

License Amendment Request Pre-Submittal Discussion

Point Beach Nuclear Plant Units 1 & 2

October 18, 2016



Agenda

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Introductions

NextEra Staff:

- **Mike Millen, PB Director of Regulatory Projects**
- **Lori Christensen, PB Licensing Project Manager**
- **Rich LaPlante, PB Civil/Structural Sr. Engineer**
- **Steve Catron, Fleet Licensing Manager**
- **Anil Julka, Fleet Risk & Reliability Manager**

Support Staff:

- **Nabil Juraydini, Stevenson & Associates Sr. Consultant**

NextEra Energy (NYSE: NEE) is comprised of two strong businesses supported by a common platform:



- \$17B Consolidated Revenues ⁽¹⁾
- 44,900 MW in operation ^(1, 2)
- 13,800 employees



One of the largest U.S. electric utilities
4.8 MM customer accounts
25,100 MW in operation



U.S. leader in renewable generation
Assets primarily in 25 states and Canada
19,800 MW in operation ^(1, 2)

World's largest generator of renewable energy from the wind and sun

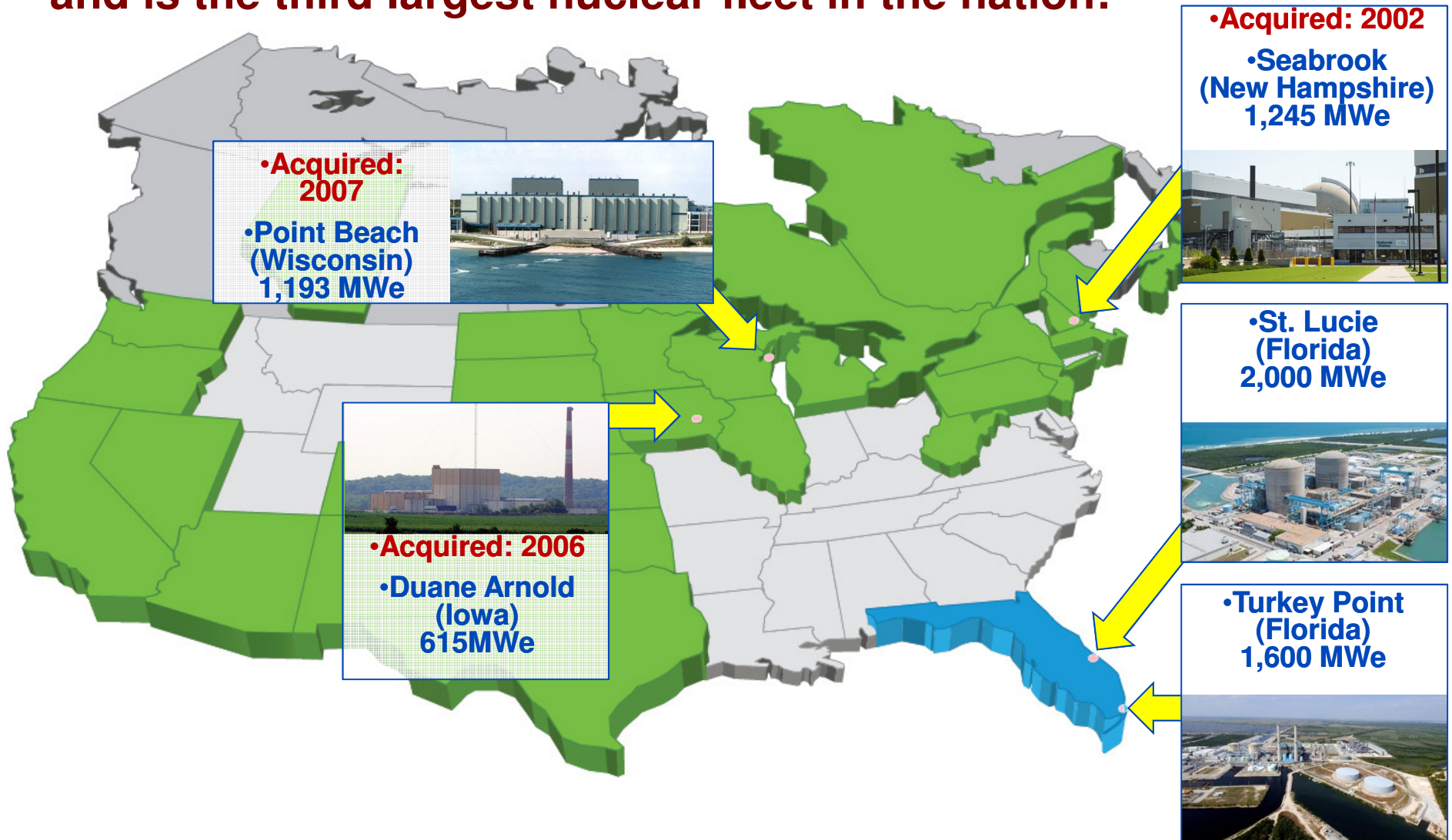
Among *Fortune*'s 2015 list of 'World's Most Admired Companies' and among top 10 companies in the world in both the categories of innovativeness and community responsibility

Named to 2015 World's Most Ethical Company list (Ethisphere Institute)

(1) As of Dec. 31, 2014 from 10-k

(2) Includes NEE's ownership share of NextEra Energy Partners' portfolio

NextEra's nuclear fleet includes eight reactors at five plant sites and is the third largest nuclear fleet in the nation:



The foundation for everything we do are the Values and Core Principles of our Nuclear Excellence Model:



Nuclear Excellence Model



Purpose

Describe the Risk-Informed License Amendment Request (LAR) to Resolve Point Beach Dome Truss Legacy Nonconformances

- **Risk-Informed Proposed License Basis Changes**
 - Revised seismic analysis methodology to evaluate the dome truss and supported components
 - Revised structural acceptance criteria for seismic and thermal response
- **Modifications to Support Risk-Informed Resolution**
- **Defense-in-Depth Maintained**

License Amendment Request proposed as risk-informed resolution for low risk non-conformances

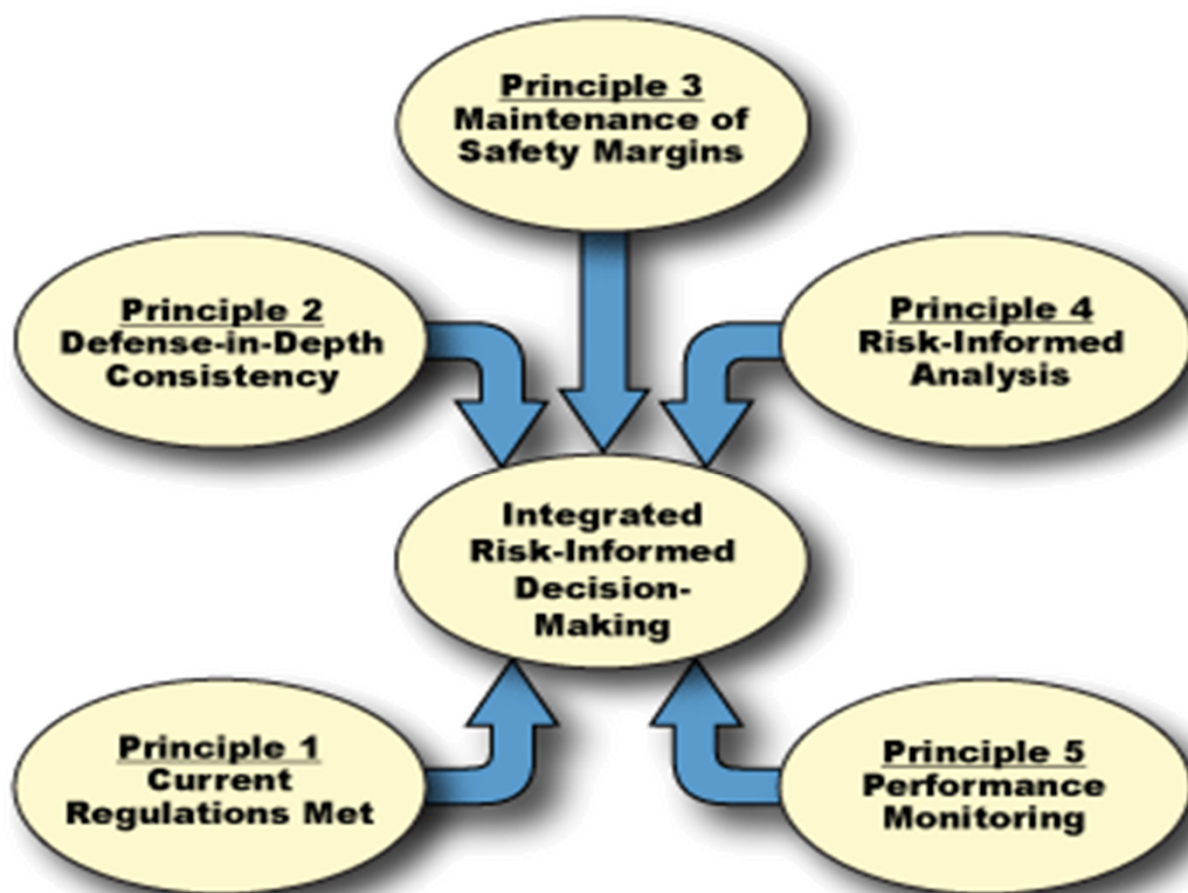
Overview

- The nonconformances are the result of a legacy condition from original construction
- The scope of the risk-informed request will be limited in application to evaluation of the dome truss structures, equipment supported by the trusses, and the containment liner
- Regulatory Guide (RG) 1.174 : *In making a regulatory decision, risk insights are integrated with considerations of defense-in-depth and safety margins*
- Following RG 1.174, Rev. 2, and monitoring developments from Draft Rev. 3

License Amendment Request proposed as risk-informed resolution for low risk non-conformances

RG 1.174 Risk-Informed LAR Principles

Regulatory Guide (RG) 1.174 : *In making a regulatory decision, risk insights are integrated with considerations of defense-in-depth and safety margins.*



RG 1.174 Principle 1 Current Regulations Met

- **Nonconformances:**
 - **Unit 1 & 2 Containment Dome Truss Structures are currently:**
 - Nonconforming to the design code of record
 - **Unit 1 & 2 Containment Spray piping ring headers are currently:**
 - Operable-but-Nonconforming to the design code of record
 - **Unit 1 & 2 Containment structures are:**
 - Operable-but-Nonconforming for locally applied thermal and seismic loads
- **The proposed license basis changes are consistent with current regulations**

***The proposed changes will return the SSCs to compliance
with a revised license basis***

RG 1.174 Principle 2 Defense-in-Depth Contingency

- **Methodologies and acceptance criteria maintain structural integrity**
- **Existing station design for Defense-in-Depth remains unchanged**
- **Involves all passive components, no human intervention**
- **No changes to existing Prevention, Mitigation and Emergency Planning strategies**
- **Identified modifications will enhance Defense-in-Depth**

Defense-in-Depth enhanced through selected modifications

RG 1.174 Principle 3 Maintenance of Safety Margins

- **Dome Truss and supported components analyzed to maintain structural integrity for analyzed events (seismic and thermal)**
- **Containment Integrity maintained**
- **Modifications planned to improve margin**
- **Mitigating System Protection Modifications**

Safety Margins are maintained

RG 1.174 Principle 4 Risk-Informed Analysis

Two PRA sensitivity evaluations characterize the risk margin:

1. Event Tree Model Crediting Limited Accident Mitigation

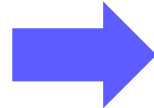
1. Applied Fault Trees from internal events model [RG 1.200]
2. Developed probabilities for certain events and failures
3. Failure probabilities based on the robustness of the barriers protecting key SSCs credited for this event. Bounding assumptions applied:
 - Assumed dome truss debris impacts equipment
 - Assumed debris weight equals the heaviest dome truss section

2. Bounding Analysis

Conservative assumption that postulated truss failure will result in core damage, i.e. Conditional Core Damage Probability [CCDP] = 1.0

RG 1.174 Principle 4 Risk-Informed Analysis

**RISK
ASSESSMENT
SHOWS VERY
LOW RISK**



BOUNDING ANALYSIS

$\Delta\text{CDF} = \text{High E-06 (Region II)}$

EVENT TREE MODEL

$\Delta\text{CDF} = \text{High E-07 (Region III)}$

Note: Both cases include Seismic and Thermal; and $\Delta\text{LERF} = 0.1 \Delta\text{CDF}$

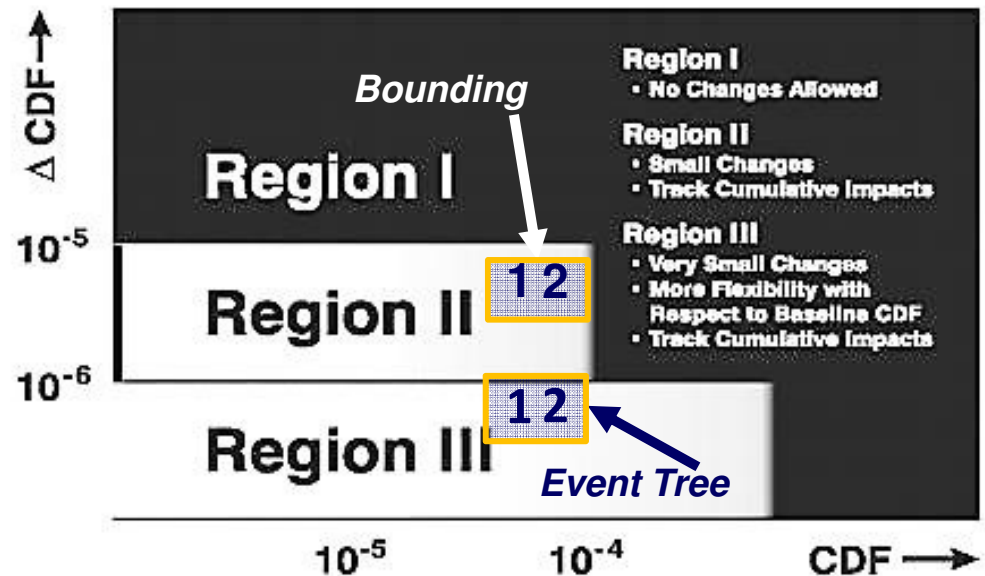


Seismic:

Unit 1/2 : Acceptance with modifications to enhance defense in depth

Thermal:

Unit 1/2: Acceptance with modifications to enhance defense in depth



RG 1.174 Principle 5 Performance Monitoring

- **Monitor equipment performance under Maintenance Rule**
- **Establish lower limit for plant shutdown and inspection**
- **Perform periodic inspections of applicable equipment and structures**

Summary of Proposed Licensing Basis Changes

- **Proposed resolution risk-informed submittal**
- **Development of new response spectra for dome truss**
 - Based upon NUREG/CR-6728 seed motions that envelope the site specific Ground Motion Response Spectra (GMRS)
 - Utilizes soil-structure interaction approach
 - Revised Damping Criteria
- **Use of alternate acceptance criteria**
 - AISC N690-1994
 - Exception to permit localized stress exceedance

Revised UFSAR pages will be included in the submittal

Proposed Timeline

- **1Q2017 – Submit LAR**
 - Revised seismic analysis methodology to evaluate the dome truss and supported components
 - Revised structural acceptance criteria for seismic and thermal response
 - Risk-informed resolution
 - Defense-in-depth and safety margins maintained
- **Implement U1 Thermal Modification**
 - Implement following existing outage milestones after issuance of the safety evaluation
- **Implement Enhancement Defense-in-Depth Modifications**
 - Implement during, or before, U1 thermal modification refueling outage

Conclusion

- **Low risk impact including bounding analysis CCDP=1**
- **Assessment identified that critical components have low probability of failure**
- **Identified mods that will enhance protection for critical mitigating functions**
- **Supporting PRA evaluations employ many conservative assumptions**
- **Meets RG 1.174 requirements**
 - PRA quality meets RG 1.200
 - Will address Facts & Observations impacts
- **Independent reviews from industry experts confirms validity of methodology and assumptions**

Questions