NEXTera ENERGY
POINT BEACH

June 10, 2010

NRC 2010-0047
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Point Beach Nuclear Plant, Units 1 and 2
Dockets 50-266 and 50-301
Renewed License Nos. DPR-24 and DPR-27

License Amendment Request 261
Extended Power Uprate
Response to Request for Additional Information

References: (1) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)

(2) NRC letter to NextEra Energy Point Beach, LLC, dated April 23, 2010, Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Electrical Engineering Branch RE: Extended Power Uprate (TAC Nos. ME1044 and ME1045) (ML101100761)

NextEra Energy Point Beach, LLC (NextEra) submitted License Amendment Request (LAR) 261 (Reference 1) to the NRC pursuant to 10 CFR 50.90. The proposed amendment would increase each unit's licensed thermal power level from 1540 megawatts thermal (MWt) to 1800 MWt, and revise the Technical Specifications to support operation at the increased thermal power level.

Via Reference (2), the NRC staff determined that additional information is required to enable the staff's continued review of the request. Enclosure 1 provides the NextEra response to the NRC staff's request for additional information.

This letter provides a partial response to the NRC Electrical Branch RAIs provided in Reference 2. The response to the remaining RAI's will be provided in a separate submittal as discussed in the regulatory commitment below.

Summary of Regulatory Commitments

This letter contains one new Regulatory Commitment provided below and no revisions to existing Regulatory Commitments.

> "The NextEra response to remaining RAI's (i.e., 16 through 24, 28, 30, 31, and 34) contained in an NRC letter to NextEra Energy dated April 23, 2010 (ML101100761) will be provided by August 13, 2010."

The information contained in this letter does not alter the no significant hazards consideration contained in Reference (1) and continues to satisfy the criteria of 10 CFR 51.22 for categorical exclusion from the requirements of an environmental assessment.

In accordance with 10 CFR 50.91, a copy of this letter is being provided to the designated Wisconsin Official.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on June 10, 2010.

Very truly yours,

NextEra Energy Point Beach, LLC

Larry Meyer
Site Vice President

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

ENCLOSURE 1

NEXTERA ENERGY POINT BEACH, LLC
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

LICENSE AMENDMENT REQUEST 261
EXTENDED POWER UPRATE
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

The NRC staff determined that additional information was required (Reference 1) to enable the Electrical Engineering Branch to complete its review of License Amendment Request (LAR) 261, Extended Power Uprate (EPU) (Reference 2). The following information is provided by NextEra Energy Point Beach, LLC (NextEra) in response to the NRC staff's request. Note that NextEra responses to EEEB-16 through 24, 28, 30, 31, and 34 will be provided in a separate submittal.

The following questions were developed as a result the staff's review of the licensee's Extended Power Uprate (EPU) application for PBNP.

2.3.1 Environmental Qualification (EQ) of Electrical Equipment

EEEB-1

On page 2.3.1-3 of Attachment 5 of the Extended Power Uprate (EPU) application, the licensee stated the following:

"PBNP is currently in the process of updating its post-accident dose assessments associated with the site boundary and on-site locations that require continuous occupancy, such as the Control Room to reflect Alternative Source Terms (AST) as outlined in 10 CFR 50.67, and Regulatory Guide 1.183."

Provide assurance that the EQ of electrical equipment will remain qualified given the expected radiation environment under EPU conditions with the new AST requirements.

NextEra Response

As described in LAR 261 Attachment 5 Section 2.3.1.2 Technical Evaluation (Radiation Environments), the EPU assessment for the post-loss of coolant accident (LOCA) integrated doses for equipment qualification continues to be based on TID-14844 source terms. This approach is acceptable per Section 1.3.5 of Regulatory Guide (RG) 1.183 which indicates that although environmental qualification (EQ) analysis impacted by plant modifications associated with AST implementation should be updated to address the impacts of the modification, no plant modification is required to address the impact of the difference in source term characteristics (i.e., AST vs. TID-14844) on EQ doses.

LAR 241, Alternative Source Term, Enclosure 1 Section 5.4 and Enclosure 3 Section 1.4 also reference Section 1.3.5 of RG 1.183 as the basis for not modifying the EQ design basis to adopt AST. The referenced sections note that the NRC staff concluded that there is no clear basis for a requirement to modify the design basis for equipment qualification to adopt AST since there is no discernible risk reduction associated with such a requirement. However, for purposes of consistency within the modification, AST source terms were used to establish the radiation

environments for the EQ of any additional electrical components that were required to perform a required function to implement the AST.

Therefore, at PBNP electrical equipment will remain qualified to the expected radiation environment under EPU conditions and TID-14844 source terms, with the AST being used to establish the radiation environments for only those additional components (i.e., primary auxiliary building (PAB) ventilation components) that are required to perform a required function to implement the AST.

EEEB-2

On page 2.3.1-5 of Attachment 5 of the EPU application, the licensee stated the following:

"Additional detailed analysis will be performed to qualify the following components for EPU conditions or they will be replaced with qualified components prior to the implementation of the proposed EPU:

- *EQCK-HONEYW-001: Four (4) Honeywell Microswitches; Containment Façade, -10' EL, [1(2) POS-00850A, 1(2) POS-00850B], residual heat removal Pump Sump B Suction Position Switch*

- *EQCK-PANEL-001: One (1) Nutherm Panel; primary auxiliary building, outside charging pump cubicle. [1 N-11], Charging Pump/PZR Heater Local Control Station"*

Provide reasonable assurance that these components will be replaced with qualified components prior to implementation of the proposed of EPU or show that they are qualified for EPU conditions.

NextEra Response

The Honeywell microswitches and Nutherm panel have now been qualified by analysis to the EPU radiation environment. The radiation doses for the area where these components are located changed as follows:

Honeywell Microswitches	Pre-EPU	EPU	Qualification
Normal Radiation (60 yrs)	1.14E3 RADS	1.7E3 RADS	7.6E6 RADS
Accident Radiation	1.45E6 RADS	7.6E6 RADS	

The equipment has been qualified by material analysis to 7.6E6 RADS. The EQ checklist (EQCK) has been revised to reflect qualification to the EPU total integrated dose (TID).

Nutherm Panel	Pre-EPU	EPU	Qualification
Normal Radiation (60 yrs)	400 RADS	1.3E3 RADS	6.7E6 RADS
Accident Radiation	3.31E6 RADS	4.93E6 RADS	

A review of a location specific calculation was performed using EPU data and existing information from the EQCK. Using this data, the actual accident dose for the panel location is shown in the above table. The EQCK has been revised to reflect this analysis.

The results from the location specific analyses performed on the Nutherm panel equipment demonstrate that the equipment is qualified for EPU radiation conditions.

EEEB-3

On page 2.3.1-6 of Attachment 5 of the EPU application, the licensee stated the following:

"For the EPU [Loss of Coolant Accident] LOCA temperature and pressure impact, the post-accident operating time has been evaluated and found acceptable."

Describe how the post-accident operating time has been evaluated and provide the acceptance criteria that were used to find this evaluation acceptable.

NextEra Response

LAR 261, Attachment 5, Section 2.3.1 provided a set of curves that show the comparison of the current EQ pressure and temperature profiles to that of the EPU LOCA profiles. The post- accident operability time (PAOT) is considered the time period past 24 hours from the initiation of the event. These curves demonstrate that the current EQ profiles remain above the EPU LOCA curves during the cooldown period, and do not impact the required PAOT of one year. Therefore, the post accident operability time of the EQ components remains valid for EPU operation. The EPU revised long term temperature profiles outside containment were compared to the equipment EQCKs to validate continued operation for the durations indicated. The equipment test temperature remained above the EPU revised long-term room temperature with margin. Therefore, the equipment remains qualified.

EEEB-4

On page 2.3.1-6 of Attachment 5 of the EPU application, the licensee stated the following:

"The submergence level inside containment increases only slightly due to increased temperature at EPU, but is essentially unchanged from the pre-EPU evaluation of 15'-2" (Elevation of Sump B is El.8') and no EQ equipment is affected by this slight change."

Table 2.3.1-1 of Attachment 5 of the EPU application shows the pre-EPU accident submergence elevation to be 14'-10" and the EPU level to be 15'2". Explain the apparent discrepancy.

NextEra Response

The pre-EPU accident submergence level is 14'-10". The accident submergence level inside containment increases to 15'-2". As noted in LAR 261, no EQ equipment is affected by this slight increase in submergence level. The statement in LAR 261, Attachment 5, Section 2.3.1, Page 2.3.1-6 quoted the EPU submergence level rather than the pre-EPU submergence level of 14'-10", and is incorrect. The values provided in LAR 261, Attachment 5, Section 2.3.1, Table 2.3.1-1 are correct.

EEEB-5

On page 2.3.1-6 of Attachment 5 of the EPU application, the licensee stated the following:

"Based on the resulting environmental conditions for [high energy line break] HELB events at EPU, all equipment currently in the EQ program remains qualified."

Provide a summary of the evaluation that shows that all equipment currently in the EQ program remains qualified for environmental conditions for HELB events at EPU.

NextEra Response

For those areas where the HELB temperature and pressure environment increased, the EQ equipment in those areas were reviewed and the applicable EQCKs were updated to demonstrate that the affected EQ equipment remains qualified with the exception of two instrumentation cables located in each unit's PAB fan rooms for steam generator pressure transmitters. These cables were not able to be environmentally qualified for the harsh temperature environment due to a steam line break in those rooms at EPU conditions. As described in the NextEra response to Question EEEB-8 in (Reference 3), these cables are being replaced with cables qualified to the new EPU conditions.

The impact of a pressure increase during a HELB event was evaluated and conditions were presented in LAR 261 Tables 2.3.1-2, 3, and 4. The over pressure resulting from a HELB was less than 1 psi, which is considered a minor increase that does not impact equipment or the rooms. Tables EEEB-5A and EEEB-5B provide a sample of EQ components with the least available margin (temperature) for each specific room/area inside containment and for each building outside containment to illustrate the increased EPU conditions and the associated qualified equipment conditions.

The EPU EQ of affected components determined that the electrical equipment will continue to meet the PBNP current licensing basis requirements following implementation of the proposed EPU.

Table EEEB 5A
Inside Containment Equipment EQ Summary Table

Unit	Equip ID	Vendor	Model	Bldg	EL.	Room / Area	EQCK	Accident Peak Temperature (°F)		Qualification Accident Peak Temperature (°F)	EPU Accident Peak Temp Margin (°F)	Accident Peak Pressure (psig)		Qualification Accident Peak Pressure (psig)	Uprate Accident Peak Pressure Margin (psig)
								Pre-EPU	EPU			Pre-EPU	EPU		
common	various	Bechtel/ Raychem	Bechtel Dwg. #SK- E-165/SFR	Cont / PAB	Var.	various	EQCK-RAYC-006	291	**279.9**	296	16.1	60	58.67	60	1.33
PB1	LT-00958	Gems Delaval	XM54854	Cont.	- 2'	Sump A	EQCK-GEMS-001	291	**279.9**	410	130.1	60	58.67	65	6.33
PB1	N-00040	Gamma-Metrics	P/N 200574-115	Cont.	26'	Next to Reactor Vessel	EQCK-GAMMA-001	291	**279.9**	440	160.1	60	58.67	70	11.33
PB2	POS-00955	NAMCO	EA180-14302, EA180-15302	Cont.	>16'	Reactor Coolant Loop Area	EQCK-NAMCO-001	311	**279.9**	361	81.1	60	58.67	76.4	17.73
PB1	RC-00430-S	ASCO	NPL8316 B74E	Cont.	80'	Pressurizer Cubicle	EQCK-ASCO-002	291	**279.9**	346	66.1	60	58.67	68	9.33
PB1	RC-00515-M	Limitorque/ Reliance	Class RH Insulation	Cont.	80'	Pressurizer Cubicle	EQCK-LIMIT-001	291	**279.9**	315	35.1	60	58.67	70	11.33
PB1	RC-00570A	Target Rock	80B-001BB-3	Cont.	>66'	Outside Missile Shield	EQCK-TARG-001	291	**279.9**	385	105.1	60	58.67	66	7.33
PB1	SI-00852A-M	Limitorque/ Reliance	Class B Insulation	Cont.	26'	Outside Secondary Shield	EQCK-LIMIT-003	291	**279.9**	297	17.1	60	58.67	60	1.33
PB1	TE-00001	Westinghouse	Chromel / Alumel Type K	Cont.	30'	RX Vessel	EQCK-WEST-014	291	**279.9**	700	420.1	60	58.67	2500	2441.33

Table EEEB 5A (continued)
Inside Containment Equipment EQ Summary Table

Unit	Equip ID	Vendor	Model	Bldg	EL.	Room / Area	EQCK	Accident Peak Temperature (°F)		Qualification Accident Peak Temperature (°F)	EPU Accident Peak Temp Margin (°F)	Accident Peak Pressure (psig)		Qualification Accident Peak Pressure (psig)	Uprate Accident Peak Pressure Margin (psig)
								Pre-EPU	EPU			Pre-EPU	EPU		
PB1	TE-00450A	Conax	7760-10000-01	Cont.	35'	Reactor Coolant Loop Area	EQCK-CONAX-005	291	**279.9**	355	75.1	60	58.67	73.65	14.98
PB1	TE-00501	Conax	7366-10000-01 & 02	Cont.	-1'	Keyway	EQCK-CONAX-004	291	**279.9**	432	152.1	60	58.67	72	13.33

Table EEEB 5B
Outside Containment Equipment EQ Summary Table

UNIT	EQUIP ID	EQCK	BLDG	EL.	Room / Area	Existing EQCK Specified Temperature (°F)	EPU HELB Temperature (°F)	EQCK Qualification Temperature (°F)	Margin	IEEE 323 Margin (15°F) Yes/No	Description	Notes
PB1	MS-02019-M	EQCK-LIMIT-003	Auxiliary	46'	CCW Hx Area	309.5	267	297	30	Yes	HX-1B SG header P-29 AFP steam supply MOV motor	Only required for 10 minutes
PB0	D72-301-01	EQCK-BRK-001	Turbine Hall	26'	Charger Room-D301	162.8	113.6	266	23	Yes	ALT PWR to D-01 DC distribution panel	

EEEB-6

On page 2.3.1-6 of Attachment 5 of the EPU application, the licensee stated the following:

"Review of these items indicates that they are the same model type as those presently in the EQ files, and as such, can be qualified to the reconstituted HELB conditions and will be documented in the EQ program prior to EPU implementation."

Describe how these components have been maintained in accordance with your 10 CFR 50.49 program and demonstrate that the qualification of the similar components envelops the qualification requirements of these components.

NextEra Response

As noted in LAR 261, Attachment 5, Section 2.3.1, Environmental Qualification of Electrical Equipment, Technical Evaluation, new components are identified that are to be added to the EQ program as a result of the HELB evaluations for EPU. The four level transmitters (Foxboro N-E10 Series) on the refueling water storage tank (RWST) (1(2) LT-972 & 973) have been added to the EQ program and have been qualified to EPU conditions. The RWST level transmitters are located in the containment facade with the following EQ environment:

Location			Normal			Accident				
Building	El.	Room Area	Temp (°F)	Radiation (60-Yr)		Temp (°F)	Radiation (1-Yr)		Pressure (psig)	Humidity (%RH)
				Gamma (rads)	Neutron (rads)		Gamma (rads)	Beta (rads)		
Cont. Facade	6.5'	Facade	85	1.71E3	N/A	230.16	N/A	N/A	0.561	100

The RWST transmitters have been qualified to a temperature of 420°F. The qualification radiation value is 2.0E8 Rads; the beta dose is not applicable since these are sealed steel components. These components have been maintained in accordance with the plant maintenance program, and meet the prerequisites for inclusion into the EQ program.

EEEB-7

On page 2.3.2-3 of Attachment 5 of the EPU application, the licensee stated the following:

"Updates to the study will be evaluated if a revised grid study analysis is received. Subject to completion of required interim or final grid system upgrades being identified by PBNP and [American Transmission Company] ATC, EPU evaluations have determined that after implementing the modifications and 345 kV grid upgrades identified above, the offsite power system will continue to have sufficient capacity and capability to supply power to all safety loads and other preferred operating equipment."

Provide a summary of your review of the grid stability study that you sent to the NRC on November 13, 2009 (ADAMS Accession No. ML093200067). Describe the impact of the latest grid study on the original application and identify any modifications that are necessary as a result of the proposed EPU.

NextEra Response

The Midwest Independent System Operator (MISO)/American Transmission Company (ATC) issued the Interconnection System Impact Study, dated October 2, 2009, which was revised to reflect the final rating of the upgraded PBNP generators by adding an additional 6 megawatts electric (MWe) to each unit for a final generator rating of 619.56 MWe net (642.96 MWe gross) per unit. A summary of the NextEra review of the revised Interconnection System Impact Study is provided as follows:

1. The ATC evaluation for Interim Operation and Impacts Re-Study Report, Revision 1, dated July 14, 2009, provides the bases for immediate network upgrades, which are planned to be in place until the final network upgrades described in the Interconnection System Impact Study can be implemented. The modifications required by the Interim Operation and Impact Re-Study Report are provided in Table 1 below. NextEra has entered into an Engineering, Design, Procurement, and Construction Agreement with ATC to implement these interim modifications prior to operation at EPU conditions.

2. The Interim Operation and Impacts Re-Study identified that there will be power restrictions for PBNP that must be implemented in the interim period in order to ensure stability under certain line outages (system non-intact condition). Plant procedures that address existing grid operating conditions which require power restrictions at PBNP during non-intact grid conditions will be revised to address additional restrictions identified in the Interim Operation and Impacts Re-Study.

3. Both the Interim Operation and Impacts Re-Study and the Interconnection System Impact Study identified changes to the generator minimum excitation limiter settings to provide a minimum level of reactive power output (over-excitation) to be maintained to ensure generator stability in anticipation of critical fault conditions. These changes are required at both PBNP units and the nearby Kewaunee Power Station (KPS). NextEra has been working with KPS to implement these changes prior to operation of PBNP Unit 2 at EPU conditions. PBNP will implement these requirements in accordance with studies, prior to the uprate.

4. There are recommended changes identified in the Interconnection System Impact Study to the PBNP switchyard. These changes include the addition of one circuit breaker in series with the existing Q303 breaker to reduce the clearing time in case of breaker failure, and implementation of several relay upgrades. It should be noted that ATC determined the Q303 breaker is no longer required as an interim upgrade and it was moved to the final modifications.

5. ATC recommends that NextEra take several actions to enhance the delayed fault clearing for the PBNP X03 high voltage station auxiliary transformers. The first item is installation of high side circuit breakers on these transformers. This recommendation is a proposed enhancement to the transmission system and not a requirement for the EPUs at PBNP. Not implementing this enhancement will not impact the reliability of the offsite power supply to the units during an event, and the post-EPU system response will be the same as the current response to this type of delayed clearing event without the enhancement. As a result, NextEra has decided not to implement this enhancement in the switchyard configuration at this time. The present configuration will continue to meet applicable North American Electric Reliability Corporation (NERC) requirements when operating at EPU conditions.

The second recommendation is to improve the clearing time for the station X03 transformers during the interim period. Improving the 345 kV fault primary clearing time from 5.1 cycles to 4.0 cycles would prevent loss of synchronism during auxiliary transformer high side faults. NextEra is planning on implementing modifications to reduce the auxiliary transformer primary clearing time as recommended to maintain the reliability of the transmission system for an X03 transformer fault. This is a recommendation by ATC, but it is required to support the PBNP licensing basis as it relates to the transmission system stability.

6. The proposed generators have adequate power factor capability at 0.95 leading and 0.94 lagging. PBNP is implementing minimum excitation limiter changes as required by ATC that will limit operation at leading power factor.

7. Plant-specific voltage requirements will continue to be met with a range of 348.5 kV to 362 kV. Note that NextEra has already reduced the maximum switchyard voltage to less than or equal to 360 kV in order to limit plant auxiliary system fault currents.

8. The final analysis in the Interconnection System Impact Study found no upgrades were required for injection limits (other than those identified in item 1 above for the Interim Operation Re-Study), voltage requirements, or breaker duty ratings.

9. Power system stabilizers (PSS) will be required for both units. These are being upgraded from the present PSS design and will require commissioning and tuning on unit startup during the EPU implementation outages.

10. Network upgrades are being recommended for stability purposes for the long-term solution. These are listed in Table 2. A good faith estimate of the time required to design, procure, and build these upgrades is 8 to 10 years. They will be put in place using the MISO facilities study and construction process.

With completion of planned interim or final grid system upgrades being identified by NextEra and ATC, the EPU evaluations have determined that the 345 kV grid and the offsite power system will continue to have sufficient capacity and capability to supply power to all safety loads and other preferred operating equipment. ATC is presently developing the facility study. After the completion and approval of the facility study, NextEra will enter into a new formal Interconnection Agreement with MISO and ATC that will replace the current Interconnection Agreement. The above facilities upgrades could be subject to change during the MISO/ATC formal Interconnection Agreement process.

Please note that in accordance with LAR 261, Attachment 4, Commitment 8, the loss of voltage (LOV) relay setpoint changes on both units will be implemented prior to operation of each unit at EPU conditions. This is required to maintain the accuracy of the ATC studies.

Table 1
ATC Interim Operation and Impacts Re-Study Modifications

Item	Description of Facility	Reason
Cypress-Arcadian 345 kV line	Adjust to obtain minimum Summer emergency rating of 572 MVA	Injection Limit
Point Beach-Sheboygan Energy Center 345 kV line	Adjust to obtain a minimum summer emergency rating of 596 MVA, an existing project upgrades this line to 1120 MVA	Injection Limit
R-304 North Appleton 345 kV Bus	Improve clearing time by replacing R-304 breaker at North Appleton	Stability
L-151 at PBNP345 kV Bus	Replace relays to improve clearing time for PBNP L151 breaker	Stability
Q-303 at PBNP 345 kV Bus	Install a new 345 kV circuit breaker in series with the existing Q-303 breaker to allow breaker failures to clear in primary time. Note that as stated in Item 4 above, ATC determined this item is no longer required as an interim upgrade and it was moved to the final modifications.	Stability
Bus Tie 2-3 at PBNP 345 kV Bus	Improve clearing time for PBNP bus tie breaker by changing relay settings. (See Note at Point 4.)	Stability
L121 at PBNP 345 kV Bus	Replace backup relay for L121 at PBNP	Stability
Minimum Excitation Limiter (MEL) at PBNP and KPS	Revise MEL settings at PBNP and KPS	Stability
L111 at Point Beach 345 kV Bus	Achieve L111 clearing times of 3.5 cycles local primary, 8.0 cycles local delayed and 4.5 cycles remote primary by reducing local delayed clearing time 1.0 cycles. It requires PBNP L111 SBF breaker failure relay replacement with an SEL-352, and the existing Line 111 SEL-221F backup relay replacement with an SEL-421.	Stability

Table 2
ATC Interconnection System Impact Study Long Term Required Modifications

Item	Description of Facility	Reason
New Substation	An eight position (expandable to twelve) 345 kV and six position (expandable to ten) 138 kV breaker-and-a-half scheme substation located at the intersection of the existing 345 kV lines W-1 (Edgewater-South Fond Du Lac) and L-SEC31 (Sheboygan Energy Center-Granville). A new 345/138 kV transformer capable of at least 500/625 MVA for SN and SE needs to be installed at the new substation. The existing 345 kV lines W-1, L-SEC31 and 796L41 (Edgewater-Cedarsauk) are looped into the new substation. The existing 138 kV line X-57 (South Sheboygan Falls-Mullet River) and the line from Holland are looped into the substation. New 138 kV line from Plymouth is terminated at the substation	Stability
New Substation	A six position (expandable to ten) breaker-and-a-half scheme substation located near the intersection of the existing 345 kV line L111 (Point Beach-Sheboygan Energy Center) and the existing 138 kV line L90 (Shoto-Glenview). The existing 345 kV lines L111 and L121 (Point Beach-Forest Junction) are looped into the new switching station.	Stability
Transmission Line Conversion	Conversion of the existing lines 971K51 (Forest Junction-Howard Grove 138 kV line) portion of HOLG21 (Howards Grove-Plymouth #4-Holland 138 kV line) to 345 kV (~48 miles). It is terminated at Forest Junction and New East 345/138 kV substation and then looped into the new North 345 kV switching station.	Stability
New Transmission Line	Construction of new double circuit 345 kV lines to loop the line 796L41 into the new East substation (~1.1 miles)	Stability
New Transmission Line	Construction of new double circuit 345 kV lines to loop the line L121 into the new North switching station (~3.2 miles)	Stability
New Transmission Line	Construction of new 138 kV lines to form new East-Plymouth-Howards Grove-Erdman 138 kV lines (~16 miles).	Stability
Line Upgrade	Cedarsauk-New East 345 kV line 796L41 south (24.1 miles) must be uprated to obtain a minimum Summer emergency rating of 960 MVA or higher. The required rating (960 MVA) is from Table A.7 (NERC C.3). This value was selected as the target rating to address potential overloads of the line under various multiple contingency events evaluated.	Injection Upgrade

Table 2 (continued)
ATC Interconnection System Impact Study Long Term Required Modifications

Item	Description of Facility	Reason
Line Upgrade	Point Beach-New North 345 kV line L111 (51.1 miles) must be uprated to obtain a minimum Summer emergency rating of 754 MVA or higher. ATC has a planned project, as an independent economic benefit project, for the Point Beach-Sheboygan Energy Center line uprate to a Summer emergency rating of 1095 MVA (1834 A), which is higher than the required rating for G833/4-J022/3.	Injection Upgrade

Please note that based on the Midwest ISO Tariff, in order to obtain any type of interconnection service, all generators must mitigate injection constraints identified in the System Impact Study. The injection constraints can be thermal overload, voltage limit, short circuit, or system stability.

EEEB-8

On page 2.3.2-4 of Attachment 5 of the EPU application, the licensee stated the following:

"The 345 kV circuit breakers F52-122 and F52-142, their associated 345 kV disconnect switches (F89-112B and F89-142B) were evaluated and proved to be acceptable at EPU conditions."

Describe how these circuit breakers and associated disconnect switches were evaluated and determined to be acceptable at EPU conditions.

NextEra Response

Existing 345 kV circuit breakers F52-122 and F52-142 and their associated 345 kV disconnect switches F89-112B and F89-142B were evaluated for both continuous current and short circuit duty for the EPU operating conditions. The maximum continuous current carried by the 345 kV disconnect switches and circuit breakers is bounded by the main transformer (X01) rating. The new main transformers (1X01 and 2X01) are rated 756 MVA. Since the 345 kV disconnect switches and 345 kV breakers continuous current rating are 2,000 A and 3,000 A, respectively, the equipment ratings are adequate for the EPU operation, with considerable margin.

The 345 kV circuit breaker short circuit (interrupting) rating of 40/50 kA was evaluated based on the maximum calculated three-phase short circuit shown in the ATC System Impact Study. The maximum calculated three-phase short circuit at the point of interconnection is 23,988.7 A and the maximum calculated single-phase short circuit at the point of interconnection is 26,615.1 A. Therefore, the short circuit rating of the existing 345 kV breakers is adequate for the EPU conditions.

The 345 kV disconnect switches have a momentary current rating of 70 kA. Based on the short circuit information provided in the ATC System Impact Study, the momentary rating of the 345 kV disconnect switches is adequate for operation at EPU conditions.

EEEB-9

On page 23 of the grid stability study that was provided by the licensee in letter dated November 13, 2009, the ATC (the transmission operator for PBNP) stated the following:

"The results of this study are subject to change. The results of the study are based on data provided by the Generator and other ATC system information that was available at the time the study was performed, and the injection study does not guarantee deliverability to the MIS energy market. If there are any significant changes in the generator and controls data, earlier queue Generator Interconnection Requests, related Transmission Service Requests, or ATC transmission system development plans, then the results of this study may also change significantly. Therefore, this request is subject to restudy. The Generator is responsible for communicating any significant generating facility data changes in a timely fashion to MISO and ATC prior to commercial operation.

Describe how changes that can impact the grid study are coordinated between PBNP and the transmission operator.

Provide assurance that the proposed EPU will not adversely impact the grid stability and reliability at PBNP.

NextEra Response

NextEra and PBNP entered into an agreement with MISO and ATC to meet the requirements of NERC Standard NUC-001-2 "Nuclear Plant Interface Coordination." The agreement requires notification to occur 90 days prior to installation, unless mutually agreed upon by both parties. This notification is required for any modification and/or technical data change to NextEra or ATC owned equipment, including setpoint changes, that could affect the transmission system or protective systems. In addition, ATC is required to respond and provide concurrence with NextEra modifications. Therefore, changes that can impact the grid studies will be coordinated between NextEra and ATC.

The proposed EPU will not adversely impact grid stability and reliability at PBNP because NextEra and ATC are required to be compliant with NERC standards as required by Federal Law. In addition, NextEra and ATC have agreements in place to ensure that grid stability and reliability are maintained. As discussed in the response to RAI EEEB-7, all necessary modifications described in EEEB-7 Table 1 will be completed prior to implementation of the EPU.

EEEB-10

On page 27 of the grid stability study that was provided by the licensee in letter dated November 13, 2009, the ATC (the transmission operator for PBNP) stated the following:

"The Point Beach nuclear units are presently undergoing design development to support the inclusion of generator breakers in their Iso-phase Bus connections. The generator breaker(s) will be positioned so as to enable a generating unit trip at the generator output voltage level/position without the need to de-energize the main transformers. Since the high voltage side breakers will remained closed, the power plant auxiliary buses are intended to be powered via the backfeed Main Transformers and the Iso-phase bus direct-connected Unit Auxiliary Transformers. This arrangement eliminates the presently needed high speed transfer of

auxiliary busses to the grid connected Startup Transformer upon a generating unit trip, and will also serve to resolve present marginal bus voltage issues. For purposes of the grid studies, the generator breakers are considered to be in place and operable at the time of startup of the generating units at their increased levels of output."

Provide assurance that the new generator breakers will be in place and operable prior to implementation of the proposed of EPU.

NextEra Response

Enclosure 2 of Reference 4 summarizes the NextEra implementation plan and provides, as shown on Table 1 of Reference 4, the installation of the new generator breakers as a regulatory commitment. Installation of the Unit 2 generator breaker was completed during the fall 2009 refueling outage. Installation of the Unit 1 generator breaker is scheduled for completion during the fall 2011 refueling outage. New generator breakers will be in place and operable prior to implementation of the EPU on the associated Unit.

EEEB-11

Explain how you plan to address each recommendation that was described in the grid study that was provided in letter dated November 13, 2009.

NextEra Response

See response to RAI EEEB-7.

EEEB-12

Describe the impact of the delayed implementation of the proposed EPU has on the grid impact study that was provided in letter dated November 13, 2009.

NextEra Response

NextEra has provided ATC with the revised generator, governor, and exciter models, as needed for the change in timing of the Unit 1 uprate. The changes in the generator/exciter modeling are insignificant, such as the use of a new refurbished exciter on Unit 2, instead of Unit 1 as originally planned. These changes and other in process design model changes were reviewed by ATC. ATC performed a screening test to determine if there is any significant impact due to the dynamic data changes from the uprate timing change. There was no significant impact found.

Since all of the interim upgrades required for both Units 1 and 2 are scheduled to be in service prior to the Unit 2 uprate (spring 2011), there is no expected impact on the required network upgrades.

EEEB-13

Describe the impact of increasing the maximum grid voltage to 360 kV has on the plant and at which per unit (pu) is this voltage assumed.

NextEra Response

NextEra is not increasing the maximum grid voltage. The maximum grid voltage for the 345 kV system voltage is currently and will continue to be 360 kV. This value was reduced from the previous maximum system voltage of 362 kV.

EEEB-14

On page 13 of the grid stability study that was provided by the licensee in letter dated November 13, 2009, the ATC (the transmission operator for PBNP) notes that a new high voltage (maximum permissible) limit of 360 kilo-Volts (kV) has been proposed by PBNP and incorporated this new limit into this study.

However, Appendix A, "Power Flow Analysis Results," of the grid stability study used a maximum permissible grid voltage range of 348.5 kV to 362 kV. Explain the apparent discrepancy.

NextEra Response

ATC has studied the previous maximum voltage limit of 362 kV and the new current maximum voltage limit of 360 kV and determined that either voltage limit could be met. NextEra and ATC have agreed upon the new maximum voltage limit for PBNP of 360 kV which is contained in a formal agreement between NextEra and ATC. Note that NextEra has already reduced the maximum switchyard voltage to less than or equal to 360 kV in order to limit plant auxiliary system fault currents and maximum system voltages.

2.3.3 AC Onsite Power System

EEEB-15

Describe the impact of the proposed EPU on the loading requirements for the emergency diesel generators (EDGs). In your response, provide a comparison of the existing EDG loads and those expected during EPU conditions.

NextEra Response

The impact on the EDG loading from EPU are a result of the auxiliary feedwater (AFW) modifications and the AST modifications. The AFW modification is replacing a 250 horsepower (HP), 460 V motor-driven AFW pump motor with a 350 HP, 4160 V motor-driven AFW pump motor. As a result of the AFW modifications, the loading on the EDGs are increased by approximately 100 HP. The AST modifications are making several changes that impact the loading on the EDG. The AST modifications are revising the control scheme for the control room ventilation fans to have them automatically load onto the EDGs to meet the AST radiological accident analyses requirements, as they are currently manually loaded onto the EDG. In addition, the AST modifications are revising control schemes for several non-essential 480 V motor control center (MCC) loads to have them strip on a loss of power and removes these loads from being automatically loaded onto the EDG. The modifications allow these loads to be manually loaded onto the EDGs by plant operators as loading on the EDG permits. The cumulative affect of the AST modifications is a reduction in the loading requirements of the EDGs. The following is a summary of the EDG loading before and after EPU.

Pre-EPU EDG Loading:

Automatic and immediate loading:

- A-Train: 2721 kW
- B-Train: 2825 kW

Maximum loading including manual action (required licensing basis loading):

- A-Train: 2812 kW
- B-Train: 2919 kW

The maximum loading on the EDGs will be below the 2000-hour rating for A-Train EDGs and will be below the 200-hour rating for B-Train EDGs.

Post-EPU EDG Loading:

Automatic and immediate loading:

- A-Train: 2718 kW
- B-Train: 2817 kW

Maximum loading including manual action (required licensing basis loading):

- A-Train: 2817 kW
- B-Train: 2831 kW

As described in NextEra letter NRC 2010-0040 (Reference 5), PBNP will maintain the loading below the 2000-hour rating for all EDGs.

EEEB-25

On page 2.3.3-9 of Attachment 5 of the EPU application, the licensee stated the following:

"Three other [Variable Frequency Drive] VFDs and motors associated with 1P-2A, 2P-2A, and 2P-2B with or without the VFD modifications have been evaluated to demonstrate that Train A and B EDGs will continue to operate within design ratings after installation."

Provide a summary of the evaluation that shows that Train A and B EDGs will continue to operate within design ratings after installation of the modifications. Also provide assurance that the modifications will be in place prior to implementation of the proposed EPU and that Train A and B EDGs will continue to operate within design ratings after installation of the modifications.

NextEra Response

Calculation 2004-0002 Revision 3, AC Electrical System Analysis, has already incorporated the planned VFD drive changes on all six charging pumps, as stated on Page 11 in Section I.2. At the time of the LAR submittal, only two of the charging pump Variable Frequency Drive (VFD) modifications had been implemented in the field (1P-2B and 2P-2C) with the rest of the modifications still to be installed. To date, three more charging pump VFDs have been installed, leaving only 2P-2B yet to be modified with a VFD. That modification is currently scheduled to be completed in July 2010.

Therefore, all charging pump VFDs will be installed prior to implementation of EPU in spring 2011. With the VFDs installed, the EDGs will operate within their design ratings as discussed in the response to RAI EEEB-15.

EEEB-26

On page 2.3.3-9 of Attachment 5 of the EPU application, the licensee stated the following:

"The generator rating will be confirmed and the rewind implemented as part of the design modification process."

Provide assurance that the main generator rating will be adequate to support operation at EPU including machine lagging reactive power requirements.

NextEra Response

As identified in Table 3 of Enclosure 2 of Reference 4, the modifications to the main generators will be implemented during the spring 2011 and fall 2011 refueling outages for Unit 2 and Unit 1, respectively.

The rating of the new generators will be 684 MVA, 19 kV, 60 Hz, 1800 rpm, 75 psig hydrogen pressure with a leading power factor of 0.95 and a lagging power factor of 0.94. This rating is consistent with the requirements of the grid stability analysis performed by ATC and the expected maximum reactor thermal output.

EEEB-27

On page 2.3.3-11 of Attachment 5 of the EPU application, the licensee stated the following:

"The [Low Voltage Station Auxiliary Transformers] LVSAT protection has been evaluated, and it has been determined that no changes are required."

Provide a summary of the evaluation that shows that no changes are required for the LVSAT protection under EPU conditions.

NextEra Response

Electrical protection of the low voltage station auxiliary transformers (LVSATs) consists of overcurrent protection (device 51), differential protection (device 87), and ground fault protection (device 51N).

The overcurrent protective relays (device 51) and associated current transformers (CTs) are selected based on the maximum LVSAT rating. EPU conditions result in a decrease of normal loading on LVSATs, as shown in LAR 261, Attachment 5, Section 2.3.3, Table 2.3.3-2. Therefore, the overcurrent protective relay settings and associated CTs are not affected by operation at EPU conditions.

The differential protective relays (device 87) and associated CTs are selected based on the maximum LVSAT rating and on the primary and secondary side CTs ratio. EPU conditions result in a decrease of normal loading on LVSATs, as shown in LAR 261, Attachment 5, Section 2.3.3, Table 2.3.3-2 and do not have an effect on the LVSAT rating or associated CTs ratio. Therefore, the LVSAT differential protective relay settings and CTs are not affected by operation at EPU conditions.

The ground fault relay setting (device 51N) for the LVSATs are based on the original transformer neutral grounding system design which limit the maximum ground fault current to 1000 A. Operation at EPU conditions does not affect the LVSATs neutral grounding system design; therefore, there are no changes to the ground fault protective relay settings or CTs.

The above evaluation of the LVSATs protection demonstrates that no changes are required for the LVSAT overcurrent protection, differential protection, and ground fault protection under EPU conditions.

EEEB-29

Provide a detailed discussion on any changes in the timing sequence for loads supplied by the emergency diesel generators and the describe impact on the capability and capacity of the emergency diesel generators to perform their design function.

NextEra Response

The clarification responses to RAIs 1 and 6 provided in Reference 5 describes the impact of AST, AFW and the EPU on the capability and capacity of the EDGs to perform their design function.

2.3.4 Direct Current (DC) Power System

EEEB-32

Describe the impact of the proposed EPU on the capability and capacity of the alternate AC (AAC) sources. In your response, provide a comparison of the load requirements pre and post EPU. Provide assurance that the AAC sources will remain capable of performing their design function under EPU conditions.

NextEra Response

The PBNP station blackout (SBO) compliance methodology, alternate AC (AAC) sources, and the impact of the proposed EPU AFW motor-driven AFW (MDAFW) pump modification on the AAC sources is provided in response to Question 6 provided in Reference 6. Per that response, since the MDAFW pumps are not credited for SBO compliance, the larger MDAFW pumps do not impact AAC assumed loads.

The AAC sources are the gas turbine generator (GTG) and one of the two EDGs in the non-blacked out unit. The GTG is rated for 20 MW. The EDG 2000-hr load rating is 2850 kW for Train A and 2848 kW for Train B. Since the GTG is approximately 7 times the capacity of one EDG, the response below addresses the more limited option of the EDG.

Each EDG can supply the same electrical train in both units. The PBNP design basis is that one EDG provide emergency power to one train of safety-related buses in order to safely shutdown one unit following a design basis LOCA and simultaneously provide power to safely shutdown the unaffected unit under loss of offsite AC power. Since an SBO does not require postulating any concurrent accidents, the requirement for the EDG acting as the AAC source is that it has sufficient power capacity to safely shutdown both units due to a loss of offsite AC power event. This is less limiting than the EDG design basis. The AC electrical load required to

take two units into safe shutdown during either a design basis accident or an SBO event is unchanged for EPU.

EEEB-33

On page 2.3.5-5 of Attachment 5 of the EPU application, the licensee stated the following:

"The Unit 1 and 2 [Condensate Storage Tank] CST required level per unit to support one hour of decay heat removal at the EPU is 15,410 gallons. This volume maintains approximately the same additional time margin for switchover of the Auxiliary Feedwater supply that was committed to as a result of the original PBNP SBO rule safety evaluation."

Provide a summary of the evaluation that shows that the new required condensate storage level needed is adequate to support one hour of decay heat removal under EPU conditions. Also provide assurance that the time margin for switchover of the Auxiliary Feedwater supply will be bounded by the time committed to as a result of the original PBNP SBO rule safety evaluation.

NextEra Response

The summary of the evaluation that demonstrates that the proposed condensate storage tank (CST) level Technical Specifications are adequate to support one hour of decay heat removal under EPU conditions is provided in the response to NRC Question 10 in Enclosure 1 and Enclosure 2 of Reference 6, with additional information provided in responses to RAIs SPBD-AFW-RAI-4, 13, and 14 in Enclosure 1 of Reference 7.

The original commitment also required maintaining a minimum usable CST volume that allowed shifting the AFW pump suctions to their long-term water source after the one-hour AC electrical power blackout period. The table below shows that EPU maintains the original SBO commitment by adjusting the volume to reflect the increase in rated reactor power. The original SBO commitment was based on the original licensed thermal power of 1518.5 megawatts thermal (MWt).

The CST volume required to support one hour of decay heat is calculated using the formula from NUMARC 87-00, Section 7.2.1, that requires 7.77 gallons for each MWt of reactor power. The allowance for transfer is the difference between the minimum required CST usable volume (per unit) and the volume required for 1 hour of decay heat.

	Reactor Power (MWt)	CST Required Usable Volume (gallons)	Volume for 1 hour (gallons)	Allowance for Transfer (gallons)
OLTP	1518.5	13,000	11,799	1,201
EPU	1800	15,410	13,986	1,424

The allowance for transfer at EPU is increased in the same proportion as the core power. Note that the above CST volumes are the usable volume. The CST Technical Specification volumes are higher as explained in the response to NRC Question 10 in Enclosure 1 of Reference 6.

EEEB-35

On page 2.3.5-6 of Attachment 5 of the EPU application, the licensee stated the following:

"Changes due to EPU result in negligible increases in room temperatures during an SBO from those previously evaluated."

Provide a summary of the evaluation that shows that the negligible increases in room temperatures during an SBO event will not adversely impact the capability and capacity of structures, systems, or components.

NextEra Response

Areas containing equipment required to mitigate an SBO are as follows:

Containment:

The initial temperature in the containment was evaluated for changes due to the increase in thermal power and due to the increase in the allowable service water (SW) temperature. The evaluation demonstrated that the maximum allowed operating temperature was not changed. In addition, the peak SBO temperature remains bounded by the LOCA and steam line break accidents.

Instrument Inverter, Cable Spreading, Control, and Computer Rooms:

Since no changes were made to the ventilation system and no additional heat load is generated following a SBO, there is no change to the temperature transient in these rooms under EPU conditions for SBO.

Auxiliary Feedwater Pump Room:

Note that per the response to NRC Question 6 of Enclosure 1 of Reference 7, the motor driven (MD) AFW pumps are not credited during the entire four hours of the PBNP SBO required coping period. The turbine-driven (TDAFW) train is used exclusively until normal AC powered is restored. There is no change to the ventilation system serving the TDAFW train. The heat loss due to operation of the TDAFW train at EPU conditions is not changed.

The major heat load is from the steam piping (i.e., main steam (MS) piping to the turbine, the turbine steam exhaust piping, and turbine casing), steam leaks, and miscellaneous DC power components. At zero power, main steam temperature at EPU conditions remains unchanged. Bearing cooling (from the fire water system, powered by the fire diesel-driven fire pump) is unchanged with EPU. Any change due to operating the TDAFW turbine and pump at a higher speed is considered negligible. The maximum allowable CST temperature is not increased: Therefore, the AFW piping temperature is unchanged. The remaining AFW heat loads are due to the DC powered components in the rooms. Heat load changes due to setpoint and cabling changes are considered insignificant. Therefore, the SBO TDAFW heat load increases due to EPU are not significant.

References

(1) NRC letter to NextEra Energy Point Beach, LLC, dated April 23, 2010, Point Beach Nuclear Plant, Units 1 and 2 – Request for Additional Information from Electrical Engineering Branch RE: Extended Power Uprate (TAC Nos. ME1044 and ME1045) (ML101100761)

(2) FPL Energy Point Beach, LLC letter to NRC, dated April 7, 2009, License Amendment Request 261, Extended Power Uprate (ML091250564)

(3) NextEra Energy Point Beach, LLC letter to NRC, dated April 28, 2010, License Amendment Request 261 Extended Power Uprate Response to Request for Additional Information (ML101190081)

(4) NextEra Energy Point Beach, LLC letter to NRC, dated February 11, 2010, License Amendment Request 261 Extended Power Uprate Withdrawal of Expedited Review Request, (ML100470786)

(5) NextEra Energy Point Beach, LLC letter to NRC, dated April 15, 2010, License Amendment Request 261 Supplement 4, Extended Power Uprate, (ML101050357)

(6) NextEra Energy Point Beach, LLC letter to NRC, dated June 17, 2009, License Amendment Request 261 Extended Power Uprate Supplement 1 (ML091690090)

(7) NextEra Energy Point Beach, LLC letter to NRC, dated November 21, 2009, License Amendment Request 261 Extended Power Uprate Response to Request for Additional Information (ML093270032)