

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Kristine L. Svinicki, Chairman
Jeff Baran
Annie Caputo
David A. Wright

In the Matter of

NEXTERA ENERGY SEABROOK, LLC

(Seabrook Station, Unit 1)

Docket No. 50-443-LA-2

CLI-19-07

MEMORANDUM AND ORDER

C-10 Research and Education Foundation filed a petition related to concrete degradation caused by alkali-silica reaction (ASR) at Seabrook Station, Unit 1.¹ C-10 asks us to exercise our inherent supervisory authority to direct the NRC Staff to address the safety risk posed by ASR in the Seabrook containment building before the Staff acts on the ASR license amendment request (LAR) or license renewal application filed by NextEra Energy Seabrook, LLC.²

As discussed below, we have reviewed the filings before us and considered C-10's claims in detail. We decline to grant C-10's requested relief (which, given that the license

¹ *Emergency Petition by C-10 Research and Education Foundation for Exercise of Commission's Supervisory Authority to Reverse No Significant Hazards Determination and Immediately Suspend License Amendment and License Renewal Decisions* (Feb. 13, 2019) (Petition).

² *Id.* at 1-2.

amendment and renewed license have already been issued, we construe to include a request to stay those actions). C-10 largely raises concerns that could have been or are being considered through other avenues. C-10 is a party to the LAR proceeding where it has raised many of the issues included in this Petition, and C-10 had the opportunity to participate in the license renewal proceeding. C-10 also raises generic issues about how the agency is dealing with ASR, which have been or could be submitted as petitions for rulemaking.³ Finally, to the extent C-10 believes Seabrook is not currently safe to operate or is not complying with our regulations, C-10 may request enforcement action under 10 C.F.R. § 2.206. We believe that our established processes are adequate to address C-10's concerns.

I. BACKGROUND

We begin our discussion with a brief overview of the phenomenon of ASR, the investigation of ASR at Seabrook, and relevant licensing actions at Seabrook.⁴

A. ASR

ASR is one type of alkali-aggregate reaction that can degrade concrete structures.⁵ ASR is a slow chemical process in which alkalis, usually predominantly from the cement, react with certain reactive types of silica found in some common coarse aggregates in the presence

³ C-10 has filed a petition for rulemaking requesting that all licensees comply with American Concrete Institute (ACI) 349.3R and American Society for Testing and Material (ASTM) C856-11. CLI-18-4, 87 NRC 89, 104 (2018); Improved Identification Techniques Against Alkali-Silica Reaction Concrete Degradation at Nuclear Power Plants; Petition for Rulemaking; Notice of Docketing, and Request for Comment, 80 Fed. Reg. 1476 (Jan. 12, 2015). The petition is open, and the Staff has not initiated a rulemaking proceeding on this subject. See <https://www.nrc.gov/reading-rm/doc-collections/rulemaking-ruleforum/active/PetitionDetails.html?id=9> (last visited June 20, 2019).

⁴ See *also* CLI-18-4, 87 NRC at 90-93; LBP-17-7, 86 NRC 59, 68-71 (2017).

⁵ "Concrete Degradation by Alkali-Silica Reaction," NRC Information Notice 2011-20 (Nov. 18, 2011), at 2 (ADAMS accession no. ML112241029) (IN 2011-20).

of moisture.⁶ This reaction produces an alkali-silica gel that can absorb water and expand to cause micro-cracking of the concrete.⁷ Excessive expansion of the gel can lead to significant cracking that can change the mechanical properties of the concrete.⁸ ASR can be identified as a likely cause of degradation during visual inspection by the cracking pattern and the presence of alkali-silica gel.⁹ But ASR-induced degradation can only be confirmed by optical microscopy performed as part of petrographic examination of concrete core samples.¹⁰

ASR may impact the material properties of concrete, which could affect the load-bearing capacity of the structure.¹¹ Concrete expansion from ASR can also cause deformation of the structure and may lead to stresses due to internal or external resistance to expansion.¹² The resulting structural deformation can increase the load or demand on the structure, thereby affecting its structural performance.¹³

⁶ *Id.*

⁷ *Id.*

⁸ *Id.* Mechanical properties of concrete that can be affected by ASR include compressive strength, tensile strength, and modulus of elasticity.

⁹ *Id.*

¹⁰ *Id.*

¹¹ License Amendment Request 16-03 – Revise Current Licensing Basis to Adopt a Methodology for the Analysis of Seismic Category I Structures with Concrete Affected by Alkali-Silica Reaction (Aug. 1, 2016) (ML16216A250 (package)) (LAR), Encl. 7, NextEra Energy Seabrook’s Evaluation of the Proposed Change (Aug. 1, 2016), § 2.1 (ML16216A240) (non-proprietary version) (LAR Evaluation).

¹² *Id.*

¹³ *Id.*

B. Investigation of ASR at Seabrook

NextEra detected cracking typical of ASR in several seismic Category I structures at Seabrook in 2009.¹⁴ After a root cause investigation into the cracking, NextEra found that the original concrete mix used at Seabrook was susceptible to ASR.¹⁵ This susceptibility, exacerbated by groundwater intrusion during plant life,¹⁶ led to the development of ASR in several structures.¹⁷ In 2012, NextEra completed an interim assessment of the structural adequacy of ASR-impacted structures and concluded that the structures remained operable.¹⁸ But additional testing was necessary to confirm that these structures still meet original design requirements.¹⁹ NextEra commissioned MPR Associates, in collaboration with the Ferguson

¹⁴ *Id.* Seismic Category I structures include structures necessary to control the release of radioactive material or otherwise mitigate the consequences of an accident. See “Seismic Design Classification for Nuclear Power Plants,” Regulatory Guide 1.29, rev. 5 (July 2016), at 5 (ML16118A148) (Reg. Guide 1.29).

¹⁵ LAR Evaluation § 2.1. The ASTM testing standard used during Seabrook’s construction “has since been revised to caution that the specified aggregate test is not effective in identifying slow-reacting aggregate, and other ASTM testing standards have been issued to more reliably identify concrete mixtures to minimize the susceptibility to ASR.” *Id.* at 8 n.1 of 73 (unnumbered); see also Letter from Kevin T. Walsh, NextEra, to William Dean, NRC, “Seabrook Station, Response to Confirmatory Action Letter” (May 1, 2013) (ML13151A328) (Response to CAL), Encl. 1, “ASR Root Cause Evaluation Summary,” at 1 of 5 (unnumbered).

¹⁶ NextEra believes that the waterproof membrane was damaged during original installation or backfill activities allowing water intrusion, resulting in ASR problems. IN 2011-20 at 3; see also Response to CAL, Encl. 1, “ASR Root Cause Evaluation Summary,” at 2 of 5 (unnumbered). Groundwater has leaked into below grade structures at Seabrook since construction. Response to CAL, Encl. 1, “ASR Root Cause Evaluation Summary,” at 2 of 5 (unnumbered). Water intrusion was exacerbated by the abandonment of dewatering channels following construction. IN 2011-20 at 3.

¹⁷ IN 2011-20 at 3. According to the Staff, there are 26 seismic Category I structures at Seabrook that are or could be affected by ASR. LBP-17-7, 86 NRC at 78-79.

¹⁸ LAR Evaluation §§ 2.1.1, 3.2.1.

¹⁹ *Id.* § 2.1.1.

Structural Engineering Laboratory (FSEL) at the University of Texas at Austin, to conduct a large-scale test program.²⁰

C. Licensing Actions for Seabrook

Our regulations require, at a minimum, that nuclear power plant structures, systems, and components important to safety be designed to withstand the effects of earthquakes and other natural phenomena without loss of their ability to perform their safety functions.²¹ The seismic Category I structures must remain functional during a safe shutdown earthquake.²² The Updated Final Safety Analysis Report (UFSAR) for Seabrook addresses design requirements for seismic Category I structures. In August 2016, NextEra submitted a LAR related to ASR at Seabrook.²³ The proposed license amendment revised the UFSAR to include a method for incorporating the material effects and loads of ASR into the Seabrook design basis to ensure that structures impacted by ASR, including the containment building, continue to meet the design requirements specified in the original licensing basis.²⁴

²⁰ *Id.* § 3.2. In addition, according to NextEra, because the evaluations of structural impact must consider the reinforcement details of the affected structure, the impacts cannot be directly measured by testing unrestrained removed concrete core samples. Response to CAL, Encl. 2, “ASR Project Corrective Action Plan,” at 3 of 12 (unnumbered).

²¹ 10 C.F.R. pt. 50, app. A, criterion 2.

²² See Reg. Guide 1.29 at 5; 10 C.F.R. pt. 100, app. A, III(c).

²³ See LAR.

²⁴ LAR Evaluation § 2.1.1. Seismic Category I structures aside from the containment building were initially designed to comply with ACI 318-71, “Building Code Requirements for Reinforced Concrete,” and the containment building was originally designed according to section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. *Id.* §§ 1.0, 2.2. Neither of these standards includes methodology for analyzing structures affected by ASR. *Id.*

NextEra used the results from its large-scale test program and existing literature to develop the methodology in the LAR.²⁵ NextEra proposed several modifications to the design calculations in the UFSAR to account for the additional loads from ASR expansion.²⁶ These proposed changes update the licensing basis to set limits for allowable ASR expansion in seismic Category I structures and recommend criteria for monitoring future changes due to ASR expansion and related structural deformation.²⁷

In response to a notice of opportunity to request a hearing on the LAR, C-10 requested a hearing and submitted a petition to intervene.²⁸ The Board found that C-10 had standing to intervene and admitted one reformulated contention related to the representativeness of the large-scale test program to ASR at Seabrook.²⁹ We affirmed the Board's decision.³⁰ An evidentiary hearing on this matter is scheduled to be held in September 2019.³¹ C-10's instant

²⁵ *Id.* §§ 2.1.1, 3.2.1.

²⁶ *Id.*, Attach. 1, "Markup of UFSAR Pages" (non-proprietary version). "[T]he expansion effects from ASR have imposed an additional static load that was not accounted for in [the concrete structures'] original design." *Id.* § 1.0.

²⁷ *Id.* § 4.2; *see also id.* §§ 3.2.1, 3.5. Because the large-scale test program did not assess more advanced levels of ASR, "periodic monitoring of ASR at Seabrook is necessary to ensure that the conclusions of the large-scale test program remain valid and that the level of ASR does not exceed that considered under the test programs." *Id.* § 3.2.1.

²⁸ *C-10 Research and Education Foundation, Inc. Petition for Leave to Intervene: Nuclear Regulatory Commission Docket No. 50-443* (Apr. 10, 2017).

²⁹ LBP-17-7, 86 NRC at 127, 137. That contention is as follows: "The large-scale test program, undertaken for NextEra at the FSEL, has yielded data that are not 'representative' of the progression of ASR at Seabrook. As a result, the proposed monitoring, acceptance criteria, and inspection intervals are not adequate." *Id.* at 127. C-10 raises similar concerns in the instant petition about the representativeness of the test program. Petition at 2, 14.

³⁰ CLI-18-4, 87 NRC at 110.

³¹ Licensing Board Order (Scheduling Evidentiary Hearing) (Apr. 5, 2019) (unpublished).

petition raises issues encompassed by its admitted contention, as well as some that are beyond its scope.

Separately, in 2010, NextEra submitted an application to renew the operating license for Seabrook for an additional twenty years.³² The adjudicatory proceeding associated with the license renewal application was terminated in 2015, and no contentions related to ASR-induced concrete degradation were filed.³³ Earlier this year, the Staff announced its plan to issue the license amendment, a final no significant hazards consideration determination (NSHCD) on the amendment, and the renewed facility operating license in January 2019.³⁴ But in response to significant public interest, the Staff notified the Board and parties that it intended to hold a public meeting near the plant before issuing the amendment or the renewed license.³⁵ Shortly thereafter, C-10 filed the instant petition. The Staff issued the license amendment on March 11, 2019, and the renewed license the next day.³⁶

³² License Renewal Application, NextEra Energy Seabrook, LLC, et al., Docket No. 50-443, Seabrook Station, Unit No. 1, Facility Operating License No. NPF-86 (May 25, 2010) (ML101590098). Seabrook will enter its period of extended operation in 2030.

³³ See *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), CLI-16-3, 83 NRC 52, 52-54 (2016); *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), LBP-15-22, 82 NRC 49, 50 (2015); *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1), LBP-11-2, 73 NRC 28, 35 (2011).

³⁴ *NRC Staff's Answer to C-10's Emergency Petition* (Feb. 25, 2019), at 4 (Staff Answer).

³⁵ *Id.* (citing Letter from Anita Ghosh Naber, NRC Staff, to Atomic Safety and Licensing Board, NRC (Jan. 22, 2019)). The Staff held this public meeting on February 13, 2019. "U.S. Nuclear Regulatory Commission Public Meeting Summary, Public Meeting on the Seabrook Station, Unit No. 1, Alkali-Silica Reaction (ASR) License Amendment Request and License Renewal Application" (Feb. 26, 2019) (ML19046A383).

³⁶ See *NextEra Energy Seabrook, LLC; Seabrook Station, Unit No. 1; License Amendment*, 84 Fed. Reg. 9564 (Mar. 15, 2019); *NextEra Energy Seabrook, LLC; Seabrook Station, Unit No. 1; License Renewal and Record of Decision*, 84 Fed. Reg. 9563 (Mar. 15, 2019).

II. DISCUSSION

C-10 asks that we exercise our inherent supervisory authority to reverse the Staff's NSHCD related to NextEra's LAR and "take other appropriate actions in this proceeding to ensure adequate consideration and resolution of the seismic risk implications of ongoing and increasing [ASR]-related degradation in the Seabrook containment and other concrete safety structures."³⁷ C-10 requests that we review and reverse the Staff's NSHCD to allow the adjudicatory hearing on C-10's ASR contention to take place before action on the LAR.³⁸ C-10 also requests that we suspend the Staff's LAR and license renewal decisions, investigate best practices for assessing ASR, and provide guidance to the Staff for evaluating ASR-related safety risks at Seabrook and other reactors.³⁹ NextEra and the Staff oppose the Petition.⁴⁰

³⁷ Petition at 1-2.

³⁸ *Id.* at 16. Though the LAR has already been granted, we could stay its effectiveness.

³⁹ *Id.* at 4, 16.

⁴⁰ *NextEra's Answer Opposing C-10's Emergency Petition* (Feb. 25, 2019) (NextEra Answer); Staff Answer. C-10 moved for leave to reply to the NextEra Answer and the Staff Answer and submitted its proposed reply. *C-10 Research and Education Foundation's Motion for Leave to File Reply to Oppositions by NextEra and NRC Staff to Emergency Petition* (Mar. 1, 2019); *C-10 Research and Education Foundation's Reply to Oppositions by NextEra and NRC Staff to Emergency Petition for Exercise of Commission's Supervisory Authority to Reverse No Significant Hazards Determination and Immediately Suspend License Amendment and License Renewal Decisions* (Mar. 1, 2019) (C-10 Reply). NextEra opposed this motion. *NextEra's Answer Opposing C-10's Motion for Leave to File a Reply to Answers to C-10's Emergency Petition* (Mar. 5, 2019). We agree with NextEra that C-10 did not demonstrate compelling circumstances—for example, that it could not reasonably have anticipated the arguments to which it seeks leave to reply—to justify a reply. See 10 C.F.R. § 2.323(c) (providing that a moving party has no right to reply, except as permitted when compelling circumstances exist). Even if we were to treat the Petition as an application for a stay, C-10 would have no right to reply. *Id.* § 2.1213(c). Therefore, we deny C-10's motion for leave to file a reply. Nevertheless, we have reviewed the C-10 Reply and have determined that it would not affect our decision.

A. Request to Exercise Supervisory Authority to Review and Reverse the Staff's NSHCD

The Staff and NextEra presumed the Petition was filed pursuant to 10 C.F.R. § 2.323 but argued it was procedurally improper.⁴¹ We agree. Both the Atomic Energy Act of 1954, as amended (AEA), and our regulations contemplate the issuance of an amendment to a reactor license during the pendency of a hearing on the amendment, as long as the NRC has first determined that the amendment involves no significant hazards consideration.⁴² The Staff's decision on an amendment request and the NSHCD associated with the amendment are two distinct actions.⁴³ A decision on the amendment request here requires reasonable assurance of adequate protection of the health and safety of the public and the common defense and security, while a determination on the significant hazards consideration addresses whether a hearing must be held before—rather than after—issuance of an amendment.⁴⁴ If a proposed license amendment meets any of the three criteria listed in 10 C.F.R. § 50.92(c), a significant hazards consideration exists.⁴⁵ If a hearing on such a license amendment request is sought and granted, that hearing must take place before the Staff's action on the request.⁴⁶

⁴¹ Staff Answer at 1, 4-5; NextEra Answer at 2, 5-6. C-10 references 10 C.F.R. § 2.323(b) at the end of the Petition for the purpose of stating that it consulted with other parties, but C-10 does not assert that this regulation authorizes the Petition's filing. Petition at 17.

⁴² See AEA § 189a.(2)(A), 42 U.S.C. § 2239(a)(2)(A); 10 C.F.R. §§ 50.91(a)(4), 50.92.

⁴³ Final Procedures and Standards on No Significant Hazards Considerations; Final Rule, 51 Fed. Reg. 7744, 7749 (Mar. 6, 1986).

⁴⁴ See *id.*; 10 C.F.R. §§ 50.40, 50.92.

⁴⁵ To determine whether a significant hazards consideration exists, the Staff considers whether the proposed amendment would (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. 10 C.F.R. § 50.92(c).

⁴⁶ *Id.* § 50.91(a)(4).

C-10 asks us to review the Staff's NSHCD. Such a request is inconsistent with 10 C.F.R. § 50.58(b)(6), which states that "[n]o petition or other request for review of or hearing on the staff's significant hazards consideration determination will be entertained by the Commission. The staff's determination is final, subject only to the Commission's discretion, on its own initiative, to review the determination."⁴⁷ Further, while C-10 does not refer to its request for review of the Staff's NSHCD as an "application for a stay," C-10 is essentially asking for a stay of the Staff's action by requesting that the amendment not take effect until the hearing is complete. Under § 2.1213(f), however, "[s]tays are not available on matters limited to whether a no significant hazards consideration determination was proper in proceedings on power reactor license amendments."⁴⁸ Therefore, sections 50.58(b)(6) and 2.1213(f) each bar C-10 from requesting that we delay issuance of the license amendment until we have reviewed the Staff's NSHCD.

C-10 also essentially asks us to immediately stay the LAR and license renewal application decisions to ensure that the Staff does not issue the license amendment or the renewed license while we review the NSHCD.⁴⁹ With respect to the LAR, as explained above, such a request is prohibited by our regulations. With respect to the renewed license, C-10 did

⁴⁷ *Id.* § 50.58(b)(6). In accordance with NRC regulations, the Staff offered the public the opportunity to comment on the draft NSHCD. C-10 filed comments on the LAR (as opposed to the NSHCD), in which it raised some of the issues it raises in its Petition. Letter from Natalie Hildt Treat, C-10, to Cindy Bladey, NRC (Mar. 9, 2017) (ML17081A015) (C-10 Comments on LAR).

⁴⁸ 10 C.F.R. § 2.1213(f); *see also* Amendments to Adjudicatory Process Rules and Related Requirements; Final Rule, 77 Fed. Reg. 46,562, 46,580, 46,585 (Aug. 3, 2012) (explaining that section 50.58(b)(6) bars challenges to NSHCDs and exclusion of such challenges from the stay provisions is consistent with federal case law treating NSHCDs as final agency actions).

⁴⁹ Petition at 16.

not submit a motion to reopen that proceeding, which under Commission procedure would be a prerequisite to a request for a stay of the issuance of the license renewal.⁵⁰

We consider reopening the record to be an extraordinary action.⁵¹ To reopen a record, a petitioner must show that its motion was timely filed, concerns a significant safety or environmental issue, and demonstrates that a materially different result would be or would have been likely had the newly proffered evidence been considered initially.⁵² C-10 does not address these standards. C-10 also does not address the stay criteria of section 2.1213, pursuant to which we consider “(1) [w]hether the requestor will be irreparably injured unless a stay is granted; (2) [w]hether the requestor has made a strong showing that it is likely to prevail on the merits; (3) [w]hether the granting of a stay would harm other participants; and (4) [w]here the public interest lies.”⁵³ As C-10 does not demonstrate how these standards are met, we decline its request to stay the effectiveness of the renewed license.⁵⁴ We also note that, like the ASR

⁵⁰ The adjudicatory proceeding related to Seabrook’s license renewal has been closed since 2015. See *Seabrook*, CLI-16-3, 83 NRC at 54; *Seabrook*, LBP-15-22, 82 NRC at 50. C-10 did not seek to intervene in the license renewal proceeding. See *Seabrook*, LBP-11-2, 73 NRC at 34.

⁵¹ *Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-11-2, 73 NRC 333, 338 (2011) (citing Criteria for Reopening Records in Formal Licensing Proceedings; Final Rule, 51 Fed. Reg. 19,535, 19,538 (May 30, 1986)).

⁵² 10 C.F.R. § 2.326(a).

⁵³ *Id.* § 2.1213(d).

⁵⁴ An application for a stay must contain a statement of the grounds for a stay, with reference to the factors in section 2.1213(d). *Id.* § 2.1213(b)(2).

license amendment, the renewed license could be revoked or modified, if necessary, to reflect the outcome of the hearing process.⁵⁵

As C-10 acknowledges, it is asking us to exercise our discretionary authority in this matter.⁵⁶ In the past, we have exercised our discretionary authority to consider petitions similar to the one that C-10 has filed here.⁵⁷ We decline, however, to do so today. While we may exercise discretion to take review of a matter to address a novel or important issue, our decision to do so stems from our inherent supervisory authority over adjudications and “in no way implies that parties have a right to seek interlocutory review on that same ground.”⁵⁸ As discussed more fully below, we find no compelling reason to exercise our discretionary authority here.

Despite the designation of its filing as an “emergency petition,” C-10 does not demonstrate that there is an urgent safety matter that we must address. We understand that C-10 believes the license amendment does not adequately address the ASR-induced concrete degradation at Seabrook, but that is already the subject of an ongoing adjudicatory proceeding.

⁵⁵ See *Energy Nuclear Vermont Yankee, LLC, and Energy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-06-8, 63 NRC 235, 237-38 (2006); 10 C.F.R. §§ 2.340(a)(2)(ii), 54.31(c).

⁵⁶ Petition at 4-6.

⁵⁷ See, e.g., *Union Electric Co., d/b/a/ Ameren Missouri* (Callaway Plant, Unit 2), CLI-11-5, 74 NRC 141 (2011). After the accident at Fukushima Daiichi Nuclear Power Station following the 2011 earthquake and tsunami, we received a series of petitions to suspend adjudicatory, licensing, and rulemaking activities. *Id.* at 145-46. We noted then that “[t]he petitions do not fall neatly within our regulations—the sole provision explicitly authorizing stay applications is available only to parties to adjudicatory proceedings seeking stays of decisions or actions of a presiding officer pending the filing and resolution of a petition for review.” *Id.* at 158. Nevertheless, we exercised our inherent supervisory authority over agency proceedings to consider the requests, as we have previously in a number of proceedings, including following the September 11 terrorist attacks. *Id.*

⁵⁸ *Energy Nuclear Operations, Inc.* (Indian Point, Units 2 and 3), CLI-09-6, 69 NRC 128, 138 (2009) (quoting *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant), CLI-00-11, 51 NRC 297, 299 (2000)).

This amendment revises the UFSAR to reflect the occurrence of ASR at Seabrook, proposes a method for evaluation of ASR-affected structures, sets limits for allowable ASR expansion in seismic Category I structures, and proposes a method for monitoring ASR progression. But it does not change the original design basis, physical configuration, or method of operation of any plant structure, system, or component.⁵⁹ NextEra does not propose to take any irreversible actions in the LAR. C-10 does not address how the operation of the plant is less safe with the proposed monitoring and management than without them, and we do not see how such actions could make the plant less safe.

Nor does C-10 offer any analysis of the regulatory criteria for making an NSHCD or any response to the Staff's and NextEra's supporting bases for the determination.⁶⁰ We also note that C-10 did not submit comments on the proposed finding when it was published in the *Federal Register*.⁶¹ The Staff and the Advisory Committee on Reactor Safeguards (ACRS) have completed their reviews of the applications for the license amendment and license renewal, and both have found NextEra's programs addressing ASR to be acceptable.⁶² C-10

⁵⁹ See Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving Proposed No Significant Hazards Considerations and Containing Sensitive Unclassified Non-Safeguards Information and Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information, 82 Fed. Reg. 9601, 9604 (Feb. 7, 2017).

⁶⁰ See *id.*; LAR Evaluation § 4.2.

⁶¹ Petition at 12; Letter from Justin C. Poole, NRC, to Mano Nazar, NextEra (Mar. 11, 2019) (ML18204A291), Encl. 2, Non-Proprietary Safety Evaluation Related to Amendment No. 159 to Facility Operating License No. NPF-86, NextEra Energy Seabrook, LLC, Seabrook Station, Unit No. 1, Docket No. 50-443 (Mar. 11, 2019), § 5.0 (SER for LAR) (stating that no public comments were received on the proposed NSHCD). C-10 did file comments directed at the LAR itself in response to the *Federal Register* notice, but it did not challenge the Staff's NSHCD. See C-10 Comments on LAR.

⁶² SER for LAR § 7.0; Safety Evaluation Report Related to the License Renewal of Seabrook Station, Docket No. 50-443, NextEra Energy Seabrook, LLC (Jan. 2, 2019), § 1.5 at 1-9 (ML18362A370) (SER for License Renewal); Letter from Michael Corradini, Chairman, ACRS, to Kristine L. Svinicki, Chairman, NRC, "Seabrook Station Unit 1 License Renewal Application:

presents no convincing reason why an evidentiary hearing after the issuance of the license amendment will not provide effective redress. If, after the hearing, the Board determines that the license amendment should not have been granted, the amendment can be revoked or conditioned.⁶³ NextEra is correct that, if C-10 prevails on its contention, “the challenged monitoring activities, acceptance criteria, and inspection intervals can be adjusted at any point.”⁶⁴ And, as the Staff noted in the SER for the license renewal, any changes resulting from the review of the LAR will be reflected in the license renewal aging management programs.⁶⁵

C-10 cites *Yankee Rowe* to persuade us to take review because the instant case presents “unique” circumstances akin to the potential failure of the Yankee Rowe reactor vessel from a pressurized thermal shock.⁶⁶ While we do not dispute that ASR is a significant issue, the Staff is actively engaged in gaining an enhanced understanding of the phenomenon and developing agency strategies for addressing ASR-related degradation. If it appears that we need to step in and provide direction in the future, we will not hesitate to act. Additionally, some aspects of NextEra’s plan to address ASR-related concrete degradation are already pending before a Licensing Board, and C-10 is a party to that proceeding. We have explained in the past that we are more likely to take review when there will otherwise not be any further

Review of Licensee Program Addressing Alkali-Silica Reaction” (Dec. 14, 2018), at 1-2 (ML18348A951) (ACRS Letter).

⁶³ See, e.g., *Vermont Yankee*, CLI-06-8, 63 NRC at 238. The Board’s decision will also be subject to our appellate review.

⁶⁴ NextEra Answer at 18.

⁶⁵ SER for License Renewal § 3.0.3.3.6 at 3-228.

⁶⁶ Petition at 4-5 (citing *Yankee Atomic Electric Co. (Yankee Rowe Nuclear Power Station)*, CLI-91-11, 34 NRC 3 (1991)); see *Yankee Rowe*, CLI-91-11, 34 NRC at 5-6, 12 (electing to take a direct role in the emergency enforcement action related to pressure vessel requirements instead of delegating to the Staff).

Commission review.⁶⁷ Here, on the other hand, the Licensing Board will review the contention related to ASR, and we maintain our appellate role in that proceeding.

B. Open Inquiry into Best Practices for Assessing ASR and Providing ASR Guidance

C-10 next asks us to “[g]ive due recognition to the significance, complexity, and lack of adequately rigorous study of ASR by opening an in-depth inquiry into best practices for assessing ASR, including consideration of all relevant research and use of peer review by an internationally recognized independent panel.”⁶⁸ We deny C-10’s request to open an inquiry into the best practices related to ASR because such a generic request is beyond the scope of this licensing proceeding, and it is not appropriate in the adjudicatory context.⁶⁹ Moreover, to the extent C-10 asks us to provide guidance to the Staff on ASR because it does not think that the existing rules are adequate, C-10 presents a challenge to our existing regulations, which is impermissible in an adjudicatory proceeding.⁷⁰ If C-10 believes that new regulations need to be developed, then it may submit a petition for rulemaking pursuant to 10 C.F.R. § 2.802.⁷¹ And

⁶⁷ *Consolidated Edison Co. of New York, Inc.* (Indian Point, Units 1, 2, and 3), CLI-75-8, 2 NRC 173, 175 (1975).

⁶⁸ Petition at 16.

⁶⁹ Where a petitioner is dissatisfied with the Commission’s generic approach to a technical issue, the rulemaking process is more appropriate than the adjudicatory process. See *Duke Energy Corp.* (Oconee Nuclear Station, Units 1, 2, and 3), CLI-99-11, 49 NRC 328, 345 (1999) (noting that petitioners in a nuclear power plant license renewal proceeding who are dissatisfied with the agency’s generic approach to high-level waste storage determinations should use the rulemaking process).

⁷⁰ See Petition at 16 (requesting that the Commission provide guidance to the Staff to establish “significantly more rigorous and sophisticated state-of-the-art methods and criteria for evaluating safety risks posed by ASR at Seabrook and other reactors”); 10 C.F.R. § 2.335(a) (prohibiting challenges to a regulation in an adjudicatory proceeding absent a waiver of the regulation).

⁷¹ See Petition at 5 (“ASR was not contemplated in the NRC’s original regulatory scheme, and no regulations or guidance have been developed to address it.”).

C-10's request for NRC study and development of guidance is beyond the scope of this licensing proceeding.

We also observe that the relief that C-10 requests has largely been granted in the form of the Staff's active engagement in soliciting and reviewing research related to ASR-induced concrete degradation and its effects at nuclear power plants for several years.⁷² The Staff is likewise already engaged in developing agency strategies for addressing this phenomenon.⁷³ Further, the NRC regularly seeks independent, expert advice on a variety of matters—including

⁷² See generally Staff Answer at 13-16 (citing "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants" (Final Report), NUREG-2192 (July 2017), §§ 3.5.3.2.1.8, 3.5.3.2.2.1, 3.5.3.2.2.3 (ML17188A158); Interagency Agreement between the NRC and the National Institute of Standards and Technology (NIST), "Structural Performance of Nuclear Power Plant (NPP) Concrete Structures Affected by Alkali-Silica Reaction (ASR)," NRC-HQ-60-14-I-0004 (Mar. 31, 2014) (ML14147A221) (NIST Interagency Agreement); Grant No. NRC-HQ-60-14-G-0010, "Experimental and Numerical Investigation of Alkali Silica Reaction in Nuclear Reactors" (Sept. 30, 2014) (ML14274A265); Grant No. NRC-HQ-60-14-G-0003, "Service Lifetime Extension of Nuclear Power Plants: Prediction of Concrete Aging and Deterioration Through Accelerated Tests, Nondestructive Evaluation, and Stochastic Multiscale Computations" (Sept. 30, 2014) (ML14275A015); IN 2011-20).

In addition, the NRC is participating in research with the Nuclear Energy Agency and the Institut de Radioprotection et de Sûreté Nucléaire (IRSN) in France. See NRC Regulatory Information Conference 2018, Technical Session, "Concrete Degradation Part I: Perspectives on Alkali-Silica Reaction Effects on the Structural Capacity of Nuclear Concrete Structures" (Mar. 15, 2018) (<https://www.nrc.gov/public-involve/conference-symposia/ric/past/2018/docs/abstracts/sessionabstract-31.html>). The Staff organized this session to explore international research and perspectives on ASR at nuclear facilities. Speakers presented research being conducted at or sponsored by NIST, IRSN, the U.S. Department of Energy and the Electric Power Research Institute, Northwestern University, and the Canadian Nuclear Safety Commission. *Id.* The NRC plans to use the results of the domestic research and the international studies to further its understanding of ASR. Staff Answer at 15-16; see "Research Activities FY 2018-2020," NUREG-1925, rev. 4 (Mar. 2018), at 144 (ML18071A139).

⁷³ The NRC has entered into an interagency agreement with NIST, with one goal being to improve the Staff's understanding of the effects of ASR on concrete structures in nuclear power plants. See NIST Interagency Agreement, Attach. 1, Statement of Work, at 2-3.

NextEra's LAR—via the ACRS.⁷⁴ And as the Staff notes, it has used an expert panel to identify knowledge gap areas regarding the aging mechanisms of concrete structures for subsequent license renewal to eighty years.⁷⁵ The report produced by the panel identified ASR as one of the five degradation modes to potentially affect the concrete containment, identified potential gaps in knowledge about ASR, and prioritized research areas related to ASR.⁷⁶ Based on the varied ASR-related research activities that the Staff has conducted and sponsored and in which it has otherwise participated, we find that the NRC is already engaged in activities and research similar to what C-10 seeks.

C. Review of Staff's Determination That Seabrook Can Be Operated Safely

Finally, C-10 claims that the operation of Seabrook poses a risk to the public based on "the absence of an adequate analysis of the containment's ability to withstand a design basis earthquake."⁷⁷ Arguably, the Petition could be construed as a request to suspend operations at Seabrook.⁷⁸ If C-10 seeks to challenge the ongoing operation of Seabrook, it may file a petition seeking enforcement action under 10 C.F.R. § 2.206. We note that the agency established the

⁷⁴ See ACRS Letter. The ACRS operates independently of the NRC Staff and reports directly to the Commission. AEA § 29, 42 U.S.C. § 2039. The operational practices of the ACRS are governed by the provisions of the Federal Advisory Committee Act. See Advisory Committee on Reactor Safeguards; Charter Renewal, 83 Fed. Reg. 63,544, 63,544-45 (Dec. 10, 2018). Advisory committees are structured to provide a forum where experts representing many technical perspectives can provide independent advice that is factored into an agency's decisionmaking process.

⁷⁵ Staff Answer at 16 (citing "Expanded Materials Degradation Assessment (EDMA), Vol. 4: Aging of Concrete and Civil Structures," NUREG/CR-7153 (Oct. 2014) (ML14279A430) (NUREG/CR-7153)).

⁷⁶ NUREG/CR-7153 at iii-iv. We note that the panel included Dr. Saouma, C-10's expert.

⁷⁷ Petition at 6.

⁷⁸ See *id.* at 2, 3, 6; see also C-10 Reply at 8 (citing *Reply Declaration of Victor E. Saouma, Ph.D* (Mar. 1, 2019) ¶ 9).

Seabrook ASR Issue Technical Team in 2012 to ensure that all aspects of the ASR issue were coordinated among the Staff,⁷⁹ and that the Staff has conducted focused ASR inspections with specialist inspectors approximately every six months as part of the Reactor Oversight Process baseline inspection program since 2013.⁸⁰ Insofar as C-10 disputes the adequacy of NextEra's ASR license amendment, the Board will resolve that contention, and we maintain our appellate role. C-10 has not demonstrated why these existing processes are insufficient to address its concerns. Therefore, based on the available enforcement processes, the upcoming hearing before the Board, and the Staff's ongoing monitoring of operations at Seabrook, we decline to address C-10's claims in the context of an emergency adjudicatory proceeding.

III. CONCLUSION

For the foregoing reasons, we *deny* C-10's requests for relief in its Petition.

IT IS SO ORDERED.

For the Commission

NRC Seal

/RA/

Russell E. Chazell
Acting Secretary of the Commission

Dated at Rockville, Maryland,
this 25th day of July 2019.

⁷⁹ Memorandum from Eric J. Leeds, Director, Office of Nuclear Reactor Regulation, NRC, and William M. Dean, Regional Administrator, Region I, NRC, "Seabrook Alkali-Silica Reaction Issue Technical Team Charter" (July 9, 2012) (ML121250588).

⁸⁰ See Memorandum from William M. Dean, Regional Administrator, Region I, NRC, to R.W. Borchardt, Executive Director for Operations, NRC, "Request for Deviation from the Reactor Oversight Process Action Matrix to Provide Increased Oversight of the Alkali-Silica Reaction Issue at Seabrook" (Sept. 5, 2012) (ML12242A370); NRC, Special NRC Oversight at Seabrook Nuclear Power Plant: Concrete Degradation, <https://www.nrc.gov/reactors/operating/ops-experience/concrete-degradation.html#cal> (last visited June 20, 2019).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
NEXTERA ENERGY SEABROOK, LLC) Docket No. 50-443-LA-2
(Seabrook Station, Unit 1))
)
(License Amendment))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **Commission Memorandum and Order (CLI-19-07)** have been served upon the following persons by Electronic Information Exchange.

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Commission Memorandum and Order (CLI-19-07)**

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Dated at Rockville, Maryland,
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