NEI Industry Update
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Kathleen Yhip
RETS-REMP, Chicago

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Issues Overview

- Carbon -14
- NRC/NAS Cancer Study
- Potential Changes to Radiation Protection Regulations and Guidance
- Ground Water Protection Initiative
- Decommissioning Planning
- License Renewal
- Fukushima

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Carbon-14

- Principal radionuclide reporting under 10 CFR 50.36a
- EPRI report 1021106 "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents," December 23, 2010
- EPRI/NEI ^{14}C workshop conducted February 15-16, 2011
- ^{14}C included in 2010 Annual Radioactive Effluents Release Reports
- Dose methodology will be updated as part of ICRP-103 updates, if any

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NRC/NAS Cancer Study

- Study evaluates incidence of cancer & cancer mortality
- 2 Phases:
  - Phase 1: final report February 2012
  - NRC requested NAS consider several topics, including:
    1. Methodology for assessing off-site dose releases
    2. Methodology for assessing cancer risks
  - 60-day comment period
  - 5 stakeholder meetings
  - Phase 2: expected to complete ~2014
    - Could result in communications issue for licensees

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ICRP 103 Implementation

- SECY-08-0197 April 2009 Develop the technical basis and solicit input :
  - Topics: occupational dose limits, dose constraints, updated methodology and terminology, protection of non-human species
- NEI submitted comments in March 2010 and January 2011
- NRC staff is currently determining the cost to industry for updating regulations and guidance
- NRC staff to make recommendations on each option to the Commissioners in late 2011

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Ground Water Protection

- NEI sponsored peer assessments: 2009-2010
  - Report to NRC: January 2011 (ML110400734/35)
- NRC TI 2515/173 inspections: September 2008-August 2010
  - Issued summary report April 2011 (ML110088A047)
- NRC gap analysis of reactor oversight process: December 2010 (SECY-11-0076)
- NRC Commission briefing (SECY-11-0019): February 2011
- GAO audit of NRC actions, policies, and procedures on buried piping: report GAO-11-563 : June 2011

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Decommissioning Planning

- Decommissioning planning rulemaking
  - Changes financial and monitoring guidance and regulations
  - 73FR No. 14 pages 3812-3846 : January 22, 2008
  - SECY 09-0042 issued March 13, 2009
- NRC Commissioners voting record issued November 30, 2010
- Final rule published June 17, 2011
  - Effective December 12, 2012
  - Reporting requirements under 10 CFR 50.82(a)(8)(v) and (vii) effective March 31, 2013
  - Revised draft regulatory guidance for surveys and monitoring to be published

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License Renewal Environmental Issues

- 10 CFR 51.53) and Generic Environmental Impact Statement (GEIS): May 1996
- Required to review/update as needed every 10 years
- Other documents:
  - NUREG-1437 vols. 1 & 2
  - RG 4.2 S1
  - NUREG-1555 Supplement 1
- Six stakeholder meetings held
- Public meeting with NRC on implementation: June 2011
- Final rule likely to go to Commission in September 2011

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U.S. Industry Response Ensure Safety at Nuclear Power Plants

- The U.S. nuclear energy industry assessed events and took action to:
  - Verify each plant's capability to manage major challenges.
  - Verify each plant's capability to manage a total loss of off-site power.
  - Verify the capability to mitigate flooding and the impact of floods on systems inside and outside the plant.
  - Walk-down and inspect important equipment needed to respond successfully to extreme events like fires and floods.

- In addition, INPO is the collection point for emergency response materials being donated by the U.S. nuclear industry.

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Fukushima Nuclear Workers

- In the media:
  - "Fukushima Fifty"
  - NY Times: "Day Laborers Brave Risks at Japan's Nuclear Plants"
  - Asia Pacific Journal: "Dying For TEPCO? Fukushima's Contract Workers"
  - *Science*Insider: "Should Japan Bank Stem Cells From Fukushima Nuclear Workers?"
  - The Japan Times: "Worker Found Overexposed to Radiation"
  - Etc…

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Fukushima Nuclear Workers

- Occupational exposure data as of 6/15/2011:
  - 23 worker have received > 10 rem
    - 2 workers have received > 60 rem
    - 6 workers have received up to 50 rem
  - 3,700 workers are being screened
  - 2 Female employees exceeded Japan regulatory limit effective dose limit for females - 5mSv (500 mrem) over 3 months <u>even in an emergency situation</u>
    - Employee A: 17.55 mSv (1.7 rem)
    - Employee B: 7.49 mSv (0.75 rem)
  - Medical assessment indicates no impact on health

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U.S. Environmental Data

- 3/17 – Radiation detectors at O'Hare identify contamination on luggage and ventilation system from plane originating from Japan
- 3/18 – SONGS (CA) air sample containing 6.00E-13 uCi/cc ^{131}I
- 3/19 – Diablo Canyon (CA) air sample 5.64E-13 uCi/cc ^{131}I
- 3/21 – Several sites air samples 6 to 7E-13 uCi/cc ^{137}Cs
- Most, if not all U.S. plants have identified low levels of ^{131}I and ^{137}Cs
- Fukushima Environmental Data Collection System 3/29/2011
  - Available to NRC, EPA, INPO, EPRI, ANI and CRCPD
  - ~2000 data points entered
  - Since April 8th, U.S. plants have reported <LLD readings
- Highest environmental reading: rain water sample at 10.2 miles from the Diablo Canyon NPP (CA) on 3/25 - 98.4 pCi/L

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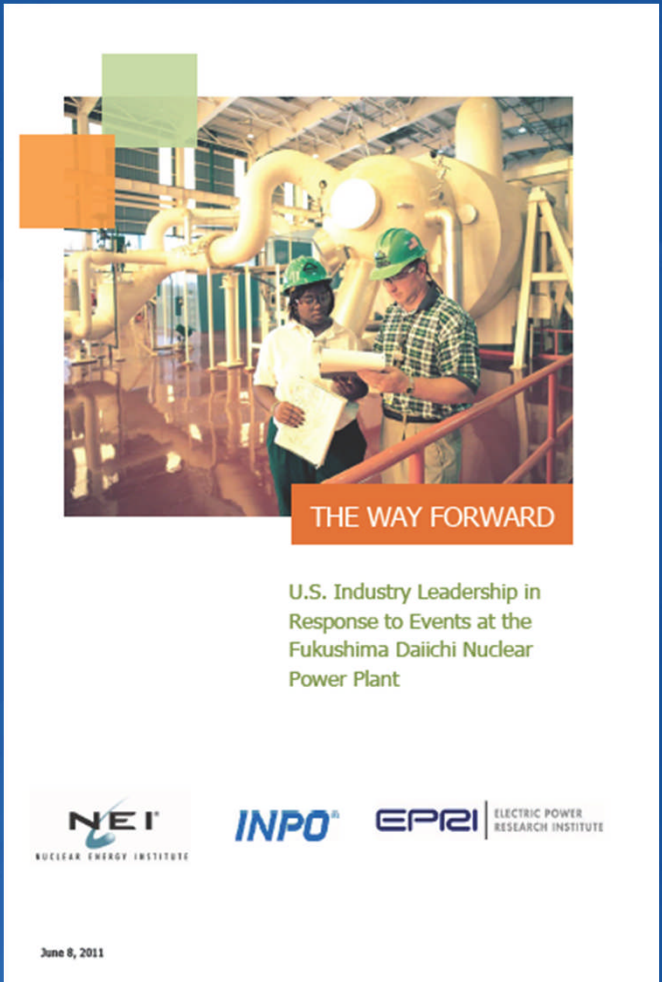
Fukushima: The Way Forward Overview

- Joint leadership model to integrate and coordinate the U.S. nuclear industry's response to ensure that lessons learned are identified and well understood, and responses are effectively coordinated and implemented throughout the industry
- Strategic Goals
- Guiding Principles
- Stakeholders & Desired Outcomes
- Leadership Model Overview



Fukushima - The Way Forward
7 Strategic Goals

1. Workforce remains focused on safety and operational excellence
2. Synchronize timelines for emergency response capability to preclude fuel damage
3. US Nuclear industry is capable of responding effectively to any significant event in the US
4. Effectively integrate response plans to be capable of responding to events that could impact multiple reactors at a single site
5. Margins for protection from external events are sufficient based on the latest hazard analyses and historical data
6. SFP cooling and makeup functions are fully protective during high heat load in the SFP and during extended station blackout
7. Primary containment protective strategies can effectively manage and mitigate post-accident conditions.

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Fukushima: The Way Forward Guiding Principles

1. Ensure equipment and guidance improve response effectiveness
2. Address guidance, equipment and training to ensure long term safety improvements
3. Develop response strategies that are performance-based, risk-informed and account for unique site characteristics
4. Interface with federal regulators to ensure regulatory actions are consistent with safety significance and that compliance can be achieved in an efficient manner
5. Coordinate with government and their emergency response organizations improve overall emergency response effectiveness.
6. Communicate the forthright approach being taken to implement the lessons from the Fukushima Daiichi accident.

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Fukushima - The Way Forward
7 Building Blocks

1. Maintain Focus Excellence in Existing Performance (INPO)
2. Develop and Issue Lessons Learned from the Fukushima Events (INPO)
3. Improve the Effectiveness of U.S. Response Capability to Global Nuclear Events (INPO/NEI)
4. Develop and Implement a Strategic Communications Plan (NEI)
5. Develop and Implement the Industry's Regulatory Response (NEI)
6. Participate and Coordinate with International Organizations (INPO/EPRI)
7. Provide Technical Support and R&D Coordination (EPRI/NSSS Owners' Groups)

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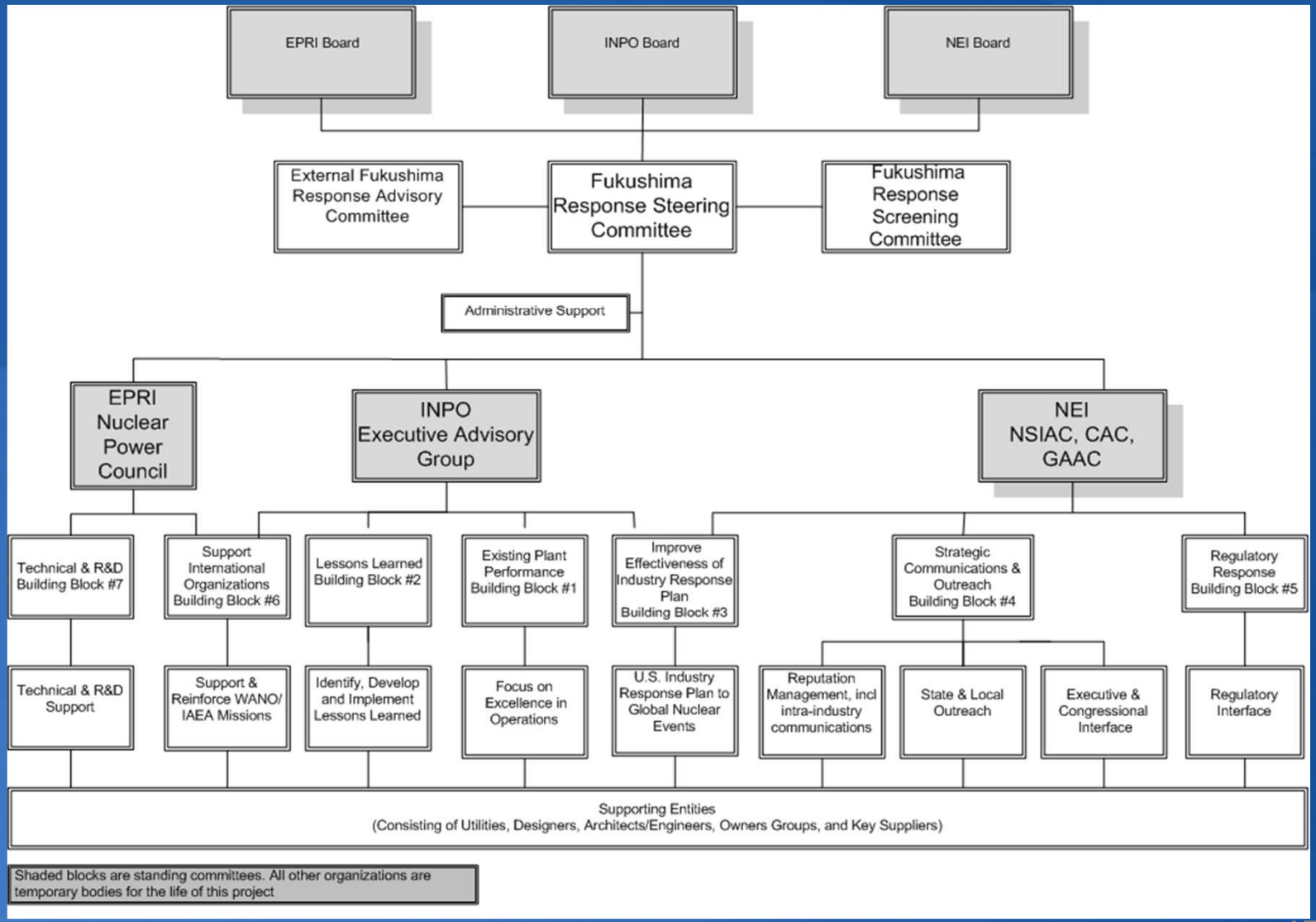
Governance & Structure



Near-Term Regulatory Topics

- Station Blackout
- B.5.b
  - Expand concept beyond aircraft impact
- Severe Accident Management Guidelines

Communications Strategy Objectives

- Reconfirm safety and preparedness of nuclear industry
- Preserve support for industry policy
- Defend current reactor operations, regulatory framework
- Maintain viability of licensing activities on current schedules
- Support industry used nuclear fuel management policy
- Reach out to governmental entities to:
  - Ensure/restore political confidence in nuclear energy
  - Ensure appropriate regulatory focus

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Communities have the right to know the safety record of America's nuclear energy plants. We are proud to share it.

Nuclear energy facilities here are built to a higher standard, yet we are actively reviewing our plants, procedures and preparedness plans to ensure even more accountability. The U.S. industry embraces a simple principle: expect the unexpected and plan for it with multi-layered safety features. That is why America's nuclear energy facilities exceed safety standards set by the independent Nuclear Regulatory Commission.

We protect the public and our workers with state-of-the-art technology that layers precaution on top of precaution. For example, American nuclear power plants have four-feet-thick, steel-reinforced concrete containment buildings that surround the reactor and multiple backup systems that function even in the event of an emergency.

Federal regulations also require nuclear power plants to be able to withstand the most severe natural events that may occur where they are located, including earthquakes, tsunamis, hurricanes, floods, tornados, and large fires.

Our Commitment to Safety: We are committed to continually making nuclear energy facilities safer by incorporating lessons learned from reactor operations around the world. In fact, companies that operate American reactors and independent regulators continue to re-inspect them to verify that they meet and exceed the highest standards. That's why U.S. nuclear power plants are safe and the most efficient source of electricity.

"We believe the nuclear option should be retained, precisely because it is an important carbon-free source of power that can potentially make a significant contribution to future electricity supply."

Massachusetts Institute of Technology / Harvard University study, *"The Future of Nuclear Power."* (2009)

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For more information on safe nuclear energy, go to nei.org.

Natalie Wood, nuclear engineer at the River Bend nuclear energy facility in Louisiana.

Communities have the right to know the safety record of its nuclear energy plants. We are proud to share it. Professionals like Natalie Wood are working to exceed the already stringent federal safety standards at their power plants.

Among the many safety features at every nuclear power plant is a four-foot thick, steel reinforced containment building that protects the reactor and its back-up safety systems. The U.S. Nuclear Regulatory Commission requires nuclear power plants to be able to withstand the most severe natural events that may occur near their locations, including earthquakes, tsunamis, hurricanes, floods, tornados, and large fires. The NRC also requires additional safety features to account for any uncertainties in forecasting these events.

U.S. energy companies are the world leaders in nuclear energy, with 104 reactors producing one-fifth of our electricity. Providing affordable electricity and ending our dependence on foreign energy sources simply cannot be achieved without nuclear power playing a significant role in our energy future.

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Future activities

- Prompt remediation: NRC webinar 7/25
- ICRP 103 cost estimates
- Enhanced Inspection and Environmental Monitoring Initiatives workshop - September 7-8, 2011 in Denver
- Decommissioning planning rule: DG-4014
- License renewal rulemaking
- 40 CFR 190 potential change to include ground water protection
- Public dose ROP change under review

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