

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Gregory B. Jaczko, Chairman
Kristine L. Svinicki
George Apostolakis
William D. Magwood, IV
William C. Ostendorff

In the Matter of)
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)
NEXTERA ENERGY SEABROOK, LLC) Docket No. 50-443-LR
)
(Seabrook Station, Unit 1))
)
)

CLI-12-05

MEMORANDUM AND ORDER

This proceeding stems from the May 25, 2010, application of NextEra Energy Seabrook, LLC (NextEra) to renew its operating license for Seabrook Station, Unit 1 (Seabrook).¹ Beyond Nuclear, the Seacoast Anti-Pollution League, and the New Hampshire Sierra Club (collectively, Beyond Nuclear) filed a joint petition to intervene.² Separately, Friends of the Coast and the New England Coalition (collectively, Friends/NEC) filed their own joint petition.³

¹ See generally Seabrook Station License Renewal Application (May 25, 2010) (Vol. I: ADAMS accession no. ML101590098; Vol. II: ML101590101; Vol. III: ML101590091) (Application).

² *Beyond Nuclear, Seacoast Anti-Pollution League and New Hampshire Sierra Club Request for Public Hearing and Petition to Intervene* (Oct. 20, 2010) (Beyond Nuclear Petition).

³ *Friends of the Coast and New England Coalition Petition for Leave to Intervene, Request for Hearing, and Admission of Contentions* (dated Oct. 20, 2010, but filed Oct. 21, 2010) (Friends/NEC Petition). Friends/NEC supported their petition with a Declaration by Mr. Paul Blanch. Declaration of Paul Blanch (Oct. 18, 2010) (Blanch Declaration), appended as Attachment 7 to Friends/NEC Petition (ML102940557).

On February 15, 2011, the Board issued LBP-11-2, finding that all petitioners had demonstrated standing, and admitting one contention in part and three more in their entirety.⁴ NextEra has appealed LBP-11-2.⁵ As discussed below, we affirm in part and reverse in part LBP-11-2.

I. REGULATORY BACKGROUND

As the U.S. Court of Appeals for the Third Circuit recognized, the scope of our license renewal process is limited.⁶ The license renewal safety review—and any associated license renewal adjudicatory proceeding—focuses on the detrimental effects of aging posed by long-term reactor operation.⁷

Part 54 of our regulations sets forth the safety review standards for license renewal. Section 54.4 defines the scope of the review, which focuses on those systems, structures, and components (SSCs) that (1) perform the safety functions outlined in section 54.4(a)(1)(i)-(iii);

⁴ LBP-11-2, 73 NRC __ (Feb. 15, 2011) (slip op. at 9-15 (standing) and 20-61 (contentions)). In addition, the Board “decline[d] to consider the revised declaration of Paul Blanch and other materials submitted by Friends/NEC on December 6, 2010,” and therefore denied as moot Friends/NEC’s motion for leave to reply to NextEra’s and the Staff’s objections to the revised declaration. LBP-11-2, 73 NRC at __ (slip op. at 64), referring to both *Supplement to Friends of the Coast and New England Coalition Petition for Leave to Intervene, Request for Hearing, and Admission of Contentions: Errors and Corrections and New Information* (Dec. 6, 2010), and *Motion by Friends of the Coast and New England Coalition for Leave to Reply to NRC Staff Objections; NextEra Energy Seabrook, LLC. Response in Opposition to the Friends of the Coast and New England Coalition Supplement to its Petition* (Dec. 20, 2010). The Board’s specific ruling with regard to the revised Blanch Declaration and other materials is not now before us on appeal.

⁵ *NextEra Energy Seabrook, LLC’s Notice of Appeal of LBP-11-02 as to the New England Coalition and Friends of the Coast* (Feb. 25, 2011); *Brief in Support of NextEra Energy Seabrook, LLC’s Appeal of LBP-11-02 as to the New England Coalition and Friends of the Coast* (Feb. 25, 2011) (NextEra Appeal I); *NextEra Energy Seabrook, LLC’s Notice of Appeal of LBP-11-02 as to Beyond Nuclear, the Seacoast Anti-Pollution League, and the Sierra Club of New Hampshire* (Feb. 25, 2011); *Brief in Support of NextEra Energy Seabrook, LLC’s Appeal of LBP-11-02 as to Beyond Nuclear, the Seacoast Anti-Pollution League, and the Sierra Club of New Hampshire* (Feb. 25, 2011) (NextEra Appeal II).

⁶ See *N.J. Env’tl. Fed’n v. NRC*, 645 F.3d 220, 224 (3d Cir. 2011).

⁷ See *id.*

(2) whose failure could prevent accomplishment of the safety-related functions outlined in section 54.4(a)(1)(i)-(iii); or (3) are relied on to demonstrate compliance with NRC regulations for fire protection, environmental qualification, pressurized thermal shock, anticipated transients without scram, or station blackout.⁸ License renewal applicants must conduct aging management reviews of any SSC that performs one of these intended functions if the SSC is both “passive” (that is, it performs its intended function(s) “without moving parts or without a change in configuration or properties”⁹) and “long-lived” (that is, it is “not subject to replacement based on a qualified life or specified time period”¹⁰). Applicants must demonstrate “reasonable assurance”¹¹ that “the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB [current licensing basis] for the period of extended operation.”¹²

⁸ 10 C.F.R. § 54.4(a).

⁹ 10 C.F.R. § 54.21(a)(1)(i); *Entergy Nuclear Generation Co. & Entergy Nuclear Operations, Inc.* (Pilgrim Nuclear Power Station), CLI-10-14, 71 NRC 449, 454 (2010); *AmerGen Energy Co., LLC* (Oyster Creek Nuclear Generating Station), CLI-08-23, 68 NRC 461, 466 (2008).

¹⁰ 10 C.F.R. § 54.21(a)(1)(ii); *Oyster Creek*, CLI-08-23, 68 NRC at 466. See 10 C.F.R. §§ 54.21(a)(3), 54.29(a)(1). “[S]tructures and components associated only with active functions can be generically excluded from a license renewal aging management review. Functional degradation resulting from the effects of aging on active functions is more readily determinable, and existing programs and requirements are expected to directly detect the effects of aging.” Final Rule, Nuclear Power Plant License Renewal; Revisions, 60 Fed. Reg. 22,461, 22,472 (May 8, 1995) (1995 License Renewal Rule). See also *Pilgrim*, CLI-10-14, 71 NRC at 454 (“Existing regulatory programs . . . can be expected to ‘directly detect the effects of aging’ on active functions” (quoting 1995 License Renewal Rule, 60 Fed. Reg. at 22,472)); *Oyster Creek*, CLI-08-23, 68 NRC at 466-67.

¹¹ 10 C.F.R. § 54.29(a).

¹² 10 C.F.R. § 54.21(a)(3). See also 10 C.F.R. § 54.4(b) (regarding the limited scope of the intended functions). The “current licensing basis” is “the set of NRC requirements (including regulations, orders, technical specifications, and license conditions) applicable to a specific plant, and includes the licensee’s written, docketed commitments for ensuring compliance with applicable NRC requirements and the plant-specific design basis.” *Pilgrim*, CLI-10-14, 71 NRC at 453-54 (footnote omitted).

In reviewing license renewal applications, the NRC is guided primarily by two documents—the Generic Aging Lessons Learned (GALL) Report and the License Renewal Standard Review Plan.¹³ If the NRC concludes that an aging management program (AMP) is consistent with the GALL Report, then it accepts the applicant’s commitment to implement that AMP, finding the commitment itself to be an adequate demonstration of reasonable assurance under section 54.29(a).¹⁴

License renewal applications are also subject to an environmental review under the National Environmental Policy Act (NEPA)¹⁵ and our Part 51 regulations implementing NEPA.¹⁶ The Staff’s review, and ultimately our own, are guided largely by a Generic Environmental Impact Statement (GEIS) that focuses specifically on license renewal applications.¹⁷

¹³ “Generic Aging Lessons Learned (GALL) Report,” NUREG-1801, Rev. 1 (Sept. 2005), Vol. 1 (ML052770419) & Vol. 2 (ML052110006) (GALL Report); “Generic Aging Lessons Learned (GALL) Report – Final Report,” NUREG-1801, Rev. 2 (Dec. 2010) (ML103490041) (GALL Report Rev. 2); “Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants,” NUREG-1801, Rev. 1 (Sept. 2005) (ML052770566) (Standard Review Plan).

¹⁴ *Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), CLI-10-17, 72 NRC 1, 36 (2010); *Oyster Creek*, CLI-08-23, 68 NRC at 467-68.

¹⁵ 42 U.S.C. §§ 4332(2)(C)(i), (iii) (requiring an agency to prepare a detailed statement describing the reasonably foreseeable environmental impacts both of the proposed federal action and of any feasible alternative(s) to the proposed federal action).

¹⁶ See generally 10 C.F.R. pt. 51.

¹⁷ “Generic Environmental Impact Statement for License Renewal of Nuclear Plants,” NUREG-1437, Vol. 1 (May 1996) (ML040690705), & Vol. 2 (Sept. 2005) (ML052780376) (License Renewal GEIS). The GEIS sets forth the technical basis for our 1996 revisions to the Part 51 rules, as they relate to power reactor license renewal. See Final Rule, Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 61 Fed. Reg. 66,537, 66,537 (Dec. 18, 1996) (“The amendments [to Part 51] are based on the analyses reported in NUREG-1437”); License Renewal GEIS, Vol. 1, § 1.1, at 1-1.

II. PROCEDURAL BACKGROUND

In its petition to intervene, Beyond Nuclear proffered one environmental contention.¹⁸ And in their petition to intervene, Friends/NEC proffered four contentions, one of which was divided into six discrete parts.¹⁹ NextEra and the NRC Staff submitted answers in which they argued that all contentions were inadmissible.²⁰ Friends/NEC and Beyond Nuclear each filed replies opposing the Staff's and NextEra's Answers.²¹ The Board held oral argument on the petitions. Subsequently, in LBP-11-2, the Board admitted Beyond Nuclear's contention, as well as two contentions and portions of a third, proffered by Friends/NEC.²² Separately,

¹⁸ Beyond Nuclear Petition at 6-49.

¹⁹ Friends/NEC Petition at 10-79.

²⁰ *NextEra Energy Seabrook, LLC's Answer Opposing the Petition to Intervene and Request for Hearing of Beyond Nuclear, Seacoast Anti-Pollution League, and New Hampshire Sierra Club* (Nov. 15, 2010), at 16-36 (NextEra Answer to Beyond Nuclear Petition); *NextEra Energy Seabrook, LLC's Answer Opposing The Petition to Intervene and Request for Hearing of Friends of the Coast and the New England Coalition* (Nov. 15, 2010), at 24-105 (NextEra Answer to Friends/NEC Petition); *NRC Staff's Answer to Petitions to Intervene and Requests for Hearing Filed by (1) Friends of the Coast and New England Coalition and (2) Beyond Nuclear, Seacoast Anti-Pollution League, and New Hampshire Sierra Club* (Nov. 15, 2010), at 18-108 (Staff Answer to Petitions). Additionally, NextEra contended that Friends/NEC had failed to demonstrate standing. NextEra Answer to Friends/NEC Petition at 4-6.

²¹ *Combined Reply of Joint Petitioners (Beyond Nuclear, Seacoast Anti-Pollution League and New Hampshire Sierra Club) to Answers of NextEra Energy Seabrook, LLC and the United States Nuclear Regulatory Commission* (Nov. 22, 2010) (Beyond Nuclear Reply); [Original] *Friends of the Coast and New England Coalition Reply to NextEra and NRC Staff Answers to Friends of the Coast and New England Coalition Petition for Leave to Intervene, Request for Hearing, and Admission of Contentions* (Nov. 22, 2010); [Revised] *Friends of the Coast and New England Coalition Reply to NextEra and NRC Staff Answers to Friends of the Coast and New England Coalition Petition for Leave to Intervene, Request for Hearing, and Admission of Contentions* (dated Nov. 22, 2010; served Nov. 23, 2010) (Friends/NEC Reply).

²² Friends/NEC's remaining contentions were excluded and are not at issue here. LBP-11-2, 73 NRC at __ (slip op. at 63).

Friends/NEC filed a motion for reconsideration of those portions in LBP-11-2 where the Board had ruled against them.²³ The Board denied their motion for reconsideration shortly thereafter.²⁴

On appeal, NextEra challenges all of the Board's contention admissibility rulings.²⁵ Both Friends/NEC and Beyond Nuclear oppose NextEra's appeal.²⁶

III. DISCUSSION

A. Applicable Standards

A request for hearing or petition for leave to intervene must set forth with particularity the contentions sought to be raised. For each contention, the request or petition must:

- (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
- (ii) Provide a brief explanation of the basis for the contention;
- (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;

²³ *Friends of the Coast and New England Coalition, Inc. Motion for Leave to File for Reconsideration of Memorandum and Order LBP-11-02* (Feb. 25, 2011).

Under NRC practice, the filing of this motion tolled our consideration of the two appeals. See *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-1, 53 NRC 1, 3 (2001) ("When a petition for review is filed with the Commission at the same time as a motion for reconsideration is filed with the Board, the Commission will delay considering the petition for review until after the Board has ruled" (citation omitted)); *Commonwealth Edison Co.*, (Byron Nuclear Power Station, Units 1 and 2), ALAB-659, 14 NRC 983, 985 (1981) ("It simply is not customary for an appeal to proceed through at least the briefing process while the trial tribunal has before it an authorized and timely-filed petition for reconsideration of the decision or order in question" (footnote omitted)).

²⁴ Order (Denying Extension Request and Denying Motion for Leave to File for Reconsideration) (Mar. 9, 2011) (unpublished).

²⁵ NextEra does not challenge the Board's rulings on standing.

²⁶ *Petitioners' Beyond Nuclear, Seacoast Anti-Pollution League and New Hampshire Sierra Club Reply in Opposition to NextEra Seabrook, LLC's Appeal of LBP-11-02* (Mar. 7, 2011) (Beyond Nuclear Opposition to Appeal); *Friends of the Coast and New England Coalition Answer and Opposition to NextEra Energy Seabrook, LLC's Notice of Appeal of LBP-11-02* (Mar. 10, 2011) (Friends/NEC Opposition to Appeal). The Secretary granted Friends/NEC a three-day extension of time within which to file its opposition. See Order (Denying Extension Request and Denying Motion for Leave to File for Reconsideration) (SECY Mar. 9, 2011) (unpublished).

- (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
- (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue . . . together with references to the specific sources and documents on which the requestor/petitioner intends to rely . . . ; [and]
- (vi) . . . [P]rovide sufficient information to show that a genuine dispute exists with the applicant/licensee on a material issue of law or fact.²⁷

As we have outlined in earlier decisions, the NRC in 1989 revised its rules to prevent the admission of contentions “based on little more than speculation.”²⁸ The agency deliberately “rais[ed] the admission standards for contentions . . . to obviate serious hearing delays caused in the past by poorly defined or [poorly] supported contentions.”²⁹ Prior to our 1989 rule revision, intervenors were able to trigger hearings after merely copying a contention from another proceeding, even though these “[a]dmitted intervenors often had negligible knowledge” of the issues “and, in fact, no direct case to present.”³⁰ Although under our current rules intervenors of course may use the discovery process to develop a case once contentions are admitted, “contentions shall not be admitted if at the *outset* they are not described with reasonable specificity or are not supported by some alleged fact or facts *demonstrating a genuine material dispute*” with the applicant.³¹ We properly “reserve our hearing process for genuine, material controversies between knowledgeable litigants.”³²

²⁷ 10 C.F.R. § 2.309(f)(1).

²⁸ *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 334 (1999).

²⁹ *Id.*

³⁰ *Id.*

³¹ *Id.* at 335 (internal quotation and citation omitted) (emphasis added).

³² *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 219 (2003) (footnote omitted).

We generally defer to Board rulings on contention admissibility unless we find “an error of law or abuse of discretion.”³³ With these points in mind, we turn to NextEra’s appeals.

B. Analysis of the Board’s Rulings on Contention Admissibility

1. Friends/NEC Contention 1

The license renewal application for Seabrook Station fails to comply with the requirements of 10 C.F.R. §§ 54.21(a) and 54.29 because Applicant has not proposed an adequate or sufficiently specific plan for aging management of non-environmentally qualified inaccessible electrical cables and wiring for which such aging management is required. Without an adequate plan for aging management of non-environmentally qualified inaccessible electrical cables[,] protection of public health and safety cannot be assured.³⁴

a. Background

NextEra’s original Application contained an AMP addressing non-environmentally qualified inaccessible medium-voltage electrical cables and wiring. On October 29, 2010, NextEra submitted a supplement to the Application³⁵ to bring the Application into conformity with Revision 2 of the GALL Report.³⁶ This supplement amended the “Non-EQ Inaccessible Medium-Voltage Cables Program,” expanding its scope to include certain low-voltage cables as well.³⁷

³³ See, e.g., *South Carolina Electric and Gas Co. and South Carolina Public Service Authority (also referred to as Santee Cooper)* (Virgil C. Summer Nuclear Station, Units 2 and 3), CLI-10-21, 72 NRC 197, 200 (2010) (citing *Crow Butte Resources, Inc.* (In Situ Leach Facility, Crawford, Nebraska), CLI-09-9, 69 NRC 331, 336 (2009)).

³⁴ Friends/NEC Petition at 10-11.

³⁵ The supplement included amendments to two AMPs. See Letter from Paul O. Freeman, Site Vice President of NextEra Energy Seabrook, LLC, to NRC Document Control Desk (Oct. 29, 2010) (Application Supplement) (ML103060022), and enclosures. See, particularly, *id.*, Enclosure 2 to SBK-L-10179, “Changes to the Seabrook Station License Renewal Application Associated with Inaccessible Medium-Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program.”

³⁶ See NextEra Appeal I at 5 (citing GALL Report Rev. 2).

³⁷ *Id.* at 5 (citing Application Supplement, Encl. 2 to SBK-L-10179, at 2, 6).

In submitting Contention 1, Friends/NEC argued generally that the original Application's aging management program for non-environmentally qualified inaccessible electrical cables and wiring fails to demonstrate that the effects of aging will be adequately managed, to the detriment of public health and safety.³⁸ Friends/NEC submitted the Declaration of Mr. Paul Blanch in support of this contention. Friends/NEC offered a number of bases for the contention.³⁹ The Board in LBP-11-2 appears to rely on five particular bases, discussed below, in admitting Contention 1.⁴⁰

The Board found generally that the combination of Mr. Blanch's Declaration and the cited technical documents provided the required minimum support for Contention 1.⁴¹ The Board, however, limited the admissibility ruling to "the adequacy of the . . . AMP . . . to manage age-related degradation of the cable insulation due to exposure to a wet or moist environment."⁴² It expressly excluded assertions of current violations or noncompliance with the current licensing basis.⁴³

In reaching this result, the Board acknowledged that Contention 1 was a challenge to an AMP that was assertedly consistent with the GALL Report,⁴⁴ but concluded that such an assertion by an applicant does not immunize it against a challenge to the AMP.⁴⁵ It likewise

³⁸ Friends/NEC Petition at 11-13.

³⁹ *See id.* The record reflects some confusion as to the number of bases supporting the contention. For example, Judge Kennedy suggests there are at least seventeen bases. *See* Transcript of Hearing for Oral Argument (Nov. 30, 2010) (Tr.) at 86-87.

⁴⁰ NextEra does the same on appeal. *See* NextEra Appeal I at 10-11.

⁴¹ LBP-11-2, 73 NRC at __ (slip op. at 29, 31-32).

⁴² *Id.* at __ (slip op. at 31).

⁴³ *Id.* at __ (slip op. at 31-32).

⁴⁴ *Id.* at __ (slip op. at 30) (citing GALL Report, Vol. 1, at iii, 1).

⁴⁵ *Id.* (citing *Vermont Yankee*, CLI-10-17, 72 NRC at 36, 38).

stated, without further discussion, that Friends/NEC's factual assertions, at least to some extent, may have been rendered moot by NextEra's October 29, 2010, Supplement to its Application.⁴⁶

b. Discussion

The scope of the contention as admitted by the Board is difficult to discern. The Board expressly mentions four bases and alludes to another⁴⁷ but does not explain specifically why any of them supports the contention's admission, or whether it included, or excluded, any particular basis in making its admissibility decision. Instead, the Board issued a blanket finding that Friends/NEC "provid[ed] a specific statement of the contention[,] . . . challeng[ed] the adequacy of the proposed AMP . . . [and] provid[ed] references to the appropriate sections of the Application and supporting documents including the Blanch [D]eclaration"⁴⁸ NextEra interprets the Board's decision to admit Contention 1 as relying on the five claims discussed by the Board. NextEra asserts on appeal that, under 10 C.F.R. § 2.309(f)(1)(v), each of these five bases lacked the required factual or expert support to support a litigable contention.⁴⁹ Similarly, we assume that any basis not addressed by the Board was not relied upon in making its admissibility decision.⁵⁰

⁴⁶ *Id.* at __ (slip op. at 31). NextEra submitted the Application Supplement on October 29, 2010, shortly after Friends/NEC had filed their October 20, 2010, Petition. Friends/NEC did not file subsequently a new or amended Contention 1.

⁴⁷ *Id.* at __ (slip op. at 27-28).

⁴⁸ *Id.* at __ (slip op. at 29) (footnote omitted).

⁴⁹ NextEra Appeal I at 6-10. Friends/NEC's answer does not respond to these points. See Friends/NEC Opposition to Appeal at 5. Rather, Friends/NEC present only one argument in rebuttal of NextEra's appeal of the admission of Contention 1. They assert that NextEra untimely raised, for the first time on appeal, the argument that the Application Supplement rendered much of Contention 1 moot. *Id.* But the record directly contradicts Friends/NEC's appellate argument. See NextEra Answer to Friends/NEC Petition at 25, 28 n.15, 41-42; Staff Answer to Petitions at 19-20, 24; Tr. at 172 (Mr. Shadis, acknowledging NextEra's argument that the Application Supplement rendered some of Friends/NEC's arguments moot).

⁵⁰ For this reason, we need not reach NextEra's alternative arguments that the Board erred in failing to identify the specific bases on which it admitted the contention, or that several of the (continued . . .)

Friends/NEC argue that the Application does not address certain specific recommendations made in two reports prepared by the Sandia and Brookhaven National Laboratories.⁵¹ The Board appeared to accept the argument that NextEra purportedly failed to address specific recommendations made in the two reports. NextEra argues on appeal (as it did before the Board) that Friends/NEC failed to identify with the required “particularity” the specific recommendations that NextEra should have addressed in the Application.⁵² Our review of the record confirms that Friends/NEC identified no specific recommendations from either of these two reports.

As NextEra observes, the Sandia Report is one of the sources that provided the technical basis for the relevant section of the GALL Report.⁵³ NextEra stated in its application that its AMP is consistent with the GALL Report, with no exceptions.⁵⁴ Moreover, NextEra

bases had been rendered moot by NextEra’s submittal of a revised AMP. See NextEra Appeal I at 10-11 (referring to LBP-11-2, 73 NRC at ___ (slip op. at 31)). We remind our boards, however, of the need to specify each basis relied upon for admitting a contention. *Crow Butte Resources, Inc.* (North Trend Expansion Project), CLI-09-12, 69 NRC 535, 553-54 (2009). Contrary to the Board’s statement (slip op. at 31), an admitted contention is defined by its bases. *Id.* See *generally Entergy Nuclear Generation Co.* (Pilgrim Nuclear Power Station), CLI-10-11, 71 NRC 287, 309 & n.103 (2010) (“The reach of a contention necessarily hinges upon its terms *coupled with* its stated bases.”) (emphasis in original; footnote and internal quotation marks omitted).

⁵¹ Friends/NEC Petition at 12, 15-16 (citing and quoting Ogden Environmental and Energy Services Co., Inc., “Aging Management Guideline for Commercial Nuclear Power Plants – Electrical Cable and Terminations,” SAND96-0344, at 6.4 (Sept. 1996) (ML031140264) (Sandia Report), and citing M. Villaran & R. Lofaro, Brookhaven National Laboratory, “Essential Elements of an Electrical Cable Condition Monitoring Program,” NUREG/CR-7000 (Jan. 2010) (ML100540050) (Brookhaven Report)).

⁵² NextEra Appeal I at 6-7 (citing 10 C.F.R. § 2.309(f)(1)); NextEra Answer to Friends/NEC Petition at 34. See *also* Oconee, CLI-99-11, 49 NRC at 336-38 (mere general references to the Staff’s Requests for Additional Information do not provide the requisite reasonable specificity).

⁵³ See GALL Report, Vol. 2, § XI.E3, “Inaccessible Medium-Voltage Cables not Subject to 10 CFR 50.49 Environmental Qualification Requirements,” at XI E-9.

⁵⁴ See NextEra Appeal I at 7 (referring to Application, Vol. III, App. B, “Aging Management Programs,” § B.2.1.34, at B-182); NextEra Answer to Friends/NEC Petition at 33 (same).

stated that it considered the technical information and guidance from the Sandia Report in its original and its revised AMP.⁵⁵

As for the Brookhaven Report, Friends/NEC have identified no provision that contradicts or is not already addressed in the Application's relevant AMP.⁵⁶ Mr. Blanch takes issue with reliance on in-service systems testing conducted under normal operating conditions, to which the Brookhaven Report refers.⁵⁷ But the AMP in the original Application provided for "a proven test for detecting deterioration of the insulation system due to wetting, such as power factor, partial discharge, or polarization index, as described in EPRI TR-103834-P1-2, 'Effects of Moisture on the Life of Power Plant Cables' [(Aug. 1994)] or other testing that is state-of-the-art at the time the test is performed."⁵⁸ This language is nearly identical to the referenced GALL AMP.⁵⁹ Friends/NEC dispute none of this. Neither Mr. Blanch nor Friends/NEC address the testing plan specified in the AMP, much less explain why it is inadequate. NextEra further points out, and our record review confirms, that its Application Supplement to bring this AMP "in

⁵⁵ NextEra Appeal I at 7 (citing Application, Vol. III, App. B, § B.2.1.34, at B-181); NextEra Answer to Friends/NEC Petition at 33 (same). See *also* Application Supplement, Encl. 2, at 7 (citing the Sandia Report as a source of guidance and technical information for the AMP).

⁵⁶ See NextEra Answer to Friends/NEC Petition at 30 (citing Application, Vol. III, App. B, § B.2.1.34).

⁵⁷ See Blanch Declaration at 9-10 & n.3.

⁵⁸ Application, Vol. III, App. B, § B.2.1.34, at B-181. See *also* NextEra Appeal I at 7-8 n.8; NextEra Answer to Friends/NEC Petition at 31; Staff Answer to Petitions at 23.

⁵⁹ See GALL Report, Vol. 2, § XI.E3, at XI E-7. This section of the GALL Report was revised in 2010. The revision expanded the reference to "wetting" so that it now includes both "wetting" and "submergence," removed the cross-reference to EPRI TR-103834-P1-2, replaced it with a non-exclusive list of specific "proven test[s]," and explained the purpose of those tests. See GALL Report Rev. 2, § XI.E3, at XI E3-1. See *also* NextEra Appeal I at 7-8 n.8 (the AMP "does not rely on the in-service systems testing to which Mr. Blanch refers but instead requires a 'proven test' that will 'provide an indication of the condition of the conductor insulation'" (quoting Application, Vol. III, App. B, § B.2.1.34, at B-181, and citing GALL Report, Vol. 2, § XI.E3, at XI E-7)).

line with GALL Rev. 2 did not modify this description of the tests”⁶⁰ In short, we find that Friends/NEC’s arguments above do not present a genuine issue of material fact or law, and that the Board therefore erred in admitting Contention 1 on this basis.

Friends/NEC also assert that “[t]here are no testing methods available to adequately assure that submerged or previously submerged cables would perform their functions for the duration of [a] postulated accident.”⁶¹ NextEra points to the absence of support for this basis, even in the Blanch Declaration.⁶² Our review of the Declaration and the Petition substantiates NextEra’s assertion, which Friends/NEC do not challenge on appeal. Moreover, Basis 2 appears to be a variation on Friends/NEC’s argument in Basis 1 regarding the Brookhaven Report. To the extent that it is, we reject it on the same grounds, specifically that such testing methods do exist and are referenced in both the GALL Report’s model AMP and NextEra’s AMP.⁶³ In short, we find that the Board erred in finding that this basis supports the admission of Contention 1.

Next, Friends/NEC argue that the Application fails to provide measures to detect cable degradation prior to failure, particularly techniques for measuring and trending the condition of cable insulation.⁶⁴ NextEra asserts on appeal that, on this point, Friends/NEC fail to address

⁶⁰ NextEra Appeal I at 8 (citing Application Supplement, Encl. 2 at 2, 5). The revision in the supplement did, however, increase testing frequency.

⁶¹ Friends/NEC Petition at 14. See *also* Blanch Declaration at 9-11. In LBP-11-2, the Board described this basis (slip op. at 28) but did not discuss it. NextEra correctly points out that the Board mischaracterized this basis in its decision. NextEra Appeal I at 7. Compare LBP-11-2, 73 NRC at ___ (slip op. at 27-28) (stating that Friends/NEC assert that the AMP for non-environmentally qualified inaccessible cables and wiring, among other things, does not “identify testing methods that would adequately assure that submerged or previously submerged cables will perform their functions for the duration of a postulated accident”).

⁶² NextEra Appeal I at 8; NextEra Answer to Friends/NEC Petition at 28.

⁶³ See text associated with nn. 57-60, *supra*.

⁶⁴ Friends/NEC Petition at 16-17 (quoting NRC Generic Letter (GL) 2007-01, “Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant (continued . . .)

the relevant AMP in the Application.⁶⁵ We agree. The Application's relevant AMP provides the detection measures that Friends/NEC claim are missing.⁶⁶ Friends/NEC have an "ironclad obligation" to review the Application thoroughly and to base their challenges on its contents.⁶⁷ Friends/NEC did not satisfy this obligation here.

It bears mention that Friends/NEC take this basis from the NRC's Generic Letter 2007-01.⁶⁸ The generic letter informed licensees that inaccessible or underground cables susceptible to moisture-induced failures, particularly prior to the end of their qualified lives, could result in certain equipment failures. Such failures could either disable accident mitigation systems in operating power reactors or cause plant transients in those reactors. The GL states that licensees can assess the condition of cable insulation "with reasonable confidence" using one or more of several testing techniques: "partial discharge testing, time domain reflectometry, dissipation factor testing, and very low frequency AC testing."⁶⁹

The Board appears to cite GL 2007-01 as support to litigate this issue in license renewal.⁷⁰ But GL 2007-01 provides no support for Friends/NEC's third basis. The GL sought information from operating license holders regarding the history of underground cable failures

Transients" (Feb. 7, 2007) (GL 2007-01) (ML070360665)). In LBP-11-2, the Board described this basis (73 NRC at ___ (slip op. at 28)) but did not discuss it.

⁶⁵ NextEra Appeal I at 8 (citing both the original and revised AMP for non-environmentally-qualified inaccessible electrical cables).

⁶⁶ Basis 3 also appears to be a variant of Bases 1 and 2. If so, it fails on the same grounds (discussed *supra*).

⁶⁷ See, e.g., *Shaw Areva MOX Services, LLC* (Mixed Oxide Fuel Fabrication Facility), CLI-09-2, 69 NRC 55, 65 n.47 (2009) (referring to intervenors' "ironclad obligation to . . . diligently search publicly available NRC or Applicant documents for information relevant to their [c]ontention" (internal quotation marks and citation omitted)).

⁶⁸ Petition at 16-17.

⁶⁹ GL 2007-01 at 4.

⁷⁰ See LBP-11-2, 73 NRC at ___ (slip op. at 28 n.149).

for cables within the scope of the maintenance rule, as well as information on inspection, testing and monitoring programs to detect degradation in such cables.⁷¹ The GL is not focused on license renewal and does not address aging management. It neither requests additional AMPs for cables nor recommends improvements to existing cable AMPs.⁷² For these reasons, the Board erred in finding this basis to provide a justification for admitting Contention 1.

Friends/NEC next argue that the Application fails to identify the location and extent of Seabrook's non-environmentally-qualified inaccessible cables.⁷³ In particular, Mr. Blanch challenged NextEra's explanation of its decision not to include "boundary drawings" in its Application, specifically taking issue with NextEra's conclusion in the Application that such drawings were unnecessary because "commodity grouping was used in the scoping process."⁷⁴ According to Mr. Blanch, "[c]haracterization of cables by commodity grouping is an acceptable practice *only* if the location where each cable type is used is also identified."⁷⁵ Mr. Blanch, however, offered no support for this assertion.

⁷¹ GL 2007-01 at 4.

⁷² See *id.* at 4-5 (requesting information from current operating licensees regarding the history of inaccessible or underground cable failures within the scope of the Maintenance Rule, and a description of inspection, testing, and monitoring programs for inaccessible or underground cables).

⁷³ Friends/NEC Petition at 12. In LBP-11-2, the Board described this basis but did not discuss it. See 73 NRC at ___ (slip op. at 28).

⁷⁴ Blanch Declaration at 13 (quoting Application, Vol. I, § 2.1.2, at 2.1-7). A "boundary drawing" depicts mechanical piping and instrumentation diagrams. The Standard Review Plan for license renewal provides that a license renewal applicant may group like structures and components into "commodity groups." Standard Review Plan at 2.1-14 to 2.1-15, Table 2.1-2, "Specific Staff Guidance on Scoping." The basis for such a grouping "can be determined by such characteristics as similar function, similar design, similar materials of construction, similar aging management practices, or similar environments." *Id.* at 2.1-14, Table 2.1-2.

⁷⁵ Blanch Declaration at 13 (emphasis added).

As NextEra argues on appeal,⁷⁶ the approach taken in the Application is consistent with the GALL Report, which provides that “[e]lectrical cables and their required terminations (i.e., connections) are typically reviewed as a single commodity.”⁷⁷ Likewise, the Standard Review Plan provides that an applicant may group like structures into commodity groups, as long as the applicant provides the basis for the groups.⁷⁸ In its Application, NextEra offered the following explanation for its use of commodity grouping. As a general rule, NextEra focused upon the Seabrook plant’s *systems and structures* when determining which ones meet “the requirements for inclusion in the scope of license renewal.”⁷⁹ Once NextEra identified the relevant systems and structures (along with their intended functions), it identified the particular components that fell within the scope of license renewal.⁸⁰ However, it concluded that some components were more effectively evaluated “by component type, rather than by system or structure.”⁸¹ In those instances, NextEra instead employed an alternative approach—commodity grouping—to evaluate “[c]omponents constructed from similar materials, exposed to similar environments,

⁷⁶ See NextEra Appeal I at 9.

⁷⁷ GALL Report, Vol. 2, § VI.A, “Equipment not Subject to 10 CFR 50.49 Environmental Qualification Requirements,” at VI A-1 (cited in NextEra Appeal I at 9). The identical language also appears in GALL Report Rev. 2, § VI.A, at VI A-1.

⁷⁸ Standard Review Plan at 2.1-14, Table 2.1-2, “Specific Staff Guidance on Scoping.” Although the GALL Report and the Standard Review Plan are guidance documents, and therefore not binding, they do carry special weight. See *Yankee Atomic Electric Co.* (Yankee Nuclear Power Station), CLI-05-15, 61 NRC 365, 375 n.26 (2005) (“We recognize, of course, that guidance documents do not have the force and effect of law. Nonetheless, guidance is at least implicitly endorsed by the Commission and therefore is entitled to correspondingly special weight”) (citations and internal quotation marks omitted); *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-01-22, 54 NRC 255, 264 (2001) (“Where the NRC develops a guidance document to assist in compliance with applicable regulations, it is entitled to special weight”), *pet. for review held in abeyance, Ohngo Gaudadeh Devia v. NRC*, 492 F.3d 421 (D.C. Cir. 2007).

⁷⁹ Application, Vol. I, § 2.1.2, at 2.1-4.

⁸⁰ *Id.*

⁸¹ *Id.*

and which perform similar intended functions.”⁸² Each commodity group was evaluated “as if it were a separate individual system,” with the group’s components “not associated with a specific system or structure during the component’s evaluation” but rather “with their assigned commodity group.”⁸³ NextEra evaluated all electrical components, including cables, using the “commodity grouping” approach.⁸⁴

Neither Friends/NEC nor Mr. Blanch challenged this explanation, or explained why commodity grouping for cables in the Seabrook license renewal application was inappropriate, or offered a reason or other unmet need that would require us to mandate inclusion of the exact location of each cable in the Seabrook license renewal application. Consequently, we find that this basis does not justify the admission of Contention 1.

Finally, Friends/NEC make a general claim (or, more precisely, a request for relief) that the NRC should require NextEra to “preclude” moisture from affecting non-environmentally-qualified inaccessible cables.⁸⁵ NextEra argues that this requirement appears nowhere in our regulations and finds no support in the Blanch Declaration.⁸⁶ We agree. At bottom, Friends/NEC ask the agency to impose a burden greater than the requirement imposed by section 54.21(a)(3) to “adequately *manage*” aging effects.⁸⁷ Friends/NEC would have us

⁸² *Id.* See also *id.*, Vol. I, § 2.5, at 2.5-1 (“similar function, similar design or similar materials of construction”).

⁸³ *Id.*, Vol. I, § 2.1.2, at 2.1-4 to 2.1-5. See also *id.*, Vol. 1, § 2.5, at 2.5-1.

⁸⁴ *Id.*, Vol. I, § 2.1.2, at 2.1-5, 2.1-22. See also *id.* at 2.1-22 to 2.1-23 (describing the sequence of screening steps used to identify electrical commodity groups requiring an aging management review), § 2.5.1, at 2.5-2 (listing “Electrical Cables and Connections” as a commodity group).

⁸⁵ Friends/NEC Petition at 20. See also *id.* at 18-19 (include additional preventive measures in the AMP). In LBP-11-2, the Board described this basis (73 NRC at ___ (slip op. at 28)) but did not discuss it.

⁸⁶ NextEra Appeal I at 9. Mr. Blanch does not assert a need to preclude wetting. See Blanch Declaration at 7-11.

⁸⁷ 10 C.F.R. § 54.21(a)(3) (emphasis added).

elevate that burden to the point where NextEra would be required to “preclude,” not just “manage,” such effects. This proposition contravenes our longstanding practice of rejecting, as a collateral attack, any contention calling for requirements in excess of those imposed by our regulations.⁸⁸

In sum, we have reviewed the administrative record, including the Board’s brief ruling on Contention 1, and find no basis sufficient to support the Board’s admission of this contention. We recently held that a license renewal applicant who commits to implement an AMP that is consistent with the corresponding AMP in the GALL Report has demonstrated reasonable assurance under 10 C.F.R. § 54.29(a) that the aging effects will be adequately managed during the period of extended operation.⁸⁹ While referencing an AMP in the GALL Report does not insulate that program from challenge in litigation, as discussed above, Friends/NEC have not submitted an adequately supported challenge here. We therefore conclude that the Board erred, and reverse the Board’s ruling admitting Contention 1.

2. Friends/NEC Contention 2

The [license renewal application] for Seabrook violates 10 C.F.R. §§ 54.21(a) and 54.29 because it fails to include an aging management plan for each electrical transformer whose proper function is important for plant safety.⁹⁰

⁸⁸ *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-4, 59 NRC 31, 39 (2004) (rejecting a contention that would exceed regulatory requirements), *pet. for review held in abeyance*, *Ohngo Gaudadeh Devia v. NRC*, 492 F.3d 421 (D.C. Cir. 2007); *GPU Nuclear, Inc.* (Oyster Creek Nuclear Generating Station), CLI-00-6, 51 NRC 193, 206 (2000) (rejecting an “attempt[] to impose . . . a requirement more stringent than the one imposed by the regulations”); *Curators of the University of Missouri*, CLI-95-1, 41 NRC 71, 170 (1995) (“Intervenors are, in essence, contending that those regulatory provisions are themselves insufficient to protect the public health and safety. This assertion constitutes an improper collateral attack upon our regulations.”) (footnote omitted). See generally 10 C.F.R. § 2.335(a).

⁸⁹ *Vermont Yankee*, CLI-10-17, 72 NRC at 36; *Oyster Creek*, CLI-08-23, 68 NRC at 467-68.

⁹⁰ Friends/NEC Petition at 20 (capitalization omitted).

a. *Background*

Simply stated, Friends/NEC argue in Contention 2 that an electrical transformer is a component that should be classified as “passive” and “long-lived,” and therefore should be subject to an aging management review. The particular focus of the contention is on whether electrical transformers are appropriately characterized as having “passive” functions.

In the Statements of Consideration for the 1995 License Renewal Rule, the Commission determined that an aging management review is required for structures and components that fall within the scope of the rule and that perform “passive” intended functions. Our license renewal review focuses on so-called “passive” structures and components because structures and components performing “passive” functions generally do not have performance or condition characteristics that are as readily observable as those performing “active” functions.⁹¹ Put another way, structures and components with “active” functions generally can be directly verified. As such, the existing regulatory process, existing licensee programs and activities, and the maintenance rule provide the basis for generically excluding from an aging management review those structures and components that perform “active” functions.⁹² For this reason, the Commission generically excluded from license renewal aging management review structures and components associated only with “active” functions.⁹³ As reflected in the statements of consideration for the 1995 License Renewal Rule, “[f]unctional degradation resulting from the

⁹¹ Section 54.21(a)(1)(i) provides an illustrative list of structures and components that are subject to an aging management review, because they perform an intended function (as defined in 10 C.F.R. § 54.4) without moving parts or without a change in configuration or properties. Electrical transformers are not among the structures and components listed.

⁹² See 1995 License Renewal Rule, 60 Fed. Reg. at 22,468-73 and, particularly, 22,471 (“Performance and condition monitoring for systems, structures and components typically involves functional verification, either directly or indirectly. Direct verification is practical for active functions such as pump flow, valve stroke time, or relay actuation where the parameter of concern (required function), including any design margins, can be directly measured or observed.”).

⁹³ See *id.* at 22,472.

effects of aging on *active* functions is more readily determinable, and existing programs and requirements are expected to directly detect the effects of aging.”⁹⁴

The rule devoted significant discussion to defining a “passive” component. The Commission observed, as relevant here:

[P]assive structures and components for which aging degradation is *not readily monitored* are those that perform an intended function without moving parts or *without a change in configuration or properties*.⁹⁵

The Commission went on to observe that the phrase “a change in configuration or properties’ should be interpreted to include a ‘change in state.’”⁹⁶

Following implementation of the License Renewal Rule, the nuclear industry developed guidelines for use by applicants in developing license renewal applications that would comply with the rule.⁹⁷ During the initial development of those guidelines, questions arose as to whether certain electrical components were, in fact, subject to an aging management review under the rule. Transformers were among the components discussed. The Staff in 1997 provided additional guidance, which addressed specifically whether electrical transformers (among other electrical components) are subject to an aging management review.

⁹⁴ *Id.* (emphasis added).

⁹⁵ *Id.* at 22,477 (emphases added). The Statements of Consideration explain that “a pump or valve has moving parts, an electrical relay can change its configuration, and a battery changes its electrolyte properties when discharging. Therefore, the performance or condition of these components is readily monitored and would not be captured by this description.” *Id.*

⁹⁶ *Id.* (offering the example of a transistor).

⁹⁷ See generally NEI 95-10 (Rev. 0 Mar. 1996), “Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule” (ML031600708). The Staff reviewed this guidance (which has since been updated several times) and has indicated that licensees may use a later version of NEI 95-10 (currently Revision 6) to implement the License Renewal Rule. See Regulatory Guide 1.188, “Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses” (Rev. 1 Sept. 2005), at 4 (Regulatory Guide 1.188) (ML051920430).

In its guidance, the Staff observed that 10 C.F.R. § 54.21(a)(1)(i) expressly excludes a variety of electrical and instrumentation and control components from an aging management review for license renewal, and stated that the exclusion “is not limited to” only these components.⁹⁸ The Staff went on to state that it had considered aging management review requirements for transformers (among other components), and concluded that transformers are not subject to an aging management review. The Staff reasoned that transformers performed their intended function through a “change in state,” by “stepping down voltage from a higher to a lower value, stepping up voltage to a higher value, or providing isolation to a load.”⁹⁹ The Staff also observed that degradation of a transformer’s ability to perform its intended function would be “readily monitorable by a change in the electrical performance of the transformer and the associated circuits.”¹⁰⁰ Ultimately, the Staff recommended that NEI revise its guidance to indicate that transformers (among other components) do not require an aging management review.¹⁰¹ NEI’s current guidance reflects the Staff position on transformers.¹⁰²

Friends/NEC argue in Contention 2 that NextEra’s Application violates 10 C.F.R. §§ 54.21(a) and 54.29 because it fails to include an aging management program for each

⁹⁸ Letter from C.I. Grimes, Office of Nuclear Reactor Regulation, to D.J. Walters, NEI, “Determination of Aging Management Review for Electrical Components” (Sept. 19, 1997) (Grimes Letter), Attachment at 1. See generally 10 C.F.R. § 54.21(a)(1)(i). The Grimes Letter is included as App. C, Ref. 2, to NEI 95-10 (Rev. 6, June 2005), “Industry Guideline for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule” (NEI 95-10 (Rev. 6)) (ML051860406).

⁹⁹ Grimes Letter, Attachment at 2. The Staff went on to state: “Transformers perform their intended function through a change in state similar to switchgear, power supplies, battery chargers, and power inverters, which have been excluded in [10 C.F.R.] § 54.21(a)(1)(i) from an aging management review.” *Id.*

¹⁰⁰ *Id.* The Staff also cited other indications of transformer performance, including observing trending of certain electrical parameters, and advanced monitoring methods. *Id.*

¹⁰¹ *Id.* at 4.

¹⁰² The Grimes Letter is incorporated into NEI 95-10 (Rev. 6) in App. C, Ref. 2.

electrical transformer whose “proper function” is important for plant safety.¹⁰³ The crux of their argument is that electrical transformers perform “passive” functions, and therefore must be addressed in an AMP, but that NextEra’s Application contains no such AMP. In support, Friends/NEC offered the expert opinion of Paul Blanch. Mr. Blanch asserted, without more, that “[t]ransformers function without moving parts or without a change in configuration or properties as defined in [10 C.F.R. § 54.21(a)].”¹⁰⁴ The Blanch Declaration went on to raise general concerns associated with the failure to properly manage aging of electrical transformers.¹⁰⁵

The Staff and NextEra responded before the Board that electrical transformers are “active” and are therefore not subject to aging management review.¹⁰⁶ They relied primarily upon the guidance discussed above, and also upon the NRC’s prior “issuance of other license renewals where transformers were treated as active components.”¹⁰⁷ They also criticized Friends/NEC and the Blanch Declaration for referring to license renewal applications and supporting documents relevant only to other nuclear facilities,¹⁰⁸ for presenting only conclusory

¹⁰³ Friends/NEC Petition at 20-22. See *also* Tr. at 100-25.

¹⁰⁴ Blanch Declaration at 11.

¹⁰⁵ *Id.* at 11-13.

¹⁰⁶ NextEra Answer to Friends/NEC Petition at 43-47; Staff Answer to Petitions at 26-30.

¹⁰⁷ Tr. at 120 (Mr. Fernandez).

¹⁰⁸ See, e.g., NextEra Answer to Friends/NEC Petition at 43 & n.32 (referring to Friends/NEC’s near-verbatim paraphrase and use of a contention from the *Indian Point* license renewal proceeding, despite the fact that the Seabrook Application lacks the language challenged in the *Indian Point* contention); Blanch Declaration at 4 (asserting that he has “reviewed Vermont Yankee’s License Renewal Application[,] . . . the subsequent submittals by Entergy to renew the operating licenses for Indian Point Unit 2 and Unit 3 . . . [and] the NRC’s Safety Evaluation Report dated May 2008 (NUREG-1907).”).

arguments,¹⁰⁹ and for contradictorily stating, at different places, that electrical transformers are “active” *and* “passive.”¹¹⁰

The Board’s discussion of Contention 2 is brief. The Board found significant that the Staff guidance upon which the Staff and NextEra relied is non-binding, and further that we had not addressed the issue whether electrical transformers are “active” or “passive” components.¹¹¹ The Board therefore concluded that “[i]n the absence of a definitive designation for transformers, this contention requires fact-based determinations best left to further adjudicatory proceedings.”¹¹²

In admitting Contention 2, the Board rejected NextEra’s and the Staff’s arguments regarding the internal inconsistency of the Blanch Declaration. The Board concluded that the inconsistency stemmed merely from clerical errors, were clarified at oral argument, and therefore should not be strictly construed against Friends/NEC.¹¹³

b. Discussion

NextEra argues that Friends/NEC’s contention is too thinly supported to merit admission.¹¹⁴ We agree. Longstanding Staff guidance directly addresses the classification of electrical transformers for the purposes of license renewal, and has found them to be “active”

¹⁰⁹ NextEra Appeal I at 14; NextEra Answer to Friends/NEC Petition at 46-47; Staff Answer to Petitions at 30-35.

¹¹⁰ NextEra Appeal I at 13; NextEra Answer to Friends/NEC Petition at 46; Staff Answer to Petitions at 25-26, 31. See Blanch Declaration at 12 (*compare* ¶ 35 *with* ¶ 36); Friends/NEC Petition at 22 (*compare* ¶ 8 *with* ¶ 9).

¹¹¹ LBP-11-2, 73 NRC at ___ (slip op. at 34).

¹¹² *Id.*

¹¹³ *Id.* at ___ (slip op. at 34-35). On this point, we agree with the Board. In considering the matter on appeal, we construed the petition and the Blanch Declaration in favor of Friends/NEC. But we caution all parties to take care in the preparation of documents for litigation, given that unclear drafting renders decision-making challenging not only for the Board, but for us.

¹¹⁴ NextEra Appeal I at 11-12.

components. At no time did Friends/NEC challenge the guidance documents in their filings before the Board. Instead, Friends/NEC rested on its initial cursory argument that “it is well known that many transformers . . . are passive devices in that they contain no moving parts and do not undergo a change of properties or state.”¹¹⁵ The Board is correct that the applicability of a guidance document may be challenged in an individual proceeding. However, we decline here to find Friends/NEC’s conclusory statements sufficient to support an admissible contention.

As discussed above, the Grimes Letter sets forth the Staff’s reasoning that transformers perform “active” functions:

Transformers perform their intended function through a change in state by stepping down voltage from a higher to a lower value, stepping up voltage to a higher value, or providing isolation to a load. Transformers perform their intended function through a change in state similar to switchgear, power supplies, battery chargers, and power inverters, which have been excluded in §54.21(a)(1)(i) from an aging management review. Any degradation of the transformer’s ability to perform its intended function is readily monitorable by a change in the electrical performance of the transformer and the associated circuits. Trending electrical parameters measured during transformer surveillance and maintenance such as Doble test results, and advanced monitoring methods such as infrared thermography, and electrical circuit characterization and diagnosis provide a direct indication of the performance of the transformer. Therefore, transformers are not subject to an aging management review.¹¹⁶

Friends/NEC and Mr. Blanch disregard the Staff guidance. As a result, Mr. Blanch’s conclusory statement that transformers are passive components is not adequate as a basis for the contention.¹¹⁷ In order to raise a litigable challenge to the categorization of electrical

¹¹⁵ Friends/NEC Petition at 22; Blanch Declaration at 12.

¹¹⁶ Grimes Letter, Attachment at 2. See also Standard Review Plan at 2.1-24, Table 2.1-5, item 104 (excluding transformers from the list of SSCs subject to an aging management review).

¹¹⁷ See *USEC Inc. (American Centrifuge Plant)*, CLI-06-10, 63 NRC 451, 472 (2006) (“[A]n expert opinion that merely states a conclusion (e.g., the application is ‘deficient,’ ‘inadequate,’ or ‘wrong’) without providing a reasoned basis or explanation for that conclusion is inadequate because it deprives the Board of the ability to make the necessary, reflective assessment of the opinion”) (quoting *Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation)*, LBP-98-7, 47 NRC 142, 181, *recons. granted in part and denied in part on other grounds*, LBP-98-10, 47 NRC 288, *aff’d on other grounds*, CLI-98-13, 48 NRC 26 (1998)).

transformers, Friends/NEC would have to provide sufficient factual information or expert opinion to merit further consideration of the matter. Here, in the absence of a supported challenge to the guidance, we do not find a genuine dispute with the applicant meriting litigation in this proceeding.

Instead, in support of this contention, Friends/NEC assert that the Staff “has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of” section 54.21, and that “[t]his path typically includes switchyard circuit breakers that connect to the offsite system power transformers (startup transformers), the transformers themselves”¹¹⁸ Based on these two premises, Friends/NEC argue that “[e]nsuring that the appropriate offsite power system long-lived passive structures and components that are part of this circuit path are subject to an [aging management review] will assure that the bases underlying the [station blackout] requirements are maintained over the period of extended license.”¹¹⁹ The upshot of this argument appears to be that, because transformers are included in a portion of a plant system that is within the scope of license renewal, they are themselves subject to an aging management review.

However, considered in context, the Staff’s statement upon which Friends/NEC rely does not support the assumption that transformers perform “passive” functions. The statement referenced by Friends/NEC appears to be a direct quotation from a Draft Request for Additional Information (Draft RAI) attached to a summary of a conference call regarding the Indian Point license renewal application.¹²⁰ The Draft RAI, in turn, quotes Staff guidance identifying

¹¹⁸ Blanch Declaration at 12 (emphasis omitted). *Accord* Friends/NEC Petition at 22 (emphasis omitted).

¹¹⁹ Blanch Declaration at 13. *Accord* Friends/NEC Petition at 22.

¹²⁰ See Staff Answer to Petitions at 31-32 & n.35 (citing Summary of Telephone Conference Call Held on September 21, 2007, between the U.S. Nuclear Regulatory Commission and Entergy Nuclear Operations, Inc., concerning Draft Requests for Additional Information Pertaining to the (continued . . .)

equipment relied on to meet the requirements of the station blackout rule, as it affects scoping for license renewal.¹²¹ The guidance states, in relevant part:

For purposes of the license renewal rule, the staff has determined that the plant system portion of the offsite power system that is used to connect the plant to the offsite power source should be included within the scope of the rule. *This path typically includes* switchyard circuit breakers that connect to the offsite system *power transformers (startup transformers), the transformers themselves* Ensuring that *the appropriate offsite power system long-lived passive structures and components that are part of this circuit path are subject to an [aging management review]* will assure that the bases underlying the [station blackout] requirements are maintained over the period of extended license.¹²²

Read in its proper context, we discern no support in the guidance for the argument that a transformer is a “passive component” and should be subject to an aging management review. The guidance simply delineates the portion of the offsite power system that is “inside the plant” for the purpose of identifying structures and components that are subject to an aging management review to confirm compliance with the station blackout rule for the period of extended operation. The Staff concluded that the portion of the offsite power system that is used to connect the plant to the offsite power source is included within the scope of the license renewal rule. That system includes several components, including transformers. But the guidance does not distinguish—or discuss at all—which of those components perform active or passive functions (or some combination thereof). For this reason, the document does not provide support for Friends/NEC’s Contention 2.

Indian Point Nuclear Generating Unit Nos. 2 & 3, License Renewal Application (Oct. 16, 2007), at 10 (ML072770605)).

¹²¹ See generally 10 C.F.R. § 54.4(a)(3) (citing 10 C.F.R. § 50.63 (station blackout rule)).

¹²² Draft RAI at 10 (emphases added) (quoting “NRC Staff Position on the License Renewal Rule (10 CFR 54.4) as it relates to The Station Blackout Rule (10 CFR 50.63),” at 2, attached to letter dated April 1, 2002, “Staff Guidance on Scoping of Equipment Relied on to Meet the Requirements of the Station Blackout (SBO) Rule (10 CFR 50.63) for License Renewal (10 CFR 54.4(a)(3))” (ML020920464)).

In sum, the Board erred in admitting Contention 2, as it lacks the support required by 10 C.F.R. § 2.309(f)(1)(v).

3. Friends/NEC Contention 4

The Environmental Report is inadequate because it underestimates the true cost of a severe accident at Seabrook Station in violation of 10 C.F.R. § 51.53(c)(3)(ii)(L) and further analysis is called for.¹²³

a. Background

Friends/NEC Contention 4 challenges NextEra's severe accident mitigation alternatives (SAMA) analysis for Seabrook. Mitigation alternatives, or "SAMAs," refer to potential safety enhancements intended to reduce the risk of severe accidents. The NRC's current Generic Environmental Impact Statement for license renewal provides a generic and bounding analysis of potential severe accident impacts, encompassing all existing plants.¹²⁴ The SAMA analysis is a site-specific analysis focusing on potential additional mitigation measures that could be implemented to *further* reduce severe accident risk (probability or consequences). The analysis by practice has been a cost-benefit analysis, examining whether particular hardware or procedural changes may be cost-beneficial to implement, given the degree of risk reduction that reasonably could be expected from the change.

Under the NRC's environmental regulations for license renewal, applicants must provide a SAMA analysis if the Staff has not yet previously considered severe accident mitigation alternatives for the applicant's plant in an environmental impact statement (EIS) or related supplement, or in an environmental assessment.¹²⁵ The SAMA analysis is an environmental mitigation analysis under NEPA, and is not part of the license renewal safety review. Whether additional accident mitigation measures may be warranted to assure public health and safety is

¹²³ Friends/NEC Petition at 33-34.

¹²⁴ See License Renewal GEIS, Vol. 1 at 5-12 to 5-106, 5-113, 5-115.

¹²⁵ See 10 C.F.R. § 51.53(c)(3)(ii)(L).

addressed through the NRC's ongoing regulatory oversight of existing plants.¹²⁶ In regard to SAMAs, we have stressed that “[u]nless it looks genuinely plausible that inclusion of an additional factor or use of other assumptions and models may change the cost-benefit conclusions for the SAMA candidates evaluated, no purpose would be served to further refine the SAMA analysis.”¹²⁷

SAMA analysis involves extensive computer modeling, and therefore may involve issues not readily understood by those not familiar with the computer codes and methodologies that are used. We recognize that SAMA analysis issues can present difficult judgment calls at the contention admissibility stage, and we are reluctant as a general matter to second-guess Board rulings on contention admissibility.¹²⁸ Nonetheless, as NextEra highlights, where arguably large portions of contentions have been “cut and pasted” from one or more other NRC proceedings—which Friends/NEC’s representative concedes was done for their intervention—it is especially important to “ensure the existence of a genuine material dispute with [the] *particular* application” at issue.¹²⁹

Given the quantitative nature of the SAMA analysis, where the analysis rests largely on selected inputs, it may always be possible to conceive of alternative and more conservative inputs, whose use in the analysis could result in greater estimated accident consequences. But the proper question is not whether there are plausible alternative choices for use in the analysis, but whether the analysis that was done is reasonable under NEPA. We have long held that

¹²⁶ See, e.g., “Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities,” Final Report, NUREG-1407 (June 1991) (ML063550238).

¹²⁷ *Pilgrim*, CLI-10-11, 71 NRC at 317.

¹²⁸ *AmerGen Energy Corp., LLC* (Oyster Creek Nuclear Generating Station), CLI-09-7, 69 NRC 235, 276-77 (2009).

¹²⁹ NextEra Appeal I at 4 & n.6, 20 (emphasis in original). See also Tr. at 68; Friends/NEC Answer to NextEra Appeal at 4.

contentions admitted for litigation must point to a deficiency in the application, and not merely “suggestions” of other ways an analysis could have been done, or other details that could have been included.¹³⁰ SAMA adjudications would prove endless if hearings were triggered merely by suggested alternative inputs and methodologies that conceivably could alter the cost-benefit conclusions. A contention proposing alternative inputs or methodologies must present some factual or expert basis for why the proposed changes in the analysis are warranted (e.g., why the inputs or methodology used is unreasonable, and the proposed changes or methodology would be more appropriate). Otherwise, there is no genuine material dispute with the SAMA analysis that was done, only a proposal for an alternate NEPA analysis that may be no more accurate or meaningful. We turn now to the SAMA contention.

Contention 4 challenged the SAMA analysis based on six claimed deficiencies (labeled alphabetically “a” through “f”). The contention claims that the SAMA analysis “improperly minimized” the potential costs of a severe accident, and therefore made additional risk reduction measures “appear[] not to be justified.”¹³¹ The Board addressed the admissibility of each of the contention “subparts” separately, as essentially distinct contentions.¹³² The Board admitted Friends/NEC Contentions 4B, 4D, and 4E, as limited by LBP-11-2.¹³³ NextEra appeals admission of the three SAMA contentions. We address each in turn.

*b. Friends/NEC’s Contention 4B – The SAMA analysis minimizes the potential amount of radioactive release in a severe accident*¹³⁴

In LBP-11-2, the Board admitted one portion of Friends/NEC 4B. The admitted issue challenges the use in the Seabrook SAMA analysis of source terms obtained with the Modular

¹³⁰ See *USEC*, CLI-06-10, 63 NRC at 477.

¹³¹ Friends/NEC Petition at 37.

¹³² LBP-11-2, 73 NRC at __ (slip op. at 38-39).

¹³³ *Id.* at __ (slip op. at 48, 55-56, 63).

¹³⁴ Friends/NEC Petition at 41.

Accident Analysis Progression (MAAP) computer code. Specifically, Friends/NEC argue that the MAAP code “has not been validated by the NRC,” and that the radionuclide release fractions generated by MAAP “are consistently smaller for key radionuclides than the release fractions specified in NUREG-1465 and its recent revision for high-burnup fuel.”¹³⁵ They go on to claim that “the source term used [in the SAMA analysis] results in lower [accident] consequences than would be obtained from NUREG-1465 release fractions and release durations.”¹³⁶ Friends/NEC further argue that it “has been previously observed” that “MAAP generates lower release fractions than those derived and used by NRC in studies such as NUREG-1150.”¹³⁷ They argue that the use of source terms generated by MAAP “appears to lead to anomalously low consequences when compared to source terms generated by NRC staff.”¹³⁸

In support, Friends/NEC cite to excerpts from two documents. One is a 1987 draft of the NUREG-1150 severe accident risk study that, in examining accident risk at the Zion Nuclear Station found that “the MAAP estimates for environmental release fractions were significantly smaller” than those obtained with “the Source Term Code Package” computer code.¹³⁹ The other is a 2002 Brookhaven National Laboratory (BNL) report examining ice condenser and Mark III containment plants, which compared the probabilistic risk assessment (PRA) results for

¹³⁵ *Id.* at 44. See “Accident Source Terms for Light-Water Nuclear Power Plants,” Final Report, NUREG-1465 (Feb. 1995) (ML041040063).

¹³⁶ Friends/NEC Petition at 44.

¹³⁷ *Id.* NUREG-1150 assessed the risks from severe accidents at five commercial nuclear power plants of different design. See “Severe Accident Risks: An Assessment for Five U.S. Nuclear Plants,” NUREG-1150 (Dec. 1990) (ML040140729). Seabrook was not one of the five plants specifically evaluated in the report.

¹³⁸ Friends/NEC Petition at 45.

¹³⁹ “Reactor Risk Reference Document,” Main Report, Draft for Comment, NUREG-1150, Vol. 1 (Feb. 1987), at 5-14 (ML063540601) (cited at Friends/NEC Petition at n.16). The Source Term Code Package (STCP) and MELCOR computer codes were used in the NUREG-1150 reactor accident study.

the Catawba plant (obtained using the MAAP code) with a “typical NUREG-1150 release” for the Sequoyah plant (obtained using the Source Term Code Package and MELCOR).¹⁴⁰ The BNL study noted that the “NUREG-1150 release fractions for the important radionuclides are about a factor of 4 higher than the ones” in the Catawba PRA, and that the “differences in the release fractions . . . are primarily attributable to the use of the different codes in the two analyses.”¹⁴¹

In LBP-11-2, the Board admitted Friends/NEC Contention 4B “to the limited extent that it relates to the selection of the source term release fractions.”¹⁴² On appeal, NextEra argues that the contention does not provide sufficient information to demonstrate the existence of a genuine dispute with the application. NextEra argues that the source term claims are taken from an expert report filed in the *Indian Point* proceeding, specifically, an accident consequence analysis that Dr. Edwin Lyman prepared, which substituted NUREG-1465 source terms for the MAAP-generated source terms the applicant used in the SAMA analysis for Indian Point Unit 2.¹⁴³ NextEra further stresses that the contention “only alleges that other models may produce a larger source term,” and that there is no expert support provided to indicate that other source terms would be more accurate or more reasonable for the SAMA analysis.¹⁴⁴

In our view, the support for the contention is weak. To the extent that the contention suggests that NextEra simply should replace the Seabrook SAMA analysis release fractions

¹⁴⁰ John R. Lehner et al., Benefit Cost Analysis of Enhancing Combustible Gas Control Availability at Ice Condenser and Mark III Containment Plants, Final Letter Report (Dec. 2002) at 17 (referenced at Friends/NEC Petition at 44-45).

¹⁴¹ *Id.*

¹⁴² LBP-11-2, 73 NRC at ___ (slip op. at 44).

¹⁴³ NextEra Appeal I at 19-20 (citing to Edwin Lyman, A Critique of the Radiological Consequence Assessment Conducted in Support of the Indian Point Severe Accident Mitigation Alternatives Analysis (Nov. 2007), attached to *Riverkeeper, Inc.’s Request for Hearing and Petition to Intervene in Indian Point License Renewal Proceeding* (Nov. 30, 2007) (ML073410093)).

¹⁴⁴ *Id.* at 20.

with generic release fractions derived from NUREG-1465, Friends/NEC identify no factual or expert support. As NextEra describes, the portion of the contention discussing NUREG-1465 appears to be “copied almost verbatim” from a site-specific consequence analysis Dr. Lyman prepared for the *Indian Point* proceeding.¹⁴⁵ It is not apparent to us that the site-specific accident “consequence” conclusions of Dr. Lyman’s report can, without more, simply be lifted and directly applied to the site-specific Seabrook SAMA analysis.

Essentially, the challenge to the MAAP-generated release fractions rests on a thin reed—the excerpts from the draft NUREG-1150 report and the BNL report. We do not read these excerpts to necessarily suggest that MAAP-generated source terms are inaccurate, only that under the specific comparisons noted the MAAP-generated source terms were smaller than source terms obtained from the NUREG-1150 report. Further, it is not clear that these comparisons (one dating back 24 years) involved the same version of the MAAP code used in the Seabrook SAMA analysis. Contention 4B does not compare NUREG-1150 values to the Seabrook SAMA analysis release fractions, or otherwise discuss or even reference the Seabrook release fractions.¹⁴⁶ And while the contention suggests that generic source term values obtained from NUREG-1150 would be larger, it does not suggest why the generic values would be more accurate for a plant-specific SAMA analysis than the MAAP-generated plant-specific release fractions.

Yet the Board found the support from the two documents sufficient, concluding that the “alleged fact that the source terms provided by MAAP are lower than those produced by the methodology used in NRC studies (resulting in consequence values that are lower by a factor of 3 and 4 according to the [BNL Report]) raises sufficient question concerning whether the

¹⁴⁵*Id.* at 19.

¹⁴⁶ We additionally note that MAAP-generated release fractions and durations apparently were not used for all of the ten accident categories analyzed in the Seabrook SAMA analysis. See *id.*, Att. F at F-59, F-63.

calculated consequences and resulting cost-benefit analyses at Seabrook are adequate for rendering decisions on potential mitigation alternatives.”¹⁴⁷ Although we consider, as we said previously, that support for this contention is weak, because the Board is the appropriate arbiter of such fact-specific questions of contention admissibility, we will not second-guess the Board’s evaluation of factual support for the contention, absent an error of law or abuse of discretion.¹⁴⁸ Here, we additionally note that NextEra never addressed specifically the relevance of the cited comparisons to the Seabrook SAMA analysis. Because we cannot conclude that the Board’s assessment of the documents amounts to legal error, we defer to the Board’s judgment in admitting Contention 4B.¹⁴⁹

c. *Friends/NEC 4D – 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 and radionuclides at Seabrook’s coastal locations.*¹⁵⁰

The straight-line Gaussian plume model is the atmospheric dispersion model in the MACCS2 computer code (a version of the MELCOR Accident Consequence Code System code), which was used for the Seabrook SAMA analysis. Friends/NEC argue that the straight-line Gaussian plume model is inappropriate for a coastal location because it “ignores the presence of sea breeze circulations which dramatically alter air flow patterns.”¹⁵¹ Friends/NEC further argue that the straight-line Gaussian plume model does not properly account for the impact of terrain effects, and that the terrain at the Seabrook site varies from “hilly to

¹⁴⁷ LBP-11-2, 73 NRC at ___ (slip op. at 48).

¹⁴⁸ See, e.g., *AmerGen Energy Co., LLC (Oyster Creek Nuclear Generating Station)*, CLI-06-24, 64 NRC 111, 121 (2006).

¹⁴⁹ We note, however, that in the Board’s assessment, we expect a thorough and thoughtful review of all facts offered in support of a contention, particularly where, as here, the contention and/or factual support was taken directly from a case involving a different facility.

¹⁵⁰ Friends/NEC Petition at 47.

¹⁵¹ *Id.* at 49-50.

mountainous except along the coast.”¹⁵² They stress that there are other more “advanced [atmospheric dispersion] models” that can be applied in “complex terrain settings such as in mountainous or coastal areas.”¹⁵³ Friends/NEC claim that use of the straight-line Gaussian plume model in the Seabrook SAMA analysis “underestimated the area likely to be affected in a severe accident and the dose likely to be received” in the affected area.¹⁵⁴

In LBP-11-2, the Board admitted Friends/NEC 4D, concluding that “Friends/NEC sufficiently support their allegation that use of the [straight-line Gaussian plume] model might significantly distort the Seabrook SAMA analysis.”¹⁵⁵ The Board found that Friends/NEC had provided “sufficient information to indicate that it is more than plausible that the use of an alternative model has the potential to change the cost-benefit conclusions for the SAMA candidates evaluated by NextEra.”¹⁵⁶

On appeal, NextEra argues that Friends/NEC did not provide any expert opinion or document indicating that “use of an alternate dispersion model would predict *greater* offsite consequences.”¹⁵⁷ NextEra goes on to assert that Friends/NEC and “by extension, the Board,” merely “assume that certain modeling features in the ATMOS^[158] model (such as the straight-line Gaussian plume, lack of modeling of terrain effects, and the use of a single year of meteorological data) ultimately might be significant.”¹⁵⁹ NextEra states that “[c]ertainly the use

¹⁵² *Id.* at 50-51 (quoting Environmental Report), 53-54.

¹⁵³ *Id.* at 59-60.

¹⁵⁴ *Id.* at 47.

¹⁵⁵ LBP-11-2, 73 NRC at ___ (slip op. at 52).

¹⁵⁶ *Id.*

¹⁵⁷ NextEra Appeal I at 22 (emphasis added).

¹⁵⁸ ATMOS is the module in the MACCS2 computer code that performs the atmospheric dispersion modeling for the SAMA analysis.

¹⁵⁹ NextEra Appeal I at 22.

of a different model *might* result in a prediction of greater offsite consequences,” but that Friends/NEC “provides no support to suggest that this is actually the case.”¹⁶⁰ NextEra further stresses that the Friends/NEC claims fail to challenge or otherwise address the “extensive sensitivity analyses” included in the SAMA analysis, which address atmospheric modeling uncertainty.¹⁶¹

We agree that Friends/NEC did not provide specific expert or factual support for its claim that use of the straight-line Gaussian plume model “underestimates” radiological doses. Rather, Friends/NEC offered factual support questioning the precision of the model. The Board rejected Staff and licensee arguments going to the sufficiency of Friends/NEC’s plume modeling claims, finding these to be “reasonable counter arguments,” but “merits-based.”¹⁶² NextEra insists that its arguments before the Board were not arguments on the merits, but arguments on whether Friends/NEC met the “threshold” contention requirement of showing materiality.¹⁶³

NextEra’s arguments are not without force. Although petitioners need not “rerun the Applicant’s own cost-benefit calculations”¹⁶⁴ at the contention admissibility stage, they can

¹⁶⁰ *Id.* (emphasis in original).

¹⁶¹ *Id.* at 22-23.

¹⁶² LBP-11-2, 73 NRC at ___ (slip op. at 55).

¹⁶³ NextEra Appeal I at 18. NextEra provides an example of a Friends/NEC argument that appears immaterial. While Friends/NEC challenges the use of a single year’s worth of meteorological data, the SAMA analysis indicates that in fact five years of data were reviewed, and the year with the most conservative data, resulting in the “maximum dose and cost risk” was used in the analysis. See *id.* at 22 (citing Environmental Report). The Board did not specifically address this claim. Moreover, we note that one argument Friends/NEC provided appears to *undercut* its contention. Referencing (actually quoting verbatim, although quotation marks were not inserted) a 2004 MACCS2 code guidance document, Friends/NEC claim that because Gaussian models are “inherently flat-earth models,” there is “inherent *conservatism* (and simplicity) if the environs” involve grade variations, significant nearby buildings, or tall vegetation that is “not taken into account in the dispersion parameterization.” See Friends/NEC Petition at 59 (emphasis added) (citation omitted).

¹⁶⁴ LBP-11-2, 73 NRC at ___ (slip op. at 40).

support SAMA contentions by providing the opinion of an expert with knowledge of SAMA code modeling issues, who has reviewed the SAMA analysis. In its reply before the Board, Friends/NEC suggested that it will, at a later “stage” in the proceeding, “present factual evidence that indeed the straight-line Gaussian plume model is NOT conservative.”¹⁶⁵

While we agree with NextEra that the SAMA analysis involves numerous considerations and properly ought to be considered in its “entirety,”¹⁶⁶ we also recognize that at the contention admissibility stage there may be close questions on the materiality of claims, particularly given the complexity of the SAMA code modeling issues and Board reluctance to delve into merits-related inquiries. As in any proceeding, the Board makes threshold decisions on materiality on a case-by-case basis, given the nature of the issue and the record presented before the Board.

Here, the Board held that “Friends/NEC have raised plausible limitations of air dispersion modeling at the [Seabrook] site,” and that the asserted limitations of the atmospheric dispersion model plausibly could affect the SAMA cost-benefit conclusions.¹⁶⁷ Given the substantial deference we typically accord licensing boards on contention admissibility, we conclude that the Board did not abuse its discretion or commit legal error in finding adequate factual support for the contention, given the limited record before it on SAMA analysis computer modeling and the inter-relationships between, and significance of, the different portions and levels of the SAMA analysis. We therefore decline to disturb the Board’s admission of Contention 4D.

- d. *Friends/NEC 4E – 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.*¹⁶⁸

¹⁶⁵ Friends/NEC Reply at 39 (emphasis in original).

¹⁶⁶ NextEra Appeal I at 18.

¹⁶⁷ LBP-11-2, 73 NRC at ___ (slip op. at 52-53).

¹⁶⁸ Friends/NEC Petition at 61.

From Contention 4E, the Board admitted the limited issues of “decontamination and cleanup costs”—specifically claims involving radionuclide “particle size” and “remediation difficulty in urban areas.”¹⁶⁹ In the Board’s description of the contention, “Friends/NEC allege that because [NextEra] ‘uses the outdated and inaccurate MACCS2 code to calculate decontamination and clean up costs,’ NextEra employs an inapplicable [radionuclide] particle size,” and “ignores the difficulty of cleanup in an urban area.”¹⁷⁰

As to radionuclide particle size, Friends/NEC claim that “[n]uclear reactor releases range in size from a fraction of a micron to a couple of microns,” but “nuclear bomb explosions fallout is much larger—particles that are ten to hundreds of microns.”¹⁷¹ They claim that the “small nuclear releases [from reactor accidents] can get wedged into small cracks and crevices of buildings making [cleanup] extremely difficult or impossible.”¹⁷² They therefore conclude that “cleanup after a nuclear bomb explosion is not comparable to clean up after a nuclear reactor accident and assuming so will underestimate cost.”¹⁷³

Friends/NEC go on to argue that the MACCS2 code uses an “economic cost model” that improperly assumes inappropriately large radionuclide particles, such as those that would be released in a nuclear weapon explosion.¹⁷⁴ Friends/NEC claim that use of the MACCS2 code will result in underestimated decontamination costs because the smaller radionuclide particles that would be released in a reactor accident would be more difficult and more expensive to

¹⁶⁹ LBP-11-2, 73 NRC at ___ (slip op. at 56).

¹⁷⁰ *Id.* (quoting Friends/NEC Petition at 62).

¹⁷¹ Friends/NEC Petition at 63.

¹⁷² *Id.*

¹⁷³ *Id.* at 62.

¹⁷⁴ *Id.*

remove or “clean up” than the larger particles released in a nuclear weapon explosion.¹⁷⁵ As support, they cite to a 1996 Sandia National Laboratories study of the potential economic costs of a plutonium dispersal accident.¹⁷⁶ They argue that the Sandia Study recognized that earlier estimates of decontamination costs, “such as incorporated in [the 1975 NRC reactor accident risk study] WASH-1400 and up through and including MACCS2” are erroneous because “they examined fallout from [explosions] of nuclear weapons that produce large particles and high mass loadings.”¹⁷⁷

In LBP-11-2, the Board found adequate support for Friends/NEC’s “assertion that smaller particles will create higher cleanup costs.”¹⁷⁸ The Board concluded that Friends/NEC “dispute sufficiently important assumptions in the calculation of severe accident decontamination and cleanup costs to make it plausible that another SAMA candidate might be cost-effective.”¹⁷⁹

On appeal, NextEra argues that Friends/NEC failed to provide the requisite factual support for their decontamination cost claim and point to no genuine dispute with the Seabrook SAMA analysis on a material issue of law or fact.¹⁸⁰ We agree.

First, it is not clear what exactly this decontamination costs contention is challenging. Friends/NEC refer without explanation or support to an unidentified MACCS2 code “cost

¹⁷⁵ *Id.* at 62-63, 66.

¹⁷⁶ *See id.* at 66-67 (citing David I. Chanin, Walter B. Murfin, SAND96-0957, Site Restoration: Estimation of Attributable Costs From Plutonium-Dispersal Accidents (May 1996) (Sandia Study)).

¹⁷⁷ Friends/NEC Petition at 66. *See also* “Reactor Safety Study: An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants (WASH-1400),” NUREG-75/014 (Oct. 1975) (WASH-1400).

¹⁷⁸ LBP-11-2, 73 NRC at ___ (slip op at 56, 58).

¹⁷⁹ *Id.* at ___ (slip op. at 58).

¹⁸⁰ NextEra Appeal I at 25-27.

formula” that “underestimates costs likely to be incurred as a result of a dispersion of radiation.”¹⁸¹ There is no discussion of any specific “cost formula used in the MACCS2 code.”¹⁸² The contention itself refers to the “use of inputs” that minimize or inaccurately reflect economic consequences, but Friends/NEC do not provide a supported and particularized argument regarding “inputs.”

The Board apparently viewed the contention as claiming that the MACCS2 code, by definition, assumes or “employs an inapplicable particle size.”¹⁸³ But we do not see even minimal factual or expert support presented for a claim that the MACCS2 code assumes “inapplicable” radionuclide particle sizes.

Friends/NEC rest their particle size claims largely on the 1996 Sandia Study that examined the potential economic costs of a plutonium dispersal accident. As Friends/NEC’s argument goes, the MACCS2 code User’s Guide indicates that the code has an “economic cost model” that is “based on WASH-1400.”¹⁸⁴ In turn, Friends/NEC describe the WASH-1400 study as having been “based on [cleanup] after a nuclear explosion.”¹⁸⁵ Friends/NEC then go on to describe that the 1996 Sandia Study of plutonium dispersal accidents criticized “earlier estimates” of decontamination costs, such as those in WASH-1400, because these earlier cost estimates were based upon explosions of nuclear weapons involving large – and therefore

¹⁸¹ Friends/NEC Petition at 62.

¹⁸² *Id.*

¹⁸³ LBP-11-2, 73 NRC at ___ (slip op. at 56). In their reply before the Board, Friends/NEC describe that they challenge “assumptions regarding cleanup . . . costs *embedded* in the code.” Friends/NEC Reply at 36 (emphasis added).

¹⁸⁴ Friends/NEC Petition at 62 (citing “Code Manual for MACCS2: User’s Guide,” NUREG/CR-6613, Vol. 1 (May 1998) (ML063550020), at 7-10 (User’s Guide)).

¹⁸⁵ *Id.* at 62.

easier to remove – radionuclide particles.¹⁸⁶ Specifically, Friends/NEC claim that the Sandia Study “recognized that earlier estimates (such as incorporated in WASH-1400 and up through and including MACCS2) of decontamination costs are incorrect because they examined fallout from nuclear explosion [sic] of nuclear weapons that produce large particle sizes and high mass loadings.”¹⁸⁷

But again, the intervenors’ claims are ill-defined and poorly supported. It is not clear what Friends/NEC mean by “incorrect” decontamination cost “estimates” that are “incorporated” in the MACCS2 code. Friends/NEC provide page citations to only three pages in the Sandia Study, none of which specifically refer to radionuclide particle sizes, the WASH-1400 reactor accident study, or the MACCS2 code.¹⁸⁸ The Sandia Study is a lengthy report focused on plutonium dispersal events, and neither we nor the Board should be expected to sift through it in search of asserted factual support that Friends/NEC has not specified.¹⁸⁹ We nonetheless reviewed portions of the Sandia Study but discerned no suggestion that the MACCS2 code assumes inapplicable radionuclide particle sizes. In fact, the 1996 Sandia Study predates issuance of the MACCS2 code User’s Guide and does not appear to discuss the MACCS2 code at all.

NextEra points out on appeal, as it did before the Board, that the Sandia Study does criticize the WASH-1400 reactor study for underestimating the economic costs of severe reactor accidents. But as NextEra describes, this criticism was of *particular* assumptions made in

¹⁸⁶ See *id.* at 66.

¹⁸⁷ See *id.*

¹⁸⁸ See *id.* at 66-67 (citing Sandia Study at 2-3 to 2-4, 6-5).

¹⁸⁹ See, e.g., *Commonwealth Edison Co.* (Zion Nuclear Station, Units 1 and 2), CLI-99-4, 49 NRC 185, 194 (1999) (petitioner bears burden for setting forth clear argument for contention); *USEC*, CLI-06-10, 63 NRC at 457 (a “contention must make clear why cited references provide a basis”).

WASH-1400 regarding decontamination costs—assumptions that the MACCS2 code does not “require or imply.”¹⁹⁰ As NextEra points out, the Sandia Study criticizes assumptions regarding a variable input called a “decontamination factor,”¹⁹¹ explained further below.

Like WASH-1400, the MACCS2 code uses inputs called “decontamination factors” to reflect different levels or strategies of decontamination to reduce radiological dose to an acceptable dose level or standard for long-term use. Logically, a less contaminated area will need less decontamination to reduce the radiological dose to the necessary standard. A decontamination factor of 20, for example, reflects an assumption “that contamination is reduced by a factor of 20 (i.e., 95% of the radioactive material is removed)” after a specified period of time.¹⁹² Higher decontamination factors reflect a need for higher levels of decontamination activities, and are therefore associated with higher costs.

The Sandia Study criticizes WASH-1400 and other reactor risk assessments for assuming that a decontamination factor of 20—meaning radiological dose would be reduced by 95%—could be achieved “in urban areas at *minimal cost*”:¹⁹³

¹⁹⁰ NextEra Appeal I at 26 (citing Sandia Study at p. 2-9). See also NextEra Answer to Friends/NEC Petition at 91-92.

¹⁹¹ NextEra Appeal I at 26.

¹⁹² *Id.* at 26 n.16 (citing Sandia Study at 2-9 n.8). As the MACCS2 code User’s Guide explains, the decontamination “objective is to reduce doses to acceptable levels” in a “cost-effective manner.” See User’s Guide at 7-9. In some cases, it may simply be more cost-effective to condemn a property. For example, if, even assuming a specified high level of decontamination a site would not become habitable, then the “property will be condemned and permanently withdrawn from use” and an economic cost assessed for condemning the property. See *id.* (cited in NextEra Appeal I at 26 n.16). Likewise, if the cost of decontamination “exceeds the property’s value,” then the code will assess an economic cost for condemning the property. See *id.* at 7-4. In other words, the SAMA economic cost analysis accounts for the costs of decontaminating property to particular user-defined decontamination levels, as well as the costs of condemning property that cannot sufficiently be decontaminated, or would be less expensive to condemn than to decontaminate.

¹⁹³ See Sandia Study at 2-9 to 2-10 (emphasis added); NextEra Appeal I at 26-27. The Sandia Study also criticized the WASH-1400 report’s decontamination cost estimates because they were based on decontamination to a long-term radiological dose criterion of 25 rem (incurred (continued . . .)

Prior to the 1986 Chernobyl accident, reactor accident risk assessments in the U.S and Europe relied heavily on the economic cost model of WASH-1400, in which the decontamination of residential property was modeled as achieving a DF [decontamination factor] of 20 in urban areas at minimal cost, that is, one tenth of the value of the affected property.

The use of 20 in WASH-1400 was apparently based on contemporary guidance documents for anticipated recovery actions, following nuclear explosions of warfare. Nuclear weapons explosions produce fallout with large particles and high mass loadings. The DF of 20 was widely used in planning documents addressing such events.¹⁹⁴

But as NextEra argues, “use of the MACCS2 code does not require or imply the use of a DF of 20” because the decontamination factor used is a *variable input* into the SAMA analysis, and the MACCS2 User’s Guide in fact suggests the use of other decontamination factors, 3 and 15.¹⁹⁵ Up to three different decontamination factors can be defined.¹⁹⁶ And the SAMA analysis has user-defined economic parameters for determining the dollar cost of performing the decontamination to the specified decontamination levels. In any event, the contention does not explain how the Sandia Study criticism of WASH-1400 supports the claim that the MACCS2 code employs inapplicable radionuclide particle sizes.

At bottom, Friends/NEC simply do not tie the Sandia Study to a genuine material dispute with the Seabrook SAMA analysis. Their contention does not discuss or even mention the issue of “decontamination factors” (or “decontamination levels,” as they are called in the Seabrook SAMA analysis).¹⁹⁷ Moreover, there are other user-defined inputs in the MACCS2 code that

over 30 years), noting that long-term radiological exposure standards “have been tightened considerably” since 1975. See *id.* at 2-9.

¹⁹⁴ Sandia Study at 2-9 (emphasis added).

¹⁹⁵ NextEra Appeal at 26 (citing User’s Guide at 7-9 to 7-11).

¹⁹⁶ See User’s Guide at 7-9.

¹⁹⁷ Only in responding to NextEra’s arguments before the Board did Friends/NEC refer to decontamination factors, inquiring if NextEra took “the User’s Guide’s suggestion” of using 3 and 15 for decontamination level inputs, and stating that “[t]hese are questions to answer as we go along.” See Friends/NEC Reply at 41-42. But our contention rules precisely are intended to prevent admission of ill-defined contentions where petitioners at the outset have not set forth (continued . . .)

also reflect underlying assumptions about how difficult – and how expensive – decontamination activities may need to be.

Here, for example, the Seabrook SAMA analysis expressly outlines various decontamination cost parameters used in the analysis. These include the estimated cost of farm decontamination (per hectare) for two levels of decontamination; the estimated cost of non-farm decontamination (per resident person) for two levels of decontamination; the estimated labor cost for decontamination (per man year); the estimated value of farm wealth (per hectare); the estimated average value of non-farm wealth (per person); and the estimated population relocation costs per person.¹⁹⁸ Friends/NEC do not provide any factual or expert support challenging these specific economic cost parameters. Nor does their contention claim that the SAMA analysis lacks necessary information. In short, while the Sandia Study may criticize “earlier estimates” or studies of severe accident decontamination costs for inappropriately assuming achievement of high levels of decontamination at a low cost, Friends/NEC Contention 4E does not set forth a genuine material dispute with the *Seabrook* SAMA analysis, and therefore does not satisfy the contention admissibility requirements.¹⁹⁹

particularized concerns. See, e.g., *Oconee*, CLI-99-11, 49 NRC at 337-38; see also *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-04-25, 60 NRC 223, 224-25 (2004) (improper to use reply brief to introduce new arguments to “reinvigorate thinly supported contentions”). Contention 4E nowhere suggests a view on the User’s Guide suggested decontamination factors. Even in their reply brief, Friends/NEC did not argue that particular decontamination factors should (or should not) be used in the Seabrook analysis – again, no particularized argument on decontamination factors is raised. Before us, Friends/NEC had no further comment on either the relevance of the Sandia Study to the Seabrook analysis, or on decontamination factors. See Friends/NEC Opposition to NextEra Appeal at 5-6.

¹⁹⁸ Environmental Report, Att. F at F-58.

¹⁹⁹ At best, Friends/NEC offer a generalized claim of a failure to consider remediation of “economic infrastructure that make[s] business, tourism and other economic activity possible.” See Friends/NEC Petition at 67. Generalized “economic cost” arguments, unsupported by asserted facts or expert opinion, are insufficient to show a genuine dispute with the application. The Board did not address specifically the Friends/NEC “economic infrastructure” claim, but rejected other similarly unsupported “economic cost” claims. See LBP-11-2, 73 NRC at ___ (slip continued . . .)

Other arguments made as part of the Friends/NEC “decontamination costs” claims equally lack support or simply do not raise a genuine dispute with the application. These include the unsupported argument that “[CERCLA], EPA, and local authorities would not allow use of” decontamination processes such as “firehosing” and “plowing.” Friends/NEC claim that these methods “simply move[] the contamination from one place to another,” and would result in a cleanup that would “take far longer, be more expensive and its success . . . unlikely.”²⁰⁰

Friends/NEC quote a passage from the MACCS2 User’s Guide, which acknowledges that “[m]any” decontamination processes, such as “plowing” and “firehosing,” reduce direct exposure doses from groundshine and re-suspension, but wash surface contamination down into the ground and therefore may not move contaminants “out of the root zone.”²⁰¹ The passage goes on to explain that because contaminants may remain in root systems, the MACCS2 economic cost model (like the earlier WASH-1400 model) assumes that farmland decontamination reduces direct exposure doses to farmers, but “*does not reduce* the ingestion doses” from “consumption of crops that are contaminated by root uptake.”²⁰² Friends/NEC neither point to any error regarding this aspect of the MACCS2 code, nor tie the passage to a specific and supported material dispute with the Seabrook SAMA analysis. Nor does either the MACCS2 User’s Guide or WASH-1400 suggest that “plowing” and “firehosing” are the only decontamination methods available.²⁰³ Friends/NEC’s “firehosing” and “plowing” claims raise no genuine material dispute with the application.

op. at 60) (rejecting claims of overlooked “business value of property,” “job retraining,” “unemployment payments,” and “inevitable litigation”).

²⁰⁰ Friends/NEC Petition at 64.

²⁰¹ *Id.* at 62 (quoting User’s Guide at 7-10).

²⁰² User’s Guide at 7-10 (emphasis added).

²⁰³ See, e.g., WASH-1400, App. VI, App. K at K-2 (noting both wet and dry decontamination methods).

The Board also admitted as part of Contention 4E a claim that “urban areas are more costly to clean up than rural areas.”²⁰⁴ But like the general argument that small radionuclide particles are more difficult to remove than large particles, we do not see how this claim—even assuming it is true—raises a genuine dispute with the Seabrook SAMA analysis. Friends/NEC do not suggest with any support that the SAMA analysis fails to encompass the decontamination of particular urban areas that should have been considered, or proffer any site-specific economic cost information or cost estimates for any relevant “urban areas.” Friends/NEC provide no factual or expert support identifying error in the estimated costs of decontamination or identifying specific overlooked “urban” decontamination costs that may bear on the analysis’s results.

Instead, as NextEra argues, Friends/NEC merely referenced excerpts of reports that “reflect the intuitive notions that cleanup of urban areas and cleanup to a higher standard can be more expensive than cleanup of rural areas or to a lower standard.”²⁰⁵ While not challenging any of the specific decontamination cost estimates or parameters provided in the Seabrook analysis, Friends/NEC refer to decontamination costs estimates in the 1996 Sandia Study of plutonium dispersal accidents, which estimated a cost of \$309 million per square kilometer for areas with “heavy [plutonium] contamination.”²⁰⁶ With no expert or factual support describing why or how it would be appropriate to directly compare the decontamination cost estimates for plutonium dispersal accident scenarios studied in the Sandia Study with the *site-specific* Seabrook SAMA analysis, Friends/NEC argue that Boston, Manchester, Portsmouth, and

²⁰⁴ LBP-11-2, 73 NRC at ___ (slip op. at 58).

²⁰⁵ NextEra Appeal I at 27.

²⁰⁶ Friends/NEC Petition at 66 (citing Sandia Study at 6-5).

Portland would have “much higher” decontamination costs than the costs outlined in the Sandia Study.²⁰⁷

Again without support or explanation, Friends/NEC claim that instead of the “outdated decontamination costs figure in the MACCS2 code”—and notably, the challenged “costs figure” is never identified—“the SAMA analysis for Seabrook should incorporate, for example, the analytical framework contained in the 1996 Sandia” Study, “as well as studies examining Chernobyl and [radioactive dispersal-type devices].”²⁰⁸ The Seabrook SAMA analysis is a site-specific mitigation alternatives analysis considering reactor severe accident scenarios for the Seabrook site. The analysis takes into account the particular mix of radionuclides in the reactor core, reactor accident radiological contaminants and their half-lives; facility-specific characteristics and accident scenarios; economic data for the 13 counties within 50 miles of the plant; site-specific meteorological data and atmospheric dispersion modeling; and other site-specific and reactor accident-specific factors. Friends/NEC’s generalized suggestions that other cost estimates and studies involving significantly different accident scenarios and assumptions reflect more accurate approaches or values to use, or otherwise indicate errors in the Seabrook SAMA analysis, are unsupported and therefore speculative. Again, any number of alternative

²⁰⁷ *Id.* at 66. Moreover, Friends/NEC go on to claim that the “economic losses stemming from the stigma effects of a severe accident are staggering.” *See id.* at 66-67. Psychological fears or “stigma” effects, however, are not cognizable NEPA claims. *See generally Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766 (1983).

Repeatedly, Friends/NEC make other assertions that are not linked to a specific dispute with the application. For example, they generally assert that the health consequences of a severe reactor accident could greatly exceed the consequences of a plutonium-dispersal accident because the quantities of a radioactive material in an operating reactor are greater. *See* Friends/NEC Petition at 67. Friends/NEC also generally refer to longstanding differences in “cleanup standards” between the NRC and the Environmental Protection Agency, as indicated in a cited 2004 General Accounting Office report. *See* Friends/NEC Petition at 65. This issue does not fall within the scope of this license renewal proceeding. Friends/NEC raise no claim that any particular NRC or EPA standard should have been used in the Seabrook SAMA analysis.

²⁰⁸ Friends/NEC Petition at 66.

analyses may be reasonable under NEPA. The issue is not whether alternative approaches exist, alternative inputs may be substituted, or yet another factor could be considered.

Petitioners must provide factual or expert support that proposed alternatives are warranted because the analysis that was done is insufficient to satisfy NEPA.

To conclude, we gave careful review to the Friends/NEC Contention 4E, but the contention is largely speculative, displays minimal understanding of the issues raised, and at bottom, fails to raise a supported genuine material dispute with the application. We do not disagree with the Board that Friends/NEC provided adequate support for general claims that “smaller particle sizes will create higher cleanup costs, and that urban areas are more costly to clean up than rural areas.”²⁰⁹ But as we described, these assertions do not point to a genuine dispute with the application. The Board admitted the contention on the ground that Friends/NEC “dispute sufficiently important assumptions in the calculation of severe accident decontamination and cleanup costs” in the Seabrook SAMA analysis.²¹⁰ But the contention nowhere identifies with support the specific “assumptions in the calculation” that are challenged. We therefore find that the Board erred in admitting Friends/NEC Contention 4E.

4. *Beyond Nuclear Contention*

The NextEra Environmental Report fails to evaluate the potential for renewable energy to offset the loss of energy production from the Seabrook nuclear power plant and to make the requested license renewal action for 2030 unnecessary. In violation of the requirements of 10 C.F.R. § 51.53(c)(3)(iii) and of the GEIS § 8.1, the NextEra 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 which are being aggressively planned and developed in the Region of Interest for the requested relicensing period of 2030-2050. The scope of the [Supplemental EIS] is improperly narrow, and the issue of the need for Seabrook as a means of satisfying demand forecasts for the relicensing period must be revisited due to

²⁰⁹ LBP-11-2, 73 NRC at ___ (slip op. at 58).

²¹⁰ *Id.*

dramatically-changing circumstances in the regional energy mix throughout the two decades preceding the relicensing period.²¹¹

The Board admitted this contention but restricted its scope. Concluding that all “supporting facts focus exclusively on wind power generation,” the Board limited Beyond Nuclear’s contention to just that form of renewable energy.²¹²

a. Background

Our regulations implementing NEPA Section 102 require Environmental Reports submitted by license renewal applicants to address the environmental impacts of the proposed action and also to compare them to impacts of alternative actions.²¹³ But NEPA requires consideration of “reasonable” alternatives, not all conceivable ones.²¹⁴

Our License Renewal GEIS²¹⁵ provides guidance on the scope of the energy alternatives analysis for license renewal. In particular, the GEIS concluded “that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources . . . that are technically feasible and commercially viable.”²¹⁶ This is guidance currently in place on the subject; however, the Staff is preparing an update to the License Renewal GEIS—still under way—that proposes a somewhat broader analysis of alternative energy sources.²¹⁷ The proposed revised GEIS would provide for reviewing several individual energy alternatives, and also observes that “combinations of alternatives may be considered during plant-specific license

²¹¹ Beyond Nuclear Petition at 6.

²¹² LBP-11-2, 73 NRC at __ (slip op. at 27).

²¹³ 10 C.F.R. § 51.53(c)(2). See NEPA § 102(2)(C)(i)-(iii), 42 U.S.C. § 4332(2)(C)(i)-(iii).

²¹⁴ *NRDC v. Morton*, 458 F.2d 827, 834, 837, 838 (D.C. Cir. 1972).

²¹⁵ See *generally* License Renewal GEIS.

²¹⁶ License Renewal GEIS, Vol. 1, § 8.1 at 8-1.

²¹⁷ See *generally* Proposed Rule, Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 74 Fed. Reg. 38,117 (July 31, 2009).

reviews.”²¹⁸ While the 1996 License Renewal GEIS carries special weight as a guidance document that has been approved by the Commission, in the end it is non-binding guidance, and thus, not unassailable. An application that complies with existing guidance may be challenged, provided that contention-admissibility requirements are met.²¹⁹

We also have held that our Staff’s EISs “need only discuss those alternatives that . . . ‘will bring about the ends’ of the proposed action”²²⁰—a principle equally applicable to Environmental Reports.²²¹ We give “substantial weight to the preferences of the applicant and/or sponsor.”²²² NextEra’s stated purpose for the Seabrook license renewal, as reflected in

²¹⁸ “Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Main Report, Draft Report for Comment,” NUREG-1437, Rev. 1 (Vol. 1 July 2009) (ML091770049), at 2-18 (Draft Revised GEIS). As the Staff indicated earlier in this proceeding, the Staff has taken this approach in at least one supplemental EIS, associated with the Salem and Hope Creek license renewal applications. See Tr. at 113-14; “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, Supplement 45 (Mar. 2011) (ML11089A021), §§ 8.1, 8.2. With respect to renewable alternatives in particular, the proposed revised GEIS states: “Combinations of energy renewable alternatives may be considered during plant-specific licensing reviews.” Draft Revised GEIS at 2-20. The Seabrook Environmental Report provided a brief assessment of several renewable alternatives, but determined that none was a reasonable replacement for Seabrook. See Environmental Report, § 7.2.1.5.

²¹⁹ See, e.g., *International Uranium (USA) Corp.* (Request for Materials License Amendment), CLI-00-1, 51 NRC 9, 19 (2000) (noting that the Commission is not bound by guidance documents, which do not carry the force of regulations and do not impose legal requirements upon licensees).

²²⁰ *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 55 (2001) (quoting *Citizens Against Burlington v. Busey*, 938 F.2d 190, 195 (D.C. Cir.), cert. denied, 502 U.S. 994 (1991)). See also *Rancho Seco*, CLI-93-3, 37 NRC at 144-45.

²²¹ See generally *Detroit Edison Co.* (Fermi Nuclear Power Plant, Unit 3), LBP-09-16, 70 NRC 227, 263, aff’d, CLI-09-22, 70 NRC 932 (2009).

²²² *City of Grapevine v. Dep’t of Transp.*, 17 F.3d 1502, 1506 (D.C. Cir.) (quoting *Citizens Against Burlington*, 938 F.2d 197-98), cert. denied, 513 U.S. 1043 (1994); *Hydro Resources*, CLI-01-4, 53 NRC at 55 (internal quotation marks and citations omitted):

When reviewing a discrete license application filed by a private applicant, a federal agency may appropriately accord substantial weight to the preferences of the applicant . . . in the siting and design of the project. . . . The agency thus may take into account the economic goals of the project’s sponsor.

its application, is baseload power generation.²²³ Thus, although NextEra in its Environmental Report briefly examined wind energy as a potential alternative to a license renewal, NextEra rejected that option on the ground that wind power, at least in its current state, is incapable of producing baseload power.²²⁴

The Board held that, despite the broad language of the contention, Beyond Nuclear's "supporting facts focus[ed] exclusively"²²⁵ on the alternative of a "system of interconnected *offshore wind farms*" that, according to Beyond Nuclear, could provide baseload power for the "region of interest" currently served by Seabrook.²²⁶ The Board therefore narrowed the contention to include only this issue, which it found to be supported by "sufficient minimal evidence" in Beyond Nuclear's exhibits.²²⁷ The Board found that Beyond Nuclear had plausibly asserted that offshore wind farms may prove feasible in the near future.²²⁸

²²³ NextEra Appeal II at 4 (quoting Environmental Report, § 7.2.1, at 7-6), 4-5 (citing Environmental Report, § 7.2.1, at 7-12). "Baseload power" generates "energy intended to continuously produce electricity at or near full capacity, with high availability." *Env'tl. Law and Policy Ctr. v. NRC*, 470 F.3d 676, 679 (7th Cir. 2006).

²²⁴ Environmental Report, § 7.2.1.5, at 7-12 to 7-13.

²²⁵ LBP-11-2, 73 NRC at ___ (slip op. at 27).

²²⁶ *Id.* at (slip op. at 20) (emphasis added). Seabrook's "region of interest" is Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Environmental Report, § 7.2.1, at 7-6.

²²⁷ LBP-11-2, 73 NRC at ___ (slip op. at 25) (internal quotation marks omitted). *See also id.* at ___ (slip op. at 25) (internal quotation marks omitted); *id.* at ___ (slip op. at 20-22) (describing various Beyond Nuclear exhibits); *id.* at ___ (slip op. at 27) (limiting the scope of the contention). The Board also concluded that many of the Staff's and NextEra's arguments regarding the remaining admissibility standards "improperly address[ed] the merits of [Beyond Nuclear's] contention, rather than whether petitioners have provided a minimal showing that material facts are in dispute, thereby demonstrating that an inquiry in depth is appropriate." *Id.* at ___ (slip op. at 23-24) (footnote and internal quotation marks omitted).

²²⁸ *Id.* at ___ (slip op. at 25) (citing Tr. at 24, 34). *Accord id.* at ___ (slip op. at 26-27) (Beyond Nuclear has "demonstrated some possibility that wind power might be a reasonable alternative as early as 2015"). *See generally id.* (slip op. at 20) (Beyond Nuclear supports its contention "with 20 exhibits purporting to demonstrate that, within the foreseeable future, an environmentally superior system of interconnected offshore wind farms might provide baseload (continued . . .)

b. *Discussion*

As discussed below, we conclude that the Board erred in admitting this contention.²²⁹

(1) **THE SCOPE OF THE ENERGY-ALTERNATIVES ANALYSIS**

The Board disagreed with the Staff's position that "Beyond Nuclear . . . must show 'that wind is a feasible alternative *at the present time*.'"²³⁰ Acknowledging that "'remote and speculative' alternatives need not be addressed in an applicant's environmental report,"²³¹ the Board nonetheless indicated that, for license renewal, "the relevant time frame is considerably broader than 'the present time.'"²³² Rather, the Board concluded that it was required "to consider alternatives 'as they exist and are likely to exist.'"²³³ The Board construed some of Beyond Nuclear's supporting references to indicate that "an integrated system of offshore wind farms could be a viable source of baseload power in the region as early as 2015."²³⁴

Beyond Nuclear argued before the Board that in their NEPA analyses the NRC and NextEra should predict which technologies will be available by the beginning of the "requested relicensing period of 2030 to 2050"²³⁵ rather than confine themselves to what is available either

power in the relevant region and thus should have been evaluated in greater detail in the Applicant's environmental report.").

²²⁹ NextEra argues on appeal that the contention constitutes a prohibited collateral attack on 10 C.F.R. § 54.17(c) and, separately, that the Board improperly reformulated the contention. See NextEra Appeal II at 10 & 19, respectively. Because we reject this contention on other grounds, we need not address these arguments.

²³⁰ LBP-11-2, 73 NRC at ___ (slip op. at 24) (emphasis added) (quoting Staff Answer to Petitions at 102).

²³¹ *Id.* at ___ (slip op. at 24-25) (citing *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 551 (1978) (quoting, in turn, *NRDC v. Morton*, 458 F.2d 827, 837-38 (D.C. Cir. 1972))).

²³² *Id.* at ___ (slip op. at 25).

²³³ *Id.* (quoting *Carolina Env'tl. Study Grp. v. U.S.*, 510 F.2d 796, 801 (D.C. Cir. 1975)).

²³⁴ *Id.* at ___ (slip op. at 25) (citing Tr. at 24, 34).

²³⁵ Beyond Nuclear Petition at 13.

now or in the near future.²³⁶ The Board found “sufficient ‘minimal’ evidence” regarding an integrated system of offshore wind farms “to warrant further inquiry as to whether such a system might be ‘likely to exist’ during the relevant time period.”²³⁷ NextEra challenges this aspect of the Board’s decision as unsupported by the record²³⁸ and as an improper requirement that NextEra consider a “remote and speculative” alternative.²³⁹

The Board is correct that the relevant period “is considerably broader than ‘the present time.’”²⁴⁰ As the Board observed, the standard established in *Carolina Environmental Study Group* is whether an alternative is “likely to exist.” It is the future environmental effect of activities during the renewal period that must be considered, not current environmental effects.²⁴¹

Pragmatically, however, near-term effects often are the best indicator of future ones. NEPA requires a “hard look” at the environmental effects of the planned action and reasonable alternatives to that action, using the best information available at the time the assessment is performed. An environmental impact statement is not “intended to be a ‘research document,’

²³⁶ See, e.g., *id.* at 13, 18 (“NEPA challenges the Applicant and the federal agency to ‘reasonably foresee’ beyond the present time in formulating its evaluation of alternatives in the Environmental Report for the projected federal relicensing action as proposed to begin in 2030”). Beyond Nuclear presents the same argument to us. See, e.g., Beyond Nuclear Opposition to Appeal at 27 (criticizing NextEra for “tak[ing] the requested licensing action out of context for 2030 to 2050 and replac[ing] with its own interpretation of reasonableness for ‘at this time,’ ‘in the near term,’ and ‘does not exist today’”) (emphasis omitted).

²³⁷ LBP-11-2, 73 NRC at ___ (slip op. at 25). The Board explained that it was not deciding at the contention admissibility stage “the exact date by which an integrated system of offshore wind farms would have to be found ‘likely to exist.’” *Id.*

²³⁸ NextEra Appeal II at 11-15.

²³⁹ *Id.* at 9-10.

²⁴⁰ LBP-11-2, 73 NRC at ___ (slip op. at 25).

²⁴¹ See generally *Florida Power & Light Co.* (Turkey Point Nuclear Generating Station, Units 3 and 4), CLI-01-17, 54 NRC 3, 11-13 (2001) (describing the Part 51 process for environmental review associated with license renewal, focusing upon the potential impacts of an additional 20 years of plant operation).

reflecting the frontiers of scientific methodology, studies, and data.”²⁴² Assessments of future energy alternatives necessarily are of a predictive nature, and the assessment therefore will include uncertainties associated with predicting advances in technology.

In other words, in performing an alternatives analysis, the applicant—and the agency—are limited by the information that is reasonably available in preparing the environmental review documents. When considering energy alternatives, it is nearly always impossible to predict, decades in advance, the viability of technologies that are currently not operational and are many years from large-scale development. Except in rare cases where there is evidence of unusual predictive reliability, it is not workable to consider, for purposes of NEPA analysis, what are essentially hypothetical or speculative alternatives as a source of future baseload power generation.²⁴³ For this reason, we find sensible the Staff’s argument that in most cases a “reasonable” energy alternative is one that is currently commercially viable, or will become so in the relatively near term. Such an assessment generally will be sufficient to provide the requisite “hard look” under NEPA.

In sum, to submit an admissible contention on energy alternatives in a license renewal proceeding, a petitioner ordinarily must provide “alleged facts or expert opinion” sufficient to raise a genuine dispute as to whether the best information available today suggests that commercially viable alternate technology (or combination of technologies) is available now, or will become so in the near future, to supply baseload power.²⁴⁴ As a general matter, a

²⁴² See *Pilgrim*, CLI-10-11, 71 NRC 287 at 315 (citing *Town of Winthrop v. FAA*, 535 F.3d 1, 11-13 (1st Cir. 2008)).

²⁴³ “NEPA does not require agencies to analyze impacts of alternatives that are speculative, remote, impractical, or not viable.” *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-28, 62 NRC 721, 729 (2005) (citations omitted).

²⁴⁴ See *Roosevelt Campobello Int’l Park Comm’n v. EPA*, 684 F.2d 1041, 1047 (1st Cir. 1982) (holding that, for siting alternatives, EPA’s “duty under NEPA is to study all alternatives that appear reasonable and appropriate for study at the time of drafting the EIS” (internal quotations omitted)); *Seacoast Anti-Pollution League v. NRC*, 598 F.2d 1221, 1230 (1st Cir. 1979) (holding (continued . . .)

“reasonable” energy alternative—one that must be assessed in the environmental review associated with a license renewal application—is one that is currently commercially viable, or will become so in the near term. We therefore conclude that the Board erred in admitting the contention.²⁴⁵

(2) FAILURE TO PROPERLY TAKE INTO ACCOUNT NEXTERA’S PURPOSE IN SEEKING LICENSE RENEWAL

To demonstrate the admissibility of a NEPA contention that an applicant failed to consider a viable alternative to its proposed action, a petitioner must show that its contention presents a “genuine dispute” under 10 C.F.R. § 2.309(f)(1)(vi). One element of that demonstration is a showing that the petitioner’s proposed alternative would satisfy the purpose of the applicant’s proposed action.²⁴⁶ NextEra argues on appeal that the Board erred in finding that wind power might satisfy the purpose of NextEra’s proposed action and that Beyond Nuclear had therefore presented a “genuine dispute.”²⁴⁷

Neither this agency nor the applicant need consider any alternative that does not “bring about the ends’ of the proposed action.”²⁴⁸ As the D.C. Circuit stated in *Citizens Against Burlington*, “[w]hen the purpose is to accomplish one thing, it makes no sense to consider the

that, for siting alternatives, an agency must consider alternatives that appear reasonable “at the time” of the NEPA review). *Cf. Carolina Env’tl. Study Group*, 510 F.2d at 800 (holding that NEPA was not meant to require detailed discussion of “remote and speculative” alternatives).

²⁴⁵ To avoid any misunderstanding, however, we hasten to add that our ruling does not exclude the possibility that a contention could show a genuine dispute with respect to a technology that, while not commercially viable at the time of the application, is under development for large-scale use and is “likely to” be available during the period of extended operation. *See Carolina Env’tl. Study Grp.*, 510 F.2d at 800.

²⁴⁶ *See* note 221, *supra*.

²⁴⁷ Beyond Nuclear Petition at 15-18.

²⁴⁸ *Hydro Resources*, CLI-01-4, 53 NRC at 55 (quoting *Citizens Against Burlington*, 938 F.2d at 195). *Accord Env’tl. Law & Policy Center v. NRC*, 470 F.3d at 683-84.

alternative ways by which another thing might be achieved.”²⁴⁹ NextEra states that its purpose in seeking license renewal is to make available “baseload power”—a preference to which we accord substantial weight.²⁵⁰ Beyond Nuclear has not articulated a genuine dispute with the Application as to the viability of offshore wind farms as a source of baseload power. For wind power to merit detailed consideration as an alternative to renewing the license for a nuclear power plant, that alternative should be capable of providing “technically feasible and commercially viable” baseload power during the renewal period. As we have discussed, in assessing energy-alternatives contentions, practicality requires us to consider chiefly, often exclusively, alternatives that can be shown to have viability today or in the near future.²⁵¹ Here, Beyond Nuclear has not provided support for its claim that offshore wind is technically feasible and commercially viable—either today or in the near future—and therefore has not submitted an admissible contention.²⁵² We rest this conclusion on the grounds discussed below.

Energy Storage. As NextEra points out, Beyond Nuclear does not challenge the conclusion in NextEra’s Environmental Report that the combination of wind-based generation and compressed air energy storage would be too costly to be a reasonable alternative to nuclear energy as a source of baseload power.²⁵³ NextEra argues on appeal that this omission

²⁴⁹ 938 F.2d at 195 (citation and internal quotation marks omitted).

²⁵⁰ See note 223, *supra*, and associated text.

²⁵¹ See License Renewal GEIS, Vol. 1, § 8.1, at 8-1.

²⁵² In theory, a petitioner might show that an alternate technology, while not viable today or in the near future, is highly likely to come on line during the period of extended operation. But such a showing is possible, as we noted above (at 53), “only in rare cases where there is evidence of unusual predictive reliability.” Beyond Nuclear proffered no such evidence in support of its contention in this proceeding.

²⁵³ See NextEra Appeal II at 18; Environmental Report, § 7.2.1.5, at 7-12. See *also* Beyond Nuclear Petition at 20-21. Beyond Nuclear’s Exhibit 3 addresses the potential of compressed air energy storage technology but does not address its cost, other than to observe generally that “additional work will be required to examine the feasibility of advanced wind/[compressed air energy storage] concepts.” National Renewable Energy Laboratory, “Creating Baseload Wind (continued . . .)

is fatal to Beyond Nuclear's contention, and therefore also to the Board's admission of that contention.²⁵⁴ We agree. Absent a challenge on this essential issue, there is no genuine dispute as required under section 2.309(f)(1)(vi).

Offshore Wind Technology. The Board ruled that Beyond Nuclear presented a genuine dispute regarding the feasibility of offshore wind technology. The Board concluded that although "[p]etitioners may face a difficult task in trying to demonstrate that such a system is . . . practical . . . [, s]uch disputed facts are not appropriately resolved . . . in connection with the Board's [admissibility] determination . . ." ²⁵⁵ We disagree with the Board on this point. As we view the record, Beyond Nuclear's "offshore wind" contention is not sustainable on its face because it lacks a supporting basis. We reach this result without improperly resolving disputed facts.

NextEra stated in its Environmental Report that the technology for an ocean-based wind farm even approaching the generation capacity of Seabrook is only in its nascent stage.²⁵⁶ Beyond Nuclear did not address this point (nor did the Board in LBP-11-2). Without some challenge to NextEra's Environmental Report on the nascent technology point, there is no

Power Systems Using Advanced Compressed Air Energy Storage Concepts" (ML102930308). NextEra provides an explanation of why this approach is not financially feasible / commercially viable, which Beyond Nuclear does not challenge. See NextEra's Answer to Beyond Nuclear Petition at 19-23; Environmental Report, § 7.2.1.5, at 7-12 to 7-13.

²⁵⁴ NextEra Appeal II at 19. As an alternative to energy storage, Beyond Nuclear alludes to the use of high-voltage direct-current transmission lines to connect independent wind farms. See Beyond Nuclear Reply at 35-36. This alternative, however, supports electric power transmission, which is not NextEra's stated purpose. NextEra states that it does not currently "own or operate substantial transmission assets in the region." NextEra Answer to Beyond Nuclear Petition at 29. See *also* NextEra Appeal II at 21-22. Because Beyond Nuclear poses an alternative that would expand the purpose of the Application, it fails to proffer a "genuine dispute" as required under 10 C.F.R. § 2.309(f)(1)(vi).

²⁵⁵ LBP-11-2, 73 NRC at ___ (slip op. at 24).

²⁵⁶ Environmental Report, § 7.2.1.5, at 7-12.

genuine dispute of material fact as to whether offshore wind power is, or soon will be, a reasonable alternative to license renewal.

NextEra takes issue with the following reasoning offered by the Board in partial support of its admission of Beyond Nuclear's contention:

Allegedly, some of the Beyond Nuclear petitioners' supporting references show that an integrated system of offshore wind farms could be a viable source of baseload power in the region *as early as 2015*. Whether this is so remains to be seen. In the Board's view, however, petitioners have proffered sufficient "minimal" evidence to warrant further inquiry as to whether such a system might be "likely to exist" during the relevant time period.²⁵⁷

The Board cites the prehearing conference transcript, where Beyond Nuclear's representative discussed one of its exhibits, not cited by the Board.²⁵⁸ NextEra argues that in actuality the "supporting references" do not support the Board's conclusion that Beyond Nuclear had "proffered sufficient 'minimal' evidence."²⁵⁹ We agree with NextEra.

The Beyond Nuclear representative first stated that, according to a University of Maine document, the operators of offshore wind farms "are delivering baseload by 2015."²⁶⁰ This statement appears to offer a prediction or statement of expectation that wind-derived baseload power *will* be delivered by 2015. This statement, however, is contradicted by the same representative later in oral argument, and also by Beyond Nuclear's Exhibit 17 (upon which the representative relied in making this statement).

In the representative's second statement, he described the University of Maine document as presenting only a "plan" for "25 megawatts [MW] of . . . deep water offshore wind .

²⁵⁷ LBP-11-2, 73 NRC at ___ (slip op. at 25) (footnotes omitted; emphasis added).

²⁵⁸ *Id.* (citing Tr. at 24, 34). See *generally* Beyond Nuclear Ex. 17, University of Maine, "Maine Offshore Wind Plan, Setting the Course for Energy Independence" (ML102930375).

²⁵⁹ NextEra Appeal II at 11-14.

²⁶⁰ Tr. at 24, referring to Beyond Nuclear Ex. 17 (Phases 2-5).

. . . to come online by 2014.”²⁶¹ Our review of Beyond Nuclear’s referenced exhibit confirms that it refers to a plan only—not a statement of expectation that the project will be commercially viable as of 2014. Therefore, the two cited portions of the oral argument transcript, when read together and in light of the exhibits, do not support the Board’s conclusion.

Indeed, the representative’s first statement is contradicted by the cited exhibit, which sets forth a timeline for the “planned” offshore wind power in Maine. The timeline for the plan describes 2012-2014 as the period for accomplishing the design, construction, deployment and testing of a 3-5 MW “floating wind turbine prototype.”²⁶² But because a single wind turbine cannot provide “continuous” production of electricity “at or near full capacity,” it does not constitute a source of “baseload” power²⁶³—the term Beyond Nuclear’s representative used, and on which the Board appeared to rely in its finding.²⁶⁴

²⁶¹ *Id.* at 34.

²⁶² Beyond Nuclear Ex. 17 (Phase 2). We also observe that this description does not match the 25-MW wind turbine to which Beyond Nuclear’s representative referred in his second statement.

²⁶³ See *Env’tl. Law and Policy Ctr.*, 470 F.3d at 679 (defining baseload power). Beyond Nuclear’s own exhibits confirm that the prototype does not satisfy this definition. See Beyond Nuclear Ex. 4, Cristina L. Archer and Mark Z. Jacobson, *Supplying Baseload Power and Reducing Transmission Requirements by Interconnecting Wind Farms*, 46 J. OF APPLIED METEOROLOGY AND CLIMATOLOGY 1701, 1716 (“an average of 33% and a maximum of 47% of yearly averaged wind power from interconnected farms can be used as reliable, baseload electric power”) (Nov. 2007) (ML102930309); Beyond Nuclear Ex. 9, EnerNex Corp., “Eastern Wind Integration and Transmission Study” (Jan. 2010), at 54 & 217 (referring to wind turbine capacity factors between 24.1% and 32.8%); Beyond Nuclear Ex. 19, U.S. Department of Energy (DOE), “20% Wind Energy by 2030: Increasing Wind Energy’s Contribution to U.S. Electricity Supply” (July 2008), at 26 (36% capacity factor in 2004 and 2005), 89 (Table 4.3: 30% capacity factor from June 2005 to May 2006), 183 (Table B-11: projecting 34-55% capacity factors for shallow-water offshore wind turbines between 2005 and 2030), 221 (“Most wind power plants operate at a capacity factor of 25% to 40%”) (ML102930395); Beyond Nuclear Ex. 21, National Renewable Energy Laboratory, “Large-Scale Offshore Wind Power in the United States: Assessment of Opportunities and Barriers” (Sep. 2010) at 35 n.7 (assigns offshore wind a capacity factor of 37%), 59 (35% to 50% capacity factor), 117 (nn.3-4: assumes a 35% capacity factor to offshore wind plants in shallow water) (ML102930637).

²⁶⁴ To the extent the Board may have relied on the two additional exhibits from the University of Maine, we find that they likewise do not support the Board’s ruling. See Beyond Nuclear Ex. 16, University of Maine, “Deepwater Offshore Wind in Maine: the Plan, the Timeline” (June 18, (continued . . .)

In short, neither the transcript nor the referenced exhibit provides support for Beyond Nuclear's assertion that wind energy may provide baseload power by 2015. The Board therefore erred in relying on those portions of the record as support for its conclusion that Beyond Nuclear's Contention was admissible.²⁶⁵

Further, Beyond Nuclear's Exhibits 14 and 15 undermine its arguments regarding the technical feasibility that would be needed to show a genuine dispute regarding offshore wind power as a reasonable alternative. The "Final Report of the Maine Ocean Energy Task Force to Governor John E. Baldacci" (Exhibit 14) observes:

[T]echnologies that would enable the placement of wind turbines on floating platforms or other structures in greater depths needed to tap the world-class deep-water resources in Maine's coastal waters or in adjoining federal waters are under development Lack of the requisite technology is an obvious barrier to establishment of the deep-water wind industry in Maine or elsewhere in the near term.²⁶⁶

Similarly, a preliminary draft report by the Department of Energy that is in the record (Exhibit 15) raises serious questions regarding the technical feasibility of offshore wind farms as a source of baseload power.²⁶⁷ According to the DOE report, offshore wind power deployment

2009) (ML102930376) (pages 13 and 14 further describe portions of the planned schedule set forth in Ex. 17); Beyond Nuclear Ex. 18, University of Maine, "Deepwater Offshore Wind: A National Opportunity" (Aug. 17, 2010) (ML102930391) (page 30 contains the same chart that comprises Ex. 17, and pages 33, 36, and 37 further describe portions of the planned schedule set forth in Ex. 17).

²⁶⁵ For a contention to be admissible, the sponsoring petitioner must, among other things, "[p]rovide a concise statement of the alleged facts or expert opinions which support [its] position on the issue and on which the petitioner intends to rely at hearing, together with references to the specific sources and documents on which [it] intends to rely to support its position on the issue." 10 C.F.R. § 2.309(f)(1)(v).

²⁶⁶ Beyond Nuclear Ex. 14, "Final Report of the Maine Ocean Energy Task Force to Governor John E. Baldacci" (Dec. 2009), at 27 (ML102930365). *See also, e.g., id.* at iv ("the technology to economically harness off-shore winds in deep water (greater than 60 meters) does not exist today."), 28-29 (listing technological (and financial) hurdles facing wind power).

²⁶⁷ Beyond Nuclear Ex. 15, "Creating an Offshore Wind Industry in the United States: A Strategic Work Plan for the United States Department of Energy, Fiscal Years 2011-2015" (Predecisional Draft) (Sep. 2, 2010), at 7-8 (ML102930374).

still faces significant challenges regarding resource characterization, infrastructure, and grid interconnection and operation.²⁶⁸ The DOE report states that offshore wind power needs to overcome significant uncertainties related to both potential project power production and the design of turbines and arrays.²⁶⁹ The implications for adding large amounts of offshore wind generation to the power system are, says DOE, still not well-understood and, as a consequence, reliable integration cannot be assured.²⁷⁰ DOE concludes that, “with current technology, cost-effective installation of offshore wind turbines requires specialized turbine installation vessels, purpose-built portside infrastructure for installation, operations, and maintenance, and robust undersea electricity transmission lines and grid interconnections [none of which] . . . currently exist in the U.S. . . .”²⁷¹

The DOE report further states that very little site-specific data are available on the external conditions that influence design requirements and energy production, and that the paucity of documentation regarding factors such as “wind resource[, . . .] wave action and seabed mechanics” currently precludes “accurate marine spatial planning [and] establishment of prioritized offshore wind zones”²⁷² Ultimately, the DOE Report concludes that “[l]ong-term gigawatt deployment of offshore wind energy in the United States cannot exist within the current [regulatory] landscape” and, further, that “key market, social and environmental risks are not

²⁶⁸ *Id.* at 7.

²⁶⁹ *Id.*

²⁷⁰ *Id.*

²⁷¹ *Id.* at 7-8. See also *Beyond Nuclear* Ex. 19 at 57 (“Today’s European shallow-water technology is still too expensive and too difficult to site in U.S. waters. . . . [N]ecessary technologies have yet to be developed”); *Beyond Nuclear* Ex. 21 at 4-6 (addressing current technological challenges), 72 (addressing technological immaturity).

²⁷² *Beyond Nuclear* Ex. 15 at 14.

well-understood; offshore wind resources are poorly characterized; and essential transmission, supply chain, installation and maintenance infrastructure does not yet exist.”²⁷³

Beyond Nuclear’s Exhibits 14 and 15 thus do not support its arguments regarding the technical feasibility that would be needed to show a genuine dispute regarding offshore wind power as a reasonable alternative to license renewal.

For all these reasons, we conclude that Beyond Nuclear’s contention, and the record-at-large, provide insufficient support for the Board’s statement that “[a]llegedly, some” of Beyond Nuclear’s “supporting references show that an integrated system of offshore wind farms could be a viable source of baseload power in the region as early as 2015.”²⁷⁴ To the contrary, the record demonstrates that Beyond Nuclear has failed to raise a genuine dispute regarding whether offshore wind farms are a technically feasible source of baseload power today, or whether they will become so in the near future.

(3) NO DISPUTED QUESTION AS TO WHETHER WIND FARMS ARE “SINGLE, DISCRETE ELECTRIC GENERATION SOURCES” UNDER THE GEIS

Finally, NextEra argues on appeal that the Board erred in concluding that a disputed question of fact existed as to whether wind farms that combine with other wind farms to create an interconnected network would constitute a “*single, discrete* electric generation source” as specified in the GEIS.²⁷⁵ As NextEra correctly points out, Beyond Nuclear does not make this argument.²⁷⁶ The Board therefore committed legal error by supplying a basis not argued by

²⁷³ *Id.* at 10.

²⁷⁴ LBP-11-2, 73 NRC at ___ (slip op. at 25) (footnote omitted).

²⁷⁵ NextEra Appeal II at 8, 20-21 (emphasis added). *See also* LBP-11-2, 73 NRC at ___ (slip op. at 25-26); License Renewal GEIS, Vol. 1, § 8.1, at 8-1.

²⁷⁶ NextEra Appeal II at 5 n.8. Indeed, Beyond Nuclear’s own Exhibit 17 would appear to undermine such an argument. *See, e.g.*, Beyond Nuclear Ex. 17, at Phase 5 (indicating that each of the University of Maine’s planned wind farms would cover 64 square miles of ocean surface, and that there would be four to eight such farms).

Beyond Nuclear, although we consider that error to be harmless, given that the GEIS does not impose a requirement on the alternatives analysis.²⁷⁷

* * * * *

One last matter bears mention. On April 18, 2011, Friends/NEC and Beyond Nuclear, filed in this proceeding a petition requesting, among other things, that we suspend “all decisions” regarding the issuance of renewed licenses, pending completion of several actions associated with the recent nuclear events in Japan.²⁷⁸ We granted the requests for relief in part, and denied them in part.²⁷⁹ In particular, we declined to suspend this or any other adjudication, or any final licensing decisions, finding no imminent risk to public health and safety, or to common defense and security. The agency continues to evaluate the implications of the events in Japan for U.S. facilities, as well as to consider actions that may be taken as a result of lessons learned in light of those events. Particularly with regard to license renewal, we stated that “[t]he NRC’s ongoing regulatory and oversight processes provide reasonable assurance that each facility complies with its ‘current licensing basis,’ which can be adjusted by future

²⁷⁷ See *USEC*, CLI-06-10, 63 NRC at 457 (“it is not up to the boards to search through pleadings or other materials to uncover arguments and support never advanced by the petitioners themselves; boards may not simply infer unarticulated bases of contentions.”) (footnote and internal quotation marks omitted). See *generally Statement of Policy on Conduct of Adjudicatory Proceedings*, CLI-98-12, 48 NRC 18, 22 (1998) (“A contention’s proponent, not the licensing board, is responsible for formulating the contention and providing the necessary information to satisfy the basis requirement for the admission of contentions . . .”).

²⁷⁸ See *generally Emergency Petition to Suspend All Pending Reactor Licensing Decisions and Related Rulemaking Decisions Pending Investigation of Lessons Learned from Fukushima Daiichi Nuclear Power Station Accident* (dated Apr. 14-18, 2011; served and docketed Apr. 15, 2011; corrected petition filed Apr. 18, 2011); *Declaration of Dr. Arjun Makhijani in Support of Emergency Petition to Suspend all Pending Reactor Licensing Decisions and Related Rulemaking Decisions Pending Investigation of Lessons Learned From Fukushima Daiichi Nuclear Power Station Accident* (dated Apr. 19, 2011; filed Apr. 19, 2011; docketed Apr. 20, 2011).

²⁷⁹ See *generally Union Electric Co. d/b/a Ameren Missouri* (Callaway Plant, Unit 2), CLI-11-5, 74 NRC __ (Sept. 9, 2011) (slip op.).

Commission order or by modification to the facility's operating license outside the renewal proceeding (perhaps even in parallel with the ongoing license renewal review).²⁸⁰

IV. CONCLUSION

For the reasons discussed above, we *reverse* LBP-11-2 in part, and *affirm* it in part.

IT IS SO ORDERED.

For the Commission

[NRC Seal]

/RA/

Annette L. Vietti-Cook
Secretary of the Commission

Dated at Rockville, Maryland,
this 8th day of March, 2012

²⁸⁰ *Id.* at __ (slip op. at 26).

Commissioners Svinicki and Apostolakis, Dissenting in Part

We respectfully dissent with regard to the admissibility of Friends/NEC Contention 4B. The majority itself acknowledges that this challenge by Friends/NEC to the use of the MAAP-generated release fractions in the Seabrook SAMA analysis “rests on a thin reed.” Indeed, the majority’s discussion renders it unnecessary for us to elaborate further on the deficiencies of the contention. In our view, Friends/NEC did not present the minimal factual or expert support necessary to demonstrate the existence of a genuine material dispute with the application. We do not expect our adjudicatory boards to arbitrate factual disputes at the contention admissibility stage, but admitting such an ill-defined and poorly-supported contention undermines the very purposes of our contention admissibility rules.¹ Contention 4B provides no basis on which a hearing would be meaningfully focused. Since the contention does not meet our rules on admissibility, we conclude that the Board erred in admitting Contention 4B.

¹ See *supra* p. 7.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
NEXTERA ENERGY SEABROOK, LLC) DOCKET NO. 50-443-LR
(Seabrook Station, Unit 1))
)
(License Renewal))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing COMMISSION MEMORANDUM AND ORDER (CLI-12-05) have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Evangeline S. Ngbea]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 8th day of March 2012