NEXTera ENERGY SEABROOK

October 27, 2011

SBK-L-11218
Docket No. 50-443

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Seabrook Station
NextEra Energy Seabrook Comments on NUREG-1437 Supplement 46
Seabrook Station Draft Supplemental Environmental Impact Statement

References:

1. NextEra Energy Seabrook, LLC letter SBK-L-10077, "Seabrook Station Application for Renewed Operating License," May 25, 2010. (Accession Number ML101590099)

2. NRC Generic Environmental Impact Statement for License Renewal of Nuclear Plants, NUREG-1437 Supplement 46 regarding Seabrook Station Draft Report for Comment, July 2011 (Accession Number ML11221A392)

In Reference 1, NextEra Energy Seabrook, LLC (NextEra) submitted an application for a renewed facility operating license for Seabrook Station for Seabrook Station Unit 1 in accordance with the Code of Federal Regulations, Title 10, Parts 50, 51, and 54.

In Reference 2, the NRC issued for comment, a Draft Supplemental Environmental Impact Statement for Seabrook Station *(SEIS)* as Supplement 46 of NUREG-1437, *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. The Enclosure contains the NextEra comments to the NRC regarding the draft SEIS. No new or revised commitments are made in this submittal.

If there are any questions or additional information is needed, please contact Mr. Richard R.Cliche, License Renewal Project Manager, at (603) 773-7003.

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If you have any questions regarding this correspondence, please contact Mr. Michael O'Keefe, Licensing Manager, at (603) 773-7745.

Sincerely,

NextEra Energy Seabrook, LLC.

Paul O. Freeman
Site Vice President

Enclosure

cc:

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Enclosure to SBK-L-11218

NextEra Energy Seabrook Comments
Draft Supplemental Environmental Impact Statement for Seabrook Station *(DSEIS)*

NUREG-1437: Supplement 46
Generic Environmental Impact Statement for License Renewal of Nuclear Plants.

NextEra has completed a review of the Draft SEIS and generally finds the statements and conclusions clear and accurate with the exceptions noted below. As part of this review, NextEra analyzed conclusions of impact reached by the SEIS which differed from NextEra in the License Renewal Application Submittal (Reference 1). As part of this review NextEra solicited comments from our aquatic contractor Normandeau Associates. Comments from Normandeau Associates and associated analysis are provided in response to these differences for consideration by the NRC.

NextEra Energy Comments on Draft SEIS

General

Page xviii Abbreviations and Acronyms

EMS should be Environmental Management System

Page 2-8 Lines 22 - 25:

Under NHDES Hazardous Waste rules, Seabrook Station is classified as a Full Quantity Generator of hazardous waste in that it generate greater than 100 kg (220 lbs) of hazardous waste in any single calendar month. Under federal rules Seabrook Station is a Small Quantity Generator of hazardous waste which is greater than 100 kg but less than 1000 kg in any month.

Page 2-8 Line 32:

Should read: National Pollutant Discharge Elimination System Permit.

Page 2-17 Line 26:

Should read: Groundwater is removed from building dewatering points for dewatering and tritium plume control.

Page 2-18 Line 25:

Add: The US Coast Guard established a security zone around Seabrook Station in 2002 requiring access restriction signage along the banks of the Browns River and Hunts Island Creek.

Page 9-1 Lines 30 - 40:

The recommended mitigation is applicable to PSNH and National Grid and beyond the control of NextEra Energy Seabrook.

Tritium

Page 2-30 Line 30
Page 4-59 Line 17
Page A-10 Line 44

These three sections each state that onsite tritium remains above EPA's 20,000pCi/L standard. This statement does not accurately and clearly convey that there has never been a groundwater sample from a groundwater monitoring well at Seabrook that exceeded 20,000pCi/L. (Reference ER Section 2.3.2 Ground Water Monitoring Program).

The readings that exceeded 20,000pCi/L to which the Draft SEIS referred are monitoring locations within plant buildings associated with plant dewatering systems, specifically the Primary Auxiliary Building and Containment Ventilation Enclosure Area (Reference LRA-ER §2.3.3.1), which were installed to create a cone of depression to provide hydraulic containment. Since February 2011, these readings have trended below 20,000pCi/L and therefore the statement "*While onsite tritium remains above EPA's 20,000 pCi/L standard at one location by Unit 1...*" is no longer accurate as shown by the following table.

Table: Tritium Concentrations at Plant Dewatering Points

Date	PAB 7'	EFW	RHR	B Elect	CEVA
	Tritium	Tritium	Tritium	Tritium	Annulus H-3
	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)
12/31/2009	1660				
1/20/2010	1170	576	582	580	14800
2/5/2010	1720				4240
2/23/2010	4020		582		7110
2/24/2010		553		558	
3/24/2010	4910	624		560	5700
3/25/2010			2310		
4/23/2010	298000	583	2680	586	19300
4/24/2010	63700				
4/25/2010	63300				
4/26/2010	57100				
4/29/2010	32300		1100		6170
5/3/2010	9700		595		9420
5/19/2010	9110	615	696		
5/20/2010				557	
5/21/2010	5710				9460
6/16/2010	4310	550	556	557	
7/21/2010	5460	810	577	591	8460
8/19/2010	5090	582	582	592	5180
9/14/2010		557			
9/22/2010		557			
10/20/2010	2750	577	580	586	5690
11/24/2010	2180	555	556	666	15100
12/23/2010	1970	577	572	580	59600
1/19/2011	2410	577	549	553	50000
2/23/2011	3720		580		11300

Date	PAB 7'	EFW	RHR	B Elect	CEVA
	Tritium	Tritium	Tritium	Tritium	Annulus H-3
	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)	(pCi/L)
3/25/2011				553	
3/26/2011	4240		582		7760
4/21/2011			556		5880
4/23/2011				800	
4/25/2011					
5/18/2011	3440		522		5300
5/20/2011				537	
6/22/2011	2400		537	541	
6/23/2011					2370
7/20/2011			538	562	2150
8/17/2011				514	
8/24/2011					2340
8/26/2011	2080		538		
9/21/2011	2060		527	592	2500

Page 4-59 Line 23
Page A-11 Line 5

As noted above, there has never been a ground water sample at Seabrook that has exceeded 20,000pCi/L. Recommend changing the sentence as follows:

Groundwater samples from ***all*** ~~several~~ ground water monitoring wells ***have remained*** ~~are~~ well below 20,000 pCi/L and are not expected to impact human or biota receptors.

Effluent Releases

Page 4-46 Lines 5 – 25

Exponents listed should be should be negative " – " e.g. 8.17 v 10^{-4} mrem

Aquatic Impacts

Page 4-16 / 17 Tables 4.5-6 and 4.5-7

These tables compare the entrainment and impingement for a number of species at Seabrook Station verses Pilgrim Nuclear Generating Station. As reflected in the tables, the numbers of entrained and impinged rainbow smelt at Seabrook are significantly smaller than at Pilgrim, and yet the Draft SEIS explains that the impact finding for Pilgrim was MODERATE where the impact for Seabrook was determined as LARGE. See page 4-19. The Draft SEIS does not explain why the significantly smaller numbers of entrained and impinged rainbow smelt at Seabrook warrant a higher impact finding.

Page 4-20 Line 12.

This statement reflects that a t-test was performed. Instead, a mixed model analysis of variance was used to determine if there were significant differences between the preoperational and operational periods, among sampling stations, and in the interaction of these terms rather than a t-test.

Page 4-20 Line 17.

The line indicates silver hake were investigated. Trends in the abundance of silver hake were not investigated as this is not one of the selected species that are subject to extensive quantitative analysis.

Page 4-20 Lines 30 and 48.

The SEIS conclusion that there is large impact to winter flounder is based on the assumption that a discrete local subpopulation of winter flounder exists within 3-4 miles (5-8 km) of the Seabrook Station intake and discharge structures. As discussed below a recent study suggests that there is significant movement beyond this range.

There is little information on the movement of rainbow smelt in the marine environment after they exit estuaries, but the decrease in abundance at all stations is indicative of a regional effect (see the second response to Page 4-34, Line 20), rather than a decrease localized to area around the Seabrook Station intakes and discharges.

Winter flounder abundance decreased between the preoperational and operational periods at Station T2, was not significantly different between periods at Station T1, and increased between periods at Station T3 (NAI 2011). The two supposed impacts due to operation of the plant are entrainment and impingement. Although entrainment of eggs has occurred in some years with an average estimate of 90,000 eggs per year, this number is not likely to affect winter flounder populations for two reasons. First, entrainment of an average of 90,000 eggs annually would result in a negligible impact on the number of adult winter flounder, as described more fully in our response to Page 4-20, Lines 44-45. Second,

winter flounder larvae are planktonic and would be widely distributed in the vicinity of Seabrook Station. Entrainment of these planktonic stages would not result in the decrease in abundance of juvenile and adults observed at only one sampling station (T2), because these lifestages have not settled to the bottom yet and are likely to show significant movement before settlement.

The movements of juvenile and adult winter flounder in the marine environment are also not well known. However, a recent paper (Fairchild et al. 2011) submitted to Fisheries Science present the results of an acoustic tagging study in nearby Ipswich Bay. They found that winter flounder can undergo extensive migrations from nearshore spawning grounds. Only 5% of the fish tagged were recovered in Ipswich Bay and some were recovered as far as 43-57 km away for the tagging site. There was evidence that winter flounder return to the same area to spawn, but their movements between spawning periods may be greater than originally thought.

A localized decrease in abundance at Station T2 could only occur if the winter flounder impinged were going to reside in the vicinity of Station T2 and not move to other areas. The recent data of Fairchild et al. (2011) indicates that this is not the case and winter flounder can undergo significant movements. The impacts of entrainment and impingement are discussed further in our response to Page 4-20, Lines 44-45.

Page 4-20, Lines 44-45.

The SEIS concludes that there is a large impact on winter flounder due to entrainment and impingement. This conclusion does not consider the Equivalent Adult (EA) analysis of the impacts of entrainment and impingement (NAI 2011: Section 4.3.3.10). The estimated annual loss of equivalent adult winter flounder due to entrainment was 1,347/year for the years 1998-2010, and equivalent adult loss due to impingement was 85/year for the years 1994-2010. These combined losses of about 1,500/year can be put into context by comparison with the recreational catch of winter flounder. Between 1998 and 2009, an average of 16,000 fish/year were taken by recreational anglers from New Hampshire waters. The take of equivalent adults at Seabrook Station is less than 1/10 of the recreational catch in New Hampshire. Therefore, any supposed impact due to the operation of Seabrook Station is less than that of the recreational fishery in New Hampshire and should not be considered to be large.

Page 4-26 Line 14.

See comment on Page 4-20, Line 12.

Page 4-26 Lines 18-19.

See comment on Page 4-20, Line 17.

Page 4-28 Lines 5-7.

The SEIS presents no evidence to support the assumption that local subpopulations of

winter flounder and rainbow smelt exist within 3-4 miles (5-8 km) of the Seabrook Station intakes or discharges. See comments on Page 4-20, Lines 30 and 48, and the second comment on Page 34 Line 20.

Page 4-34 Lines 20-21.

See comment on Page 4-20, Lines 30 and 48 and Page 4-20, Lines 44-45.

Page 4-34 Line 20.

The SEIS concludes that there is a large combined impact on rainbow smelt due to the operation of the Seabrook Station cooling water system. The two impacts considered are Entrainment (Section 4.5.2) and Thermal Shock (Section 4.5.3). However, the SEIS does not identify any impacts to rainbow smelt in the Summary of Entrainment and Impingement Impacts on page 4-20 or in Section 4.5.3. Therefore it is not clear how there can be any combined impacts on rainbow smelt due to these causes when there does not appear to be any individual impact from either entrainment and impingement, or thermal shock.

Page 4-34 Line 20.

The SEIS concludes that there is a large combined impact on rainbow smelt due to the operation of the Seabrook Station cooling water system. Abundance of rainbow smelt has decreased significantly at all three trawl stations from the period before plant operation (Preoperational Period) to the period after plant operation (Operational period). The BACI model has identified a greater decrease at the sampling station near the intakes and discharges than at the other two stations. However, this decrease by itself does not necessarily mean that operation of the cooling water system is the cause. Results of a BACI model must be put in context with regional trends to see if there are any region-wide causes that could result in what appears to be a local impact. For the remaining demersal selected species, commercial overfishing is a regional impact that has caused catch decreases at the three sampling stations to uniformly very low levels. In the case of rainbow smelt, there has been a regional decrease in abundance throughout the Gulf of Maine (NMFS 2007) unrelated to the operation of Seabrook Station. This unrelated regional decrease likely caused the reduction in abundance at all sampling stations. Rainbow smelt are currently declared a "species of special concern", and acid precipitation, spawning habitat degradation, overfishing, and dams and blocked culverts are suggested reasons for the regional decline in abundance (NMFS 2007). The operation of the Seabrook Station cooling water system does not contribute to any of these potential causes. The uniformly low abundance at all three stations suggests a regional decline in rainbow smelt stocks, consistent with the designation of rainbow smelt as a species of special concern (NMFS 2007).

Rainbow smelt are entrained and impinged at Seabrook Station, but in relatively low numbers. These losses can be put in context through comparison with New Hampshire recreational catch statistics. Rainbow smelt spawn in estuaries and their demersal and

adhesive eggs are not subject to entrainment. Rainbow smelt larvae can be subject to entrainment and an estimated annual average of 430,000 have been entrained between 1990 and 2010 (NAI 2011). Natural mortality would greatly reduce this estimate to a small number of adult reproductive fish. An estimated average 1,054 rainbow smelt are impinged each year. In comparison, recreational fishing in the nearby Great Bay removed an estimated average of 102,000 adult rainbow smelt each year between 1994 and 2010 (NAI 2010). These losses are much greater than those incurred at Seabrook Station.

The regional decrease in rainbow smelt abundance is the most likely cause for the decrease in rainbow smelt in the study area and in the vicinity of the Seabrook Station's intakes and discharges. The SEIS findings (page 4-34, line 23-24) also assume that a local subpopulation of rainbow smelts exists within 3-4 miles (5-8 km) of the cooling water intake and discharge structures, yet this assumption is not supported by objective evidence. The Gulf of Maine-wide decrease in rainbow smelt stocks coupled with the relatively small estimates of impingement and entrainment at Seabrook Station compared to the recreational catch, are not consistent with the finding of a large impact due to the operation of the cooling water system.

Page 4-34 Line 27.

The SEIS concludes that there is a large combined effect on *Laminaria digitata* and *Saccharina latissima* due to the operation of the Seabrook Station cooling water system. The two impacts considered are Entrainment (Section 4.5.2) and Thermal Shock (section 4.5.3). However, the SEIS does not identify any impacts on *L. digitata* and *S. latissima* in either of these sections. Therefore it is not clear how there can be any combined impacts on *L. digitata* and *S. latissima* due to these causes when there does not appear to be any individual impact from either entrainment and impingement, or thermal shock.

Page 4-34 Line 27.

The SEIS concludes that there is a large combined impact on *Laminaria digitata* and *Saccharina latissima* due to the operation of the Seabrook Station cooling water system. This conclusion does not consider the trend analysis (Table 5-12; NAI 2010) conducted on the annual density of *L. digitata* between 1982 and 2009 for the shallow subtidal stations and between 1978 and 2009 for the mid-depth stations. There has been a significant negative trend in *L. digitata* density throughout the entire time series at all four benthic stations (shallow subtidal: nearfield and farfield; mid-depth: nearfield and farfield). This is an indication that this is a long-term decline in abundance unrelated to the operation of Seabrook Station and may be a region-wide phenomenon because it occurred at both nearfield and farfield stations. Furthermore, there are habitat differences between the mid-depth stations that complicate the analysis. The habitat at the mid-depth nearfield station is less preferable for *L. digitata* due to the greater depth (12.2 m) compared to the nearfield station (9.4 m).

There was also a significant negative trend in the density of *Saccharina latissima* at the nearfield shallow subtidal station starting in 1982, indicating a long-term trend. This also

may be a region-wide phenomenon because it occurred at both nearfield and farfield stations.

Special studies conducted by NextEra indicate that thermal discharge from Seabrook Station is not responsible for the decline in kelp abundance (Section 5.4.2, NAI 2010; Section 5.5 NAI 2011). Possible reasons for a large scale decline in kelp abundance are:

1. a regional increase in water temperature (NAI 2009, NAI 2010),
2. turbidity, suspended sediment deposition and nutrient enrichment (McDowell 2009; NAI 1999),
3. changes due to storm action in 1991 (Hurricane Bob and the "Perfect Storm") and large scale biological disturbances, and
4. the effect of introduced species, particularly the bryozoan *Membranipora membranacea.*

Page 4-39, Lines 25-26.

The SEIS concludes that the impact on rainbow smelt for an additional 20 years of operation is large. Regarding potential impacts to rainbow smelt due to operation of Seabrook Station see comment on Page 4-34 Line 20.

Page 4-65, Lines 34-45.

The SEIS states that the incremental impacts from the operation of Seabrook Station would be large for winter flounder and rainbow smelt. As stated above in comments on Page 4-20 Lines 44-45, the combined losses of equivalent adult winter flounder due to entrainment and impingement are less than $1/10^{th}$ of the losses due to the recreational fishery in New Hampshire alone, not to mention adjoining states and losses due to the commercial fishery. By any reasonable measure, these incremental losses due to operation of Seabrook Station are not large.

Similarly, in comments on Page 34, Line 20, the losses to rainbow smelt due to the operation of Seabrook Station are about 1% of the annual take of rainbow smelt in the Great Bay fishery alone, not to mention other recreational catches in tributaries of the Gulf of Maine. By any reasonable measure, these incremental losses due to operation of Seabrook Station are not large.

Page 4-65 Line 37.

The SEIS states that the operation of Seabrook Station has destabilized the local abundance of winter flounder and rainbow smelt and refer to Section 4.5. See comment on Page 4-20, Lines 30 and 48, and comment on Page 4-34, Line 20 for rainbow smelt.

References:

Fairchild. E.A., L. Siceloff, W.H. Howell, B. Hoffman and M.P. Armstrong. 2011. A New Paradigm of Spawning Movement and Habitat use for Winter Flounder in the Southern Gulf of Maine. Submitted to Fisheries Science Special Issue: Reconciling Spatial Scales.

McDowell, W.H. 2009. Summary of Seabrook Station Suspended Sediment Characterization Study. University of New Hampshire. Prepared for Normandeau Associates, Inc. 10 pp.

NAI 1999. Long-term Patterns of Kelp Community Composition off Coastal New Hampshire as Part of the Seabrook Station Environmental Monitoring Program. Prepared for North Atlantic Energy Service Corporation.

NAI (Normandeau Associates Inc.) 2010. Seabrook Station 2009 Environmental Monitoring in the Hampton – Seabrook Area. Prepared for NextEra Energy Seabrook LLC.

NAI (Normandeau Associates Inc.) 2011. Seabrook Station 2010 Environmental Monitoring in the Hampton – Seabrook Area. Prepared for NextEra Energy Seabrook LLC.

NMFS (National Marine Fisheries Service). 2007. Species of Special Concern: Rainbow smelt *Osmerus mordax*. http://www.nmfs.noaa.gov/pr/pdfs/species/rainbowsmelt_detailed.pdf.