Congress of the United States
Washington, DC 20510

December 18, 2013

The Honorable Allison Macfarlane
Chairman
Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Dear Chairman Macfarlane:

We write to strongly recommend that the Nuclear Regulatory Commission (NRC) make no decision on the June 1, 2010 request[1] made by NextEra Energy Seabrook, the licensee for the Seabrook nuclear power plant, for a twenty year operating license that would begin in 2030 and end in 2050, until the concrete degradation Seabrook is experiencing is fully tested, well understood, and remedied by way of an amendment to NextEra's current operating license.

In 2009, cracking in the concrete of some of the safety-related structures at the Seabrook nuclear power plant was found, a phenomenon later determined to be alkali silica reaction (ASR) caused when groundwater seeped below the plant. This was the first time that ASR was ever documented in a U.S. nuclear reactor. Although testing and monitoring of the problem has been undertaken since then, it seems unlikely that the tests or models currently being utilized can be applied to Seabrook in a manner that would enable the licensee to predict any future impacts of ASR.

In fact, it appears that *no* tests or models currently exist that could enable the licensee to make such a prediction. A Summer, 2013 report[2] prepared by the National Institute of Standards and Technology and the American National Standards Institute entitled "Codes and Standards for the Repair of Nuclear Power Plant Concrete Structures: Recommendations for Future Development" uses the example of ASR at Seabrook to conclude that research in the area has been done, "but it has not reached a level that would allow the repair and prediction of service life. A combination of measurement techniques and models is necessary to be able to monitor the progression of any ASR and to predict the remaining service life before and after any repair. Protocols for the selection of repair materials and monitoring also need to be developed."

It is also our understanding that some of the ASR testing currently underway at the University of Texas (UT) for NextEra has yielded some disturbing and unexpected results. While NextEra has decided it would track cracking on the surface of concrete structures[3] as its means

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[1] http://www.nrc.gov/reactors/operating/licensing/renewal/applications/seabrook.html

[2] http://publicaa.ansi.org/sites/apdl/Documents/Meetings%20and%20Events/NESCC/NESCC-13-084-Codes-and-Standards-for-the-Repair-of-Nuclear-Power-Plant.pdf

[3] See for example page 14 of http://pbadupws.nrc.gov/docs/ML1315/ML13151A328.pdf

for tracking the progression of ASR, the tests performed by UT on the sort of steel-reinforced structures that exist at Seabrook showed that even when evidence of surface cracking is not present, severe ASR and structural damage on the interior of the structures that would not have been predicted using NextEra's proxy method still was found to exist.

If the aging-related safety concerns associated with nuclear power plants were fully understood and addressed, that could be one of several factors accounted for when considering whether to allow the Seabrook nuclear power plant to operate until the year 2050. But that is clearly not the case when it comes to ASR, and as such it is simply not possible to conclude that the reactor can be safely operated between the years 2030-50. Consequently, we ask that you affirm that you will make no decision on the request by NextEra to extend its operating license at least until a) the University of Texas completes its analysis, obtains an independent peer review thereof, and submits both the analysis and peer review to the Commission, and b) NextEra seeks and obtains a license amendment to its existing operating license demonstrating that it will incorporate mitigation measures as well as in-situ measurement, techniques and models that are shown to be able to monitor the progression of any ASR and to predict the remaining service life before and after any repair.

Sincerely,

Edward J. Markey
United States Senator

Elizabeth Warren
United States Senator

John F. Tierney
Member of Congress

James P. McGovern
Member of Congress

Stephen F. Lynch
Member of Congress

William R. Keating
Member of Congress

Niki Tsongas
Member of Congress

Joseph P. Kennedy III
Member of Congress