

**UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION**

**BEFORE THE ATOMIC SAFETY AND LICENSING BOARD**

<b>In the Matter of:</b>	)	
	)	
<b>EXELON GENERATION COMPANY, LLC</b>	)	<b>Docket No. 50-352-LR</b>
	)	<b>Docket No. 50-353-LR</b>
<b>(Limerick Generating Station, Units 1 and 2)</b>	)	
	)	<b>November 22, 2011</b>
<b>(License Renewal Application)</b>		

**NATURAL RESOURCES DEFENSE COUNCIL  
PETITION TO INTERVENE AND  
NOTICE OF INTENTION TO PARTICIPATE**

**PRELIMINARY STATEMENT**

The Natural Resources Defense Council (“NRDC”) respectfully submits this petition to intervene in the Nuclear Regulatory Commission (“NRC”) relicensing proceeding that will determine the future of the two Limerick nuclear power reactors, located in Limerick, Pennsylvania. The Limerick Generating Station, Units 1 and 2 (“LGS”), have 13 years and 18 years, respectively, of operation remaining on their initial 40 year operating licenses. However, in the initial 27 and 22 years of operation, a lot of changes have occurred that bear directly on whether, when these licenses expire, Exelon Generating Company, LLC (“Exelon”), the current owner of Limerick, should be licensed to continue to operate the reactors for an additional 20 years. In addition, between now and when the current licenses will expire, significant changes are likely to occur that bear directly on the wisdom of allowing further operation of two reactors that will have reached 40 years of age and that may require substantial additional safety measures to qualify for an additional 20 years of operation.

The following Contentions allege that Exelon has failed to conduct a legally adequate environmental analysis because 1) it fails to properly identify and evaluate all new information and ignores or distorts the significance of this new information; 2) the 1989 Supplemental FES upon which it relies to meet its obligation to evaluate severe accident mitigation alternatives is deficient in several significant ways; 3) the 1989 Supplemental FES does not qualify as a legally sufficient severe accident mitigation alternatives analysis within the meaning of 10 C.F.R. § 51.53(c)(3)(ii)(L); and 4) it fails to properly evaluate the alternatives of “No Action” and compare its consequences with those of the proposed action.

In its Environmental Report, Exelon acknowledges some of the new information that bears on the current application. License Renewal Application (“LRA”), Appendix E, Environmental Report (“ER”) at 5-4 to 5-9. Exelon focuses on new information that it concedes is directly relevant to a previous analysis conducted by NRC Staff in 1989 which was called a “severe accident mitigation design alternatives (“SAMDA”) analysis. The ER, §§ 4.20 and 5.3, incorporates and adopts the NRC Staff’s SAMDA analysis as Exelon’s analysis of alternatives to mitigate the adverse impacts of severe accidents at Limerick. *See* NUREG-0974 Supplement, Final Environmental Statement Related to the Operation of Limerick Generating Station, Units 1 and 2 Docket Nos. 50-352 and 50-353 Philadelphia Electric Company (August 1989) (“SAMDA”). The SAMDA was prepared as the result of a successful court challenge by a previous intervenor, Limerick Ecology Action (“LEA”). *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719 (3<sup>rd</sup> Cir. 1989). Because of a settlement between LEA and the then owner of Limerick (*see Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), LBP-89-24, 30 N.R.C. 152 (1989)) the final SAMDAs analysis issued by NRC Staff was never

evaluated for accuracy, completeness or compliance with the requirements of the National Environmental Policy Act (“NEPA”) by the ASLB, the Commission or a federal court. Exelon now relies on that SAMDA analysis, unmodified, to meet its NRC regulatory obligation to fully consider alternatives to the proposed action. *See* 10 C.F.R. §§ 51.45(c), 51.53(c)(2) and 51.53(c)(3)(iii).

Exelon is also required to consider any “new and significant” information that may alter previous environmental conclusions. 10 C.F.R. § 51.53(c)(3)(iv). In its analysis of new and significant information Exelon ignores several additional pieces of new information that bear directly on the previously conducted SAMDA analysis and it dismisses as insignificant the new information it does acknowledge exists without providing a defensible basis for its conclusions. When the full extent of the new and significant information is included, it demonstrates that the SAMDA analysis upon which Exelon relies is inadequate and fails to fulfill its obligations under NRC regulations to fully develop, evaluate and weigh alternatives to the proposed action that would result in mitigating the consequences of a severe accident.

In addition, Exelon fails to fully and properly evaluate the No Action alternative. Exelon ignores the reasonably foreseeable outcome that in the next 13-18 years substantial changes in available electricity system resources may reduce any putative adverse impacts from denying renewed licenses for Limerick. The ER impermissibly restricts its detailed consideration of the possible consequences of license denial to an analysis of new generating capacity. The type of analysis required for appropriate consideration of the environmental consequences of the No Action alternative is substantially different from that used in the ER to evaluate a specific generation alternative.

Limerick presents a major risk to the environment and its extended operation demands the most scrupulous and exacting review by NRC. The facility is sited within a 50 mile radius of nearly 10 million people, including all of Philadelphia, Pennsylvania, Camden and Trenton, New Jersey and Wilmington, Delaware, and on the banks of the Schulykill River, one of Pennsylvania's major scenic rivers, supplying both drinking water and recreation and flowing through the center of Philadelphia, where it becomes the largest tributary of the Delaware River, and eventually flowing into one of the richest water resources in America, the Chesapeake Bay. Exelon's ER fails to provide the basis for that review. Absent substantial improvements by Exelon made as a result of NRC Staff insisting on compliance with NRC regulations, NRC Staff will itself be saddled with carrying out a thorough and accurate review of alternatives to mitigate severe accidents and to properly evaluate the No Action alternative in order to complete the required supplemental environmental impact statement.

### **STANDING**

NRDC is a national non-profit environmental organization with offices in Washington, D.C., New York City, San Francisco, Chicago, Santa Monica, and Beijing. NRDC has a nationwide membership of over 350,000 (plus hundreds of thousands of online activists), including 15,787 members in Pennsylvania, at least 2,894 members living within 50 miles of LGS and approximately 62 members living within 10 miles of the facility. Declaration of Linda Lopez at 4, Nov. 17, 2011. Among its missions, NRDC seeks to maintain and enhance environmental quality, to safeguard the natural world for present and future generations, and to foster the fundamental right of all people to have a voice in the decisions that affect their environment. *Id.* at 5. Since its inception in 1970, NRDC has sought to improve the

environmental, health, and safety conditions at the nuclear facilities operated by the Department of Energy and the civil nuclear facilities licensed by the NRC and their predecessor agencies. *Id.* at 6. To that end, NRDC utilizes its institutional resources, including legislative advocacy, litigation, and public outreach and education, to minimize the risks that nuclear facilities pose to its members and to the general public. *Id.*

Under the AEA, the Commission must grant a hearing on a license application upon "the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding." 42 U.S.C. § 2239(a)(1)(A). To that end, a petitioner must provide the Commission with information regarding "(1) the nature of the petitioner's right under the governing statutes to be made a party; (2) the nature of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any decision or order on the petitioner's interest." *Entergy Nuclear Vermont Yankee, L.L.C., and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), 60 N.R.C. 548, 552 (2004) (*citing* 10 C.F.R. § 2.309(d)(1)). "The NRC generally uses judicial concepts of standing in interpreting this regulation." *Entergy Nuclear Vermont Yankee*, 60 N.R.C. at 552. Thus, a petitioner may intervene if it can specify facts showing "that (1) it has suffered or will suffer a distinct and palpable harm constituting injury-in-fact within the zone of interests arguably protected by the governing statutes, (2) the injury is fairly traceable to the action being challenged, and (3) the injury will likely be redressed by a favorable determination." *Id.* at 552-53. In determining whether a petitioner has met the requirements for establishing standing, this Board "construe[s] the petition in favor of the petitioner." *Id.* at 553.

Member organizations such as NRDC may intervene on behalf of their members if they

can "demonstrate that the licensing action will affect at least one of [their] members, . . . identify that member by name and address, and . . . show that [they are] authorized by that member to request a hearing on his or her behalf." *Id.* NRDC members Mr. Charles W. Elliott, Ms. Suzanne Day, and Mr. William White all reside within 50 miles of the LGS and all describe the economic, aesthetic, and environmental interests they wish to safeguard and the harms that the relicensing of LGS without full compliance with the law will pose to those interests. *See*, Declarations of Mr. Charles W. Elliott, Ms. Suzanne Day, and Mr. William White (collectively referenced "NRDC members," and individually referenced by "\_\_\_\_ Decl.at \_\_\_\_"). The November 22, 2011 Declaration of Drs. Cochran, McKinzie and Weaver ("NRDC Expert Decl.") and the November 22, 2011 Declaration of Christopher E. Paine ("Paine Expert Decl.") affirm the scientific basis for NRDC members' concerns. *See* Attachments 5 and 6 to this Notice and Petition. All of these NRDC's members support this Petition, and have authorized NRDC to intervene in this proceeding and request a hearing on their behalf. *See*, Elliott Decl. at 13, Day Decl. at 10, and White Decl. at 11.

Mr. Charles W. Elliott lives at 604 Cattell Street, in Easton, Northampton County, Pennsylvania, approximately 38 miles from the LGS. Elliott Decl. at 3, 4. Mr. Elliott has been a NRDC member since 1981. *Id.* at 2. One of the reasons Mr. Elliott describes for joining NRDC so long ago was because of his concerns about nuclear energy and the risks of nuclear power reactor accidents following the Three Mile Island accident in 1979. *Id.* Mr. Elliott is personally familiar with LGS in his capacity as counsel for the citizen organization Limerick Ecology Action, Inc., in the original operating license proceedings for Limerick Units 1 and 2 before the NRC and in the petition for review in the related appeal proceedings before the U.S. Court of

Appeals for the Third Circuit. *Id.* at 5, *see also, Limerick Ecology Action v. U.S. NRC*, 869 F.2d 719 (3rd. Cir. 1989). While involved in the prior Limerick proceeding, Mr. Elliott physically toured the facility with members of the Atomic Safety and Licensing Board and other parties during construction, reviewed licensing documents and other material related to safety issues and severe accident risks posed by the Limerick facility, and consulted with experts in nuclear safety and risk assessment concerning the risks of operation of LGS. *Id.* In particular, one of his areas of special concern was to ensure that the Limerick facility ultimately be required to employ cost-effective, state of the art measures to prevent and to mitigate the risks of severe accidents as part of the licensing process. *Id.* Mr. Elliott, who remains unconvinced that the Limerick facility is as safe as it reasonably could be, also notes that the region where he lives has become increasingly populated and urbanized since the time of the original licensing of the facility. *Id.* at 6, 7. Mr. Elliott states that the Lehigh Valley Planning Commission projects significantly increased population growth through 2030. *Id.* at 7. Thus, Mr. Elliott, an informed individual, is concerned that in the event of a severe accident, travel in his area may be impaired, "particularly where the severity, dynamics and consequences of a nuclear reactor accident can be unclear, fast-moving and unpredictable and in light of the fact that nuclear reactor accidents can cause spontaneous and voluntary evacuations for distances of 100 miles or more." *Id.* (citations omitted). And finally, Mr. Elliott is concerned to understand that as part of this relicensing the LGS has not produced an updated study of severe accident consequences at the facility and ways to prevent such an accident and to mitigate its consequences. *Id.* at 9.

Ms. Suzanne Day resides at 3 Taylors Lane in Cinnaminson, New Jersey, an organic family farm that borders the Delaware River, from the windows of her farm she can see the

intake system for the public water supply for three counties, and is 35 miles downwind from the LGS. Day Decl. at 2, 3. Ms. Day has been a NRDC member for approximately 20 years. *Id.* Ms. Day expresses concern that there could be a serious accident at the facility and radiation from the nuclear power plants or that the stored nuclear waste could harm her family, the public health of her community, and the surrounding environment in Pennsylvania and New Jersey. *Id.* at 5. Specifically, Ms. Day notes that the "Delaware Valley has grown in population and land use ... our roadways are choked routinely just on ordinary weekdays." *Id.* at 7. The failure of the LGS to update its SAMA analysis or the NRC to require such an updated analysis concern her and, if LGS is allowed to operate an additional 20 years past its current license, she would "like to be sure that... they are using the most up to date equipment and strategies to prevent a nuclear accident, to mitigate against bad environmental consequences, and to plan evacuations that would be feasible." *Id.*

Mr. William White lives at 135 Pennsylvania Avenue in Bryn Mawr, Pennsylvania, has been a NRDC member for nearly 40 years. White Decl. at 2,3. His home is approximately 30 miles from the LGS and he is concerned for the potential for an aging nuclear facility to accidentally cause leakages of radioactivity. *Id.* at 4. Specifically, he notes that as part of this relicensing he is aware that "the LGS has not produced an updated study of severe accident consequences and ways to prevent such an accident and to mitigate its consequences." *Id.* at 8. Mr. White notes that the area surrounding LGS has changed a great deal since the time LGS performed an analysis of a severe accident, "especially along the Route 422 corridor, with more people and businesses locating there annually." *Id.* The failure of LGS to produce updated studies and plans concerns him and, like the other NRDC standing members, wants to be sure

that if the LGS reactors are allowed to operate for an additional 20 years, they use "the most up-to-date equipment and strategies to prevent a nuclear accident and to mitigate against its environmental consequences." *Id.*

Petitioners' experts discuss in their declarations the inadequacies in the applicant's analysis of potential adverse environmental consequences of LGS relicensing, including inadequate analysis of the consequences of a severe accident. These inadequacies impact NRDC members' right to a complete and accurate assessment of the costs and benefits of the proposed action and alternatives to the proposed action.

As NRDC members explain, they will suffer (or will be under threat of suffering) concrete and particularized injuries from the continued operations of LGS operations without adequate analysis of severe accident mitigation alternatives.<sup>1</sup> Petitioners' experts confirm the science behind these concerns: if LGS is not relicensed, the potential harms will not occur; and even if LGS is relicensed, the potential adverse consequences of a severe accident can be substantially mitigated if cost beneficial mitigation measures are identified and implemented. LGS may not continue operations without a license from the Commission. 42 U.S.C. §2133. Accordingly, LGS and the NRC will have caused these injuries if the proposed new operating license is issued as currently proposed.

By granting Petitioners the relief they request and rejecting LGS's relicensing application or requiring that a SAMA analysis be performed, NRDC's members will obtain redress for their injuries, since the reactor operations will continue beyond the term of their current license or

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<sup>1</sup> So long as a Petitioner falls within the zone of interests protected by the statute, and alleges harm that is "concrete and particularized," rather than "conjectural" or "hypothetical," the "requisite injury may either be actual *or threatened*." *Crow Butte Res., Inc.* (License Amendment for the North Trend Expansion), 67 N.R.C. 241, 271 (2008) (emphasis added).

such a renewed license, if issued, will benefit from a properly conducted SAMA analysis. Even if LGS chooses to revise its ER to provide a legally sufficient SAMA analysis, NRDC members will still have obtained redress: NEPA, in its implementing regulation at 10 C.F.R. Part 51 and 10 C.F.R. Part 2, accord procedural rights to those such as NRDC members whose concrete interests may be harmed by the project. By requiring LGS and the NRC staff to comply with these authorities' requirements, our members' procedural rights will have been vindicated. *See Lujan v. Defenders of Wildlife*, 504 U.S. 555, 572 n.7 (1992) ("[P]rocedural rights are special: The person who has been accorded a procedural right to protect his concrete interests can assert that right without meeting all the normal standards for redressability and immediacy.") (internal quotations omitted); *see also Duke Energy Corporation* (McGuire, Units 1 and 2; Catawba, Units 1 and 2) CLI-02-17, 56 N.R.C. 1 (July 23, 2002) at 10, emphasizing the NEPA obligation to fully develop the record with regard to any SAMA analysis is required "to ensure that the agency does not act upon incomplete information, only to regret its decision after it is too late to correct."

Finally, our members have expressed concerns that fall within the zone of interests protected by NEPA and its implementing regulations. *See, e.g., Ouachita Watch League v. Jacobs*, 463 F.3d 1163, 1173 (11th Cir. 2006) ("[S]ince the injury alleged is environmental, it falls within the zone of interests protected by NEPA . . . ."); *Sabine River Auth. v. U.S. Dep't of Interior*, 951 F.2d 669, 675 (5th Cir. 1992) (plaintiffs' concerns about impacts on water quality and quantity fell within NEPA's zone of interests). Their concerns also fall within the zone of interests protected by the AEA and its implementing regulations. *Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site), 39 N.R.C. 54, 75 (1994) (membership organization

granted standing by showing that "the health and safety interests of its members are within the AEA-protected zone of interests"); *Babcock and Wilcox* (Apollo, Pennsylvania Fuel Fabrication Facility), 37 N.R.C. 72, 80 (1993) (holding that specified "health, safety, and environmental concerns . . . clearly come within the zone of interests safeguarded by the AEA and NEPA").

NRDC members therefore have standing to intervene in their own right: they have met the requirements for injury-in-fact, causation, and redressability, and their concerns fall within the zone of interests protected by NEPA, the AEA, and their implementing regulations. They will be affected by LGS's proposed relicensing and failure to provide a legally adequate SAMA analysis, have provided their names and addresses, and have authorized NRDC, of which they are members, to intervene in this proceeding on their behalf. Thus, Petitioners have standing to pursue this action. *Entergy Nuclear Vermont Yankee*, 60 N.R.C. at 553.

#### **NOTICE OF INTENT TO PARTICIPATE**

Pursuant to 10 C.F.R. § 2.309 and the Notice of Acceptance for Docketing of the Application and Notice of Opportunity for Hearing Regarding Renewal of Facility Operating License Nos. NPF-39 and NPF-85 for an Additional 20-Year Period, Exelon Generation Company, LLC, Limerick Generating Station (76 Fed. Reg. 52992, Aug.24, 2011), Petitioner NRDC hereby submits contentions regarding Exelon's application for renewal of its licenses to operate Limerick Units 1 and 2 for an additional 20 years, or until 2044 and 2049, respectively. As demonstrated below, these contentions should be admitted because they satisfy the NRC's admissibility requirements in 10 C.F.R. § 2.309.<sup>2</sup>

As noted above, several members of NRDC live within 50 miles of the Limerick reactors,

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<sup>2</sup> By Order of the Commission dated October 17, 2011, the time for filing a Petition to Intervene by NRDC was extended to November 22, 2011.

have authorized NRDC to represent their interests in environmental protection in this proceeding and, thus, pursuant to 10 C.F.R. § 2.309(d)(1), NRDC has standing for purposes of raising its concerns in this proceeding.

## **PETITION TO INTERVENE**

### **I. APPLICABLE LEGAL STANDARDS**

#### **A. Standards of Admissibility**

Proffered contentions must put “other parties in the proceeding on notice of the petitioners’ specific grievances” in order to “give [] them a good idea of the claims they will be either supporting or opposing.” *Duke Energy Corp.*, (Oconee Nuclear Station, Units 1, 2 and 3) 49 NRC 328, 333 (1999). Accordingly, in order to ensure “a clearer and more focused record for decision,” 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004), an admissible contention will provide (1) a specific statement of the legal or factual issue proposed; (2) a brief explanation of its basis; (3) a demonstration that the issue is within the scope of the proceeding; (4) a demonstration that the issue is material to the findings the NRC must make to support the action involved in the proceeding; (5) a concise statement of the alleged facts or expert opinions, including references to specific sources and documents that support the petitioners’ position and upon which the petitioner intends to rely at hearing; and (6) sufficient information to show that a genuine dispute exists with regard to a material issue of law or fact, including references to specific portions of the application that the petitioner disputes or, when the application is alleged to be deficient, the identification of such deficiencies and supporting reasons for this belief. *See* 10 C.F.R. § 2.309(f).

The contention rule has not become a “fortress to deny intervention” despite its 1989

fortification. *Duke Energy Corp.* (Oconee Nuclear Power Plant), 49 NRC at 335 (*quoting Philadelphia Elec. Co.* (Peach Bottom Atomic Power Sta., Units 2 and 3), 8 AEC 13, 20-21 (1974), *rev'd in part*, CLI-74-32, 8 AEC 217 (1974), *rev'd in part*, *York Committee for a Safe Environment v. N.R.C.*, 527 F.2d 812 (D.C. Cir. 1975)). Indeed, “[t]he Commission and its Boards regularly continue to admit for litigation and hearing contentions that are material and supported by reasonably specific factual and legal allegations.” *Duke Energy*, 49 NRC at 333. Nor have more recent revisions materially changed the admissibility standard for contentions. *PPL Susquehanna, LLC*, 65 NRC 281, 303 (2007). *See also Entergy Nuclear Operations, Inc.*, LBP-03-08, 68 N.R.C. 43, 60 *et. seq.* (2008).

Although an intervenor cannot use discovery or cross-examination as a “fishing expedition” in hopes of turning up supporting facts, there is also no requirement that the substantive case be made at the contention stage. *Entergy Nuclear Generation Co. et al.* (Pilgrim Nuclear Power Station), ASLB Oct. 16, 2006, 2006 WL 4801142 at slip op. 85 (*quoting Oconee*, 49 NRC at 342)).

The Commission has also, however, explained that the requirement at § 2.309(f)(1)(v) “does not call upon the intervenor to make its case at [the contention] stage of the proceeding, but rather to indicate what facts or expert opinions, be it one fact or opinion or many, of which it is aware at that point in time which provide the basis for its contention. A petitioner does not have to provide a complete or final list of its experts or evidence or prove the merits of its contention at the admissibility stage. And, as with a summary disposition motion, the support for a contention may be viewed in a light that is favorable to the petitioner so long as the admissibility requirements are found to have been met. The requirement “generally is fulfilled when the sponsor of an otherwise acceptable contention provides a brief recitation of the factors underlying the contention or references to documents and texts that provide such reasons.

*Id.* at 84 (*quotations and citations omitted*). “A contention may be plausible enough to meet the admission standards even if it is ultimately denied on the merits.” *Entergy Nuclear Vermont*

*Yankee, LLC* (Vermont Yankee), LBP-06-20, 64 N.R.C. 131, 160 (2006).

In addition, a contention of “omission” that focuses on the absence of a required analysis in the application is admissible and not deemed speculative because of any lack of detail regarding the potential content of the missing information. *See Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-08-13, 64 N.R.C. 43, 86, n. 194 (2008).

### **B. Specific Statement of the Issue of Law or Fact to be Raised or Controverted**

First, a petitioner must clearly identify the issue of law or fact that it will raise or dispute. 10 C.F.R. § 2.309(f)(1)(i).

### **C. Brief Explanation of the Basis of the Contention**

Next “a petitioner must provide some sort of *minimal* basis indicating the *potential* validity of the contention.” Final Rule, *Rules of Practice for Domestic Licensing Proceedings - Procedural Changes in the Hearing Process*, 54 Fed. Reg. 33,168, 33,170 (Aug. 11, 1989) (emphasis added). This minimal basis need not be “an exhaustive list of possible bases, but simply enough to provide the alleged factual or legal bases in support of the contention.” *Vermont Yankee*, 64 N.R.C. at 147 (quoting *Louisiana Energy Serv., LP* (National Enrichment Facility), 60 NRC 619, 623 (2004)).

### **D. Showing that the Contention is Material to Findings that the NRC Must Make in Support of the Proposed Action**

A proposed contention must concern an issue that is “material” to the findings the NRC must make. 10 C.F.R. § 2.309(f)(1)(iv). A “material” issue is one that would make a difference in the outcome of the proceeding. 54 Fed. Red. at 33,172. “This means that there should be some significant link between the claimed deficiency and either the health and safety of the public or the environment.” *Vermont Yankee*, 60 NRC 548, 557 (Nov. 22, 2004).

### **E. Concise Statement of the Alleged Facts or Expert Opinions in Support of Petitioners' Position**

A petitioner must also demonstrate that each proposed contention is supported by “a concise statement of the alleged facts or expert opinions which support the . . . petitioner’s position on the issue . . . together with references to the specific sources and documents on which [it] intends to rely.” 10 C.F.R. § 2.309(f)(1)(v). This does not mean, though, that a petitioner must “make its case at this stage of the proceeding.” 54 Fed. Reg. at 33,170. Rather, the petitioner must simply “indicate what facts or expert opinions, be it one fact or opinion or many, of which it is aware at that point in time which provide the basis for its contention.” *Id.* Moreover, “a ‘Board may appropriately view Petitioners' support for its contention in a light that is favorable to the Petitioner.’” *Vermont Yankee*, 60 NRC at 555 (*quoting Arizona Public Service Co. (Palo Verde Nuclear Station)*, 34 NRC, 149, 155 (Aug. 16, 1991)).

### **F. Sufficient Information to Show that a Genuine Dispute Exists with the Applicant or Licensee on a Material Issue of Law or Fact**

NRC set forth factors relevant to determining if a genuine dispute exists when it adopted the current version of 10 C.F.R. § 2.309(f)(1):

This will require the intervenor to read the pertinent portions of the license application, including the Safety Analysis Report and the Environmental Report, state the applicant's position and the petitioner's opposing view. Where the intervenor believes the application and supporting material do not address a relevant matter, it will be sufficient for the intervenor to explain why the application is deficient.

54 Fed. Reg. at 33,170.

As set forth in detail in the following contentions, NRDC easily satisfies the admissibility standard with respect to each contention. Further, as set forth below and as required by 10 C.F.R. § 2.309(f)(1)(iii), NRDC will show that each contention is within the scope of the

proceeding.

## II. NRDC CONTENTIONS

### CONTENTION 1-E<sup>3</sup>

**APPLICANT’S ENVIRONMENTAL REPORT (§ 5.3) ERRONEOUSLY CONCLUDES THAT NEW INFORMATION RELATED TO ITS SEVERE ACCIDENT MITIGATION DESIGN ALTERNATIVES (“SAMDA”) ANALYSIS IS NOT SIGNIFICANT, IN VIOLATION OF 10 C.F.R. § 51.53(c)(3)(iv), AND THUS THE ER FAILS TO PRESENT A LEGALLY SUFFICIENT ANALYSIS OF SEVERE ACCIDENT MITIGATION ALTERNATIVES**

#### **BASES**

1. Applicant’s Environmental Report -Operating License Renewal Stage, Limerick Generating Station, Units 1 and 2 (“ER”) misinterprets and/or misuses new information regarding increased population in the area within 10 miles of the plant and thus fails to account for the significant increase in total person-remS of exposure that could occur in the event of a severe accident. ER at 5-7. This population was substantially underestimated in the 1989 SAMDA analysis upon which the Applicant continues to rely<sup>4</sup>, and thus the ER substantially understates or fails to analyze the potential adverse impact in terms of person-remS of collective exposure from a severe accident at Limerick and the potential benefits of mitigation measures that would avoid those exposures.

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<sup>3</sup> “E” indicates the contention is environmental.

<sup>4</sup> The ER, § 5.3, incorporates and adopts as Exelon’s analysis of alternatives to mitigate the adverse impacts of severe accidents at Limerick, an analysis done by NRC Staff in 1989 known as a severe accident mitigation design alternatives (“SAMDA”) analysis. See NUREG-0974 Supplement, Final Environmental Statement Related to the Operation of Limerick Generating Station, Units 1 and 2 Docket Nos. 50-352 and 50-353 Philadelphia Electric Company (August 1989)(“SAMDA”).

NRDC Expert Decl. ¶¶ 22-30.

2. The ER misinterprets and/or misuses new information regarding increased population in the area within 50 miles of the plant and thus fails to account for the significant increase in total person rems of exposure that will occur in the event of a severe accident. ER at 5-7. This population was substantially underestimated in the 1989 SAMDA analysis upon which the Applicant continues to rely, and thus the ER substantially understates the potential adverse impact, in terms of person-rems of collective exposure, from a severe accident at Limerick and the potential benefits of mitigation measures that would avoid those exposures. NRDC Expert Decl. ¶¶ 22-30
3. The ER fails to analyze the significance of radiation exposure to an increased population following a severe accident and fails to consider more than a very narrow group of mitigation measures identified in the 1989 SAMDA analysis. It ignores new and significant information regarding potential mitigation alternatives that have been considered for other BWR Mark II containment reactors that were not considered in the original SAMDA analysis and ignores new and significant information regarding additional plausible severe accident scenarios. ER at § 5.3. Thus the ER fails to demonstrate that with the accurate distribution and number of persons who will be exposed in the event of a severe accident and all reasonable mitigation alternatives considered, there will be no significant change in the SAMDA analysis and there will be no cost beneficial mitigation alternatives.<sup>5</sup> NRDC Expert Decl. ¶¶ 7-17 and 22-30.

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<sup>5</sup> The original SAMDA analysis identified “several candidate SAMDAs [that] might be cost effective” but dismissed them because of reliance on a PRA analysis by the then owner of Limerick that Staff conceded “staff has not verified.” SAMDA at 15.

4. The ER analysis of the significance of exposure of an increased population to harmful radionuclides following a severe accident ignores new and significant information based on an analysis of actual core damage events at light water reactors in general, and BWRs in particular. Such an action demonstrates that the CDF probability for Limerick is likely higher than the estimate relied upon in the 1989 SAMDA analysis and updated CDF probabilities on which applicant continues to rely (ER at 5-6). Thus the ER conclusion that the new information regarding the population at risk from a severe accident does not constitute significant information is based on non-conservative assumptions that understate the likely damage from a severe accident at Limerick. NRDC Expert Decl. ¶¶ 18-30.
5. The ER analysis of the significance of including information regarding the potential economic impact of a severe accident at Limerick erroneously relies on data from an analysis done at TMI, a site that involves a markedly different and less economically developed area than the area within 50 miles of Limerick, which includes the densely populated urban environments of Philadelphia, PA, Camden and Trenton, NJ and Wilmington, DE. The ER thus fails to evaluate the impact of a properly conducted economic analysis on the assessment of the environmental consequences of a severe accident at Limerick. NRDC Expert Decl. ¶¶ 31-39.
6. The ER ignores new and significant information regarding the likely cost of cleanup from a severe accident in a metropolitan area like Philadelphia and thus understates the impact of a properly conducted economic analysis on the environmental consequences of a severe accident at Limerick. NRDC Expert Decl. ¶ 39.

7. The ER fails to include an analysis of the impacts to the quality of the human environment that were not discussed in the ER, for example, loss of family homestead, possessions, abandonment of livestock and domestic animals, pain and suffering, including that associated with loss of one's job or possessions, and uncertainties associated with the safety of the food supply.

### **SUPPORTING EVIDENCE**

8. This Contention is supported by the Attached NRDC Expert Declaration and the References attached thereto. Specific paragraphs of the Declaration that support each basis are identified following each basis and the Declaration as a whole is also generally supportive of the Contention.

### **CONTENTION 2-E**

**APPLICANT'S ENVIRONMENTAL REPORT (§ 5.3) IN RELYING ON A SAMDA<sup>6</sup> ANALYSIS FROM 1989 FAILS TO COMPLY WITH 10 C.F.R. §§ 51.45, 51.53(c)(2) AND 51.53(c)(3)(iii) BECAUSE IT DOES NOT INCLUDE AN ACCURATE OR COMPLETE ANALYSIS OF "ALTERNATIVES AVAILABLE FOR REDUCING OR AVOIDING ADVERSE ENVIRONMENTAL EFFECTS," DOES NOT "CONTAIN SUFFICIENT DATA TO AID THE COMMISSION IN ITS DEVELOPMENT OF AN INDEPENDENT ANALYSIS" OF ALTERNATIVES AND DOES NOT CONTAIN AN ADEQUATE "CONSIDERATION OF ALTERNATIVES FOR REDUCING ADVERSE IMPACTS . . . FOR ALL CATEGORY 2 LICENSE RENEWAL ISSUES."**

### **BASES**

1. The ER relies on an arbitrarily limited and outdated list of SAMDA candidates for

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<sup>6</sup> The ER, § 5.3 incorporates and adopts as Exelon's analysis of alternatives to mitigate the adverse impacts of severe accidents at Limerick, the SAMDA analysis done by NRC Staff in 1989. This contention focuses on the numerous deficiencies in that SAMDA analysis and, because Exelon chooses to adopt it as the SAMA analysis for this license renewal proceeding, it is referred to here as the "SAMA" analysis.

evaluation. Thus the ER fails to demonstrate any support for the proposition that it cannot identify any severe accident mitigation measures that would be cost-effective to implement. NRDC Expert Decl. ¶¶ 7-15.

2. The ER analysis of SAMDAs relies on an inaccurate analysis of the population that could be exposed in the event of a severe accident within both 10 miles and 50 miles of Limerick, thus understating the adverse environmental impacts from a severe accident and failing to provide a reliable basis for the conclusion that there are no cost beneficial SAMAs. NRDC Expert Decl. ¶¶ 22-30.
3. As a result of using inadequate and outdated meteorological data, the ER analysis of SAMAs relies on an inaccurate analysis of the dispersion of harmful radionuclides from the site in the event of a severe accident, thus potentially understating the adverse environmental impacts from a severe accident and failing to provide a reliable basis for the conclusion that there are no cost-beneficial SAMAs. NRDC Expert Decl. ¶¶ 45-48.
4. The ER analysis of SAMDAs relies on an inaccurate estimate of the core damage frequency for these reactors, thus understating the adverse environmental impacts from a severe accident and failing to provide a reliable basis for the conclusion that there are no cost-beneficial SAMAs. NRDC Expert Decl. ¶¶ 18-21.
5. The ER analysis of SAMDAs relies on inaccurate analyses of the evacuation time that would be required in the event of a severe accident, thus understating the adverse environmental impacts from a severe accident and failing to provide a reliable basis for the conclusion that there are no cost beneficial SAMAs. NRDC Expert Decl. ¶¶ 40-44.
6. The ER analysis of SAMDAs contains no analysis of the economic impact of a severe

accident on areas within 50 miles of the reactors, thus understating the adverse environmental impacts from a severe accident and failing to provide a reliable basis for the conclusion that there are no cost beneficial SAMAs. NRDC Expert Decl. ¶¶ 31-39

7. The ER analysis of SAMDAs relies on inaccurate and unreliable methodologies to attempt to evaluate the impact on the SAMDA analysis of new information regarding increased population exposed in the event of a severe accident, consideration of the economic cost of a severe accident, a limited and outdated list of SAMA candidates, and increased dollar value assigned to person-remS of exposure averted. As a consequence the ER thus understates the significance of this new information and fails to provide a reliable basis for the conclusion that there are no cost-beneficial SAMAs. NRDC Expert Decl. ¶¶ 7-48.

### **SUPPORTING EVIDENCE**

8. This Contention is supported by the Attached NRDC Expert Declaration and the References attached thereto. Specific paragraphs of the Declaration that support each basis are identified following each basis and the Declaration as a whole is also generally supportive of the Contention.

### **CONTENTION 3-E**

**APPLICANT'S ENVIRONMENTAL REPORT ERRONEOUSLY CONCLUDES THAT THE SAMDA ANALYSIS CONDUCTED IN 1989 IS A SAMA ANALYSIS WITHIN THE MEANING OF 10 C.F.R. § 51.53(c)(3)(ii)(L) AND THUS THE ER IS DEFICIENT FOR ITS FAILURE TO INCLUDE A SAMA ANALYSIS.**

### **BASES**

1. NRC Staff has identified factors that must be included for a legally adequate SAMA

analysis by adopting NEI-05-01 Rev. A (Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document (Nov. 2005)). *See* 72 Fed. Reg. 45466, 45467 (“The staff finds that NEI 05-01, Revision A, describes existing NRC regulations, and facilitates complete preparation of SAMA analysis submittals”).

2. The 1989 SAMDA analysis fails to include many of these factors including:
  - a. no analysis of the economic consequences of a severe accident; NRDC Expert Decl. ¶¶ 31-39.
  - b. inaccurate population projections for the 50 mile EPZ; NRDC Expert Decl. ¶¶ 22-30.
  - c. inadequate range of alternatives to mitigate the consequences of a severe accident; NRDC Expert Decl. ¶¶ 7-15.
  - d. inaccurate CDF calculations; NRDC Expert Decl. ¶¶ 18-21.
  - e. inaccurate meteorological data; NRDC Expert Decl. ¶¶ 45-48;
  - f. incomplete analyses of plausible severe accident scenarios; NRDC Expert Decl. ¶¶ 16-17; and
  - g. inaccurate calculation of evacuation times in the event of an accident. NRDC Expert Decl. ¶¶ 40-44.
3. The 1989 SAMDA analysis fails to assess the impact of all relevant factors, including those enumerated in 2 above, using MELCOR Accident Consequence Code Systems (“MACCS”)2 or an equally capable NRC approved up-to-date probabilistic safety assessment severe accident consequences code system.
4. Thus, the 1989 SAMDA analysis is not sufficient to excuse Exelon from conducting a full SAMA analysis as required by 10 C.F.R. § 51.53(c)(3)(ii)(L).

## **SUPPORTING EVIDENCE**

5. This Contention is supported by the Attached NRDC Expert Declaration and the References attached thereto. Specific paragraphs of the Declaration that support each basis are identified following each basis and the Declaration as a whole is also generally supportive of the Contention.

### **CONTENTION 4-E**

**APPLICANT’S ENVIRONMENTAL REPORT (§ 7.2) FAILS TO ADEQUATELY CONSIDER THE NO ACTION ALTERNATIVE IN VIOLATION OF 10 C.F.R. §§ 51.45 (c), 51.53(c)(2) AND 51.53(c)(iii).**

### **BASES**

1. The ER violates 10 C.F.R. § 51.45(c) because it omits an analysis that “considers and balances the environmental effects of the proposed action” and the alternative of No Action. Paine Expert Decl. at ¶¶ 4-7.
2. The ER violates 10 C.F.R. § 51.45( c) because it unreasonably and arbitrarily limits its analysis of the No Action alternative in a manner that fails, “to the fullest extent practicable, [to] quantify the various factors considered” and neglects discussion of “important qualitative considerations or factors that cannot be quantified.” Paine Expert Decl. at ¶¶ 4-10.
3. The ER violates 40 C.F.R. § 1502.14(d) and 10 C.F.R. Part 51, Subpart A, Appendix A, § 4, by improperly and illogically narrowing discussion of the No Action alternative to consideration of (1) decommissioning impacts and (2) power generation alternatives that would “equivalently satisfy the purpose and need for the proposed action” by “replacing

the generating capacity of LGS” with “single discrete generation sources.” Paine Expert Decl. at ¶¶ 5-7.

4. The ER violates 10 C.F.R. § 51.53(c) by failing to thoroughly consider the environmental impacts and likely consequences under the No Action alternative of denying relicensing now, 13 years before the existing license for Limerick 1 will expire and 18 years before the existing license for Limerick 2 will expire, including the expected growth in demand side management and renewable energy sources, and fails to quantify and balance the environmental costs of those consequences against the environmental costs of relicensing the Limerick reactors, including the properly analyzed cost of a severe accident. Paine Expert Decl. at ¶¶ 4-10.

#### **SUPPORTING EVIDENCE**

5. The bases for this contention are support by the Declaration of Christopher E. Paine, which is Attachment 6 to this Notice and Petition.

### **III. NRDC’S CONTENTIONS ARE WITHIN THE SCOPE OF THE PROCEEDING**

Each of NRDC’s contentions is within the scope of this license renewal proceeding, which is described in Parts 51 and 54. *See Florida Power & Light Co. (Turkey Point Nuclear Power Plant), CLI-01-17, 54 NRC 3, 6-13 (Jul. 19, 2001); Nuclear Power Plant License Renewal, 60 Fed. Reg. 22,461 (May 8, 1995).* A license renewal application review typically implicates issues that fall into one of two broad areas: safety/aging management issues, and environmental impacts. NRDC’s contentions are focused on environmental impacts.

The scope of the environmental review is defined by 10 C.F.R. Part 51, the NRC’s

“Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (NUREG-1437 (May 1996)), and the initial hearing notice and order. *See, e.g., Vermont Yankee*, 64 N.R.C. at 148-49. Some environmental issues that might otherwise be germane in a license renewal proceeding have been resolved generically for all plants and are normally, therefore, “beyond the scope of a license renewal hearing.” *Turkey Point*, 54 NRC at 15; *see* 10 C.F.R. § 51.53(c)(3)(i). These “Category 1” issues are classified in 10 C.F.R. Part 51, Subpart A, Appendix B. Category 1 issues may be raised when a petitioner (1) demonstrates that there is new and significant information subsequent to the preparation of the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (NUREG-1437) (“GEIS”) regarding the environmental impacts of license renewal; (2) files a petition for a rulemaking with the NRC; or (3) seeks a waiver pursuant to 10 C.F.R. § 2.335.<sup>7</sup> *See Turkey Point*, 54 NRC at 10-12; *see also* 10 C.F.R. § 51.53(c)(3)(iv) (new and significant information).

NRDC’s environmental contentions primarily relate to a Category 2 issue, *i.e.* whether the ER has appropriately addressed the issue of mitigation alternatives for severe accidents. *See* 10 C.F.R. Part 51, Subpart A, Appendix B. NRDC’s contentions focus on 1) the failure of the ER to identify all of the new information relative to an analysis of mitigation alternatives for severe accidents and the failure of the ER to justify its conclusion that the new information recognized by Exelon is not significant; 2) the failure of the ER to provide a legally sufficient SAMA analysis because of the obvious deficiencies in the SAMDA analysis upon which Exelon relies to meet its obligations to thoroughly evaluate mitigation alternatives for severe accidents;

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<sup>7</sup> Because NRC regulations specifically provide that only a “party to an adjudicatory proceeding” can seek a waiver, 10 C.F.R. § 2.335, any determination that a regulation precludes any of NRDC’s contentions must be held in abeyance until NRDC has been admitted to the proceeding as a “party” and has had an opportunity to pursue any necessary waiver petition.

and 3) the ER's mistaken conclusion that NRC "staff has . . . previously considered severe accident mitigation alternatives for the applicant's plant" (10 C.F.R. § 51.53(c)(3)(ii)(L)) by conducting the 1989 SAMDA analysis.

**A. New and Significant Information (Contention 1-E)**

The National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-37, requires all federal agencies to examine environmental impacts that could be caused by their discretionary actions. The Supreme Court has identified NEPA's twin aims as (1) obligating a federal agency to consider every significant aspect of the environmental impact of a proposed action and (2) ensuring that the federal agency will inform the public that it has indeed considered environmental concerns in its decision-making process. *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 97 (1983); *see also* 42 U.S.C. § 4332(2)(c) (identifying requirements of an EIS). As a federal agency, the NRC must comply with NEPA. *Calvert Cliffs Coordinating Comm. v. United States Atomic Energy Commission*, 449 F.2d 1109 (D.C. Cir. 1971) (NEPA applies to NRC predecessor). NEPA requires that NRC take a "hard look" at alternatives, including SAMAs, and to provide a rational basis for rejecting alternatives that are decidedly cost-effective. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); *accord Limerick Ecology*, 869 F.2d at 737 and *Bowman Transp., Inc. v. Arkansas-Best Freight System, Inc.* 419 U.S. 281, 285-286; *see also Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-11-17, \_\_N.R.C. \_\_ (July 17, 2011) *petition for interlocutory review pending*.

Moreover, NEPA imposes continuing obligations on NRC after it completes an environmental analysis. An agency that receives new and significant information casting doubt

upon a previous environmental analysis must reevaluate the prior analysis. *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989). This requirement is codified in the NRC’s own regulations. *See* 10 C.F.R. §§ 51.53(c)(iv) and 51.92(a)(2).

Exelon incorporates the SAMDA analysis performed during the operating license process as its SAMA analysis for purposes of this request for a new operating license. ER at §§ 4.20 and 5.3. However, 10 C.F.R. Part 51, Subpt. A, Appendix A, § 1(b) provides that the techniques of incorporation by reference and adoption described respectively in 40 CFR §§ 1502.21 and 1506.3 of CEQ’s NEPA regulations may only be used as appropriate to aid in the presentation of issues, eliminate repetition or reduce the size of an environmental impact statement and the use of such adoption is not allowed except where the prior information “meets the standards for an adequate statement under these regulations.” 40 C.F.R. § 1506.3(a).

A key requirement of NEPA is that the information upon which an environmental impact statement is based must be based on “accurate scientific analysis, expert agency comments, and public scrutiny [which] are essential to implementing NEPA.” *Native Ecosystems Council v. U.S. Forest Svc.*, 418 F.3d 953, 964, 965 (9th Cir. 2005). If the ER relies on, or adopts, environmental analyses that are outdated, inaccurate or incomplete, NRC cannot rely on the ER because, by doing so, it would not have taken the requisite “hard look” by simply relying on the incorrect assumptions or data provided by the licensee. 40 C.F.R. § 1501(b). Accordingly, NEPA requires that an EIS must contain “high quality” information and “accurate scientific analysis,” and furthermore obligates Staff to “independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement.” 10 C.F.R. § 51.70(b); *see also* 10 C.F.R. § 51.92(a); 40 C.F.R. § 1502.24 (Staff must ensure “the professional

integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.”) Since NRC Staff relies on the ER for much of its NEPA analysis, particularly the SAMA analysis, if, as here, the SAMA analysis is defective, absent diligent enforcement of its own regulations and guidance by NRC Staff, the FSEIS will be similarly deficient. Thus, Exelon’s inadequate analysis of severe accident mitigation alternatives will necessarily have a profound impact on this licensing proceeding and the ability of the NRC to comply with its NEPA obligations.

In its decisions, the Commission has emphasized that the SAMA process is designed to assist the NRC in making decisions. *Duke Energy Corporation* (McGuire, Units 1 and 2; Catawba, Units 1 and 2) CLI-02-17, 56 N.R.C. 1 (July 23, 2002) at 10, emphasizing that even though NEPA does not require implementation of any particular SAMA, the obligation to fully develop the record with regard to any SAMA is required “to ensure that the agency does not act upon incomplete information, only to regret its decision after it is too late to correct.” *Id.* Thus, the ER as written will not fulfill the goal of providing NRC Staff with the information needed for its SAMA analysis unless the information upon which the analysis offered by Exelon is based on accurate, current and complete information.

Not surprisingly, the NRC’s license renewal application regulations also reiterate this obligation. 10 C.F.R. § 51.53(c)(3)(iv) provides that an ER must contain “any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware.” Exelon accepts this obligation but, as the preceding contentions demonstrate, Exelon’s ER is deficient in its attempt to meet this obligation both because it ignores new information and because it incorrectly assesses the significance of the information it

concedes is new.

The Commission recently reiterated the criteria that should be applied in determining whether new information is significant. It held “[t]he new information must present ‘a seriously different picture of the environmental impact of the proposed project from what was previously envisioned.’” *Union Elec. Co. et al.*, CLI-11-05, 2011 NRC LEXIS 6, 50 (Sept. 9, 2011). As the attached Declaration of Drs. Cochran, McKinzie and Weaver amply demonstrates the new information that is dismissed by Exelon as insignificant and the additional new information ignored by Exelon would, if properly analyzed, present a “seriously different picture of the environmental impacts” of the proposed license renewal by substantially expanding the number of potential mitigation measures and substantially increasing the environmental impact of a severe accident and the benefits to be gained by mitigating those impacts. In addition, disputes about whether new information is “significant” are inherently factual and not appropriate for resolution at the contention admissibility stage. *See Entergy Nuclear Operations, Inc.* (Indian Point Energy Center), LBP-08-13, 68 N.R.C. 43, 190-191 (N.R.C. 2008).

In this case Exelon, while recognizing that changes to the previous analysis of severe accident mitigation alternatives might be warranted if new information were significant (ER at § 5.3), undertakes, at best, a breezy analysis of the significance of new information, even using a SAMA analysis at a plant that was markedly different than Limerick – a different type of reactor, a different environmental setting - rather than run its own technically competent sensitivity analyses to determine how new information might alter both the scope and viability of mitigation alternatives.

**B. The Adequacy of Exelon’s Analysis of Severe Accident Mitigation Alternatives (Contention 2-E)**

In order to meet the requirements of 10 C.F.R. § 51.53(c)(3)(ii)(L) and to comply with the mandate of the Federal Court in *Limerick Ecology Action*, Exelon asserts that severe accident mitigation alternatives have already been considered for Limerick. ER at § 4.20. In order to meet its burden of proof, Exelon must demonstrate that the previous analysis, which it asserts meets its NEPA and NRC obligations contains “high quality” information and “accurate scientific analysis,” and that all the information contained in that analysis reliable. *See* 10 C.F.R. § 51.70(b); *see also* 10 C.F.R. § 51.92(a); 40 C.F.R. § 1502.24 (Staff must ensure “the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements.”).<sup>8</sup> In numerous respects, as identified in the bases for Contention 2-E, the analysis which Exelon offers as meeting the obligations to conduct a thorough severe accident mitigation alternatives analysis is deficient. Challenges to the adequacy of a SAMA analysis are well within the scope of a license renewal proceeding. *See e.g. Duke Energy Corporation* (McGuire, Units 1 and 2; Catawba, Units 1 and 2) CLI-02-17, 56 N.R.C. 1.

**C. The 1989 SAMDA Is Not A SAMA (Contention 3-E)**

Exelon asserts that the 1989 Supplemental FES is the “previously considered severe accident mitigation alternatives for the applicant's plant” contemplated by 10 C.F.R. § 51.53(c)(3)(ii)(L)). However, that concept does not bless any analysis, regardless of how deficient it may be, merely because NRC Staff calls it a “severe accident mitigation alternatives

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<sup>8</sup> Since it is a Staff analysis that Exelon asserts meets its SAMA obligations, the standards applicable to the Staff in preparing such an analysis should be used to judge the legal sufficiency of the document.

[analysis] for the applicant's plant". First, the standard against which the analysis must be measured is NEPA since it was NEPA that the Third Circuit enforced when it found the previous efforts to consider mitigation alternatives at Limerick were deficient. *Limerick Ecology Action*, 869 F. 2d at 741. The deficiencies identified in Contention 2-E, coupled with the total failure to consider critical factors that are essential for a valid consideration of mitigation alternatives, as set forth in Contention 3-E, provide ample basis to reject the 1989 FES Supplement as meeting the NEPA standards. Second, Exelon's assertion that the 1989 FES Supplement meets the NEPA mitigation alternative evaluation standard is no substitute for a demonstration by Exelon that its assertion is correct. As the Commission observed, in a different context, "[w]e do not simply take the applicant at its word." *Entergy Nuclear Vt. Yankee, LLC* (Vt. Yankee Nuclear Power Station), CLI-10-17, 72 N.R.C. \_\_\_, slip op. at 45 (July 8, 2010). Exelon must provide some evidence and analysis to support its assertion that the 1989 FES Supplement is in fact a SAMA analysis within the meaning of the NRC Regulation. Exelon has not done that. Third, the adequacy of the 1989 FES Supplement has never been tested or independently evaluated because the Petitioner in that case reached a settlement with the then-owner of Limerick before the ASLB could consider the adequacy of Staff's analysis.<sup>9</sup> *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), LBP-89-24, 30 N.R.C. 152 (1989).

#### **D. Failure to Consider No Action Alternative (Contention 4-E)**

Contention 4 is a contention of omission and the Commission has recognized that

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<sup>9</sup> The Statement of Consideration that accompanied the GEIS issuance in 1996 included a statement that the 1989 FES Supplement met that standard for 10 C.F.R. § 51.53(c)(3)(ii)(L). 61 Fed. Reg. 28467, 28481 (June 5, 1996). However, that was not a determination by the Commission, did not occur in the context in which the adequacy of the Supplement was at issue and, of course, is not a binding determination by the Commission.

Contentions of Omission are appropriate and within the scope of a relicensing proceeding. *See Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3), LBP-08-13, 64 N.R.C. 43, 86, n. 194 (2008). The applicant's ER is required to adequately consider the No Action alternative to comply with 10 C.F.R. §§51.45(c), 51.53.(c)(2) and 51.53(c)(iii).

#### **IV. NRDC'S CONTENTIONS MEET ALL OTHER ADMISSIBILITY REQUIREMENTS OF 10 C.F.R. § 2.309(f)(1)**

The four contentions offered by NRDC specifically state issues of law or fact that are in dispute and are supported by a brief explanation of the bases for the contentions, which are supported by sufficient information to demonstrate that there is a material issue of law or fact in dispute between Exelon and NRDC. In addition to numerous references to documents that provide support for the contentions, NRDC has also provided a detailed declaration from three highly qualified nuclear experts, all of whom have extensive experience with nuclear issues in general and environmentally related nuclear issues in particular. They provide specific evidence of many flaws in the ER as it relates to severe accident mitigation alternatives, identifying information that Exelon should have included in its ER and explaining the relevance of that information to the ultimate task assigned to it -- *i.e.*, to present a fair assessment of the environmental costs and benefits of the proposed action. In presenting information regarding severe accident mitigation alternatives, Exelon has not met its obligation to submit information that is not only "supporting the proposed action but should also include adverse information." 10 C.F.R. § 51.45(e). Rather, its analysis is decidedly one-sided, stretching credulity in an effort to turn a 22 year old FES Supplement that took a limited look at mitigation alternatives into a thorough evaluation of severe accident mitigation alternatives for Limerick when it must have

known of the vastly more comprehensive analyses being conducted for similar reactors.

### CONCLUSION

For all the reasons stated above NRDC should be admitted as a party to the proceeding to pursue the four admissible contentions it has presented.

Respectfully Submitted,

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Filed this date of November 22, 2011

## CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Petition to Intervene and Request for Hearing in the captioned proceeding were served via the Electronic Information Exchange (EIE) on the 22<sup>nd</sup> day of November 2011, which to the best of my knowledge resulted in transmittal of same to those on the EIE Service List for the captioned proceeding.

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