 (NEPA)); (2) the injury can be fairly traced to the challenged action; and (3) the injury is likely to be redressed by a favorable decision. See *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plants), LBP-99-25, 50 NRC 25, 29 (1999). An organization that wishes to intervene in a proceeding may do so either in its own right by demonstrating harm to its organizational interests, or in a representational capacity by demonstrating harm to its members. See *Hydro Resources, Inc.* (2929 Coors Road, Suite 101, Albuquerque, NM 87120), LBP-98-9, 47 NRC 261, 271 (1998). To intervene in a representational capacity, an organization must show not only that at least one of its members would fulfill the standing requirements, but also that he or she has authorized the organization to represent his or her interests. See *Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 168, *aff'd on other grounds*, CLI-98-13, 48 NRC 26 (1998).

⁴ *Pacific Gas & Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413, 426 (2002).

Standing to participate in this proceeding is demonstrated by the attached declarations of the following members of NC WARN, people who live in North Carolina within 50 miles of the proposed site and who have authorized NC WARN to represent their interests in this proceeding:

Elizabeth Anne Cullington, Pittsboro
Beverly Ann D'Aquanni, Pittsboro
Judith A. Elzinga, Apex
Gina Gaurisas-Wilson, Cary
Hugh B. Haskell, Cary
Judith Ann Hogan, Moncure
Meribeth Lorraine Howlett, Raleigh
Patricia V. Long, Raleigh
Vernelle P. Long, Raleigh
Mark Edward Mintz, Raleigh
Gary Phillips, Pittsboro
Audrey Bernier Schwankl, Pittsboro
James Patrick Schwankl, Pittsboro
Katherine P. Seaton, Pittsboro
Richard Wilson, Cary

In addition, NC WARN's office is physically located at 2812 Hillsborough Road, Durham, North Carolina. This is within 50 miles of the proposed Harris reactors and NC WARN as an organization is concerned about the health and safety of its staff while they are working.

As demonstrated by the attached declarations, NC WARN's members live near the proposed site, i.e., within 50 miles, although many live much closer. Thus, they have presumptive standing by virtue of their proximity to the proposed nuclear plants that may be constructed on the site.⁵ In *Diablo Canyon*, the Atomic Safety and

⁵ *Diablo Canyon, supra*, 56 NRC at 426-427, citing *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), LBP-01-6, 53 NRC 138, 146, *aff'd*, CLI-01-17, 54 NRC 3 (2001).

Licensing Board noted that petitioners who live within 50 miles of a proposed nuclear power plant are presumed to have standing in reactor construction permit and operating license cases, because there is an “obvious potential for offsite consequences” within that distance.

Here, the granting of a combined operating license (“COL”) to Progress Energy would permit the construction and operation of two nuclear reactors on the Harris site in Wake County, North Carolina. NC WARN’s members seek to protect their lives and health by opposing the issuance of a COL to Progress Energy. NC WARN seeks to ensure that no COL is issued by the Commission unless Progress Energy demonstrates full compliance with the AEA, the National Environmental Policy Act (“NEPA”) and all other applicable laws and regulations.

Further, *locus standi* is based on three requirements: injury, causation and redressability. NC WARN hereby requests to be made a party to the proceeding because:

(1) construction and operation of a nuclear reactor at Harris would present a tangible and particular harm to the health and well-being of NC WARN’s members living within 50 miles of the site;

(2) the Commission has initiated proceedings for a COL, the granting of which would directly affect NC WARN and its members; and

(3) the Commission is the sole agency with the power to approve, to deny or to modify a license to construct and operate a commercial nuclear power plant.

RELATED PROCEDURAL MATTERS

On June 24, 2008, NC WARN moved to indefinitely postpone the hearing notice in this docket on the bases that the COLA was incomplete because the lack of information on water (see Contention EC-3 below) and the uncertified AP1000 reactor design and operational procedures in Docket No. 52-002 (see Contention TC-1 below). NC WARN supplemented its motion on July 20, 2008 with additional information about further delays in the certification process. The applicant and the NRC staff responded to the motion. On July 23, 2008, the Secretary issued Commission Memorandum and Order (CLI-08-15) denying this motion. In that decision, the Commission states that

although the Commission anticipated that applicants would first seek to have designs certified before submitting COLs which reference those designs, the NRC's regulations, nonetheless, allow an applicant – at its own risk – to submit a COL application that does not reference a certified design.

Because the Commission's "anticipated" certification process has not been accomplished in actuality, leading to the very problem described in Contention TC-1 below, i.e., that a petitioner, such as NC WARN, is forced to file contentions on designs and operational procedures that are "known unknowns." NC WARN therefore adopts its motion and supplement by reference, and supported by Contention TC-1 below, herein requests that the Commission reconsider its Memorandum and Order.

LEGAL CONSIDERATIONS

Of primary importance, the AEA prohibits the Commission from issuing a license to operate a nuclear power plant if it would be "inimical to the common defense and

security or to the health and safety of the public.”⁶ Public safety is “the first, last, and a permanent consideration in any decision on the issuance of a construction permit or a license to operate a nuclear facility.”⁷ As detailed below in NC WARN’s contentions, Progress Energy’s COLA also fails to comply with the NEPA requirement that it address the environmental impacts of operating the proposed Harris reactors.

The AEA sets minimum standards for safe and secure operation of nuclear facilities, while NEPA requires the Commission to consider and attempt to avoid or mitigate significant adverse environmental impacts of licensing those facilities. Although the statutes have some overlapping concerns, they establish independent requirements.⁸ It is “unreasonable to suppose that [environmental] risks are automatically acceptable, and may be imposed upon the public by virtue of the AEA, merely because operation of a facility will conform to the Commission’s basic health and safety standards.”⁹ NEPA goes beyond the AEA, by requiring the consideration of alternatives for reducing or avoiding adverse environmental impacts of NRC licensing actions.¹⁰

⁶ 42 U.S.C. §2133(d).

⁷ Petition for Emergency and Remedial Action, 7 NRC at 404, citing *Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers*, 367 U.S. 396, 402 (1961).

⁸ *Limerick Ecology Action v. NRC*, 869 F.2d 719, 729-30 (3rd Cir. 1989) (“*Limerick Ecology Action*”) (holding that the AEA does not preclude NEPA).

⁹ *Limerick Ecology Action*, quoting *Citizens for Safe Power v. NRC*, 524 F.2d 1291, 1299 (D.C. Cir. 1975).

¹⁰ 10 C.F.R. § 51.71(d).

NRC regulations for 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.

Again, the NRC relies in large part on the “adequacy of structures, systems and components” to prevent and mitigate the “anticipated” accidents, i.e., the design-basis accidents (“DBAs”).¹¹ DBAs include low-frequency but credible events. The applicant for a license and the resulting Environmental Impact Statement (“EIS”) prepared by the NRC must analyze and evaluate the adequacy of the plant to protect the public health and safety from these accidents.

The NRC designates accidents that are more complex and less likely than design basis accidents as “severe accidents,” i.e., “those involving multiple failures of equipment or function and, therefore, whose likelihood is generally lower than design-basis accidents but whose consequences may be higher.” Although severe accidents are “beyond the substantial coverage of design-basis events,” they constitute “the major risk to the public associated with radioactive releases from nuclear power

¹¹ NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants at 5-1 (1996) (“License Renewal GEIS”).

plant accidents.”¹²

NEPA procedures require the NRC to prepare an EIS for any major licensing action significantly affecting the quality of the human environment.¹³ The goal of the EIS is to analyze and evaluate the ability of the plant to operate safely; first that the plant is in compliance with safety rules, and protects against “anticipated” accidents and design basis accidents, and the “reasonably foreseeable” impacts which have “catastrophic consequences, even if their probability of occurrence is low.”¹⁴ In licensing hearings, the Commission has required that the EIS address the probability of severe accidents and how to prevent them if at all possible, or mitigate them if they cannot be prevented.¹⁵

In the EIS for the present operating license extension, 10 C.F.R. 51.53(c)(ii)(L) requires that the license renewal applicant and the NRC consider alternatives to mitigate severe accidents if the NRC staff has not previously evaluated Severe Accident Mitigation Alternatives (“SAMAs”) for the applicant’s plant in an EIS document. Both the Environmental Report (“ER”) prepared by Progress Energy and the EIS prepared by the NRC staff must present “alternatives for reducing adverse impacts,”

¹² “Policy Statement on Severe Accidents Regarding Future Designs and Existing Plants,” 50 F.R. 32,138, 32,139 (August 8, 1985) (“Severe Accident Policy Statement”).

¹³ 10 C.F.R. §§ 51.71 and 51.91.

¹⁴ 40 C.F.R. § 1502.22(b)(1).

¹⁵ See, e.g., *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), CLI-01-11, 53 NRC 370, 387 (2001).

including the severe accidents.¹⁶ This requirement is:

based on the Commission's NEPA regulations that require a review of severe [accident] mitigation alternatives in its environmental impact statements (EISs) and supplements to EISs, as well as a previous court decision that required review of severe mitigation alternatives (referred to as SAMAs) at the operating license stage. See, *Limerick Ecology Action v. NRC*, 869 F.2d 719 (3d Cir. 1989).¹⁷

The NRC staff's responsibility in preparing the EIS is to conduct a fair and independent analysis of the impacts of the proposed action on the environment in order to give the decisionmaker a useful tool, based on solid scientific and technical data, to make a decision to grant or deny the COLA.

OVERVIEW OF THE CONTENTIONS

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. NC WARN wishes to intervene because operation of the two proposed nuclear reactors would endanger more than 2.2 million people living within 50 miles of the proposed reactors. Furthermore, the risk is unnecessary and wholly out of proportion to any possible benefit.

NC WARN hereby sets forth with particularity its proposed contentions. For each contention, NC WARN demonstrates that the issues raised are within the scope of the proceeding, that the issues are material to the Commission's licensing responsibilities,

¹⁶ 10 C.F.R. § 51.53(c)(3)(iii), citing 10 C.F.R. § 51.45(c).

¹⁷ 61 F.R. at 28,481.

and that there exists a genuine dispute between NC WARN and the licensee. In its contentions, NC WARN presents 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.

NC WARN's contentions are divided into two categories, environmental and technical.¹⁸ The following are the contention names and the page number on which each begins in this Petition:

Contention TC-1 (AP 1000 certification), page 13.

Contention TC-2 (Track record of fire violations), page 18.

Contention TC-3 (Aircraft attacks), page 24.

Contention TC-4 (Aircraft attacks and fires), page 31.

Contention TC-5 (High density spent fuel pools), page 34.

Contention TC-6 (Reliability of uranium fuel), page 37.

Contention EC-1 (Underestimation of costs), page 38.

Contention EC-2 (Carbon footprint), page 43.

Contention EC-3 (Water requirements), page 46.

Contention EC-4 (Deficiencies in emergency planning), page 48.

Contention EC-5 (Waste disposal), page 52.

¹⁸ The contentions are described as follows: the Environmental Contentions are designated EC-#, Technical Contentions as TC-#. These classifications are fairly arbitrary and most of the contentions express overlapping concerns, so that an environmental contention has technical and safety concerns related to it, and vice versa.

CONTENTIONS

Contention TC-1 (AP1000 Certification).

The COLA is incomplete because many of the major safety components and procedures at proposed Harris reactors are only conditional at this time. The COLA adopts by reference a design and operational procedures that have not been certified by the NRC or accepted by the applicant. Modifications to the design or operational procedures for the AP1000 Revision 16 would require changes in Progress Energy's application, the final design and operational procedures. Regardless whether the components are certified or not, the COLA cannot be reviewed without the full disclosure of all designs and operational procedures.

Support for contention. The most significant elements of the proposed reactors, i.e., the design and operational practices, are lacking in the COLA. The Design Control Document ("DCD") for the AP1000 Revision16 has been adopted by reference for the proposed Harris reactors and is, as such, part of the application.¹⁹ It is impossible to conduct a meaningful technical and safety review of the COLA without knowing the final design of the reactors as they would be constructed by Progress Energy. On its face, the DCD is incomplete; even after the certification of several "Tier 1" components in December 2005, there remain a number of serious safety inadequacies in the AP1000 revision 16 design that have not been satisfactorily addressed. For example, in the January 18, 2008, letter to Westinghouse docketing AP1000 revision 16²⁰, there was

¹⁹ Appendix D to 10 C.F.R. Part 52 and the AP1000 DCD Revision 16.

²⁰ ADAMS Accession No. ML073600743.

discussion of an incomplete recirculation screen design, i.e., the “sump problem,” a necessary component to the emergency cooling system that will affect the design for the proposed Harris reactors.²¹ The unresolved sump problem is not the only design consideration that will ultimately impact the safety of the facility.

The AP1000 DCD Revision 16 currently lists 172 separate documents concerning various aspects of the AP1000 reactor, totaling more than 6,500 pages. However, only 21 of the components appear to have been certified by the NRC and most of those rely on systems reflected in the remaining, non-certified design and operational procedures. These documents contain Tier 1 information, i.e., components of the design that have been certified, and Tier 2 information, i.e., components that have not been certified as complying with Appendix D to 10 C.F.R. Part 52.²² Importantly, the Tier 1 design descriptions, interface requirements and site parameters are derived from the Tier 2 information.²³ In other words, not even the so-called “certified” components have been fully approved as they depend on the interaction with non-certified components.

The Tier 2 components are not trivial, but run the gamut of containment, control room set up, seismic qualifications, fire areas, heat removal, human factors engineering design, plant personnel requirements, operator decision-making, alarms and piping.

²¹ Union of Concerned Scientists, “Regulatory Malpractice: The NRC's Handling of the PWR Containment Sump Problem,” October 2003. Available at http://www.ucsusa.org/clean_energy/nuclear_safety/regulatory-malpractice-nrcs-handling-of-the-pwr-containment-sump-problem.html

²² The AP-1000 Certification Rule.

²³ AP1000 DCD Revision 16, Introduction, paragraph 1.3.

These non-certified components interact with Tier 1 components and each other to a significant degree. During the certification process, any or all of these may be modified by the Commission, and as a result, require the applicant to modify its application. These lead to one of the basic problems for all reviewers of the COLA for Progress Energy and other utilities; it is impossible to conduct the probabilistic risk assessment (“PRA”) for the proposed Harris reactors without a final design and operations procedures.

The AP1000 revision 16 reactor is experimental in nature and has never been constructed even on a demonstration scale, increasing both the financial and safety risks. As is generally the case with advanced technologies, risks of failure are usually higher during the break-in phase. This was demonstrated by the partial meltdowns that occurred during the early years of the current generation of commercial reactors.

While some new systems might appear on paper to be advanced, the passive design has less redundancy in safety systems and lower tolerance for equipment failures, apparently due to cost-cutting pressures. As noted by the Union of Concerned Scientists, “reactor designs with passive safety systems could use active systems as backups, but the NRC asserts that such an approach would be inconsistent with the “design objective.” It would also be more expensive.”²⁴ The NRC declined to require the double containment structure required of new reactors being built in Europe.

It should be noted in the Memorandum and Order (CLI-08-15) denying NC

²⁴ Union of Concerned Scientists, “Nuclear Power in a Warming World: Assessing the Risks, Addressing the Challenges,” December 2007. Available at www.ucsusa.org/global_warming/solutions/nuclearandclimate.html

WARN's motion to indefinitely postpone the notice of hearing in this docket, the Commission states that

If the Petitioners believe the Application is incomplete in some way, they may file a contention to that effect. Indeed, the very purpose of NRC adjudicatory hearings is to consider claims of deficiencies in a license application; such contentions are commonplace at the outset of NRC adjudications.

The validity of this contention does not depend on whether the ultimate design is certified or not; the COLA is incomplete and cannot be reviewed by the NRC staff or affected petitioners. Specifically at the proposed Harris reactors, the application does not contain the following:

- a. The final design of the reactor containment.
- b. The control room set up and operator decision-making procedures.
- c. Seismic qualifications for various components of the AP1000 reactors.
- d. The establishment of fire protection areas.
- e. Technology requirements for heat removal.
- f. Human factors engineering design throughout the plant.
- g. Plant personnel requirements.
- h. Alarm systems throughout the plant.
- i. Plant-wide requirements for pipes and conduits.

In addition to the Westinghouse-acknowledged deficiencies in the sump and design instrumentation and controls, it is clear that the missing components and procedures are crucial in assessing the safety and impacts of the proposed reactors.

When Westinghouse submitted its AP1000 revision 16 to the NRC in March

2002, the estimated completion date for full certification was expected to be 2008.²⁵

After six years and with the bulk of the problems only recently revealed, NC WARN has no confidence that several of the fundamental issues will be resolved. Even the basic design for the steam generators and pressurizers are currently being revised. The expected completion date of the certification process will in all likelihood continue to be delayed past its current estimation of mid-2011.²⁶

An assessment of risk is required for a COLA review, and that depends on the ultimate design of the reactor and how all of the components interact with each other. Likewise, the ER culminates in the assessment of DBAs, and then the severe accidents to develop the severe accident mitigation design. The NRC staff's Environmental Assessment on the AP1000 Revision 16 was conducted in 2005, prior to the submittal of the Harris application, and cannot be relied upon. Without having the current configuration, design and operating procedures in the application, the risk assessment and SAMAs cannot be determined. Until major components are incorporated into the COLA for a full review, much of the interaction between the various components cannot be resolved.

Conclusion. The deficiencies in the Harris COLA are manifold with much of the technical descriptions of major components of the plant subject to change. The lack of information about the basic design and operating requirements for the AP1000 reactor Revision 16 will not allow a full and meaningful review. Regardless of whether the

²⁵ www.nrc.gov/reactors/new-licensing/design-cert/amended-ap1000.html

²⁶ www.nrc.gov/reactors/new-licensing/new-licensing-files/new-rx-licensing-app-legend.pdf (May 29, 2008).

reactor components are certified or not at some time in the future, the COLA does not contain the necessary information on major design and operational components.

Neither the NRC staff nor Progress Energy knows at this time what the final design will end up being.

Contention TC-2 (Track record of fire violations).

The event of a significant fire can lead to the loss of the operators' ability to achieve and maintain hot standby/shutdown conditions further resulting in significant accidental release of radiation and posing a severe threat to public health and safety. Given its track record of noncompliance of fire regulations at the existing Harris Unit 1, Progress Energy should not be granted a COL for the two proposed reactors. The existing Harris reactor has been out of compliance since at least 1992 with requirements to maintain the post-fire safe shutdown systems of the reactor that minimize the probability and effects of fires and explosions. Given Progress Energy's history of noncompliance at the existing Harris reactor, NC WARN anticipates similar noncompliance at the proposed Harris reactors.

Support for contention. The risk from fire at nuclear plants has been quantified repeatedly by the NRC staff. As early as 1990, staff reported that

based on plant operating experiences over the last 20 years it has been observed that typical nuclear power plants will have three to four significant fires over their operating lifetime. Previous Probabilistic Risk Assessments have shown that fires are significant contributors to the overall core damage frequency, contributing anywhere from 7 percent to 50 percent of the total, considering contributions from internal, seismic, flood, fire, and other events. There are many reasons for these findings. The foremost reason is that like many other external events, a fire event not only acts as an initiator but can also compromise mitigating systems

because of its common-cause effect.²⁷

As recently as July 17, 2008, an NRC official in a staff briefing confirmed that fire-related events represent approximately half the overall risk of core damage at U.S. nuclear power plants.²⁸

The existing Harris reactor's fire protection system encompasses a number of systems including various types of fire barriers, fire doors and penetrations for pipes, electrical cable/conduits, and HVAC ducts. The fire barriers include extensive applications of inoperable fire barrier systems consisting of Thermo Lag, HEMYC and MT. These fire barrier materials were originally designated for the fire protection of electrical cables and conduits vital to the post fire safe shutdown systems. However, subsequent fire tests have identified that these fire barrier systems do not provide the level of required fire protection on standardized time and temperature industry fire tests.

NRC regulations mandate that nuclear power station operators physically protect emergency backup electrical systems, such as power, control and instrumentation cables, that are used to remotely shut down the reactor from the control room. The regulatory provisions require the physical fire protection of electrical cabling to include independently tested to ASTM standards for rating as qualified fire barriers. Such fire protection systems are to be designed, installed and maintained to resist the passage of

²⁷ "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants, " US NRC, NUREG-1150, Vol. 2, Appendix C, October 1990; p. C-128.

²⁸ The NRC staff briefing to the Commission on Fire Protection Issues is referenced in Chairman Klein's response to OIG, July 15, 2008. Available at www.nrc.gov/reading-rm/doc-collections/insp-gen/2008/chairman-letter-to-bell-July-2008.pdf A transcript of the July 17 staff briefing is expected in the near future.

flame and hot gas to protect encased electrical cables from excessive temperatures to allow them to operate for safe shutdown.

Pursuant to 10 C.F.R. 50.48(e), NRC regulations require that all plants licensed to operate after January 1, 1979, shall complete all fire protection modifications needed to satisfy of 10 C.F.R. Part 50, Appendix A, Criterion 3 in accordance with the provisions of their operating licenses. The details of the fire protection program for the existing Harris reactor are required to be in accordance with NRC Standard Review Plan, NUREG-0800, Section 9.5.1, a document which parallels 10 C.F.R. 50 Appendix R for the protection of post-fire safe shutdown systems. 10 C.F.R. 50, Appendix R, III.G.2 provides the three acceptable methods of protecting at least one shutdown train to remain free from fire damage during a postulated fire when redundant trains are located in the same fire area, those being:

1. Separation of the redundant system by a passive barrier able to withstand a fire for at least three hours; or
2. Separation of the redundant system by a distance of twenty feet containing no intervening combustible material, together with fire detectors and an automatic fire suppression system; or
3. Separation of the redundant system by a passive barrier able to withstand a fire for one hour, coupled with fire detectors and an automatic fire suppression system.

This prescriptive fire code was put in place for US nuclear power plants following the fire at the Browns Ferry nuclear plant in 1975 to provide the best assurance than no single fire can destroy a control room's ability to safely and remotely shut down the reactor.²⁹ The Brown Ferry fire demonstrated that a high number of circuit failures can occur in a

²⁹ NRC Bulletin 75-04, "Cable Fire at Browns Ferry Nuclear Power Station."

relatively short time period, in this case within 15 minutes from the ignition of the foam insulating material in the cable trays.

The existing Harris reactor has been out of compliance since 1992 so there is absolutely no reasonable assurance against cable and conduit fires and consequential impairment of the ability of the plant to safely operate, and in particular, to safely shut down and maintain the reactor in emergency situations. On September 20, 2006, NC WARN and other petitioners documented the fire protection noncompliance at the existing Harris reactor in the report, "Delaying with Fire: The Shearon Harris Nuclear Plant and 14 Years of Fire Safety Violations."³⁰ The report contains attachments providing additional documentation of Harris's noncompliance with the fire regulations through a long series of NRC notices, bulletins and enforcement actions that have been in large part ignored by Progress Energy. Promises to come into compliance have been repeatedly made and then postponed.³¹

NC WARN submitted an emergency petition pursuant to 10 C.F.R. §2.206 immediately shut down the plant and fine Progress Energy the maximum fine for each violation, and to investigate the fire protection problems.³² In his proposed decision, the

³⁰ www.ncwarn.org/docs/reports/WP%20DELAYING%20W%20FIRE%20REP.pdf

³¹ Attachment 1 to this report, the Shearon Harris Fire Protection Abridged Chronology, documents the lack of compliance with fire safety rules and Progress Energy's continuing noncompliance in the face of NRC actions, notices and guidance documents.

³² The 2.206 Petition and additional supporting documents, the Proposed Director's Decision are in the ADAMS system at the following: Petition, Accession Nos. ML06240550 and ML062830089; the transcript, ML063210488; supplements, ML062980107, ML063200168, ML063450098, and ML070510497; the Proposed Director's Decision, ML070780537; Petitioners' Response, ML071230046; Director's

director concluded that the Harris reactor was out of compliance, but denied the §2.206 petition because it appeared that the existing Harris reactor would come into compliance with a proposal for a risk-based program, referred to as NFPA 805.

The problem at the existing Harris reactor has not been resolved. On March 10, 2008, the NRC staff issued a technical assessment of Progress Energy's study to transition to the risk-based NFPA 805 standard.³³ The cover letter concludes

that the Harris fire PRA is not complete, some tasks have yet to be started, and many areas are still in draft form. At the time of the onsite portion of the review, the Harris fire PRA was more similar to a scoping analysis, rather than a completed fire PRA

Progress Energy has continued to delay the resolution of the fire issue. Regardless of the effort to relax fire protection regulations under a new, voluntary NFPA 805 regulatory scheme, the existing Harris reactor would remain in non compliance with both the current and new regulations indefinitely.³⁴

In part, because of the §2.206 petition, the NRC staff's role in the lack of compliance with fire regulations was investigated by the NRC Office of Inspector General.³⁵ The resulting report criticized the NRC for allowing the fire safety problems

Decision DD-07-03, ML062640550.

³³ "Shearon Harris Nuclear Power Plant, Unit 1 - Preliminary Results of the NRC Staff Review of the Fire Probabilistic Risk Assessment Model to Support Implementation of National Fire Protection Association Standards NFPA-805, "Performance-Based Standard for the Protection for Light Water Reactor Electric Generating Plants.""

³⁴ Comments in staff briefing, see footnote 28 on page 19.

³⁵ OIG, "NRC's Oversight of HEMYC Fire Barriers," Case 05-46, January 22, 2008. Available at www.nrc.gov/reading-rm/doc-collections/insp-gen/2008/el-05-46.pdf

to linger since at least 1994 when the then-NRC Chairman committed to a Congressional panel that the NRC would evaluate fire endurance characteristics of fire wraps and review the original fire qualification test reports from the fire wrap manufacturers. As of January 2008, this had not been done.

The lack of compliance with fire regulations was the subject of a recent study by the Government Accountability Office.³⁶ The issues examined by the GAO were:

1) the frequency and causes of recent fire emergencies at U.S. nuclear power plants; (2) the adequacy and acceptable duration of interim compensatory measures; and (3) whether the transition to risk-based fire safety standards has led to an over-reliance on such measures during the transition period.

The report found it “especially critical” to resolve the effectiveness of fire wraps “that were found lacking in effectiveness in various tests.” The GAO study concludes

By taking prompt action to address the unapproved use of operator manual actions, long-term use of interim compensatory measures, the effectiveness of fire wraps, and multiple spurious actuations, NRC would provide greater assurance to the public that nuclear units are operated in a way that promotes fire safety.

This ongoing noncompliance with fire regulations at the existing Harris reactor is both a risk to that reactor and an additional risk to the proposed Harris reactors.

In its documents supporting the AP1000 revision 16, Westinghouse postulates that only one fire is assumed to occur within the plant at any given time.³⁷ This assumption is used in performing the safe shutdown evaluation. Given the risk of

³⁶ GAO, “Nuclear Safety: NRC’s Oversight of Fire Protection at U.S. Commercial Nuclear Reactor Units Could Be Strengthened,” GAO-08-747, June 2008. Available at www.gao.gov/htext/d08747.html

³⁷ Westinghouse AP1000 DCD Rev. 16, Document 172, Section 9A.2.7.1 and Appendix 9A (Fire Protection Analysis).

“multiple spurious actuation,” this false assumption is not a reasonable basis upon which to assess risk for the AP1000 revision reactors.

Conclusion. Progress Energy has relied on inoperable and inadequate fire safety systems for at least fifteen years at Harris and has indicated that it may resolve some of the fire protection problems by 2015 or later. People living around Harris remain subject to severe and undue risks from these noncompliant practices. No assurance can be given by Progress Energy or the NRC that public health and safety will be protected or that potential accidents at the existing Harris reactor will have no impact on the proposed Harris reactors. Therefore, as a matter of law, the decision on the COL for the proposed Harris reactors should be denied until the plant is fully in compliance with the fire regulations at its existing reactor.

Contention TC-3 (Aircraft attacks).

Progress Energy’s ER fails to satisfy NEPA because it does not address the environmental impacts of a successful attack by the 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. It is unreasonable for the NRC to dismiss the possibility of an aviation attack on the existing and proposed Harris reactors in light of the studies by the NRC that this is a real possibility that could have devastating results.

Support for contention. 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.

Multiple studies show that the Commission's basis for refusing to consider the environmental impacts of deliberate and malicious acts in a COL is no longer viable, and therefore may be challenged in this proceeding.³⁸ Progress Energy's COLA for the proposed Harris reactors does not evaluate 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.³⁹

In its 1982 analysis, the Argonne National Laboratory submitted its "Evaluation of Aircraft Hazards Analysis for Nuclear Power Plants," NUREG-2859, to the NRC.⁴⁰ This study focused on accidental aircraft crashes but the same threat analysis can and

³⁸ 10 C.F.R. § 51.53(c)(3)(iv).

³⁹ John Large, "The Implications of 11 September for the Nuclear Industry," presented at Nuclear Terrorism, Disarmament Forum, page 35. Available at www.largeassociates.com/terrorismUNDisarmament.pdf

⁴⁰ After being made public for almost two decades, NUREG-2859 was apparently removed from the public ADAMS system and elsewhere on the NRC website after the terrorist attacks of September 11, 2001, because of the sensitive nature of some of the specifics described in it. At a hearing on the COL, Petitioners may introduce the entire document into the record because it remains relevant to aircraft attacks, both accidents and deliberate malicious actions.

should be made for the impacts of deliberate malicious actions at the proposed Harris reactors. NUREG 2859 at page 5 identifies that:

The major threats associated with an aircraft crash are the impact loads resulting from the collision of the aircraft with power plant structures and components and the thermal and/or overpressure effects which can arise due to the ignition of the fuel carried by the aircraft.

Page 11 continues that:

It appears that for all U.S. plants currently under construction it has been found that it is not necessary to require containments designed to take the impact of a large commercial jet aircraft. This practice is contrasted by the experience in the Federal Republic of Germany where it has been found necessary to design essentially all nuclear containments to withstand the crash of certain types of military and commercial aircraft.

NUREG-2859 continues on page 42 that:

Niyogi et al ... numerically weight the effective areas of their identified susceptible targets by assumed conditional release probabilities as follows: a value of 1.0 for the containment, fuel storage building, and control room; 0.1 for the primary auxiliary building and equipment vault; 0.01 for the diesel generator building, cooling tower, and waste-processing building, refueling water storage tank, circulating water pump house, and service water pump house; and 0.0 for the turbine building.

NUREG-2859 continues on p. 50 with the following

The results of an aircraft crash on a nuclear power plant are not limited to the effects of the impact of heavy parts (such as a jet engine) on civil engineering structures. Numerous systems are required in order to provide reactor shutdown and adequate long-term cooling of the core. Although many of these safety-related systems are well protected within hardened structures (containment system, auxiliary building), some are not.

As described in Contention TC-2 above, the various structures, systems and components of the plant cannot be relied upon if the plant is not in compliance with safety-related rules that leave all of the post-fire safe shutdown systems vulnerable.

Given accidents at various nuclear plants, such as San Onofre, Rancho Seco,

and Crystal River facilities, it is clear that electrical failures lead to the inability for safe shutdown. NUREG-2859 continues at Page 51 through 53:

A crash of an aircraft on a switchyard would very likely eliminate the plant's offsite power. Furthermore, although there exist protective design features against propagation of electrical failures from the switchyard into the rest of the plant, the probability for such electrical failure propagation is not zero: Past experience has shown that the electrical failures may propagate unexpectedly from nonsafety systems to safety systems . . .

An aircraft crash on a PWR nuclear power plant resulting in rapid depressurization of the plant's secondary cooling system, combined with total loss of electrical power (impact on the turbine building and the switchyard), would result in an accident sequence in which the fission power in the core would remain at some considerable level: Initially, upon dropping of the control rods, the fission power would decrease; however, the rapid depressurization of the secondary system would result in a rapid cooldown of the primary system, thus resulting in recriticality; since the primary system would remain pressurized (preventing discharge of the accumulators with borated water), and since the safety injection system (SIS) would not be functioning due to loss of electric power, there would be no way to shut down the reactor. Furthermore, since the loss of electrical power and the damage to the secondary system would preclude any cooling other than short-term boil-off of the primary coolant inventory, the core would most probably be headed for serious damage if not total meltdown. Core meltdown, without the availability of electric power, would probably result in containment overpressurization and release of radioactive materials to the environment far in excess of 10 C.F.R. 100 guidelines. Note that the above sequence of events does not depend in any way on the breach of a hardened structure due to the impact of a heavy segment of the aircraft at some optimum (i.e., most damaging) angle, which seems up to now to have had the greatest attention in the evaluation of nuclear power reactor safety with respect to aircraft crashes . . . An aircraft crash affecting the ultimate heat sink (cooling tower, water intakes, etc.) would leave core cooling dependent on the feed-and-bleed cooling mode, provided a sufficient water supply and electrical power remain available.

Compared to other causes of accidents, aviation attacks are some of the most severe. NUREG-2859 states on page 70 that “[o]n the other hand, the effect due to the impact of the Boeing 707-320 at 103 m/s is clearly more severe than that due to an

earthquake." On page 79, NUREG-2859 concludes with:

Major criticisms that may be made of typical aircraft hazards analyses are the lack of clear and supported statements on many key underlying assumptions and comprehensive treatments of the overall hazard. Thus, both the open literature and documentation concerning specific power plants abound with studies of the impact phenomena of aircraft or aircraft missiles on substantial concrete structures. These analyses are pursued to the virtual exclusion of other aircraft crash scenarios. ... It is possible to envision a chain of events that involves nonhardened plant systems, e.g., a switchyard-turbine hall, which could lead to severe consequences.

These same concerns about the inadequacy of nuclear plants to withstand aircraft accidents and attacks were raised in at least two more recent studies. In March 2000, the NRC requested that the Turkey Point nuclear plant respond to agency questions about the expanded aircraft operations at the nearby Homestead Air Force Base. In the response, the owner of the plant informed that a number of postulated aircraft impacts would lead to fuel damage, i.e., conditional core damage probability, and core failure.⁴¹ In October 2000, the NRC released a study of the spent fuel pool hazard at nuclear power plants undergoing decommissioning.⁴² That study determined that the impacts of an aircraft attack were possible, and the results were potentially devastating.

In response to a rulemaking petition to amend 10 C.F.R. § 73.1 and to fulfill its Congressional mandate under Section 651 of the Energy Policy Act of 2005, the NRC

⁴¹ Letter from R.J. Hovey, Vice President – Turkey Point Plant to NRC, “Response to Request for information Regarding the Potential Risk of the Proposed Civil and Government Aircraft Operation at Homestead Air Force Base on the Turkey Point Plant,” May 2, 2000.

⁴² NRC, “Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants,” October 2000.

initiated and completed a review of its Design Basis Threats.⁴³ On January 29, 2007, the NRC voted to revise its security regulations and adopt the modifications. 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.” The NRC did not address 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.”⁴⁴

A key premise in the modified security rules is the NRC’s belief that the nuclear plants need to rely on “passive measures” in the regulatory requirements to mitigate fires and explosions. The 9th Circuit Court of Appeals held this position to be unreasonable and required the NRC to investigate aviation threats.⁴⁵ 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.”⁴⁶ All of the studies conducted by the NRC and outside parties have shown that nuclear reactors cannot withstand aviation attacks, and that attacks on containments and spent fuel pools can be devastating.

Specific to this contention, the ability of the proposed Harris reactors to withstand

⁴³ “Final Rulemaking to Revise 10 C.F.R. 73.1, Design Basis Threat (DBT) Requirements,” SECY-06-0219, October 30, 2006.

⁴⁴ *Ibid.*, page 4.

⁴⁵ *San Luis Obispo Mothers for Peace v. NRC*, 449 F.3d 1016 (9th Cir. 2006), cert. den. 549 US ___ (06-466, January 16, 2007).

⁴⁶ Lochbaum, “The NRC’s Revised Security Regulations,” February 1, 2007. Available at www.ucsusa.org-20070201-ucs-aircraft-fire-hazards.pdf

aviation attacks has not been demonstrated in the COLA. 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 hardware, procedures and training, with the potential for improving severe-accident safety performance are identified and evaluated. The 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.

Despite the much-discussed acknowledgment by the NRC and other federal agencies that nuclear power plants are potential targets for attack, the NRC did not require new designs to correct the known vulnerabilities inherent in currently operating plants. Regarding the most highly publicized new feature, the so-called "passive emergency cooling system," much or all of any advantage afforded by this experimental system is outweighed by the fact that the emergency water supply is located on top of the reactor building and outside of the containment structure. Therefore, in many attack scenarios, the backup cooling system could be rendered inoperable

Conclusion. Therefore, the application for the proposed Harris reactors cannot be approved without a full study of the threats from aviation attacks and implementation of the SAMAs required to prevent or mitigate the impacts from those attacks. The unpalatable likelihood of an intentional aircraft crash into a nuclear plant has to be considered and accounted for as a DBT.

CONTENTION TC-4 (Aviation attacks and fires)

The ER for the COL for the proposed Harris reactors fails to satisfy NEPA because it does not address a significant fire involving noncompliant fire protection features for both primary and redundant safe shutdown electrical circuits caused by a deliberate malicious action using a fuel-laden and/or explosive-laden aircraft on the facility.

Support for Contention. The proposed Harris reactors are required to comply with all existing NRC regulations regarding the physical protection of the power, instrumentation and control circuitry from the control room to safe shutdown systems for the reactor so that no single fire can result in loss of cable functionality for post-fire safe shutdown. Alternately, Progress Energy can provide an analysis for NRC review and approval for post-fire safe shutdown through application of the exemption process.

As described in Contention TC-3 above and incorporated herein, the potential consequences of a successful aviation attack on the proposed Harris reactors have not been evaluated for fire and explosion resulting from a deliberate aircraft strike. As described in Contention TC-2 above, the existing Harris reactor has been in violation of NRC regulations since at least 1992 and is not currently in regulatory compliance with the requirements for post-fire protection of reactor safe shutdown systems. Progress Energy has not demonstrated that it can or will bring post-fire reactor safe shutdown systems at the present Harris reactor into regulatory compliance in a timely fashion. The presence of the noncompliant existing reactor compounds the risk of adding two additional reactors at the site.

As described in Contention TC-3 above, the Argonne National Laboratory study, NUREG-2859, states on pages 76 - 77 that "[i]f only one percent of the fuel, say 500 lb.

for the FB-111 fighter plane, is involved in such an event, the blast environment will be equivalent to the detonation of approximately 1000 lb. of TNT." ⁴⁷ NUREG-2859 continues that

Based on the review of past licensing experience, it appears that fire and explosion hazards have been treated with less care than the direct aircraft impact and the resulting structural response. Therefore, the claim that these fire/explosion effects do not represent a threat to nuclear power plant facilities has not been clearly demonstrated.

Significant fires caused by deliberate malicious acts are credible and potentially devastating; they should be considered DBTs and addressed as such. The aviation attacks of September 11, 2001, successfully destroyed both towers of the World Trade Center, the result of structural damage from fire induced by deliberately crashing aircraft into the structures. The structures protecting the electric circuits for the control operation of the safe shutdown systems at the existing Harris reactor and the proposed Harris reactors are similarly vulnerable. Control room operation of safe shutdown systems for the reactor in the event of explosion and fire is the preferred method and is prioritized by NRC regulations.

Not only is it clear that such hardening of vital structures has not been performed with the AP1000 revision 16, in an apparent effort to cut costs, the current design is less safe.⁴⁸

The designers of these reactors have also weakened defense-in-depth – presumably to cut costs. For example, these two designs have less robust containment systems, less redundancy in safety systems, and fewer safety-grade structures, systems, and components.

⁴⁷ Cited at length in Contention TC-3 above. See pp. 76 -78.

⁴⁸ See footnote 24 on page 15.

However, many of the cost savings come from scaling back the size of the containment building. The ratio of containment volume to a reactor's thermal power is a good measure of its containment capacity, and the AP1000 has a ratio lower than that of most reactors now operating.

In addition, unlike today's reactors, the AP600 and the AP1000 require a cooling water system to protect the containment structure from rupturing after an accident. Because this creates another potential failure mode, it increases the risk that such a rupture would occur. Westinghouse considered using a more robust containment structure but ... rejected it as not cost-beneficial.

The fire protection regulations, even if met in full and nonexempted, are intended to deal with a single fire in a single room or area. No other equipment damage is presumed to occur, other than the components within that room or area damaged by the single fire itself. The fire protection regulations are not designed for and are not adequate to deal with fires in multiple rooms easily result from an aircraft crash.

In its review of the COL, the NRC is required to 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 hardware, procedures and training, with the potential for improving severe-accident safety performance are evaluated.

Conclusion. The COLA cannot be approved without a full study of the risks associated with fires and explosions caused by aviation attacks and implementation of the SAMAs required to prevent or mitigate those impacts.

Contention TC-5 (High density spent fuel pools).

The ER for the proposed Harris reactors fails to satisfy NEPA because it does

not consider the potential impacts of a radiation release caused by high-density storage of highly-radioactive “spent” fuel in its spent fuel pools. The COLA indicates that spent fuel rods would be stored in two newly constructed cooling pools in buildings designed to withstand only weather-related impacts. The proposed high-density storage heightens the risk of catastrophic radiation releases due to accident or terrorism.

Support for contention. As described in the section on legal considerations above, NRC regulations for implementation of the AEA provide that a nuclear power plant must be designed against accidents that are "anticipated during the life of the facility." A loss-of-pool-coolant event resulting from accidental or intentional damage or collapse of the pool could have severe consequences and should be carefully examined.⁴⁹

The existing Harris reactor is the only United States nuclear plant with four spent fuel cooling pools, and as a comparison, already containing in excess of ten times the amount of cesium 137 as was released by the 1986 Chernobyl accident.⁵⁰ Spent fuel assemblies must remain submerged in water for five years after removal from a reactor. For years, independent scientists and citizen groups have insisted that storage pools at existing plants should be returned to their original, low-density configuration, and that all

⁴⁹ The Commission in its Memorandum and Order (CLI-01-011) addressed two technical contentions brought by Orange County, North Carolina, on spent fuel pools at the existing Harris reactor in a relicensing amendment. This proceeding occurred prior to the issuance of the National Academy of Sciences report discussed in this contention.

⁵⁰ Thompson, “Risks And Alternative Options Associated With Spent Fuel Storage At the Shearon Harris Nuclear Power Plant,” February 1999. Available at www.irss-usa.org/pages/documents/RisksnoptionsatShearonHarris_000.pdf

spent fuel more than five years old be moved into hardened dry storage separated by berms or bunkers. Such storage would nearly eliminate the potential for a worst-case radiation disaster due to water loss leading to heat build-up and fire emanating from spent fuel cladding.

In its 2005 study, the United States National Academy of Sciences (“NAS”) confirmed this as a safer storage methodology.⁵¹ The proposed high-density spent fuel storage runs diametrically opposite the NAS’s warning of "enormous potential consequences" associated with high density, water-filled cooling pools due to the likelihood of a self-propagating fire if cooling water is lost and spent fuel assemblies are exposed to air. The Westinghouse-designed storage pools for the proposed Harris reactors would pack spent fuel assemblies so close together that boron shields must be used to prevent nuclear reactions.⁵² But as confirmed by NAS, the shields increase the likelihood of fire if the pools are drained of cooling water, because they would inhibit the flow of air around the assemblies.

Spent fuel storage in low-density with open racks is consistent with original designs at all operating United States nuclear plants.⁵³ It seem clear that the intention to use high-density storage is intended solely for the economic benefit of the applicant, low-density racking requires approximately twice the amount of pool space as does

⁵¹ NAS, "Safety and Security of Commercial Spent Nuclear Fuel," April 6, 2005. Available at www.nap.edu/catalog.php?record_id=11263#toc

⁵² Westinghouse AP1000 DCD Rev. 16, Document 166, Section 9.1.2.2.1 (Spent Fuel Rack Design) and Document 37.

⁵³ NUREG CR-0649, described in www.nrc.gov/waste/spent-fuel-storage.html

high-density racking for the same inventory of spent fuel.⁵⁴ The shift to the riskier, albeit less expensive, high-density racking appears to have been undertaken in the more recent revisions to the AP1000 design.

The existing Harris reactor continues to use high-density racking in its four pools, and the proposed Harris reactors would add additional fuel pools, despite the NAS warning believes that knowledgeable terrorists might choose to attack spent fuel pools because: (a) the spent fuel pools at commercial nuclear power plants in the United States are less well protected structurally than reactor cores; and (2) the spent fuel pools typically contain inventories of medium and long-lived radionuclides that are several times greater than those in individual reactor cores.⁵⁵ As discussed in Contentions TC-3 and TC-4 above, under NEPA it is highly appropriate to consider whether the Commission continues to have a reasonable basis for expressing confidence that stored spent fuel is safe from terrorist attacks.

Conclusion. The proposed use of high-density spent fuel pools at the proposed Harris reactors significantly increases the risk of off-site impacts from the release of radiation from loss-of-coolant fires and/or terrorist attacks.

Contention TC-6 (Reliability of uranium fuel).

The assumption that uranium fuel is a reliable source of fuel for the projected

⁵⁴ Alvarez et al., "Reducing the Hazards from Stored Spent Power-Reactor Fuel in the United States," *Science & Global Security*, Spring 2003. Available at www.princeton.edu/~globsec/people/fvhippel_spentfuel.html

⁵⁵ NAS study, *supra*.

operating life of the proposed Harris reactors is not supported in the COLA submitted by Progress Energy.

Support for contention. The applicant fails to fully and credibly discuss the reliability of uranium fuel supply in the COLA when asserting that building new nuclear power reactors are a means of achieving a reliable and cost-effective supply of electricity. The cost of electricity generated from a power plant that has no fuel is effectively infinite, and therefore NC WARN's members as ratepayers are in grave risk of increased power costs if uranium fuel is unavailable. As taxpayers, NC WARN's members are also at risk of a major federal action to facility the uranium fuel at reactors in the United States that does not deliver its stated goals, and for which they may have to pay significant costs.

Worldwide, uranium consumption is approximately 67,000 metric tons per year; this has exceeded worldwide uranium production for some time. The World Nuclear Association reports that approximately 60% of consumption is currently supplied by annual production; actual production of uranium has been effectively level for the last twenty years.⁵⁶ The same authority quotes the production of uranium from mines as 40,251 metric tons for 2004; 41,702 metric tons for 2005 and 39,429 metric tons for 2006, leaving an annual shortfall of uranium to fuel the existing reactors of approximately 26,000 metric tons.⁵⁷ This shortage is being made up short-term stopgaps such as consuming former stockpiles, reprocessing of nuclear weapons

⁵⁶ World Nuclear Association backgrounder on Uranium Supply, available at www.world-nuclear.org/info/inf75.html?terms=uranium+supply

⁵⁷ www.world-nuclear.org/info/inf23.html

uranium, longer reactor cycles and changes in the enrichment process.

It is incumbent upon Progress Energy to address these issues and to support the statements in its COLA which imply that uranium availability will be sufficient to service the proposed Harris nuclear reactors as part of the existing and proposed worldwide fleet of nuclear power reactors over the current periods of license.

Conclusion. The COL is lacking because it does not address the reliability of uranium over the projected lives of the proposed Harris reactors.

Contention EC-1 (Underestimation of costs).

In its COLA, Progress Energy grossly underestimates the costs and risks of the proposed Harris reactors and grossly overestimates the costs of their alternatives. The lack of a reasonable cost basis means that there can be no reasonable analysis of comparative sources of energy generation, energy efficiency or other energy management strategies.

Support for Contention. As discussed above, the NRC staff has responsibility under NEPA to prepare an EIS. One of the principal determinations of NEPA is to assess the “alternatives to the proposed action.”⁵⁸ The costs, economic and environmental, as well as the risks for each of the alternatives need to be carefully presented so that the ultimate decision-maker can make an informed decision. “The NEPA process is intended to help public official make decision that are based on understanding of environmental consequences, and take actions that protect, restore,

⁵⁸ NEPA, 42 U.S.C. § 4333(C)(iii).

and enhance the environment.”⁵⁹ The NRC staff’s review should be conducted in an unbiased and independent manner; it cannot rely on Progress Energy or other agencies, such as the N.C. Utilities Commission, to determine if the proposed Harris reactors should be built.

The cost and benefits of the proposed Harris reactors as compared to the costs and benefits of alternatives must be addressed. When a cost-benefit analysis is required, the EIS must

discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities. For purposes of complying with [NEPA], the weight of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. In any event an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision.⁶⁰

In this case the comparisons can be qualified to a significant degree and the EIS should clearly compare the costs and risks for each of the alternatives.

One of the fundamental deficiencies in the present ER is the lack of a realistic and up-to-date cost estimate for the proposed Harris reactors. The estimated cost of \$2.2 billion per reactor estimates in the ER appear to be based on out-of-date reports that are now shown to be grossly below current estimates for reactors with the same design, including similar reactors proposed by Progress Energy in Levy County, Florida. The estimated costs of other nuclear reactors in the Southeast are currently in

⁵⁹ 40 C.F.R. § 1500.1(c).

⁶⁰ 40 C.F.R. § 1502.33.

the range of \$8 -10 billion, without subsidies, although these costs are expected is expected to increase.

The NRC cannot accept the cost of a new AP1000 reactor and associated costs as described in the ER at only \$2.2 billion, when the costs of the two proposed reactors in Levy County, albeit a greenfield site, have been submitted to the Florida Public Service Commission at a cost exceeding \$16.5 billion. The estimated cost for the two proposed Levy County Units⁶¹ is as follows:

LNP Units 1 & 2 (\$000's)	Unit 1	Unit 2	Current total
unit overnight total cost	5,617,297	3,686,282	9,303,579
project escalation @ 3%	883,980	655,388	1,539,367
estimated project AFUDC	1,814,733	1,432,029	3,246,762
LNP total	8,316,010	5,773,698	14,089,708

The costs in this table do not include an additional \$2.45 billion for transmission lines (excluding AFUDC)⁶² or any of the Federal subsidies, such as the cost of high-level waste disposal at the proposed Yucca Mountain repository that is approaching \$1 billion per reactor (as described in Contention EC-4 below), tax breaks and direct subsidies, and liability coverage under the Price-Anderson Act.

In addition to the direct costs and allowance for funds used during construction (“AFUDC”) and other financing charges, nuclear generation is a highly risky venture. A

⁶¹ Florida Public Service Commission Docket 08-080149; “New Nuclear Baseload Generation Project: Business Analysis Package (Revision 2),” document 06344-08, page 89 of 172 (April 8, 2008). Available at www.psc.state.fl.us/library/filings/08/06344-08/06344-08.pdf

⁶² *Id.*, page 93 of 172.

report by Peter Bradford and David Schlissel provides a number of relevant financial and environmental issues.⁶³ Some of those risks include:

a. The present cost estimates for nuclear reactors have increased exponentially over the past five years, and historically nuclear reactors have had significant cost overruns.⁶⁴

b. The dates for bringing nuclear reactors online have been significantly delayed.

c. Wall Street investors have expressed serious concerns about the credit worthiness of companies that pursue new nuclear reactors.

d. Nuclear reactors are stated terrorist targets. (See Contention TC-3 above).

e. There are a large number of safety and environmental concerns, including the risk of the release of radioactive material and accidents, that have made the public dubious about nuclear power as an option.

f. The storage of used nuclear fuel and high level radioactive waste remains unresolved. (See Contention EC-5 below).

g. Transportation of used nuclear fuel and radioactive waste spreads the risk.

h. Nuclear reactors use considerable amounts of water. (See Contention EC-3 below).

i. The cost of nuclear power plants precludes the use of less risky energy

⁶³ Bradford and Schlissel, "Why a Future for the Nuclear Industry is Risky," presented to the New York Society of Security Analysts, June 2006. Mr. Bradford is a former NRC Commissioner and former Chair of the New York State Public Service Commission and Maine Public Utilities Commission,. Commissions. Mr. Schlissel is a Researcher at Synapse Energy Economics, Inc.

⁶⁴ Note that the current cost estimates for nuclear reactors have increased two- to three-fold over those used in the report in June 2006.

efficiency and renewable energy sources.

In its COLA, Progress Energy has not addressed any of the substantive issues about the costs and risks, nor shown any of its analysis to support its decision to construct the proposed Harris reactors despite the costs and risks.

In its estimates of the environmental costs, Progress Energy includes only the 192-acre footprint for the land use impact of the proposed reactors, omitting the thousands of acres to be flooded by increasing the size of the Harris Lake, the land taken for new transmission lines, relocated roads and bridges, and other infrastructure needs. In contrast to the underestimation of the reactor costs, the costs, impacts, and requirements for the renewable energy alternatives are particularly inaccurate in the ER, with inflated land requirements for wind and solar, and unreasonable conclusions that the waste impacts of wind and solar are greater than that of a nuclear power plant. Progress Energy has substituted its calculation of land requirements for flat plate or tracking photovoltaics, for solar thermal plants which is a completely different technology.

The ER in large part ignores the positive benefits of energy efficiency, cogeneration, purchased power and alternative energy sources to reduce or meet the reduced energy demand. In prefiled testimony before the N.C. Utilities Commission,⁶⁵ Dr. John A. Blackburn concluded that “a series of reasonable adjustments to the

⁶⁵ Investigation of Integrated Resource Planning in North Carolina, NCUC Docket E-100, Sub 114; Prefiled Testimony of John Blackburn for NC WARN. Available at <http://ncuc.commerce.state.nc.us/cgi-bin/webview/senddoc.pgm?dispfmt=&itype=Q&authorization=&parm2=GBAAA55180B&parm3=000127213> Dr. Blackburn is professor emeritus and former Chair of the Economics Department, Duke University (his resume is attached to his testimony).

demand forecasts postpone or eliminate the need for new and expensive generating plants. Now is the time to implement the potential we have seen in renewable energy and energy efficiency.”

Conclusion. Until the costs and risks of the proposed Harris reactors and the alternatives are fairly and completely presented, the NRC staff will not be able to complete its EIS.

Contention EC-2 (Carbon Footprint).

Progress Energy fails to present evidence or analysis of the “carbon footprint,” i.e., the atmospheric carbon generated by mining and fuel processing, the construction and operation, the long-term waste storage, associated with the proposed Harris reactors in its ER.

Support for contention. Greenhouse gases rank among the top environmental concerns today. The release of greenhouse gases is part of any major construction operation – as the production of cement, steel, copper and other raw materials and components all contribute to what is generically called the “carbon-footprint” though more accurately, it could be referred to as the “greenhouse gas footprint.” These emissions from many sources, in aggregate, are contributing to the destabilization of climate and could have catastrophic impacts. Dr. James Hansen summarizes the problem by stating

Humanity’s task of moderating human-caused global climate change is urgent. Ocean and ice sheet inertias provide a buffer delaying full response by centuries, but there is a danger that human-made forcings could drive the climate system beyond tipping points such that change proceeds out of our control. The time available to reduce the human-

made forcing is uncertain, because models of the global system and critical components such as ice sheets are inadequate. However, climate response time is surely less than the atmospheric lifetime of the human-cause perturbation of CO₂.⁶⁶

The proposed Harris reactors would contribute to this problem. The COLA needs to include an analysis of the emission of greenhouse gases in the entire cycle, i.e., mining uranium ores, transporting those ores and processing into fuel, production of raw materials and components, transporting these materials and components, the processes to construct, operate and close the proposed Harris nuclear reactors, and transporting and disposing of radioactive wastes.

Analysis of the greenhouse gas emissions associated with each and every step in the uranium fuel chain are crucial to determining the carbon footprint. The mining of uranium is accomplished using fossil fuel. The report by Smith and van Leeuwen⁶⁷ makes the finding that a key limiting variable in the nuclear fuel cycle impacts on greenhouse gas emissions is the relative ease with which uranium is obtained – the harder the rock, the deeper the deposits, the greater the greenhouse gas emissions. Therefore, a flat-line projection for greenhouse gas emissions from the nuclear fuel cycle is not likely to be an accurate representation. The many transportation links in the uranium processing steps, i.e., mining, milling, conversion, enrichment, re-conversion

⁶⁶ Hansen, "Target Atmospheric CO₂: Where Should Humanity Aim?", summarized in "Global Warming 20 Years Later; Tipping Point Nears," presentation to House Select Committee on Energy Independence and Global Warming, June 23, 2008. Available at www.columbia.edu/~jeh1/2008/TippingPointsNear_20080623.pdf Dr. Hansen is a professor at Columbia University and scientist with the National Aeronautics and Space Administration.

⁶⁷ Smith and van Leeuwen, "Nuclear Power -- Energy Balance," newly updated in 2008. Available at www.stormsmith.nl/

and fuel fabrication, prior to shipment to the Harris site have not been analyzed for greenhouse gas emissions and associated climate impacts. Today there are sometimes additional steps when down-blending and other feedstock sources are utilized in uranium fuel production. Each uranium processing steps requires power, and most are currently powered with fossil fuels. The back-end of the nuclear fuel chain also involves transportation and therefore combustion of fossil fuels in moving the so-called low-level waste, and at some period in the future, high-level waste. Any plans for additional steps of storage or processing of these wastes will increase the associated transportation-generated greenhouse gas emissions. In addition, the reprocessing of nuclear fuel generates large quantities of gaseous emissions, all of which need to be evaluated for whether they contribute to climate destabilization.

Conclusion. The review of environmental impacts of the proposed Harris reactors is not complete until it analyzes the greenhouse gas emissions associated with the mining, processing, transportation, construction, operation, closure and waste disposal that would be a direct impact of the proposed Harris reactors.

Contention EC -3 (Water requirements).

The COLA does not identify the plans for meeting the water requirements for the proposed Harris reactors with sufficient detail to determine if there will be adequate water during adverse weather conditions, such as droughts, and the environmental impacts for water withdrawals during both normal and adverse conditions.

Support for contention. The availability of cooling water is a significant

constraint to the safe shutdown of the proposed reactors and without a clear plan on how that water will be provided, the COLA is incomplete. In its initial review of the COLA for the proposed Harris reactors, the NRC staff recognized the deficiencies in the COL regarding the impacts of water withdrawal.⁶⁸ As shown in the letter accepting the application, there are two significant areas in which the NRC staff declared the application to be incomplete – the environmental impacts caused by changing water levels at the Harris Lake and the intake on the Cape Fear River. By themselves, these two significant deficits in the COLA show that it does not satisfy the requirement for completeness of 10 C.F.R. § 2.101(a)(3).

Annual temperatures in the Southeast region are increasing and are projected to continue to do so over a relatively short period of time. The applicant fails to fully analyze the following potential impacts of elevated water temperatures in the Harris Lake and its watershed, and the Cape Fear River. In addition to the specific deficiencies noted by the NRC staff, the COL is deficient in the following:

- a. Analysis of the additive and synergistic impacts on the local and downstream ecosystem from the reactor thermal discharge on water in Harris Lake, which is already elevated in temperature.
- b. Analysis of the impact of warmed water on condenser cooling.
- c. The evaluation of increasingly warmer water on reactor cooling.
- d. Evaluation of the impact of warmer ambient water temperatures on total withdrawal, consumption and evaporation.

⁶⁸ ADAMS Accession No. ML081070226.

e. Analysis of the impacts of the proposed water withdrawal from the Cape Fear River for the proposed Harris reactors on the other facilities and municipalities downstream that use the river for either or both water supply and wastewater discharge.

f. Analysis of the impact of pollution in water at warmer temperatures on the ecology of Harris Lake and downstream.

g. A full analysis of the impact of reactor heat increasing the temperature in water on the other pollutants in the water, including implications for the food chain.

h. Analysis of the impact of reactors going off-line on overall power and reliability, including the impact on Progress Energy's customers.

i. Analysis of the impact of reactors going off-line on regional grid stability.

j. An evaluation of the potential for extended drought locally, and in the region, that would exacerbate all of the issues identified above.

In the COLA submitted for the proposed Harris reactors, Progress Energy makes a commitment not to withdraw water from the Cape Fear River during low flow periods, yet these are often the times that are coincident with its summer peak demand. A significant safety concern in recent years is that nuclear reactors around the world in increasing numbers, including all three of the TVA Brown's Ferry nuclear reactors in 2007 and several French reactors, have gone to low-power or off-line due to elevated cooling water temperatures and the loss of efficiency in power production due to loss of effective condensation of steam used to generate power.

Conclusion. The lack of detailed information about the impacts of water usage and temperature increases, renders the COLA incomplete. No reliable analysis of the environmental impacts, ranging from biotic life to the increased chance of a major

reactor accident due to heat impacts, from the proposed Harris reactors can be accomplished without solid scientific information in the COLA. Water at the reactors must be readily available at all times of the year, including summer low flow periods.

Contention EC-4 (Deficiencies in emergency planning).

The area around the Harris site has changed considerably since the first reactor was constructed from dramatically increased populations and changing land uses. The ER does not provide an adequate analysis of the current populations and land use, and does not address the forecasted growth in the area. As a result, emergency planning that adequately protects the health and safety of the residents, students and workers around the proposed Harris reactors cannot be adequately accomplished.

Support for contention. Before a nuclear plant is licensed to operate, the NRC must have “reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.”⁶⁹ Given the projected increases in population, and the resulting impacts of those people in the 10-mile emergency planning zone (“EPZ”), along with the changing land uses in the EPZ, the health and safety of those people cannot be protected during an accident.

In 1987 when the existing Harris reactor was licensed, there were only 15,000 people living in the 10-mile EPZ; currently there are at least four times that many, and the population is predicted to grow significantly from the present through any licensing

⁶⁹ 10 C.F.R. Part 50, Appendix E and NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” March 2002.

period. Likewise, the population within the 50-mile Ingestion Pathway is forecast to grow significantly, compounding all attempts to safely evacuate people around the plant. Currently, there are more than 2.2 million people within the 50-mile radius and that number is likely to increase dramatically over the possible license period. The EIS needs to look realistically at significant population increases and changes in land use.

Without a solid grasp on who will be living around the plant, the NRC and Progress Energy cannot prepare its emergency plans. Of concern are the susceptible populations, i.e., children, women of childbearing age, senior citizens and nursing home residents who may have special difficulties in the event of an evacuation and may be more susceptible to radiation emissions and other hazards that could occur in connection with evacuation and relocation. A baseline health study is essential in finding out the broadly-defined medical needs of these susceptible populations.

The ER needs to examine the forecasted increase in vehicle use on the highways in the area. Given the traffic increases and population growth, the major thoroughfares used as evacuation routes may be impassible at most times of day without extensive new spending on highway expansions and improvements. Local governments, such as the Town of Holly Springs, recently testified at the scoping meeting on the EIS for the proposed Harris reactors that it was concerned about roads and bridges that would be removed if the Harris Lake was expanded.⁷⁰ The potential changes in this infrastructure could limit the ability for safe evacuation.

An effective emergency plan incorporates the strengths of local governments and

⁷⁰ www.hollyspringsnc.us/gov/agendatc071508/9b.pdf See also Contention EC-3 above on increasing the size of the Harris Lake.

medical support infrastructure, and at the same time, provides the support for adequate planning, resources, training and staff. The Orange County Board of Commissioners, in an October 3, 2006 resolution, concluded that “there is no coordinated emergency management and evacuation planning for the portion of the ingestion pathway beyond the area defined by the ten-mile radius around Shearon Harris.” Other local governments have express the same concerns.

In his analysis of the area around the Harris site, Dr. Steven Wing noted the significant population increases within the 10-mile EPZ.⁷¹ These increases have occurred from 1987 when the plant was licensed to the current date, and projections of population increases from 2007 to 2027 and projections of population increases from 2027 to 2047. Similarly, the population within the 50-mile area around the plant has also increased dramatically and is projected to continue to increase significantly.

Dr. Wing expressed concern that there are numbers of children, women of childbearing age, senior citizens and nursing home residents who may have special difficulties in the event of an evacuation and may be more susceptible to radiation emissions and other hazards that could occur in connection with evacuation and relocation. He is further concerned that other susceptible populations, such as homebound persons and number of children attending schools within the 10-mile, 20-mile and 50-mile radii around the plant are not adequately covered in the evacuation

⁷¹ Request for a Hearing and Petition for Leave to Intervene, Renewal of Facility Operating License No. NPF-63, Carolina Power & Light Company, Shearon Harris Nuclear Power Plant, Unit 1 (Docket No. 50-400). Attachments 4 (Affidavit), 4A(Curriculum Vitae) and 4B (“Population Living Near the Harris Nuclear Plant, North Carolina”) . ADAMS Accession No. ML071430566. Dr. Wing is an Associate Professor of Epidemiology, University of North Carolina at Chapel Hill School of Public Health.

plan. He concludes that “in my opinion, the evacuation plan for the Shearon Harris nuclear plant must provide care for all persons around the plant, and make special provisions for the susceptible populations.”

Other relevant changes in circumstances surrounding the Harris site are the increased vehicle use on the highways in the area to the point that the major thoroughfares used as evacuation routes may be impassible at most times of day. This increase in vehicle use reflects the significant increases in population as well as changes in land uses and a trend for increased use of automobiles, tempered by rising fuel costs. The forecasts that the vehicle use on the state-maintained highways that will be used for evacuation routes within the 10-mile EPZ and the surrounding 50-mile area may be completely useless by 2027 without extensive new spending on highway expansions and improvements.⁷²

Conclusion. The COLA for the proposed Harris reactors cannot be approved without a full study of the current and forecasted populations, including susceptible populations, and the ability of the evacuation plan to provide “reasonable assurance” that all of these people will be provided adequate care in case of an accident.

Contention EC-5 (Waste disposal).

The COLA fails to evaluate whether and in what time frame the irradiated “spent” fuel generated by the proposed Harris nuclear reactors can be safely disposed. The ER

⁷² NC Department of Transportation, NC Statewide Transportation Plan, September 2004; available at www.ncdot.org/doh/preconstruct/tpb/statewideplan/pdf/NCStatewideTransportationPlan.pdf.

does not contain any discussion of the environmental implications of the lack of options for permanent disposal of the irradiated fuel to be generated by the Harris site.

Support for contention. The ER is deficient because it fails to discuss the environmental implications of the lack of options for permanent disposal of the spent fuel that will be generated by the proposed reactors if built and operated.⁷³ Nor has the NRC made an assessment on which Progress Energy can rely regarding the degree of assurance now available that radioactive waste generated by the proposed reactors “can be safely disposed of [and] when such disposal or off-site storage will be available.”⁷⁴ Accordingly, the ER fails to provide a sufficient discussion of the environmental impacts of the proposed new nuclear reactors.

The U.S. Department of Energy (“DOE”) recognizes that significant radioactivity releases from a Yucca Mountain repository would in fact occur over time.⁷⁵ The radiation release regulations by the U.S. Environmental Protection Agency (“EPA”) for the proposed Yucca Mountain site extend out to a million years post waste burial, and shows that such releases will continue for many hundreds of thousands of years into the future.⁷⁶

⁷³ *State of Minnesota v. NRC*, 602 F.2d 412, 416-417 (D.C. Cir. 1979).

⁷⁴ Final Waste Confidence Decision, 49 F.R. 34,658 (August 31, 1984), citing *State of Minnesota v. NRC*, *supra*.

⁷⁵ See, for example, U.S. DOE Office of Civilian Radioactive Waste Management, “NWTRB Repository Panel meeting: Postclosure Defense in Depth in the Design Selection Process,” presentation for the Nuclear Waste Technical Review Board Panel for the Repository, January 25, 1999.

⁷⁶ EPA, “40 C.F.R. Part 197: Public Health and Environmental Radiation Protection Standards for Yucca Mountain , Nevada : Proposed Rule.” 70 F.R. 49014 ff.,

While Progress Energy may have intended to rely in the COLA on the NRC's Waste Confidence decision issued in 1984 and most recently amended in 1999,⁷⁷ that decision is inapplicable because it applies only to plants which are currently operating, not new plants. The second finding of the Waste Confidence Decision, as amended, is that the Commission has reasonable assurance that at least one mined geologic repository would be available within the first quarter of the twenty-first century, and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level radioactive waste and spent fuel originating in each reactor and generated up until that time. This finding revised the finding in the original decision that a mined geologic repository would be available by the years 2007 to 2009. Clearly, the Commission's finding applies to any existing reactor, including reactors whose licenses are revised or renewed. The Commission gives no indication that it has confidence that repository space can be found for spent fuel and other high-level radioactive waste from new reactors licensed after December 1999.

Moreover, the revised second finding in the 1999 Waste Confidence review statement conspicuously fails to assert confidence in the likelihood that more than one repository will be licensed. In essence, the Commission has backtracked on its original 1984 Waste Confidence Decision, in which the Commission expressed confidence that

August 22, 2005. Available at <http://a257.g.akamaitech.net/7/257/2422/01jan20051800/edocket.access.gpo.gov/2005/pdf/05-16193.pdf>.

⁷⁷ Waste Confidence Decision Review: Status, 64 F.R. 68,005 (December 6, 1999).

“one or more” repositories would open between 2007 and 2009.⁷⁸ The 1999 Status Report states merely that “at least one” repository will open by 2025.⁷⁹ Current estimates by DOE now give the “best-possible” opening date for the Yucca Mountain site at 2020.⁸⁰ Given the 25-year process to date at Yucca Mountain, DOE’s best-possible date seems overly optimistic.

The inventory of spent fuel and other high-level radioactive waste being generated by the current generation of nuclear reactors is far greater than what can be accommodated in the single repository in which the Commission places its confidence. As recently as March 2008, at the Commission’s Regulatory Information Conference, Mr. Sproat, the director of the DOE Office of Civilian Radioactive Waste Management announced that there would be enough commercial irradiated nuclear fuel by early 2010 to fill Yucca to its legal limit.

DOE predicted the generation of over 105,000 metric tons of commercial irradiated nuclear fuel by the year 2046.⁸¹ This DOE prediction assumed that the term of license extensions for operation reactors would be only ten years, so that the

⁷⁸ Waste Confidence Decision, 49 F.R. at 34,673.

⁷⁹ 64 F.R. at 68,006.

⁸⁰ “Total U.S. Nuke Dump Cost to Top \$90-billion,” Associated Press, July 15, 2005; interview with Ward Sproat, DOE Office of Civilian Waste Management. See also GAO-02-191, “Nuclear Waste: Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project,” December, 2001, which predicted the earliest possible date for operation at 2015. This additional five-year delay over the past seven years is indicative of further delays.

⁸¹ Final Environmental Impact Statement for a Repository for Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,” (Feb. 2002). Table A-8, page A-16.

Commission's now-routine approval of twenty-year license extensions to existing commercial nuclear reactors will only increase the quantity of high-level radioactive waste. DOE also assumed there would be no new commercial nuclear reactors in the United States. Thus, the high-level waste and spent fuel generated by the current generation of reactors will far exceed the capacity of the single repository that the NRC has identified as feasible and likely.

Experience also shows that the NRC has been overly optimistic about the opening of the first repository. The first deadline of 1998 was missed. Altogether, it took from twenty years, from 1982 when the Nuclear Waste Policy Act was passed until 2002, just for the DOE to recommend Yucca Mountain as "suitable" for repository development. It took DOE another six years to file a license application for the facility. Both the finding of suitability and the license application have been consistently challenged by the State of Nevada,⁸² environmental groups, and numerous scientists.

Accordingly, the spent fuel and other high-level radioactive wastes generated at the proposed Harris reactors could not be "disposed of" at Yucca Mountain unless and until a second national repository is operating. But the Commission has not expressed confidence that a second repository will open. At best, given the history of the search for a high-level repository, this will take decades or even longer.

Moreover, Congress has not given the NRC any basis for assuming that a second repository will be opened. Section 161(b) of the NWPA provides that: "[t]he

⁸² "State of Nevada's Petition to Reject DOE's Yucca Mountain License Application as Unauthorized and Substantially Incomplete," June 2008. Available at www.state.nv.us/nucwaste/news2008/pdf/nv0806nrc_la.pdf

Secretary [of Energy] shall report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository.”⁸³

Section 161(a) also states that: “The Secretary [of Energy] may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities.”⁸⁴ DOE has not made a finding that a second repository is needed, nor has Congress specifically authorized or appropriated funds for site-specific activities.

The Commission’s failure to express confidence that a second repository will be opened any time soon also implicates the third and fourth findings of the Waste Confidence Decision, i.e., that spent fuel and other high-level radioactive waste can be safely stored at reactor sites for up to 30 years.⁸⁵ If the Commission has no confidence that a repository will open at some reasonable time in the future, it must be assumed that spent fuel may sit at the proposed reactor site for an indefinite period of time. The environmental impacts of such indefinite storage must be evaluated before a COL for the proposed Harris reactors can be granted.

As a corollary, even if *arguendo* the Waste Confidence Decision applies to COLs for new reactors, it should be reconsidered in light of significant and pertinent unexpected events that raise substantial doubt about its continuing validity, i.e., the significant increase in cost estimates for the facility and the increased threat of terrorist

⁸³ 42 U.S.C. §10172a(b).

⁸⁴ 42 U.S.C. § 10172a(a).

⁸⁵ 64 F.R. at 68,006.

attacks against targeted facilities in the United States. In its 1999 “Nuclear Waste Confidence Decision” revision, the NRC stated

the Commission would consider undertaking a comprehensive reevaluation of the Waste Confidence findings...if significant and pertinent unexpected events occur raising substantial doubt about the continuing validity of the Waste Confidence findings.⁸⁶

NC WARN has substantial doubts about the continuing validity of the third and fourth findings of the revised Waste Confidence Decision and the reasonableness of the Commission’s finding. These findings are:

3. The Commission finds reasonable assurance that high-level radioactive waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level waste and spent fuel.

4. The Commission finds reasonable assurance that, if necessary, spent fuel can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations.

Finding 3 is identical to the finding in the original Waste Confidence Decision in 1984, and Finding 4 is basically identical to that in the original Waste Confidence Decision with the addition of the consideration of license renewal and spent fuel storage thirty years beyond the licensed life for operation of a reactor.

First, the DOE is now estimating that the cost of the Yucca Mountain repository will be in excess of \$90 billion, up from the \$56-billion cost estimates in 2001.⁸⁷ It is

⁸⁶ 64 F.R. at 68,007

⁸⁷ “Total U.S. Nuke Dump Cost to Top \$90-billion,” Associated Press, July 15, 2005; interview with Ward Sproat, DOE Office of Civilian Waste Management. It is expected that in the near future DOE will formally testify about the cost increases to

unjustified for the Commission to assume that Congressional funding will continue to fund even the licensing for the first repository, let alone the full cost for construction and operation of Yucca Mountain, when costs are increasing so rapidly and that repository lacks capacity even to accommodate the spent fuel from the currently operating reactors.

Secondly, as described above in the Contention TC-3 and TC-4 above, there are the terrorist threats to irradiated nuclear fuel and high-level radioactive waste – whether it is being stored on-site at commercial reactors in storage pools or dry casks, stored in away-from-reactor independent spent fuel storage Installations, or transported by truck, train, or barge between nuclear plants and off-site interim storage facilities – which demand an evaluation in the COL for the proposed Harris reactors. NC WARN is aware that the Commission’s position is that the environmental impacts of terrorist attacks may not be cognizable under NEPA in some jurisdictions.⁸⁸ But if the Waste Confidence Decision now covers COLs for new reactors, NC WARN requests that the Commission reconsider this policy, in light of:

a. The obvious attractiveness and vulnerability of spent fuel at reactor sites, in transit and at a repository to terrorist attack.

b. The Secretary of Energy’s recognition of the relationship between homeland security and assured capacity for timely spent fuel disposal.

Congress. This taxpayer subsidy is approaching \$1 billion for each existing reactor, a cost that needs to be included in the cost estimates for the proposed Harris reactors.

⁸⁸ See, e.g., *Pacific Gas & Electric Co.* (Diablo Canyon Independent Spent Fuel Storage Installation), CLI-03-01, 57 NRC 1 (2003); *Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), CLI-02-25, 56 NRC 340 (2002).

c. The Commission's explicit statement in the Waste Confidence status review that it would undertake a comprehensive reevaluation of the Waste Confidence findings if "significant and pertinent unexpected events" occur raising substantial doubt about the continuing validity of the Waste Confidence findings.

d. The judicial decisions and appeals in *San Luis Obispo Mothers for Peace v. NRC*, *supra*, and its likely progeny in other licensing matters.

Conclusion. Progress Energy does not have any place to safely dispose of the spent fuel that would be generated by the proposed Harris reactors. The Commission's Waste Confidence Decision, as amended in 1999, does not apply to new reactors, and even if it does, that decision is outmoded because the cost estimates for the proposed Yucca Mountain repository are increasing significantly and that repository would be full when open. Similar to other components of nuclear reactors, spent fuel is a terrorist target.

CONCLUSION

NC WARN prays its petition for intervention and request for hearing is granted. The foregoing contentions should be admitted because they clearly satisfy all of the Commission's requirements in 10 C.F.R. § 2.309 and 10 C.F.R. § 52.103.

Respectfully submitted this the 4th day of August 2008.

_____/s/jr_____
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CERTIFICATE OF COUNSEL

Pursuant to 10 C.F.R. 2.323(b), I certify that on August 2, 2008, I contacted counsel for NRC, Sara E. Brock, and counsel for Progress Energy, John O'Neill, by email to inform them that NC WARN was filing this petition and requested that they contact me if they would support this petition. Ms. Brock responded that the Staff will not take a position until it has the opportunity to review the petition. Based on earlier conversations, I am aware that Progress Energy intends to oppose this petition in whole or in part and that the issues in this petition cannot be resolved.

_____/s/jr_____
John D. Runkle, Attorney at Law

CERTIFICATE OF SERVICE

I hereby certify that copies of this PETITION FOR INTERVENTION AND REQUEST FOR HEARING BY THE NORTH CAROLINA WASTE AWARENESS AND REDUCTION NETWORK was served on the following via email and/or deposit in the U.S. Mail, postage prepaid:

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This is the 4th day of August 2008.

_____/s/jr_____
John D. Runkle, Attorney at Law

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3) _____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Elizabeth Anne Cullington
(print your name clearly)

Under penalty of perjury, Elizabeth A. CULLINGTON declares as follows:
(print your name clearly)

1. My name is Liz Cullington. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 390 Rocky Hills Rd, Pittsboro NC 27312
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature E. Cullington Date 7/28/2008

STATE OF NORTH CAROLINA
COUNTY OF Chatham

Acknowledged before me this the 28th day of July

Nicole McNeill
Notary Public
my commission expires: 11/25/09



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Beverly Ann D'Aquanni
(print your name clearly)

Under penalty of perjury, Beverly Ann D'Aquanni declares as follows:
(print your name clearly)

1. My name is Beverly Ann D'Aquanni I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 856 Millcroft Road Pittsboro NC 27312
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Beverly Ann D'Aquanni Date 7/31/08

STATE OF NORTH CAROLINA
COUNTY OF CHATHAM

Acknowledged before me this the 31ST day of JULY, 2008.

Martin A Frost
Notary Public
my commission expires: 04-20-2011

MARTIN A FROST
NOTARY PUBLIC
ORANGE COUNTY, NC
My Commission Expires 4-20-2011

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF JUDITH A. ELZINGA
(print your name clearly)

Under penalty of perjury, JUDITH A. ELZINGA declares as follows:
(print your name clearly)

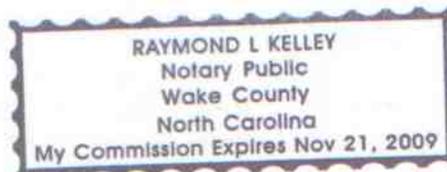
1. My name is Judith A. Elzinga. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 308 Knightsborough Way [Apex]. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Judith Elzinga Date 7-28-08

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Acknowledged before me this the 28th day of JULY, 2008.

Raymond L. Kelley
Notary Public
my commission expires: NOVEMBER 21, 2009



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
)
Carolina Power & Light Company) Docket Nos. 52-022 COL
) 52-023 COL
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
)

DECLARATION OF GINA GAURISAS-WILSON
(print your name clearly)

Under penalty of perjury, GINA GAURISAS-WILSON declares as follows:
(print your name clearly)

1. My name is GINA GAURISAS-WILSON. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 306 OAKRIDGE RD CARY, NC 27511. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Gina Gaurisas-Wilson Date 7.28.08

STATE OF NORTH CAROLINA
COUNTY OF Wake

Acknowledged before me this the 28 day of July, 2008.

Lawi Gibson
Notary Public
my commission expires:

VALERIE A. BROOKS
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 9-11-2012

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Hugh B Haskell
(print your name clearly)

Under penalty of perjury, Hugh B Haskell declares as follows:
(print your name clearly)

1. My name is Hugh B Haskell. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 244 Beachers Brook Lane, Cary NC, 27511. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Hugh B Haskell Date 7/28/08

STATE OF NORTH CAROLINA
COUNTY OF Wayne

Acknowledged before me this the 28 day of July, 2008.

Tom C. Wind
Notary Public
my commission expires: oct, 15 2011



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
Carolina Power & Light Company)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Judith Ann Hogan
(print your name clearly)

Under penalty of perjury, Judith Ann Hogan declares as follows:
(print your name clearly)

1. My name is Judith Ann Hogan. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 7598 Moncure-Pittsboro Rd, Moncure, NC 27559. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Judith Ann Hogan Date July 29, 2008

STATE OF NORTH CAROLINA
COUNTY OF Wake

Acknowledged before me this the 29 day of July, 2008.

Lorrie E. James
Notary Public

my commission expires: 02/17/2013



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF MERIBETH LORRAINE HOWLETT
(print your name clearly)

Under penalty of perjury, MERIBETH LORRAINE HOWLETT declares as follows:
(print your name clearly)

1. My name is MERIBETH L. HOWLETT. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 8108 SILVERTHORNE DRIVE, RALEIGH, NC 27612. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Meribeth Lorraine Howlett Date 28 July 2008

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Acknowledged before me this the 28 day of July, 2008.

Mark A. Lovvoen
Notary Public MARK A. LOVVOEN
my commission expires: 6/7/2012



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF PATRICIA V. LONG
(print your name clearly)

Under penalty of perjury, PATRICIA V. LONG declares as follows:
(print your name clearly)

1. My name is PATRICIA V. LONG. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 1101 ESHER COURT, RALEIGH, NC 27609-3954
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

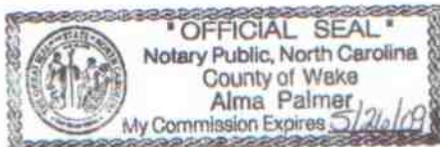
Signature Patricia V. Long Date 7-28-08

STATE OF NORTH CAROLINA
COUNTY OF Wake

Acknowledged before me this the 28 day of July, 2008.

Alma Palmer
Notary Public

my commission expires: May 26, 2009



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)

Carolina Power & Light Company)

(Shearon Harris Nuclear Power Plant,)
Units 2 and 3) _____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF VERNELLE P. LONG
(print your name clearly)

Under penalty of perjury, VERNELLE P. LONG declares as follows:
(print your name clearly)

1. My name is VERNELLE P. LONG. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 1101 ESHER COURT RALEIGH, NC 27609-3954. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Vernelle P. Long Date July 28, 2008

STATE OF NORTH CAROLINA
COUNTY OF Wake

Acknowledged before me this the 28th day of JULY, 2008.

Laura Ficken
Notary Public
my commission expires: 7/31/11



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)

Carolina Power & Light Company)

(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Mark Edward Mintz
(print your name clearly)

Under penalty of perjury, Mark Edward Mintz declares as follows:
(print your name clearly)

1. My name is Mark E. Mintz. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 8708 Silverthorne Drive - Raleigh, NC 27612. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature [Handwritten Signature] Date July 28th, 2008

STATE OF NORTH CAROLINA
COUNTY OF WAKE

Acknowledged before me this the 28 day of July, 2008.

Mark A. Lovvorn
Notary Public
my commission expires: 6/7/2012
MARK A. LOVVORN



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF GARY PHILLIPS
(print your name clearly)

Under penalty of perjury, GARY PHILLIPS declares as follows:
(print your name clearly)

1. My name is GARY PHILLIPS. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 97 Box Turtle Road, Pittsboro, N.C. 27312.
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature G Phillips Date July 28, 2008

STATE OF NORTH CAROLINA
COUNTY OF ORANGE

Acknowledged before me this the 28th day of July, 2008.

TERRI TURNER
Notary Public
my commission expires: 5-12-2013



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of _____)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
_____)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF Audrey Bernier Schwankl
(print your name clearly)

Under penalty of perjury, Audrey Bernier Schwankl declares as follows:
(print your name clearly)

1. My name is Audrey Bernier Schwankl. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 1285 Thompson St., Pittsboro, NC 27312.
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Audrey B Schwankl Date July 28, 2008

STATE OF NORTH CAROLINA
COUNTY OF N.C.

Acknowledged before me this the 28 day of July ~~August~~ SKC 2008.

Sandra K. Cockman
Notary Public
my commission expires: 8/30/2009



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)

Carolina Power & Light Company)

(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF James Patrick Schwankl
(print your name clearly)

Under penalty of perjury, James Patrick Schwankl declares as follows:
(print your name clearly)

1. My name is James Patrick Schwankl. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 1285 Thompson St., Pittsboro, NC 27312
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature James Patrick Schwankl Date July 28, 2008

STATE OF NORTH CAROLINA
COUNTY OF Chatham

Acknowledged before me this the 28 day of July, 2008.

Sandra K. Cockman
Notary Public
my commission expires:



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)

Carolina Power & Light Company)

(Shearon Harris Nuclear Power Plant,
Units 2 and 3))

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF KATHERINE P. SEATON
(print your name clearly)

Under penalty of perjury, KATHERINE P. SEATON declares as follows:
(print your name clearly)

1. My name is KATHERINE P. SEATON. I am a member of NC Waste Awareness and Reduction Network (NC WARN).
2. My home street address is 3269 Chicken Bridge Rd., Pittsboro NC 27312. My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.
3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.
4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Katherine P. Seaton

Date 7/26/08

STATE OF NORTH CAROLINA
COUNTY OF CHATHAM

Acknowledged before me this the 26 day of JULY, 2008.

Rebecca D. Crabtree
Notary Public
my commission expires: 11-08-09

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE SECRETARY

In the Matter of)
)
Carolina Power & Light Company)
)
(Shearon Harris Nuclear Power Plant,)
Units 2 and 3))
)

Docket Nos. 52-022 COL
52-023 COL

DECLARATION OF RICHARD WILSON
(print your name clearly)

Under penalty of perjury, RICHARD WILSON declares as follows:
(print your name clearly)

1. My name is RICHARD WILSON. I am a member of NC Waste Awareness and Reduction Network (NC WARN).

2. My home street address is 306 OAKRIDGE RD CARY, NC 27511
My home is within 50 miles of the site of the Shearon Harris Nuclear Power Plant in Wake County, North Carolina, for which Progress Energy (formerly Carolina Power & Light) has applied to the US Nuclear Regulatory Commission for a Combined Operating License for the construction and operation of two new reactors.

3. Based on the history of nuclear reactors to date, I believe that the proposed reactors are inherently dangerous. The construction of one or more new nuclear reactors so close to my home could pose a grave risk to my health and safety, and my economic well-being. I am deeply concerned that an accident could release radioactive material into the atmosphere or my drinking water, and if that were to occur, I could be killed or become seriously ill.

4. Therefore, I have authorized NC WARN to represent my interests in this proceeding by opposing the issuance of a Combined Operating License to Progress Energy for two new reactors at the Harris site.

Signature Richard D Wilson Date 7/29/08

STATE OF NORTH CAROLINA
COUNTY OF Wake

Acknowledged before me this the 29 day of July, 2008.

Valerie A Brooks
Notary Public
my commission expires:

VALERIE A. BROOKS
NOTARY PUBLIC
WAKE COUNTY, NC
My Commission Expires 9-11-2012