LBP-11-13

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

William J. Froehlich, Chairman
Nicholas G. Trikouros
Dr. William E. Kastenberg

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| In the Matter of:<br><br>FirstEnergy NUCLEAR OPERATING COMPANY<br><br>(Davis-Besse Nuclear Power Station, Unit 1) | Docket No. 50-346-LR<br><br>ASLBP No. 11-907-01-LR-BD01<br><br>April 26, 2011 |

MEMORANDUM AND ORDER
(Ruling on Petition to Intervene and Request for Hearing)

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MEMORANDUM AND ORDER
(Ruling on Petition to Intervene and Request for Hearing)

Before this Atomic Safety and Licensing Board (Board) is a petition to intervene and a request for a hearing (Petition) filed jointly by four organizations: Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario (CEA), Don't Waste Michigan, and the Green Party of Ohio (collectively, Joint Petitioners).[1] The Joint Petitioners challenge the application (Application) filed by FirstEnergy Nuclear Operating Company (FirstEnergy) to extend its operating license for the Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse) for an additional twenty years from the current expiration date of April 22, 2017 to April 22, 2037, pursuant to Part 54 of Title 10 of the Code of Federal Regulations.[2] Davis-Besse is located on the southwestern shore of

[1] Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Green Party of Ohio Request for Public Hearing and Petition for Leave to Intervene (Dec. 27, 2010) [hereinafter Petition].

[2] License Renewal Application; Davis-Besse Nuclear Power Station 1.0-1, 1.1-1 (Aug. 2010) (ADAMS Accession Nos. ML102450567, ML102450563) [hereinafter Application]. The application also seeks renewal of the associated source material, special nuclear material, and by-product material licenses under 10 C.F.R. Parts 30, 40, and 70. Id. at 1.0-1.

Lake Erie in Ottawa County in northwestern Ohio, approximately twenty miles east of Toledo.[3]

The Joint Petitioners have proffered four contentions. FirstEnergy and the NRC Staff contend that CEA does not have standing and that each proffered contention is inadmissible on one or more grounds. FirstEnergy also argues the Petition should be rejected because it is untimely and that CEA has not demonstrated that it authorized any officer or member to represent it in this proceeding.

The Board grants the intervention petition because the Joint Petitioners have demonstrated standing and have collectively proffered at least one contention that is admissible, in whole or in part, pursuant to 10 C.F.R. § 2.309(f)(1). In accordance with 10 C.F.R. § 2.309(a), we therefore grant the request for public hearing and admit each petitioner as a party to this proceeding. As limited by the Board, the admitted contentions will be heard under the procedures set forth at 10 C.F.R. Part 2, Subpart L.

## I. Procedural Background

FirstEnergy[4] filed the Application to renew its operating license for Davis-Besse[5] on August 27, 2010.[6] A notice published in the Federal Register on October 25, 2010 stated that the NRC Staff would review the Application and that persons whose interests might be affected by the proposed license renewal would have until December 27, 2010 to petition to intervene in the

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[3] Id. at 1.2-1.

[4] FirstEnergy applied on its own behalf and as agent for FirstEnergy Nuclear Generation Corp., the owner and licensee. Id. at 1.1-1.

[5] Davis-Besse has a pressurized water reactor nuclear steam supply system furnished by the Babcock & Wilcox Company. Id. at 1.2-1. The licensed core power level is 2817 megawatts-thermal (MWt). Id. Davis-Besse's gross electrical output is 908 megawatts-electric (MWe). Id.

[6] Notice of Acceptance for Docketing of the Application, Notice of Opportunity for Hearing for Facility Operating License No. NPF-003 for an Additional 20-Year Period; First[E]nergy Nuclear Operating Company, Davis-Besse Nuclear Power Station, Unit 1, 75 Fed. Reg. 65,528, 65,528-29 (Oct. 25, 2010) [hereinafter Hearing Notice]. Notice of receipt of FirstEnergy's license renewal application was published in the Federal Register on September 20, 2010. FirstEnergy Nuclear Operating Company; Notice of Receipt and Availability of Application for Renewal of Davis[-]Besse Nuclear Power Station, Unit 1, Facility Operating License No. NPF-003 for an Additional 20-Year Period, 75 Fed. Reg. 57,299 (Sept. 20, 2010).

proceeding and to request a hearing.[7] The Joint Petitioners filed the Petition and several exhibits on December 27.[8] Between midnight and 3:10 a.m. on December 28, the Joint Petitioners filed nearly seventy more exhibits one at a time.[9] They filed two final exhibits at 12:15 p.m. on December 28.[10] Joint Petitioners filed "an Errata to correct errors" in the Petition on January 5, 2011.[11]

The Petition's first three contentions allege that the Application's environmental report (ER) does not adequately analyze, as reasonable baseload power alternatives, allegedly environmentally superior systems of renewable energy[12]—respectively, wind power,[13] solar power,[14] and a combination of wind and solar power[15]—with compressed air storage.[16] The Petition's fourth contention concerns the ER's severe accident mitigation alternatives (SAMA) analysis.[17]

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[7] Hearing Notice, 75 Fed. Reg. at 65,529.

[8] Petition; Declarations in Support of Standing from Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan and Green Party of Ohio, and Individual Organization Members (Dec. 27, 2010) [hereinafter Standing Decls.]; Exhibits in support of the Petition to Intervene in the License Renewal proceeding for Davis[-]Besse [hereinafter Petition Attachments].

[9] Declaration and Curriculum Vitae of Alvin Compaan, Intervenors' Expert Witness on Contention #2 (signed Dec. 27, 2010, submitted Dec. 28, 2010) [hereinafter Compaan Decl.]; Petition Attachments.

[10] Petition Attachments.

[11] Errata (Jan. 5, 2011).

[12] Petition at 15-17, 27-28, 71, 82-83.

[13] Id. at 10.

[14] Id. at 68-69.

[15] Id. at 93.

[16] Id. at 28, 71.

[17] Id. at 100.

FirstEnergy and the NRC Staff filed answers on January 21, 2011.[18] Both argue that petitioner CEA lacks standing and that every proffered contention is inadmissible.[19] FirstEnergy further argues that the entire petition should be dismissed as untimely and that CEA has not shown that it authorized anyone to represent it.[20]

Joint Petitioners filed a combined reply on January 28.[21] FirstEnergy moved to strike portions of this reply on February 7, arguing that it impermissibly expanded the scope of the original Petition without satisfying the standards governing new or amended contentions.[22] Joint Petitioners filed an errata to their reply on February 10[23] and an opposition to the motion to strike on February 17.[24] On February 18 this Board granted FirstEnergy's motion to strike and ordered Joint Petitioners to re-file a revised reply with the disputed portions deleted, the errata incorporated, and the pages numbered.[25] Joint Petitioners filed a revised reply on February 23[26]

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[18] FirstEnergy's Answer Opposing Request for Public Hearing and Petition for Leave to Intervene (Jan. 21, 2011) [hereinafter FirstEnergy Answer]; NRC Staff's Answer to Joint Petitioners' Request for a Hearing and Petition for Leave to Intervene (Jan. 21, 2011) [hereinafter NRC Staff Answer].

[19] FirstEnergy Answer at 2-3; NRC Staff Answer at 2, 6-7. FirstEnergy argued in its answer that petitioner Don't Waste Michigan also lacks standing, id. at 2-3, but withdrew this challenge during oral argument. Tr. at 38-39.

[20] FirstEnergy Answer at 2.

[21] Joint Intervenors' Combined Reply in Support of Petition for Leave to Intervene (Jan. 28, 2011).

[22] FirstEnergy's Motion to Strike Portions of Petitioners' Combined Reply (Feb. 7, 2011) at 1 (citing 10 C.F.R. § 2.309(c), (f)(2)).

[23] Errata (Feb. 10, 2011).

[24] Joint Intervenors' Combined Reply in Opposition to FENOC's 'Motion to Strike' (Feb. 17, 2011).

[25] Licensing Board Order (Granting Motion To Strike and Requiring Re-filing of Reply) (Feb. 18, 2011) at 4 (unpublished).

[26] Joint Intervenors' Combined Reply in Support of Petition for Leave to Intervene (Corrected Version) (Feb. 23, 2011).

and a final revised reply on February 24.[27]

This Board heard oral argument on the Petition in Port Clinton, Ohio, on March 1, 2011.[28] On the eve of oral argument, Joint Petitioners submitted a notice seeking to bring to the Board's attention a recently published Licensing Board order.[29]

II. Analysis of Timeliness, Standing and Representation

Any person or organization seeking to intervene as a party in a NRC adjudicatory proceeding addressing a proposed licensing action must: (1) establish standing; and (2) proffer at least one admissible contention.[30] In addition, an officer, member or attorney representing an organization in such a proceeding must file a written notice of appearance stating, among other things, his or her basis for representing the organization.[31] Before analyzing standing, representation and contention admissibility, we first address the timeliness of the Petition.

A. Timeliness

FirstEnergy argues the Petition "is untimely and should be rejected" because Joint Petitioners filed "67 exhibits and an expert affidavit" after the deadline for submitting an intervention petition challenging the Davis-Besse renewal application, which was 11:59 p.m. Eastern Time on

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[27] Joint Intervenors' Combined Reply in Support of Petition for Leave to Intervene (2nd, Final Corrected Version) (Feb. 24, 2011) [hereinafter Reply]. Beyond Nuclear's representative explained at oral argument that he filed the February 24 reply because he had inadvertently retained, in the February 23 reply, material the Board had struck. Tr. at 35-37.

[28] Tr. at 1-239.

[29] Joint Intervenors' Notice of Additional Authority (Feb. 28, 2011) (attaching NextEra Energy Seabrook LLC (Seabrook Station, Unit 1), LBP-11-02, 73 NRC __ (slip op.) (Feb. 15, 2011)). In response to FirstEnergy's objection at oral argument that Joint Petitioners inappropriately included five pages of supplemental legal argument in the notice, Tr. at 229-30, this Board stated that it is aware of the order, that the order is not binding on this Board, that it will use the order to the extent it is helpful, and that it will disregard the supplemental legal argument that came with the filing. Id. at 230-31.

[30] 10 C.F.R. § 2.309(a).

[31] Id. § 2.314(b).

December 27, 2010.[32] FirstEnergy reasons that because "an electronic filing is only complete 'when the filer performs the last act that it must perform to transmit a document, in its entirety,'" the entire Petition is untimely.[33] At oral argument FirstEnergy stated the filing deadline is akin to a statute of limitations.[34]

Joint Petitioners assert that this was the "first adjudicatory filing situation" for the "inexperienced, pro se coordinator"[35] who was the "Joint Petitioners' point person" when the Petition was filed.[36] Joint Petitioners argue that, because they were proceeding pro se at that time, they should be "shown greater leeway on the question of whether they have demonstrated good cause for lateness than petitioners represented by counsel."[37] The Commission has directed that pro se litigants generally be extended some latitude, although they are still expected to comply with procedural rules.[38]

While the petition itself was timely filed, we must balance the eight factors set forth in 10 C.F.R. § 2.309(c)(1) to determine whether we can consider Joint Petitioners' late-filed exhibits. Good cause for the failure to file on time is the most important factor.[39]

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[32] FirstEnergy Answer at 2 (citing Hearing Notice, 75 Fed. Reg. 65,528; 10 C.F.R. § 2.306(c)).

[33] Id. (quoting 10 C.F.R. § 2.302(d)(1)) (emphasis added in FirstEnergy Answer).

[34] Tr. at 35.

[35] Reply at 5.

[36] Reply, Attach., Declaration of Kevin Kamps, Beyond Nuclear ¶ 1 (Jan. 28, 2011) [hereinafter Kamps Decl.].

[37] Id. at 4-5 (citing Maine Yankee Atomic Power Co. (Maine Yankee Atomic Power Station), LBP-03-23, 58 NRC 372, 378 (2003)). Joint Petitioners also argue FirstEnergy "can make no credible showing of prejudice." Id. at 5. We do not consider whether FirstEnergy was prejudiced by the late filing because prejudice is not a factor in the balancing test for nontimely filings. 10 C.F.R. § 2.309(c)(1).

[38] South Carolina Elec. & Gas Co. (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI-10-01, 71 NRC __, __ (slip op. at 5) (Jan. 7, 2010) (citations omitted).

[39] Crow Butte Res., Inc. (North Trend Expansion Project), CLI-09-12, 69 NRC 535, 549 n.61 (2009) (referring to 10 C.F.R. § 2.309(c)(1)(i)).

In their reply, Joint Petitioners assert they have "'good cause' to have their Petition deemed timely,"[40] explaining that they "experienced major difficulties with NRC's Electronic Information Exchange system on the night of . . . December 27, 2010."[41] Allegedly, when it "quickly became apparent that the EIE system was not working properly" for the point person, a second representative "rac[ed] to the Beyond Nuclear office" after 11:00 p.m.—on a day his organization observes as a holiday—to "successful[ly] fil[e] several key documents ahead of midnight" and to submit "73 items in all, one at a time."[42] Two additional documents were filed after four hours of assistance from the agency's E-Filing Help Desk once it opened for the day.[43]

The NRC Staff does not challenge the timeliness of the Petition.[44] They suggested at oral argument, however, that "it would have been helpful" if the parties had not had to wait until the reply to know about the difficulties the Joint Petitioners experienced with the E-Filing system.[45]

In this case, the Petition—complete with active embedded links to most of the exhibits—the standing declarations, and eight exhibits were submitted before the deadline.[46] The balance of the exhibits was filed overnight and into the next day.[47] All parties to an adjudicatory proceeding have an obligation to prepare and to file their pleadings and submissions in a timely manner and in accordance with the regulations. The Board believes that—for lengthy documents with multiple attachments—this means beginning the filing process sufficiently in advance of the deadline so that if unforeseen problems arise, the document and all referenced exhibits and attachments can

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[40] Reply at 4.

[41] Id. at 2.

[42] Id. at 2-4; accord Kamps Decl. ¶¶ 4-7.

[43] Kamps Decl. ¶ 11; accord Reply at 4.

[44] Tr. at 33.

[45] Id.

[46] Petition; Standing Decls.; Petition Attachments; accord Reply at 3.

[47] Compaan Decl.; Petition Attachments.

still be filed in their entirety prior to the deadline.[48] If a petitioner encounters problems with a particular document or with the agency's E-Filing system so that the document cannot be filed before the deadline, it is incumbent upon that petitioner to explain the circumstances surrounding the problem as soon as possible to the Board and the parties, by promptly filing a motion seeking leave from the Board to accept the document out of time. In this situation, it appears the Joint Petitioners began the filing process approximately one hour before the deadline.[49] Given the problems they encountered and the size of the filing, one hour was not sufficient time to complete the filing. However, the Joint Petitioners were able timely to file the Petition in its entirety and some of the exhibits. Most of the exhibits were filed after the deadline, and for those exhibits the Petitioners should have filed a motion seeking leave to have them accepted out of time. Given the Joint Petitioners' inexperienced pro se coordinator (and first-time filer) and the apparent problems with the E-Filing system, we conclude that Joint Petitioners' efforts, as outlined in their reply pleading, demonstrate the required good cause for us to accept their untimely submissions. We therefore accept the nontimely exhibits for further consideration with the timely filed Petition. In the future Joint Petitioners are strongly advised to prepare their pleadings well in advance of any deadlines, and if any portion of a filing is untimely tendered, it must be accompanied by a motion pursuant to 10 C.F.R. §§ 2.309(c)(1) and 2.323.

B. Standing

Joint Petitioners assert each has standing to intervene as the representative of its members living in geographic proximity to the Davis-Besse facility.[50] When an organization seeks to intervene in a representative capacity it must: (1) show that the interests it seeks to protect are

[48] 10 C.F.R. § 2.302(d)(1) provides that a filing by electronic transmission is complete only when "the filer performs the last act that it must perform to transmit a document, in its entirety."

[49] Kamps Decl. ¶ 4.

[50] Petition at 4-6.

germane to its own purpose; (2) identify, by name and address,[51] at least one member who qualifies for standing in his or her own right; and (3) show that it is authorized by that member to request a hearing on his or her behalf.[52]

In determining whether an individual member of an organization qualifies for standing in his or her own right, the NRC generally applies traditional judicial standing concepts,[53] which require a showing that the individual has suffered or might suffer a concrete and particularized injury that is: (1) fairly traceable to the challenged action; (2) likely redressible by a favorable decision;[54] and (3) arguably within zone of interests protected by the governing statutes[55]—e.g. the Atomic Energy Act of 1954 (AEA)[56] and the National Environmental Policy Act of 1969 (NEPA).[57] These standing requirements are codified at 10 C.F.R. § 2.309(d)(1)(ii)-(iv).

In reactor license renewal cases, however, petitioners are entitled to invoke what has come to be known as the proximity presumption. This presumption of standing excuses petitioners from

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[51] Power Authority of New York (James A. FitzPatrick Nuclear Power Plant; Indian Point, Unit 3), CLI-00-22, 52 N.R.C. 266, 293 (2000).

[52] Consumers Energy Co. (Palisades Nuclear Power Plant), CLI-07-18, 65 NRC 399, 409 (2007) (citations omitted); cf. Friends of the Earth, Inc. v. Laidlaw Envtl. Servs. (TOC), Inc., 528 U.S. 167, 181 (2000) ("An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." (citing Hunt v. Wash. State Apple Adver. Comm'n, 432 U.S. 333, 343 (1977))).

[53] Nuclear Mgmt. Co., LLC (Monticello Nuclear Generating Plant), CLI-06-6, 63 NRC 161, 163 (2006) (citing U.S. Dep't of Energy (Plutonium Export License), CLI-04-17, 59 NRC 357, 363 (2004); Sacramento Mun. Util. Dist. (Rancho Seco Nuclear Generating Station), CLI-92-2, 35 NRC 47, 56 (1992)).

[54] Georgia Inst. of Tech. (Georgia Tech Research Reactor, Atlanta Georgia), CLI-95-12, 42 NRC 111, 115 (1995) (citing Lujan v. Defenders of Wildlife, 504 U.S. 555, 560-61 (1992)).

[55] Yankee Atomic Elec. Co. (Yankee Nuclear Power Station), CLI-96-1, 43 NRC 1, 6 (1996) (citing Cleveland Elec. Illuminating Co. (Perry Nuclear Power Plant, Unit 1), CLI-93-21, 38 NRC 87, 92 (1993)).

[56] 42 U.S.C. §§ 2011-2297.

[57] Id. §§ 4321-4346.

the need to show an injury. The Commission has applied this geographic proximity presumption as follows:

> In practice, we have found standing based on this "proximity presumption" if a petitioner (or a representative of a petitioner organization) resides within approximately 50 miles of the facility in question.[58]

The proximity presumption also applies if a petitioner "has frequent contacts with" this geographic zone of potential harm.[59] This presumption's rationale is that "persons living within the roughly 50-mile radius of the facility 'face a realistic threat of harm' if a release from the facility of radioactive material were to occur."[60]

The Joint Petitioners have each articulated how the interests it seeks to protect are germane to its own purpose. Beyond Nuclear's name implies that the organization is concerned about nuclear issues. It claims to have "over 6,000 members of whom a number reside, work and recreate" near the Davis-Besse Nuclear Power Station.[61] CEA asserts that it "favor[s] the increased deployment of environmentally benign energy sources."[62] Don't Waste Michigan asserts its articles of incorporation state its "dedicat[ion] to educating the public about the dangers nuclear contamination poses to human health and the environment."[63] The Green Party of Ohio asserts that it is concerned with the issue of alternative energy.[64]

Each of the Joint Petitioners also identifies at least one member qualified for standing in his or her own right based on the proximity presumption, and each of these members authorizes the

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[58] Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-09-20, 70 NRC 911, 915-16 (2009) (emphasis added).

[59] Id. at 915.

[60] Id. at 917 (quoting Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), LBP-09-4, 69 NRC 170, 183 (2009)) (emphasis added).

[61] Petition at 4.

[62] Id. at 4.

[63] Reply at 8.

[64] Petition at 6.

respective organization to represent his or her interests. Beyond Nuclear relies on the declaration of member Phyllis Oster, who provides a home address that is less than forty miles from the power station and states her interests will not be adequately represented unless Beyond Nuclear participates in this proceeding, impliedly authorizing the organization to represent her interests.[65] CEA provides declarations from two members, Derek and Richard Coronado (the Coronados), who state that their home is within a 50-mile radius of the Davis-Besse plant and designate CEA to represent their interests.[66] Don't Waste Michigan relies on the declaration of member Michael J. Keegan, who provides a home address that is less than twenty-five miles from the power station and designates Don't Waste Michigan to represent his interests.[67] The Green Party of Ohio provides declarations from three members, Anita Rios, Joseph R. DeMare, and Sean Nestor, who each provide a home address within twenty-five miles of the power station and designate the Green Party of Ohio to represent their interests.[68] FirstEnergy and the NRC Staff contest the standing of only Derek and Richard Coronado and their organization, CEA.[69]

FirstEnergy contends that CEA "cannot rely on the proximity presumption to establish standing" because "the Coronados appear to live slightly more than 50 miles from Davis-Besse."[70] The NRC Staff agree that CEA has not shown standing because the Coronados do not qualify for the proximity presumption and CEA has not otherwise alleged and demonstrated an appropriate

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[65] See Declaration of Phyllis Oster (Dec. 24, 2010).

[66] Declaration of Derek Coronado (Dec. 26, 2010) [hereinafter D. Coronado Decl.]; Declaration of Richard Coronado (Dec. 26, 2010) [hereinafter R. Coronado Decl.].

[67] See Declaration of Michael J. Keegan (Dec. 27, 2010).

[68] See Declaration of Anita Rios (Dec. 26, 2010); Declaration of Joseph R. DeMare (Dec. 14, 2010); Declaration of Sean Nestor (Dec. 26, 2010).

[69] FirstEnergy Answer at 8-9; NRC Staff Answer at 6-7.

[70] FirstEnergy Answer at 9.

injury.[71] The NRC Staff calculates that the Coronado's residence is "approximately 300 feet" outside the 50-mile radius of Davis-Besse,[72] measuring from the center line of the reactor to the nearest corner of the Coronado's property,[73] and FirstEnergy calculates the deficit as 0.024 miles.[74] FirstEnergy's calculations place the Coronado residence 127 feet beyond a 50-mile radius from the center line of the reactor.

The Joint Petitioners respond that the Coronados "are within 49.751 miles of the containment building at Davis-Besse" when they "are at work or meeting" in the CEA office.[75] The Petition identifies the Coronados as CEA's coordinators and provides the address of the CEA office.[76] If Joint Petitioners' calculation is converted from miles to feet, CEA's office is 1314.7 feet within the 50-mile radius.

Following the Commission's example, we "construe the petition in favor of the petitioner" in determining whether a petitioner has demonstrated standing.[77] As previously mentioned, a petitioner may avail himself or herself of the proximity presumption if he or she lives within approximately 50 miles of the facility or otherwise has frequent contacts within this area.[78] We are satisfied that the filed pleadings and the oral argument indicate that the Coronados' residence is approximately 50 miles from Davis-Besse and their work address is less than 50 miles from Davis-Besse. Further, common sense would dictate that the Coronados would have frequent contacts within the 50-mile radius of the plant because of where they live and where they work.

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[71] NRC Staff Answer at 6-7.

[72] Id. at 6.

[73] Tr. at 40-42.

[74] See FirstEnergy Answer at 9 n.31.

[75] Reply at 7; accord Tr. at 45-46.

[76] Petition at 5.

[77] Georgia Tech., CLI-95-12, 42 NRC at 115.

[78] Calvert Cliffs, CLI-09-20, 70 NRC at 915-16.

Accordingly, the Coronados qualify for the proximity presumption and CEA may assert representational standing on their behalf.[79]

C. Representation by Member, Officer or Attorney

FirstEnergy also challenges CEA's participation on the ground that Joint Petitioners fail to include documentation showing that CEA has authorized Derek Coronado or any other officer or member of the organization to represent it.[80] 10 C.F.R. § 2.314(b) provides that a "duly authorized member or officer" may represent his or her "partnership, corporation, or unincorporated association" even if he or she is not an attorney at law, but the representative's notice of appearance must state "the basis of his or her authority to act on behalf of the party." An organization's standing can be demonstrated through the interests of its members, but if a member acts or speaks on behalf of the organization, "that member must also demonstrate authorization by that organization to represent it."[81] Accordingly, although the Coronados' declarations show they authorize CEA to represent their interests,[82] to act as CEA's representatives they would also have to demonstrate that the organization in turn has authorized them to represent it.

On February 22, 2011 Terry J. Lodge filed a notice of appearance.[83] The notice of appearance indicates Mr. Lodge is a member of the bar of the Supreme Court of Ohio and further indicates that he is attorney of record in this matter for CEA, Don't Waste Michigan, and the Green

[79] We note that the arguments of both the NRC Staff and FirstEnergy in this regard are approximately 1000 feet past the point from which frivolous arguments are measured.

[80] FirstEnergy Answer at 8.

[81] See Detroit Edison Co. (Enrico Fermi Atomic Power Plant, Unit 2), LBP-78-37, 8 NRC 575, 583 (1978) (citing Tenn. Valley Auth. (Watts Bar Nuclear Plant, Units 1 and 2), ALAB-413, 5 NRC 1418, 1421 (1977))).

[82] D. Coronado Decl.; R. Coronado Decl.

[83] Notice of Appearance of Counsel for Citizens Environmental Alliance of Southwestern Ontario, Don't Waste Michigan, and Green Party of Ohio (Feb. 22, 2011).

Party of Ohio.[84] His notice of appearance also includes his state bar number.[85] The notice of appearance and the fact that CEA is now represented by an attorney cures any possible deficiency in representation which may have existed when the Petition was filed by its pro se representative.[86] We are "lenient in permitting pro se petitioners the opportunity to cure procedural defects in petitions to intervene regarding standing."[87] And although an allegation that a purported representative is acting without his or her organization's authorization—i.e. is acting ultra vires—is distinct from a challenge to the organization's standing,[88] a petitioner may cure such a defect in representation as well.[89]

In summary, Beyond Nuclear, CEA, Don't Waste Michigan, and the Green Party of Ohio all have shown that the interests they seek to protect are germane to their organizational purposes. Their individual declarants all have established standing to intervene in their own right and have authorized their respective organizations to represent their interests. Accordingly, each

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[84] Id.

[85] Id.

[86] An attorney who purports to represent a client without authorization is subject to disciplinary proceedings by the state bar association. See Ohio Rules of Prof'l Conduct R. 3.3(a)(1) (2007) (prohibiting lawyer from knowingly making a false statement of law or fact to a tribunal); Disciplinary Counsel v. Bursey, 919 N.E.2d 198, 204-06 (Ohio 2009) (disbarring permanently an attorney whose violations of the Rules of Professional Conduct included negotiating a settlement for a client that had never given him settlement authority, forging client's name on settlement check, and depositing it into attorney's bank account).

[87] PPL Bell Bend LLC (Bell Bend Nuclear Power Plant), LBP-09-18, 70 NRC 385, 396 (2009) (citing Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-91-7, 33 NRC 179, 195 (1991)); see, e.g., Virgil C. Summer Nuclear Station, CLI-10-01, 71 NRC at __ (slip op. at 6-8) (allowing petitioner to clarify standing declarations by submitting revised declarations with reply).

[88] See Houston Lighting & Power Co. (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377, 395-96 (1979) (distinguishing the authority of an officer or attorney to sign a petition from an authorization "addressed to the organization's standing to intervene" (emphasis omitted)).

[89] See id. (stating how petitioner could have appropriately responded to "an intimation of ultra vires conduct" had the argument been raised).

organization has demonstrated representational standing.[90] And Attorney Lodge's notice of appearance cures the absence of a declaration or affidavit showing that CEA authorized any member or officer to represent it.

III. Analysis of Contention Admissibility

As previously noted, to participate as a party, a petitioner must not only establish standing, but must also proffer at least one admissible contention that meets the requirements of 10 C.F.R. § 2.309(f)(1). An admissible contention must: (i) provide a specific statement of the issue of law or fact to be raised; (ii) provide a brief explanation of the basis for the contention; (iii) demonstrate that the issue raised is within the proceeding's scope; (iv) demonstrate that the issue raised 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, including references to specific sources and documents, that support the petitioner's position and upon which the petitioner intends to rely at hearing; and (vi) show that a genuine dispute exists on a material issue of law or fact by referring to specific portions of the application that the petitioner disputes or, if the application is alleged to be deficient, by identifying such deficiencies and the supporting reasons for this allegation.[91]

In explaining these requirements, the Commission has said the agency "should not have to expend resources to support the hearing process unless there is an issue that is appropriate for, and susceptible to, resolution in an NRC hearing."[92] Alternatives for reducing adverse

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[90] We deny Ms. Rios, Mr. DeMare, and Mr. Nestor's requests in the alternative for individual standing, Tr. at 37; Petition at 6, because the Green Party of Ohio has demonstrated representational standing. Tr. at 37. An individual may not intervene in his or her own right while simultaneously being represented by another petitioner in the same proceeding. Powertech (USA), Inc. (Dewey-Burdock In Situ Uranium Recovery Facility), LBP-10-16, 72 NRC __, __ (slip op. at 21) (Aug. 5, 2010).

[91] 10 C.F.R. § 2.309(f)(1)(i)-(vi).

[92] Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004).

environmental impacts, including impacts of severe accidents,[93] are among the limited issues within the scope of a license renewal proceeding.[94] A challenge to a Commission rule or regulation, however, is outside the scope of an adjudicatory hearing unless the petitioner first obtains a waiver.[95]

For example, the Commission has codified generic determinations for certain environmental issues, identified as Category 1 issues, for license renewal proceedings.[96] Category 1 issues are not subject to challenge in a relicensing proceeding because they "involve environmental effects that are essentially similar for all plants [and] need not be assessed repeatedly on a site-specific basis."[97] Pursuant to 10 C.F.R. § 2.335, Category 1 issues cannot be addressed in a license renewal proceeding absent a waiver. Issues that require site-specific analysis, on the other hand, are identified as Category 2 issues.[98] Category 2 issues must be reviewed on a site-specific basis because they have not been determined to be "essentially similar" for all plants;[99] accordingly, challenges relating to these issues are properly part of a license renewal proceeding.

Although "[m]ere 'notice pleading' is insufficient" in NRC proceedings,[100] a petitioner does not have to prove its contentions at the admissibility stage,[101] and we do not adjudicate disputed

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[93] 10 C.F.R. § 51.53(c)(3)(ii)(L).

[94] 42 U.S.C. § 4332(2)(C)(iii); 10 C.F.R. §§ 54.29(b), 51.53(c)(2), 51.53(c)(3)(iii).

[95] 10 C.F.R. § 2.335(a).

[96] 10 C.F.R. Part 51, subpt. A, app. B, n.2.

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

[98] 10 C.F.R. Part 51, subpt. A, app. B, n.2.

[99] Id.

[100] Fansteel, Inc. (Muskogee, Oklahoma, Site), CLI-03-13, 58 NRC 195, 203 (2003).

[101] Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004).

facts at this juncture.[102] The factual support required is "'a minimal showing that material facts are in dispute.'"[103] All that is needed at this juncture is "alleged facts" and the factual support "need not be in affidavit or formal evidentiary form and need not be of the quality necessary to withstand a summary disposition motion."[104]

A. Contentions One, Two and Three

Although styled as separate contentions, Contentions One, Two and Three allege that FirstEnergy should have considered renewable energy sources in a more comprehensive manner in its ER. Contention One, simply titled Wind Power, states the "Environmental Report fails to adequately evaluate the full potential for renewable energy sources, such as wind power, to offset the loss of energy production from Davis-Besse."[105] Likewise, Contention Two, entitled Solar Power, alleges the "Environmental Report fails to adequately evaluate the full potential for renewable energy sources, such as solar electric power or photovoltaics (hereinafter 'solar power'), to offset the loss of energy production from Davis-Besse."[106] In Contention Three, Joint Petitioners state "NEPA further requires in the consideration of alternatives to the license extension for Davis-Besse a combination of commercial wind-generated baseload power, combined with commercial solar photovoltaic-generated baseload power."[107]

The essence of Contentions One, Two and Three is that FirstEnergy should have evaluated wind power, solar photovoltaic power, or a combination of both, bolstered by energy storage, in a

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[102] Mississippi Power & Light, Co. (Grand Gulf Nuclear Station, Units 1 & 2), ALAB-130, 6 AEC 423, 426 (1973).

[103] Gulf States Utils. Co. (River Bend Station, Unit 1), CLI-94-10, 40 NRC 43, 51 (1994) (quoting Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process, 54 Fed. Reg. 33,168, 33,171 (Aug. 11, 1989) [hereinafter Procedural Changes]).

[104] Procedural Changes, 54 Fed. Reg. at 33,171.

[105] Petition at 10.

[106] Id. at 68-69.

[107] Id. at 93.

more comprehensive manner in its ER as an alternative to the renewal of Davis-Besse's operating license.[108]

1. Legal standards for alternatives analysis in an ER

The Commission's regulations require an applicant seeking a license renewal to file an ER that includes an alternatives analysis that "considers and balances . . . the environmental impacts of alternatives to the proposed action, and alternatives available for reducing or avoiding adverse environmental effects."[109] An ER's adequacy is examined under the auspices of NEPA because the ER is the foundation upon which NRC's environmental impact statement (EIS) is prepared.[110] Therefore, an applicant's alternatives analysis must be "sufficiently complete to aid the Commission in developing and exploring, pursuant to section 102(2)(E) of NEPA, 'appropriate alternatives'" to the proposed action.[111] Generally, NEPA requires that an environmental review provide a sufficient discussion of alternatives to "'enable the decisionmaker to take a "hard look" at environmental factors, and to make a reasoned decision.'"[112]

An applicant's alternatives analysis need not discuss every conceivable alternative to the proposed action. Rather, NEPA requires only consideration of "feasible, nonspeculative, and reasonable alternatives."[113] In defining the scope of alternatives that applicants must consider, the

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[108] Id. at 10-11, 28, 68-69, 71, 93.

[109] 10 C.F.R. § 51.45(c).

[110] See Progress Energy Florida, Inc. (Levy County Nuclear Power Plant, Units 1 and 2), CLI-10-02, 71 NRC__, __ (slip op. at 8) (Jan. 7, 2010) (stating that to facilitate the NRC's compliance with NEPA, the agency requires an applicant to submit "a complete environmental report with its application, which is essentially the applicant's proposal for the draft environmental impact statement" and that "contentions that seek compliance with NEPA must be based on that environmental report" (internal citations omitted)).

[111] 10 C.F.R. § 51.45(b)(3) (referring to 42 U.S.C. § 4332(2)(E)).

[112] Tongass Conservation Soc'y v. Cheney, 924 F.2d 1137, 1140 (D.C. Cir. 1991) (quoting Natural Res. Def. Council, Inc. v. Hodel, 865 F.2d 288, 294 (D.C. Cir. 1988)).

[113] Entergy Nuclear Operations, Inc (Indian Point, Units 2 and 3), LBP-08-13, 68 NRC 43, 95 (2008) (citing Nuclear Mgmt. Co., LLC (Monticello Nuclear Generating Plant), LBP-05-31, 62 NRC

Commission has indicated that an ER need only consider the range of alternatives that are capable of achieving the goals of the proposed action.[114] The NRC generally defers to an applicant's stated purpose "so long as that purpose is not so narrow as to eliminate alternatives."[115] Generation of baseload power is an acceptable purpose for a licensing action and has been determined to be broad enough "to permit consideration of a host of energy generating alternatives."[116] Here, the goal of the proposed license renewal is to deliver "approximately 910 MWe" of baseload power,[117] beginning on April 22, 2017 and available for a period of 20 years.

2. Treatment of wind and solar alternatives in the ER

FirstEnergy's ER devotes only four paragraphs to wind power, three paragraphs to solar power, and two paragraphs to a mix of renewable energy with natural gas generation, among other things, as alternatives to the Davis-Besse license renewal.[118] The ER concludes, however, that none of these alternatives is reasonable.[119]

According to the ER, wind power cannot "serve as a large base-load generator" because it has a "high degree of intermittency" and "relatively low" average annual capacity and because

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735, 753 (2005)); accord City of Carmel-by-the-Sea v. Dep't of Transp., 123 F.3d 1142, 1155 (9th Cir. 1997); Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), CLI-91-2, 33 NRC 61, 71 (1991).

[114] See Hydro Res., Inc. (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 55 (2001) ("Agencies need only discuss those alternatives that are reasonable and 'will bring about the ends' of the proposed action." (quoting Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 195 (D.C. Cir. 1991))).

[115] South Carolina Elec. & Gas Co. (Virgil C. Summer Nuclear Station, Units 2 and 3), LBP-09-2, 69 NRC 87, 110 (2009).

[116] Envtl. Law & Policy Ctr. v. NRC, 470 F.3d 676, 684 (7th Cir. 2006).

[117] Appendix E; Applicant's Environmental Report; Operating License Renewal Stage; Davis-Besse Nuclear Power Station at 7.2-7 (Aug. 2010) [hereinafter ER].

[118] Id. at 7.2-9 to 7.2-10, 7.2-12 to 7.2-13.

[119] Id. at 7.2-12.

"current energy storage technologies are too expensive."[120] The ER's conclusion that wind power is not a reasonable alternative also rests in part on the "large land requirements and associated aesthetic impacts" of wind power.[121]

Similarly, the ER concludes solar power is not a reasonable alternative because: (1) it would require energy storage or supplemental energy sources because it is intermittent; (2) many solar technologies are "still in the demonstration phase of development" and are not "competitive with fossil or nuclear-based technologies . . . due to high costs"; and (3) it would require a large area of land—nearly 13,000 acres—to replace Davis-Besse's generating capacity.[122]

Finally, the ER concludes that "[w]hen considered in various combinations . . . , these same renewable . . . energy resources still fail to be reasonable alternatives to renewal of Davis-Besse's operating license."[123] Putting forward a mix of 25 percent renewable energy and 75 percent natural gas generation as an example, the ER reasons that: (1) the "fluctuation of wind and solar resources" would cause "increased uncertainty in energy output"; (2) the land-use environmental impact of siting the resources would "likely exceed" the environmental impacts of Davis-Besse's continued operation; and (3) the natural gas plant's air quality impacts would "greatly exceed" continued operation's environmental impacts.[124]

3. Analysis of Joint Petitioners' contentions

Contention One states the ER "fails to adequately evaluate the full potential for renewable

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[120] Id. at 7.2-9 (citing Division of Regulatory Applications, Office of Reactor Regulatory Research, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437, Vol. 1, § 8.3.1 (1996) [hereinafter GEIS, NUREG-1437, Vol. 1]; Office of Nuclear Reactor Regulation, Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants: Regarding Beaver Valley Power Station, Units 1 and 2, NUREG-1437, Supp. 36, § 8.2.5.2 (May 2009)).

[121] Id.

[122] Id. at 7.2-9 to 7.2-10 (citing GEIS, NUREG-1437, Vol. 1, §§ 8.3.2, 8.3.3).

[123] Id. at 7.2-12.

[124] Id. at 7.2-12 to 7.2-13.

energy sources, such as wind power."[125] Contention Two is identical to Contention One except that it substitutes solar power for wind power.[126] Contention Three alleges: "NEPA further requires in the consideration of alternatives to the license extension for Davis-Besse a combination of commercial wind-generated baseload power, combined with commercial solar photovoltaic-

[125] Petition at 10. The full contention reads:

> Contention One: Wind Power. The FirstEnergy Nuclear Operating Company (hereinafter, FENOC) Environmental Report fails to adequately evaluate the full potential for renewable energy sources, such as wind power, to offset the loss of energy production from Davis-Besse, and to make the requested license renewal action from 2017 to 2037 unnecessary. In violation of the requirements of 10 C.F.R. § 51.53(c)(3)(iii) and of the GEIS § 8.1, the FENOC Environmental Report (§ 7.2) treats all of the alternatives to license renewal except for natural gas and coal plants as unreasonable and does not provide a substantial analysis of the potential for significant alternatives, such as wind power, in the Region of Interest for the requested relicensing period of 2017 to 2037. The scope of the SEIS is improperly narrow, and the issue of the need for Davis-Besse as a means of satisfying demand forecasts for the relicensing period must be revisited due to dramatically-changing circumstances in the regional energy mix that are currently underway already during this decade of Davis-Besse's remaining operating license (2010 to 2017), and can especially be expected to accelerate and materialize over two decades to come covering FENOC's requested license extension period (2017 to 2037).

Id. at 10-11.

[126] Id. at 68. The full contention reads:

> Contention Two: Solar Electric (Photovoltaic) Power. The FirstEnergy Nuclear Operating Company (hereinafter, FENOC) Environmental Report fails to adequately evaluate the full potential for renewable energy sources, such as solar electric power or photovoltaics (hereinafter "solar power"), to offset the loss of energy production from Davis-Besse, and to make the requested license renewal action from 2017 to 2037 unnecessary. In violation of the requirements of 10 C.F.R. § 51.53(c)(3)(iii) and of the GEIS § 8.1, the FENOC Environmental Report (§ 7.2) treats all of the alternatives to license renewal except for natural gas and coal plants as unreasonable and does not provide a substantial analysis of the potential for significant alternatives, such as solar power, in the Region of Interest for the requested relicensing period of 2017 to 2037. The scope of the Supplemental Environment Impact Statement (SEIS) is improperly narrow, and the issue of the need for Davis-Besse as a means of satisfying demand forecasts for the relicensing period must be revisited due to dramatically-changing circumstances in the regional energy mix that are currently underway already during this decade of Davis-Besse's remaining operating license (2010 to 2017), and can especially be expected to accelerate and materialize over two decades to come covering FENOC's requested license extension period (2017 to 2037).

Id. at 68-69.

generated baseload power."[127] In the introduction to the third contention the Joint Petitioners seek to "incorporate as though rewritten fully herein the facts, arguments, legal points and authorities and rationales contained in Contentions 1 and 2 of this Petition."[128]

The NRC Staff and FirstEnergy argue that all three contentions are inadmissible. They assert that the Joint Petitioners do not demonstrate the existence of a material factual dispute with the ER as required by 10 C.F.R. § 2.309(f)(1)(vi).[129] The NRC Staff argues that Joint Petitioners do not succeed at demonstrating that solar power can replace the 910 MWe of baseload power that Davis-Besse provides.[130] NRC Staff also argues that Joint Petitioners have not "provided sufficient information to support their assertions that offshore and onshore wind energy can replace Davis-Besse's baseload power generation."[131] Likewise FirstEnergy posits that Petitioners have not provided sufficient alleged facts or expert opinion to support their contentions.[132]

We will analyze Contentions One, Two and Three as if they were a single contention that challenges the sufficiency of the ER's analysis of renewable energy sources, specifically wind, solar or a combination of wind and solar, as a reasonable alternative to the renewal of Davis-

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[127] The full contention reads:

> Contention Three: Solar and Wind in Combination. The Relicensing GEIS Is Stale, Dated and NEPA Non-Compliant; Commercial Wind And Solar Photovoltaic Baseload Power Should Be Considered Under NEPA as a Single, Combined-Source Alternative. ¶ 158. NEPA further requires in the consideration of alternatives to the license extension for Davis-Besse a combination of commercial wind-generated baseload power, combined with commercial solar photovoltaic-generated baseload power. Petitioners incorporate as though rewritten fully herein the facts, arguments, legal points and authorities and rationales contained in Contentions 1 and 2 of this Petition.

Id. at 93.

[128] Petition at 93. Following Joint Petitioners' lead, FirstEnergy incorporates by reference its responses to Contentions One and Two in its answer to Contention Three. FirstEnergy Answer at 64.

[129] NRC Staff Answer at 20; FirstEnergy Answer at 33-34, 43, 45, 54, 59, 63-64, 65.

[130] NRC Staff Answer at 26.

[131] Id. at 27.

[132] FirstEnergy Answer at 47-48, 61-62.

Besse's operating license.[133] As we review these three contentions, we will first eliminate those portions of the contention that are clearly extraneous to this proceeding, i.e. are outside the scope of this proceeding, are not material to this proceeding, or fail to raise a genuine dispute with the ER.[134]

4. Issues that are out of scope, not material or not supported

To the extent that Contentions One[135] and Two[136] refer to events that would "materialize over two decades to come . . . (2017 to 2037),"[137] we find any reference to events that will occur during that period of time not to be material to this proceeding and thus inadmissible. As conceded by Joint Petitioners,[138] any reasonable alternative to be evaluated in depth must be an alternative that is available now or in the near future and in any event no later than April 22, 2017, the expiration date of the current license. The Joint Petitioners raise a second extraneous issue in their assertion that "[t]he scope of the SEIS [sic] is improperly narrow, and the issue of the need for Davis-Besse as a means of satisfying demand forecasts for the relicensing period must be revisited due to dramatically-changing circumstances in the regional energy mix."[139] The Joint Petitioners' argument about the need for power from Davis-Besse during the license renewal period is outside the scope of this proceeding and inadmissible under 10 C.F.R. § 2.309(f)(1)(iii) because it challenges 10 C.F.R. § 51.53(c)(2), which states that a license renewal ER "is not

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[133] Crow Butte, CLI-09-12, 69 NRC at 552 (stating boards may reformulate contentions "'to consolidate issues for a more efficient proceeding.'" (quoting Shaw Areva MOX Servs. (Mixed Oxide Fuel Fabrication Facility), LBP-08-11, 67 NRC 460, 482 (2008))).

[134] Authority for narrowing the scope of a contention is found in 10 C.F.R. § 2.319(e) which authorizes the presiding officer to "[r]estrict irrelevant, immaterial, unreliable, duplicative or cumulative evidence and/or arguments."

[135] Petition at 10-11.

[136] Id. at 69.

[137] Id. at 11, 69.

[138] Tr. at 69.

[139] Petition at 10; accord id. at 69.

required to include discussion of need for power." Under 10 C.F.R. § 2.335(a), this and other rules and regulations of the Commission are not subject to challenge in any adjudicatory proceeding in the absence of a waiver. Joint Petitioners have neither sought nor received a waiver of Section 51.53(c)(2).

A third extraneous issue the Joint Petitioners raise is the role the Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)[140] should play in defining the range of alternatives to be considered in the ER. To the extent they urge that the "1996 Generic EIS' parameters must be deemed legally void under NEPA[]," [141] the Joint Petitioners raise an issue that is both outside the scope of the proceeding and not material to any findings the NRC must make to support the requested action. Similarly, the Joint Petitioners' allegation, in the introduction to Contention Three, that the relicensing GEIS is "stale, dated and NEPA non-compliant"[142] is inadmissible because it raises issues that are beyond the scope of this proceeding and are not material, and therefore violates 10 C.F.R. §§ 2.309(f)(1)(iii) and (iv).

5. Admissible contention as narrowed by the Board

The elimination of these extraneous issues reveals the admissible core of Contentions One, Two and Three. This core is the Joint Petitioners' challenge to the ER's failure to consider in a comprehensive manner combinations of wind and/or solar photovoltaic energy sources as an alternative to the Davis-Besse relicensing. Joint Petitioners charge that the ER contains a "vague and superficial"[143] discussion of wind, solar, and other renewable energy alternatives,[144] and

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[140] GEIS, NUREG-1437, Vol. 1.

[141] Petition at 95.

[142] Id. at 93 (capitalization altered).

[143] Id. at 19.

[144] Id. at 20-22, 36-38, 69-70.

contend this discussion is inadequate.[145] Joint Petitioners allege that FirstEnergy "has not undertaken the requisite 'hard look' at commercial wind energy or solar as alternatives."[146] The Joint Petitioners controvert the ER's conclusion that wind, solar, or a combination of wind and solar cannot meet the baseload output of the Davis-Besse plant by 2017.

Section 2.309(f)(1)(i) requires a proposed contention to provide a specific statement of the issue of law or fact to be raised or controverted. Joint Petitioners provide a specific statement for Contention One as follows: "The FirstEnergy . . . Environmental Report fails to adequately evaluate the full potential for renewable energy sources, such as wind power, to offset the loss of energy production from Davis-Besse, and to make the requested license renewal action from 2017 to 2037 unnecessary."[147] Joint Petitioners provide a specific statement for Contention Two that is identical except for the substitution of the words "solar electric power or photovoltaics (hereinafter 'solar power')" for "wind power."[148] For Contention Three, Joint Petitioners' specific statement is that "NEPA further requires in the consideration of alternatives to the license extension for Davis-Besse a combination of commercial wind-generated baseload power, combined with commercial solar photovoltaic-generated baseload power."[149]

Section 2.309(f)(1)(ii) requires a brief explanation of the basis for the contention. Although Joint Petitioners are not particularly brief in their explanation, the basis of Contentions One, Two and Three, is that wind energy, solar photovoltaic energy, and a combination of both fulfills all of the criteria of a reasonable alternative.[150] Joint Petitioners assert that these energy sources would have "significantly less adverse human environmental impacts" because "energy alternatives like

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[145] Id. at 19, 73.

[146] Id. at 98.

[147] Id. at 10.

[148] Id. at 68-69.

[149] Id. at 93.

[150] Id. at 97.

wind . . . and solar . . . are abundantly available and do not have a carbon producing fuel cycle such as is the case with uranium."[151] Joint Petitioners deny that "wind power involves negative 'aesthetic' and 'visual' impacts."[152] Joint Petitioners deny also that "storage remains a cost prohibitive impediment to wind power's widespread and large-scale development,"[153] thereby disputing the ER's conclusion that "current energy storage technologies are too expensive for wind power to serve as a large base-load generator."[154] Joint Petitioners assert that "interconnectedness of renewable energy generation" is another "solution to baseload and intermittency issues."[155]

Sections 2.309(f)(1)(iii) and 2.309(f)(1)(iv) require that the issue be within the scope of the proceeding and material to the findings that the NRC must make to support the action that is involved in the proceeding. The submission of an ER is the first instance where petitioners can challenge the environmental analysis put forward by an applicant. The ER and its conclusions provide the foundation for the EIS that the agency staff is tasked with preparing. A concern that the ER's analysis pays short shrift to the possible role of wind and solar photovoltaic energy as reasonable alternatives to relicensing is within the scope of a relicensing proceeding and is material to the findings that the NRC must make under NEPA.

Section 2.309(f)(1)(v) requires a concise statement of alleged facts or expert opinions that support the petitioner's position on the issue and upon which the petitioner intends to rely at the hearing. Although not particularly concise, the Joint Petitioners allege many facts and proffer expert support. They refer to materials that allegedly show that compressed air storage would

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[151] Id. at 15-16.

[152] Id. at 27 (emphasis omitted).

[153] Id. at 28.

[154] ER at 7.2-9.

[155] Petition at 41.

"work for wind power, and at a very large scale"[156] and has "enabled wind power to surmount intermittency challenges, so much so that NREL [National Renewable Energy Laboratory] now recognizes the existence of 'baseload wind.'"[157] Joint Petitioners also include the declaration of Dr. Alvin Compaan, who proffers paragraphs 123 through 151 of Contention Two as his expert opinion.[158] Dr. Compaan, a professor of physics at the University of Toledo,[159] notes that "[s]olar power has a $CO_2$ footprint that is much smaller than the full fuel chain of nuclear."[160] According to Dr. Compaan, "[e]conomical sources of energy storage and back-up power are available to provide good base-load power, in conjunction with solar."[161] Dr. Compaan further concludes that "wide-scale installation of solar power combined with a storage facility . . . is a very viable alternative" to the requested Davis-Besse license extension.[162] Joint Petitioners also allege that FirstEnergy recently purchased a compressed-air storage project, the Norton Energy Storage Project.[163]

In addition, Joint Petitioners have tendered numerous exhibits that contain studies and reports that they allege show that within the foreseeable future, wind power, solar power and a combination of wind and solar could be reasonable alternatives to the renewal of Davis-Besse. They argue that these renewable energy sources should have been evaluated in greater detail in

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[156] Id. at 28 (citing id., Attach. 48, Ken Zweibel, et al., By 2050 solar power could end U.S. dependence on foreign oil and slash greenhouse gas emissions, Scientific American 64 (Jan. 2008)).

[157] Id. (citing id., Attach. 11, Arjun Makhijani, Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policies (Aug. 2007)). NREL, a national laboratory of the United States Department of Energy, is "the nation's primary laboratory for renewable energy and energy efficiency research and development." NREL, Overview, http://www.nrel.gov/overview/ (last visited Apr. 22, 2011).

[158] Compaan Decl. at 1-2.

[159] Id. at 1.

[160] Petition at 71 (sponsored by Compaan Decl. at 1-2).

[161] Id. (sponsored by Compaan Decl at 1-2).

[162] Id. (sponsored by Compaan Decl. at 1-2)

[163] Id. at 28-29 (quoting id., Attach. 49, Press release from FirstEnergy Corp., FirstEnergy Acquires Rights to Norton Energy Storage Project (Nov. 23, 2009)).

the ER. For example, Joint Petitioners cite the following:

i) A June 2010 NREL technical report that shows the offshore wind potential for the United States.[164] Joint Petitioners allege this study shows that, within FirstEnergy's region of interest, "there is a total resource of 155.5 gigawatts (GW) of offshore and deepwater wind alone (within 50 nautical miles)."[165]

ii) A January 2010 NREL study, from which the Joint Petitioners quote:

> "Greatly expanded use of wind energy has been proposed to reduce dependence on fossil and nuclear fuels for electricity generation. The large-scale deployment of wind energy is ultimately limited by its intermittent output and the remote location of high-value wind resources, particularly in the United States. Wind energy systems that combine wind turbine generation with energy storage and long-distance transmission may overcome these obstacles and provide a source of power that is functionally equivalent to a conventional baseload electric power plant. A 'baseload wind' system can produce a stable, reliable output that can replace a conventional fossil or nuclear baseload plant, instead of merely supplementing its output. This type of system could provide a large fraction of a region's electricity demand, far beyond the 10-20% often suggested as an economic upper limit for conventional wind generation deployed without storage."[166]

iii) A 2007 Stanford University study entitled "Supplying Baseload Power and Reducing Transmission Requirements by Interconnected Wind Farms."[167] The Joint Petitioners quote from this study as follows:

> "A solution to improve wind power reliability is interconnected wind power. In other words, by linking multiple wind farms together it is possible to improve substantially the overall performance of the interconnected system (i.e., array) when compared with that of any individual wind farm."[168]

The Joint Petitioners quote as the study's conclusion: "'Contrary to common knowledge, an

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[164] Id. at 51-52 (citing id., Attach. 33, Marc Schwartz et al., Assessment of Offshore Wind Energy Resources for the United States (June 2010)).

[165] Id. at 52 (citing Schwartz et al., supra note 164, at 3 tbl.1).

[166] Id. at 38-39 (quoting id., Attach. 20, National Renewable Energy Laboratory, United States Department of Energy, Creating Baseload Wind Power Systems (Oct. 3, 2006)).

[167] Id. at 40 (citing id., Attach. 21, Cristina L. Archer & Mark Z. Jacobson, Supplying Baseload Power and Reducing Transmission Requirements by Interconnecting Wind Farms, 46 J. of Appl. Meteorol. & Clim. 1701 (Feb. 2007)).

[168] Id. (quoting Archer et al., supra note 167, at 1702).

average of 33% and a maximum of 47% of yearly averaged wind power from interconnected farms can be used as reliable, baseload electric power.'"[169]

iv) A press release announcing FirstEnergy's acquisition of rights to the Norton Energy Storage Project in Ohio.[170] Joint Petitioners contend that "wide-scale installation of solar power combined with a storage facility such as the Norton Project, already acquired by First Energy, is a very viable alternative to the license extension for 20 more years of operation of the Davis-Besse nuclear facility."[171] The Joint Petitioners quote the press release's statement that the former limestone mine "'is ideal for energy storage technology.'"[172] Anthony J. Alexander, president and chief executive officer of FirstEnergy, is quoted in the press release as stating:

> "The compressed-air technology envisioned at this site would essentially operate like a large battery, storing energy at night for use during the day when it is needed . . . . Because many renewable energy sources—such as wind—are intermittent, they don't always produce power when electricity demand is high. The energy storage aspects of this project would provide a way to harness renewable energy to be used when customers need it, making this project a key component to our region's overall renewable energy strategy."[173]

v) Lastly, a study prepared for the Department of Energy Office of Energy Efficiency and Renewable Energy, Wind and Water Power Program.[174] Joint Petitioners quote this study as stating that:

> "[O]ffshore wind resource data for the Great Lakes, U.S. coastal waters, and Outer Continental Shelf [including off of New Jersey's coast] up to 50 nautical miles from shore indicate that for annual average wind speeds above 8.0 m/s, the total gross resource of the United States is 2,957 GW or approximately three times the

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[169] Id. (quoting Archer et al., supra note 167, at 1716).

[170] Id. at 29, 88 (citing id., Attach. 54, FirstEnergy Acquires Rights to Norton Energy Storage Project, Nov. 23, 2009 [hereinafter FirstEnergy Acquires Rights to Norton]).

[171] Id. at 89.

[172] Id. at 88 (quoting FirstEnergy Acquires Rights to Norton, supra note 170, at 1).

[173] FirstEnergy Acquires Rights to Norton, supra note 170, at 1.

[174] Petition at 59 (citing id., Attach. 42, Jacques Beaudry-Losique, et al., Creating an Offshore Wind Industry in the United States: A Strategic Work Plan for the United States Department of Energy, Fiscal Years 2011-2015 (Sept. 2, 2010) (predecisional draft)).

> generating capacity of the current U.S. electric grid. . . . The scale of this theoretical capacity implies that under reasonable economic scenarios, offshore wind can contribute to the nation's energy mix to significant levels."[175]

This study refers to land-based and shallow water offshore wind platforms as "Commercially Proven Technologies."[176]

Although many of the Joint Petitioners' exhibits do not specifically address FirstEnergy's region of interest, we find that they have provided the required "alleged facts" and "minimal" factual support for admitting a challenge which questions the sufficiency of the ER's examination of wind power, solar photovoltaic power, and a combination of both as alternatives to relicensing Davis-Besse.

Section 2.309(f)(1)(vi) requires a showing that a genuine dispute exists with the applicant on a material issue of law or fact. FirstEnergy and the NRC Staff argue that Joint Petitioners do not show a genuine dispute under 10 C.F.R. § 2.309(f)(1)(vi) because an energy source must be single and discrete to be a reasonable alternative, and interconnected wind farms, renewable energy with storage, and a combination of wind and solar power are not single and discrete.[177] The Applicant and NRC Staff cite the GEIS[178] for the proposition that "a reasonable alternative energy source must . . . be a single, discrete electric generation source."[179]

During oral argument the NRC Staff conceded that this portion of the GEIS has not been converted into a regulation and is therefore not binding on the Board.[180] Indeed, the NRC Staff stated recent NRC environmental impact documents review wind and solar in combination with

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[175] Id. at 59-60 (quoting Beaudry-Losique, et al., supra note 174, at 3 (emphasis by Joint Petitioners omitted)).

[176] Beaudry-Losique, et al., supra note 174, at 21.

[177] FirstEnergy Answer at 27.

[178] GEIS, NUREG-1437, Vol. 1, § 8.1.

[179] FirstEnergy Answer at 54, accord NRC Staff Answer at 43.

[180] Tr. at 50-52.

fossil fuel as a reasonable alternative.[181] The Supreme Court has recognized that the concept of "alternatives" evolves, and agencies must explore alternatives as they become better known and understood.[182] The GEIS is not binding law and its statements concerning the practicality of multiple alternative sources have not been revised in 15 years. The NRC is in the process of amending its environmental protection regulations by updating its 1996 findings on the environmental impacts related to the renewal of a nuclear power plant's operating license.[183] We are not persuaded that, as a matter of law, a distributed combination of wind farms, solar arrays, and compressed air energy storage (CAES) could not constitute a reasonable alternative.

In addition, the NRC Staff argues that Joint Petitioners have not shown "a genuine dispute with the ER's conclusion that solar power and wind power cannot replace Davis-Besse as a source of 910 MWe of baseload power by the commencement of the relicensing period, 2017."[184] Making the same argument, FirstEnergy contends that Joint Petitioners do not show a genuine dispute because they "have not shown that baseload wind and solar power is technically feasible or commercially viable now or in the immediate future."[185] A baseload power source, as the NRC Staff explains, "runs continuously to produce electricity at an essentially constant rate in order to satisfy all or part of the minimum, or base, system load."[186] Baseload generation is different than

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[181] See Tr. at 113-114. The NRC Staff considered "a combination of alternatives that includes natural gas combined-cycle generation, energy conservation/energy efficiency, and wind power" for several recent license applications. See, e.g., Office of Nuclear Reactor Regulation, Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants: Regarding Hope Creek Generating Station and Salem Nuclear Generating Station, Units 1 and 2, NUREG-1437, Supp. 45, at iii (Mar. 2011).

[182] Vermont Yankee v. NRDC, 435 U.S. 519, 553 (1978).

[183] 74 Fed. Reg. 38117 (July 31, 2009).

[184] NRC Staff Answer at 16 (internal footnote omitted).

[185] FirstEnergy Answer at 4.

[186] NRC Staff Answer at 16 n.26 (citing U.S. Energy Information Administration, Overview - Generating Capability/Capacity, http://www.eia.doe.gov/cneaf/electricity/page/prim2/chapter2.html (last visited Apr. 22, 2011)).

peaking power, which provides supplemental power during hours of the day when demand is highest.[187] However, Joint Petitioners dispute the ER by claiming that interconnectedness and energy storage allow wind and solar power to provide baseload power and proffer expert support and specific references to support this claim, as discussed above. Joint Petitioners have submitted numerous exhibits and a declaration that purport to demonstrate that within the foreseeable future, an environmentally superior alternative of wind, solar or wind and solar baseload power may be technically feasible and commercially viable. We need not address the merits issue here. Further, as stated in Carolina Environmental Study Group v. United States[188] there exists an obligation to consider alternatives "as they exist and are likely to exist."[189]

FirstEnergy and the NRC Staff's remaining arguments against admissibility of Contentions One, Two and Three are not persuasive. First, the NRC Staff interprets Contention Three to contend that FirstEnergy omitted any discussion of a combination of wind and solar power and argue the contention is not admissible "because the information Joint Petitioners allege as omitted is in fact included in the Application."[190] However, it appears to this Board that Joint Petitioners' contention posits that FirstEnergy should have identified a combination of wind and solar power as a reasonable alternative and analyzed it as such.[191] Accordingly, we do not agree that Contention Three should be viewed as a contention of omission.

Second, in challenging admissibility, the Applicant and the NRC Staff conflate the merits of the contention with the adequacy of its pleading. The Applicant states it "believes that various combinations of renewable and advanced energy resources with generation equivalent to that of

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[187] United States v. Cinergy Corp., 623 F.3d 455, 459-60 (7th Cir. 2010) (quoting Babcock & Wilcox Co. v. United Techs. Corp., 435 F. Supp. 1249, 1256 (N.D. Ohio 1977)).

[188] 510 F.2d 796 (D.C. Cir. 1975).

[189] Id. at 801.

[190] NRC Staff Answer at 40.

[191] See Petition at 97 (discussing the definition of "reasonable alternative" and concluding "[c]ommercial wind and solar photovoltaic fulfill all these criteria").

Davis-Besse are not reasonable alternatives to renewal of Davis-Besse's operating license"[192] and argues that "Contention 3 provides no information to show that a combination of wind and solar power could provide baseload power of this magnitude, or that this baseload generation would be technically feasible or commercially viable."[193] But this question of whether a combination of renewable energy sources constitutes a "reasonable" alternative is the very issue on which the Joint Petitioners seek a hearing. When a contention alleges the need for further study of an alternative, from an environmental perspective, "such reasonableness determinations are the merits, and should only be decided after the contention is admitted."[194] To be entitled to a hearing, Joint Petitioners need not demonstrate that they will necessarily prevail, but only that there is at least some minimal factual support for their position.

It is rarely appropriate to resolve complex, fact-intensive issues on the initial pleadings.[195] Thus, many of FirstEnergy and the NRC Staff's arguments improperly address the merits of the Joint Petitioners' contention, rather than whether Joint Petitioners have provided "'a minimal showing that material facts are in dispute, thereby demonstrating that an inquiry in depth is appropriate.'"[196]

We agree with the approach recently taken by the Licensing Board in the Seabrook

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[192] FirstEnergy Answer at 67 (quoting ER at 7.2-13).

[193] Id. at 66.

[194] Progress Energy Florida, Inc. (Levy County Nuclear Power Plant, Units 1 and 2), LBP-09-10, 70 NRC 51, 86 (2009), rev'd in part on other grounds, CLI-10-02, 71 NRC__, __ (slip op. at 1-2) (Jan. 7, 2010).

[195] Cf. Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC at __ (slip op. at 21, 23) (Mar. 26, 2010) [hereinafter Pilgrim II] (declining to uphold summary dismissal of contention involving "complex, fact-intensive issues" based on factors the board did not address and develop in the record).

[196] Final Rule, Rules of Practice for Domestic Licensing Proceedings – Procedural Changes in the Hearing Process, 54 Fed. Reg. at 33,171 (quoting Connecticut Bankers Ass'n v. Board of Governors, 627 F.2d 245, 251 (D.C. Cir. 1980)).

proceeding where a somewhat similar contention was admitted.[197] At this stage, it is sufficient for the Joint Petitioners to proffer some "minimal" factual support for their contention. This they have done and included both an expert's declaration and a number of alleged facts from scholarly sources.

Some of the Joint Petitioners' supporting references are said to suggest that alternative energy sources, like wind or solar could be a viable source of baseload power in the region by 2017.[198] Whether this is so remains to be seen. In the Board's view, however, Joint Petitioners have proffered sufficient "minimal" evidence to warrant further inquiry as to whether such alternatives might be "likely to exist" during the relevant time period.

Although the Petition is generally unfocused and includes numerous exhibits irrelevant and immaterial to this proceeding, buried within its first 100 pages and first 171 numbered paragraphs lies a single contention concerning reasonable alternatives to the relicensing application. As stated above, a contention must satisfy each element of Section 2.309(f)(1) to be admissible. We find the following contention, as narrowed by the Board,[199] meets the requirements of § 2.309(f)(1) and is therefore admissible:

> The FirstEnergy Nuclear Operating Company's Environmental Report fails to adequately evaluate the full potential for renewable energy sources, specifically wind power in the form of interconnected wind farms and/or solar photovoltaic power, in combination with compressed air energy storage, to offset the loss of energy production from Davis-Besse, and to make the requested license renewal action unnecessary. The FENOC Environmental Report (§ 7.2) treats all of the alternatives to license renewal except for natural gas and coal plants as unreasonable and does

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[197] Seabrook, LBP-11-02, 73 NRC at __ (slip op. at 19, 27).

[198] Tr. at 69-70, 75, 97, 109, 113.

[199] Having eliminated extraneous issues, we consolidate and rephrase Contentions One, Two, and Three to clarify their scope. See, e.g., Southern Nuclear Operating Co. (Early Site Permit for Vogtle ESP Site), LBP-07-03, 65 NRC 237, 255 (2007) ("[E]xercising our authority under 10 C.F.R. §§ 2.316, 2.319, 2.329, we have acted to further define the Joint Petitioners[']admitted contentions when redrafting would clarify the scope of the contentions."); cf. Pennsylvania Power & Light Co. Allegheny Elec. Cooperative, Inc. (Susquehanna Steam Electric Station, Units 1 and 2), LBP-79-6, 9 NRC 291, 295-96 (1979) (holding that although a Licensing Board "is not required to recast contentions to make them acceptable," it is "also not precluded from doing so").

not provide a substantial analysis of the potential for significant alternatives in the Region of Interest.

B. Contention Four

Joint Petitioners' fourth contention concerns FirstEnergy's analysis of severe accident mitigation alternatives or "SAMAs."[200] SAMA analyses identify and assess possible plant changes—such as hardware modifications and improved training or procedures—that could cost-effectively reduce the radiological risk from a severe accident.[201] Cost-effective SAMA candidates are identified by comparing the annualized cost of the mitigation measure with the benefit as determined by the averted cost of severe accidents (consequences), as weighted by the probability of the accidents' occurrence.[202]

The regulation codifying the Commission's determination that the probability-weighted consequences of a severe accident (risk) are small in the context of a license renewal proceeding[203] cannot be challenged in this proceeding.[204] Although a petitioner cannot challenge that regulation, a petitioner may argue that potential reduction in the probability-weighted consequences of severe accidents is not small when compared to the cost of mitigation measures. The Commission's regulations permit rather than foreclose challenges to SAMA analyses.[205]

A SAMA analysis fulfills the requirement under NRC's NEPA-implementing regulation, 10

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[200] Petition at 100.

[201] Duke Energy Corp. (McGuire Nuclear Station, Units 1 and 2; Catawba Nuclear Station, Units 1 and1), CLI-02-17, 56 NRC 1, 5 (2002) [hereinafter McGuire/Catawba]; accord Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 28,467, 28,481 (June 5, 1996).

[202] McGuire/Catawba, CLI-02-17, 56 NRC at 4.

[203] 10 C.F.R. Part 51, subpt. A, app. B, tbl. B-1 ("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.").

[204] See 10 C.F.R. § 2.335(a) (providing that absent a waiver, no rule or regulation of the Commission is subject to challenge in an adjudicatory proceeding).

[205] Id. ("[A]lternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives." (citing 10 C.F.R. § 51.53(c)(3)(ii)(L))).

C.F.R. Part 51, to provide "a consideration of alternatives to mitigate severe accidents,"[206] and therefore is governed by NEPA's "rule of reason."[207] NEPA requires a "reasonably complete discussion of possible mitigation measures."[208] The "ultimate concern" in a SAMA contention "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."[209] Accordingly, a SAMA contention is admissible only if "it looks genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated."[210]

> Joint Petitioners allege in Contention Four that:
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> The Environmental Report (ER) is Inadequate Because It Underestimates the True Cost of a Severe Accident at Davis-Besse in Violation of 10 C.F.R. § 51.53(C)(3)(II)(L) and Further Analysis by the Applicant, [FirstEnergy], Is Called For.[211]

Joint Petitioners specify several factors, assumptions, and models[212] that allegedly have,

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[206] 10 C.F.R. § 51.53(c)(3)(ii)(L).

[207] McGuire/Catawba, CLI-02-17, 56 NRC at 7.

[208] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352 (1989).

[209] Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-09-11, 69 NRC 529, 533 (2009) [hereinafter Pilgrim I].

[210] Pilgrim II, CLI-10-11, 71 NRC at __ (slip op. at 39).

[211] Petition at 100.

[212] Joint Petitioners express Contention Four's bases as follows:

a. [FirstEnergy]'s use of probabilistic modeling underestimated the deaths, injuries, and economic impact likely from a severe accident by multiplying consequence values, irrespective of their amount, with very low probability numbers, the consequence figures appeared minimal.
b. Minimization of the potential amount of radioactive material released in a severe accident.
c. Use of an outdated and inaccurate proxy, the MACCS2 computer program, to perform its SAMA analysis.
d. Use of an inappropriate air dispersion model, the straight-line Gaussian plume, and meteorological data inputs that did not accurately predict the geographic dispersion and deposition of radionuclides at Davis-Besse's Great Lake shoreline location.

"individually and together with one or more of the others, improperly minimized costs likely to result in a severe accident."[213] Joint Petitioners contend that FirstEnergy's ER underestimates the cost of a severe accident and "incorrectly discounts possible mitigation alternatives" and that, as a result, "a potentially cost effective mitigation alternative might not be considered that could prevent or reduce the impacts of that accident."[214]

The NRC Staff argues that Joint Petitioners have not shown that the factors, assumptions, and models identified in Contention Four are material.[215] In addition, the NRC Staff challenges some subparts of the contention as outside the scope of the proceeding[216] and some as inadequately supported by alleged facts or expert opinion.[217] The NRC Staff concludes that, for these reasons, Contention Four should not be admitted.[218]

Similarly, FirstEnergy argues that Contention Four "lacks adequate support in the form of alleged facts or expert opinion" and raises issues outside the scope of this proceeding.[219] FirstEnergy argues also that Joint Petitioners do not attempt to meet the materiality standard and

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e. Use of inputs that minimized and inaccurately reflected the economic consequences of a severe accident, including decontamination costs, cleanup costs and health costs, and that either minimized or ignored a host of other costs.

f. Use of inappropriate statistical analysis of the data — specifically the Applicant chose to follow NRC practice, not NRC regulation, regarding SAMA analyses by using mean consequence values instead of, for example, 95 percentile values.

Id. at 104.

[213] Id. at 103.

[214] Id.

[215] NRC Staff Answer at 49.

[216] Id. at 51.

[217] E.g., id. at 58.

[218] See id. at 2.

[219] FirstEnergy Answer at 80.

that they ignore applicable precedent and pertinent factual information in the ER.[220] FirstEnergy concludes that "whether its subparts are viewed independently or cumulatively in combination with other subparts, Contention 4 should be rejected in its entirety for failing to meet the requirements of 10 C.F.R. § 2.309(f)(1)(iii)-(vi)."[221]

In the analysis that follows, the Board will identify issues that: (1) are outside the scope of this license renewal proceeding; (2) are not material; (3) are unsupported by alleged fact or expert support; or (4) fail to refer to the Application to show a genuine dispute. These issues will not be considered further in this proceeding. By eliminating these extraneous issues, we will have narrowed Contention Four down to its admissible core.[222]

1. Issues that are out of scope (Small impact of severe accidents; Spent fuel pool)

FirstEnergy and the NRC Staff argue that several of the issues Joint Petitioners attempt to raise in Contention Four are outside the scope of license renewal proceedings.[223] We agree, at least as to Joint Petitioners' challenges to (1) the Commission's determination that severe accident impacts are small[224] and (2) the Commission's exclusion of the irradiated nuclear fuel pool risk.[225]

First, as FirstEnergy and the NRC Staff have argued,[226] Joint Petitioners' claim that "the 'societal and economic impacts from severe accidents' are unlikely to be small for all plants and simply appear so by the use of methods that minimized consequences as set forth in this

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[220] Id. at 82-83.

[221] Id. at 70-71.

[222] Crow Butte, CLI-09-12, 69 NRC at 552 ("Our boards may reformulate contentions to 'eliminate extraneous issues or to consolidate issues for a more efficient proceeding.'" (quoting Shaw Areva, LBP-08-11, 67 NRC at 482)).

[223] FirstEnergy Answer at 80; NRC Staff Answer at 51.

[224] FirstEnergy Answer at 87-88; NRC Staff Answer at 57-58; see Petition at 105.

[225] FirstEnergy Answer at 92-95; NRC Staff Answer at 51-55; see Petition at 108-12.

[226] FirstEnergy Answer at 87-88; NRC Staff Answer at 57-58.

Motion"[227] is outside the scope of this proceeding because it directly challenges a Commission regulation. The statement challenges the agency regulation codifying the Commission's determination that, for any license renewal of a nuclear power plant, the probability-weighted consequences of a severe accident are small.[228] Unless a party first successfully petitions for a waiver or exception, it may not challenge Commission rules or regulations in an adjudicatory hearing.[229] Joint Petitioners have not petitioned for a waiver or exception to the small risk determination. Accordingly, the argument that severe accident risk is not small is in contravention of 10 C.F.R. § 2.309(f)(1)(iii) and so is outside the scope of this proceeding.

In addition, FirstEnergy interprets Joint Petitioners' assertion that FirstEnergy's "use of probabilistic modeling underestimated the true consequences of a severe accident"[230] as an argument that SAMAs "must ignore risk and focus only on accident consequences."[231] FirstEnergy asserts that such an argument "should be dismissed in its entirety"[232] as an impermissible challenge to NRC regulations outside the scope of an adjudicatory proceeding.[233] The NRC Staff similarly argues "Joint Petitioners' challenge to [FirstEnergy's] probabilistic approach in computing SAMAs is . . . outside the scope of the proceeding."[234] In their final revised reply, Joint Petitioners clarify that they are "not 'enemies' of probability determinations"[235] and "agree that probability must

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[227] Petition at 105.

[228] 10 C.F.R. Part 51, subpt. A, app. B, tbl. B-1.

[229] Id. § 2.335.

[230] Petition at 104.

[231] FirstEnergy Answer at 84-85.

[232] Id. at 86.

[233] Id. at 85 (citing 10 C.F.R. § 2.335).

[234] NRC Staff Answer at 83.

[235] Reply at 45.

be taken into consideration."[236] As clarified in the final revised reply, Joint Petitioners' argument is that FirstEnergy "has consistently underestimated risk in its SAMA calculations by inappropriately and improperly underestimating probability values" through "flawed models and methodologies."[237] As a consequence, we do not need to decide whether it would be out of scope to challenge the weighting of severe accident consequences by the probability of their occurrence in SAMA analyses, because Joint Petitioners have clarified that they are not arguing against probabilistic modeling in this proceeding.

Second, FirstEnergy and the NRC Staff argue Joint Petitioners have raised an out-of-scope issue[238] by arguing that the risk of "a severe accident in the irradiated nuclear fuel pool" should have been considered in the SAMA analysis.[239] FirstEnergy contends this issue "improperly challenges the Commission's generic determination in Part 51 that the impacts of on-site spent fuel storage are 'small.'"[240] The NRC Staff agrees that "this portion of Joint Petitioners' argument is inadmissible because it is . . . a direct attack on the Commission's regulations."[241]

The germane Commission regulation states that, for all plants, on-site dry or pool storage can "safely accommodate" spent fuel accumulated from a 20-year license extension with "small environmental effects," and categorizes on-site spent fuel as a Category 1 issue.[242] For Category 1 issues, mitigation of adverse impacts has already been generically analyzed and it has already been determined "that additional plant-specific mitigation measures are likely not to be sufficiently

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[236] Id. at 46.

[237] Id. at 45.

[238] FirstEnergy Answer at 92-93; NRC Staff Answer at 51-55.

[239] Petition at 108.

[240] FirstEnergy Answer at 92.

[241] NRC Staff Answer at 52.

[242] 10 C.F.R. Part 51, subpt. A, app. B, tbl. B-1.

beneficial to warrant implementation."[243] Since Joint Petitioners have not obtained a waiver or exception to this regulation, their challenge to this rule is outside the scope of this license renewal proceeding.[244] Accordingly, spent fuel pool risk is extraneous to Joint Petitioners' SAMA contention.[245]

Because spent fuel pool risk is outside the scope of SAMA analyses, we do not reach Joint Petitioners' argument that Davis-Besse's irradiated fuel storage pools contain a larger inventory of radioactive materials than its reactor core.[246] For the same reason, we need not address Joint Petitioners' interpretation of Sections 5 and 6 of the GEIS as including the irradiated nuclear fuel pool in SAMA analyses,[247] except to note that the Commission has rejected this very argument.[248]

2. Issues that are not material (Sabotage risk; Quality assurance)

FirstEnergy and the NRC Staff also assert that some issues raised in Contention Four are not material to the findings NRC must make to support the requested license renewal. We agree, at least as to the treatment of the risk of sabotage and the quality assurance standards applied to the MACCS2 code. In section III(B)(5) below, we address—with reference to the potentially admissible core of this SAMA contention—FirstEnergy and the NRC Staff's arguments that the

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[243] Id. at tbl. B-1, n.2.

[244] See 10 C.F.R. § 2.335; see also Turkey Point, CLI-01-17, 54 NRC at 23 (holding "Part 51's license renewal provisions cover environmental issues relating to onsite spent fuel storage generically" and "[a]ll such issues, including accident risk, fall outside the scope of license renewal proceedings.").

[245] See Pilgrim II, CLI 10-11, 71 NRC at __ (slip op. at 33) (stating that claim that "SAMA analysis is deficient for failing to address potential spent fuel pool accidents" falls "beyond the scope of NRC SAMA analysis and impermissibly challenges [Commission] regulations").

[246] Petition at 112.

[247] Id. (referring to GEIS, NUREG-1437, Vol. 1, §§ 5, 6).

[248] Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC __, __ (slip op. at 34) (June 17, 2010) [hereinafter Pilgrim III] (clarifying that "[c]hapter six clearly is not limited to discussing only 'normal operations,' but also discusses potential accidents and other non-routine events," and that "[t]he Category 1 finding for onsite spent fuel storage (and chapter six of the GEIS upon which the finding is based) is not limited to routine or 'normal operations'" (citing GEIS, NUREG-1437, Vol. 1, at 6-19, 6-21, 6-28, 6-31, 6-34)).

entire contention is inadmissible for lack of a showing that the refinements in question might make an additional SAMA candidate cost-effective.

First, the Applicant argues that Joint Petitioners' "claims regarding the need to address intentional acts in a SAMA analysis . . . do not raise a material issue,"[249] and the NRC Staff agrees.[250] Joint Petitioners charge FirstEnergy with failing "to model intentional acts in its analysis of external events"[251] and state that "intentional acts represent a class of accidents that should not be considered using probabilistic modeling."[252] However, as the Commission recently reiterated, "NEPA 'imposes no legal duty on the NRC to consider intentional malevolent acts . . . in conjunction with commercial power reactor license renewal applications.'"[253] Therefore, we conclude that intentional malevolent acts, such as sabotage and terrorism, are not material to the SAMA findings the NRC must make in deciding whether to extend the Davis-Besse license, in contravention of 10 C.F.R. § 2.309(f)(1)(iv).

Second, Joint Petitioners failed to show how their claim that the MACCS2 code "is not QA'd" is material.[254] Joint Petitioners assert MACCS2 was developed using "the less rigorous QA guidelines of ANSI/ANS 10.4" instead of being "held to the QA requirements of NQA-a."[255] FirstEnergy points out that appendix B to 10 C.F.R. Part 50 requires quality assurance, but only for safety-related functions of structures, systems, and components and not for NEPA analyses.[256]

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[249] FirstEnergy Answer at 87.

[250] NRC Staff Answer at 55-56.

[251] Petition at 108.

[252] Id. at 107.

[253] Pilgrim III, CLI-10-14, 71 NRC at __ (slip op. at 37) (quoting AmerGen Energy Co., LLC (Oyster Creek Nuclear Generation Station), CLI-07-8, 65 NRC 124, 129 (2007)).

[254] Petition at 115.

[255] Id.

[256] FirstEnergy Answer at 101.

SAMA analyses are required pursuant to NEPA.[257] FirstEnergy admonishes Joint Petitioners for not explaining why a computer code used to evaluate SAMAs would need to meet quality assurance requirements.[258] We agree that Joint Petitioners have not demonstrated that the issue of whether the MACCS2 was "QA'd" is material to the findings the NRC must make under NEPA to support the requested license extension, as required by 10 C.F.R. § 2.309(f)(1)(iv).

3. Issues that are not supported by alleged facts or expert opinion (Indoor dose; Forest, wetland, and shoreline clean up; Stigma costs; Economic infrastructure costs; Multiplier effect; Evacuation time input data; "Myriad of other economic costs"; Terrain effects on dispersion; $2,000/person-rem conversion factor; Consequence value uncertainties)

FirstEnergy and the NRC Staff argue that Joint Petitioners have failed to provide alleged facts or expert opinions to support several of the claims they make in Contention Four. In one instance, FirstEnergy and the NRC Staff note that Joint Petitioners "provide no alleged facts or expert opinion to support" their claim that "if properly modeled, the indoor dose would increase by a factor" of 2 to 4.[259] In a second instance, FirstEnergy[260] and the NRC Staff[261] argue that Joint Petitioners do not provide facts or expert support for their assertion that FirstEnergy's analysis should have considered that "forests, wetlands and shorelines cannot realistically be cleaned up and decontaminated."[262] Next, the NRC Staff argues Joint Petitioners have not supported their claim that "the 'economic losses stemming from the stigma effects of a severe accident [at Davis-Besse] would be staggering.'"[263] The NRC Staff also faults Joint Petitioners for not providing facts or expert support for their claim that the ER should have discussed economic infrastructure costs

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[257] 10 C.F.R. §§ 51.1(a), 51.53(c)(3)(ii)(L).

[258] FirstEnergy Answer at 101.

[259] Id. at 103; NRC Staff Answer at 61; see Petition at 116.

[260] FirstEnergy Answer at 118.

[261] NRC Staff Answer at 73.

[262] Petition at 138.

[263] NRC Staff Answer at 74 (quoting Petition at 141).

and indirect economic effects ("multiplier effects").[264] FirstEnergy and the NRC Staff argue also that Joint Petitioners did not provide alleged facts or expert opinion[265] to support their argument that FirstEnergy's "evacuation time input data" was "unrealistically low and unsubstantiated" because it did not account for certain traffic, weather, and human behavior effects.[266] Finally, the NRC Staff argues[267] that Joint Petitioners do not provide any facts or expert opinion to support their claim that "a myriad of other economic costs were underestimated or totally ignored."[268] We agree that Joint Petitioners do not provide any alleged facts or expert opinion to support any of these claims, as required by 10 C.F.R § 2.309(f)(1)(v).

The NRC Staff argues also that Joint Petitioners have also failed to support their claim regarding complex terrain.[269] Joint Petitioners argue that the Gaussian plume model FirstEnergy used to model atmospheric dispersion is not appropriate[270] because, among other reasons, it does not model the impact of terrain on "wind field patterns and plume dispersion."[271] The NRC Staff notes that although Joint Petitioners provide studies "that suggest a user should employ caution when relying on a Gaussian plume model in areas with complex or varied terrain," they "have not shown that Davis-Besse is surrounded by complex terrain."[272] Joint Petitioners claim the Cuyahoga River Valley is "one example of the complex topographical features in Davis-Besse's

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[264] Id. (citing Petition at 141-42).

[265] FirstEnergy Answer at 129; NRC Staff Answer at 78.

[266] Petition at 147.

[267] NRC Staff Answer at 148.

[268] Petition at 148.

[269] NRC Staff Answer at 66.

[270] Petition at 116.

[271] Id. at 122.

[272] NRC Staff Answer at 62.

region,"[273] but do not provide any alleged facts or expert support indicating that this river valley is within the geographical area for which FirstEnergy was required to model atmospheric dispersion. We agree that the Joint Petitioners have not supported their terrain claim with alleged facts or expert opinion, as required by 10 C.F.R. § 2.309(f)(1)(v).

Joint Petitioners' challenge of the $2,000/person-rem conversion factor is inadmissible because it too lacks support. They make three arguments to establish that the $2,000/person-rem factor is "based on a deeply flawed analysis and seriously underestimates the cost of the health consequences of severe accidents."[274]

First, Joint Petitioners point out the conversion factor represents "only stochastic health effects (e.g., cancer)" and argue "it is inappropriate to use a conversion factor that does not include deterministic effects."[275] Joint Petitioners instead recommend summing the total number of early fatalities and latent cancer fatalities and multiplying by the $3 million value of a statistical life.[276] The NRC Staff argues that this argument "offers only an unsupported assertion" because Joint Petitioners "offer no estimate" of the "large number of early fatalities" they assert should be part of the analysis.[277] Joint Petitioners do provide an estimate of 1,400 early fatalities and 73,000 early injuries, citing a document they refer to as "CRAC-2, Calculation of Reactor Accident Consequences, U.S. Nuclear Power Plants, Sandia National Laboratory, 1982."[278] FirstEnergy asserts, however, that it "has been unable to locate a document with this title, author, and date that is readily available in the public domain" and point out that Joint Petitioners did not submit this

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[273] Petition at 134 (citing id., Attach. 70, Website of National Park Service, U.S. Department of the Interior, Cuyahoga Valley National Park).

[274] Id. at 142-43.

[275] Id. at 144.

[276] Id. at 145.

[277] NRC Staff Answer at 75-76.

[278] Petition at 146.

document as an attachment to the Petition.[279] The NRC Staff assert they also "weren't able to locate it based on [Joint Petitioners'] representation of it."[280] Joint Petitioners respond that the document is "a well known report within the nuclear power establishment" and "is an NRC document,"[281] but admitted at oral argument that they "only cite it by name" and "may not have gotten the title correct."[282] We thus conclude that Joint Petitioners do not provide alleged facts or expert opinion indicating that a severe accident at Davis-Besse might have deterministic effects, such as early fatalities or early injuries, that FirstEnergy did not account for in its SAMA analysis.

Second, Joint Petitioners further contend that the $2,000/person-rem conversion factor "assumes that all exposed persons receive dose commitments below the threshold at which the dose and dose-rate reduction factor . . . should be applied."[283] However, Joint Petitioners do not support their assertions about dose and dose-rate reduction factors with any alleged facts or expert support.

Third, Joint Petitioners argue that FirstEnergy's $2000/person-rem conversion analysis "ignored a marked increase in the value of cancer mortality risk per unit of radiation at low doses (2-3 rem average)," and cite two articles in support.[284] At oral argument, Joint Petitioners explained that "the person-rem conversion factor needs to undergo reevaluation," because "at low doses of radiation, there is a supra-linear harm caused to people."[285] However, neither of the

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[279] FirstEnergy Answer at 128.

[280] Tr. at 220.

[281] Reply at 72.

[282] Tr. at 217-18.

[283] Petition at 144-45.

[284] Id. at 146 (citing E. Cardis, et al., Risk of Cancer After Low Doses of Ionising Radiation: Retrospective Cohort Study in 15 Countries, 331 Brit. Med. J. 77 (July 4, 2005) and L. Yu. Krestinina, et al., Protracted Radiation Exposure and Cancer Mortality in the Techa River Cohort, 164 Radiation Res. 602 (2005)).

[285] Tr. at 209.

articles cited in the Petition indicate there is a supra-linear relationship between dose and risk at low doses. The first article, entitled "Risk of Cancer After Low Doses of Ionising Radiation: Retrospective Cohort Study in 15 Countries," estimates that the risk to nuclear industry workers at low doses is "higher than, but statistically compatible with, the current bases for radiation protection standards."[286] The second article, entitled "Protracted Exposure and Cancer Mortality in the Techa River Cohort," estimated "the slope of the dose response for both solid cancer and leukemia" in its subject population and concluded there was "no indication of significant curvature."[287] In short, the alleged facts and expert opinion the Joint Petitioners proffer do not provide support for their challenge to the $2,000/person-rem conversion factor.

Joint Petitioners' final unsupported claim is their assertion that FirstEnergy "fails to consider the uncertainties in its consequence calculation."[288] They assert that meteorological variations cause uncertainties in estimates of population dose, fatalities, and offsite economic costs[289] and criticize FirstEnergy for "inadequately dealing with" uncertainty in its ER.[290] The ER explains that

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[286] Cardis et al., supra note 284, at 5.

[287] Krestinina et al., supra note 284, at 608. At oral argument, the Joint Petitioners argued that the BEIR VII Report by the National Academy of Sciences shows the supra-linear dose-risk relationship is not reflected in the $2,000/person-rem conversion factor. Tr. at 209. The Joint Petitioners cited this report in the Petition, but not as support for the supra-linear relationship claim. Petition at 146-147. Instead, they cited the report to support their statement that cancer incidence and the other "potential health effects from exposure to radiation in a severe radiological event" should have been considered but were not, id., confusingly contradicting their earlier statement that the $2,000/person-rem conversion accounts for stochiastic health effects. Id. at 144. The Joint Petitioners have never directed our attention to a specific page or section of the BEIR VII Report, which is over 400 pages long. Committee to Assess Health Risks from Exposure to Low Levels of Ionizing Radiation, National Research Council, Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2 (2006). Board members are not required to comb through the record seeking support for contentions. Florida Power & Light Co. (Turkey Point Units 6 and 7), LBP-11-06, 73 NRC __, __ (slip op. at 109 n.111) (Feb. 28, 2011) (citing SmithKline Beecham Corp. v. Apotex Corp., 439 F.3d 1312, 1320 (Fed. Cir. 2006)). We decline to unearth support in this report for a proposition for which it was not even cited as authority in the Petition.

[288] Petition at 148.

[289] Id. at 148-49.

[290] Id. at 149.

no explicit uncertainty analysis was performed because "the number of conservative assumptions and inputs" in the SAMA analysis "account for any uncertainties in the calculations" and because "sensitivity cases . . . showed the robustness of the SAMA cost-benefit evaluation."[291] Hence the ER does not report any consequences at the mean or 95th percentile values, but rather presents "conservative" point values. Joint Petitioners, however, criticize FirstEnergy for "using mean consequence values instead of, for example, 95 percentile values"[292] and complain also that FirstEnergy "has unconvincingly performed suspect sensitivity analyses."[293] FirstEnergy and the NRC Staff argue that Joint Petitioners have not provided alleged facts or expert support for their claim about uncertainty.[294] We agree. Although Joint Petitioners refer to two documents indicating uncertainties can arise in probabilistic risk assessment,[295] neither of these citations show that FirstEnergy's sensitivity cases and conservative assumptions and inputs were inadequate for dealing with uncertainty.[296] Accordingly, Joint Petitioners' claim about uncertainty in the consequence calculation is not supported by alleged facts or expert opinion.

In summary, for the reasons outlined above, we conclude that Joint Petitioners have failed to provide alleged facts or expert opinion to support their claims pursuant to 10 C.F.R.

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[291] ER at E-70.

[292] Petition at 148 (capitalization omitted).

[293] Id. at 149.

[294] FirstEnergy Answer at 131; NRC Staff Answer at 85-86.

[295] Petition at 148-49 (citing Edwin S. Lyman, A Critique of the Radiological Consequence Assessment Conducted in Support of the Indian Point Severe Accident Mitigation Alternatives Analysis at 4 (Nov. 2007) (Accession No. ML 073410093) and quoting Kamiar Jamali, Use of Risk Measures in Design and Licensing of Future Reactors, Reliability Eng'g & Safety Sys. 95 at 935-36 (2010)).

[296] The Commission has suggested that a petitioner may question the "practice for SAMA analysis to utilize mean consequence values, which results in an averaging of potential consequences." Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station), CLI-10-22, 72 NRC __, __ (slip op. at 8 n.34) (Aug. 27, 2010). However, a petitioner must support such a challenge with alleged facts or expert opinion. 10 C.F.R. § 2.309(f)(1)(v).

§ 2.309(f)(1)(v) regarding: (1) indoor dose; (2) forest, wetland, and shoreline clean up; (3) stigma costs; (4) economic infrastructure costs; (5) multiplier effect; (6) evacuation times; (7) "myriad" other economic costs; (8) terrain effects; (9) the $2,000/person-rem conversion factor; and (10) consequence value uncertainties.

4. Issues that do not dispute the Application (Fire hosing and plowing)

Joint Petitioners' criticism of fire hosing and plowing decontamination methods[297] do not dispute the Application's SAMA analysis. FirstEnergy points out that Joint Petitioners quote language from the MACCS2 User's Guide that states that the code is made more conservative by its assumption that farmlands are decontaminated using these methods.[298] The MACCS2 User's Guide explains that the code assumes these surface-washing methods might not move contamination out of the root zone, where radioactivity could be taken up into crops.[299] Thus, the guide concludes, the code assumes that these methods would not reduce ingestion doses although they would reduce direct exposure doses to farmers.[300] And for their part the Joint Petitioners do not explain how the MACCS2 codes assumption about fire hosing and plowing could have caused FirstEnergy to underestimate the cost of a severe accident. Accordingly, Joint Petitioners' fire hosing and plowing claims do not dispute the Application. We will not consider these claims further, because they do not satisfy 10 C.F.R. § 2.309(f)(1)(vi).

5. Admissible contention as narrowed by the Board

Having eliminated the extraneous issues, we look next at issues that we find ultimately provide an admissible core for Contention Four. Using the Joint Petitioners' own words whenever possible, we recast Contention Four as follows:

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[297] Petition at 136, 138.

[298] FirstEnergy Answer at 117-18 (citing Petition at 136 (quoting D. Chanin & M.L. Young, Code Manual for MACCS2; User's Guide, NUREG/CR-6613, Vol. 1, at 7-10 (May 1998) (ADAMS Accession No. ML063550020) [hereinafter MACCS2 User's Guide, NUREG/CR-6613, Vol. 1])).

[299] MACCS2 User's Guide, NUREG/CR-6613, Vol. 1, at 7-10.

[300] Id.

"The Environmental Report (ER) is inadequate because it underestimates the true cost of a severe accident at Davis-Besse in violation of 10 C.F.R. § 51.53(C)(3)(II)(L) [sic] and Further Analysis by the Applicant, [FirstEnergy], is called for"[301] because of:

(1) "Minimization of the potential amount of radioactive material released in a severe accident"[302] by "using a source term . . . based on radionuclide release fractions . . . which are smaller for key radionuclides than the release fractions specified in NRC guidance";[303]

(2) "Use of an inappropriate air dispersion model, the straight-line Gaussian plume,"[304] that "does not allow consideration for the fact that winds for a given time period may vary spatially, . . . ignores the presences of Great Lakes 'sea breeze' circulations which dramatically alter air flow patterns,"[305] fails to account for "hot spots of radioactivity" caused by "plumes blowing . . . offshore over Lake Erie,"[306] and is based on "meteorological inputs . . . collected from just one site — at Davis-Besse itself;"[307] and

(3) Use of "inputs that minimized and inaccurately reflected the economic consequences of a severe accident,"[308] specifically particle size and clean-up costs for urban areas.

a. Source terms

Joint Petitioners contend that using a source term generated by the Modular Accident Analysis Progression code (MAAP code)—as FirstEnergy did—"appears to lead to anomalously low consequences when compared to source terms generated by the NRC staff."[309] Joint Petitioners allege that the MAAP code generates source terms that "are consistently smaller for key radionuclides than the release fractions specified in NUREG-1465 and its recent revision for

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[301] Petition at 100.

[302] Id. at 104.

[303] Id. at 108.

[304] Id. at 104.

[305] Id. at 119.

[306] Id. at 121.

[307] Id. at 125.

[308] Id. at 104.

[309] Id. at 114.

high-burnup irradiated nuclear fuel."[310]

Joint Petitioners support their source-term claim by quoting a published draft of NUREG-1150 in which the NRC observed, in the context of the Zion Nuclear Power Plant, that "comparisons made between the Source Term Code Package results and MAAP results indicated that the MAAP estimates for environmental release fractions were significantly smaller."[311] Joint Petitioners also quote a Brookhaven National Laboratory study that determined that dose results reported by the applicant for license renewal at the Catawba and McGuire Plants were "less by a factor between 3 and 4" than those calculated consistent with NUREG-1150.[312] The NRC Staff recognizes that "Joint Petitioners have provided some support for the argument that MAAP may lead to lower consequences when compared to source terms generated by NRC Staff."[313]

Nevertheless, the NRC Staff argues that "Joint Petitioners' reliance on NUREG-1465 is unavailing."[314] FirstEnergy agrees, asserting that "reference to NUREG-1465 . . . provides no factual or technical support for the contention."[315] FirstEnergy distinguishes "the release of radionuclides into containment," which is addressed in NUREG-1465, from "the release of

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[310] Id. at 112 (referring to L. Soffer et al., Accident Source Terms for Light-Water Nuclear Power Plants, NUREG-1465 (Feb. 1995) (ADAMS Accession No. ML041040063) [hereinafter NUREG-1465]).

[311] Id. at 114 (quoting Office of Nuclear Regulatory Research, Draft for Comment, Reactor Risk Reference Document, NUREG-1150, Vol. 1, at 5-14 (Feb. 1987) (ADAMS Accession No. ML063540601)) [hereinafter Draft NUREG-1150] (capitalization altered by Joint Petitioners). The draft of NUREG-1150 states that the Source Term Code Package is described in NUREG-0956. Draft NUREG-1150 at ES-3 (citing M. Silverberg, et al., Reassessment of the Technical Bases for Estimating Source Terms, NUREG-0956 (July 1986) (ADAMS Accession No. ML063550025)).

[312] Id. at 113 (quoting John R. Lehner, et al., Brookhaven National Laboratory, Benefit Cost Analysis of Enhancing Combustible Gas Control Availability at Ice Condenser and Mark III Containment Plants at 17 (Dec. 2002) (ADAMS Accession No. ML031700011)).

[313] NRC Staff Answer at 80.

[314] Id.

[315] FirstEnergy Answer at 95.

radionuclides into the environment during a severe accident," which SAMA analyses model.[316] This technical argument, from the Board's perspective, warrants exploration in further adjudicatory proceedings, so as to avoid addressing the merits of the contention at the contention-admissibility stage of this proceeding.

FirstEnergy points out that the ER presents "[t]he release categories and their frequencies" in Section E.3.4.5 and Table E.3-20 and chides Joint Petitioners for not challenging the SAMA analysis with "any particularity."[317] However, Joint Petitioners cite pages of the ER that state that FirstEnergy used source terms generated by the MAAP code,[318] thereby demonstrating that Joint Petitioners have a genuine dispute with the Application.

FirstEnergy and the NRC Staff also point out that the Licensing Board presiding over the Indian Point license renewal case rejected a similar contention,[319] and FirstEnergy notes "the widespread use and acceptance of the MAAP code in the nuclear industry."[320] Joint Petitioners respond to the first point by arguing that a decision holding that the source term issue was not part of a contention in another proceeding "has nothing to do with whether the issues that are raised by the Joint Petitioners here must be considered."[321] They address the second point by asserting that "[j]ust because MAAP is broadly used does not necessarily mean that it is free from the flaws . . . allege[d]."[322] The Indian Point decision has persuasive rather than binding authority on us, and MAAP's widespread use does not immunize it from being challenged by a properly pled contention.

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[316] Id. (quoting NUREG-1465, at 1) (emphasis in original); accord NRC Staff Answer at 80 (quoting NUREG-1465, at 1).

[317] FirstEnergy Answer at 97.

[318] Petition at 113 (citing ER § 4.20-1, E-17).

[319] FirstEnergy Answer at 97; NRC Staff Answer at 81.

[320] FirstEnergy Answer at 98.

[321] Reply at 32.

[322] Id. at 54.

FirstEnergy and the NRC Staff further contend that the source term argument,[323] indeed the entire SAMA analysis contention,[324] is inadmissible because Joint Petitioners have not shown it is material to the findings the NRC must make to support the requested license renewal. To be material, a SAMA contention must show that "it looks genuinely plausible that inclusion of an additional factor or use of other assumptions or models may change the cost-benefit conclusions for the SAMA candidates evaluated."[325]

FirstEnergy articulates a materiality standard that would require an expert affidavit and a showing that the cost-benefit conclusions for SAMA candidates would change. FirstEnergy asserts "a petitioner must provide adequate support to show that additional SAMA should have been identified as potentially cost-beneficial."[326] At oral argument, FirstEnergy asserted the materiality standard was "whether it would genuinely cause a change in a SAMA, identification of a SAMA, or in the ultimate cost-benefit analysis."[327] FirstEnergy implied at oral argument that a petitioner would need an expert affidavit to meet the "genuinely plausible" standard because SAMA analyses are "very specialized, detailed, probabilistic analyses and require some familiarity with the MACCS2 code in order to understand why" revised factors, models, or assumptions "could potentially have a change without running the model."[328] We believe FirstEnergy has exaggerated the materiality standard, which requires only that petitioners "provide sufficient information to show that, if their proposed refinements were incorporated, it is 'genuinely plausible' that cost-benefit

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[323] FirstEnergy Answer at 97 (remonstrating Joint Petitioners for having "provided no facts or expert opinion to establish that . . . the use of alternative source terms would have resulted in the identification of additional potentially cost-beneficial SAMAs for Davis-Besse"); NRC Staff Answer at 81 (". . . Joint Petitioners have not established that . . . the use of another source term would identify additional cost beneficial SAMAs." (citing Pilgrim I, CLI-09-11, 69 NRC at 533)).

[324] FirstEnergy Answer at 82; NRC Staff Answer at 49.

[325] Pilgrim II, CLI-10-11, 71 NRC at __ (slip op. at 39) (emphasis added).

[326] FirstEnergy Answer at 82 (citing Pilgrim I, CLI-09-11, 69 NRC at 533).

[327] Tr. at 137 (emphasis added).

[328] Tr. at 153.

conclusions might change."[329]

Joint Petitioners have shown that a change in the SAMA candidates' cost-benefit conclusions is genuinely plausible. The Brookhaven National Laboratory study they cite shows that source term selection can change dose results by a factor of 3 to 4.[330] Although this study addressed different nuclear power plants, it indicates that source term selection can make a large difference in dose results.

b. Gaussian plume

Joint Petitioners also contend that using the "steady-state, straight-line Gaussian plume" air dispersion model in the MACCS2 code—as FirstEnergy did—"underestimates the area likely to be affected in a severe accident and the dose likely to be received in those areas."[331] Joint Petitioners assert that using this model "is not appropriate for . . . Davis-Besse's Great Lakes shoreline location" because the model cannot model spatially and temporally varying winds and "ignores the presences of Great Lakes 'sea breeze' circulations which dramatically alter air flow patterns."[332] Another reason the model is inappropriate, Joint Petitioners assert, is that it "'should be applied with caution at distances greater than ten to fifteen miles, especially if meteorological conditions are likely to be different from those at the source of release.'"[333] Joint Petitioners further maintain that the Gaussian plume model treats plumes blowing offshore over Lake Erie as though they have no impact, when in actuality "a plume over water, rather than being dispersed, will remain tightly

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[329] Seabrook, LBP-11-02, 73 NRC at __ (slip op. at 39).

[330] Lehner, et al., supra note 312, at 17.

[331] Petition at 116.

[332] Id. at 119.

[333] Id. at 124 (quoting U.S. Department of Energy, MACCS2 Computer Code Application Guidance for Documented Safety Analysis 3-8 (June 2004), available at http://hss.energy.gov/nuclearsafety/qa/sqa/central_registry/MACCS2/Final_MACCS2_Guidance_Report_June_1_2004.pdf).

concentrated due to the lack of turbulence . . . until winds blow it onto land."[334] According to Joint Petitioners, the behavior of plumes over water "can lead to hot spots of radioactivity in places along the . . . Great Lakes shoreline, certainly to Detroit/Windsor, Toledo, and Cleveland."[335] Finally, the Joint Petitioners contend that inputting meteorological data collected over "just three years" from "just one site"—Davis-Besse itself—"will definitely not suffice to define the Great Lakes 'sea breeze' or capture variability."[336] Joint Petitioners point out that, to make matters "worse," the third year's data was "'deemed to be not viable as MACCS2 input.'"[337]

FirstEnergy clarifies that the Gaussian plume model is "used in the ATMOS module of MACCS2"[338] and asserts that "the straight-line Gaussian ATMOS model cannot be replaced without replacing the MACCS2 code itself."[339] FirstEnergy concedes, however, that the inability to interchange ATMOS with other plume dispersion models does not immunize the Gaussian model from a properly pled contention.[340]

The NRC Staff asserts that Joint Petitioners "have not provided adequate factual support" for their assertions regarding the lake breeze effect.[341] Despite acknowledging that "Joint Petitioners have produced several studies that indicate the sea breeze effect plays an important

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[334] Id. at 121.

[335] Id.

[336] Id. at 125.

[337] Id. (quoting ER at E.3.4.3). Another failing of the Gaussian plume model, according to Joint Petitioners, is that it cannot model terrain effects. Id. at 122. As discussed above in section III(B)(3), the ability of a Gaussian plume to model terrain effects is an extraneous issue because Joint Petitioners have not provided alleged facts or expert opinion indicating that Davis-Besse is surrounded by complex terrain. We have eliminated this issue from this proceeding.

[338] FirstEnergy Answer at 106.

[339] Id. at 108.

[340] Id.

[341] NRC Staff Answer at 69.

role at New England sites,"[342] the NRC Staff questions whether these studies have any applicability to Davis-Besse's Great Lakes location.[343] Joint Petitioners tie the Atlantic coast studies to Davis-Besse's location by citing two websites.[344] First, Joint Petitioners quote a National Weather Service webpage that states: "[w]hile the sea breeze is generally associated with the ocean, they can occur along the shore of any large body of water such as the Great Lakes."[345] Second, Joint Petitioners quote the website of "Weather Doctor" Keith C. Heidorn, which states: "The lake breeze is similar to the sea breeze found along sea coasts."[346] Together with the Atlantic coast studies, these websites provide the requisite minimal support that a lake breeze might be a factor near Davis-Besse.

FirstEnergy and the NRC Staff argue in addition that Joint Petitioners have not provided adequate support for their claim regarding the behavior of plumes over water.[347] The NRC Staff seems to suggest that the ER already accounts for the impact of plumes travelling across Lake Erie into Michigan and Canada, but the page of the ER the Staff cites does not address reduced turbulence over water.[348] FirstEnergy points out that Joint Petitioners cite two documents by no more than their authors' last name—Zagar et al. and Angevine et al.—and one's publication date without attaching them to the petition.[349] The Board nonetheless was able to locate full citations for

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[342] Id. at 70.

[343] Id. at 63, 70.

[344] Petition at 117-18.

[345] Id. (quoting National Weather Service, JetStream, Online School for Weather, The Sea Breeze, http://www.srh.weather.gov/srh/jetstream/ocean/seabreezes.htm (last visited Apr. 22, 2011)).

[346] Id. (quoting Keith C. Heidorn, Weather Almanac for May 2000: Great Lake Breezes, http://www.islandnet.com/~see/weather/almanac/arc2000/alm00may2.htm (last visited Apr. 22, 2011)).

[347] FirstEnergy Answer at 110; NRC Staff Answer at 69.

[348] NRC Staff Answer at 70 (citing ER at E-49).

[349] FirstEnergy Answer at 110.

these two documents in the report by Dr. Jan Beyea that Joint Petitioners also cite, [350] and located one of them in the agency's ADAMS library. [351] This article deals with transport of airborne pollutants over water,[352] and Dr. Beyea cited it to support his conclusion that radioactive releases from the Pilgrim power plant on the New England coastline that are "headed initially out to sea will remain tightly concentrated due to reduced turbulence until winds blow the puffs back over land."[353] FirstEnergy points out that Dr. Beyea's report is "second-hand" because it discusses a different reactor and that he did not perform an independent SAMA analysis.[354] Nevertheless, in the Board's estimation, Dr. Beyea's report and the article about pollutant transport provide the requisite minimal support, together with alleged facts, that the behavior of plumes over water might be a factor near Davis-Besse.

FirstEnergy and the NRC Staff also dispute the relevance and meaning of material Joint Petitioners proffer as support. The NRC Staff argues that studies indicating that the Gaussian model might be inappropriate in the context of source permitting do not support the claim that the model would not produce adequate SAMA results at Davis-Besse.[355] Similarly, the NRC Staff

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[350] Petition at 122 (citing Jan Beyea, Report to the Massachusetts Attorney General on the Potential Consequences of a Spent-Fuel-Pool Fire at the Pilgrim or Vermont Yankee Nuclear Plant 11 (May 25, 2006) (ADAMS Accession No. ML071840568)).

[351] Wayne M. Angevine, et al., Modeling of the Coastal Boundary Layer and Pollutant Transport in New England (Jan. 2006) (ADAMS Accession No. ML110030899). The Board points out that, if this proceeding ultimately does go to an evidentiary hearing, the record upon which it will base its decision will be limited to the testimony and documentary material admitted as evidence, which generally will require, for instance, that any technical article or other document cited in a party's prefiled testimony must be submitted for the record as an exhibit.

[352] Id. at 1.

[353] Beyea, supra note 350, at 11.

[354] FirstEnergy Answer at 111.

[355] NRC Staff Answer at 62, 64.

argues that a study the Joint Petitioners cited in support of their terrain claim[356] establishes that "the ATMOS model is accurate at distances up to 200 miles."[357] FirstEnergy also disputes the relevance of the material Joint Petitioners proffer as support.[358] These arguments, however, address the merits of the contention, not the adequacy of the pleading, and so provide no basis for deeming this portion of the contention inadmissible.

FirstEnergy argues the merits as well in its additional assertion that "the alleged methodological shortcomings of ATMOS are as likely to result in an overly conservative result."[359] The validity of this and other merits-based arguments bear further exploration after the contention is admitted.

FirstEnergy chides Joint Petitioners for not providing factual or expert support for their assertion that "data collected at the Davis-Besse site meteorological tower would not reflect any 'sea breeze' present in the site vicinity."[360] The NRC Staff likewise criticize Joint Petitioners for not providing "any citation or expert testimony to support this claim."[361] However, Joint Petitioners have provided support indicating that a lake breeze might cause spatially varying air circulation in the area surrounding Davis-Besse, and it is self-evident that a single immobile meteorological site would be unable to measure such spatially dependent circulation. Therefore, we conclude Joint Petitioners have provided adequate support for their claim that a single meteorological site is

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[356] Petition at 127. A source permit is an operating permit that the Clean Air Act requires major stationary sources of air pollution to obtain. Sierra Club v. Georgia Power Co., 443 F.3d 1346, 1348 (11th Cir. 2006) (citing Legal Envtl. Assistance Found., Inc. v. EPA, 400 F.3d 1278, 1279 (11th Cir. 2005)).

[357] NRC Staff Answer at 65 (C. R. Molenkamp, et al., Lawrence Livermore National Laboratory, Comparison of Average Transport and Dispersion Among a Gaussian, a Two-Dimensional and a Three-Dimensional Model, NUREG/CR-6853 (Oct. 2004) (ADAMS Accession No. ML043240034)).

[358] FirstEnergy Answer at 106.

[359] Id. at 109.

[360] Id. at 114.

[361] NRC Staff Answer at 72.

inadequate to provide data for the complex air circulation model they assert is necessary.

FirstEnergy also faults Joint Petitioners for not citing all the discussion of meteorological measurements in the ER.[362] At issue is Joint Petitioners' reference to the ER's statement that data was collected for the years 2006 through 2008 and that the 2008 data was deemed not to be viable.[363] FirstEnergy criticizes Joint Petitioners for not mentioning that the ER also states that "the 2006 meteorological data were used as the base case, and the meteorological data from 2007 were used in one sensitivity case" and that "sensitivity cases . . . us[ing] data from the late-1990s . . . confirmed that the 2006 meteorological data were representative and typical of annual meteorological conditions."[364] However, this level of specificity is not required in pleading a contention to raise a genuine dispute, especially considering that the information FirstEnergy refers to is included on the very page of the ER that Joint Petitioners cite.[365]

Finally, the NRC Staff and FirstEnergy argue that Joint Petitioners have not shown their challenge to the Gaussian model is a material dispute because they have not shown that the asserted errors might have masked a cost-beneficial SAMA.[366] Because Joint Petitioners have shown that the source term alone can alter dose results by a factor or 3 to 4, the source term and Gaussian model modifications acting together have sufficient impact to potentially make another SAMA candidate cost-beneficial.

c. Particle size and clean-up costs for urban areas

Joint Petitioners contend that FirstEnergy underestimated costs by using the MACCS2 code to calculate decontamination and clean-up costs likely to be incurred in the event of a

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[362] FirstEnergy Answer at 114.

[363] Petition at 125 (citing ER § E.3.4.3).

[364] FirstEnergy Answer at 114 (citing ER at E-43 to E-44).

[365] Petition at 125 (citing ER § E.3.4.3).

[366] NRC Staff Answer at 63; FirstEnergy Answer at 109.

radioactive release.[367] Joint Petitioners suggest that "[i]n place of the outdated decontamination cost figure in the MACCS2 code, the SAMA analysis for Davis-Besse should incorporate, for example, the analytical framework contained in the 1996 Sandia National Laboratories report concerning site restoration costs . . . as well as Chernobyl and RDD type devices."[368] Although Joint Petitioners fail to support many of their assertions of error relating to decontamination costs,[369] they raise two claims that we conclude satisfy 10 C.F.R. § 2.309(f)(1).

The first concerns particle size. Joint Petitioners point out that the MACCS2 User's Guide states that the code's economic cost model is "WASH-1400 based," and assert that relying on WASH-1400 underestimates costs because it is based on clean up after a nuclear weapon explosion.[370] According to Joint Petitioners, reactor accidents release smaller sized particles, ranging in size from a "fraction of a micron to a couple of microns," compared to particles produced in a nuclear weapon explosion, which are "ten to hundreds of microns."[371] Joint Petitioners contend the smaller particle size makes reactor accidents more difficult to clean up.[372]

The second concerns urban areas, which Joint Petitioners contend "will be considerably more expensive and time consuming to decontaminate and clean than rural areas."[373] Joint Petitioners refer to a study they allege "provides estimates for different types of areas, from farm or

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[367] Petition at 135-36.

[368] Id. at 140 (citing David I. Chanin & Walter B. Murfin, Site Restoration: Estimation of Attributable Costs from Plutonium-Dispersal Accidents (May 1996) available at http://chaninconsulting.com/downloads/sand96-0957.pdf).

[369] See sections III(B)(3)-(4), supra.

[370] Petition at 136 (citing MACCS2 User's Guide, NUREG/CR-6613, Vol. 1, at 7-10).

[371] Id. at 136-37.

[372] Id. at 137.

[373] Id. at 138.

range land to high density urban areas."[374]

The NRC Staff states that it "recognizes that Joint Petitioners have provided minimal support necessary for its assertion that smaller particles will create higher cleanup costs and that urban areas are more costly to clean up than rural areas."[375]

FirstEnergy, on the other hand, argues that the Commission concluded the 1996 Sandia report was "of dubious relevance" to the Pilgrim applicant's SAMA analysis.[376] Joint Petitioners respond that the Pilgrim decision was "dependent on exactly what the intervenor(s) there did, or did not, plead or prove."[377]

FirstEnergy also argues that Joint Petitioners do not provide information to support their assertions about particle size because the Sandia report "indicates only that certain decontamination data may not be applicable to a plutonium dispersal accident."[378] FirstEnergy maintains that although the Sandia report states that most prior decontamination research has limited application to plutonium-dispersal accidents, it "makes no such assertion with respect to a reactor accident."[379]

This aspect of Contention 4 is admissible. The statement FirstEnergy quotes does not show that the Sandia report lends no support to Joint Petitioners' particle size claim. While particle size might depend on whether the radioactive substance is plutonium or reactor fuel, it also might depend on whether the dispersal is caused by a weapon explosion or a reactor accident, which is exactly the point raised by Joint Petitioners in their contention.

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[374] Id. at 138-39 (citing id., Reichmuth Attach., Barbara Reichmuth, et al., Economic Consequences of a Rad/Nuc Attack: Cleanup Standards Significantly Affect Costs at 6 tbl.1, 12 (Apr. 2005)).

[375] NRC Staff Answer at 74.

[376] FirstEnergy Answer at 116.

[377] Reply at 31-32.

[378] FirstEnergy Answer at 117 (citing Chanin & Murfin, supra note 368, at App. E. at E-1).

[379] Id. (citing Chanin & Murfin, supra note 368, at App. E. at E-1).

Regarding urban area cleanup costs, the NRC Staff argues that Joint Petitioners have not demonstrated that their challenge to the ER's decontamination and clean-up costs is material because they "have not shown that a different cost formula . . . could result in another cost-beneficial SAMA."[380] Similarly, FirstEnergy contends that Joint Petitioners have not adequately explained the materiality of their general decontamination-cost assertions to the Davis-Besse SAMA analysis.[381] Because we have determined that Joint Petitioners have shown that it is genuinely plausible that FirstEnergy's source term calculation and use of the Gaussian plume model could have masked a cost-beneficial SAMA candidate, these two factors acting together with refinement to the decontamination cost analysis might have masked a candidate. Therefore, we conclude the SAMA contention as limited is material.

We thus determine that Contention Four is admissible, as limited by the Board, to read as follows:

> The Environmental Report (ER) is inadequate because it underestimates the true cost of a severe accident at Davis-Besse in violation of 10 C.F.R. § 51.53(C)(3)(ii)(L) and Further Analysis by the Applicant, FirstEnergy, is called for because of:
> (1) Minimization of the potential amount of radioactive material released in a severe accident by using a source term based on radionuclide release fractions which are smaller for key radionuclides than the release fractions specified in NRC guidance;
> (2) Use of an inappropriate air dispersion model, the straight-line Gaussian plume, that does not allow consideration for the fact that winds for a given time period may vary spatially, ignores the presences of Great Lakes "sea breeze" circulations which dramatically alter air flow patterns, fails to account for hot spots of radioactivity caused by plumes blowing offshore over Lake Erie, and is based on meteorological inputs collected from just one site—at Davis-Besse itself; and
> (3) Use of inputs that minimized and inaccurately reflected the economic consequences of a severe accident, specifically particle size and clean-up costs for urban areas.

## IV. Selection of Hearing Procedures

### A. Legal Standards

As required by 10 C.F.R. § 2.310(a), upon admission of a contention in a licensing proceeding, the Board must identify the specific hearing procedures to be used to adjudicate the

[380] NRC Staff Answer at 72-73.

[381] FirstEnergy Answer at 118.

contention. NRC regulations provide for a number of different procedural schemes, two of which are relevant here.[382] First, there is Subpart G,[383] which is mandated for certain proceedings,[384] and establishes NRC "Rules for Formal Adjudications," in which parties are permitted to "propound interrogatories, take depositions, and cross-examine witnesses without leave of the Board."[385] The other is Subpart L[386] which provides for a more "informal" proceeding in which discovery is generally prohibited (except for (1) specified mandatory disclosures under 10 C.F.R. § 2.336; and (2) the mandatory production of the hearing file under 10 C.F.R. § 2.1203(a)).[387] When utilizing Subpart L, the Board has the primary responsibility for questioning the witnesses at any evidentiary hearing.[388]

B. Ruling on Hearing Procedure

The Board concludes that, at this juncture, the Subpart L hearing procedures will be used to adjudicate each of the contentions we have admitted. We reach this result as follows. First, we conclude that there has been no showing under 10 C.F.R. § 2.310(d) that the Subpart G procedures are mandated for any of the admitted contentions. Second, exercising our discretion under 10 C.F.R. § 2.310(a), we have seen no reason or need to apply the Subpart G procedures to either of the admitted contentions. We therefore rule that, for the time being, the procedures of

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[382] If the hearing on a contention is "expected to take no more than two (2) days to complete," 10 C.F.R. § 2.310(h)(1), the Board can impose the Subpart N procedures for "Expedited Proceedings with Oral Hearings" specified at 10 C.F.R. § 2.1400-1407. These procedures are highly truncated, but may prove appropriate for certain contentions at a later stage.

[383] 10 C.F.R. Part 2.

[384] See, e.g., id. § 2.310(d).

[385] Entergy Nuclear Vermont Yankee, LLC (Vermont Yankee Nuclear Power Station), LBP-06-20, 64 NRC 131, 201 (2006).

[386] 10 C.F.R. Part 2.

[387] Id. § 2.1203(d).

[388] Id. § 2.1207(b)(6).

Subpart L will be used for the adjudication of each of the admitted contentions.[389] This determination is, of course, subject to reconsideration should there be reason to do so at a later date.

V. Order

Based on the foregoing, it is hereby ORDERED:

A. Joint Petitioners, consisting of Beyond Nuclear, Citizens Environment Alliance of Southwestern Ontario, Don't Waste Michigan, and the Green Party of Ohio, having demonstrated standing and having submitted at least one admissible contention are admitted as parties in this proceeding.

B. The following contentions are admitted as limited and reworded by the Licensing Board:

Contention One:

> The FirstEnergy Nuclear Operating Company's Environmental Report fails to adequately evaluate the full potential for renewable energy sources, specifically wind power in the form of interconnected wind farms and/or solar photovoltaic power, in combination with compressed air energy storage, to offset the loss of energy production from Davis-Besse, and to make the requested license renewal action unnecessary. The FENOC Environmental Report (§ 7.2) treats all of the alternatives to license renewal except for natural gas and coal plants as unreasonable and does not provide a substantial analysis of the potential for significant alternatives in the Region of Interest.

Contention Four:

> The Environmental Report (ER) is inadequate because it underestimates the true cost of a severe accident at Davis-Besse in violation of 10 C.F.R. § 51.53(C)(3)(ii)(L) and Further Analysis by the Applicant, FirstEnergy, is called for because of:
>
> (1) Minimization of the potential amount of radioactive material released in a severe accident by using a source term based on radionuclide release fractions which are smaller for key radionuclides than the release fractions specified in NRC guidance;
>
> (2) Use of an inappropriate air dispersion model, the straight-line Gaussian plume, that does not allow consideration for the fact that winds for a given time period may vary spatially, ignores the presences of Great Lakes "sea breeze" circulations which dramatically alter air flow patterns, fails to account for hot spots of radioactivity caused by plumes blowing offshore over Lake Erie, and is based on

[389] The selection of hearing procedures for contentions at the outset of a proceeding is not immutable because, inter alia, the availability of Subpart G procedures under 10 C.F.R. § 2.310(d) depends critically on whether the credibility of eyewitnesses is important in resolving a contention, and witnesses relevant to each contention are not identified, under 10 C.F.R. § 2.336(a)(1), until after contentions are admitted. See Entergy Nuclear Vermont Yankee, LLC (Vermont Yankee Nuclear Power Station), LBP-07-15, 66 NRC 261, 272 (2007); see also 10 C.F.R. § 2.1402(b).

meteorological inputs collected from just one site—at Davis-Besse itself; and

(3) Use of inputs that minimized and inaccurately reflected the economic consequences of a severe accident, specifically particle size and clean-up costs for urban areas.

C. Any portions of Joint Petitioners' Contentions One, Two, Three or Four not specifically included in Ordering Paragraph B are not admitted.

D. A Subpart L hearing is granted with respect to the above-admitted contentions.

E. The Licensing Board will hold a telephone conference with the parties in which we will discuss a schedule of further proceedings in this matter.

F. This Order is subject to appeal to the Commission in accordance with the provisions of 10 C.F.R. § 2.311. Any petitions for review meeting applicable requirements set forth in that section must be filed within ten (10) days of service of this Memorandum and Order.

THE ATOMIC SAFETY AND
LICENSING BOARD[390]

***/RA/***

_____
William J. Froehlich, Chairman
ADMINISTRATIVE JUDGE

***/RA/***

_____
Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

***/RA/***

_____
Dr. William E. Kastenberg
ADMINISTRATIVE JUDGE

Rockville, Maryland
April 26, 2011

[390] Copies of this memorandum and order were sent this date by the agency's E-Filing system to the counsel/representatives for (1) the Joint Petitioners; (2) FirstEnergy; and (3) the NRC Staff.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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|---|---|---|
| In the Matter of | ) | |
| | ) | |
| FIRST ENERGY NUCLEAR OPERATING COMPANY | ) | |
| | ) | |
| (Davis-Besse Nuclear Power Station, Unit 1) | ) | Docket No. 50-346-LR |
| | ) | |

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing MEMORANDUM AND ORDER (Ruling on Petition to Intervene and Request for Hearing) (LBP-11-13) have been served upon the following persons by Electronic Information Exchange.

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Docket No. 50-346-LR
MEMORANDUM AND ORDER (Ruling on Petition to Intervene and Request for Hearing)
(LBP-11-13)

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[Original signed by Christine M. Pierpoint ]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 26th day of April 2011