

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

LBP-22-01

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before the Licensing Board:

G. Paul Bollwerk, III, Chairman
Nicholas G. Trikouros
Dr. Gary S. Arnold

In the Matter of

DUKE ENERGY CAROLINAS, LLC

(Oconee Nuclear Station, Units 1, 2, and 3)

Docket Nos. 50–269-SLR, 50–270-SLR,
and 50–287-SLR

ASLBP No. 22-973-01-SLR-BD01

February 11, 2022

MEMORANDUM AND ORDER
(Denying Intervention and Terminating Proceeding)

By application dated June 7, 2021, licensee Duke Energy Carolinas, LLC (Duke) is seeking second twenty-year renewals of its 10 C.F.R. Part 50 operating licenses for Units 1, 2, and 3 at the Oconee Nuclear Station (ONS).¹ In a September 27, 2021 hearing request, Beyond Nuclear, Inc., and Sierra Club, Inc., (collectively Petitioners) submitted three contentions contesting the Environmental Report (ER) portion of Duke's subsequent license renewal (SLR) application.² Two of Petitioners' contentions, designated as Contentions 2 and 3,

¹ See Letter from Steven M. Snider, Site Vice President, ONS, to NRC Document Control Desk (June 7, 2021) (ADAMS Accession No. ML21158A194) [hereinafter Oconee SLR Application].

² See Hearing Request and Petition to Intervene by [Petitioners] and Petition for Waiver of 10 C.F.R. §§ 51.53(c)(3)(i), 51.53(c)(3)(ii)(L), 51.71(d), and 51.95(c)(1) and 10 C.F.R. Part 51 Subpart A, Appendix B, Table B-1 to Allow Consideration of Category 1 NEPA Issues (Sept. 27, 2021) [hereinafter Hearing Petition]; see also Oconee SLR Application, encl. 3, attach. 2 (Appendix E, Applicant's [ER], Subsequent Operating License Renewal Stage, [ONS] Units 1, 2, and 3 (Mar. 2021) (ADAMS Package Accession No. ML21158A193)). Within the agency's ADAMS records system, the publicly available version of the ONS ER has been divided into seven segments, with the most relevant to this proceeding being the first, which contains
(footnote continued...)

claim Duke's ER is deficient in its discussion of dam-failure impacts, including its assessment of associated severe accident mitigation alternatives (SAMAs), for which Petitioners also provide a 10 C.F.R. § 2.335 waiver request to the degree litigation of those issues might be precluded by certain provisions in 10 C.F.R. Part 51. See Hearing Petition at 13–22. In contrast, Petitioners' other contention, labeled Contention 1, maintains that those Part 51 preclusion provisions are limited to initial license renewals and so do not apply to second license renewal proceedings such as this one. See id. at 11–13. Both Duke and the Nuclear Regulatory Commission (NRC) Staff oppose Petitioners' hearing request, asserting there is no basis for further adjudicatory consideration of either their contentions or the waiver request.³

Although Petitioners have established their representational standing to intervene, they have failed to demonstrate that their contentions are litigable in this proceeding. Their first contention does not raise a genuine dispute, as required by 10 C.F.R. § 2.309(f)(1)(vi), because it asserts a legal position that has been squarely rejected in controlling Commission decisions. Further, Petitioners' request for a waiver of the NRC regulations that prohibit this Board from adjudicating their second and third contentions fails to make the requisite *prima facie* showing of "special circumstances" required for such a waiver under section 2.335(b). Accordingly, Petitioners' hearing and waiver requests must be denied and this proceeding terminated.

sections 1.0 through 3.0, see id. (ADAMS Accession No. ML21158A195) [hereinafter ER Part 1], and the second, which contains sections 4.0 through 10.0 and attachments A (NRC NEPA Issues for License Renewal) and B (ONS NPDES Permit), see id. (ADAMS Accession No. ML21158A196) [hereinafter ER Part 2].

³ See Applicant's Answer Opposing Request for Hearing, Petition to Intervene, and Petition for Waiver Submitted by [Petitioners] (Oct. 22, 2021) at 2–4 [hereinafter Duke Answer]; NRC Staff's Answer Opposing [Petitioners] Hearing Request (Oct. 22, 2021) at 2 [hereinafter Staff Answer].

I. BACKGROUND

A. Procedural Background

Submitted in response to a July 28, 2021 Federal Register hearing opportunity notice regarding the Duke SLR application,⁴ Petitioners' three contentions raise both legal and factual questions about whether the Duke ER satisfies the requirements in the NRC's 10 C.F.R. Part 51 regulations implementing the National Environmental Policy Act (NEPA). In their second and third contentions, Petitioners assert that Duke's ER is deficient because it fails to (1) discuss purported new and significant environmental impacts associated with reactor accidents at ONS that could be caused by the failure of the nearby Jocassee Dam; and (2) properly assess new and significant information affecting Duke's SAMA analysis intended to mitigate the effects of such an event. See Hearing Petition at 13–18. Further, Petitioners acknowledge that such flooding accident impact issues would otherwise be precluded from consideration in this license renewal proceeding because they involve a "Category 1" (or Category-1 equivalent) issue listed in Table B-1 of Part 51, subpart A, appendix B of the agency's NEPA implementation provisions. See id. at 18–19. Petitioners thus seek a 10 C.F.R. § 2.335(b) waiver of 10 C.F.R. Part 51, subpart A, appendix B, and sections 51.53(c)(3)(i), 51.53(c)(3)(ii)(L), 51.71(d), and 51.95(c)(1) to permit Board consideration of both contentions in this adjudication. See id. at 19–22. Additionally, in their first contention Petitioners interpose a legal claim that the applicability of these Part 51 preclusion provisions is limited to initial license renewals and so do not apply to this SLR proceeding. See id. at 11–13.

By memorandum dated September 29, 2021, the Secretary of the Commission referred Petitioners' hearing request to the Chief Administrative Judge,⁵ who, in turn, on October 4,

⁴ See [Duke]; Duke Energy; [ONS], Units 1, 2, and 3, 86 Fed. Reg. 40,662 (July 28, 2021).

⁵ See Memorandum from Annette L. Vietti-Cook, NRC Secretary, to E. Roy Hawken, Chief Administrative Judge (Sept. 29, 2021).

2021, assigned the intervention petition to this Licensing Board to rule on standing and contention admissibility/waiver matters and preside at any hearing.⁶ While not contesting Petitioners' representational standing to intervene in this proceeding, in their October 22, 2021 answers to Petitioners' hearing request, both Duke and the Staff assert that Petitioners' three contentions are inadmissible and their waiver request fails to meet the requisite standards in section 2.335. See Duke Answer at 1 n.3, 2–4; Staff Answer at 1–2. Petitioners' November 5, 2021 reply maintains that their waiver request should be granted and their contentions admitted.⁷

In a series of issuances, the Board scheduled an initial prehearing conference to consider the efficacy of Petitioners' hearing request.⁸ A virtual conference was conducted on November 16, 2021, during which the Board heard oral argument from the participants on the sufficiency of Petitioners' waiver and contention admissibility claims regarding Contentions 2 and 3.⁹ Thereafter, in a November 22, 2021 issuance, the Board requested information on the

⁶ See [Duke], Establishment of Atomic Safety and Licensing Board, 86 Fed. Reg. 56,299 (Oct. 8, 2021), superseded by [Duke], Establishment of Atomic Safety and Licensing Board, 86 Fed. Reg. 58,703 (Oct. 22, 2021) (providing corrected Atomic Safety and Licensing Board Panel docket number).

⁷ See Petitioners' Reply to Oppositions by [Duke] and NRC Staff to Petitioners' Hearing Request and Petition to Intervene and Waiver Petition (Nov. 5, 2021) at 1 [hereinafter Petitioners Reply]. Subsequently, on November 15, 2021, Duke submitted a motion to strike portions of Petitioners' reply filing. See [Duke] Motion to Strike Portions of the Reply Filed by [Petitioners] (Nov. 15, 2021). In accordance with a Board scheduling order, only the Petitioners submitted a response, opposing the motion. See Petitioners' Response to [Duke's] Motion to Strike Portion of Petitioners' Reply (Dec. 1, 2021) at 1; see also Licensing Board Order (Establishing Briefing Schedule Associated with Applicant [Duke's] Motion to Strike (Nov. 16, 2021) at 2 & n.4 (unpublished).

⁸ See Licensing Board Memorandum and Order (Initial Prehearing Conference Scheduling and Procedures) (Oct. 29, 2021) (unpublished) [hereinafter Conference Procedures Order]; Licensing Board Memorandum and Order (Scheduling Prehearing Conference) (Nov. 4, 2021) (unpublished); Licensing Board Memorandum and Order (Clarification on Prehearing Conference Procedures) (Nov. 10, 2021) (unpublished).

⁹ See Tr. at 1–134; see also Licensing Board Memorandum and Order (Adopting Transcript Corrections for Initial Prehearing Conference) (Dec. 16, 2021) (unpublished). In its October 29, 2019 order on scheduling and procedures for the initial prehearing conference, the (footnote continued...)

supporting basis for a statement in a January 2011 Staff assessment regarding external flooding concerns at ONS “that the potential failure of the Jocassee Dam from either an overtopping event or seismic event was not credible.”¹⁰ Duke and the Staff provided responses to this request on November 29 and 30, 2021, respectively, with Petitioners responding in a filing dated December 7, 2021.¹¹

Board indicated that because Petitioners’ standing was not contested and the issue raised by their Contention 1 had been addressed by the Commission in precedential rulings that were binding on the Board, the focus of the oral argument at the conference would be on the admissibility of Petitioners’ Contentions 2 and 3 and the associated section 2.335 waiver request. See Conference Procedures Order at 3 & n.2.

¹⁰ Licensing Board Memorandum and Order (Request to Provide Post-Initial Prehearing Conference Information) (Nov. 22, 2021) at 1 (unpublished) (quoting Letter from Eric J. Leeds, Director, NRC Office of Nuclear Reactor Regulation (NRR), to Preston Gillespie, Site Vice President, ONS at 1 (Jan. 28, 2011) (ADAMS Accession No. ML110280153) [hereinafter January 2011 Leeds Letter]) [hereinafter Licensing Board Post-Argument Information Request Order].

¹¹ See [Duke] Response to the Atomic Safety and Licensing Board’s November 22, 2021 Order (Nov. 29, 2021); NRC Staff Response to the Atomic Safety and Licensing Board’s November 22, 2021 Memorandum and Order (Nov. 30, 2021); Petitioners’ Response to [Duke] and NRC Staff’s Responses to ASLB’S November 22 Order (Dec. 7, 2021) [hereinafter Petitioners Response to Licensing Board Post-Argument Information Request].

In addition, during the proceeding Duke submitted another item for Board consideration. In a November 8, 2021 information notice, Duke advised the Board that it had sent a report to the NRC Office of the Inspector General (OIG) about an alleged violation of the post-employment restrictions of 18 U.S.C. § 207(a)(1) by Jeffrey Mitman, the former NRC Staff senior reliability and risk analyst who provided a declaration in support of Petitioners’ hearing request, to which the NRC Staff and Petitioners provided responses. See Letter from Ryan K. Lighty, Duke Counsel, to Licensing Board at 1–3 (Nov. 8, 2021); NRC Staff Response to [Licensing Board] November 10, 2021 Memorandum and Order and to Duke’s November 8, 2021 Notification Letter (Nov. 19, 2021) at 2 (indicating OIG’s internal processes allow 10 days to assess whether an allegation warrants further action, with OIG’s strategic goal to complete any allegation investigation it institutes within 18 months); Petitioners’ Response to Duke’s Notification Regarding Information Potentially Relevant to the Adjudicatory Proceeding (Nov. 19, 2021) at 2 (indicating that because Mr. Mitman was never involved in the “particular matter” of Duke’s SLR application while an agency employee, he did not violate 18 U.S.C. § 207(a)(1)); see also Licensing Board Memorandum and Order (Schedule for Responses to Applicant [Duke’s] Information Notification (Nov. 10, 2021) (unpublished).

B. Environmental Review Process Regarding an SLR Application¹²

An application for either an initial or a subsequent renewal of the 10 C.F.R. Part 50 operating license for an existing nuclear power plant is governed by the provisions of 10 C.F.R. Part 54.¹³ The environmental contents of such an application are described in section § 54.23, which provides that the application must “include a supplement to the [ER] that complies with the requirements of subpart A of 10 CFR Part 51.” 10 C.F.R § 54.23. The information required for such a supplement is outlined in section 51.53(c), which also provides in paragraph (3)(i) that “[t]he [ER] for the operating license renewal stage is not required to contain analyses of the environmental impacts of the license renewal issues identified as Category 1 issues in appendix B to subpart A of this part.” Id. § 51.53(c)(3)(i). Other Part 51 provisions extend this exemption for Category 1 issues to the Staff’s draft and final supplements to the agency’s generic environmental impact statement (GEIS) for license renewal. See id. §§ 51.71(d), 51.95(c)(1).

As appendix B to subpart A of Part 51 makes clear, “[t]he Commission has assessed the environmental impacts associated with granting a renewed operating license for a nuclear power plant . . . [and] Table B-1 summarizes the Commission’s findings on the scope and magnitude of environmental impacts” that NEPA requires to be addressed. Id. pt. 51, subpart A, app. B. Table B-1, in turn, indicates that the “[d]ata supporting this table are contained in NUREG-1437, Revision 1, ‘[GEIS] for License Renewal of Nuclear Plants (June 2013)’” and that for Category 1 items, “[t]he generic analysis of the issue may be adopted in each plant-specific

¹² In a recent decision regarding a challenge to the SLR application for the North Anna facility, the licensing board provided an overview discussion about this process, some of which we reiterate here with revisions to encompass the flooding impacts challenges that are the focus of this proceeding. See Va. Elec. and Power Co. (North Anna Power Station, Units 1 and 2), LBP-21-4, 93 NRC 179, 189–93 (2021), appeal pending.

¹³ An initial and subsequent renewal each add an additional 20 years to the original 40-year term of a Part 50 operating license, so that in the case of the ONS facility, if the Duke SLR application is granted, the Units 1, 2, and 3 operating license terms would run until February 6, 2053, October 6, 2053, and July 19, 2054, respectively. See Staff Answer at 3.

review.” Id. tbl. B-1 nn.1–2. Commission caselaw establishes that an adjudicatory challenge based on an applicant’s failure to deal appropriately with a Category 1 item constitutes an attack on an agency rule, making a section 2.335(b) waiver the sole vehicle for raising such an issue in an adjudication.¹⁴

Among its listings, Table B-1 specifically identifies summary environmental impact findings relating to “Postulated Accidents,” including “Design-basis accidents” and “Severe accidents.”¹⁵ Id. pt. 51, subpart A, app. B. tbl. B-1. A design-basis accident is not only classified as a Category 1 item, but its impacts finding is designated as “SMALL,”¹⁶ with “[t]he NRC staff conclud[ing] that the environmental impacts of design-basis accidents are of small significance to all plants.”¹⁷ Id. In contrast, severe accidents and the SAMA analyses

¹⁴ See Entergy Nuclear Vt. Yankee, LLC (Vermont Yankee Nuclear Power Station), CLI-07-3, 65 NRC 13, 20 (2007) (citing Fla. Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-01-17, 54 NRC 3, 11–13 (2001)).

¹⁵ The Table B-1 summary impact findings are based on the generic analysis of design-basis and severe accidents provided in the referenced GEIS, which was originally promulgated in 1996 and was updated in 2013. See 1 Office of Nuclear Regulatory Research (RES), NRC, [GEIS] for License Renewal of Nuclear Plants, NUREG-1437, Main Report, Final Report (May 1996) (ADAMS Accession No. ML040690705) [hereinafter 1996 GEIS]; 1 NRR, NRC, [GEIS] for License Renewal of Nuclear Plants, NUREG-1437, Main Report, Final Report (rev. 1 June 2013) (ADAMS Accession No. ML13106A241) [hereinafter 2013 Revised GEIS].

¹⁶ Table B-1 defines the significance level of a “SMALL” impacts designation as

[f]or the issue, environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission’s regulations are considered small as the term is used in this table.

10 C.F.R. pt. 51, subpart A, app. B. tbl. B-1 n.3.

¹⁷ As the basis for its findings regarding design-basis accidents, the 1996 GEIS states that

[b]ecause of the requirements that continuous acceptability of the consequences and aging management programs be in effect for license renewal, the environmental impacts as calculated for design-basis accidents should not differ significantly from initial licensing assessments over the life of the plant, including the license renewal period. In addition, any refurbishment necessary

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associated with such accidents in the NEPA context are classified as items under Category 2, which is a Table B-1 listing designating those items for which “the analysis reported in the [GEIS] has shown that . . . additional plant specific-review is required.”¹⁸ Id. n.2. And the Table B-1 summary impacts finding for such accidents states:

SMALL. The probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants. However, alternatives to mitigate severe accidents must be considered for all plants that have not considered such alternatives.

Id. Additionally, while a Table B-1 Category 2 site-specific issue generally would be subject to adjudicatory challenge in a license renewal proceeding, in instances such as here in which a

to prepare for license renewal would be done in a fashion consistent with the limits set for design-basis accidents and would not alter their consequences. Accordingly, the design of the plant relative to design-basis accidents during the extended license period is considered to remain acceptable and the environmental impacts of those accidents will not be examined further in this section.

1996 GEIS at 5-12.

¹⁸ With respect to the impacts of severe accidents, under the general heading of “Probabilistic Assessment of Severe Accidents,” acknowledging “[s]evere accidents initiated by tornadoes, floods, earthquakes, fires, and sabotage have not traditionally been discussed in quantitative terms in [final environmental statements],” the 1996 GEIS goes on to note that:

Although external events are not discussed in further detail in this chapter, it should be noted that the NRC is continuing to evaluate ways to reduce the risk from nuclear power plants from external events. For example, each licensee is performing an individual plant examination to look for plant vulnerabilities to internal and externally initiated events and considering potential improvements to reduce the frequency or consequences of such events. Additionally, . . . as part of the review of individual license renewal applications, a site-specific consideration of alternatives to mitigate severe accidents will be performed in order to determine if improvements to further reduce severe accident risk or consequences are warranted.

Id. at 5-17, 5-18.

facility-specific SAMA analysis has been considered in an environmental impact statement,¹⁹ under section 51.53(c)(3)(ii)(L) a license renewal contention regarding the adequacy of a previously considered SAMA cannot be litigated absent a section 2.335(b) waiver.²⁰

The Commission's 2013 Revised GEIS did not change the 1996 GEIS's analysis of the impacts of either design-basis or severe accidents due to seismic events;²¹ however, that GEIS included this observation regarding the issues of seismic risk and flooding:

The NRC will not make a decision or any recommendations on the basis of information presented in this GEIS regarding seismic risk and flooding at nuclear power plants. The NRC's assessment of seismic and flood hazards for existing nuclear power plants is a separate and distinct process from license renewal reviews. Seismic and flood hazard issues are addressed by the NRC on an ongoing basis at all licensed nuclear facilities. As such, decisions and recommendations concerning seismic risk and flooding at nuclear power plants are outside the regulatory scope of this GEIS. Nevertheless, following the accident at the Fukushima Dai-ichi nuclear power plant resulting from the March 11, 2011, Great Tohoku Earthquake and subsequent tsunami, the NRC established the Near-Term Task Force as directed by the Commission on March 23, 2011, in COMGBJ-11-0002. The Japan Near-Term Task Force assessment resulted in the issuance of 10 CFR 50.54(f) letters on March 12, 2012, directing that seismic and flooding reevaluations be conducted at existing nuclear power plants.²²

¹⁹ Because there had not been a SAMA analysis done at the time the original Part 50 operating licenses were issued for ONS Units 1, 2, and 3, consistent with Table B-1's finding for severe accidents, such an analysis was performed by Duke and reviewed by the Staff as part of the initial license renewal proceeding for the ONS facility. See NRR, NRC, [GEIS] for License Renewal of Nuclear Plants, NUREG-1437, at 5-3 (supp. 2 Dec. 1999) (ADAMS Accession No. ML003670518) [hereinafter ONS GEIS Supp.].

²⁰ Exelon Generation Co., LLC (Limerick Generating Stations, Units 1 and 2), CLI-13-7, 78 NRC 199, 211–12 (2013) (indicating section 51.53(c)(3)(ii)(L) affords the “functional equivalent” of the Category 1 issue preclusion established by section 51.53(c)(3)(i)), petition for review denied sub nom., NRDC v. NRC, 823 F.3d 641 (D.C. Cir. 2016).

²¹ See 3 NRR, NRC, [GEIS] for License Renewal of Nuclear Plants, NUREG-1437, Appendices, Final Report at B-29 to -30 (rev. 1 June 2013) (ADAMS Accession No. ML13106A244).

²² 2013 Revised GEIS at 1-16 (citing Letter from Eric J. Leeds, Director, NRC NRR, and Michael R. Johnson, Director, NRC Office of New Reactors (NRO), to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status (Mar. 12, 2012) (ADAMS Accession No. ML12053A340) [hereinafter March 2012 NRC Fukushima Section 50.54(f) Letter]).

Further, in the June 2013 statement of considerations accompanying the Commission's final rule updating the regulatory framework for the 1996 GEIS, the Commission stated:

The NRC's evaluation of the consequences of the Fukushima events is ongoing. As such, the NRC will continue to evaluate the need to make improvements to existing regulatory requirements based on the task force report and additional studies and analyses of the Fukushima events as more information is learned. To the extent that any revisions are made to the NRC's regulatory requirements, they would be made applicable to nuclear power reactors regardless of whether or not they have a renewed license. Therefore, no additional analyses have been performed in the revised GEIS as a result of the Fukushima events. In the event that the NRC identifies information from the Fukushima events that constitutes new and significant information with respect to the environmental impacts of license renewal, the NRC will discuss that information in its site-specific SEISs to the GEIS, as it does with all such new and significant information.²³

Finally, for the ONS SLR application, the environmental evaluation of flooding events is found in the ER's discussion of postulated accidents, including design-basis accidents and severe accidents, its consideration of SAMAs, and its analysis of the possible existence of "new and significant information" regarding such accidents and SAMAs. See ER Part 2, at 4-2, 4-7 (tbl. 4.0-2), 4-10 (tbl. 4.0-3), 4-74 to -82. Indicating that it had considered developments in a number of areas, including risk-beneficial plant changes implemented in response to

²³ Revisions to Environmental Review for Renewal of Nuclear Power Plant Operating Licenses, 78 Fed. Reg. 37,282, 37,292 (June 20, 2013); see also 2013 Revised GEIS at 1-34 (stating no additional evaluation of seismic and flooding evaluations in this GEIS in light of ongoing Fukushima lessons-learned assessment; identification of Fukushima event-related information that is "new and significant" will be discussed in site-specific supplemental environmental impact statements (SEISs) to this GEIS); id. at 3-51 (explaining NRC's well-established reactor design criteria and standards, which are intended to ensure the ability to withstand environmental hazards, such as earthquakes and flooding, without loss of capacity to perform their safety functions, requires that safety-related structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area); id. at 3-61 (indicating site-specific design bases for flood protection are prescribed by facility's final or updated final safety analysis report (FSAR/UFSAR) and applicable technical specifications and NRC evaluates any new information or operating experience relating to flooding as it becomes available, to determine if changes are needed at existing plants and are considered during site-specific safety reviews and addressed on an ongoing basis through the reactor oversight process and other NRC safety programs separate from the license renewal process).

recommendations from the Fukushima Dai-ichi Near-Term Task Force, and citing a probabilistic risk assessment (PRA) model to support its conclusion about SAMAs, Duke asserted no such “new and significant” information existed. See id. at 4-74, 4-76, 4-77 to -78, 4-79, 4-82; see also id. at 5-1 to -3 (indicating no “new and significant information” identified based on Duke’s review process).

C. Consideration of Dam Breach-Related Events for ONS

Relative to both their second and third contentions and their section 2.335 waiver request, Petitioners’ principal focus is on the purported failure of Duke’s ER “to address the environmental impacts of flooding caused by failure of the Jocassee Dam in light of newly available information demonstrating the significance of the environmental risk, or to re-evaluate SAMAs in light of this new information.” Hearing Petition at 3. In this regard, as the ER reflects, the Jocassee Dam is a prominent feature in the vicinity of the ONS facility. The facility itself is located on Lake Keowee near the 150-foot Keowee earth-fill dam that, along with the 170-foot high Little River earth-fill dam, created the lake in 1971.²⁴ Situated approximately 11 miles north of the ONS facility is the much larger Jocassee Dam, completed in 1973. See ER Part 1, at 3-76. This 385-foot high rockfill dam confines Lake Jocassee, which has a surface area of some 7565 acres, a shoreline of approximately 75 miles, and a volume of 1,160,298 acre-feet. See id.; AEC Safety Evaluation at 3-6.

A breach of the Jocassee Dam and the impact on ONS of a resulting flood has been a matter of evolving regulatory concern. When ONS was first licensed in the early 1970s, a Jocassee Dam failure was not considered a credible event based on dam design and

²⁴ See Directorate of Licensing, Atomic Energy Commission (AEC), Safety Evaluation by the [AEC Licensing Directorate] in the Matter of Duke Power Company, [ONS] Units 2 and 3, Docket Nos. 50-270/287, at 3-5 (July 6, 1973) (ADAMS Accession No. ML12276A272) [hereinafter AEC Safety Evaluation]; see also ER Part 1, at 3-76.

construction.²⁵ A potential Jocassee Dam failure thus was not made part of the current licensing basis for the facility, instead being considered a beyond-design-basis event. See Tr. at 81–82 (Lighty). Moreover, during initial facility licensing for the ONS facility, which is situated at 796 feet mean sea level (MSL), Duke calculated the probable maximum flood on Lake Keowee to be 808 feet MSL, with potential wind-generated wave runup reaching 813 feet MSL. See AEC Safety Evaluation at 3-6; June 2016 NRC Flooding Investigative Report at 83. Duke concluded these levels would not exceed the 815-foot MSL heights of the nearby Keowee Dam and the protective dike for that dam’s hydropower intake. See AEC Safety Evaluation at 3-6. In its review, the AEC Staff generated similar probable maximum flood estimates and agreed that at 815 feet MSL, the Keowee Dam and the intake protective dike could “adequately withstand” the probable maximum flood so there would be no flooding problems at the ONS site. Id. at 3-6 to -7; see also June 2016 NRC Flooding Investigative Report at 83.

In the early 1980s, to provide an independent means of achieving and maintaining safe shutdown of one or more ONS units under certain postulated scenarios such as fires, turbine building floods, and security incidents, Duke built a standby shutdown facility (SSF) that includes subsystems to provide reactor coolant makeup, auxiliary service water for steam generator injection, electrical power via a diesel generator and batteries, and support systems. See June 2016 NRC Flooding Investigative Report at 83. With the SSF entrance identified as being at 797 feet MSL, the Staff’s safety evaluation at that time determined this to be above the maximum expected flood onsite and therefore consistent with NRC flood protection requirements and guidelines. See id. However, as part of a 1983 PRA conducted by Duke and

²⁵ See Letter from Stephen G. Burns, NRC Chairman, to Carolyn N. Lerner, Special Counsel, U.S. Office of Special Counsel (OSC), encl. at 83 (June 30, 2016) (NRC Flooding Working Group, Investigative Report to the Chairman of the U.S. NRC Re: OSC File No. 01-15-5254 (undated)), <https://osc.gov/Documents/Public%20Files/FY17/DI-15-5254/DI-15-5254%20Agency%20Report.pdf> [hereinafter June 2016 NRC Flooding Investigative Report].

the Electric Power Research Institute, after considering various Jocassee Dam failure modes, timing possibilities, and lake levels, Duke found that while the estimated dam-failure frequency was $2.5\text{E-}05$ per year (or about once in 40,000 years), there nonetheless could be a resulting flood above plant-yard grade.²⁶ At that time, among the measures Duke implemented to address this risk was construction of an additional five-foot flood barrier at the SSF doorway to protect the SSF from floods up to 801 feet MSL. See March 1994 Hampton Letter Attachment at 3; June 2016 NRC Flooding Investigative Report at 83. Thereafter, as part of its 1990 response to NRC Generic Letter 88-20 calling for individual plant examinations (IPEs) to address severe accident issues, Duke submitted a 1987 PRA, initiated to take into account plant changes, current materials, and data, that found the Jocassee Dam failure frequency was estimated to be $1.58\text{E-}05$ per year (or once in about 63,000 years).²⁷

The early 1990s brought another Jocassee Dam inundation study, this one in response to a Federal Energy Regulatory Commission (FERC) mandate. A 1992 Duke inundation study indicated that, based on the latest computer models and a number of FERC-required conservative assumptions, the estimated yard flood level of approximately 16.5 feet (an equivalent of approximately 813 feet MSL) would render inoperable all SSF systems necessary for safe shutdown and maintenance of the three ONS reactors.²⁸ Further, as a consequence of

²⁶ See Letter from J.W. Hampton, Vice President, ONS, to NRC Document Control Desk, attach. at 3 (Mar. 14, 1994) (ADAMS Accession No. ML15261A316) [hereinafter March 1994 Hampton Letter Attachment]; see also June 2016 NRC Flooding Investigative Report at 83; Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk, attach. 1, at 7 (Sept. 26, 2008) (Jocassee Project Description and Oconee Flooding Licensing Basis History) (ADAMS Accession No. ML082750106) [hereinafter September 2008 Baxter Letter].

²⁷ See March 1994 Hampton Letter Attachment at 3 (referencing NRC Letter to All Licensees Holding Operating Licenses and Construction Permits for Nuclear Power Reactor Facilities, [IPE] for Severe Accident Vulnerabilities - 10 CFR § 50.54(f), Generic Letter No. 88-20 (Nov. 23, 1988), <https://www.nrc.gov/reading-rm/doc-collections/gen-comm/gen-letters/1988/gl88020.html>); June 2016 NRC Flooding Investigative Report at 83, 84.

²⁸ See January 2011 Leeds Letter, encl. at 1 (Safety Evaluation by [NRR] Related to [Duke] Confirmatory Action Letter - Commitments to Address External Flooding Concerns, Closure of Inundation Site Results [ONS], Docket Nos. 50-269, 50-270, and 50-287) [hereinafter (footnote continued...)]

a 1994 agency inspection report regarding ONS service water system operational performance that raised questions about the difference between the 1992 FERC-associated review and the 1990 Duke PRA study,²⁹ in 1995 Duke submitted to the NRC another analysis of Jocassee Dam flood risk as part of an Individual Plant Examination for External Events (IPEEE) that showed the estimated core damage frequency (CDF) as 7.0E-06 per year (or about once in 143,000 years) for a Jocassee Dam seismic failure.³⁰ Moreover, as part of a 1999 review of the July 1998 Duke application for the initial Part 54 renewal of the ONS Part 50 facility operating licenses, the Staff's GEIS supplement determined there was no new and significant information regarding either design-basis accidents or severe accidents and that Duke's SAMA analysis for the facility, including those items associated with a potential Jocassee Dam failure, was

January 2011 Staff Safety Evaluation]; June 2016 NRC Flooding Investigative Report at 83–84; see also March 1994 Hampton Letter Attachment at 3–4.

²⁹ See Letter from Albert F. Gibson, Division Director, NRC Region II, to J.W. Hampton, Vice President, ONS at 2 (Feb. 11, 1994) (noting 1990 Duke IPE submittal is inconsistent with NRC inspection finding that SSF could not withstand postulated Jocassee Dam failure) (ADAMS Accession No. ML15261A308); id. encl. 3, at 29–30 (NRC Region II, Inspection Report Nos. 50-269/93-25, 50-270/93-25, and 50-287/93-25 (Feb. 10, 1994) (indicating, contrary to 1990 Duke IPE submittal, recently completed Jocassee Dam failure reanalysis for another regulatory agency resulted in a flood height at least 10 feet above the SSF wall) (ADAMS Accession No. ML15261A314); Letter Albert F. Gibson, Division Director, NRC Region II, to J.W. Hampton, Vice President, ONS, encl. 2, at 16 (Dec. 19, 1994) (NRC Region II, Inspection Report Nos. 50-269/94-31, 50-270/94-31, and 50-287/94-31 (Dec. 16, 1994) (closing inspection item 50-269, 270, 287/93-25-11 based on FSAR change removing SSF mitigation for a rapid Jocassee Dam failure and Duke indication it will provide external flood risk reanalysis as part of 1995 IPE external events submittal)) (ADAMS Accession Nos. ML16154A725 (transmittal letter) and ML16154A728 (enclosure 2 inspection report)).

³⁰ See Duke Power Co., ONS, IPEEE Submittal Report at 5-27 (Dec. 21, 1995) (ADAMS Accession No. ML15118A407); see also September 2008 Baxter Letter at 8; Letter from David E. LaBarge, Senior Project Manager, NRC NRR, to W.R. McCollum, Jr., Vice President, ONS, encl. 1, at 2 (Mar. 15, 2000) (Staff Evaluation Report of [IPEEE] Submittal by [Duke] for [ONS], Units 1, 2, and 3) (indicating “[e]xternal flooding events contribute about 7.0E-6/[reactor year] to the CDF”) (ADAMS Accession No. ML003694349); June 2016 NRC Flooding Investigative Report at 84. The December 1995 Duke IPEEE was submitted pursuant to Generic Letter 88-20, Supplement 4. See NRC Letter to All Licensees Holding Operating Licenses and Construction Permits for Nuclear Power Reactor Facilities, [IPEEE] for Severe Accident Vulnerabilities – 10 CFR § 50.54(f), Generic Letter No. 88-20 (supp. 4 June 28, 1991), <https://www.nrc.gov/reading-rm/doc-collections/gen-comm/gen-letters/1988/gl88020s4.html>.

acceptable. See ONS GEIS Supp. at 5-1 to -14; June 2016 NRC Flooding Investigative Report at 84.

The issue of Jocassee Dam failure and ONS facility flooding next arose in the context of an April 2006 NRC Staff inspection report.³¹ This report detailed the circumstances surrounding Duke's June 2005 identification of a breach of a passive flood protection barrier for the SSF when Duke in August 2003 attempted to accommodate a temporary electrical power cable routing by removing an access cover that was part of that barrier. See April 2006 Staff Inspection Report at 6; June 2016 NRC Flooding Investigative Report at 85. Noting that the SSF external flood barrier was designed to protect that building against a five-foot flood and citing a "recently completed flood analysis indicat[ing] that a Jocassee Dam failure could result in an external flood height of at least 10 [feet]" and the 1992 FERC study predicting such a failure "could result in flood waters of approximately 12.5 to 16.8 feet deep" at ONS, the report characterized the issue of flood protection measures as "unresolved pending further Staff inspection and assessment." April 2006 Staff Inspection Report at 7. Thereafter, in August 2006 the NRC Staff made a preliminary performance deficiency "white finding" determination of low to moderate risk significance for this "uncompensated for and uncontrolled flowpath [that] existed through the SSF wall, which could have rendered the SSF unable to perform its intended functions in the event of an external flood in excess of 4.6 feet (800.625 feet above [MSL])."³² The Staff found this unacceptable from either a quantitative/risk analysis or qualitative/deterministic perspective because it (1) resulted in an increase in risk, with an estimated CDF change of 3.3E-06 per year; and (2) failed to preserve defense-in-depth in that

³¹ See Letter from D. Charles Payne, Acting Branch Chief, NRC Region II, to B.H. Hamilton, Site Vice President, ONS, encl. (Apr. 28, 2006) (NRC Integrated Inspection Report 05000269/2006002, 05000270/2006002, 05000287/2006002) (ADAMS Accession No. ML061180451) [hereinafter April 2006 Staff Inspection Report].

³² See Letter from Charles Casto, Division Director, NRC Region II, to B.H. Hamilton, Site Vice President, ONS at 2 (Aug. 31, 2006) (ADAMS Accession No. ML080780143) [hereinafter August 2006 Casto Letter].

SSF unavailability meant “no other event mitigation systems would be available to prevent core damage.” August 2006 Casto Letter at 2. With minor adjustments, this white finding was finalized in November 2006.³³

During the next eighteen months, Duke sought unsuccessfully to overturn this finding in a series of appeals and requests for reconsideration. See June 2016 NRC Flooding Investigative Report at 85. This included Staff consideration of a January 2007 updated Jocassee Dam fragility study submitted by Duke in February 2007.³⁴ In its November 2007 reconsideration denial, while agreeing with Duke that the seismic contribution to the Jocassee Dam failure frequency was “negligible” so that a Duke analysis of a random or “sunny-day” dam failure was most appropriate,³⁵ the Staff indicated that, rather than the Duke-provided estimate of 1.4E-05 per year (once in about 71,000 years), an estimated dam-failure frequency of 1.8E-04 per year (once in about 5500 years) was appropriate. See November 2007 Staff White Finding Reconsideration Denial at 1; June 2016 NRC Flooding Investigative Report at 85. Accordingly, while acknowledging there are some uncertainties in such a quantitative/risk analysis estimate, the Staff concluded that the “large increase in the ‘sunny day’ dam-failure

³³ See Letter from William D. Travers, Regional Administrator, NRC Region II, to B.H. Hamilton, Site Vice President, ONS at 2 (Nov. 22, 2006) (ADAMS Accession No. ML063260282).

³⁴ See Letter from William D. Travers, Regional Administrator, NRC Region II, to Bruce H. Hamilton, Site Vice President, ONS at 1 (Nov. 20, 2007) (ADAMS Accession No. ML073241045) [hereinafter November 2007 Staff White Finding Reconsideration Denial]; see also June 2016 NRC Flooding Investigative Report at 85; Letter from Bruce H. Hamilton, Site Vice President, ONS, to NRC Document Control Desk at 1 (Feb. 5, 2007) (ADAMS Accession No. ML070440337).

³⁵ As the June 2016 NRC Flooding Investigative Report noted, “[a] ‘sunny-day’ failure is a random failure of a dam, not caused by a flood or earthquake. These dam failures may occur because of failures of embankments, foundations, or other dam components, potentially because of an inherent design flaw. NRC guidance indicates that sunny-day failures cannot be screened out.” June 2016 NRC Flooding Investigative Report at 49 n.104 (citing Japan Lessons-Learned Project Directorate, JLD-ISG-2013-01, Guidance [f]or Assessment of Flooding Hazards Due to Dam Failure, Interim Staff Guidance at 6-1 (rev. 0 July 29, 2013) (ADAMS Accession No. ML13151A153) [hereinafter July 2013 JLD-ISG-2013-01 Interim Staff Guidance]).

frequency more than compensates for the uncertainties in the quantitative considerations” so as to provide confidence that the Staff’s supporting risk analysis “is appropriately characterized as [white/]low to moderate.” November 2007 Staff White Finding Reconsideration Denial at 2.

While this resolved the controversy over the April 2006 SSF flood barrier breach inspection finding, it did not alleviate the NRC Staff’s concern about ONS site external flooding, including a possible Jocassee Dam failure. In August 2008, the Staff sent Duke a 10 C.F.R. § 50.54(f) request seeking information “to determine whether unfavorable physical characteristics of the site exist relative to a Jocassee Dam failure, and whether [ONS] lacks appropriate and adequate compensating engineering safeguards for such an event.”³⁶ There followed a series of communications between the Staff and Duke,³⁷ culminating in a June 3, 2010 Duke letter listing compensatory measures that Duke had undertaken or would undertake

³⁶ Letter from Joseph G. Giitter, Division Director, NRC NRR, to Dave Baxter, Vice President, ONS at 1 (Aug. 15, 2008) (ADAMS Accession No. ML081640244) [hereinafter August 2008 Staff Jocassee Dam Failure Section 50.54(f) Letter]; see also June 2016 NRC Flooding Investigative Report at 85–86.

³⁷ Among the communications during this nearly two-year period were an initial September 2008 Duke response in which it committed to doing inundation and sensitivity analyses; an April 2009 Staff request for additional information (RAI) outlining the Staff’s views on what these studies should include; a November 2009 Duke response to the Staff’s April 2009 request providing the requested studies and a corrective action plan; a January 2010 Duke description of interim measures taken or planned to mitigate flooding from a sunny-day Jocassee Dam failure, including raising the SSF flood wall by 2.5 feet to 803.5 feet MSL; a January 2010 set of additional Staff RAIs requesting information to aid in determining whether the ONS site is adequately protected from external flooding events for the entire Jocassee earthen works; and Duke’s March 2010 response to the additional Staff RAIs. See September 2008 Baxter Letter, attach. 4 (Regulatory Commitments); Letter from Joseph G. Giitter, Division Director, NRC NRR, to Dave Baxter, Vice President, ONS at 1–3 (Apr. 30, 2009) (ADAMS Accession No. ML090570779) [hereinafter April 2009 Giitter Letter]; Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk at 3 (Nov. 30, 2009) (ADAMS Accession No. ML093380701); Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk, attach. 1, at 3 & n.2 (Jan. 15, 2010) (In Place Measures that Address Postulated External Flood Threat Issues) (ADAMS Accession No. ML100210199); id. attach 2 (Interim Commitments and Implementation Dates); Letter from Joseph G. Giitter, Division Director, NRC NRR, to Dave Baxter, Vice President, ONS at 1 (Jan. 29, 2010) (ADAMS Accession No. ML100271591); Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk, attach 1 (Mar. 5, 2010) (RAI Responses) (ADAMS Accession No. ML103430047); see also June 2016 NRC Flooding Investigative Report at 85–86.

to mitigate external flooding hazards resulting from a potential Jocassee Dam failure.³⁸ The NRC Staff responded on June 22, 2010, with a confirmatory action letter (CAL) requiring that (1) the June 3, 2010 compensatory measures, as listed in an enclosure with implementation dates, remain in place until a final resolution of the Jocassee Dam failure-related ONS site inundation matter was reached; (2) Duke provide all documentation needed to demonstrate it had conducted an appropriate bounding analysis of ONS inundation from a Jocassee Dam failure; and (3) in addition to the June 2010 compensatory measures, Duke provide “a list of all modifications necessary to adequately mitigate the inundation” and make such modifications.³⁹

With respect to the June 2010 Staff CAL requirements regarding mitigating measures, in a November 2010 letter Duke stated it had completed all those items identified except for an emergency response drill that it planned for December 2010,⁴⁰ and subsequently completed.⁴¹ Further, in an April 2011 response to the June 2010 Staff CAL request for a list of all additional modifications necessary to adequately mitigate inundation, Duke provided an overarching inundation mitigation strategy and outlined its plant modification plans to protect the SSF from flooding and extend its operational duration, which included constructing a dedicated, flood-protected offsite power path and several additional walls and sets of flood barriers as well

³⁸ See Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk, attach. 1 (June 3, 2010) (Status of External Flood Commitments) (ADAMS Accession No. ML101610083); see also June 2016 NRC Flooding Investigative Report at 86–87.

³⁹ See Letter from Luis A. Reyes, Administrator, NRC Region II, to David A. Baxter, Site Vice President, ONS at 1 (June 22, 2010) (ADAMS Accession No. ML101730329) [hereinafter June 2010 Staff CAL]; id., encl. (Compensatory Measures).

⁴⁰ See Letter from T. Preston Gillespie, Jr., Vice President, ONS, to Luis Reyes, Regional Administrator, NRC Region II, at 1 (Nov. 29, 2010) (ADAMS Accession No. ML103490330); id., attach. 1 (Status of External Flood Compensatory Measures); see also June 2016 NRC Flooding Investigative Report at 87.

⁴¹ See Memorandum from Patrick L. Hiland, Division Director, NRC NRR, and Joseph G. Giitter, Division Director, NRC NRR, to John A. Grobe, Deputy Director, NRC NRR, et. al, Technical Basis for the Timeline to Resolve External Flooding at Oconee at 3 (Mar. 5, 2011) (ADAMS Accession No. ML103410042). The date on this letter is March 5, 2010, but the concurrence block makes it clear this was a 2011 letter. See id. at 4.

as providing a means of spent fuel pool makeup water.⁴² In reviewing these Duke proposals, the Staff requested and received from Duke additional information on the ONS design basis, the justification for the assumptions supporting and a summary of the actions needed for undertaking the proposed mitigation strategies, the quality standards applied to the calculations and procedures supporting those strategies, and the construction codes and seismic criteria for the additional flood walls.⁴³ And based on its review of this information, in September 2012 the NRC Staff accepted Duke's proposal to design and construct the structures protecting against sunny-day dam failures using FERC-accepted structural codes, with modification implementation expected by about June 2016.⁴⁴

As to the June 2010 Staff CAL direction to provide ONS site inundation bounding documentation, in an August 2010 response Duke included the results of simulation modeling intended to determine accurately ONS site water levels resulting from a hypothetical Jocassee Dam failure.⁴⁵ In a January 28, 2011 letter, the NRC Staff provided its assessment of this ONS

⁴² See Letter from T. Preston Gillespie, Jr., Vice President, ONS, to Victor McCree, Regional Administrator, NRC Region II, at 2 (Apr. 29, 2011) (ADAMS Accession No. ML111460063); id. attach 1 (Jocassee Dam Failure Flood Mitigation Strategy); id. attach. 2, at 2 (Description of Modifications).

⁴³ See Letter from John A. Grobe, Deputy Director, NRC NRR, to Preston Gillespie, Site Vice President, ONS, at 1–2 (Aug. 18, 2011) (ADAMS Accession No. ML12363A090); Letter from T. Preston Gillespie, Jr., Vice President, ONS, to NRC Document Control Desk, encl. (Oct. 17, 2011) (Response to August 18, 2011 [RAIs] Regarding ONS External Flooding) (ADAMS Accession No. ML11294A341); Letter from Michele G. Evans, Division Director, NRC NRR, to Preston Gillespie, Site Vice President, ONS at 1 (May 15, 2012) (ADAMS Accession No. ML12129A186); Letter from T. Preston Gillespie, Jr., Vice President, ONS, to NRC Document Control Desk, attach. 1 (June 14, 2012) (Response to May 15, 2012, [RAIs] Regarding ONS External Flooding) (ADAMS Accession No. ML12167A372); id. attach. 2 (Codes and Standards for [ONS] External Flood Mitigation Solutions).

⁴⁴ See Letter from Michele G. Evans, Division Director, NRC NRR, to Preston Gillespie, Site Vice President, ONS at 1–2 (Sept. 20, 2012) (ADAMS Accession No. ML12219A163) [hereinafter September 2012 Evans Letter]; see also June 2016 NRC Flooding Investigative Report at 87. The 2016 implementation date reflected the circumstances surrounding the agency's then-ongoing post-Fukushima domestic reactor safety review process concerning, among other things, flooding and seismic events. See infra note 46 and accompanying text.

⁴⁵ See Letter from Dave Baxter, Vice President, ONS, to NRC Document Control Desk, (footnote continued...)

site inundation bounding information, noting again that a random or “sunny-day” failure scenario was selected after a failure modes evaluation determined that the potential failure of the Jocassee Dam from either an overtopping event or seismic event “was not credible.” January 2011 Leeds Letter at 1. In the accompanying January 2011 Staff Safety Evaluation, while noting that certain of the simulation model runs performed by Duke showed “the greatest depth at the SSF of 19.5 ft.” (or approximately 816 MSL), the Staff “agreed with the licensee’s approach” that the appropriate modeling methodology for this sunny-day failure scenario showed that the maximum water levels at the SSF would be 815 feet MSL, the same as the top elevation of the intake dike that “will allow flooding of the plant upon overtopping, independent of the breach location(s).” January 2011 Staff Safety Evaluation at 12. Also, the Staff determined that “the licensee ha[d] included conservatisms of the parameters utilized in the dam breach scenario” such that this “scenario will bound the inundation at ONS, therefore providing reasonable assurance for the overall flooding scenario at the site,” and this “scenario will be the new flooding basis for the site.” Id. at 13. Duke thus having submitted what the Staff considered the documentation necessary to demonstrate a Jocassee Dam failure-associated ONS site inundation had been bounded, and Duke having committed to keep the June 2010 compensatory measures “in place until a final resolution ha[d] been agreed upon between Duke and the NRC staff,” the Staff concluded that “this technical assessment officially closes the CAL action” requiring Duke to provide adequate scenario-bounding documentation. Id.

A little more than a month later, a March 11, 2011 earthquake and resulting tsunami caused, over the next several days, reactor core meltdowns and hydrogen explosions at the Fukushima Dai-ichi facility in Japan. In the aftermath of this severe accident, agency attention turned to the safety of United States reactors from seismic and flooding events. Consequently,

attach. 1 (Aug. 2, 2010) (RAI Responses) (ADAMS Accession No. ML102170006) [hereinafter August 2010 Duke Flooding Evaluation].

in March 2012 the agency issued a section 50.45(f) request for information (RFI) to Duke and all other power reactor licensees to provide information “to support the NRC staff's evaluation of whether further regulatory action was needed in the areas of seismic and flooding design.”

March 2012 NRC Fukushima Section 50.54(f) Letter at 2. Specifically, using present-day NRC requirements and guidance as well as current methodologies and practices, these licensees were to perform reevaluations of “seismic hazards at their sites” and “all appropriate external flooding sources, including the effects from local intense precipitation on the site, probable maximum flood (PMF) on stream and rivers, storm surges, seiches, tsunamis, and dam failures.”

Id., encl. 1, at 5–6 (Recommendation 2.1: Seismic); id., encl. 2, at 6 (Recommendation 2.1: Flooding). Moreover, regarding the June 2010 Staff CAL, in its September 2012 letter accepting Duke’s proposal to design and construct Jocassee Dam failure inundation mitigation structures, the NRC Staff advised Duke that the June 2010 CAL would remain “active until it can be superseded by regulatory action related to the Fukushima responses.”⁴⁶ Also, according to this Staff letter, if the post-Fukushima RFI review indicated “that the Jocassee Dam will not fail due to overtopping or seismic failure, and the NRC staff review supports this determination, then the NRC will accept the [January 2011 Staff Safety Evaluation] as defining the bounding flood at the Oconee site due to dam failure.” September 2012 Evans Letter at 2.

In response to the NRC Staff’s March 2012 Fukushima RFI, in March 2013 Duke submitted a flood hazard reevaluation report (FHRR),⁴⁷ which Duke updated in March 2015 in response to Staff RAIs requesting a dam-failure reanalysis applying alternate breach

⁴⁶ September 2012 Evans Letter at 2; see also Memorandum to File from John P. Boska, Senior Project Manager, NRC NRR, encl. at 5, 7 (Mar. 19, 2013) (LIC-504 Assessment, Integrated Risk-Informed Decision Making Process for Emergent Issues Regarding External Flooding Resulting From Dam Failure, [Duke], [ONS], Units 1, 2, and 3, Docket Nos. 50-269, 50-270, and 50-287) (ADAMS Accession No. ML16070A287).

⁴⁷ See Letter from T.P. Gillespie, Jr., Vice President, ONS, to NRC Document Control Desk at 1 (Mar. 13, 2013) (ADAMS Accession No. ML13079A227).

methodologies and a recently-completed Jocassee Dam-specific seismic analysis.⁴⁸ Further, in an August 2014 letter to the Staff, acknowledging that “[a]ll CAL compensatory measures will remain in effect until regulatory action allows their suspension,” Duke indicated its understanding that (1) the FHRR would be the basis for further facility modifications rather than the still-outstanding June 2010 Staff CAL; and (2) final approval of the FHRR would allow the June 2010 Staff CAL flooding basis to be replaced by the Fukushima flood analysis of upstream dam failures, which, in turn would allow Duke to update its June 2010 Staff CAL response with a new mitigation strategy and corresponding modifications.⁴⁹

In a September 2015 interim Staff response (ISR) letter, based on its review of Duke’s FHRR addressing ONS reevaluated flooding hazards relative to both design-basis and beyond-design-basis external events, the NRC Staff (1) concluded the FHRR was suitable for assessing mitigating strategies and developing a mitigating strategies assessment in that it provided Duke with suitable input values associated with the three reevaluated flood hazard mechanisms, including dam failure, that exceeded ONS’s current design basis; and (2) directed that these values be utilized in an additional focused evaluation addressing those flooding hazards.⁵⁰ The September 2015 ISR Letter also indicated that the Staff’s soon-to-be issued report documenting the basis for these conclusions would address the impact of FHRR review on the previous ONS flooding analyses submitted in response to the June 2010 Staff CAL. See September 2015 ISR Letter at 2. Then, after providing Duke with a January 2016 audit report

⁴⁸ See Letter from Scott L. Batson, Vice President, ONS, to NRC Document Control Desk at 2 (Mar. 6, 2015) (ADAMS Accession No. ML15072A106).

⁴⁹ See Letter from Scott L. Batson, Vice President, ONS, to NRC Document Control Desk at 1, 2 (Aug. 8, 2014) (ADAMS Accession No. ML14225A540).

⁵⁰ See Letter from Juan F. Uribe, Project Manager, NRC NRR, to Scott Batson, Vice President, ONS at 2 (Sept. 24, 2015) (ADAMS Accession No. ML15239B261) [hereinafter September 2015 ISR Letter]; id., encl. 1, tbl. 2 (Recalculated Flood Hazards for Flood-Causing Mechanisms for Use in the [Mitigating Strategies Assessment]).

detailing the Staff's regulatory review process regarding Duke's FHRR submittals,⁵¹ the Staff issued its April 14, 2016 FHRR final assessment.⁵²

The Staff's April 2016 FHRR final assessment considered the adequacy of FHRR information regarding Jocassee Dam hydrologic overtopping, seismic failure, and sunny-day failure.⁵³ The Staff concluded that (1) Duke had conducted the hazard reevaluation using appropriate present-day methodology and current regulatory guidance; and (2) Duke's information regarding these reevaluated flood-causing mechanisms would be appropriate input to use in its additionally required focused evaluation. See April 2016 Staff FHRR Final Assessment at 41. The Staff also concluded, based on its evaluation of the FHRR information, that both Jocassee Dam hydrologic overtopping and seismically induced failure modes were "not reasonable based on present-day methodologies and guidance." Id. at 21, 27.

Additionally, the final FHRR assessment provided a summary comparison of Duke's 2010 and post-Fukushima-related 2015 flood hazards evaluations, noting that although both "appropriately followed engineering and regulatory guidance," the 2010 evaluation was "based on several conservative assumptions" while the 2015 evaluation (1) removed some conservatism in the 2010 analysis; (2) was consistent with Commission direction regarding the March 2012 Fukushima RFI flood hazard reevaluations; and (3) provided an appropriate basis

⁵¹ See Letter from Juan Uribe, Project Manager, NRC NRR, to Scott Batson, Vice President, ONS, at 1 (Jan. 12, 2016) (ADAMS Accession No. ML15355A164).

⁵² See Letter from Jack R. Davis, Division Director, NRC NRR, and Anne Boland, Division Director, NRC NRR, to Scott Batson, Site Vice President, ONS (Apr. 14, 2016) (ADAMS Accession No. ML15352A207) [hereinafter April 2016 Davis/Boland FHRR Final Assessment Letter].

⁵³ See id., encl. 1, at 19–38 (Staff Assessment by [NRR] Related to [FHRR] Near-Term Task Force Recommendation 2.1, [ONS] Units Nos. 1, 2, and 3, Docket No. 50-269, 50-270, and 50-287) (ADAMS Accession No. ML17335A438) [hereinafter April 2016 Staff FHRR Final Assessment]. Although this enclosure and the enclosure cited in footnote 54 below were publicly-withheld attachments to the April 2016 Davis/Boland FHRR Final Assessment Letter cited in note 52, when these enclosures later were publicly released they were assigned the cited ADAMS accession numbers.

for assessing the need for specific actions included in the June 2010 Staff CAL.⁵⁴ And in this regard, the Staff indicated that the revised 2015 Duke FHRR provided “an acceptable alternative flood hazard analysis for ONS for the purpose of meeting the terms of the [June 2010 Staff CAL]” and that following “completion of the associated flooding modifications . . . the NRC [would] evaluate whether the terms of the [June 2010 Staff] CAL [had] been satisfied.” April 2016 Davis/Boland FHRR Final Assessment Letter at 2.

Thereafter, in a late April 2016 letter, Duke informed the NRC Staff that it had completed the five external flood modification measures it committed to implementing in response to the June 2010 Staff CAL to support dam-failure flood mitigation.⁵⁵ In a June 2016 report documenting a May 2016 inspection, the Staff concluded that its review of those actions, as well as “previously completed inspection activities related to interim compensatory measures, and the [April 2016 Davis/Boland FHRR Final Assessment Letter], provide adequate assurance that the required terms as directed by the [June 2010 Staff] CAL have been satisfied by ONS. The [June 2010 Staff CAL] is now closed.”⁵⁶ Additionally, the Staff reiterated its intent, as outlined in the April 2016 Staff Final FHRR Assessment, to “address ongoing external flooding issues for ONS within the framework of the Fukushima Near-Term Task Force Recommendation 2.1 process, to ensure consistency in the staff’s approach to addressing these issues for all plants.” June 2016 Haney Letter at 1.

In July 2017, Duke submitted its Staff-mandated focused evaluation. In assessing the three reevaluated flood hazard mechanisms, including dam failure, that the Staff identified in its

⁵⁴ See id., encl. 2, at 4 (Comparison of the 2010 and 2015 Postulated Jocassee Dam Failure and Downstream Flooding Evaluations by [Duke]) [hereinafter Staff 2010/2015 Evaluation Comparison].

⁵⁵ See Letter from Scott L. Batson, Vice President, ONS, to NRC Document Control Desk at 2 (Apr. 29, 2016) (ADAMS Accession No. ML16131A671).

⁵⁶ Letter from Catherine Haney, Regional Administrator, NRC Region II, to Scott Batson, Site Vice President, ONS, at 1 (June 16, 2016) (ADAMS Accession No. ML16168A176) [hereinafter June 2016 Haney Letter].

September 2015 ISR Letter as requiring additional evaluation, Duke stated that, per current NRC-endorsed Nuclear Energy Institute (NEI) guidance, “ONS has reliable, passive protection of [k]ey [s]tructures, [s]ystems, and [c]omponents . . . to maintain [k]ey [s]afety [f]unctions . . . for the three flood causing mechanisms.”⁵⁷ The NRC Staff then issued a June 2018 focused evaluation assessment finding that “the [ONS focused evaluation] was performed consistent with the [NRC-endorsed NEI] guidance” and that Duke “has demonstrated that effective flood protection, if appropriately implemented, exists for the . . . dam breach flood mechanisms during a beyond-design-basis external flooding event.”⁵⁸ The Staff indicated as well that “additional regulatory actions associated with the reevaluated flood hazard are not warranted” and that Duke “has satisfactorily completed providing responses to the 50.54(f) activities associated with the reevaluated flood hazards.”⁵⁹ Finally, in November 2020, the NRC Staff provided Duke with a letter documenting that Duke had provided the information requested by the NRC in conjunction with the March 2012 NRC Fukushima Section 50.54(f) Letter and that “the actions

⁵⁷ See Letter from Thomas D. Ray, Vice President, ONS, to NRC Document Control Desk at 2 (July 31, 2017) (ADAMS Accession No. ML17222A068). As referenced in this letter, see id., an NEI guidance document received Staff endorsement as providing appropriate methods for satisfying the March 2012 NRC Fukushima Section 50.54(f) Letter, see NRR, NRC, JLD-ISG-2016-01, Guidance for Activities Related to Near-Term Task Force Recommendation 2.1, Flooding Hazard Reevaluation; Focused Evaluation and Integrated Assessment, Interim Staff Guidance at 4 (rev. 0 July 11, 2016) (ADAMS Accession No. ML16162A301).

⁵⁸ Letter from Juan F. Uribe, Project Manager, NRC NRR, to Ed Burchfield, Jr., Site Vice President, ONS, at 2 (June 18, 2018) (ADAMS Accession No. ML18141A755) [hereinafter June 2018 Uribe Letter].

⁵⁹ Id., encl. 2, at 10 (Staff Assessment by [NRR] Related to the Focused Evaluation for [ONS], Units 1, 2, and 3 as a Result of the Reevaluated Flooding Hazard Near-Term Task Force Recommendation 2.1 – Flooding (CAC Nos. MG0265, MG0266, MG0267, and EPID L-2017-JLD-0029). The Staff’s ONS focused evaluation assessment also indicated that Duke submitted an ONS mitigating strategies assessment in January 2017, which the Staff in a July 2017 evaluation found “was performed consistent” with the NRC-endorsed NEI guidance and “demonstrated that the mitigation strategies, if appropriately implemented, are reasonably protected from reevaluated flood hazard conditions for beyond-design-basis external flooding events.” Id. at 2–3.

required by the [NRC] in orders issued following the accident at the Fukushima Dai-ichi Nuclear Power Station have been completed for [ONS].”⁶⁰

It is against this regulatory and historical background that we consider Petitioners’ hearing request.

II. STANDING

While Petitioners’ standing has not been contested, an independent Board determination is required about whether each has fulfilled the requirements to establish standing to intervene in this proceeding.⁶¹ And in that regard, as the Commission noted recently, to establish the representational standing claimed by Petitioners, in addition to providing the information required by 10 C.F.R. § 2.309(d)(1) to identify the organization seeking to intervene and its interest in the proceeding as it is seeking to represent the interests of its members, the organization also “must show that at least one member has standing and has authorized the organization to represent [the member] and to request a hearing on [the member’s] behalf.”⁶²

In this instance, Petitioners rely on the proximity presumption as a principal element for establishing their representational standing. Recently applied by several licensing boards in SLR proceedings, this presumption excuses a petitioner otherwise meeting the requirements for standing from having to make a specific showing of injury in fact so long as that petitioner resides, works, or otherwise has regular contacts within a 50-mile radius of the reactor facility in

⁶⁰ Letter from Robert J. Bernardo, Project Manager, NRC NRR, to J. Ed Burchfield, Jr., Site Vice President, ONS, at 1 (Nov. 17, 2020) (ADAMS Accession No. ML20304A369) [hereinafter November 2020 Bernardo Letter].

⁶¹ See 10 C.F.R. § 2.309(d)(2); see also Exelon Generation Co., LLC (Peach Bottom Atomic Power Station, Units 2 and 3), LBP-19-5, 89 NRC 483, 491 (2019), aff’d on other grounds, CLI-20-11, 92 NRC 335 (2020).

⁶² S. Nuclear Operating Co. (Vogtle Electric Generating Plant, Unit 3), CLI-20-6, 91 NRC 225, 237–38 (2020).

question.⁶³ Member affidavits supplied with Petitioners' hearing request show that each has at least one member residing within 50 miles of the ONS facility who has met the other standing requirements specified above.⁶⁴

We thus conclude that each of the Petitioners has established its representational standing to intervene in this proceeding.

III. ADMISSIBILITY OF PETITIONERS' CONTENTION 1

Beyond establishing standing, a petitioner in a licensing proceeding also must tender at least one litigable contention for its hearing request to be granted. In the context of this SLR proceeding, to establish the litigability of their three contentions, Petitioners must establish both that (1) the contentions are admissible pursuant to the standards in 10 C.F.R. § 2.309(f)(1); and (2) with respect to Contentions 2 and 3, the section 2.335 standards have been met for obtaining a waiver of the restriction on challenging a Commission rule in the context of an adjudicatory proceeding. We begin by addressing the admissibility of Petitioners' first issue statement under section 2.309(f)(1).

A. Contention Admissibility Standards under 10 C.F.R. § 2.309(f)(1)

When a hearing requestor, such as Petitioners here, seeks admission of a contention submitted as part of a timely intervention petition, that contention must satisfy the six admissibility factors set forth in section 2.309(f)(1). Those factors require the proponent of a contention to

⁶³ See North Anna, LBP-21-4, 93 NRC at 196–97; Peach Bottom, LBP-19-5, 89 NRC at 490–91; Fla. Power & Light Co. (Turkey Point Nuclear Generating Units 3 and 4), LBP-19-3, 89 NRC 245, 258–59 (2019), appeal dismissed and referred ruling aff'd, CLI-20-3, 91 NRC 133 (2020).

⁶⁴ See Hearing Petition, attachs. 2 A & 2B (affidavits of Beyond Nuclear, Inc., and Sierra Club, Inc. members residing approximately two miles from the ONS facility); id., attach. 2C (affidavit of Sierra Club, Inc. member residing approximately 20 miles from the ONS facility). The distance measurements provided above are Google Maps-based calculations.

- (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
- (ii) Provide a brief explanation of the basis for the contention;
- (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
- (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
- (v) Provide a concise statement of the alleged facts or expert opinions which support the requestor's/petitioner's position on the issue and on which the petitioner intends to rely at hearing . . . ;
[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.

10 C.F.R. § 2.309(f)(1)(i)–(vi).

These six criteria aim to “focus litigation on concrete issues and result in a clearer and more focused record for decision.”⁶⁵ The petitioner bears the burden to satisfy each of the criteria,⁶⁶ and a failure to comply with any of the requirements constitutes grounds for rejecting a proposed contention.⁶⁷

B. Petitioners' Contention 1

As set forth in their hearing request, Petitioners' Contention 1, “Failure to Comply with 10 C.F.R. [§] 51.53(c)(2),” states:

Duke's [ER] fails to satisfy 10 C.F.R. § 51.53(c)(2) because it fails to fulfill that provision's requirement to discuss “the environmental impacts of alternatives and any other matters described in [10 C.F.R.] § 51.45.” In particular, Duke incorrectly relies on 10 C.F.R. § 51.53(c)(3) to excuse it from discussing significant environmental impacts classified as “Category 1” in 10 C.F.R. Part 51, [Subpart] A, Appendix B. By its own terms,

⁶⁵ Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2202 (Jan. 14, 2004) [hereinafter 2004 Part 2 Changes].

⁶⁶ See Entergy Nuclear Operations, Inc. (Palisades Nuclear Plant), CLI-15-23, 82 NRC 321, 329 (2015) (“[I]t is Petitioners' responsibility, not the Board's, to formulate contentions and to provide ‘the necessary information to satisfy the basis requirement’ for admission.” (quoting Statement of Policy on Conduct of Adjudicatory Proceedings, CLI-98-12, 48 NRC 18, 22 (1998))).

⁶⁷ See 2004 Part 2 Changes, 69 Fed. Reg. at 2221; see also Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999).

however, [section] 51.53(c)(3) applies only to “applicants seeking an initial renewed license,” and therefore does not apply to SLR applicants. Pursuant to 10 C.F.R. §§ 51.53(c)(2) and 51.45(a), Duke must discuss all significant environmental impacts of the proposed approval of Duke’s SLR application, including the environmental impacts of reactor accidents and alternatives for avoiding or mitigating those impacts. The impacts that must be considered include the environmental impacts of a core melt accident caused by failure of the Jocassee Dam. Relevant information that must be considered is set forth in Contentions 2 and 3, below, which are hereby adopted and incorporated by reference.

Hearing Petition at 11 (footnote omitted). As Petitioners recognize, however, the legal issue they frame with this contention, i.e., whether section 51.53(c)(3)’s exclusion of Category 1 issues from NEPA consideration applies in an SLR proceeding such as this one, has been ruled upon by the Commission in holdings that found this provision applicable to SLR proceedings. See id. at 12 (citing Turkey Point, CLI-20-3, 91 NRC at 141–45; Peach Bottom, CLI-20-11, 92 NRC at 342–43); Petitioners Reply at 2 (recognizing Turkey Point and Peach Bottom decisions are binding but indicating Contention 1 raised to preserve right to seek judicial review). As was recently illustrated by the North Anna licensing board in responding to a similar assertion in that SLR proceeding, the Commission’s prior rulings resolving this point are binding precedent that the Board must follow in this SLR proceeding. See North Anna, LBP-21-4, 93 NRC at 189 n.11.

Accordingly, we find this legal contention inadmissible as failing to raise a genuine dispute over a material issue of law. See 10 C.F.R. § 2.309(f)(1)(vi).

IV. PETITIONERS’ 10 C.F.R. § 2.335(b) WAIVER PETITION REGARDING CONTENTIONS 2 AND 3

As is detailed in section I.B. above, a contention challenging established NRC regulatory findings, including the Part 51, subpart A, appendix B exclusion of “Category 1 environmental determinations and SAMA analyses” disputed by Petitioners, see Hearing Petition at 10–11,

requires submission of a petition for a waiver pursuant to 10 C.F.R. § 2.335(b).⁶⁸ And as Petitioners' hearing request makes clear, their Contentions 2 and 3 both raise challenges to matters included in appendix B, Table B-1, Category 1, or the equivalent, under the 2013 Revised GEIS as it applies to Duke's ER for this SLR proceeding, see id. at 2–3, thereby posing the issue whether these contentions can meet the standards set forth in section 2.335 so as to be litigable in this adjudication. For the reasons set forth below, we find that for both these contentions, Petitioners have failed to fulfill the section 2.335 waiver requirements. Further, because this determination precludes litigation of these two contentions in this proceeding,⁶⁹ we need not address the question whether either contention meets the admissibility standards of section 2.309(f)(1).

⁶⁸ See Exelon Generation Co., LLC (Limerick Generating Station, Units 1 and 2), CLI-12-19, 76 NRC 377, 386 (2012) (identifying SAMAs as the “functional equivalent of a Category 1 issue, removing [them] from litigation in . . . case-by-case license renewal adjudications”).

⁶⁹ One licensing board has indicated, that when a section 2.335 rule waiver is required to permit further consideration of a contention, “[a]bsent a rule waiver, [the contention] is outside the scope of this proceeding, see 10 C.F.R. § 2.309(f)(1)(iii), because it constitutes an impermissible challenge to a Commission regulation. See id. § 2.335(a).” Fla. Power & Light Co. (Turkey Point Nuclear Generating Units 3 and 4), LBP-19-8, 90 NRC 139, 170 (2019). This acknowledgment of the established principle that, absent a rule waiver, a challenge to a Commission rule “would be outside the scope of an adjudication,” Limerick, CLI-13-7, 78 NRC at 206, does not, in our estimation, support the notion that the standards that govern the analysis of the admissibility of a contention under section 2.309(f)(1) are somehow co-extensive with those that apply in determining whether a contention is litigable in the context of a section 2.335 rule waiver determination. Indeed, as section 2.335 makes clear, its provisions apply “in any adjudicatory proceeding subject to [10 C.F.R. Part 2],” 10 C.F.R. § 2.335(a), including in a Part 2, subpart B enforcement proceeding in which a section 2.309(f)(1) admissible contention is not required for litigation to proceed relative to the hearing request of the subject of the agency enforcement order or civil penalty at issue, see Exelon Generation Co., LLC (Dresden Nuclear Power Station, Units 2 and 3), LPB-14-4, 79 NRC 319, 325–26 (2014) (citing Andrew Siemaszko, CLI-06-16, 63 NRC 708, 714 n.3 (2006)), appeal dismissed as moot, CLI-16-6, 83 NRC 147 (2016).

A. Standards for Obtaining a Waiver Under 10 C.F.R. § 2.335(b)

In accordance with the Commission's policy goals, an NRC regulatory determination published as a rule is generally not subject to adjudicatory challenge.⁷⁰ But as 10 C.F.R. § 2.335(b) indicates, it is possible for a hearing requestor in an adjudication to obtain a waiver of the applicability of a Commission regulation if "special circumstances with respect to the subject matter" exist in the immediate proceeding, i.e., if the application of the pertinent rule "would not serve the purposes for which [it] was adopted." Over time, Commission caselaw has defined the nature of such "special circumstances" within the meaning of section 2.335(b), culminating in the Commission's Millstone decision that identified the following four factors as pertinent to evaluating whether a waiver is appropriate:

- (i) the rule's strict application would not serve the purposes for which it was adopted;
- (ii) special circumstances exist that were not considered, either explicitly or by necessary implication, in the rulemaking proceeding leading to the rule sought to be waived;
- (iii) those circumstances are unique to the facility rather than common to a large class of facilities; and
- (iv) waiver of the regulation is necessary to reach a significant safety [or environmental] problem.⁷¹

The ultimate authority for granting a waiver lies with the Commission, but the decision whether to advance a section 2.335 waiver request proffered in an adjudicatory proceeding to the Commission is made in the first instance by the licensing board assigned to the adjudication. See 10 C.F.R. § 2.335(d). Further, for each of these Millstone factors, a petitioner must make a "prima facie showing" to allow a licensing board to "certify the matter directly to the

⁷⁰ See Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Unit 2), CLI-03-14, 58 NRC 207, 218 (2003) ("Petitioners may not seek an adjudicatory hearing 'to attack generic NRC requirements or regulations, or to express generalized grievances about NRC policies.'" (quoting Duke Energy Corp. (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 334 (1999))).

⁷¹ Limerick, CLI-13-7, 78 NRC at 207–08 (citing Dominion Nuclear Conn., Inc. (Millstone Nuclear Power Station, Units 2 and 3), CLI-05-24, 62 NRC 551, 559–60 (2005)).

Commission,” in the absence of which the board “may not further consider the matter.” Id. § 2.335(c). Although not defined in the agency’s regulations, to constitute a prima facie showing, caselaw suggests that to meet the “substantial” showing required in connection with a section 2.335 waiver petition,⁷² the information concerning each factor must be “legally sufficient to establish a fact or case unless disproved,”⁷³ and must be presented by affidavit “in a persuasive manner with adequate supporting facts.”⁷⁴

B. Petitioners’ Have Failed to Make a Prima Facie Showing of Special Circumstances Warranting a Section 2.335(b) Waiver for Contentions 2 and 3

In their Contention 2,⁷⁵ Petitioners first assert “new and significant information” has been overlooked by Duke in its ER, which “fails to consider the environmental implications of a core

⁷² Tenn. Valley Auth. (Watts Bar Nuclear Plant, Unit 2) LBP-10-12, 71 NRC 656, 662 n.9 (citing Seabrook, ALAB-895, 28 NRC at 22; Pac. Gas and Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-653, 16 NRC 55, 72 (1981)), petition for interlocutory review denied, CLI-10-29, 72 NRC 556 (2010).

⁷³ Pub. Serv. Co. of N.H. (Seabrook Station, Units 1 and 2), ALAB-895, 28 NRC 7, 22 (1988) (quoting Diablo Canyon, ALAB-653, 16 NRC at 72).

⁷⁴ Watts Bar, LBP-10-12, 71 NRC 662 n.9. The question whether a prima facie showing has been made is one generally associated with meeting the burden of production or the burden of going forward during an evidentiary hearing. See NextEra Energy Seabrook, LLC (Seabrook Station, Unit 1), LBP-20-9, 92 NRC 58, 94–95 & n.191 (2020) (“An Intervenor has the initial ‘burden of going forward,’ which requires an intervenor to establish a prima facie case for claims asserted in the reformulated contention. The admission of a contention, by itself, does not satisfy the ‘burden of going forward.’ An intervenor must ‘provid[e] probative evidence or expert testimony.’” (footnotes omitted)), review declined, Memorandum from Annette Vietti-Cook, Secretary of the Commission, to Board and Parties (May 11, 2021) (unpublished). But in the context of determining whether a section 2.335 waiver petition makes a prima facie showing, whether provided by an expert or otherwise, that support must deal adequately with potentially relevant information. See Watts Bar, LBP-10-12, 71 NRC at 670–71 (indicating petitioner’s expert declaration is insufficient to provide prima facie support for section 2.335 waiver request in that expert’s claim of unanalyzed environmental impacts because “more work needs to be done” to bring unit online fails to indicate what the work or the impacts might entail).

⁷⁵ Petitioners’ Contention 2, “Failure to Consider New and Significant Information Regarding Significant Impacts of Reactor Accidents Caused by Failure of Jocassee Dam,” alleges:

Duke has violated NEPA and 10 C.F.R. § 51.53(c)(3)(iv) by failing to address “new and significant information regarding the environmental impacts of license renewal of which [Duke] is

(footnote continued...)

melt accident caused by failure of the Jocassee Dam.”⁷⁶ Hearing Petition at 14–15, 18.

Additionally, Petitioners maintain that Duke’s failure to implement measures to address the

aware.” The Commission should waive 10 C.F.R. § 51.53(c)(3) and the categorical exclusions of 10 C.F.R. Part 51, [Subpart] A, Appendix B, and require Duke to address those impacts in a complete environmental impact analysis, as set forth in 10 C.F.R. § 51.45.

The new and significant information of which Duke is aware, and that is not addressed in the [ER], consists of the following:

- Duke’s own risk analyses show that the likelihood of a core melt accident and containment failure caused by a random failure of the Jocassee Dam is significantly higher than presented in Duke’s [ER]. And even this higher estimate of Jocassee Dam failure frequency is too low, given Duke’s failure to consider the additional credible contributors to Jocassee [D]am failure frequency of seismic events and dam overtopping.
- Duke fails to address the environmental significance of a 2011 Safety Evaluation, in which the NRC Staff determined that the potential for a random (i.e., “sunny day”) Jocassee Dam failure constitutes an “adequate protection” issue requiring Duke to implement additional measures to protect against flooding of essential safety equipment and thereby prevent a reactor meltdown. By establishing the risk of a core melt accident with an associated containment failure due to failure of the Jocassee Dam as an adequate protection issue, the NRC effectively established it as a significant environmental issue as well.

Hearing Petition at 13–14.

⁷⁶ In this regard, based on the supporting statement of an expert who appears to have substantial experience in the field of risk analysis, Petitioners’ Contention 2 maintains among other things, that the dam-failure rate figure calculated by Petitioners’ expert is higher than the dam-failure rate figure provided in Duke’s ER, establishing that Duke’s failure rate is both “wrong,” as well as indicating it fails to account for “additional significant contributors to dam failure risk such as seismically-induced dam failure and dam overtopping” or “the risk contribution from shutdown operations.” Hearing Petition at 14–15 (citing Hearing Petition, attach. 1, ex. 1, § 3 (Jeffrey T. Mitman, NRC Relicensing Crisis at [ONS]: Stop Duke from Sending Safety Over the Jocassee Dam (Sept. 2021) [hereinafter Mitman Report])). In contesting these claims, Duke and the NRC Staff respectively assert, among other things, that the technical basis for Petitioners’ Contention 2 has “multiple and significant factual errors, omissions, and mischaracterizations” that deprive Petitioners’ hearing request of the needed support to demonstrate a genuine dispute, Duke Answer at 13–19, and is outside the scope of the proceeding by seeking improperly to conflate a NEPA environmental impact issue with a
(footnote continued...)

import of the January 2011 Staff Safety Evaluation constitutes an “unresolved safety issue” that they now pose in the form of an environmental contention involving “new and significant information” that requires attention under NEPA in this SLR proceeding. Id. at 3. In Contention 3,⁷⁷ Petitioners similarly maintain Duke failed to consider “new and significant information” as it affects the outcome of Duke’s ER SAMA analysis.⁷⁸ See id.

For the purpose of determining whether a section 2.335 waiver is appropriate, these two contentions are complementary in that both can be addressed through a discussion about

safety concern associated with a current licensing basis operating issue that is otherwise unrelated to the plant systems, structures, and components aging management issues that are the recognized focus for a litigable safety contention in a license renewal proceeding, see Staff Answer at 47–49.

⁷⁷ After incorporating Petitioners’ arguments from Contention 2 regarding dam-failure risk analysis associated with core-melt accident and containment-failure probabilities and the purported failure to consider seismic events and dam overtopping, see supra note 75, Contention 3 adds:

- The NRC’s 2011 Safety Evaluation, discussed above in Contention 2, required Duke to implement certain measures for protection against a random (i.e., “sunny day”) Jocassee Dam failure as a matter of providing “adequate protection” to public health and safety. By deeming these measures necessary, the NRC established them as SAMAs worthy of consideration. Indeed, in order to exclude a necessary safety measure, Duke would have a very high burden of justification. Yet, these measures are not discussed or implemented in the [ER].
- The [ER] fails to consider additional mitigative measures that may well be cost-effective at Oconee, given the increased likelihood of a core melt accident. These measures include preemptively shutting down the reactors when reservoir water levels get too high, lowering the water levels in the lake behind the Jocassee and Keowee Dams, or lowering the crest elevation of some of the surround[ing] earthworks such that they overtop before the Jocassee Dam, thus lowering the flood impacts at ONS.

Hearing Petition at 16–17.

⁷⁸ As the support for Contention 3, Petitioners’ referenced Mr. Mitman’s expert report in which he suggests “Duke’s SAMA analysis does not reflect any consideration of the extensive work done to incorporate the Jocassee Dam failure and flood routing analysis,” including the “significant flood control measures in the [January] 2011 [Staff] Safety Evaluation” required by
(footnote continued...)

whether the contentions support a prima facie showing of special circumstances warranting a waiver of the pertinent regulations that otherwise would apply generic Category 1 environmental impact findings to Duke's SLR application. In this regard, Petitioners seek to waive the application of 10 C.F.R. §§ 51.53(c)(3)(i) and 51.53(c)(3)(ii)(L) insofar as these provisions excuse an applicant from having to evaluate Category 1 items (and their functional equivalents, such as a SAMA analysis) in an ER prepared as part of an SLR application. See id. at 18. Moreover, in what we agree is "reasonable anticipation," Petitioners also request a waiver of 10 C.F.R. §§ 51.71(d) and 51.95(c)(1) that excuse the NRC Staff from addressing these same items in both their draft and final GEIS supplement to be issued in subsequent phases of the SLR application review process. See id. at 18–19. Finally, Petitioners seek a waiver of 10 C.F.R. Part 51, subpart A, appendix B, Table B-1, for their Contention 2 and 3 challenges to those Category 1 findings associated with considering the environmental implications of a core-melt accident caused by failure of the Jocassee Dam. See id. at 18.

With this appendix B framework thus applying to both contentions, our determination whether the Petitioners' have supplied the information required for a section 2.335(b) waiver request must be guided by the Millstone standards. For the reasons set forth below, we conclude that Petitioners' failure to satisfy Millstone factor four — whether "waiver of the regulation is necessary to reach a significant safety [or environmental] problem," Limerick,

the NRC, and fails to analyze the mitigation measures listed in the contention (i.e., preemptive ONS shut down when reservoir water levels get too high, lowering the lake water levels behind the Jocassee and Keowee Dams, lowering crest elevation of Jocassee Dam earthworks so they overtop before the dam), which are "some other obvious ways to reduce the flood hazard from Oconee." Mitman Report at 24. In response, both Duke and the Staff challenge the contention as failing to acknowledge or analyze the mitigation measures already implemented by Duke and providing suggestions for additional SAMAs that are "casual recommendations" that, as compared to the existing Duke SAMA analysis, fail to provide the requisite "seriously different picture of the environmental impact" necessary to frame an admissible issue. Staff Answer at 52 (quoting Union Elec. Co. d/b/a Ameren Missouri (Callaway Plant, Unit 2), CLI-11-5, 74 NRC 141, 167–68 (2005)); see Duke Answer at 39–40.

CLI-13-7, 78 NRC at 208 (citing Millstone, CLI-05-24, 62 NRC at 559–60) — precludes Petitioners from obtaining a waiver of section 2.335 for these two contentions.⁷⁹

To reiterate, to make a successful showing regarding the Millstone factors, a petitioner must meet “extremely high standards” showing the existence of “compelling circumstances,”⁸⁰ stating “with particularity” the special circumstances that justify the need for waiver, a standard that is “stringent by design” and imposes a “substantial burden” on the participant seeking the waiver, Limerick, CLI-13-7, 78 NRC at 207, 208. In considering whether Petitioners have met this overarching benchmark in connection with Millstone factor four, i.e., by demonstrating there is a significant safety or environmental issue that needs to be reached to warrant a waiver, because of the technical nature of their contentions we will evaluate separately the issues posed within Contentions 2 and 3.

⁷⁹ With our finding below that Petitioners have failed to meet the fourth Millstone factor, we need not reach the issue whether their waiver request passes muster under Millstone factors one through three. Nonetheless, at least for Contention 2, more than a modicum of support under Millstone factor two (i.e., lack of consideration in the rulemaking leading to the rule to be waived) and Millstone factor three (i.e., circumstances unique to the facility) may exist in these circumstances in that (1) under the 2013 Revised GEIS, for license renewal purposes any plant-specific environmental consideration of seismic and flooding issues associated with post-Fukushima evaluations (and seemingly other contemporaneous post-1996 GEIS analyses) is deferred to the next license renewal GEIS supplement process for the individual plant, see supra section I.B.; and (2) although ONS has geographic proximity to a dam, relative to the basis for the 1996 GEIS generic environmental impact findings regarding severe accidents, as incorporated into the 2013 Revised GEIS, none of the 28 nuclear power plants “taken as a representative sample” were “specifically downstream of a dam,” Tr. at 60–61 (Woods). But even assuming that these two Millstone factors could be met, and that the remaining Millstone factor one (i.e., rule’s strict application will not serve its adopted purposes) would be accommodated by an admissible Contention 2, see Limerick, CLI-13-7, 78 NRC at 210–11; Turkey Point, CLI-01-17, 54 NRC at 12, this would not alleviate the need to make a prima facie showing regarding the fourth Millstone factor, see Turkey Point, LBP-19-8, 90 NRC 169–70 (indicating intervenors’ asserted need to review and challenge draft SEIS analysis of new information does not relieve their obligation to satisfy the four Millstone factors in their section 2.335 waiver petition), which we conclude Petitioners have failed to accomplish.

⁸⁰ Pub. Serv. Co. of N.H. (Seabrook Station, Units 1 and 2), CLI-89-20, 30 NRC 231, 245 (1989).

1. For Contention 2, Petitioners Have Failed to Make a Prima Facie Showing Under Millstone Factor Four that Waiver of the Regulation is Necessary to Reach a Significant Safety or Environmental Problem

In support of Millstone factor four, Petitioners' waiver request makes only the general observation that a waiver "is necessary to address significant adverse environmental impacts that have not previously been considered."⁸¹ Hearing Petition at 22. And as we have observed previously, see supra note 75, the problems Petitioners reference in Contention 2 as having significant but unconsidered environmental impacts include (1) the difference between the probability figure used in the Duke ER, which also is alleged not to include the risks associated with seismically-induced dam failure and dam overtopping, and the probability figure provided in a March 2010 NRC generic dam-failure estimate, which purportedly shows that "the likelihood of a core melt accident caused by a random failure of the Jocassee Dam . . . is significantly higher" than postulated in the ER; and (2) the asserted failure to address the January 2011 Staff Safety Evaluation, as it "constitutes an adequate protection issue" that requires new flooding mitigation measures to prevent a reactor meltdown. Hearing Petition at 2–3. Duke disputes this, arguing that neither its risk analysis nor any of their other Jocassee Dam failure-related concerns can justify a waiver of the appendix B framework given Petitioners' failure to challenge in any specific way the post-Fukushima Duke flooding analyses and implemented mitigation measures, along with the associated Staff evaluations that ultimately resulted in the closing of the June 2010 Staff CAL. See Duke Answer at 25–26. In the circumstances here, we agree that Petitioners' failure to engage this regulatory history is at the root of their failure to identify a "significant issue" under Millstone factor four.⁸²

As recounted in section I.C above, in a letter issued within six months of its March 2012 Fukushima RFI, the Staff indicated that the agency's post-Fukushima regulatory process for

⁸¹ Notwithstanding the potential pleading issue with this summary discussion regarding Contention 2, we continue our analysis of whether Petitioners have fulfilled Millstone factor four (footnote continued...)

assessing and addressing seismic and flooding hazards using present-day methodologies and guidance would, in the case of Oconee, supplant the still-outstanding June 2010 Staff CAL.

See September 2012 Evans Letter at 2. Thereafter, as additional seismic dam failure, overtopping dam failure, and flooding analyses were provided in the 2015 Duke FHRR, this

to ensure the matter is fully explored.

⁸² As was noted previously, see supra note 76, the Petitioners did present the Board with a dam-failure rate figure higher than the dam-failure rate figure provided in Duke's ER with the claim that Duke's failure rate was "wrong." Hearing Petition at 14–15. But Petitioners' dam-failure rate has as a primary underpinning a March 2010 NRC Staff-generated generic failure rate for large rockfill dams similar to the Jocassee Dam. See Mitman Report at 22 (describing "NRC's best estimate [initiating event frequency (IEF)] of 2.8E-4 per year") (citing James Vail, Fernando Ferrante, and Jeff Mitman, Reliability and Risk Analysts, NRC NRR, Generic Failure Rate Evaluation for Jocassee Dam (Mar. 15, 2010) (ADAMS Accession No. ML13039A084)); see also June 2016 NRC Flooding Investigative Report at 86 (indicating that in March 2010 NRC Staff reevaluated the failure rate of rock-filled dams as about once in 3600 years). This, in turn, underscores a principal basis for Petitioners' contention, i.e., its reliance on June 2010 Staff CAL-associated Staff appraisals, including the January 2011 Staff Safety Evaluation. This reliance is further highlighted by Petitioners' second bulleted argument in support of Contention 2, see supra note 75, regarding the environmental significance of Duke's alleged failure to address the January 2011 Staff Safety Evaluation and the "adequate protection" issue of the need for additional protective measures. Indeed, according to Petitioners' counsel, "as long as a safety evaluation that is relied on in the GEIS remains unresolved, according to the NRC's own regulatory practices it becomes an environmental issue." Tr. at 16 (Curran).

Also indicative of this focus on the Staff's pre-Fukushima assessment of a potential Jocassee Dam failure is Petitioners' December 7, 2021 pleading filed in response to a November 22, 2021 Board request for information in which they discuss two NRC Staff member non-concurrence submissions, one from Mr. Mitman in January 2011 regarding the January 2011 Staff Safety Evaluation and another in April 2009 from a different NRC employee concerning the August 2008 Staff Jocassee Dam Failure Section 50.54(f) Letter. See Petitioners Response to Licensing Board Post-Argument Information Request at 3–9 (discussing NRC Form 757, Non-Concurrence Process (Jan. 10, 2011) (ADAMS Accession No. ML110260443) and NRC Form 757, Non-Concurrence Process (Apr. 6, 2009) (ADAMS Accession No. ML091170104)).

As a procedural matter, we observe that without seeking a page-limit extension, Petitioners' December 7, 2021 filing in response to the Board's November 22, 2021 issuance failed to conform to the Board-established page restriction for participant responsive submissions to its information request. Compare id. at 10 (signature page), with Licensing Board Post-Argument Information Request Order at 2 (indicating participant responsive submissions should be "no more than five pages"). Nonetheless, given the lack of objection from the other two participants, we take no adverse action regarding the second half of Petitioners' submission.

successive review process culminated in the Staff's June 2016 letter indicating that, on the basis of the Staff's review of post-Fukushima information provided by Duke, which included Duke's compensatory modification measures to address possible dam-break related flooding, the Staff was closing the June 2010 Staff CAL. See June 2016 Haney Letter at 1; see also April 2016 Davis FHRR Final Assessment Letter at 2; August 2014 Batson Letter at 2. Moreover, in an addendum to the April 2016 Staff Final FHRR Assessment there is a detailed discussion comparing the circumstances surrounding the August 2010 Duke Flooding Evaluation and the Staff's post-Fukushima activities regarding seismic and flooding that explains the basis for the Staff's adjusted approach. See Staff 2010/2015 Evaluation Comparison at 1–2. That addendum noted that the August 2010 Duke Flooding Evaluation, which the January 2011 Staff Safety Evaluation concluded provided documentation appropriate to the computation of “a conservative, bounding, estimation of a postulated sunny-day Jocassee Dam failure and subsequent downstream flooding at the ONS,” is “based on several conservative assumptions including[] (1) breach size selection given the dam’s construction and bedrock type at the dam site; [and] (2) a hypothetical time to reach a peak outflow . . . based on the quality of construction, basal rock type, and degree of monitoring of the Jocassee [D]am.” Id. at 3, 4. The April 2016 Staff Final FHRR Assessment addendum further contrasted the August 2010 Duke Flooding Evaluation methodology with the approach taken in response to the March 2012 NRC Fukushima Section 50.54(f) Letter, which was based on the requirements of (1) Near-Term Task Force Recommendation 2.1;⁸³ and (2) the July 2013 JLD-ISG-2013-01 Interim Staff Guidance. According to the addendum, the former directed that a licensee must use present-day methodologies and regulatory guidance applicable to Part 52 licenses to assess all

⁸³ SECY-11-0093, Near-Term Report and Recommendations for Agency Actions Following the Events in Japan, encl. (July 12, 2011) (The Near-Term Task Force, NRC, Recommendations for Enhancing Reactor Safety in the 21st Century at 30 (July 12, 2011)) (ADAMS Accession No. ML111861807).

flood-causing mechanisms, which for ONS included the potential for hydrologic/overtopping, seismic, and sunny-day failures of the Jocassee Dam, while the latter clarified acceptable dam breach formulation methodologies that were not available for Staff use during its 2010 review of the Jocassee Dam-associated flooding issue. See Staff 2010/2015 Evaluation Comparison at 3; see also April 2016 Staff FHRR Final Assessment at 3-6.

Further, in evaluating Duke's information regarding these three failure modes using present-day methodologies and regulatory guidance, which included independent confirmatory analyses of the Jocassee Dam breach uncertainties range, the Staff determined that both seismically and overtopping-induced failures of the Jocassee Dam were not "reasonable mode[s] of failure" while the sunny-day Jocassee Dam failure mode was deemed "an unlikely, although reasonable, failure mode." Staff 2010/2015 Evaluation Comparison at 3; see also April 2016 Staff FHRR Final Assessment at 6–41. The Staff concluded as well that (1) the Duke 2015 FHRR reflected "a reasonable analysis that removes some conservatism" in the August 2010 Duke Flooding Evaluation consistent with recent Commission direction regarding licensees' section 50.54(f) letter flood hazard reevaluations; (2) Duke's estimated ONS flood levels were "reasonable," satisfying the Staff's information requests; and (3) the revised March 2015 Duke FHRR provided "an acceptable evaluation of a postulated sunny-day failure of the Jocassee Dam, and is appropriate to consider in assessing the need for specific actions" included in the June 2010 Staff CAL. Staff 2010/2015 Evaluation Comparison at 4. The Staff assessment did indicate that Duke still needed to provide a focused evaluation "confirming the capability of flood protection and available physical margin or a revised integrated assessment . . . for all reevaluated mechanisms not bounded by the current design basis." Id. And thereafter, in assessing Duke's focused evaluation the Staff concluded that Duke had implemented the necessary compensatory measures to mitigate a possible Jocassee Dam failure such that the focused evaluation requirement was fulfilled and the March 2012 NRC

Fukushima Section 50.54(f) Letter could be closed. See June 2018 Uribe Letter at 2; November 2020 Bernardo Letter at 1.

Petitioners do not reference the more recent information set forth above in their hearing petition or the supporting Mitman Report. Nonetheless, they still claim that they did not ignore those interactions and reviews. According to Petitioners, this material is simply irrelevant because the language of the January 2011 Staff Safety Evaluation establishes an “adequate protection” issue, while the post-Fukushima material does not employ the necessary “reasonable assurance of adequate protection to public health and safety” language. See Petitioners Reply at 11–14; Tr. at 50–51 (Curran). According to Petitioners, even if the documents state that the June 2010 Staff CAL is superseded or closed out, they have been unable to locate any documents addressing the close-out of the January 2011 Staff Safety Evaluation with its “adequate protection” issue. See Tr. at 94–95 (Curran). This, they assert, establishes that the January 2011 Staff Safety Evaluation continues to be outstanding and, in the context of NRC regulatory practice, by its very nature must be considered a “significant” issue. See Petitioners Reply at 6, 20.

As we consider Petitioners’ arguments in the context of this waiver determination, we conclude we cannot agree. Initially we note that, in determining whether the stringent standards applicable to the grant of a section 2.335 waiver have been met, we consider it entirely appropriate to take into account both what the required affidavit and additional material provided in support of a waiver request says and does not say.⁸⁴ And clearly of significance in this

⁸⁴ In this regard, section 2.335(b) requires that in support of a waiver request a petitioner must provide “an affidavit that identifies the specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted . . . [and] must state with particularity the special circumstances alleged to justify the waiver or exception requested.” Recognizing this requirement, see Hearing Petition at 19, Petitioners’ have proffered two sworn “declarations,” one by its legal counsel and one by Mr. Mitman. In the former, Mr. Mitman’s declaration and report are identified as the source of any factual assertions in support of the waiver petition and counsel is identified as the source of any legal conclusions supporting the
(footnote continued...)

circumstance is the sequence of events that were part of a major, agency order-instituted post-Fukushima effort intended to ensure “that the NRC can continue to have reasonable assurance of adequate protection of public health and safety in mitigating the consequences of a beyond-design-basis external event.”⁸⁵ This included the related Commission-endorsed effort initiated by the March 2012 NRC Fukushima Section 50.45(f) Letter, of which the April 2016 Staff Final FHRR Assessment was a part, to use current scientific methodologies and agency regulatory guidance to identify and mitigate seismic and flooding hazards.⁸⁶

But despite the relevance of these post-Fukushima regulatory events to the assessment of seismic and flooding events at ONS and elsewhere, as is evident from the Mitman Report that provides the sole technical support for their hearing petition, Petitioners fail to engage with the numerous post-Fukushima documents and reports that were exchanged between Duke and

petition. See id. attach. 3, at 1–2 (Declaration of Diane Curran in Support of Petition for Waiver of 10 C.F.R. §§ 51.53(c)(3)(i), 51.53(c)(ii)(L), 51.71(d), 51.95(c)(1), and 10 C.F.R. Su[bp]art A, Appendix B, Table B-1 to Allow Consideration of Category 1 NEPA Issues and SAMA Issues (Sept. 27, 2021)). In contrast, the latter attests to the validity of the factual statements in the Mitman Report. See id. attach. 1, at 2 (Declaration of Jeffrey T. Mitman in Support of Beyond Nuclear and Sierra Club Hearing Request (Sept. 27, 2021)). Neither contains any identified discussion of “the specific aspect or aspects of the subject matter of the proceeding as to which the application of the rule or regulation (or provision of it) would not serve the purposes for which the rule or regulation was adopted” or “the special circumstances alleged to justify the waiver or exception requested,” the subjects a supporting affidavit is supposed to address under section 2.335(b). Instead, any recitation concerning these matters is confined to Petitioners’ hearing request, see Hearing Petition at 20–22, making it unclear to what extent the section 2.335(b) affidavit requirement has been fulfilled as a supporting basis for their waiver request.

⁸⁵ Order Modifying Licenses [w]ith Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Effective Immediately), 77 Fed. Reg. 16,091, 16,092 (Mar. 19, 2012) (EA-12-049).

⁸⁶ See, e.g., Memorandum from Annette L. Vietti-Cook, NRC Secretary, to Mark A. Satorius, Executive Director for Operations (EDO) at 1 (July 28, 2015) (Staff Requirements — COMSECY-15-0019 — Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants) (ADAMS Accession No. ML15209A682); Memorandum from Mark A. Satorius, EDO, to the Commission at 1–3 (June 30, 2015) (COMSECY-15-0019, Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants) (ADAMS Accession No. ML15153A105).

the NRC from 2012 through 2020.⁸⁷ Their expert report makes no mention of the significance of the differences identified between the underlying bases for assessments conducted relative to the June 2010 Staff CAL, of which the January 2011 Staff Safety Evaluation was a component, and the post-Fukushima Duke analyses and associated Staff evaluations, particularly as outlined in the Staff 2010/2015 Evaluation Comparison.⁸⁸ Nor does that expert report identify and explain the significance of what was addressed in the post-Fukushima Duke and Staff evaluations relative to the January 2011 Staff Safety Evaluation.⁸⁹

⁸⁷ At the same time, based on Mr. Mitman's otherwise unsupported statement in his report that "[i]t is widely understood in the nuclear industry and by the NRC that the risks from shutdown are comparable to those during power operations," Mitman Report at 23, Petitioners seek to raise concerns about the credibility of Duke's risk analysis based on Duke purportedly ignoring the issue of risk contribution from reactor shutdown operations, see Hearing Petition at 15; Petitioners Reply at 6 n.2; see also supra note 76. Even putting aside whether, as the Staff maintains, this has been identified by the Commission as an operational issue that is outside the scope of a license renewal proceeding, see Staff Answer at 49 (citing Pac. Gas and Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-15-21, 82 NRC 295, 304–05 (2015)), in the circumstance of assessing whether section 2.335's strict standards have been met, this passing reference, made without any quantification or other technical support or explanation, will not abide, even from an expert, see Entergy Nuclear Operations, Inc. (Palisades Nuclear Plant), CLI-15-23, 82 NRC 321, 328 (2015) ("[A]n expert opinion that merely states a conclusion . . . 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.") (citation omitted)); USEC, Inc. (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 472 (2006) (same). It also is not clear how Mr. Mitman's general concern about reactor shutdown risk, see Mitman Report at 23, relates to his view that reservoir level-related preemptive reactor shutdown should be considered an obvious SAMA strategy, see id. at 24.

⁸⁸ See Watts Bar, LBP-10-12, 71 NRC at 670–71 (indicating claim in supporting expert declaration that the utility's past operational history without a nuclear facility means denying an operating license would be environmentally preferable is insufficient to provide prima facie support for petitioner's section 2.335 waiver request because, without showing comparative financial and environmental costs, expert's assertion "[t]hat it was not necessary to operate a facility in the past simply does not establish that it will be unreasonable to operate it in the future").

⁸⁹ Petitioners attempt to explain, at least in part, the lack of engagement with post-Fukushima documentation as being the result of having access to post-Fukushima Duke and Staff evaluation documents with "a significant portion" of the quantitative information excised as not publicly available. See Petitioners Reply at 14 n.8; see also Mitman Report at 1–2. It is true that prior to having an admitted contention, there is no adjudicatory discovery available by which they could obtain this redacted information. See Wisc. Elec. Power Co. (Point Beach Nuclear Plant, Unit 1), ALAB-696, 16 NRC 1245, 1263 (1982). Nonetheless, in
(footnote continued...)

Instead, the report relies on what Petitioners' technical expert characterizes as the regulatory significance of the wording employed by the Staff in the April 2009 Giitter Letter and in its January 2011 Staff Safety Evaluation, as compared to the April 2016 Staff FHRR Final Assessment, as well as the difference in titles used in the January 2011 and April 2016 Staff documents, the former a "Safety Evaluation" and the latter a "Staff Assessment." See Mitman Report at 12, 13, 15. However, as a basis for their waiver request, these wording or title distinctions do not carry the regulatory significance Petitioners assign them.

According to Petitioners' expert report, the April 2009 Giitter Letter is significant because it indicates that the Staff planned to evaluate the results of Duke's inundation model benchmarking "to determine whether further regulatory actions are necessary to ensure there is adequate protection against external flooding at Oconee" and states the Staff's expectation that it would receive sensitivity analyses "which would establish an adequate licensing basis for external flooding." Mitman Report at 12 (quoting April 2009 Giitter Letter at 3). But this assertion is speculative and removes the letter from its context in the regulatory landscape. Equally plausible from the face of the letter is that it reflects the Staff's then-acknowledgment that if it ultimately wanted to issue an enforcement-type order to Duke regarding its ongoing Oconee inundation assessment, it would need to make such an "adequate protection" finding.⁹⁰ But again, parsing the language of the letter without acknowledging what has happened subsequently does not imbue that document with the significance Petitioners would assign it. Indeed, another 2010 document cited in Mr. Mitman's report, but not discussed in this context,

the context of their section 2.335 petition seeking to show a "significant" environmental matter that requires a regulatory waiver, in our view this does not relieve Petitioners of the responsibility to address, to the extent they can, the adequacy of the post-Fukushima evaluations in the context of whatever relevant public information is available.

⁹⁰ See NRC, Management of Backfitting, Forward Fitting, Issue Finality, and Information Request, Directive Handbook 8.4, at 4–5 (Sept. 20, 2019) (indicating a backfitting evaluation is applicable to facility-specific inspection and licensing actions and requires an initial determination whether action is necessary to provide "adequate protection of public health and safety") (ADAMS Accession No. ML18093B087).

bears this out.⁹¹ This “adequate protection” backfitting exception analysis regarding Oconee inundation issues apparently was prepared by the Staff as support for a possible license-modification enforcement order.⁹² But an order based on such a finding was never issued.⁹³

Instead, based on its interactions with the Staff, Duke committed to inundation-related mitigation modifications during the process associated with the June 2010 Staff CAL,⁹⁴ measures that the Staff determined in conjunction with its post-Fukushima evaluation process were acceptable, see June 2016 Haney Letter at 1. Given the Staff’s willingness to proceed under the June 2010 Staff CAL without any ONS-specific license modification order, the Mitman Report-referenced language in the January 2011 Staff Safety Evaluation, which states that the Duke ONS site inundation bounding analysis information provided “reasonable assurance for the overall flooding scenario at the site,” Mitman Report at 13 (quoting January 2011 Staff Safety Evaluation at 13), provides an insufficient basis for the significance attributed to it by Petitioners, at least with no supporting analysis contesting the adequacy of the Staff’s post-Fukushima safety determinations regarding ONS Jocassee Dam-related inundation. And the same is the case with the Mitman Report’s declaration that “[b]y titling [its April 2016]

⁹¹ See Mitman Report at 18 n.81 (citing NRC, [ONS] Adequate Protection Backfit Documented Evaluation (document identified as “circa 2010”) (ADAMS Accession No. ML14058A015) [hereinafter Backfit Documented Evaluation]).

⁹² See Backfit Documented Evaluation at 8 (“The objective of this documented evaluation . . . is to justify a backfit exception (under 10 CFR 50.109(a)(4)(ii)) to modify the ONS license to ensure that there is adequate protection against all types of external floods and to maintain defense-in-depth.”).

⁹³ See Petitioners Reply at 10 (“the [January] 2011 [Staff] Safety Evaluation did not explicitly require Duke to take certain measures to ensure adequate protection of public health and safety”).

⁹⁴ See June 2010 Staff CAL at 1, 2 (noting listed compensatory measures must remain in place until final resolution of the matter of ONS site inundation from Jocassee Dam failure has been determined by Duke and agreed upon by NRC, including implementation of all mitigation modifications, and indicating CAL does not preclude issuance of order formalizing commitments or requiring other actions, including enforcement actions).

document a 'Staff Assessment' rather than a 'Safety Evaluation,' the NRC Staff indicated that the document did not have the regulatory equivalence of safety findings." Mitman Report at 15. As Duke points out, whether a "safety evaluation" has the regulatory significance attributed to it by Petitioners is not apparent either.⁹⁵

While Duke has accounted for the mitigative measures it implemented under this post-Fukushima evaluative process in assessing whether any "new and significant information" required further consideration in its ER, see supra section I.B, Petitioners have failed to engage with the underlying Duke and Staff post-Fukushima analyses that support those determinations. Instead, they have chosen to rely on purported distinctions in language associated with pre-Fukushima Staff evaluations that, in this context, are of highly questionable regulatory significance. Under these circumstances, lacking the requisite showing that the information they provide meets the benchmark of presenting "a seriously different picture of the environmental impact of the proposed project from what was previously envisioned,"⁹⁶ we are unable to conclude that Petitioners have adequately established a prima facie showing that there is a "significant" environmental issue that merits a waiver under section 2.335 so as to permit consideration of Petitioners' Contention 2 in this adjudicatory proceeding.

⁹⁵ See Duke Answer at 14–15 & n.71 (quoting SECY-21-0037, NUREG-1409, "Backfitting Guidelines," Rev. 1 (Mar. 31, 2021), encl. 1, at 1-5 (NRR, NRC, Backfitting Guidelines, Final Report (rev. 1 undated) (draft) (indicating Staff positions in safety evaluations "are not requirements" and are "not part of the licensing basis" for a facility) (ADAMS Accession No. ML21006A433)).

⁹⁶ Callaway, CLI-11-5, 74 NRC at 167–68 (quoting Hydro Resources, Inc. (2929 Coors Road, Suite 101, Albuquerque, NM 871200), CLI-99-22, 50 NRC 3, 14 (1999)). To be sure, this "seriously different picture" yardstick was identified in the context of determining whether "new and significant information" existed sufficient to trigger a Staff supplemental environmental analysis under NEPA. See id. While we do not necessarily equate the "new and significant information" standard governing NEPA supplementation with the "significant environmental problem" criterion under Millstone factor four, in assessing a waiver request the former would at least need to be met in determining what is "significant" under the latter.

2. For Contention 3, Petitioners Have Failed to Make a Prima Facie Showing Under Millstone Factor Four that Waiver of the Regulation is Necessary to Reach a Significant Safety or Environmental Problem

Also in connection with Millstone factor four, Petitioners contend that waiver of the regulations is necessary to address the significant environmental problem of “SAMAs that may be cost-effective in preventing or mitigating those impacts but that have not previously been considered.” Hearing Petition at 22. This parallels their Contention 2 concern that, given the alternative risk estimate they have provided, Duke’s SAMA analysis “is incorrect and should be done again using reasonable and up-to-date assumptions.” Id. at 3. We determined regarding Contention 2, see supra section IV.B.1, that by treating as irrelevant the post-Fukushima Duke and Staff activities in addressing seismic and flooding issues, including Duke’s facility modifications that were implemented in accordance with the Staff’s post-Fukushima regulatory guidance and assessed by Duke, for SAMA purposes, as part of its SLR ER, Petitioners failed to provide sufficient support to demonstrate the existence of a “significant” environmental issue under Millstone factor four. And in the context of Petitioners’ waiver request, we conclude these same deficiencies deprive their Contention 3 concerns of any claim to being a “significant” environmental issue such that a waiver of the appendix B framework is warranted.

In sum, with respect to Millstone factor four, Petitioners have failed to put forth a supporting analysis that demonstrates with specificity a prima facie showing of a “significant” problem that must be addressed as part of this SLR proceeding so as to necessitate a waiver of the appendix B framework to allow adjudicatory consideration of the issues they have proffered in Contentions 2 and 3.⁹⁷ And without a demonstration by Petitioners of the “special

⁹⁷ Of course, the Board’s determination regarding Petitioners’ waiver request does not negate the Staff’s responsibility (1) in conducting its “hard look” licensing review of the Duke ER, to assess whether new and significant information exists that requires additional consideration; or (2) per 10 C.F.R. § 51.73, to consider whether any information provided by public comments as part of the environment review process for Duke’s SLR application merits further analysis as new and significant information. See Limerick, CLI-17-3, 78 NRC at 216–17.

circumstances” required to justify granting a section 2.335(b) waiver, the Board cannot certify to the Commission for a merits determination the matter whether such a waiver is called for so as to make their Contentions 2 and 3 eligible for adjudicatory consideration in this SLR proceeding.

V. CONCLUSION

For the reasons set forth above in section II.B., Petitioners have provided an adequate showing to establish their representational standing in this SLR proceeding for Duke’s ONS facility. Nevertheless, for the reasons described in section III.B above, we find under the applicable standards in 10 C.F.R. § 2.309(f)(1) that Petitioners have failed to establish the grounds for admitting their Contention 1 challenging whether the exclusion of 10 C.F.R. Part 51, subpart A, appendix B, Table B-1 Category 1 issues from NEPA consideration applies in an SLR proceeding such as this one. Further, for the reasons set forth in section IV.B above, we conclude Petitioners have failed under the requirements set forth in 10 C.F.R. § 2.335 to justify certifying to the Commission whether to grant a waiver of the 10 C.F.R. Part 51 provisions that otherwise preclude the Board from considering in this adjudicatory proceeding the Duke ER adequacy issues posed by Petitioners’ Contentions 2 and 3.

For the foregoing reasons, it is this eleventh day of February 2022, ORDERED, that:

1. The September 27, 2021 hearing request of petitioners Beyond Nuclear, Inc., and the Sierra Club, Inc., and the accompanying 10 C.F.R. § 2.335 waiver request are denied and this proceeding is terminated.⁹⁸

⁹⁸ Regarding the outstanding November 15, 2021 Duke motion to strike a portion of Petitioners’ November 5, 2021 reply pleading, see supra note 7, our denial of Petitioners’ hearing and waiver requests moots that Duke request.

2. In accordance with the provisions of 10 C.F.R. § 2.311, as this memorandum and order rules upon an intervention petition, any appeal to the Commission from this memorandum and order must be taken within 25 days after this issuance is served.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

G. Paul Bollwerk, III, Chairman
ADMINISTRATIVE JUDGE

/RA/

Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

/RA/

Dr. Gary S. Arnold
ADMINISTRATIVE JUDGE

Rockville, Maryland

February 11, 2022

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
DUKE ENERGY CAROLINAS, LLC,)	Docket Nos. 50-269, 50-270 & 50-287-SLR
DUKE ENERGY)	
)	
(Oconee Nuclear Station)	
Units 1, 2 and 3))	

CERTIFICATE OF SERVICE

I hereby certify that copies of the **Memorandum and Order (Denying Intervention and Terminating Proceeding) (LBP-22-01)** have been served upon the following persons by Electronic Information Exchange.

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Oconee Power Station (Units 1, 2 and 3)
Docket Nos. 50-269, 50-270 and 50-287-SLR

Memorandum and Order (Denying Intervention and Terminating Proceeding) (LBP-22-01)

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Dated at Rockville, Maryland,
This 11th day of February 2022.