NEXTera ENERGY POINT BEACH

September 14, 2010

NRC 2010-0093
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)
(3) NextEra Energy Point Beach, LLC letter to NRC, dated June 10, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML101610711)
(4) NextEra Energy Point Beach, LLC letter to NRC, dated August 12, 2010, License Amendment Request 261, Extended Power Uprate, Regulatory Commitment Change (ML102240444)

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. Reference (3) provided the NextEra response to the NRC staff's request for additional information, and a Regulatory Commitment for NextEra to respond to NRC Questions 16 through 24, 28, 30, 31, and 34. Enclosure 1 provides this response.

Summary of Regulatory Commitments

Via Reference (4), NextEra modified the Regulatory Commitment in Reference (3) as follows:

- The NextEra response to remaining RAIs (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 September 17, 2010.

This letter fulfills the Regulatory Commitment discussed above.

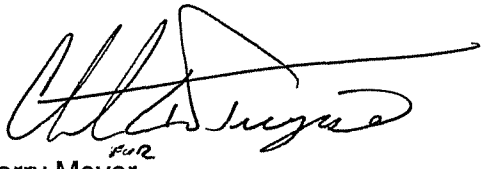
The information contained in this letter does not alter the no significant hazards consideration contained in Reference (1) and continues to satisfy the criteria of 10 CFR 51.22 for categorical exclusion from the requirements of an environmental assessment.

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 September 14, 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 for additional information (RAI) EEEB-16 through 24, 28, 30, 31, and 34 contained in Reference (1).

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

2.3.3 AC Onsite Power System

EEEB-16

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

"Therefore, the EPU voltage level requirements of the running motors are bounded by equipment design ratings and will be confirmed by the modification design process."

Provide assurance that the voltage level requirements of the running motors will continue to be bounded by equipment design ratings at EPU conditions.

NextEra Response

As noted in LAR-261, Attachment 5, Section 2.5.5.4, the condensate and feedwater pumps and motors are being replaced. The minimum and maximum EPU running voltage for the 4 kV non-safety-related motors, including condensate pump motors, feedwater pump motors, reactor coolant pump (RCP) motors, and heater drain (HD) pump motors were evaluated and will remain within the allowable 90% and 110% of rated voltage and continue to be bounded by the equipment design ratings at EPU conditions. The result of the evaluation is shown on Tables EEEB-16-1 and EEEB-16-2 below.

Therefore, the voltage level requirements of the running motors will continue to be bounded by the equipment design ratings at EPU conditions.

Table EEEB-16-1
4.16 kV Switchgear Minimum Running Motor Terminal Steady State Voltage

Bus	Motor	Rated Voltage (V)	Minimum Voltage (% of rated voltage)			Basis
			LAR EPU Voltage	Modification EPU Voltage	Allowable Voltage	
1A-01	1P-001A (RCP)	4000	101.09	95.69	90	Note 1
	1P-028A (Feedwater pump)	4000	101.31	95.93	90	Note 1
	1P-025A (Condensate pump)	4000	101.28	95.90	90	Note 1
	1P-027A (HD pump)	4000	101.37	96.00	90	Note 1
	1P-027C (HD pump)	4000	101.36	96.00	90	Note 1
1A-02	1P-001B (RCP)	4000	101.36	95.97	90	Note 1
	1P-028B (Feedwater pump)	4000	101.52	96.11	90	Note 1
	1P-025B (Condensate pump)	4000	101.47	96.08	90	Note 1
	1P-027B (HD pump)	4000	101.55	96.17	90	Note 1
2A-01	2P-001A (RCP)	4000	100.66	94.99	90	Note 1
	2P-028A (Feedwater pump)	4000	100.90	95.25	90	Note 1
	2P-025A (Condensate pump)	4000	100.86	95.20	90	Note 1
	2P-027A (HD pump)	4000	100.95	95.30	90	Note 1
	2P-027C (HD pump)	4000	100.95	95.30	90	Note 1
2A-02	2P-001B (RCP)	4000	100.75	95.13	90	Note 1
	2P-028B (Feedwater pump)	4000	100.91	95.29	90	Note 1
	2P-025B (Condensate pump)	4000	100.89	95.27	90	Note 1
	2P-027B (HD pump)	4000	100.98	95.37	90	Note 1

Note:

1. The minimum calculated steady-state voltages are obtained from the completed load flow analysis for 95% generator output voltage. Voltages reported in LAR-261 (Reference 2) were based on 100% generator voltage.

Table EEEB-16-2
4.16 kV Switchgear Maximum Running Motor Terminal Steady-State Voltage

Bus	Motor	Rated Voltage (V)	Maximum Voltage (% of rated voltage)			Basis
			LAR EPU Voltage	Modification EPU Voltage	Allowable Voltage	
1A-01	1P-001A (RCP)	4000	107.16	108.90	110	Note 1
	1P-028A (Feedwater pump)	4000	107.34	108.90	110	Note 1
	1P-025A (Condensate pump)	4000	107.32	108.90	110	Note 1
	1P-027A (HD pump)	4000	107.35	108.90	110	Note 1
	1P-027C (HD pump)	4000	107.35	108.90	110	Note 1
1A-02	1P-001B (RCP)	4000	107.34	108.85	110	Note 1
	1P-028B (Feedwater pump)	4000	107.47	108.85	110	Note 1
	1P-025B (Condensate pump)	4000	107.44	108.85	110	Note 1
	1P-027B (HD pump)	4000	107.47	108.85	110	Note 1
2A-01	2P-001A (RCP)	4000	106.82	108.85	110	Note 1
	2P-028A (Feedwater pump)	4000	107.01	108.85	110	Note 1
	2P-025A (Condensate pump)	4000	106.98	108.85	110	Note 1
	2P-027A (HD Pump)	4000	107.01	108.85	110	Note 1
	2P-027C (HD pump)	4000	107.02	108.85	110	Note 1
2A-02	2P-001B (RCP)	4000	106.91	108.90	110	Note 1
	2P-028B (Feedwater pump)	4000	107.04	108.90	110	Note 1
	2P-025B (Condensate pump)	4000	107.03	108.90	110	Note 1
	2P-027B (HD pump)	4000	107.06	108.90	110	Note 1

Note:

1. The calculated maximum voltage is obtained from the completed load flow analysis.

EEEB-17

On page 2.3.3-6 of Attachment 5 of the EPU application, the licensee stated the following:

"The protective relay settings for the condensate pump and main feedwater pump motors will be revised to protect the replacement motors and provide coordination. The [Reactor Coolant Pump] RCP motor overcurrent protection settings are impacted by cold-loop conditions and will be revised to prevent nuisance alarming during these conditions while providing adequate protection for the motors, electrical penetrations and cables. The necessary protective relay setting changes will be determined and implemented as part of the plant modification process."

Provide assurance that the above stated actions will be completed prior to implementation of the proposed EPU at PBNP.

NextEra Response

Calculations have been performed to address the protective relay settings for the Point Beach Nuclear Plant (PBNP), Units 1 and 2 condensate and feedwater pump motors. The calculations address changes to current transformer rating and relay settings for the new condensate and feedwater motors. New 51L (long-time, extremely inverse) relays are being added to the feedwater pump motors to provide locked rotor protection. The calculations demonstrate that the condensate and feedwater pump motors and their feeders are adequately protected. The changes are being implemented with the installation of the new condensate and feedwater pumps and motors.

The review of the reactor coolant pump (RCP) motor overcurrent protection settings affected by cold-loop conditions has been completed. To prevent nuisance alarms during these conditions, phase time overcurrent relay alarm pickup settings are being changed.

Due to the increase in horsepower of the condensate and feedwater pump motors, the low voltage station auxiliary transformer (LVSAT) low side CO-8 relay time dial, and the LVSAT high side CO-9 relay time dial setting will be revised to maintain coordination to support off-normal electrical system alignments. Note that the values in LAR 261 EPU, Licensing Report Tables 2.3.2-2, 1X-03 Maximum Input Loading on the H Winding, 2.3.2-3, 2X-03 Maximum Input Loading on the H Winding, 2.3.3-2, Low Voltage Station Auxiliary Transformers Input Load, and 2.3.3-3, 13.8 kV Switchgear Continuous Current, represent normal electrical system alignments.

The required changes described above will be completed prior to entry into EPU conditions.

EEEB-18

On page 2.3.3-6 of Attachment 5 of the EPU application, the licensee stated the following: "The safety-related system experiences improved voltage levels and lower short circuit currents under these modifications. The impact on the 480 V system will be confirmed for all additional EPU modifications by the modification process."

Provide assurance that the voltage level and short circuit current requirements will continue to be bounded by equipment design ratings at EPU conditions.

NextEra Response

The voltage levels and short circuit currents at the 480 V system buses and equipment are affected by several changes being performed for the EPU and Auxiliary Feed Water (AFW) modifications. In addition to the isolated phase bus (IPB) cooling and transformer cooling modifications, the additional key modifications that affect the 480 V system loading are the main generator high pressure seal oil back-up pump upgrade, the feedwater (FW) pump lubricating oil reservoir heater addition, a load reduction due to the feedwater pump motor space heater change, service air compressor upgrade and AFW modifications. These modifications impact the 480 V system as a result of the replacement motors, replacement and addition of cabling, addition of new load, and addition of a new motor control center (MCC).

Evaluations and supporting calculations that address the modifications discussed above to the 480 V system have been performed to demonstrate that the voltage levels and short circuit current requirements for the 480 V system are met and remain within equipment design ratings. The results indicate that there were improved minimum and maximum voltage levels and slight increases in the short circuit currents for the 480 V safety-related system.

Therefore, the 480 V system will continue to be bounded by equipment design ratings when operating at EPU conditions.

EEEB-19

On page 2.3.3-7 of Attachment 5 of the EPU application, the licensee stated the following:

"The load changes on the 480 V system are due to the IPB duct cooling system and new main transformers cooling systems which affects the non safety 480 V motor control center buses. The load changes in the AC load flow/short circuit analysis will be confirmed that they do not adversely impact the loading requirements upstream on 480 V load center buses and breakers under EPU conditions and the load center buses and breakers will remain bounded by equipment design ratings. This will be confirmed as part of the modification design process."

Provide assurance that the design requirements will continue to be bounded by equipment design ratings at EPU conditions.

NextEra Response

Evaluations and supporting calculations have been performed to address the loading requirements on the 480 V load center buses with implementation of the PBNP Unit 1 and Unit 2 EPU modifications. The calculated PBNP load center loading following the EPU and AFW modifications is summarized on Table EEEB-19-1 below.

Table EEEB-19-1
Load Center Loading

Bus	Total Load (kVA)	Minimum Voltage (V)	Maximum Normal Load Current (A)	Load Center Bus and Circuit Breaker Rating (A)
1B-01	782.19	426	1060.09	1600
1B-02	701.14	427	948.02	1600
1B-03	1349.0	424	1836.90	3000
1B-04	1166.52	428	1573.58	3000
2B-01	781.07	423	1066.08	1600
2B-02	964.85	422	1320.04	1600
2B-03	1070.44	428	1443.97	3000
2B-04	1476.0	426	2000.40	3000

The EPU modifications do not negatively impact the loading on the safety-related switchgear (1B-03, 1B-04, 2B-03, and 2B-04) for design basis events when safety injection or undervoltage signals are received. The remaining buses listed on this table are non-safety-related.

Therefore, the 480 V load center buses and breakers remain bounded by equipment ratings when operating at EPU conditions.

EEEB-20

On page 2.3.3-7 of Attachment 5 of the EPU application, the licensee stated the following:

"The short circuit currents (interrupting and momentary) at affected 480 V load center buses and circuit breakers during operation at EPU conditions will be confirmed that they are within the equipment short circuit ratings. The EPU short circuit requirements of load center buses and breakers will remain within the equipment design ratings. This will be confirmed as part of the modification process."

Provide assurance that the short circuit design requirements will continue to be bounded by equipment design ratings at EPU conditions.

NextEra Response

The 480 V load centers (i.e., 1B-01, 1B-02, 1B-03, 1B-04, 2B-01, 2B-02, 2B-03, and 2B-04) are affected by EPU and AFW modifications. Evaluations and supporting calculations have been performed addressing the short circuit requirements on the PBNP Unit 1 and Unit 2 480 V load center buses and breakers with implementation of the PBNP Unit 1 and Unit 2 EPU and AFW modifications. Tables EEEB-20-1 and EEEB-20-2 below provide a summary of the short circuit currents under normal alignment at EPU conditions.

Therefore, the 480 V short circuit design requirements will continue to be bounded by equipment design ratings when operating at EPU conditions.

Table EEEB-20-1
480 V Load Center Bus Short Circuit Current

Bus	Momentary, symmetrical (kA)		Basis
	EPU Maximum Duty	Design Rating	
1B-01	28.936	30	Note 1
1B-02	27.524	30	Note 1
1B-03	39.598	50	Note 1
1B-04	36.581	50	Note 1
2B-01	28.421	30	Note 1
2B-02	29.614	30	Note 1
2B-03	37.703	50	Note 1
2B-04	40.450	50	Note 1

Note:

1. The calculated short circuit current is obtained from the completed short circuit analysis.

Table EEEB-20-2
480 V Load Center Circuit Breaker Short Circuit Current

Bus	Breaker Frame Size	Interrupting, symmetrical (kA)		Basis
		EPU Maximum Adjusted Duty	Design Rating	
1B-01	1600 A	24.690	50	Note 1
	600 A	28.936	30	Note 1
1B-02	1600 A	24.478	50	Note 1
	600 A	27.524	30	Note 1
1B-03	3000 A	28.786	65	Note 1
	1600 A	39.598	50	Note 1
1B-04	3000 A	28.331	65	Note 1
	1600 A	36.581	50	Note 1
2B-01	1600 A	24.698	50	Note 1
	600 A	28.421	30	Note 1
2B-02	1600 A	24.548	50	Note 1
	600 A	29.614	30	Note 1
2B-03	3000 A	28.962	65	Note 1
	1600 A	37.720	50	Note 1
2B-04	3000 A	28.442	65	Note 1
	1600 A	40.450	50	Note 1

Note:

1. The calculated short circuit current is obtained from the completed short circuit analysis.

EEEB-21

On page 2.3.3-7 of Attachment 5 of the EPU application, the licensee stated the following:

"The load changes on the 480 V system are due to IPB duct cooling system and new main transformers cooling systems. The loads in the AC load flow/short circuit analysis will be confirmed that they do not adversely impact the loading requirements on the affected 480 V motor control center (MCC) buses and breakers under EPU conditions. The continuous current requirements for motor control center buses and circuit breakers at EPU conditions will be confirmed by AC load flow/short circuit analysis. This will be confirmed as part of the modification design process."

Provide assurance that continuous current requirements for MCC buses and circuit breakers at EPU conditions will continue to be bounded by equipment design ratings.

NextEra Response

Evaluations and supporting calculations that address the EPU and AFW modifications have been performed addressing the loading requirements on the 480 V MCC buses. The MCCs affected by the AFW and EPU are summarized below.

For PBNP Unit 2, calculations were performed to address the new loading on MCC 2B-41 and MCC B-22. The calculation showed that for MCC 2B-41, the existing cables were capable of supplying the load current. For MCC B-22, new cables have been installed and are capable of supplying the load current of MCC B-22. MCC B-22 is rated 600 amps and has a maximum load of 534.1 amps (peak winter) and 376.5 amps (peak summer) at EPU conditions. MCC 2B-41 is rated 600 amps and has a maximum load of 485.9 amps (peak winter) and 469.0 amps (peak summer) at EPU conditions.

For PBNP Unit 1, the existing MCC B-21 will not support additional load. Therefore, load is being reduced by removing turbine generator bus cooling fan 1W-45B. Instead of adding load to MCC 1B-41, a new MCC 1B-12 is being installed and will now serve turbine generator bus cooling fan 1W-45B, as well as power panels PP-2 and PP-3, formerly fed from MCC 1B-41. Calculations have been performed addressing the new loading on the existing MCC 1B-41 and the new MCC 1B-12. These calculations demonstrate that the existing cables for MCC 1B-41 and the new cables for MCC 1B-12 are capable of supplying the maximum calculated load. MCC 1B-41 is rated 600 amps and has a maximum load of 476.8 amps (peak winter and summer) at EPU Conditions. New MCC 1B-12 is rated 600 amps and has a maximum load of 283.6 amps (peak winter) and 132.1 amps (peak summer) at EPU conditions.

Loading on MCC B-33 and B-43 is affected by the AFW modifications due to the addition of new AFW pumps and motors. MCC B-33 and MCC B-43 experience a load increase from the addition of electric heaters, which is offset by a greater reduction due to the removal of the Boric Acid Evaporators (BAE) control panels. This results in a net reduction in load on MCC B-33 and MCC B-43.

The load changes on the 480 V system due to EPU modifications do not adversely affect the 480 V system. Through analysis (i.e., relay setting adjustments, re-cabling, addition of a new MCC, and shifting loads to this new MCC), load margins have improved on several MCC buses. Refer to Table EEEB-22-2 for the 480 V MCC circuit breaker short circuit current loading.

Therefore, the continuous current requirements for MCC buses and circuit breakers at EPU conditions will continue to be bounded by equipment design ratings.

EEEB-22

On page 2.3.3-7 of Attachment 5 of the EPU application, the licensee stated the following:

"The short circuit currents (interrupting and momentary) at affected 480 V motor control center buses and circuit breakers during operation at EPU conditions will be confirmed that they remain within the equipment short circuit ratings. The EPU short circuit requirements of motor control center buses and breakers will remain within the equipment design ratings in the AC load flow/short circuit analysis. This will be confirmed as part of the modification process."

Provide assurance that EPU short circuit requirements of MCC buses and breakers will remain within the equipment design ratings in the AC load flow/short circuit analysis.

NextEra Response

Evaluations and supporting calculations have been performed addressing the impacts to the short circuit requirements on the 480 V MCC buses and breakers related to the EPU and AFW modifications. The rated momentary symmetrical short circuit current for the existing and new 480 V MCCs affected by these modifications are shown in Table EEEB-22-1. The rated interrupting symmetrical short circuits current for the associated MCC circuit breakers are shown in Table EEEB-22-2. The maximum short circuit currents calculated for the new and affected existing 480 V MCCs and circuit breakers are below the equipment design ratings.

Tables EEEB-22-1 and EEEB-22-2 below provide a summary of the short circuit currents under normal alignment at EPU conditions.

Therefore, the EPU short circuit requirements of the MCC buses and breakers will remain within the equipment design ratings in the alternating current (AC) short circuit analysis when operating at EPU conditions.

Table EEEB-22-1
480 V Motor Control Center Bus Short Circuit Current

MCC	Momentary, symmetrical (kA)		Basis
	Maximum EPU Duty	Design Rating	
1B-12	21.886	42	Note 1
1B-41	23.774	50	Note 1
2B-41	25.546	50	Note 1
B-21	27.946	50	Note 1
B-22	24.482	50	Note 1
B-33	24.554	42	Note 1
B-43	23.156	42	Note 1

Note:

1. The calculated short circuit current is obtained from the completed short circuit analysis.

Table EEEB-22-2
480 V Motor Control Center Circuit Breaker Short Circuit Current

MCC	Interrupting, symmetrical (kA)		Basis
	Maximum Adjusted EPU Duty	Design Rating	
1B-12	21.866	65	Note 1
1B-41	23.774	65	Note 1
2B-41	25.546	65	Note 1
B-21	27.946	65	Note 1
B-22	24.482	65	Note 1
B-33	24.554	35	Note 1
B-43	23.156	25	Note 1

Note:
1. The calculated short circuit current is obtained from the completed short circuit analysis.

EEEB-23

On page 2.3.3-8 of Attachment 5 of the EPU application, the licensee stated the following:

"Power supply requirements have been analyzed and there is no adverse impact on the 480 V system from these modifications, as determined in the AC load flow/short circuit analysis. Modifications to the isolated phase bus duct and main transformers will be implemented prior to EPU operation. This will be confirmed as part of the modification design process."

Provide assurance that modifications to the isolated phase bus duct and main transformers will be implemented prior to EPU operation and that there will be no adverse impact on the 480 V system as a result of these modifications.

NextEra Response

The modifications to the IPB duct and main transformers were completed on PBNP Unit 2 during the Fall 2009 refueling outage. The remaining PBNP Unit 2 EPU modifications will be installed prior to entry into EPU conditions for Unit 2. The PBNP Unit 1 EPU modifications will be installed prior to entry into EPU conditions.

As identified in the responses to EEEB-18, -19, -20, -21, and -22, there will be no adverse impact on the 480 V system as a result of these modifications.

EEEB-24

On page 2.3.3-8 of Attachment 5 of the EPU application, the licensee stated the following:

"The new load additions from these modifications are expected to be minor and the effect on the non safety-related 120 V AC instrument power system is expected to be small. Therefore, the voltage levels and short circuit current requirements for the 120 V AC instrument system equipment will not be adversely affected by EPU conditions, and equipment ratings are expected to remain bounded by the existing equipment design ratings. The new load additions will be confirmed and their effects on the system will be verified as part of the plant modification process."

Provide a summary of the evaluation that shows impact of these modifications on the 120 V AC instrument power system. Also provide assurance that equipment ratings will remain bounded by the existing equipment design ratings and that modifications to the 120 V AC system will be implemented prior to EPU operation.

NextEra Response

Evaluations and supporting calculations have been performed addressing the loading requirements on the non safety-related 120 VAC instrument power system with the implementation of the PBNP Unit 1 and Unit 2 EPU modifications.

For PBNP Unit 1, the EPU modifications affect 120 VAC panel 1Y-06 which feeds new panel 1Y-18. Panel 1Y-06 is fed from 30 kVA transformer 1XY-06. Calculations were performed to support EPU modifications to 1Y-06. The effect of EPU and AST changes will increase the load on the upstream transformer 1XY-06. However, the available margin on the transformer loading remains greater than 5%.

For PBNP Unit 2, the EPU modifications affect 120 VAC panel 2Y-06 which feeds new panel 2Y-18. Panel 2Y-06 is fed from 30 kVA transformer 2XY-06. Calculations were performed to support EPU modifications to 2Y-06. The effect of EPU and AST changes will increase the load on the upstream transformer 2XY-06. However, the available margin on the transformer loading remains greater than 5%.

Analysis of cable ampacity, voltage drop and short circuit consideration for the 120 VAC system changes has been addressed. The short circuit analysis results show that the existing 120 VAC buses will remain unchanged, since no motor loads are added to the system and the new panels 1Y-18 and 2Y-18 are within design ratings. The voltage drop analysis results showed that all equipment being added by EPU will be within equipment minimum voltage requirements. The ampacity analysis results showed that the load currents are less than ampacity requirements and the cables are protected by their protective device.

The equipment ratings on the 120 VAC system are bounded by the existing equipment design ratings when operating at EPU conditions. The EPU modifications noted above will be completed prior to entry to EPU conditions.

EEEB-28

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

"The new generator output circuit breaker protection scheme requires changes to the main generator, main transformer and [Unit Auxiliary Transformer] UAT protection settings. These changes will be addressed as part of the plant modification process for the main generators."

Provide assurance that the new generator output circuit breaker protection scheme will be modified to address any adverse impact as a result of operating under EPU conditions.

NextEra Response

The modification package for the new generator breaker was implemented (Fall 2009) for PBNP Unit 2 to accommodate EPU conditions. This modification included changes to the protection scheme that addressed adverse impacts associated with current power level conditions. The generator and circuit breaker protection schemes will be modified to address any adverse impacts associated with EPU conditions prior to entry into EPU conditions.

The modification to install the new generator breaker for PBNP Unit 1 has been prepared, reviewed, and approved. This modification includes changes to the protection scheme that address adverse impacts. This modification will be implemented prior to entry into EPU conditions for PBNP Unit 1. The new generator output circuit breaker protection scheme will be modified to address any adverse impact as a result of operating under EPU conditions.

2.3.4 Direct Current (DC) Power System

EEEB-30

On page 2.3.4-3 of Attachment 5 of the EPU application, the licensee stated the following:

"The load changes resulting from these modifications are small and the effect on the 125V DC system has been found to be acceptable. The design of these modifications are in process and the effect on EPU will be evaluated as part of the modification progress. This includes determining the impact on the licensing basis using the 10 CFR 50.59 screening and evaluation process."
Provide a summary of the evaluation that shows that load changes that result from modifications will remain within the equipment design ratings under EPU conditions. Also provide assurance that the modifications will be completed prior to implementation of the proposed EPU.

NextEra Response

Safety-related station batteries D-05, D-06, D-105, D-106, and D-305 and non-safety-related station batteries 1D-205 and 2D-205 are affected by EPU modifications. Calculations have been performed to address safety-related battery performance for design basis accident (i.e., loss of offsite power (LOOP) / loss of coolant accident (LOCA) and station blackout (SBO)) conditions, as well as address battery performance for non-safety related batteries during a LOOP event.

There will be a small reduction in battery capacity design margin for safety-related station batteries D-05 and D-06 as a result of the EPU modifications. There will be a more significant reduction in battery capacity design margin for safety-related station batteries D-105, D-106, D-305 and non-safety-related station batteries 1D-205 and 2D-205 due to the EPU modifications. However, the available battery capacity margin remains above the minimum required design margin for the safety-related station batteries D-105, D-106, D-305 and non-safety-related station batteries 1D-205 and 2D-205.

The calculations show that the minimum voltage requirement downstream of the 125 VDC panels is satisfied to ensure that the loads are above minimum voltage requirements.

The battery charger rating for the batteries are minimally affected by the EPU modifications because the normal DC system load slightly increased. The battery charger sizing is based on the maximum ampere-hour discharge capacity of each battery for the specified duty cycle duration and maximum normal 125 VDC system load. The EPU and AFW modifications have a minimal effect on battery charger rating and the battery chargers will remain adequately sized.

The short circuit contributions to D-05, D-06, D-105, D-106, D-305 1D-205 and 2D-205 will be affected by load added or removed by EPU and AFW modifications. Based on calculations, the new short circuit currents do not exceed existing bus or protective device ratings.

The 125 VDC system equipment has sufficient capability and capacity to supply the load changes introduced by EPU. Therefore, load changes to the 125 VDC system that result from modifications will remain within the equipment design ratings under EPU conditions.

The PBNP Unit 1 and Unit 2 EPU modifications will be installed prior to entry into EPU conditions for each respective unit.

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Provide a detailed discussion on any changes in the timing sequence for loads supplied by the safety-related batteries and the impact on the capability and capacity of the DC power system to perform its design function.

NextEra Response

With the exception of the new safety injection auxiliary relays (type MG-6) used in the feedwater isolation valve circuitry (LOCA only) and the AFW intermittent loads, DC loads added to the safety-related batteries as a result of EPU start at time t=0 and are conservatively assumed to operate for the duration of the battery duty cycle.

The AFW intermittent loads begin with the automatic start of turbine-driven AFW (TDAFW) pumps within 5 to 20 seconds. This allows the steam admission valve to open and admit steam to start the pumps. The motor-driven AFW (MDAFW) pump 1P-053 close coil is energized at 42-seconds and the spring charge motor is energized between 43 and 48 seconds. TDAFW pumps discharge valve manually operates between minute 58 and minute 59. The service water suction valves for the TDAFW and MDAFW pumps operate between minute 59 and minute 60, which is the most critical time of the duty cycle that has the highest load when these valves can be expected to operate. The TDAFW and MDAFW pump recirculation valve(s) solenoid operated valve circuit is assumed to be energized throughout the battery's 1-hour duty cycle.

As discussed in EEEB-30 above, the DC power system equipment will remain within the design rating at EPU conditions. The timing sequence for loads supplied by the safety-related batteries will not adversely impact the capability and capacity of the DC power system to perform its design function.

2.3.5 Station Blackout (SBO) Section

EEEB-34

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

"EPU does not require SBO-related equipment to be added or changed which would require additional DC power during an SBO event. There are no significant additional loads added to the safety-related battery during an SBO at EPU conditions."

Identify all loads that are being added to the safety-related batteries during an SBO event at EPU conditions. Provide assurance that the safety-related batteries will remain capable of performing their design function during an SBO event under EPU conditions

NextEra Response

The following loads are being added or modified as part of the EPU and are assumed to be energized during the station blackout (SBO) duty cycle of the safety-related batteries D-05, D-06, D-105 and D-305. Refer to Table EEEB 34-1 below.

Similarly, the AFW modifications contribute to load changes during SBO conditions. The approximate steady state loads added and removed to safety-related batteries D-05, D-06, D-105, D-106 and D-305 due to the AFW modifications are shown in Table EEEB 34-2 and Table EEEB 34-3 below. The below steady state loads shown are approximate, and do not include intermittent loads operating during short periods in design basis accidents or SBO scenarios.

Table EEEB 34-1
Extended Power Uprate Station Blackout Loads

Battery	Load Description	Load Rating (W)
D-05	(1)Time-Overcurrent relay, Long Time Extremely Inverse for Feed Water Pump motor protection 1P-028A	2.5
	(1)Time-Overcurrent relay, Long Time Extremely Inverse for Feed Water Pump motor protection 2P-028A	2.5
	(2) Indicating lights associated with Unit 1 MFIV SOV 1CS254A/B	8
	(2) ASCO Solenoid valves (2) VALCOR Solenoid Valves associated with Unit 1 MFRV 1CS466 and 1CS476	54.8
	(2) Loss of Voltage relays for MFIV (2) Indicating Lights associated with Unit 2 MFIV SOV 2CS254A/B	36.8
Total		**104.6**
D-06	(1) Time-Overcurrent relay, Long Time Extremely Inverse for Feed Water Pump motor protection 2P-028B	2.5
	(2) Loss of voltage relays for MFIV (2) Indicating lights associated with Unit 2 MFIV SOV 2CS255A/B	36.8
	(2) ASCO Solenoid Valves (2) VALCOR Solenoid valves associated with Unit 2 MFRV 2CS466 and 2CS476	54.8
	Main transformer 2X01 Cooler Control panel and (3)Pressure Monitors	485.25
	Main transformer 1X01 Cooler Control panel and (3) Pressure Monitor	485.25
	(2) Indicating lights associated with Unit 1 MFIV SOV 1CS255A/B	8
	(1) Time-Overcurrent relay, Long Time Extremely Inverse for Feedwater Pump motor protection 1P-028B	2.5
Total		**1075.1**
D-105	Unit 1 Feedwater Regulating Valve Control Station	9.4
	Unit 2 Feedwater Regulating Valve Control Station	9.4
Total		**18.8**

Table EEEB 34-2
Auxiliary Feedwater Modification Load Changes

Battery	Load ID	Component	Load Rating (W)
D-05	Panel D16 Feed	N/A	
	2-62AX	RELAY	12
	1SGLLA	RELAY	12
	1MS2019-1X	RELAY	12
	2SGLLA	RELAY	12
Total			**48**
D-06	Panel D18 Feed	N/A	
	2SGLLB	RELAY	12
	2MS2020-1X	RELAY	12
	1SGLLB	RELAY	12
	1-62BX	RELAY	12
Total			**48**
D-105	2A52-68-G1	LIGHT	4
	2A52-68-G2	LIGHT	4
	2A52-68-G3	LIGHT	4
	2A52-68-R1	LIGHT	4
	2A52-68-R2	LIGHT	4
	2A52-68-R3	LIGHT	4
	2A52-68-R4	LIGHT	4
	2A52-68-W	LIGHT	4
	2AF-4073A-S	VALVE	16
	2AF-4073B-S	VALVE	16
	2A52-68-G4	LIGHT	4
	2A52-68-R5	LIGHT	4
	2A52-68-Y	RELAY	7.5
	50G/A52-68	RELAY	25
	51/50A/A52-68	RELAY	25
	51/50B/A52-68	RELAY	25
	51/50C/A52-68	RELAY	25
	74/A52-68	RELAY	3.5
	74/A68FM-CLOSE	RELAY	1.2
	74/A68FM-TRIP	RELAY	1.2
	86/A52-68	RELAY	7.8
	62/4073	RELAY	8
	1MS-2020-42/C	RELAY	12.4
	1MS-2020-42/O	RELAY	12.4
	1MS-2020-G	LIGHT	4
	1MS-2020-M (SS-dischres+shunt coil)	MOV	152.8
	1MS-2020-R	LIGHT	4
	33X/1MS-2020	RELAY	9
	1AF-4000-42/C	RELAY	12.4
	1AF-4000-42/O	RELAY	12.4
	1AF-4000-R	LIGHT	4
	1AF-4000-G	LIGHT	4

Battery	Load ID	Component	Load Rating (W)
D-105 (Cont.)	1AF-4000-M (SS-dischres+shunt coil)	MOV	152.8
	1AF-4006-42/C	RELAY	12.4
	1AF-4006-42/O	RELAY	12.4
	1AF-4006-G	LIGHT	4
	1AF-4006-R	LIGHT	4
	62/1-4044C	RELAY	6
	2AF-4067-G	LIGHT	4
	2AF-4067-R	LIGHT	4
	2AF-4067-42/C	RELAY	12.4
	2AF-4067-42/O	RELAY	12.4
	1-62-4044 (1MS-2082)	RELAY	6
	1-62-4044X (1MS-2082)	RELAY	12
	1-74-02082	RELAY	12
	1MS-2082-42/C	RELAY	12
	1MS-2082-42/C-X	RELAY	9
	1MS-2082-42/O	RELAY	12
	1MS-2082-42/O-X	RELAY	9
	1MS-2082-A	LIGHT	4
	1MS-2082-G	LIGHT	4
	1MS-2082-R1	LIGHT	4
	1MS-2082-R2	LIGHT	4
	1-62/NC005	RELAY	8
	1AF-4002-G	LIGHT	4
	1AF-4002-R	LIGHT	4
	1AF-4002-S	VALVE	33
	1-74-2020	RELAY	9
	1MS2020-1X	RELAY	12
	2P-53-11X	RELAY	12
	2P-53-1X	RELAY	12
	2P-53-6X	RELAY	12
	62/2-2P53A1	RELAY	6
	62/2-2P53A2	RELAY	6
	74/2P-53X	RELAY	12
	74/2P-53X-W	LIGHT	4
	2AF-4074A-G	LIGHT	4
	2AF-4074A-R	LIGHT	4
	2AF-4074B-G	LIGHT	4
	2AF-4074B-R	LIGHT	4
	2P-53-3X	RELAY	12
	62/4069A1	RELAY	6
	62/4069A2	RELAY	6
	74/4069	RELAY	12
	74/4069-W	LIGHT	4
	2A5268-1X	RELAY	12
	2A5268-2X	RELAY	12
Total			**955**

Battery	Load ID	Component	Load Rating (W)
D-106	1A52-83-R4	LIGHT	4
	1AF-4073A-S	VALVE	16
	1AF-4073B-S	VALVE	16
	1-74/A52-83	RELAY	65
	1-86/A52-83	RELAY	2.5
	1A52-83-G4	LIGHT	4
	1A52-83-R5	LIGHT	4
	1A52-83-Y	RELAY	7.5
	49/A52-83	RELAY	10
	50D/A52-83	RELAY	6.3
	50G/A52-83	RELAY	1.3
	51/A52-83	RELAY	2.5
	1A52-83-G1	LIGHT	4
	1A52-83-G2	LIGHT	4
	1A52-83-G3	LIGHT	4
	1A52-83-R1	LIGHT	4
	1A52-83-R2	LIGHT	4
	1A52-83-R3	LIGHT	4
	1A52-83-W	LIGHT	4
	62/1-4073	RELAY	8
	74/A83FM-CLOSE	RELAY	1.2
	74/A83FM-TRIP	RELAY	1.2
	2MS-2019-42/C	RELAY	12.4
	2MS-2019-42/O	RELAY	12.4
	2MS-2019-G	LIGHT	4
	2MS-2019-M (SS-dischres+shunt coil)	MOV	152.8
	2MS-2019-R	LIGHT	4
	33X/MS-2019	RELAY	9
	2AF-4001-42/C	RELAY	12.4
	2AF-4001-42/O	RELAY	12.4
	2AF-4001-G	LIGHT	4
	2AF-4001-R	LIGHT	4
	2AF-4006-42/C	RELAY	12.4
	2AF-4006-42/O	RELAY	12.4
	2AF-4006-M (SS-dischres+shunt coil)	MOV	152.8
	2AF-4006-G	LIGHT	4
	2AF-4006-R	LIGHT	4
	62/4044C	RELAY	6
	1AF-4067-42/C	RELAY	12.4
	1AF-4067-42/O	RELAY	12.4
	1AF-4067-M (SS-dischres+shunt coil)	MOV	152.8
	1AF-4067-G	LIGHT	4
	1AF-4067-R	LIGHT	4
	2-62-4044 (2MS-2082)	RELAY	6
	2-62-4044X (2MS-2082)	RELAY	12
	2-74-02082	RELAY	12
	2MS-2082-42/C	RELAY	12

Battery	Load ID	Component	Load Rating (W)
D-106 (Cont.)	2MS-2082-42/C-X	RELAY	9
	2MS-2082-42/O	RELAY	12
	2MS-2082-42/O-X	RELAY	9
	2MS-2082-A	LIGHT	4
	2MS-2082-G	LIGHT	4
	2MS-2082-R1	LIGHT	4
	2MS-2082-R2	LIGHT	4
	2-62/NC005	RELAY	8
	2AF-4002-G	LIGHT	4
	2AF-4002-R	LIGHT	4
	2-74-2019	RELAY	9
	2MS2019-1X	RELAY	12
	1P-53-11X	RELAY	12
	1P-53-1X	RELAY	12
	1P-53-6X	RELAY	12
	62/1-1P53A1	RELAY	6
	62/1-1P53A2	RELAY	6
	74/1P-53X	RELAY	12
	74/1P-53X-W	LIGHT	4
	1P-53-3X	RELAY	12
	62/1-4069A1	RELAY	6
	62/1-4069A2	RELAY	6
	74/1-4069	RELAY	12
	74/1-4069-W	LIGHT	4
	1AF-4074A-G	LIGHT	4
	1AF-4074A-R	LIGHT	4
	1AF-4074B-G	LIGHT	4
	1AF-4074B-R	LIGHT	4
	1A5283-1X	RELAY	12
	1A5283-2X	RELAY	12
Total			**1051.1**

Table EEEB 34-3
Auxiliary Feedwater Modification Load Changes

Battery	Load ID	Component	Load Rating (W)
D-05	2AF-04001-42/C	RELAY	-12
	2AF-04001-42/O	RELAY	-12
	33X/2AF-04001	RELAY	-9
	2MS-02019-42/C	RELAY	-12
	2MS-02019-42/O	RELAY	-12
	2MS-02019-G	LIGHT	-4
	2MS-02019-R	LIGHT	-4
	33X/2MS-02019	RELAY	-9
	74/P-38A-11X	RELAY	-12
	74/P-38A-1X	RELAY	-12
	74/P-38A-21X	RELAY	-12
	74/P-38A-2X	RELAY	-12
	74/P-38A-W	LIGHT	-4
	74/P-38A-X	RELAY	-12
	AF-4022-X	RELAY	-9
	AF-4023-X	RELAY	-9
	2-74-2019 (4044A)	RELAY	-9
Total			**-165**
D-06	1AF-04000-33X	RELAY	-9
	1AF-04000-42/C	RELAY	-12
	1AF-04000-42/O	RELAY	-12
	1MS-02020-42/C	RELAY	-12
	1MS-02020-42/O	RELAY	-12
	1MS-02020-G	LIGHT	-4
	1MS-02020-R	LIGHT	-4
	1AF-04000-G	LIGHT	-4
	1AF-04000-R	LIGHT	-4
	2-74/P38BX	RELAY	-12
	2-74/P38BX-W	LIGHT	-4
	2AF-4020X	RELAY	-9
	2AF-4021X	RELAY	-9
	P-038B-11X	RELAY	-12
	P-038B-1X	RELAY	-12
	P-038B-21X	RELAY	-12
	P-038B-2X	RELAY	-12
	1-74-2020	RELAY	-9
Total			**-164**
D-105	1-62-4044 (1MS-2082)	RELAY	-6
	1-62-4044X (1MS-2082)	RELAY	-12
	1-74-02082	RELAY	-12
	1MS-02082-42/C	RELAY	-12
	1MS-02082-42/C-X	RELAY	-9
	1MS-02082-42/O	RELAY	-12

Battery	Load ID	Component	Load Rating (W)
D-105 (Cont.)	1MS-02082-42/O-X	RELAY	-9
	1MS-02082-A	LIGHT	-4
	1MS-02082-G	LIGHT	-4
	1MS-02082-HOLD RELAY	RELAY	-12
	1MS-02082-R1	LIGHT	-4
	1MS-02082-R2	LIGHT	-4
	1MS-02082-TRIP SOLENOID	RELAY	-35.1
	1-62/NC005	RELAY	-8
	1AF-04002-G	LIGHT	-4
	1AF-04002-R	LIGHT	-4
	1AF-04002-S	VALVE	-33
Total			**-184.1**
D-106	2-62-4044 (2MS-2082)	RELAY	-6
	2-62-4044X (2MS-2082)	RELAY	-12
	2-74-02082	RELAY	-12
	2MS-02082-42/C	RELAY	-12
	2MS-02082-42/C-X	RELAY	-9
	2MS-02082-42/O	RELAY	-12
	2MS-02082-42/O-X	RELAY	-9
	2MS-02082-A	LIGHT	-4
	2MS-02082-G	LIGHT	-4
	2MS-02082-HOLD RELAY	RELAY	-12
	2MS-02082-R1	LIGHT	-4
	2MS-02082-R2	LIGHT	-4
	2MS-02082-S	VALVE	
	2MS-02082-TRIP SOLENOID	RELAY	-35.1
Total			**-135.1**

The response to RAI EEEB-30 discusses safety-related batteries acceptable performance during an SBO event under EPU conditions. Therefore, the safety-related batteries will remain capable of performing their design function during an SBO event under EPU conditions.

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 August 9, 2010, License Amendment Request 261, Extended Power Uprate, Response to Request for Additional Information (ML102220146)