UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 16, 2017

Mr. Robert Coffey
Site Vice President
NextEra Energy Point Beach, LLC
6610 Nuclear Road,
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 – STAFF REVIEW OF MITIGATING STRATEGIES ASSESSMENT REPORT OF THE IMPACT OF THE REEVALUATED SEISMIC HAZARD DEVELOPED IN RESPONSE TO THE MARCH 12, 2012, 50.54(f) LETTER (CAC NOS. MF7863 AND MF7864; EPID L-2016-JLD-0006)

Dear Mr. Coffey:

The purpose of this letter is to provide the U.S. Nuclear Regulatory Commission's (NRC) assessment of the seismic hazard mitigating strategies assessment (MSA), as described in the August 17, 2017, letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17229B210), submitted by NextEra Energy Point Beach, LLC (NextEra, the licensee) for Point Beach Nuclear Plant, Units 1 and 2 (PBNP). The NRC staff evaluated the PBNP strategies developed under Order EA-12-049 and described in NextEra's Final Integrated Plan (FIP) (ADAMS Accession No. ML15350A085). The staff's review of PBNP's mitigating strategies was documented in a safety evaluation dated September 23, 2016 (ADAMS Accession No. ML16241A000). The purpose of the safety evaluation is to ensure that the licensee has developed guidance and proposed designs which, if implemented appropriately, should adequately address the requirements of Order EA-12-049. An inspection confirmed compliance with the order and is documented in a report dated June 16, 2017 (ADAMS Accession No. ML17170A097). The following NRC staff review confirms that the licensee has adequately addressed the reevaluated seismic hazard within PBNP's mitigation strategies for beyond-design-basis external events.

BACKGROUND

By letter dated March 12, 2012 (ADAMS Accession No. ML12053A340), the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) (hereafter referred to as the 50.54(f) letter). The 50.54(f) letter was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 1 to the 50.54(f) letter requested that licensees reevaluate the seismic hazard using present-day methodologies and guidance.

Concurrent with the reevaluation of seismic hazards, the NRC issued Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A736). The order requires holders of operating power reactor licenses and construction permits issued under 10 CFR Part 50 to develop, implement, and maintain guidance and strategies to maintain or restore

core cooling, containment, and spent fuel pool cooling following a beyond-design-basis external event. In order to proceed with the implementation of Order EA-12-049, licensees used the current design basis flood and seismic hazard or the most recent flood and seismic hazard information, which may not be based on present-day methodologies and guidance, in developing their mitigation strategies.

On December 10, 2015 (ADAMS Accession No. ML16005A621), the Nuclear Energy Institute (NEI) submitted Revision 2 to NEI 12-06, including guidance for conducting MSAs using the reevaluated hazard information. The NRC endorsed NEI 12-06, Revision 2, with exceptions, clarifications, and additions, in Japan Lessons-Learned Division (JLD) interim staff guidance (ISG) JLD-ISG-2012-01, Revision 1, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML15357A163).

MITIGATION STRATEGIES ASSESSMENT

By letter dated August 3, 2015 (ADAMS Accession No. ML15211A593), the NRC staff documented its review of the licensee's reevaluated seismic hazard, also referred to as the mitigation strategies seismic hazard information (MSSHI). The staff found that the PBNP Ground Motion Response Spectrum (GMRS) exceeds the safe shutdown earthquake (SSE) in the 3 to 100 Hertz (Hz) range. However, based on the NRC staff's comparison of the GMRS to the SSE and the review of additional hazard and risk information as documented in NRC staff letter dated October 27, 2015 (ADAMS Accession No. ML15194A015), the NRC staff concluded that a seismic risk evaluation was not merited for PBNP. Because the GMRS exceeds the SSE above 10 Hz, a high frequency (HF) confirmation is merited. In addition, the staff concluded that the GMRS determined by the licensee adequately characterizes the reevaluated seismic hazard for the PBNP site.

By letter dated August 2, 2017 (ADAMS Accession No. ML17214A268), NextEra submitted a HF confirmation report for PBNP. By letter dated August 21, 2017 (ADAMS Accession No. ML17229B187), the NRC staff concluded, based on its review, that the licensee correctly implemented the guidance in conducting the HF confirmation for PBNP. Almost all evaluated components demonstrated adequate seismic capacity and few component modifications were required based on the HF confirmation.

By letter dated August 17, 2017 (ADAMS Accession No. ML17229B210), NextEra submitted the seismic MSA report for PBNP. The licensee stated that the PBNP MSA was performed consistent with Appendix H of NEI 12-06, Revision 2, which describes acceptable methods for demonstrating that the reevaluated seismic hazard is addressed within the PBNP mitigation strategies for beyond-design-basis external events. Guidance document NEI 12-06, Revision 2 was endorsed by NRC staff document JLD-ISG-2012-01, Revision 1. Therefore, the methodology used by the licensee is acceptable to perform an assessment of the mitigation strategies that addresses the reevaluated seismic hazard.

The NRC staff performed checklist reviews of the seismic hazard MSA for PBNP. The checklists are provided as attachments to this letter. The NRC staff found that PBNP met the intent of the guidance. The staff did not identify any deficiencies. All evaluated components demonstrated adequate seismic capacity and no component modifications were required.

The NRC staff completed its review of the seismic hazard MSA for PBNP and concluded that sufficient information has been provided to demonstrate that the licensee's plans for the

development and implementation of guidance and strategies under Order EA-12-049 appropriately address the reevaluated seismic hazard information stemming from the 50.54(f) letter.

If you have any questions, please contact me at (301)415-2864 or via e-mail at Milton.Valentin@nrc.gov.

Sincerely,

Milton Valentín, Project Manager
Beyond-Design-Basis Management Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure:
Technical Review Checklist

cc w/encl: Distribution via Listserv

TECHNICAL REVIEW CHECKLIST
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO PATH FOUR MITIGATING STRATEGY ASSESSMENT
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-266 AND 50-301

The NRC staff performed the following checklist review based on the Enclosure of the August 17, 2017, letter (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17229B210) for Point Beach Nuclear Plant, Units 1 and 2 (PBNP). Deviations, deficiencies, and conclusions are noted at the end of each section and an overall conclusion is provided at the end of the checklist.

I. Background and Assessment to Mitigation Strategies Seismic Hazard Assessment (MSSHI)

This section establishes basic background and assessment to MSSHI criteria in Nuclear Energy Institute (NEI) 12-06, Appendix H.	
Licensee approach to mitigating strategies assessment (MSA):	
Was the MSA conducted in accordance with NEI 12-06, Revision 2 as endorsed by the staff?	Yes / ~~No~~
Was the MSA conducted using an alternate method?	~~Yes~~ / No
Status of Order EA-12-049 Flexible Mitigation Strategy at the time of this review:	
Has the licensee submitted a Final Integrated Plan?	Yes / ~~No~~
Has the NRC staff completed a safety evaluation for the mitigation strategy?	Yes / ~~No~~
Has the NRC staff confirmed compliance with Order EA-12-049 by successfully completing the temporary instruction (TI)-191 inspection?	Yes / ~~No~~
Status of MSSHI:	
Did the licensee use the Ground Motion Response Spectra (GMRS) and Uniform Hazard Response Spectra (UHRS) as submitted in response to the 50.54(f) request for information and reviewed by the NRC staff?	Yes / ~~No~~

Has the plant equipment relied on for FLEX strategies previously been evaluated as seismically robust to the plant safe shutdown earthquake (SSE) levels?	Yes / ~~No / NA~~
Is the maximum ratio of GMRS/SSE in the range of 1-10 Hertz (Hz) less than 2?	Yes / ~~No~~
Did the licensee meet the seismic evaluation criteria described in NEI 12-06, Section H.5?	Yes / ~~No~~
Notes from staff reviewer: The GMRS/SSE ratio is about 1.85. This meets the criteria of NEI 12-06, Appendix H.5. Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	
The NRC staff concludes: • The licensee meets the background and assessment to MSSHI criteria in NEI 12-06, Appendix H.	Yes / ~~No~~

II. Expedited Seismic Evaluation Process (ESEP) Equipment

Equipment used in support of the FLEX strategies has been evaluated to demonstrate seismic adequacy following the guidance in Section 5 of NEI 12-06. As stated in Appendix H of NEI 12-06, previous seismic evaluations should be credited to the extent that they apply for the assessment of the MSSHI, including the ESEP evaluations performed in accordance with Electric Power Research Institute 3002000704. Licensees may reference a previous ESEP submittal, submit a new or updated ESEP report, or provide other adequate justification or evaluation.	
Did the licensee previously perform an ESEP?	Yes / ~~No~~
Did the licensee provide a new or updated ESEP report with the MSA?	~~Yes~~ / No
If the licensee did not perform ESEP, did they provide adequate justification that the expedited seismic equipment list structures, systems, and components (SSCs) are acceptable	~~Yes / No~~ / NA

in accordance with the original guidance and in accordance with NEI 12-06 Section H.5 $C_{10\%}$ capacity criteria? If the licensee did not perform the ESEP, did they perform an evaluation consistent with the guidance in NEI 12-06, Section H.4.4, Steps 2 and 3, including the evaluation of FLEX components that were not previously evaluated to GMRS or 2 times the SSE?	~~Yes / No~~ / NA
Notes from staff reviewer: By letter dated July 29, 2015 (ADAMS Accession No. ML15209A657), the NRC staff stated that NextEra followed the ESEP guidance given the completion of regulatory commitments made in the PBNP ESEP report. In its letter dated January 10, 2017 (ADAMS Accession No. ML17010A227), the licensee reported completion of these regulatory requirements. Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	
The NRC staff concludes: • The licensee has evaluated seismic adequacy of equipment used in support of FLEX strategy consistent with the NEI 12-06, Appendix H guidance.	Yes / ~~No~~

III. Inherently / Sufficiently Rugged Equipment

Appendix H, Section 4.4 of NEI 12-06, Revision 2 documents the process and justification for inherently and sufficiently rugged SSCs. The licensee: Documented the inherently and sufficiently rugged SSCs consistent with the NEI 12-06 Appendix H guidance.	Yes / ~~No~~
Notes from staff reviewer: None Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	

The NRC staff concludes: • The licensee's assessment of inherently and sufficiently rugged SSCs met the intent of the NEI 12-06, Appendix H guidance.	Yes / ~~No~~

IV. Evaluation of Components Not Covered by ESEP

The ESEP specifically excluded the evaluation of certain components of the FLEX strategy in an effort to provide stakeholders with near-term confidence in a plant's seismic capacity. However, licensees will be required to complete those evaluations as part of the Path 4 MSA to demonstrate compliance with the impending rule. Were the following components, not evaluated in the ESEP, evaluated as part of the MSA? :	
• FLEX Storage Building	Yes / ~~No~~
• Non-seismic CAT I structures	Yes / ~~No / NA~~
• Operator Pathways credited in FLEX strategy	Yes / ~~No~~
• Tie down of FLEX portable equipment	Yes / ~~No~~
• Seismic interactions	
o Masonry block wall	Yes / ~~No~~
o Piping attached to tanks	Yes / ~~No~~
o Flooding from non-seismically robust tanks	Yes / ~~No~~
o Distributed systems (Piping/conduit/raceways/cable trays)	Yes / ~~No~~
o Other potential areas of interaction	Yes / ~~No~~
• FLEX equipment haul paths	Yes / ~~No~~
• Other equipment (list in Staff Reviewer Notes)	~~Yes~~ / No / ~~NA~~
Did the licensee provide adequate description/documentation of the evaluation?	Yes / ~~No~~

Notes from staff reviewer: The licensee stated that FLEX items not included in the ESEP were evaluated and qualified for the PBNP MSSHI. The licensee stated to have performed analyses (Calculations 16Q0396-CAL-001, 16Q0396-RPT-001, and 16Q0396-RPT-003) in accordance with NEI 12-06 Section H and concluded that these

items have adequate protection or capacities. Also, the licensee stated that liquefaction is highly unlikely. In addition, in its letter dated January 10, 2017 (ADAMS Accession No. ML17010A227), the licensee reported completion of modifications to masonry walls and anchorage identified during the ESEP to enhance its seismic capacity. Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	
The NRC staff concludes: • The licensee followed the NEI 12-06, Appendix H guidance in evaluating SSCs not deemed inherently rugged.	Yes / ~~No~~

V. Spent Fuel Pool (SFP) Cooling

Per NEI 12-06, Appendix H, Section 4.4, licensees need to evaluate the adequacy of SFP cooling equipment to the GMRS. Most plants include the Order EA-12-051 SFP Level Instrument as part of the strategy. The licensee:	
• Clearly identified the SSCs and locations of the equipment that is part of the final FLEX SFP cooling strategy.	Yes / ~~No~~
• Clearly stated the seismic design-basis (e.g. SSE) of the equipment used in the strategy.	Yes / ~~No~~
• Provided adequate description or documentation of the SFP cooling equipment's evaluation to the GMRS. Portable equipment and flexible hoses do not need to be evaluated.	Yes / ~~No~~
Notes from staff reviewer: The NRC staff confirmed that the SFP cooling equipment described in the licensee's FIP was reevaluated to the GMRS in Document 16Q0396-RPT-003. The NRC staff reviewed the calculation and confirmed that it meets the guidance in NEI 12-06, Appendix H, Section 4.4. Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	

The NRC staff concludes: • The licensee followed the NEI 12-06, Appendix H guidance in evaluating SFP cooling.	Yes / ~~No~~

VI. High Frequency (HF)

Per NEI 12-06, Appendix H, Section 4.4, licensees with GMRS exceedance of the SSE above 10 Hz need to evaluate bi-stable components such as relays using the methodology described in NEI 12-06, Section H.4.2. The HF evaluation may have been submitted under separate letter or may be sent as an attachment to the MSA Report. The staff review checklist is included as an attachment to this report. The licensee: • GMRS exceeds the SSE above 10 Hz. • Provided a HF evaluation as described in NEI 12-06, Section H.4.2. • Appeared to follow the guidance for the HF evaluation. • Provided results of demand vs. capacity with identification of resolutions as needed.	 Yes / ~~No~~ Yes / ~~No / NA~~ Yes / ~~No / NA~~ Yes / ~~No / NA~~
Notes from staff reviewer: The NRC staff confirmed that about 14 components were identified for HF evaluation as documented in Document 16Q0396-RPT-002. The licensee stated that these components have adequate capacity. No modifications were required. Deviation(s) or deficiency(ies) and Resolution: None Consequence(s): None	
The NRC staff concludes: • The licensee's component capacity evaluation met the intent of the HF guidance.	Yes / ~~No~~

VII. Conclusions:

The NRC staff assessed the licensee's implementation of the MSA guidance for PBNP. Based on its review, the NRC staff concludes that the licensee's implementation of the MSA meets the intent of the guidance. The staff concludes that through the implementation of the MSA guidance, the licensee identified and evaluated the seismic capacity of the mitigating strategies equipment to ensure functionality will be maintained following a seismic event up to the GMRS. As noted in the review checklist, the staff identified no deviations and no exceptions taken from the guidance. The licensee did not identify any necessary equipment modifications or changes to the strategy.

In summary, the NRC staff has reviewed the seismic hazard MSA for PBNP. The NRC staff concludes that sufficient information has been provided to demonstrate that the licensee's plans for the development and implementation of guidance and strategies under Order EA-12-049 appropriately address the reevaluated seismic hazard information stemming from the 50.54(f) letter.

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 – STAFF REVIEW OF MITIGATING STRATEGIES ASSESSMENT REPORT OF THE IMPACT OF THE RE-EVALUATED SEISMIC HAZARD DEVELOPED IN RESPONSE TO THE MARCH 12, 2012, 50.54(f) LETTER (CAC NOS. MF7863 AND MF7864; EPID L-2016-JLD-0006) DATED November 16, 2017

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