UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

E. Roy Hawkens, Chairman
Dr. Michael F. Kennedy
Dr. Richard E. Wardwell

In the Matter of ENTERGY OPERATIONS, INC. (River Bend Station, Unit 1)	Docket No. 50-458-LR ASLBP No. 17-956-01-LR-BD01 January 8, 2018

MEMORANDUM AND ORDER
(Denying Sierra Club's Petition for Intervention and Request for Hearing)

Pending before this Licensing Board is a Petition to Intervene and Request for Hearing filed by Sierra Club. See Petition to Intervene and Request for Adjudicatory Hearing by Sierra Club (Oct. 12, 2017) [hereinafter Petition]. The petition challenges an application by Entergy Operations, Inc. (Entergy) to renew the operating license for River Bend Station, Unit 1 (River Bend), located in St. Francisville, Louisiana, for twenty years beyond the current expiration date of August 29, 2025. Sierra Club proffers three contentions: two contentions challenge River Bend's Environmental Report (ER),[1] and one contention challenges River Bend's aging management review results.[2] See Petition at 6, 8, 30.

For the reasons discussed below, we conclude that, although Sierra Club establishes standing, it fails to proffer an admissible contention. We therefore deny its petition to intervene.

[1] See Entergy, River Bend Station, License Renewal Application, Appendix E – Applicant's Environmental Report (May 2017) (ADAMS Accession No. ML17174A531) [hereinafter ER].

[2] See Entergy, River Bend Station, License Renewal Application, Appendix B – Aging Management Programs and Activities (May 2017) (ADAMS Accession No. ML17153A287) [hereinafter AMP].

I. PROCEDURAL BACKGROUND

On May 25, 2017, Entergy submitted a license renewal application (LRA)[3] for River Bend pursuant to 10 C.F.R. Part 54. See Letter from William F. Maguire, Site Vice President to Document Control Desk, NRC (May 25, 2017) (ADAMS Accession No. ML17153A285). On August 14, 2017, the NRC Staff accepted the LRA for docketing and issued an Opportunity to Request a Hearing and Petition for Leave to Intervene, which provided sixty days from the date of publication to file a petition to intervene in the LRA proceeding. See Entergy Operations Inc.; River Bend Station, Unit 1, 82 Fed. Reg. 37,908, 37,908–09 (Aug. 14, 2017).

On October 12, 2017, Sierra Club timely filed a petition to intervene in the LRA proceeding and proffered three contentions. See Petition at 6, 8, 30. On November 6, 2017, Entergy and the NRC Staff filed oppositions to the petition, arguing that all three contentions are inadmissible. See Entergy's Answer Opposing Sierra Club's Petition to Intervene and Request for Adjudicatory Hearing (Nov. 6, 2017) [hereinafter Entergy's Answer]; NRC Staff's Response to Petition to Intervene and Request for Hearing Filed by the Sierra Club (Nov. 6, 2017) [hereinafter NRC Staff's Answer]. Sierra Club filed a reply on November 13, 2017. See Sierra Club's Reply to Answers Opposing Sierra Club's Petition to Intervene (Nov. 13, 2017) [hereinafter Reply].

On November 17, 2017, Entergy moved to strike portions of Sierra Club's reply. See Motion to Strike Portions of Sierra Club Reply to Answers (Nov. 17, 2017) [hereinafter Entergy's Motion to Strike]. On November 21, 2017, the NRC Staff filed an answer supporting Entergy's motion, see NRC Staff's Answer to Entergy's Motion to Strike Portions of Sierra Club Reply to Answers (Nov. 21, 2017), and on November 27, 2017, Sierra Club filed an answer opposing

[3] See Entergy, River Bend Station, License Renewal Application (May 2017) (ADAMS Accession No. ML17153A286) [hereinafter LRA].

Entergy's motion. See Sierra Club's Answer in Opposition to Entergy's Motion to Strike Portions of Reply (Nov. 27, 2017).

On November 30, 2017, this Board held an oral argument to assess Sierra Club's standing and the admissibility of its contentions. See Official Transcript of Proceedings, Entergy Operations, Inc. River Bend Station Unit 1 Oral Argument at 1–100 (Nov. 30, 2017) [hereinafter Tr.].

II. ANALYSIS

An entity seeking to intervene in a licensing proceeding must demonstrate standing and proffer a contention that satisfies this agency's contention admissibility criteria. See 10 C.F.R. § 2.309(a)–(d), (f). As discussed below, we conclude that Sierra Club demonstrates standing but fails to proffer an admissible contention.

Before analyzing Sierra Club's intervention request, however, we address Entergy's motion to strike certain material in Sierra Club's reply. See Entergy's Motion to Strike, Attachment, Red-Line of Sierra Club's Reply at 3–8. In our view, the challenged material bears a sufficient nexus to the facts and arguments in the initial petition and answers to warrant being included in the reply, and we therefore deny Entergy's motion. See DTE Elec. Co. (Fermi Nuclear Power Plant, Unit 2), CLI-15-18, 82 NRC 135, 146 (2015). To the extent Entergy asserts that it lacked an opportunity to respond to allegedly new arguments in the reply, see Entergy's Motion to Strike at 4, those concerns are mooted by our determination that Sierra Club's proffered contentions are inadmissible.

A. Sierra Club Satisfies Standing Requirements

Although neither Entergy nor the NRC Staff challenges Sierra Club's standing, see Entergy's Answer at 2, NRC's Answer at 7, a licensing board has an independent obligation to determine whether a petitioner satisfies standing requirements. See 10 C.F.R. § 2.309(d)(2). We apply contemporaneous judicial concepts of standing, which require a petitioner to "(1) allege an injury in fact that is (2) fairly traceable to the challenged action and (3) is likely to

be redressed by a favorable decision." Fla. Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 & 4), CLI-15-25, 82 NRC 389, 394 (2015). For certain licensing proceedings, however (e.g., reactor construction permit proceedings and new operating reactor license proceedings), the Commission has authorized the use of a "proximity presumption," which "presume[s] that a petitioner has standing to intervene if the petitioner lives within . . . approximately 50 miles of the facility in question." Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-09-20, 70 NRC 911, 915–16 (2009). This presumption "rests on [the] finding . . . that persons living within the roughly 50-mile radius of [a] facility face a realistic threat of harm if a release from the facility of radioactive material were to occur." Id. at 917 (internal quotation marks omitted).

The Commission has not explicitly held that the 50-mile proximity presumption applies in reactor license renewal proceedings. In the Calvert Cliffs combined license application case, however, the Commission cited with approval a licensing board decision that applied the proximity presumption in a reactor license renewal proceeding. See CLI-09-20, 70 NRC at 915 n.15 (citing Fla. Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 & 4), LBP-01-06, 53 NRC 138, 150, aff'd on other grounds, CLI-01-17, 54 NRC 3 (2001)). During oral argument in this case, the NRC Staff stated that, in its view, the Commission's favorable reference to the standing analysis in the Turkey Point case indicates that the Commission has "implicitly endorsed" applying the 50-mile proximity presumption in reactor license renewal proceedings. Tr. at 72. We agree.[4]

Here, Sierra Club seeks to establish representational standing; that is, it seeks to intervene on behalf of one or more of its members. See Petition at 3. Sierra Club must

[4] As the Commission explained in Calvert Cliffs, the 50-mile proximity presumption "is simply a shortcut for determining standing in certain cases," CLI-09-20, 70 NRC at 917, including—by implicit approval—reactor license renewal cases. See id. at 915 n.15. Such a bright-line rule in this cabined category of cases not only satisfies contemporaneous judicial concepts of standing, see id. at 917, it provides clarity for litigants and licensing boards, thereby promoting efficiency in the adjudicatory process.

therefore show that (1) at least one of its members would otherwise have standing to sue in his or her own right; (2) the member has authorized Sierra Club to represent his or her interests; (3) the interests that Sierra Club seeks to protect are germane to its purpose; and (4) neither the claim asserted nor the relief requested requires the member to participate in the adjudicatory proceeding. See Private Fuel Storage, L.L.C. (Indep. Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 323 (1999).

Sierra Club satisfies these four requirements for representational standing. Sierra Club filed an affidavit from one of its members declaring that he (1) authorizes Sierra Club to represent his interests; (2) lives about 30 miles from River Bend, thus satisfying the 50-mile proximity presumption for standing; and (3) is the Conservation Chair for the Delta Chapter of the Sierra Club, and in that capacity, he knows that the interests Sierra Club seeks to protect in this proceeding are germane to its purpose. See Petition, Attachment, Declaration of William Fontenot. Additionally, the claims asserted by Sierra Club and the relief it requests do not require its members to participate in this proceeding. Sierra Club therefore has standing.

B. Sierra Club Fails to Proffer an Admissible Contention

Contentions are admissible if they satisfy the six-factor contention admissibility criteria in 10 C.F.R. § 2.309(f)(1), which requires a petitioner to

> (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
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> (ii) Provide a brief explanation of the basis for the contention;
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> (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
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> (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;
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> (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 to support its position on the issue; [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. This information must include references to specific portions of the application . . . that the petitioner disputes and the supporting reasons for each dispute . . . .

10 C.F.R. § 2.309(f)(1).

This standard is "strict by design," Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Units 2 & 3), CLI-01-24, 54 NRC 349, 358 (2001), and "failure to fulfill any one of these requirements renders a contention inadmissible." Entergy Nuclear Operations, Inc. (Indian Point, Unit 2), CLI-16-05, 83 NRC 131, 136 (2016). As the Commission has observed, this agency's contention admissibility rule "properly 'reserve[s] our hearing process for genuine, material controversies between knowledgeable litigants.'" FirstEnergy Nuclear Operating Co. (Davis-Besse Nuclear Power Station, Unit 1), CLI-12-08, 75 NRC 393, 396 (2012) (quoting Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 219 (2003)).

1. Contention 1 Is Inadmissible Because it Fails to Raise a Genuine Dispute with the ER

Contention 1 asserts that "[t]he [ER] submitted by [Entergy] does not properly and adequately state a purpose and need for the relicensing of River Bend Station." Petition at 6. In support of Contention 1, Sierra Club argues that (1) the ER "does not actually state a purpose and need," id. at 7; and (2) to the extent the ER states a purpose and need, the statement is impermissibly narrow, resulting in an environmental analysis that fails to consider reasonable alternatives to renewing River Bend's operating license. See id. at 7–8. We conclude that Contention 1 fails to raise a genuine dispute with the ER, as required by 10 C.F.R. § 2.309(f)(1)(vi).

First, Sierra Club errs in asserting that the ER "does not actually state a purpose and need for the relicensing of the River Bend Station." Petition at 7. The ER's purpose and need statement reads in relevant part: "The purpose and need for the proposed action (i.e., issuance

of a renewed nuclear plant operating license) is to provide an option that allows for baseload power generation capability [of 967 net megawatts electric (MWe)] beyond the term of the current nuclear power plant operating license [in August 2025] to meet future system generating needs." ER at 1-1. Sierra Club's claim that the ER does not state a purpose and need for the proposed action is manifestly incorrect and fails to raise a genuine dispute.

Second, contrary to Sierra Club's assertion, the purpose and need statement is not so narrow as to foreclose consideration of reasonable alternatives to the renewal of River Bend's license, thereby making renewal "a foregone conclusion." Reply at 2. As shown above, the ER states that the purpose and need for the proposed action "is to provide an option that allows for baseload power generation capability beyond [August 2025] to meet future system generating needs." ER at 1-1 (emphasis added). Nothing in the purpose and need statement indicates that the proposed action of renewing River Bend's license is the only option that would allow for baseload power generation capability in Louisiana beyond 2025. Moreover, Sierra Club fails to identify any provision in the ER that purports to foreclose consideration of other energy alternatives.

In fact, the ER considers at least eighteen alternatives as options to the renewal of River Bend's license, see ER at 2-34 to 2-35, 7-1 to 7-57, including purchased power; plant reactivation or extended service life of older gas-fired units; demand-side management, which includes energy efficiency, energy conservation, and demand response initiatives; wind; solar technologies, including photovoltaic cells and solar thermal power; hydropower; geothermal energy; wood waste; municipal solid waste; other biomass-derived fuels; fuel cells; oil; ocean wave and current energy; and coal-fired integrated gasification combined cycle. See id. at 2-35, 7-4 to 7-12. The ER ultimately concludes that the above energy options are not reasonable because they "would not satisfy the purpose and need for the proposed action." Id. at 2-33.

The ER concludes, however, that four alternatives are reasonable because they could be "commercially viable on a utility scale and operational prior to the expiration of [River Bend's

license in August 2025]," ER at 7-1, and it subjects each of them to an extensive environmental impact analysis. These four alternatives that the ER deems to be reasonable are (1) natural gas-fired energy generation at the River Bend site, see id. at 7-13 to 7-23; (2) coal-fired energy generation at the River Bend site, see id. at 7-23 to 7-33; (3) new nuclear energy generation at the River Bend site, see id. at 7-33 to 7-41; and (4) a combination of alternatives consisting of a natural gas-fired plant and biomass plants at the River Bend site, coupled with demand-side management programs. See id. at 7-42 to 7-53.

In short, the ER's purpose and need statement demonstrably allows for the consideration of a full spectrum of baseload power alternatives. Sierra Club's erroneous claim to the contrary in Contention 1 fails to raise a genuine dispute with the ER, as required by 10 C.F.R. § 2.309(f)(1)(vi).[5]

2. Contention 2 Is Inadmissible Because it Fails to (1) Raise a Genuine Dispute with the ER; and (2) Lay an Adequate Factual Foundation

Contention 2 alleges that "[i]n examining the no action alternative, the ER improperly failed to include renewable energy and energy efficiency as a consequence of the River Bend license not being renewed." Petition at 8. On its face, Contention 2 is framed as a contention of omission, alleging that the ER improperly fails to consider renewable energy and energy efficiency as alternatives to renewing River Bend's license. Additionally, based on Sierra Club's

[5] Sierra Club's petition also asserts that the ER's purpose and need statement constitutes "an abdication of the NRC's duty under NEPA," Petition at 6, insofar as it says that future energy needs "may be determined by other energy-planning decisionmakers, such as State, utility, and, where authorized, Federal agencies (other than the NRC)." ER at 1-1. At oral argument, Sierra Club abandoned this argument, conceding that NEPA does not impose an obligation on the NRC to engage in energy-planning decisions. See Tr. at 14. At the same time, however, Sierra Club endeavored to put a different gloss on its "abdication" argument, asserting that it was "talking about the purpose and need for the relicensing of River Bend[, which, in turn] . . . dictates the range of alternative[s considered]." Tr. at 15. To the extent Sierra Club meant that the purpose and need statement improperly restricts the range of alternatives to be considered, see Tr. at 11–15, such a claim fails to raise a genuine dispute for the reasons discussed supra in text.

arguments, we construe Contention 2 as a claim that the ER's analysis of wind power, solar power, and energy efficiency in combination is inadequate. See id. at 10–30; Reply at 4–5.

As we show below, Contention 2 is not admissible. First, insofar as Contention 2 alleges that the ER failed to consider renewable energy and energy efficiency as alternatives to renewing River Bend's license, it fails to raise a genuine dispute, as required by 10 C.F.R. § 2.309(f)(1)(vi). Second, insofar as Contention 2 claims that the ER's analysis of wind, solar, and energy efficiency in combination is inadequate, it fails to lay an adequate factual foundation, as required by 10 C.F.R. § 2.309(f)(1)(v). The ER is only required to consider reasonable alternatives to the renewal of River Bend's license, and Sierra Club fails to proffer alleged facts or expert opinion to support the proposition that a combination of wind, solar, and energy efficiency is a reasonable alternative that must be considered in the ER.

a. To the Extent Contention 2 Alleges that the ER Failed To Consider Wind, Solar, and Energy Efficiency as Alternatives, It Fails to Raise a Genuine Dispute. Contention 2 alleges that the ER does not include a discussion of renewable energy and energy efficiency as alternatives to the renewal of River Bend's license. See Petition at 8. As Entergy and the NRC Staff explain, however, the ER does, in fact, contain a robust discussion of wind, solar, and energy efficiency, and it concludes that none is a reasonable alternative for replacing River Bend's production of baseload power in Louisiana by 2025. See Entergy's Answer at 13–15; NRC Staff's Answer at 22–26.[6]

For example, regarding wind power, the ER analyzes several reports including (1) a 2015 report by the National Renewable Energy Laboratory that reviewed wind energy potential

[6] Renewable energy and energy efficiency are discussed in (1) Section 2.6 of the ER, which explains the alternatives to the renewal of River Bend's license and the criteria for determining what constitutes reasonable alternatives to the renewal of River Bend's license, see ER at 2-33 to 2-35; and (2) Chapter 7 of the ER, which discusses and analyzes energy options that were deemed to be reasonable alternatives to River Bend's generating capacity, see id. at 7-1 to 7-3, 7-13 to 7-53, as well as options that were deemed to be unreasonable alternatives. See id. at 7-4 to 7-12.

for Louisiana utilizing current and near-term commercial wind turbine technology; (2) a 2015 handbook prepared by Sandia National Laboratories on energy storage for utility decisionmakers, "which discusses the existing and emerging energy storage options for deployment to meet a range of energy storage needs"; and (3) a 2012 U.S. Fish and Wildlife Service report documenting the potential environmental impacts to ecological resources caused by wind turbines. ER at 7-6. Based on these reports, the ER concludes that onshore wind power does not present a reasonable alternative to the renewal of River Bend's license because of the "potentially LARGE impacts of siting wind energy facilities on a large scale and the need for an energy storage system that provides adequate storage and capabilities to inject the stored energy into the grid." Id. at 7-7. The ER similarly concludes that offshore wind power "is not considered a reasonable alternative" because (1) "Louisiana's offshore areas . . . have the lowest classification (fair) for potential wind energy development," id.; and (2) potential environmental impacts would not only be similar to those associated with onshore wind power, they would also include adverse impacts on "marine life, coastal terrestrial communities, avian communities, aesthetics, fishing . . . , and boating and yachting safety." Id.

Regarding solar power, the ER analyzes several reports including a 2012 National Renewable Energy Laboratory report discussing solar radiation potential throughout Louisiana, including in the Entergy Louisiana, LLC service territory. See ER at 7-7. Based on this report and others, the ER concludes that solar power does not present a reasonable alternative to the renewal of River Bend's operating license because of "the relatively modest amount of solar radiation in Louisiana, increased land requirements for a utility-scale facility to provide replacement power, intermittency of the power source, need for energy storage, and a capacity factor of 20 to 25 percent when producing electricity from solar power versus [River Bend]'s capacity factor of 90 percent." Id. at 7-8.

Finally, as to energy efficiency, the ER "reviewed deployment of a full range of existing and potentially deployable [demand-side management (i.e., energy efficiency)] programs across

the residential, commercial, and industrial sectors served by Entergy," and concluded that "[t]he [demand-side management] potential within the Entergy Louisiana, LLC service area is not adequate for the replacement of [River Bend's] generating capacity." ER at 7-5 to 7-6.

Sierra Club fails to acknowledge, much less challenge, any of the above analyses in the ER. Accordingly, insofar as Contention 2 alleges that the ER fails to consider wind, solar, and energy efficiency as alternatives, it is factually incorrect and, thus, inadmissible for failing to raise a genuine dispute with the ER, as required by 10 C.F.R. § 2.309(f)(1)(vi).

b. To the Extent Contention 2 Claims that the ER Should Have Considered a Combination of Wind, Solar, and Energy Efficiency as a Reasonable Alternative to the Renewal of River Bend's License, it Fails to Lay an Adequate Factual Foundation. In support of Contention 2, Sierra Club also argues that the ER is deficient because it fails to consider a combination of wind, solar, and energy efficiency as a reasonable alternative to the renewal of River Bend's operating license. See Petition at 10; Reply at 5. Sierra Club fails, however, to provide alleged facts or expert opinion to support this aspect of Contention 2, as required by 10 C.F.R. § 2.309(f)(1)(v).[7]

NEPA requires an ER to address the environmental impacts of the proposed action and compare them to impacts of "'reasonable' alternatives" to the proposed action. NextEra Energy Seabrook, LLC (Seabrook Station, Unit 1), CLI-12-05, 75 NRC 301, 338 (2012) (quoting Nat.

[7] In its argument underlying Contention 2, Sierra Club also asserts, without elaboration, that the ER should have analyzed (1) "whether the River Bend Station is needed to produce the power required to serve the people of Louisiana"; and (2) "whether there is another, perhaps better, way to deliver that power." Petition at 9–10. Regarding the first assertion, as stated supra note 5, Sierra Club abandoned its argument that NEPA requires an agency to engage in energy-planning decisions. Regarding the second assertion, NEPA does not establish a "perhaps better" standard for determining the range of alternatives that an agency must consider. Rather, as discussed infra note 8 and accompanying text, NEPA requires an agency to consider "reasonable" alternatives.

Res. Def. Council, Inc. v. Morton, 458 F.2d 827, 837, 838 (D.C. Cir. 1972)).[8] In the context of reactor license renewal applications, "[f]or an alternative energy source to be considered reasonable . . . the alternative should be commercially viable and technically capable" of producing the required baseload power in the region of interest by the expiration date of the license. Davis-Besse, CLI-12-08, 75 NRC at 400. At the contention admissibility stage, the petitioner bears the burden of providing some minimal "factual support or expert opinion sufficient to demonstrate a genuine dispute as to whether an alternative energy source—or a combination of sources—can meet that standard." Id.

Applying the above principles here, for Contention 2 to satisfy 10 C.F.R. § 2.309(f)(1)(v), Sierra Club was required to provide alleged facts or expert opinion supporting the proposition that a combination of wind, solar, and energy efficiency would be (1) commercially viable and technically capable of producing 967 net MWe (2) in Louisiana (3) by 2025. See Davis-Besse, CLI-12-08, 75 NRC at 400; Seabrook Station, CLI-12-05, 75 NRC at 342. This Sierra Club failed to do.

Instead, in support of Contention 2, Sierra Club's petition simply cites to numerous studies and reports that lay a foundation for the following propositions: (1) by interconnecting renewable energy sources to the transmission grid and employing other technologies, renewable energy sources, such as wind and solar power, could provide reliable baseload power;[9] (2) the Federal Energy Regulatory Commission has recently adopted policies that

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[8] See also Hydro Res., Inc. (P.O. Box 15910, Rio Rancho, N.M. 87174), CLI-01-04, 53 NRC 31, 55 (2001) ("Agencies need only discuss those alternatives that are reasonable and 'will bring about the ends' of the proposed action.") (quoting Citizens Against Burlington v. Busey, 938 F.2d 190, 195 (D.C. Cir.), cert. denied, 502 U.S. 994 (1991)); see also Morton, 458 F.2d at 837–38 (explaining that NEPA does not require consideration of alternatives that are "only remote and speculative possibilities").

[9] See Petition at 10 (citing Cristina L. Archer & Mark Z. Jacobson, Supplying Baseload Power and Reducing Transmission Requirements by Interconnecting Wind Farms, 46 J. Applied Meteorology & Climatology 1701 (2007)), 11–12 (citing Mark Z. Jacobson & Mark A. Delucchi, Providing All Global Energy with Wind, Water, and Solar Power, Part I: Technologies, Energy

promote the expansion of the transmission grid;[10] (3) certain renewable energy sources are becoming more wide-spread and cost-effective;[11] (4) renewable energy sources provide certain benefits not provided by nuclear power or fossil fuels;[12] and (5) in Louisiana, offshore wind power could be further developed as a potential source of energy.[13]

Relying on the above-cited sources, Sierra Club broadly asserts "that there are numerous ways to get to a clean and renewable energy future without nuclear power." Petition at 18. That general assertion might be true in theory, but for present purposes, it is quite beside the point. Sierra Club's sources, whether viewed individually or cumulatively, fail to lay the required factual foundation for the proposition that a combination of renewables and energy efficiency will be commercially viable and technically capable of producing 967 net MWe in Louisiana by 2025, as required by 10 C.F.R. § 2.309(f)(1)(v). See Davis-Besse, CLI-12-08, 75 NRC at 402 ("The mere potential for, or theoretical capacity" of renewable and energy efficiency

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Sources, Quantities and Areas of Infrastructure, and Materials, 39 Energy Pol'y 1154 (2011); and Mark Z. Jacobson & Mark A. Delucchi, Providing All Global Energy with Wind, Water, and Solar Power, Part II: Reliability, System and Transmission Costs, and Policies, 39 Energy Pol'y 1170 (2011)), 16 (citing Arjun Makhijani, Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policy (2007) [hereinafter 2007 Makhijani Book]), 20–21 (citing George Crabtree & Jim Misewich, Integrating Renewable Electricity on the Grid (2010) [hereinafter 2010 Crabtree & Misewich Report]).

[10] See Petition at 18–19 (citing FERC, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, Order No. 1000, 18 C.F.R. Part 35 (2011)).

[11] See Petition at 22–25 (citing Am. Council on Renewable Energy, The Outlook for Renewable Energy in America (2014)), 28–29 (citing Maggie Molina, The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs (2014)).

[12] See Petition at 10 (citing Mark Z. Jacobson, Review of Solutions to Global Warming, Air Pollution, and Energy Security, 2 Energy & Envtl. Sci. 148 (2009)), 14 (citing R. Neal Elliott et al., Avoiding a Train Wreck: Replacing Old Coal Plants with Energy Efficiency (2011); and Dan York & Martin Kushler, The Old Model Isn't Working: Creating the Energy Utility for the 21st Century (2011)), 27–28 (citing Int'l Energy Agency, Capturing the Multiple Benefits of Energy Efficiency (2014)).

[13] See Petition at 29–30 (citing Bryan Crouch, Offshore Louisiana Wind Power, La. Energy Topic (2004) [hereinafter 2004 Crouch Study]; and Bob Spreche & Bryan Crouch, Economics of Offshore Wind Power (2005) [hereinafter 2005 Spreche & Crouch Study]).

in lieu of nuclear power "is insufficient to show their commercial viability as a source of baseload power in the [region of interest] by [the expiration date of the license]."); see also id. at 401 (for an alternative energy source to be deemed reasonable, it must be a "current or impending reality" in the region of interest).

In the Davis-Besse license renewal proceeding, the Commission acknowledged that the studies and reports relied on by petitioners provided support for the propositions that (1) wind and solar are capable of producing significant energy in ideal locations; (2) wind power could produce significant gross capacity in the region of interest; and (3) technological alternatives such as storage and integrated energy sources may eventually be able to compensate for the intermittency of wind and solar and become sufficiently reliable to constitute baseload power. See CLI-12-08, 75 NRC at 400–01. The Commission nevertheless concluded that petitioners failed to satisfy 10 C.F.R. § 2.309(f)(1)(v) because they "failed to lay a foundation for their claim that wind, solar, and energy storage—in any combination—could satisfy the baseload demand in the region of interest by [the expiration date of the license]." Id. at 401. In our view, the rationale in Davis-Besse applies with equal force here and mandates the rejection of Contention 2 pursuant to 10 C.F.R. § 2.309(f)(1)(v).[14]

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[14] Not only do Sierra Club's sources fail to provide the necessary factual foundation required by 10 C.F.R. § 2.309(f)(1)(v), many of them are in significant tension with, or fatally undercut, a conclusion that renewable energy and energy efficiency would be capable of replacing River Bend's baseload power generation by 2025. For example, the 2007 Makhijani Book states that "[i]t is technologically and economically feasible to phase out CO_2 emissions and nuclear power . . . at reasonable cost by 2050," 2007 Makhijani Book at 147, which is 25 years beyond when it would be needed to replace River Bend's baseload generation. The 2010 Crabtree & Misewich Report states that integrating renewable resources on the grid will require additional research to find solutions to technological challenges. See 2010 Crabtree & Misewich Report at 29 ("The grid faces two new and fundamental technological challenges in accommodating renewables: location and variability."); id. ("Solutions to the challenges of remote location and variability of generation are needed."); id. at 30 (Each of the potential "solutions to variability . . . requires significant research and development."). The 2004 Crouch Study acknowledges that obstacles hamper the development of offshore wind energy in Louisiana, stating that the "main drawbacks to wind generated electricity are its high capital costs and the intermittency of the wind," and other "drawbacks . . . include both aesthetics and associated bird fatalities." 2004 Crouch Study at 2. Moreover, it declares that Louisiana's "offshore wind resource is, to date, still somewhat of

In sum, Sierra Club failed to provide alleged facts or expert opinion to support the proposition that a combination of wind, solar, and energy efficiency is a reasonable alternative to the renewal of River Bend's operating license. This failure is fatal to Contention 2's assertion that the ER's consideration of such a combination is inadequate, see Petition at 10, because NEPA imposes no requirement to consider alternatives that are not reasonable.[15]

3. Contention 3 Is Inadmissible Because it Fails to Raise a Genuine Dispute with the LRA

Contention 3 alleges that "[t]he LRA does not undertake an adequate aging management review of the concrete on the containment vessel." Petition at 30. Relying solely on an NRC Information Notice issued in November 2011, see NRC Information Notice 2011-20, Concrete Degradation by Alkali-Silica Reaction (Nov. 18, 2011) (ADAMS Accession No. ML112241029) [hereinafter IN-2011-20], Sierra Club alleges that (1) River Bend's Mark III concrete drywell is susceptible to alkali-silica reaction (ASR)-induced concrete degradation; and (2) River Bend's LRA does not adequately address ASR. See Petition at 31. We conclude that Contention 3 is not admissible, because it fails to raise a genuine dispute with the LRA, as required by 10 C.F.R. § 2.309(f)(1)(vi).

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an unknown," and its "onshore wind resource has virtually no potential for wind power development." Id. at 3 (emphasis added). Finally, the 2005 Spreche & Crouch Study confirms that the "offshore wind regime is still something of an unknown," and it states that "no offshore wind farms have actually been built in the U.S." 2005 Spreche & Crouch Study at 1.

Notably, after citing several studies that discuss the progress some states have made in implementing renewable energy and energy efficiency, see Petition at 22–29, Sierra Club concedes that "Louisiana has not thus far been a leader in developing renewable energy and energy efficiency." Id. at 29.

[15] Sierra Club's petition singles out the "no action alternative" analysis in the ER as being deficient for failing to consider the "viable alternatives" of wind, solar, and energy efficiency in combination. Petition at 10. As shown supra in text, however, Sierra Club failed to provide support for its assertion that these so-called "viable alternatives" are reasonable. Accordingly, Entergy was not required to consider a combination of these alternatives in any portion of the ER, including the no action alternative analysis.

We first summarize the LRA's treatment of ASR, and we then address Sierra Club's arguments.[16]

a. The LRA's Treatment of ASR. As Entergy and the NRC Staff explain, see Entergy's Answer at 25; NRC Staff's Answer at 31–32, Entergy's LRA does not use the term "alkali-silica reaction" or "ASR." Instead, consistent with an NRC guidance document called the "GALL Report," the LRA uses the term "reaction with aggregates," which, by definition, includes ASR.[17] The LRA thus addresses ASR by stating that, although River Bend "has not identified operating experience with occurrences of [degradation due to reaction with aggregates (which includes ASR)]," Entergy has nevertheless "conservatively elected to manage this aging effect" in River Bend's Mark III concrete drywell "by the Structures Monitoring Program." LRA at 3.5-12. River Bend's Structures Monitoring Program, in turn, states that it "will be consistent with the program described in [the GALL Report], Section XI.S6, Structures Monitoring Program." AMP at B-146.

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[16] It appears that Sierra Club initially intended Contention 3 to be a contention of omission as well as one of adequacy. See Petition at 31 (Sierra Club asserts that River Bend's LRA "does not address the degradation of the concrete drywell due to ASR."); id. at 32 ("The [LRA] for River Bend does not include any discussion of ASR-induced degradation."). During oral argument, however, Sierra Club prudently renounced its omission claim because, as shown infra Part II.B.3.a, Entergy's LRA expressly provides for the aging management of reaction with aggregates, which, by definition, includes ASR. See Tr. at 36 (Sierra Club affirms that it is "no longer concerned that ASR is not being discussed in the [LRA], but rather that it is not adequately being discussed.").

[17] The GALL Report defines the term "Reaction with Aggregates" as follows:

> The presence of reactive alkalis in concrete can lead to subsequent reactions with aggregates that may be present. These alkalis are introduced mainly by cement, but also may come from admixtures, salt-contamination, seawater penetration, or solutions of deicing salts. These reactions include alkali-silica reactions, cement-aggregate reactions, and aggregate-carbonate reactions. These reactions may lead to expansion and cracking.

Division of License Renewal, Office of Nuclear Reactor Regulation, Generic Aging Lessons Learned (GALL) Report, NUREG-1801, Rev. 2, at IX-36 (Dec. 2010) (emphasis added) (ADAMS Accession No. ML103490041) [hereinafter GALL Report].

The Structures Monitoring Program in the GALL Report "consists of periodic visual inspections [i.e., on a frequency not to exceed five years] by personnel qualified to monitor structures and components for applicable aging effects." GALL Report at XI S6-1. "Structures are monitored under this program using periodic visual inspection . . . to ensure that aging degradation will be detected and quantified before there is loss of intended function." Id. at XI S6-2. The visual inspection's acceptance criteria "calls for inspection results to be evaluated by qualified engineering personnel based on acceptance criteria . . . [that, inter alia,] consider industry and plant operating experience." Id. at XI S6-3. Insofar as acceptance criteria for visual inspections of River Bend's Mark III concrete drywell are based on "industry experience," id., those criteria will include the information contained in Information Notice 2011-20. See Tr. at 66–68, 91. Moreover, the visual inspections provided in the GALL Report comport with inspections contemplated in the Information Notice, which states that "visual inspections of concrete can identify the . . . cracking and the presence of [ASR] gel." IN-2011-20 at 3.

Finally, the GALL Report states that "[c]orrective actions are initiated in accordance with the corrective action process if the evaluation results indicate there is a need for a repair or replacement. As discussed in the Appendix for [the] GALL [Report], the [NRC Staff] finds the requirements of 10 CFR Part 50, Appendix B, acceptable to address the corrective actions." GALL Report at XI S6-4. Moreover, the GALL Report declares that "[t]here is reasonable assurance that implementation of the structures monitoring program described [in the GALL Report] will be effective in managing the aging of the in-scope structures . . . through the period of extended operation." Id.

b. Contention 3 Fails to Raise a Genuine Dispute with the LRA. The arguments advanced by Sierra Club in support of Contention 3 do not raise a genuine dispute on a material issue of law or fact regarding the LRA's discussion of ASR, as required by 10 C.F.R. § 2.309(f)(1)(vi). First, Sierra Club's complaint that the LRA's discussion of ASR is "extremely brief and simply refers to Entergy's Structures Monitoring Program," Reply at 7, does not suffice.

A petitioner must present a "fact-based argument that actually and specifically challenges the application," and a contention "that fails directly to controvert the license application . . . is subject to dismissal." Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, & 3), CLI-99-11, 49 NRC 328, 341–42 (1999) (internal quotation marks omitted). Sierra Club's simplistic assertion that the LRA's discussion of ASR is inadequate because it merely refers to Entergy's Structures Monitoring Program, see Reply at 7, does not specify a deficiency in the LRA, and it is therefore insufficient to raise a genuine dispute.[18]

Similarly unavailing is Sierra Club's argument that the LRA's discussion of ASR is deficient because it makes no reference to the American Society for Testing and Materials (ASTM) standards that are discussed in the Information Notice. See Reply at 8. Admittedly, as Sierra Club states, the Information Notice says that old ASTM standards previously used by licensees during construction of a nuclear power plant "may not accurately predict aggregate reactivity when dealing with late- or slow-expanding aggregates containing strained quartz or microcrystalline quartz." Id. (quoting IN-2011-20 at 3). The Information Notice therefore advises licensees that if, during construction, they "tested [concrete] using [the standards in] ASTM C227 and ASTM C289 [they] could have concrete that is susceptible to ASR-induced degradation." Id. (quoting IN-2011-20 at 3). Sierra Club criticizes the River Bend LRA because its discussion of ASR "makes no reference to any of these standards." Id.

But the LRA's failure to discuss the ASTM standards is not a deficiency. The reason the Information Notice mentioned the ASTM standards was to put licensees on notice that if, during

[18] Sierra Club incorrectly claims that the LRA lacks "any indication that the concerns set forth in the [I]nformation [N]otice are being addressed at River Bend." Reply at 8. As explained supra Part II.B.3.a, River Bend's Structures Monitoring Program is "consistent" with the GALL Report, see AMP at B-146, and the visual inspections required by the Structures Monitoring Program will address the ASR concerns set forth in the Information Notice. See IN-2011-20 at 3 ("[V]isual inspections of concrete can identify the unique 'map' or 'patterned' cracking and the presence of [ASR] gel."); Tr. at 36 (Sierra Club acknowledges that the "first step" for identifying ASR deterioration is a visual inspection). Moreover, the acceptance criteria for visual inspections described in the GALL Report consider industry experience, see GALL Report at XI S6-3, which includes the Information Notice's concern about ASR. See Tr. at 66–68, 91.

construction of a concrete structure, they tested the concrete using old ASTM standards, the concrete could nevertheless be susceptible to ASR-induced degradation. See IN-2011-20 at 3. There was no need for the River Bend LRA to discuss ASTM standards because Entergy conservatively assumed that the River Bend concrete drywell could be susceptible to ASR-induced degradation, even though no evidence of such degradation had ever been observed. See LRA at 3.5-12. The River Bend LRA states that it will manage the possibility of such degradation in accordance with its Structures Monitoring Program, which comports with the GALL Report and thus takes into account the ASR concerns discussed in the Information Notice. See id.; AMP at B-146; supra note 18. Sierra Club's claim that the LRA is deficient for failing to discuss the ASTM standards does not, therefore, raise a genuine dispute on an issue of material law or fact regarding the adequacy of the LRA's treatment of ASR-induced degradation in River Bend's drywell, as required by 10 C.F.R. § 2.309(f)(1)(vi). Contention 3 is therefore not admissible.[19]

[19] Nor is Contention 3 supported by adequate alleged facts or expert opinion, as required by 10 C.F.R. § 2.309(f)(1)(v). Sierra Club relies solely on the Information Notice to support Contention 3, even though Sierra Club acknowledged at oral argument that the Information Notice imposes no requirements on the River Bend LRA. See Tr. at 33; see also IN-2011-20 at 1 ("[S]uggestions contained in this [Information Notice] are not NRC requirements; therefore, no specific action . . . is required."). Notably, the Commission has stated that an "applicant's use of an aging management program identified in the GALL Report constitutes reasonable assurance that it will manage the targeted aging effect during the renewal period." Amergen Energy Co., LLC (Oyster Creek Nuclear Generating Station), CLI-09-23, 68 NRC 461, 468 (2008). Here, the River Bend LRA is consistent with the GALL Report, see supra Part II.B.3.a, and nothing in the Information Notice (or in any of the arguments proffered by Sierra Club) provides a factual foundation for the proposition that the LRA's conformance with the GALL Report is inadequate for managing the possibility of ASR-induced degradation in River Bend's drywell.

III. CONCLUSION AND ORDER

For the foregoing reasons, this Board denies Sierra Club's petition to intervene, thereby terminating this proceeding at the Board level. Sierra Club may appeal this decision to the Commission within twenty-five days of service of this order. Any party opposing the appeal may file a brief in opposition within twenty-five days after service of the appeal. See 10 C.F.R. § 2.311(b).

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

_____
E. Roy Hawkens, Chairman
ADMINISTRATIVE JUDGE

/RA/

_____
Dr. Michael F. Kennedy
ADMINISTRATIVE JUDGE

/RA/

_____
Dr. Richard E. Wardwell
ADMINISTRATIVE JUDGE

Rockville, Maryland
January 8, 2018

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No. 50-458-LR
ENTERGY OPERATIONS, INC.	)	
	)	
(River Bend Station, Unit 1 – License Renewal Application)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **MEMORANDUM AND ORDER (Denying Sierra Club's Petition for Intervention and Request for Hearing)** have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Brian Newell]
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Dated at Rockville, Maryland,
this 8th day of January, 2018