UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
Union Electric Co.	)	50-483-LR
	)	
(Callaway Plant Unit 1)	)	
	)	

NRC STAFF'S ANSWER TO MISSOURI COALITION FOR THE ENVIRONMENT'S HEARING REQUEST AND PETITION TO INTERVENE

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May 21, 2012

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INTRODUCTION

Pursuant to 10 C.F.R. § 2.309(h)(1), the staff of the Nuclear Regulatory Commission ("Staff") files its answer to the Missouri Coalition for the Environment's ("MCE") Hearing Request and Petition to Intervene ("Petition").[1] The Petition contains three environmental contentions that challenge Union Electric Co. d/b/a Ameren Corp.'s ("Ameren" or "Applicant") license renewal application ("Application") for Callaway Plant Unit 1 ("Callaway"). As discussed below, MCE has established standing to intervene in this proceeding. However, because none of the three contentions are admissible, the Atomic Safety and Licensing Board ("Board") should deny MCE's Petition.

Contentions 1 and 2 allege that Ameren's environmental report ("ER") omits information required by 10 C.F.R. § 51.53(c)(2) on planned modifications to the facility in support of license

[1] Missouri Coalition for the Environment's Hearing Request and Petition to Intervene in License Renewal Proceeding for Callaway Nuclear Power Plant (Apr. 24, 2012) (Agencywide Documents Access and Management System ("ADAMS") Accession No. ML12115A371) ("Petition"). The Petition was supported by standing declarations and an expert declaration. *See* Declarations of Ruth Schaefer, Mary A. Mosley, Mark Haim, Carla T. Klein, and Patrick J. Wilson (Apr. 23, 2012) (ADAMS Accession No. ML12115A372) ("Standing Declarations"); Declaration of Dr. Arjun Makhijani in Support of Missouri Coalition for the Environment's Hearing Request Regarding Callaway License Renewal Application (Apr. 24, 2012) (ADAMS Accession No. ML12115A376) ("Makhijani Declaration").

renewal and § 51.45(d) on the status of Federal permits required for license renewal, respectively. Specifically, the Contentions allege that the ER omits information regarding compliance with a Commission Order and/or a Request for Information recently issued by the Commission to all power reactor licensees and holders of construction permits as part of its response to the Fukushima Dai-ichi accident. However, the information MCE asserts has been omitted is not within the scope of information required by either §§ 51.53(c)(2) or 51.45(d). Moreover, even if the information was required, both Contention 1 and 2 lack sufficient basis and support, are immaterial, and fail to raise a genuine dispute with the Application. Finally, Contention 3, which asserts that the ER does not contain a sufficient discussion of wind energy, is inadmissible because it fails to raise a genuine dispute with the Application, is immaterial, unsupported, and outside the scope of this proceeding. Consequently, the Board should deny MCE's Petition.

BACKGROUND

On December 15, 2011, Ameren filed an application to renew the Callaway operating license for an additional 20 years from its current expiration date of October 18, 2024.[2] The Callaway site rests about 5 miles from the Missouri River, 10 miles southeast of Fulton, Missouri and 80 miles west of the St. Louis metropolitan area.[3] Callaway employs a Westinghouse pressurized water reactor producing a reactor core power of 3,565 megawatts-thermal.[4]

On February 24, 2012, the Staff published a notice in the *Federal Register* finding the Application acceptable for docketing and establishing April 24, 2012 as the deadline for filing

[2] *See* Callaway Plant Unit 1, Facility Operation License NPF-30, License Renewal Application (Dec. 15, 2011) (ADAMS Accession No. ML113530372) ("Application"); Callaway Plant Unit 1 Applicant's Environmental Report, Operating License Renewal Stage (Dec. 15, 2011) (ADAMS Accession No. ML113540349) ("ER").

[3] ER at 2-1.

[4] *Id*. at 3-1.

Hearing Requests on the Application.[5] On March 12, 2012, in response to the Fukushima Dai-ichi accident, the NRC issued three immediately effective orders to impose license modifications on all power reactor licenses, including Order EA-12-049 ("Order"), which is the subject of MCE Contentions 1 and 2.[6] The Order requires power reactor licensees and construction permit holders to "develop, implement and maintain guidance and strategies to restore or maintain core cooling, containment and [spent fuel pool ("SFP")] cooling capabilities in the event of a beyond-design-basis external event."[7] These requirements "increase the capability of nuclear power plants to mitigate beyond-design-basis external events."[8] Also on March 12, 2012, the NRC issued a letter pursuant to 10 C.F.R. § 50.54(f) related to the Fukushima Dai-ichi accident ("50.54(f) Letter") to all reactor licensees and construction permit holders.[9] The 50.54(f) Letter requires recipients to "provide further information to support the evaluation of the NRC staff

[5] *See* Renewal of Facility Operating License No. NPF-30, Union Electric Company, Callaway Plant, Unit 1, 77 Fed. Reg. 11,173 (Feb. 24, 2012).

[6] *See* Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Effective Immediately), 77 Fed. Reg. 16,091 (Mar. 19, 2012) (also available at ADAMS Accession No. ML12054A735); Order Modifying Licenses with Regard to Reliable Hardened Containment Vents (Effective Immediately) (NRC Order EA-12-050), 77 Fed. Reg. 16,098 – 16,105 (Mar. 19, 2012); Order Modifying Licenses Regarding Reliable Spent Fuel Pool Instrumentation (Effective Immediately) (NRC Order EA-12-051), 77 Fed. Reg. at 16,082 – 16,090 (Mar. 19, 2012). MCE's contentions do not concern Order EA-12-051. NRC Order EA-12-050 applies only to boiling water reactors using a Mark I containment and, thus, is inapplicable to Callaway.

[7] Order at 77 Fed. Reg 16,092. The Order, along with the other immediately effective orders issued on March 12, 2012, were the result of a months-long systematic and methodical review of the NRC's regulations and processes by a senior-level agency task force (the "Near-Term Task Force") to determine if additional improvements to the agency's programs were warranted in light of the March 11, 2011 Fukushima Dai-ichi accident. SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," (July 12, 2011) was issued containing the Near-Term Task Force's recommendations. *See also* SECY-11-0124, "Recommended Actions To Be Taken Without Delay From The Near-Term Task Force Report," (Sept. 9, 2001), SECY-11-0137, "Prioritization of Recommended Actions To Be Taken In Response To Fukushima Lessons Learned," (Oct. 3, 2011), and SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami."

[8] Order at 77 Fed. Reg 16,091-92. *See also id*. at 16,092 (noting that these strategies will improve defense-in-depth of licensed nuclear power reactors).

[9] *See* Request for Information Pursuant to Title 10 of the Code of Federal Regulations, 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (Mar. 12, 2012) (ADAMS Accession No. ML12053A340).

recommendations for the Near-Term Task Force (NTTF) review of the accident at the Fukushima Dai-ichi nuclear facility."[10] On April 24, 2012, MCE timely filed the instant Petition.[11] On May 7, 2012, MCE submitted editorial corrections to its Petition.[12]

DISCUSSION

I. MCE Has Established Standing to Intervene

"Any person whose interest may be affected by a proceeding and who desires to participate as a party must file a written request for hearing or petition for leave to intervene and a specification of the contentions which the person seeks to have litigated in the hearing."[13] 10 C.F.R. § 2.309(a). An organization, such as MCE, may establish representational standing to intervene if it identifies a member of the organization by name and address who would qualify for standing, shows that the member has authorized the organization to represent his or her interests, and demonstrates that the interest the organization seeks to protect is germane to its own purposes.[14] In license renewal proceedings, "a petitioner is presumed to have standing to intervene without the need specifically to plead injury, causation, and redressability if the petitioner lives within 50 miles of the nuclear power reactor."[15]

In this case, several named members of MCE have provided affidavits that establish that they live within 50 miles of Callaway, authorize MCE to represent them in this proceeding, and raise concerns that are germane to MCE's purposes.[16] Therefore, MCE has established

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[10] *Id*.

[11] Petition at 1.

[12] Errata to Hearing Request and Petition to Intervene (May 7, 2012) (ADAMS Package Accession No. ML12128A166).

[13] The definition of person in 10 C.F.R. § 2.4 includes public interest groups, such as MCE.

[14] *Consumers Energy Co.* (Palisades Nuclear Power Plant), CLI-07-18, 65 NRC 399, 409 (2007).

[15] *Entergy Nuclear Operations, Inc.*, (Indian Point, Units 2 & 3), LBP-08-13, 68 NRC 43, 60 (2008).

[16] Petition at 1-2; Standing Declarations.

standing under 10 C.F.R. § 2.309(a).

II. Contention Admissibility

A. Legal Requirements for Contentions

1. General Admissibility Requirements

The legal requirements governing the admissibility of contentions are well-established and set forth in 10 C.F.R. § 2.309(f) of the Commission's Rules of Practice. Specifically, in order to be admitted, a contention must satisfy the following requirements:

> (f) Contentions. (1) A request for hearing or petition for leave to intervene must set forth with particularity the contentions sought to be raised. For each contention, the request or petition must:
>
> (i) Provide a specific statement of the issue of law or fact to be raised or controverted;
>
> (ii) Provide a brief explanation of the basis for the contention;
>
> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
>
> (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
>
> (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which the requestor/petitioner intends to rely to support its position on the issue; and
>
> (vi) Provide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact. This information must include references to specific portions of the application (including the applicant's environmental report and safety report) that the petition disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief.

> (2) Contentions must be based on documents or other information available at the time the petition is to be filed, such as the application, supporting safety analysis report, environmental report or other supporting document filed by an applicant or licensee, or otherwise available to a petitioner. On issues arising under the National Environmental Policy Act, the petitioner shall file contentions based on the applicant's environmental report . . .

10 C.F.R. § 2.309(f)(1)-(2). The requirements governing the admissibility of contentions are "strict by design."[17] Thus, they have been strictly applied in NRC adjudications, including license renewal proceedings.[18]

2. The Scope of the NRC's Environmental Review for License Renewal Proceedings

Because MCE's contentions raise environmental claims, the Staff will only discuss the scope of its environmental review in license renewal proceedings.[19] In the National Environmental Policy Act of 1969 ("NEPA"), Congress announced a national policy "to create and maintain conditions under which man and nature can exist in productive harmony."[20] Thus, pursuant to Section 102 of NEPA, before undertaking a major Federal action, Federal agencies must prepare a detailed statement that discusses the environmental impacts of the proposed

[17] *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001).

[18] *AmerGen Energy Company, LLC* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 118-19 (2006).

[19] The NRC also conducts a technical review pursuant to 10 C.F.R. Part 54 to assure that pertinent public health and safety requirements have been satisfied. *See Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC 449, 453-56 (2010). Importantly, regardless of whether a license renewal application has been filed for a facility, the Commission has a continuing responsibility to oversee the safety and security of ongoing plant operations, and it routinely oversees a broad range of operating issues under its statutory responsibility to assure the protection of public health and safety for operations under the existing operating license. Therefore, for license renewal, the Commission has found it unnecessary to include a review of issues already monitored and reviewed in the ongoing regulatory oversight process. *Id.*

[20] 42 U.S.C. § 4331.

action.[21] This statement furthers the policies of NEPA in two ways.[22] First, "It ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts."[23] Second, "[I]t also guarantees that the relevant information will be made available to the larger audience," and thus "provides a springboard for public comment."[24] Importantly, NEPA only requires that agencies take a "hard look at environmental consequences;" NEPA does not "mandate particular results."[25] Further, NEPA's requirements are "tempered by a rule of reason."[26]

Part 51 of the NRC's regulations contains the agency's implementation of NEPA.[27] Under Part 51, the NRC must prepare an environmental impact statement ("EIS") for license renewals.[28] On many environmental issues related to license renewal, the Commission "found that it could draw generic conclusions applicable to all existing nuclear power plants, or to a specific subgroup of plants."[29] Consequently, the NRC prepared a generic EIS ("GEIS") that assessed those impacts generically.[30] Table B-1 of Appendix B of Subpart A to 10 C.F.R. Part 51 ("Table B-1") codifies the results of the GEIS.

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[21] *Id*. at § 4332.

[22] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989).

[23] *Id*.

[24] *Id*.

[25] *Id*. (internal quotations omitted).

[26] *Entergy Nuclear Generation Co. and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC 202, 208 (2010).

[27] 10 C.F.R. § 51.2.

[28] 10 C.F.R. § 51.20(b)(2).

[29] *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 11 (2001).

[30] NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," Final Report, (May 1996) (ADAMS Accession No. ML040690705).

Table B-1 defines environmental issues that the NRC can resolve generically as "Category 1" issues, and defines issues that the NRC could not resolve generically as "Category 2" issues. The NRC must address these Category 2 issues in the site-specific supplemental EIS ("SEIS") it prepares prior to granting a renewed operating license.[31] For all Category 1 issues, Table B-1 also assigns an impact level of small, moderate, or large.

To qualify as a Category 1 issue, an environmental issue must meet three criteria. First, the environmental impacts associated with that issue must apply to all plants or groups of plants. Second, those impacts must have a single significance level across all plants. Finally, additional plant-specific mitigation measures must not be likely to be sufficiently beneficial to warrant implementation.[32] The NRC's regulations specifically provide that the NRC may incorporate the generic conclusions for Category 1 issues into its SEIS and applicants for license renewal need not discuss Category 1 issues in their applications.[33] Thus, challenges to Category 1 issues, like challenges to all of the Commission's regulations, are outside the scope of NRC adjudications. Consequently, a party seeking to litigate a Category 1 issue or challenging a determination in Table B-1 in a license renewal proceeding must seek a waiver of the Commission's regulations, pursuant to 10 C.F.R. § 2.335.[34]

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[31] 10 C.F.R. § 51.95(c).

[32] The Attorney General of Commonwealth of Massachusetts, The Attorney General of California; Denial of Petitions for Rulemaking, 73 Fed. Reg. 46,204, 46,206 (Aug. 8, 2008). The NRC must further evaluate Category 1 issues, however, if it identifies new and significant information. 10 C.F.R. §§ 51.53(c)(3)(iv), 51.72(a)(2) and 51.92(a).

[33] 10 C.F.R. §§ 51.53(c)(3), 51.95(c). While NEPA ultimately places an obligation on the NRC to prepare an EIS to support a major Federal action, 42 U.S.C. § 4332, the NRC requires applicants to submit an ER to aid the NRC in conducting its environmental analysis. 10 C.F.R. § 51.41. Potential intervenors must file contentions based on the ER, and may amend those contentions if the NRC's draft SEIS ("DSEIS") contains different information. 10 C.F.R. § 2.309(f)(2).

[34] *Turkey Point*, CLI-01-17, 54 NRC at 12, 22-23.

3. The NRC's Consideration of the Environmental Impacts of Severe Accidents in License Renewal Proceedings

As pertinent here, in the GEIS, the NRC reached a generic determination that the environmental impacts of severe accidents would be "not significant," or "small."[35] The NRC's regulations implementing NEPA expressly incorporated this generic finding. "The probability weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to ground water, and societal and economic impacts from severe accidents are small for all plants."[36] Therefore, the Applicant's license renewal ER for Callaway and the Staff's SEIS do not have to reassess the issue.[37]

While the ER and SEIS do not have to reassess the issue, the Commission recognizes its duty to evaluate whether there is any new and significant information regarding its severe accident determinations and, if so, supplement its NEPA documentation accordingly.[38]

Importantly, the Commission recently determined that the Fukushima events do not currently constitute new and significant information under NEPA.[39] Specifically, while the Near Term Task Force made extensive findings and recommendations under the Atomic Energy Act, it did not find that Fukushima would have a direct impact on the NRC's environmental reviews of current licensing activities under NEPA or recommend that the NRC alter those reviews to account for Fukushima. The Near Term Task Force did not provide any indication that the

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[35] *See* GEIS at 5.3.3.1.

[36] *See* Table B-1.

[37] Both the Applicant and Staff have to determine if new and significant information significantly alters previous SAMA determinations. *See* 10 C.F.R. §§ 51.53(c)(3)(iv); 51.71;51.95(c)(1). *See also* 10 C.F.R. § 51.95(c)(3); *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 2), CLI-10-29, 72 NRC 556, 563 (*citing Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 373-74 (1989) (discussing duty to supplement NEPA documentation based on new and significant information).

[38] *See* 10 C.F.R. § 51.95(c)(3); *Watts Bar*, CLI-10-29, 72 NRC at 563 (*citing Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 373-74 (1989)).

[39] *Union Electric Company, d/b/a Ameren Missouri* (Callaway Plant, Unit 2) *et al.*, CLI-11-05, 74 NRC __ (Sept. 9, 2011)(slip op. at 30-31).

events at Fukushima changed the NRC's understanding of the environmental consequences of a severe accident for NEPA purposes. *Id*.[40]

4. The NRC's Consideration of Severe Accident Mitigation Alternatives in License Renewal Proceedings

Certain license renewal applicants, including Ameren, are required to consider severe accident mitigation alternatives ("SAMAs") in the ER prepared in connection with their license renewal application.[41] "Mitigation alternatives or 'SAMAs' refer to safety enhancements such as a new hardware item or procedure intended to reduce the risk of severe accidents."[42] The SAMA review ensures "that any plant changes – in hardware, procedures, or training – that have a potential for significantly improving severe accident safety performance are identified and assessed."[43]

In explaining another SAMA contention, the Commission noted that it has "long stressed that NRC adjudicatory hearings are not EIS editing sessions."[44] "Under NEPA, mitigation (and the SAMA issue is one of mitigation) need only be discussed in 'sufficient detail to ensure that environmental consequences [of the proposed project] have been fairly evaluated.'"[45] Thus, the

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[40] The Commission made clear, however, that if "new and significant information comes to light that requires consideration as part of the ongoing preparation of application-specific NEPA documents, the agency will assess the significance of that information, as appropriate." *Callaway*, CLI-11-05, 74 NRC __ (slip op. at 30-31).

[41] *See* 10 C.F.R. § 51.53(c)(3)(ii)(L) (noting that ER must provide a consideration of alternatives to mitigate severe accidents if the staff has not previously considered such alternatives for the plant in a NEPA document). *See also Entergy Nuclear Generation Company and Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 290 (2010) *reconsideration denied*, CLI-10-15, 71 NRC 479 (2010).

[42] *Pilgrim,* CLI-10-11, 71 NRC at 290-91.

[43] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 & 2; Catawba Nuclear Station, Units 1 & 2), CLI-02-17, 56 NRC 1, 5 (2002); *FirstEnergy Nuclear Operating Co.* (Davis-Besse Nuclear Power Station, Unit 1), CLI-12-08, 75 NRC __ (Mar. 27, 2012) (slip op. at 17).

[44] *Entergy Nuclear Generation Co. & Entergy Nuclear Operations* (Pilgrim Nuclear Power Station), CLI-09-11, 69 NRC 529, 533 (2009) (internal quotations omitted).

[45] *Duke Energy Corp.* (McGuire Nuclear Station, Units 1 & 2, Catawba Nuclear Station, Units 1 & 2), CLI-03-17, 58 NRC 419, 431 (2003) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. (continued. . .)

Commission has stated that the "ultimate concern" for a SAMA analysis "is whether any additional SAMA should have been identified as potentially cost beneficial, not whether further analysis may refine the details in the SAMA NEPA analysis."[46]

Thus, when it comes to admissibility of SAMA contentions, "the proper question is not whether there are plausible alternative choices for use in the analysis, but whether the analysis that was done is reasonable under NEPA."[47] "Unless a petitioner sets forth a supported contention pointing to an apparent *error or deficiency* that may have significantly skewed the environmental conclusions, there is no genuine material dispute for hearing."[48]

B. Contention Admissibility

MCE's Petition contains three proposed environmental contentions. The following summarizes those contentions and provides the Staff's response to each contention.

PROPOSED CONTENTION 1

Contention 1 states:

> The Environmental Report fails to satisfy 10 C.F.R. § 51.53(c)(2) because it does not include information about Ameren's plans to modify the Callaway facility in response to post-Fukushima enforcement order EA-12-049 (March 12, 2012), Order Modifying Licenses With Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Effective Immediately) ("Order EA-12-049") (ML12056A045). Also, as required by 10 C.F.R. § 51.53(c)(2), the Environmental Report must include a discussion of a reasonable array of alternative measures for modifying the facility in accordance with Order EA-12-049.[49]

In Contention 1, MCE argues that Ameren's ER does not contain "a description of the

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(. . .continued)
332, 353 (1989) (alteration in original)).

[46] *Pilgrim*, CLI-09-11, 69 NRC at 533.

[47] *Davis-Besse*, CLI-12-08, 75 NRC __ (slip op. at 17-18) (*citing NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC __ (Mar. 8, 2012) (slip op. at 28-29).

[48] *Id*. (internal citations omitted).

[49] Petition at 2-3.

proposed action, including the applicant's plans to modify the facility or its administrative controls as described in accordance with § 54.21 of this chapter" that directly affect the environment or affect plant effluents that affect the environment, as required by 10 C.F.R. § 51.53(c)(2).[50] MCE asserts that because the Order requires modifications the NRC has determined are necessary for adequate protection of public health and safety against beyond-design-basis accidents, the modifications must be set forth in the ER.[51] MCE further contends that because the Order does not prescribe specific strategies and measures for complying with the Order's requirements, but rather allows the licensee to make its own proposal, "the relative effectiveness and costs of a range of alternatives for meeting the requirements of [the Order] should be discussed."[52] MCE argues that modifications to comply with the Order are within the scope of this proceeding and are material because they bear on the consideration of the environmental consequences of a beyond design basis accident and alternatives for mitigation of beyond-design-basis accidents.[53]

For the reasons discussed below, Contention 1 is outside the scope of this proceeding, unsupported, immaterial, and fails to raise a genuine dispute with the Application.

1. Contention 1 Raises Issues Outside the Scope of This Proceeding

For the following reasons, Contention 1 raises issues that are outside the scope of this proceeding and are therefore inadmissible.

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[50] Petition at 3 (quoting § 51.53(c)(2)).

[51] Petition at 5.

[52] *Id*.

[53] *Id*. at 5-6. Although MCE uses the term "beyond design basis accident" the term used in Part 51 and in the GEIS is "severe accident." While the terms are equivalent, the Staff will use the term "severe accident." *See* GEIS at 5-1 to 5-2 (stating: the "[NRC] categorizes accidents as 'design-basis' (i.e., the plant is designed specifically to accommodate these) or 'severe' (i.e., those involving multiple failures of equipment or function and, therefore, whose likelihood is generally lower than design-basis accidents but where consequences might be higher), for which plants are analyzed to determine their response").

a. Contention 1 Impermissibly Challenges the Commission's Generic Determination on the Environmental Impacts of Severe Accidents

Contention 1 implicitly attacks the Commission's generic determination in Table B-1 that the environmental impacts of severe accidents are small.[54] Specifically, MCE asserts that the information that Contention 1 alleges has been omitted from the ER "may affect the degree to which the environment is protected against the environmental impacts of [severe] accidents during the license renewal term."[55]

As discussed, the Commission has limited contentions raising environmental issues in license renewal proceedings to those issues that are affected by license renewal and have not been addressed by rulemaking or on a generic basis.[56] While "severe accident mitigation alternatives" is a Category 2 issue, i.e., requires site-specific review, the Commission has made a generic determination that the environmental impacts for both design basis and severe accidents are small for all plants.[57] These generic findings, codified in NRC regulations, are not subject to challenge absent a waiver of their application in a particular adjudicatory proceeding.[58] MCE has not requested such a waiver. Thus, MCE has not demonstrated that this issue is within the scope of this proceeding, as required by 10 C.F.R. § 2.309(f)(1)(iii).

b. Any Potential Modifications to Callaway as a Result of the Order Are Beyond the Scope of the License Renewal NEPA Review

The environmental impacts of potential modifications to Callaway as a result of the Order are outside the scope of license renewal NEPA review. First, the Order requires compliance by

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[54] 10 C.F.R Part 51 Appendix A, Table B-1.

[55] Petition at 6.

[56] *Turkey Point*, CLI-01-17, 54 NRC at 11, 16.

[57] *See* Table B-1 at 65.

[58] *See* 10 C.F.R. § 2.335(a); *Turkey Point*, CLI-01-17, 54 NRC at 11, 16; *FirstEnergy Nuclear Operating Co.* (Davis-Besse Nuclear Power Station, Unit 1), LBP-11-13, 73 NRC __ (Apr. 26, 2011)(slip op. at 35).

December 31, 2016. Therefore, any potential modifications to Callaway resulting from the Order must be completed before the period of extended operation and are unrelated to license renewal. While the NRC's NEPA review for license renewal is not limited to the scope of its safety review, the NRC's NEPA review for license renewal is limited to the environmental impacts of an additional 20 years of operation beyond the current term.[59] In the case of Callaway, the NEPA review considers the environmental impacts of operation from 2024 to 2044, which is well beyond December 31, 2016.

Second, the Order is unrelated to license renewal because it was issued to all operating reactors regardless of whether a plant holds or has applied for a renewed operating license.[60] As discussed, contentions raising environmental issues in a license renewal proceeding are limited to those issues which are affected by license renewal.[61] NEPA considerations for operation during the initial licensing term have already been considered and actions triggering NEPA during the life of the plant must be addressed when the action occurs.[62] Potential future actions are only within the scope of NEPA review if they are pending before the agency and are in some way related to the action the agency is actively considering.[63]

Ameren has not yet proposed modifications to Callaway to comply with the Order and, even if Ameren had already proposed such changes, they are not interrelated to license renewal. Modifications have not yet been proposed because licensees are not required to

[59] *Turkey Point*, CLI-01-17, 54 NRC at 7, 11.

[60] *See* Order at Attachment 1 (listing recipients).

[61] *Turkey Point*, CLI-01-17, 54 NRC at 11-12.

[62] *See* Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, Final Rule, 61 Fed. Reg. 28,467, 28,485 (June 5, 1996).

[63] *Duke Energy Corp.* (McGuire Nuclear Station Units 1 and 2; Catawba Nuclear Station, Units 1 and 2), CLI-02-14, 55 NRC 278, 295-97 (2002) (finding that a potential license amendment to allow use of MOX fuel in the McGuire and Catawba reactors was neither pending nor interrelated to license renewal because, if the potential amendment to use MOX fuel were granted, the plants could operate using the MOX fueling during the remainder of the current operating terms regardless of whether the operating licenses were renewed).

submit implementation plans until February 2013. Even if potential modifications had been proposed, actions to comply with the Order are not related to license renewal because Ameren must comply with the requirements of the Order even to operate Callaway until the end of its current term in 2024. That compliance with the Order is unrelated to license renewal is supported by the Commission's agreement in CLI-11-05 with the proposition that any enhancements or changes to regulatory requirements as a result of Fukushima will be imposed irrespective of whether a plant is applying for or has been granted a renewed operating license.[64] Thus, MCE's claim that the ER should discuss the environmental impacts of modifications to comply with the Order is outside the scope of this proceeding.

In addition, the Applicant is not required by 10 C.F.R. § 51.53(c)(2) to discuss in its ER potential modifications to Callaway as a result of the Order. Section 51.53(c)(2) requires license renewal applicants to include in the ER "plans to modify the facility or its administrative control procedures as described in accordance with § 54.21 of this chapter."[65] NRC guidance[66] describes the type of information license renewal applications should provide on plant modifications to satisfy § 51.53(c)(2). Importantly, that guidance states that the chapter in the ER on the proposed action "should identify those activities *attendant to license renewal* that can affect the environment external to the plant."[67] That same NRC guidance, in turn, refers to Chapter 2 of the GEIS. Section 2.6 of the GEIS assesses activities a plant may undertake to "achieve license renewal and an extended plant life," as well as "major activities the applicant may choose to perform to enable safe and economic operation during the incremental term

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[64] *Callaway*, CLI-11-05, 74 NRC __ (slip op. at 26-27).

[65] Section 54.21 describes the information that must be contained in a license renewal application.

[66] Supplement 1 to Regulatory Guide ("RG") 4.2 Preparation of Supplemental Environmental Reports for Applications to Renew Nuclear Power Plant Operating Licenses (ADAMS Accession No. ML003710495) (Sept. 2000).

[67] RG 4.2 at 4.2-S-9 (emphasis added).

allowed by license renewal."[68]

Any potential modifications to Callaway as a result of the Order would not be "attendant to license renewal," undertaken to "achieve license renewal," nor "to extend plant life." Likewise, they are not activities the licensee is choosing to take to ensure safe and economic operation during the proposed renewal term. Instead, any modifications Ameren may make in response to the Order are attendant on achieving compliance with the Order and must be completed regardless of whether Callaway operates beyond 2024. Thus, the information MCE asserts has been omitted is neither required nor within the scope of this proceeding.

2. Even if Contention 1 Were In Scope, It Lacks Sufficient Basis and Support, Is Immaterial, and Fails to Demonstrate a Genuine Dispute with the Application

As discussed below, even if Contention 1 were within the scope of this proceeding, it would nevertheless be inadmissible because it lacks sufficient basis, is immaterial, and otherwise fails to demonstrate a genuine dispute with the application. 10 C.F.R. § 2.309(f)(1)(ii), (iv), (v), (vi).

a. Contention 1 Lacks Sufficient Basis and Support

MCE states that the support for its contention may be found in the ER, the Order, and its Petition.[69] These documents do not, however, provide sufficient basis or support for Contention 1. As MCE admits, the Order does not require licensees to submit a plan describing how they will comply with the requirements in Attachment 2 of the Order until February 28, 2013.[70] While the Staff plans to issue guidance on compliance with the Order in August,[71] the only available information about how licensees are expected to comply with the Order is in Attachment 2 to the

[68] GEIS at 2-32; 2-36.

[69] Petition at 6

[70] *Id*; Order at 9.

[71] Order at 4.

Order.[72] While Ameren's compliance with the Order may be necessary to ensure adequate protection during the current operating term, MCE provides no facts or expert opinion to support its assertion that Ameren's compliance with the requirements in Attachment 2 will result in environmental impacts during the period of extended operation, including the effectiveness and relative costs of alternatives for mitigation of severe accidents.[73] Without some factual explanation and expert opinion, one is left to speculate how potential modifications to Callaway to *enhance* its ability to mitigate severe accidents, as required by the Order, could change the environmental impacts of license renewal or could result in the identification of additional potentially cost-beneficial SAMAs, which is the purpose of the SAMA analysis.[74] Thus, Contention 1 is based upon speculation and bare assertion without expert support and is inadmissible.[75]

Furthermore, where a contention seeks to connect a set of facts with a specific result and that result is not self-evident, expert analysis is needed to bridge the gap.[76] As the Board in *Georgia Tech* recognized, "it is the petitioner who is obligated to provide the analyses and expert opinion showing why its bases support its contention."[77] And that obligation must be satisfied when the petition is filed.

MCE has not provided sufficient facts or expert analysis to link potential modifications to Callaway to comply with the Order by the end of 2016 with potential environmental impacts of

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[72] Order at Attachment 2 "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events at Operating Reactor Sites and Construction Permit Holders" (ADAMS accession No. ML12054A735)(77 Fed. Reg. at 16098).

[73] Petition at 6.

[74] See *Pilgrim*, CLI-10-11, 71 NRC at 290-91.

[75] *See e.g., Private Fuel Storage, LLC* (Indep. Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139-140 (2004).

[76] *See e.g., Nuclear Mgmt. Co., LLC* (Palisades Nuclear Plant), LBP-06-10, 63 NRC 314, 352 (2006), *aff'd* CLI-06-17, 63 NRC 727 (2006).

[77] *Georgia Inst. of Tech.* (Georgia Tech Research Reactor), LBP-95-6, 41 NRC 281, 305 (1995).

operations of Callaway during the proposed license renewal term or consideration of severe accident mitigation alternatives. Moreover, MCE has provided no facts or expert opinion to establish a link between potential modifications to Callaway to enhance its ability to mitigate severe accidents, as required by the Order, and environmental impacts during the proposed period of extended operation. Furthermore, MCE provides no expert opinion or facts suggesting that compliance with the Order, which is intended to improve safety from the status quo, could result in greater potential environmental impacts during the proposed period of extended operation than the status quo without the Order. Consequently, Contention 1 is inadmissible as it does not meet the basis and support requirements of 10 C.F.R. § 2.309(f)(1)(ii), (v).

b. Contention 1 Is Immaterial and Fails to Raise a Genuine Dispute with the Application

In addition to lacking sufficient basis and support, Contention 1 is immaterial and fails to raise a genuine dispute with the Application as required by 10 C.F.R. § 2.309(f)(1)(iv), (vi). First, MCE asserts that information about potential modifications to Callaway to comply with the Order by 2016 is required by 10 C.F.R. § 51.53(c)(2) because modification "will affect [Callaway's] safety and environmental impacts during the license renewal term."[78] This is insufficient to demonstrate a material issue or raise a genuine dispute with the Application because Callaway must be in compliance with the Order eight years before the proposed period of extended operation would even begin. Thus any environmental impacts from making any potential modifications will occur during the current term. As discussed above, MCE has provided no explanation or expert support for its assertion that potential modifications during the current term will result in environmental impacts during the proposed period of extended operation or explained how information on potential modifications to Callaway is material to the NRC's license renewal decision. It is incumbent upon the petitioner to demonstrate why the

[78] Petition at 6.

omitted information is material. The unsupported assertions by MCE are simply insufficient to demonstrate materiality or raise a genuine dispute with the application. 10 C.F.R. § 2.309(f)(1)(iv), (vi).

Second, MCE asserts that consideration of potential modifications to comply with the Order "will ensure that the NRC has considered an appropriate array of alternatives for protecting public health and safety against the adverse environmental impacts of [severe] accidents at Callaway, as required by NEPA."[79] MCE provides no explanation or expert analysis demonstrating that potential modifications to Callaway to comply with the Order render the existing SAMA analysis unreasonable or otherwise deficient for NEPA purposes. The Commission has stated that an admissible SAMA contention must demonstrate that some error or deficiency in the analysis renders the analysis unreasonable under NEPA.[80] In that same decision, the Commission stated, "Unless a petitioner sets forth a supported contention pointing to an apparent error or deficiency that may have significantly skewed the environmental conclusions, there is no genuine material dispute for hearing."[81] Where, as here, the petitioner has provided no expert support for the purported deficiency let alone demonstrated how the allegedly omitted information could significantly skew the environmental conclusions, there is no genuine, material dispute for hearing and thus, the Board should deny the contention. 10 C.F.R. § 2.309(f)(1)(iv), (vi).

Accordingly, Contention 1 is inadmissible because it falls outside the scope of this proceeding, lacks sufficient basis and support, is immaterial, and fails to raise a genuine dispute with the Application. *See* 10 C.F.R. § 2.309(f)(1)(ii)-(vi).

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[79] Petition at 6 (citing *Exelon Generation Co. LLC* (Limerick Generation Station Units 1 and 2), LBP-12-08, 75 NRC__, __ (slip op. at 9 & n.42) (Apr. 4, 2012).

[80] *Davis-Besse*, CLI-12-08, 75 NRC __ (slip op at 18-19).

[81] *Id.* (slip op. at 19).

PROPOSED CONTENTION 2

Contention 2 states, in part:

> In violation of 10 C.F.R. § 51.45(d), the Environmental Report fails to describe the status of Ameren's compliance with NRC post-Fukushima orders[82] and requests for additional information relevant to the environmental impacts of the Callaway nuclear power plant during the license renewal term. These requests for information and orders for actions originate with both the NRC and the U.S. Congress.[83]

In support of Contention 2, MCE argues that the Order and the 50.54(f) Letter "constitute federal requirements that must be identified in the Environmental Report," and that the "Environmental Report must discuss the status of Ameren's compliance with these requirements."[84]

For the reasons discussed below, Contention 2 is inadmissible because it falls outside the scope of this proceeding, lacks sufficient support, is immaterial, and fails to raise a genuine dispute with the Application.

1. Contention 2 Is Outside the Scope of This Proceeding

Section 51.45(d) requires that the license renewal ER "list all Federal permits, licenses, approvals and other entitlements which must be obtained in connection with the proposed action and . . . describe the status of compliance with these requirements." MCE claims that the information and actions requested in the Order and the 50.54(f) Letter "are mandatory because they are necessary to provide adequate protection to public health, and therefore they relate to the environmental impacts of Callaway on the human environment during the license renewal

[82] While the Commission issued several post-Fukushima orders, Contention 2 only challenges Order EA-12-049, which is abbreviated as "Order" throughout this Answer.

[83] Petition at 7 (citations omitted). The statement of Contention 2 continues by quoting from the Order and referencing specific portions of the 50.54(f) Letter, which MCE asserts must be addressed in the ER.

[84] *Id.* at 9.

term."[85] Thus, MCE argues that the Order and the 50.54(f) Letter "constitute federal requirements that must be identified in the Environmental Report," and that the "Environmental Report must discuss the status of Ameren's compliance with these requirements."[86] Further, MCE argues that any actions that Ameren takes in response to the requirements may affect the degree to which the environment is protected against the environmental impacts of severe accidents during the license renewal term.[87]

Contrary to MCE's assertions, the Order and the 50.54(f) Letter are not requirements to be listed in the ER in accordance with 10 C.F.R. § 51.45(d). In practice, § 51.45(d) has only been applied to approvals needed from Federal, State, and local agencies other than the NRC such as permits issued by the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service.[88] Moreover, by its terms, § 50.54 only requires a written statement in response to an information request by the NRC—it is not a federal permit, license, approval, or entitlement. Therefore, Contention 2 falls outside the scope of this license renewal proceeding.

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[85] *Id.*

[86] *Id.* MCE further asserts that Contention 2 is within the scope of the proceeding because the information MCE requests bears on the environmental impacts of a severe accident at Callaway and consideration of alternatives for mitigation of such severe accident. *Id.* In addition, MCE asserts that the information is relevant to license renewal because the actions and information requested in Order EA-12-049 and the 50.54(f) Letter must be fulfilled within the next three or four years. *Id.* at 9-10.

[87] *Id.* at 10.

[88] *See* "10 CFR Part 51, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses" 61 Fed. Reg. 28,467, 28,475 (June 5, 1996)("[P]ursuant to 10 CFR 51.45(d), an applicant for license renewal must identify and indicate in its environmental report the status of State and local approvals regarding water use issues."); *id.* at 28,484 ("Pursuant to 10 CFR 51.45(d), the environmental report must include a discussion of the status of compliance with applicable Federal, State, and local environmental standards."). *See also, e.g.*, *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 2), LBP-09-26, 70 NRC 939, 956-60 (2009); *South Texas Project Nuclear Operating Company (*South Texas Project, Units 3 and 4) LBP-09-21, 70 NRC 581, 595-94 (2009); *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2) LBP-09-10, 70 NRC 51, 97-98, 105-106 (2009); *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 3), LBP-08-09, 67 NRC 421, 447 n. 151 (2008); *Nuclear Management Co.,* LLC (Palisades Nuclear Plant), LBP-06-10, 63 NRC 314, 362 (2006); *Hydro Resources, Inc.* (292 Coors Road, Suite 101, Albuquerque, NM 87120) CLI-98-16, 48 NRC 119, 122 n.3 (1998).

Even if § 51.45(d) applies to NRC orders and requests for information pursuant to 10 C.F.R. § 50.54(f), Contention 2 falls outside the scope of this proceeding because Ameren's compliance with the Order and the 50.54(f) Letter is unrelated to license renewal. Contentions raising environmental issues in a license renewal proceeding are limited to those issues which are affected by license renewal.[89] Compliance with the 50.54(f) Letter is unrelated to license renewal because the environmental review for license renewal considers the environmental consequences of 20 additional years of operation beyond the initial 40-year term.[90] The 50.54(f) Letter states that the Staff's goal is to collect sufficient information to make a regulatory decision for most plants within five years (2017) and that information collection for all plants will take no longer than seven years (2019). Therefore, compliance with the 50.54(f) Letter will be completed five to seven years before Callaway's period of extended operation begins in 2024. Moreover, the 50.54(f) Letter was issued to all power reactor licensees regardless of whether a plant is applying for or has been granted a renewed operating license.[91] Thus, the 50.54(f) Letter falls outside the scope of license renewal.

Additionally, as discussed in detail above in the Staff's response to Contention 1, modifications to Callaway to comply with the Order have not yet been proposed, and even if they had been proposed, are not interrelated to license renewal.[92] The Order imposes requirements on all operating license holders regardless of whether a licensee holds or has applied for a renewed operating license.[93] Moreover, Ameren must be in compliance with the Order no later than December 31, 2016, eight years before Callaway's proposed period of

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[89] *Turkey Point*, CLI-01-17, 54 NRC at 11-12.

[90] *Id.* at 7, 11.

[91] *See* 50.54(f) Letter at 1 and Enclosure 6 (listing the letter's addresses).

[92] *See supra* at 14-15.

[93] *See* Order Attachment 1 (listing recipients)

extended operation begins in 2024. Therefore, Contention 2 is inadmissible because both the Order and the 50.54(f) Letter fall outside the scope of license renewal. 10 C.F.R. § 2.309(f)(1)(iii).

2. Contention 2 Is Inadmissible Because It Lacks Sufficient Basis and Support, Is Immaterial, and Fails to Raise a Genuine Dispute with the Application

As discussed below, even if Contention 2 were within the scope of this proceeding, it would nevertheless be inadmissible because it lacks sufficient basis, is immaterial, and otherwise fails to demonstrate a genuine material dispute with the application. 10 C.F.R. § 2.309(f)(1)(ii), (iv), (v), (vi).

a. Contention 2 Lacks Sufficient Basis and Support

In addition to being out of scope, Contention 2 is inadmissible because MCE does not provide sufficient basis and support as required by 10 C.F.R. § 2.309(f)(1)(ii), (v). MCE states that the facts supporting Contention 2 can be found in the ER, the Order, the 50.54(f) Letter, and the Petition.[94] However, none of these documents provide sufficient support for Contention 2. MCE suggests that the Order and the 50.54(f) Letter relate to the environmental impacts of Callaway during the license renewal term because "the NRC has stated that [these documents] are mandatory because they are necessary to provide adequate protection to public health . . ."[95] While compliance with the Order may be necessary to ensure adequate protection during the current operating term, MCE provides no facts or expert opinion that Ameren's compliance with the Order will result in environmental impacts during the period of extended operation. Similarly, MCE provides no facts or expert opinion that Ameren's response to the 50.54(f) Letter will result in environmental impacts during the period of extended operation.

[94] Petition at 8-9.

[95] *Id.* at 9.

Additionally, with respect to the 50.54(f) Letter, MCE asserts that "to the extent that Ameren proposes modifications to the Callaway facility in response to the [50.54(f) Letter], NEPA also requires consideration of the effectiveness and relative costs of a range of alternatives for satisfying the NRC's concerns."[96] However, MCE's assertion is speculative because the 50.54(f) Letter does not require Ameren to propose potential modifications to the Callaway facility in its response. Contentions based upon speculation or opinion without expert support are inadmissible.[97] Therefore, Contention 2 is inadmissible because it does not provide sufficient basis and support for MCE's assertions. 10 C.F.R. § 2.309(f)(1)(ii), (v).

b. Contention 2 Is Immaterial and Fails to Raise a Genuine Dispute with the Application

Contention 2 is also inadmissible because MCE does not raise a genuine material dispute with Ameren's Application in accordance with 10 C.F.R. § 2.309(f)(1)(iv), (vi). MCE suggests that Contention 2 is relevant to license renewal because the actions and information requested in the Order and the 50.54(f) Letter must be fulfilled within the next three or four years.[98] Thus, MCE argues that any actions that Ameren takes in response to the requirements may affect the degree to which the environment is protected against the environmental impacts of severe accidents during the license renewal term.[99]

MCE's claims are insufficient to demonstrate a material issue or raise a genuine dispute with the Application because, as discussed above, Ameren must comply with both the Order and the 50.54(f) Letter several years before the proposed period of extended operation would even begin. Therefore, any environmental impacts from any actions that Ameren takes in

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[96] *Id.* at 8.

[97] *Private Fuel Storage, LLC*, CLI-04-22, 50 NRC at 139-140.

[98] Petition at 9-10.

[99] *Id*. at 10.

response to the Order or the 50.54(f) Letter would occur during the current operating term. MCE does not provide any explanation or expert support for the assertion that Ameren's compliance with the Order and the 50.54(f) Letter during the current operating term would result in any environmental impacts during the proposed period of extended operation or how Ameren's compliance with the Order and response to the 50.54(f) letter are material to the NRC's license renewal decision. Such unsupported assertions are insufficient to demonstrate materiality or establish a genuine dispute with the application. *See* 10 C.F.R. § 2.309(f)(1)(iv), (vi).

Additionally, Contention 2 does not raise a material issue because it is unnecessary to include the status of compliance with the Order and the 50.54(f) Letter in the ER. The purpose of an ER is to provide information to the NRC which may be useful to the NRC in completing an EIS and complying with section 102(2) of NEPA. *See* 10 C.F.R. § 51.41. Because the Order and the 50.54(f) Letter are not relevant to license renewal, including the status of Ameren's compliance with these documents would not aid the NRC in completing its EIS for Ameren's Application.

Accordingly, Contention 2 is inadmissible because it falls outside the scope of this proceeding, lacks sufficient basis and support, is immaterial, and fails to raise a genuine dispute with the Application. *See* 10 C.F.R. § 2.309(f)(1)(ii)-(vi).

PROPOSED CONTENTION 3

In its Petition, MCE asserts:

> The Environmental Report is inadequate to satisfy NEPA or 10 C.F.R. § 51.53(c)(2) because it dismisses and refuses to consider the relative merits of the reasonable energy alternative of wind energy operating in the Midwest Independent Transmission System Operator ("MISO") grid. Wind energy operating in the MISO grid warrants serious consideration as an alternative because it is currently available and sufficient to entirely replace the energy to be generated by Callaway during the license renewal term. Wind energy also has the relative benefits that it is less dangerous than renewed operation of Callaway, depends on a renewable energy source and would save millions of gallons of

water now used by Callaway every day.[100]

In Contention 3, MCE argues that Ameren's ER does not contain a sufficient discussion of wind energy, and therefore does not satisfy NEPA or 10 C.F.R. § 51.53(c)(2). Contention 3 is supported by the Declaration of Dr. Arjun Makhijani, which declares that "Ameren did not address renewable alternative energy sources in the [ER] for Callaway in a reasonable and technically sound way."[101] Specifically, the Makhijani Declaration asserts that "Ameren should have examined wind energy operating in the MISO grid and compared it to nuclear operating in the grid, taking into account the specific pattern of unavailability of each, including unplanned outages."[102]

For the reasons discussed below, Contention 3 fails to raise a genuine dispute with the Application, is unsupported, immaterial, and raises issues that are beyond the scope of this proceeding in contravention of 10 C.F.R. § 2.309(f)(1)(iii),(iv), and (vi). It is, therefore, inadmissible.

1. Contention 3 Does Not Raise a Genuine Dispute on a Material Issue of Law

In Contention 3, MCE argues that even though wind energy does not provide baseload power, wind should be considered as a reasonable alternative to license renewal. MCE's argument is contrary to Commission case law and therefore fails to raise a genuine dispute on a material issue of law. In its recent decisions on energy alternatives in *Seabrook*[103] and *Davis-Besse,*[104] the Commission held that only economically and technically viable alternatives that

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[100] Petition at 10.

[101] Makhijani Declaration at 3.

[102] Makhijani Declaration at 9.

[103] *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-12-05, 75 NRC ___, __ (Mar. 8, 2012) (slip op. at 54-61).

[104] *FirstEnergy Nuclear Operating Co.* (Davis-Besse Nuclear Power Station, Unit 1), CLI-12-08, 75 NRC ___, ___ (Mar. 27, 2012) (slip op. at 9-10).

produce baseload power constitute reasonable alternatives to license renewal.[105] In this case, however, wind would not meet the requirement to produce baseload power, and thus Ameren is not required to analyze it in its ER. Because Contention 3 is contrary to Commission case law, it fails to raise a genuine dispute on a material issue of law.

In *Seabrook*, the Commission explained that the criteria for an admissible contention on energy alternatives include the ability of the proffered alternative to produce baseload power.[106] The Commission stated that the ER need only discuss alternatives that "will bring about the ends of the proposed action."[107] In determining "the ends of the proposed action," the Commission gives substantial weight to the preference of the applicant.[108] Like the *Seabrook* applicant, Ameren's stated purpose for the proposed action is the production of power sufficient to replace the baseload capacity of the nuclear power plant at issue.[109] Like the *Seabrook* petitioner, MCE has "not articulated a genuine dispute with the Application as to the viability of [wind] as a source of baseload power."[110] The Commission explained:

> [T]o submit an admissible contention on energy alternatives in a license renewal proceeding, a petitioner ordinarily must provide "alleged facts or expert opinion" sufficient to raise a genuine dispute as to whether the best information today suggests that commercially viable alternate technology (or combination of technologies) is available now, or will become so in the near future, to supply *baseload power*.[111]

The Commission quoted the Seventh Circuit's definition of baseload power: "energy intended to

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[105] *Seabrook*, CLI-12-05, 75 NRC at __ (slip op. at 55); *Davis-Besse*, CLI-12-08, 75 NRC at ___ (slip op. at 5).

[106] *Seabrook*, CLI-12-05, 75 NRC at ___ (slip op. at 54-55).

[107] *Id.* at 49 (interior quotation marks omitted).

[108] *Id*.

[109] Application Section 3.0, p. 1.

[110] *Seabrook*, CLI-12-05, 75 NRC at __ (slip op. at 55).

[111] *Id.* at ___ (slip op. at 53) (emphasis added).

continuously produce electricity at or near full capacity, with high availability."[112] The Commission explained that

> For wind power to merit detailed consideration as an alternative to renewing the license for a nuclear power plant, that alternative should be capable of providing "technically feasible and commercially viable" *baseload power* during the renewal period.[113]

The Commission further observed that the *Seabrook* petitioner had not provided "support for [its] assertion that wind energy may provide baseload power by 2015."[114] Thus, in *Seabrook*, the Commission held inadmissible a contention that, like Petitioner's Contention 3 in Callaway, asserted that wind power should be analyzed as an alternative to license renewal.

In *Davis-Besse*, the Commission also rejected a contention that proposed wind as an alternative to license renewal. The *Davis-Besse* applicant had rejected wind and solar energy as potential alternatives to license renewal on the grounds that they "are incapable of producing baseload power."[115] The *Davis-Besse* petitioner asserted that this rendered the license renewal application deficient, arguing that wind, solar, and storage (individually or in combination) could provide baseload power and so should have been analyzed as alternatives to license renewal.[116]

The Commission disagreed, explaining that in order to challenge the applicant's analysis of alternatives,

> a petitioner ordinarily must provide "alleged facts or expert opinion" sufficient to raise a genuine dispute as to whether the best information available today suggests that a commercially viable alternate technology (or combination of technologies) is available now, or will become so in the near future, to supply

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[112] *Id. at* 50, quoting *Environmental Law and Policy Center v. NRC,* 470 F.3d 676, 679 (7th Cir. 2006).

[113] *Id.* at __ (slip op. at 55) (emphasis added).

[114] *Id.* at 59.

[115] *Davis-Besse*, CLI-12-08, 75 NRC at ___ (slip op. at 6).

[116] *Id*.

baseload power.[117]

The Commission found that the *Davis-Besse* petitioner had not established that these alternatives could provide the necessary baseload power in a timely fashion, i.e., by the start of the license renewal period and ruled the contention inadmissible.[118] The Commission wrote: "the Petitioners have failed to lay a foundation for their claim that wind, solar, and energy storage – in any combination – could satisfy the baseload demand in the region of interest by 2017."[119] A similar result, based on similar facts, should apply here.

As the Commission has found in both *Seabrook* and *Davis-Besse*, in order for an alternative to qualify for the kind of review that MCE seeks here, the alternative must be able to provide baseload power in an amount equal to the power produced by the nuclear power plant at issue and must be able to do so during the license renewal period.[120] MCE, however, has not demonstrated that wind can provide baseload power. Accordingly, wind power is not an alternative that Ameren had to analyze in depth and MCE's contention to the contrary does not raise a genuine issue of law.

MCE attempts to skirt the difficulties presented by wind energy's inability to provide baseload power by posing the alternatives issue in a different way. MCE readily acknowledges that wind energy is intermittent. In fact, in his Declaration, Dr. Makhijani states that he

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[117] *Id. at* __ (slip op. at 5) (emphasis added).

[118] *Id*. at 10.

[119] *Id.* In coming to its conclusion, the Commission discussed an exhibit submitted by the *Davis-Besse* petitioner, a book by Dr. Arjun Makhijani who submitted a declaration in support of MCE in this proceeding. *Davis-Besse,* CLI-12-08, 75 NRC at ___ (slip op. at 14-15). The Commission observed that in his book, CARBON-FREE AND NUCLEAR-FREE: A ROADMAP FOR U.S. ENERGY POLICY (Aug. 2007), Dr. Makhijani "purportedly observes that, based on advances in compressed air energy storage, the [National Renewable Energy Laboratory ("NREL")] now recognizes the existence of 'baseload wind.'" *Id.* However, the Commission found that "while the book discusses possible solutions to the intermittency problem that may one day be put into practice, we find nothing to indicate that these would be ready in time to support generation of baseload power at Davis-Besse." *Id.*

[120] *Seabrook*, CLI-12-05, 75 NRC at ___ (slip op. at 55), *Davis-Besse*, CLI-12-08, 75 NRC at __ (slip op. at 5).

"recognize[s] of course that wind is intermittent."[121] Instead of arguing that wind is not intermittent, MCE argues that nuclear power plants, such as Callaway, experience both planned and unplanned outages and thus are also unavailable from time to time.[122]

While Dr. Makhijani admits that "all power stations have planned and unplanned outages,"[123] and while he insists that an "apples-to-apples" comparison is appropriate,[124] his own analysis fails to make an "apples-to-apples" comparison. Nowhere does he discuss the effects of planned and unplanned outages on wind power. Nowhere does he discuss the effects of maintenance, repair, accident or malfunction with respect to wind power production and thus he presents no data on wind that would correspond to the outage data for nuclear power plants upon which he relies so heavily.[125]

MCE argues that when wind farms and nuclear power plants are not producing power, either because the wind is not blowing at sufficient levels for power production or a nuclear plant is in an outage, the power each would have produced is supplied by other producers who are part of the grid.[126] Thus, MCE argues, wind energy is not significantly different from the nuclear power used by Callaway to produce electricity and should be considered as a reasonable alternative to license renewal even though MCE never claims that wind is baseload power.[127]

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[121] Makhijani Declaration at 9.

[122] Petition at 11.

[123] Makhijani Declaration at 3.

[124] *Id.*

[125] *Id.* at 5-8.

[126] *Id.*

[127] Taken to its logical conclusion, MCE's approach would enable a petitioner to demand the analysis of almost any alternative to license renewal, no matter how insignificant its contribution, how intermittent or how unreliable. MCE's approach views wind power, augmented by other electric generators attached to the electric transmission grid, as an alternative to license renewal of a nuclear power plant. According to this approach, other generators attached to the grid ameliorate the intermittency of wind power. If other generators attached to the grid can do this for wind power, then arguably, they can do it for any other alternative. Such an approach would be contrary to NEPA's rule of (continued. . .)

MCE Contention 3, which ignores Commission precedent to the contrary in *Seabrook* and *Davis-Besse*, is thus inadmissible for failure to raise a genuine issue of law, as required by 10 C.F.R. § 2.309(f)(1)(vi).

2. Contention 3 Lacks a Factual Basis and Fails to Raise a Genuine Dispute with the Application

a. The Environmental Report Determination that Wind Power Is Not a Reasonable Alternative to License Renewal Is Adequately Supported

In its ER for Callaway, Ameren explores several options involving wind power (including both interconnected wind farms and wind power augmented by five different kinds of energy storage) and explains in detail, over the course of three pages, why it did not consider wind as a reasonable alternative to license renewal.[128] Contention 3, which asserts that the ER is deficient, thus fails to raise a genuine dispute with the Application.

In the ER, Ameren explains that wind power is not suitable as baseload power because of its intermittent nature and also explains why wind power is particularly unsuitable in Missouri.[129] Ameren acknowledges the recent advances in wind energy technology, but observes that "average annual capacity factors for wind power systems are relatively low (22 to 47 percent) compared to 90 to 97 percent industry average for a baseload plant such as a

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(. . .continued)
reason, *see e.g., NRDC v. Morton*, 458 F.3d 827, 834, 837, 838 (D.C. Cir. 1972), as it would require the analysis of virtually any alternative electricity producer regardless of the amount of electric it produced or how intermittently or unreliably.

Such an approach not only requires the analysis of any alternative, it requires the analysis of all of them. This is because what MCE proposes is a combination alternative that has as its component parts wind and every (and any) electrical production facility that contributes electricity to the grid. This combination alternative would include coal, natural gas, renewables and, ironically, nuclear power. Each component in this all-inclusive combination alternative would have to be analyzed for its contribution to the environmental impact of the whole. Not only would this be unreasonable, but the all-encompassing nature of the requisite analysis would render meaningless any attempt to compare the environmental impacts of the wind-plus grid combination with the license renewal alternative.

[128] ER Section 7.2.1 at p. 6-7 and Section 7.2.1.5 at pp. 15-17.

[129] ER Section 7.2.1.5 at p. 15.

nuclear plant."[130] Ameren stated that the average capacity factor for wind power systems in Missouri is 35 percent. Ameren explained that "the energy potential in the wind is expressed by wind generation classes that range from 1 (least energetic) to 7 (most energetic)" and that "[c]urrent wind technology can operate economically on Class 4."[131] Ameren reported that the majority of the state is classified as a Class 1 region and that the northwest and western parts of the state range in classification from Class 2 to Class 3.[132] Thus Ameren demonstrated that while wind power has a relatively low capacity factor compared to nuclear power plants, wind power in Missouri is particularly problematic as the state does not have high wind energy potential.

Nevertheless, on the basis of recent studies that suggest that baseload power can be provided by interconnected wind farms, Ameren examined the suitability of interconnected wind farms as a possible alternative to license renewal.[133] Based on its review of the studies, Ameren found that when the scheduled down time of conventional power plants was compared with the unscheduled and unpredictable downtime of wind power, the "comparison demonstrates that wind farms, even when interconnected in an array, are not as reliable as conventional power plants."[134] Ameren concluded that "interconnected wind farms may have some advantages over a single large scale wind farm, but the capacity factor and reliability of interconnected wind farms are inadequate to provide baseload power."[135]

Ameren also examined the possibility of using five separate energy storage mechanisms

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[130] *Id.* (citations omitted).

[131] *Id*.

[132] *Id*.

[133] *Id.* at 16.

[134] *Id.*

[135] *Id*.

to augment wind power.[136] However, it found that cost, technical constraints, the need for large storage capacity, the relative unavailability of raw materials, and safety issues precluded the consideration of three out of the five.[137] It rejected the fourth and fifth storage mechanism (pumped hydroelectric and compressed air energy storage ("CAES")) because of geological limitations.[138] Furthermore, it observed that CAES "is a relatively immature technology and the use of CAES for baseload wind generation has not been demonstrated."[139]

Ultimately, Ameren concluded that while wind energy is developed and proven, "it is not readily available in Missouri and the capacity factor and reliability for wind energy are inadequate to provide baseload power."[140]

Based on the foregoing, Contention 3's claim that the ER fails to adequately address wind power is factually incorrect. It is, therefore, inadmissible for lack of a factual basis pursuant to 10 C.F.R. § 2.309(f)(1)(v) and inadmissible for failure to demonstrate the existence of a genuine dispute with the Application pursuant to 10 C.F.R. § 2.309(f)(1)(vi).

b. Contention 3 Relies on Irrelevant and Immaterial Facts

Contention 3 relies on data regarding the shut-down of nuclear facilities in Japan and Germany to support its assertion that nuclear should not be considered reliable baseload power.[141] As a preliminary matter, the shut-down of plants is different than outages and should not be considered an indication of the reliability of nuclear power plants or their characterization as baseload power. Furthermore, the decisions of local Japanese authorities whether or not to restart Japanese reactors and the German government's decision to phase-out nuclear power

[136] *Id.* at 16-17.

[137] *Id*. at 16.

[138] *Id.* at 16-17.

[139] *Id.* at 17.

[140] *Id*.

[141] Makhijani Declaration at 4-7.

by the end of 2022 are fundamentally political decisions. As such, they shed no light on the question whether or not nuclear power should be considered baseload power in the United States and they are not relevant to the question whether Callaway produces baseload power.

Moreover, while MCE's expert, Dr. Makhijani, cites a substantial amount of data regarding existing and potential generation within the footprint of the Midwest Independent Transmission System Operator ("MISO") system, he fails to establish how that data is relevant to the Ameren's Application. Callaway's operator, Ameren Missouri, is a vertically-integrated electricity producer that provides electricity only in the state of Missouri.[142] MISO, in contrast, encompasses electricity production and distribution in at least Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, North Dakota, and South Dakota.[143] MCE has not established why this very large geographic area, which covers at least 8 states, is relevant to a discussion of alternatives for a nuclear power plant that only serves users in one of those 8 states.[144]

While he asserts that the total wind capacity value in MISO is equivalent to two and a half times Callaway's capacity,[145] Dr. Makhijani fails to show that this MISO wind capacity can, as a practical matter, serve as a replacement for Callaway. MISO spans a large geographical area with a large number of end-users. While MISO can potentially produce a substantial quantity of wind power, Dr. Makhijani has made no showing that the MISO wind power he identified can service Callaway's end-users. MISO wind data, absent evidence that it can serve as replacement power for Callaway, is immaterial and irrelevant. Beyond the fact that wind power is not baseload, if the available wind power is not technically feasible from the point of

[142] LRA Section 1.1.3 at pp. 1.1-2 to 1.1-3.

[143] Makhijani Declaration at 11, 13.

[144] Moreover, while he argues that data regarding MISO is relevant, Dr. Makhijani never states what area MISO covers. In his Declaration at 11, he states that these are "some states fully or mainly in MISO," but he does not identify the other states in MISO.

[145] *Id*. at 10.

view of Callaway's end-users, it is not a reasonable alternative to license renewal. *Potential* power that is not, as a practical matter, *feasible* does not constitute a reasonable alternative to license renewal.[146] Because MCE has not provided a factual basis for its assertion that MISO wind power is a reasonable alternative to Callaway, Contention 3 should be held to be inadmissible.

c. MCE's Criticism of Ameren's Use of a Zero Capacity Credit for Wind Does Not Raise a Material Issue of Fact

MCE's expert, Dr. Makhijani, complains that the ER's analysis of wind power is "technically incorrect" because, he asserts, Ameren has assigned a capacity credit of zero to wind and solar.[147] MCE bases its claim on Ameren's assignment of 1200 MW of backup capacity for a wind or solar alternative.[148] First, even assuming for the sake of argument, MCE's claim that the capacity credit for wind should be 8 percent, the claim fails to raise a material issue of fact. Second, this assertion misreads Ameren's statements in the ER.

Dr. Makhijani appears to argue that instead of applying a zero capacity credit to wind, Ameren should have applied an 8 percent capacity credit to wind.[149] However, if an 8 percent capacity credit is applied to the 1200 MW that Callaway produces, this will result in only 96 MW of wind power. Thus, even using MCE's approach, 1104 MW of backup capacity would still be needed if wind power is employed. Thus, MCE has failed to raise a material issue.[150]

Second, Ameren did not actually assign a zero capacity credit to wind. What Ameren said was that when wind was not blowing, or the sun was not shining, the full amount of the

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[146] *Seabrook*, CLI-12-05, 75 NRC at ___ (slip op. at 55) (requiring analysis of alternatives that are "technically feasible").

[147] Makhijani Declaration at 10.

[148] ER Section 7.2.1 at p. 6.

[149] Makhijani Declaration at 10.

[150] *South Carolina Electric and Gas Co. and South Carolina Public Service Authority* (Virgil C. Summer Nuclear Station, Units 2 and 3), LBP-10-6, 71 NRC 350, 360 (2010).

electricity the wind power or solar power would have produced would have to be produced by another source.[151] This is not the same as assigning a zero capacity credit to wind; it is simply an acknowledgement that when wind and solar produce no electricity, power will have to come from another source. Ameren's statement is not technically incorrect and there is no factual basis for Dr. Makhijani's criticism on this point.

3. Contention 3 Raises Issues Beyond the Scope of This Proceeding

Contention 3 is also inadmissible because, at its base, it is nothing more than a generalized disagreement with the way in which the NRC addresses the alternatives analysis and thus raises an issue that is beyond the scope of this proceeding.

The NRC requires that an applicant provide an impact analysis for reasonable alternatives to license renewal and the Commission has made it clear that a reasonable alternative is one that will provide baseload power.[152] MCE's approach to alternatives removes the requirement of the production of baseload power from the analysis. According to Dr. Makhijani, "nuclear reactors cannot *a priori* be regarded as baseload sources[.]"[153] MCE asserts that nuclear power plants are subject to outages and thus are unavailable for some portion of time and argues that an "apples-to-apples comparison requires that Ameren analyze the patter[n]s of unavailability of nuclear and the role of the grid in providing supply and the variability of wind and the role o[f] the grid in accommodating it."[154] In essence, MCE simply disagrees with the NRC approach that confines the analysis to alternatives that produce baseload power and without reference to the role of the grid. Such a generalized grievance with

[151] ER Section 7.2.1 at page 6.

[152] *Seabrook*, CLI-12-05, 75 NRC at ___ (slip op. at 48, 54-55).

[153] Makhijani Declaration at 7.

[154] Petition at 11.

the Commission's conceptualization of the issue will not support admission of a contention.[155]

CONCLUSION

To be admitted as a party to an NRC proceeding, a petitioner must demonstrate standing and proffer at least one admissible contention. 10 C.F.R. § 2.309(a). MCE has established standing but has failed to proffer an admissible contention. To be admissible a contention must be within the scope of the proceeding, have a sufficient factual basis, be material to findings the NRC must make, and demonstrate a genuine dispute with the application on a material issue. As discussed in detail above, MCE's contentions do not meet these requirements as they raise issues that are not within the scope of this proceeding and otherwise lack sufficient basis, are immaterial, and fail to raise a genuine dispute with the Application. Because MCE has not proffered an admissible contention, the Petition should be denied.

Respectfully submitted,

/Signed (electronically) by/

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[155] *Duke Energy Carolinas, LLC* (William States Lee III Nuclear Station, Units 1 and 2), LBP-08-17, 68 NRC 431, 451-52 (2008).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
Union Electric Co.	)	50-483-LR
	)	
(Callaway Plant Unit 1)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the "NRC STAFF'S ANSWER TO MISSOURI COALITION FOR THE ENVIRONMENT'S HEARING REQUEST AND PETITION TO INTERVENE" in the above captioned proceeding have been served upon the following by the Electronic Information Exchange, this 21st day of May, 2012:

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