

Status of RP 2020 in 2010

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NUCLEAR
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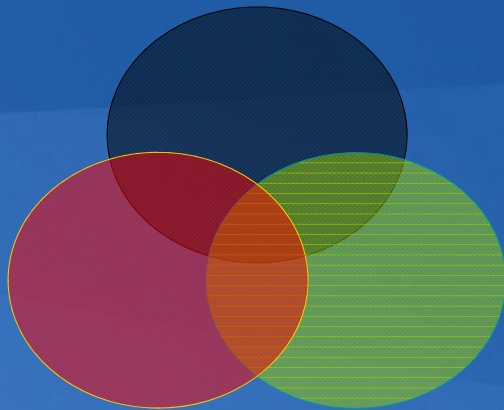
RP 2020 Goal

Reshape radiation protection at nuclear power plants to achieve significant improvements in safety performance and cost-effectiveness

Partners in Creating RP 2020

Radiation Protection Managers

Chief Nuclear Officers



NEI

EPRI

INPO

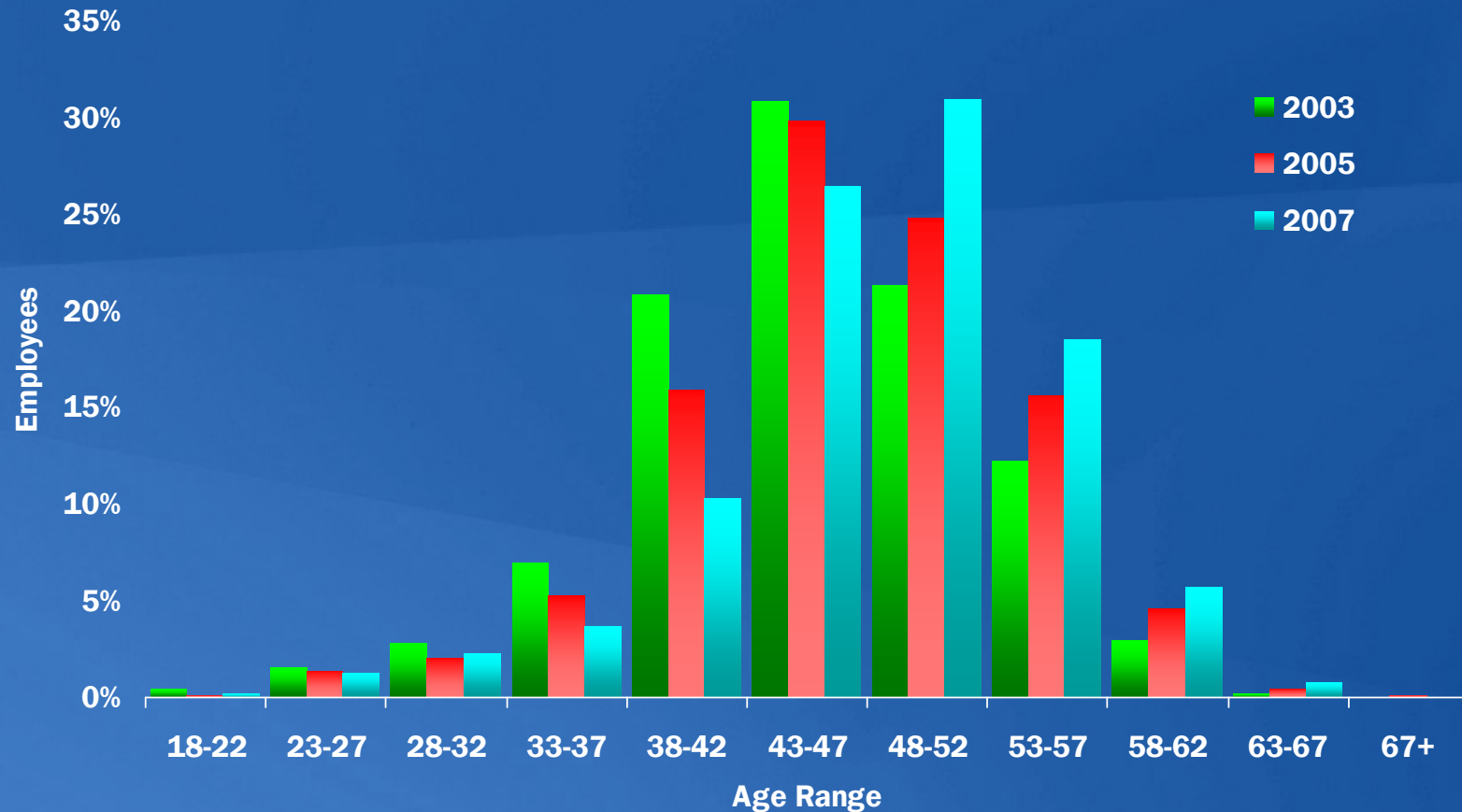
NEI = Policy
INPO = Performance
EPRI = Research

Objectives

- 1. Reduce radiation fields (EPRI)**
- 2. Improve technologies utilization (EPRI)**
- 3. Align RP workforce supply & demand (NEI)**
- 4. Inform and influence RP regulations (NEI)**
- 5. Standardize RP practices (NEI/INPO)**
- 6. Improve RP transparency and openness (NEI)**

Align RP workforce supply and demand

Nuclear Generation Radiation Protection Distribution by Age



Align RP workforce supply and demand

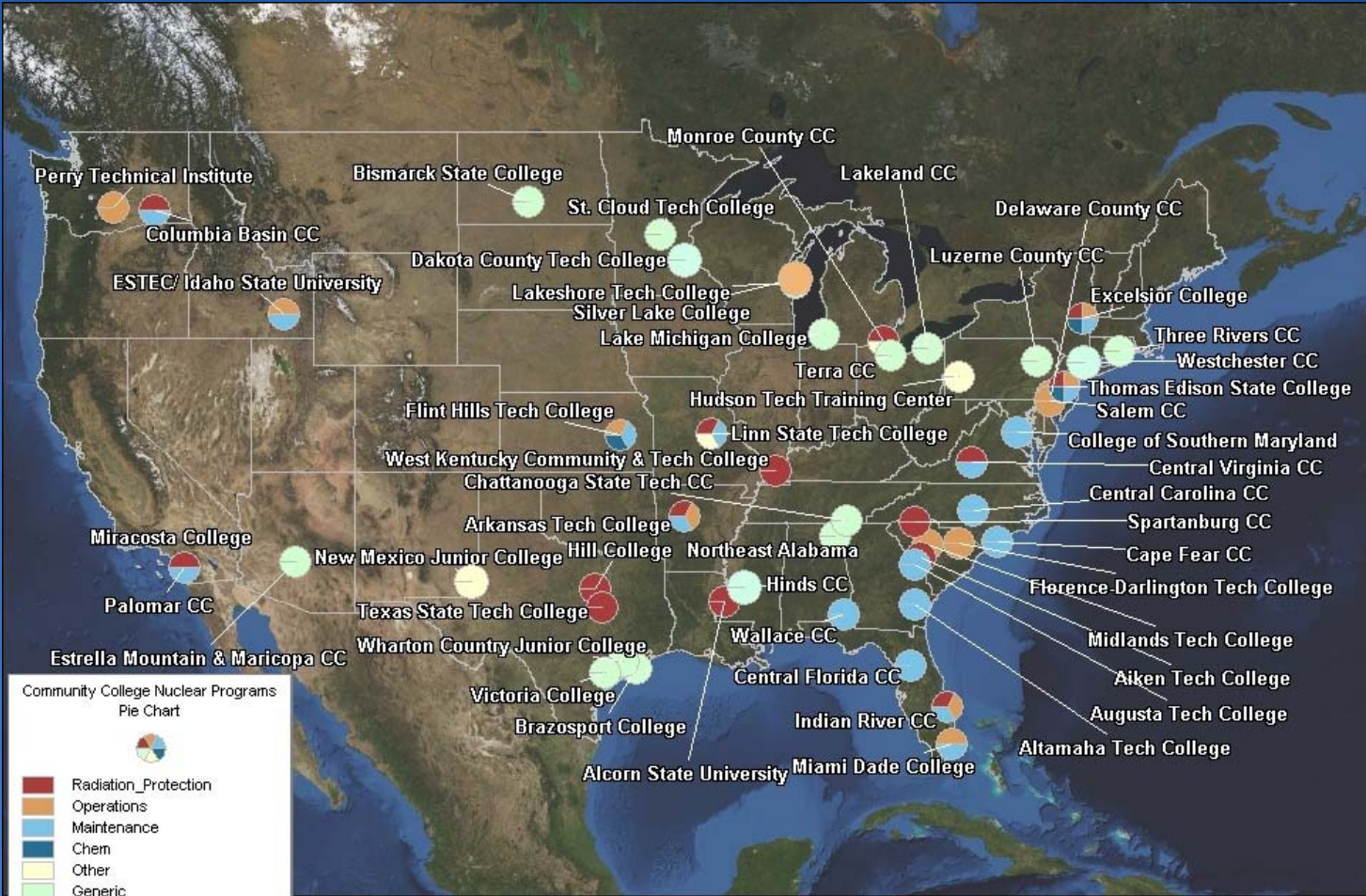
- **Established NEI Workforce Issues Task Force**
- **Nuclear Uniform Curriculum Program**
 - Supply v. demand assessments and inventory of programs
 - Uniform curriculum guideline
 - Industry approach v. single company approach

Align RP workforce supply and demand

■ Results:

- **10 New Radiation Protection Programs have been established**
- **Graduate approximately 120 Radiation Protection Technicians per year**
 - **Meets the utility needs for full-time employees**
- **Need to graduate at least 200 per year to meet demands for utility outage support, government labs, and isotope labs**

Partnered Nuclear Community College Programs



Align RP workforce supply and demand

- **Establish industry pilot to remove “time in job” requirement from plant Technical Specifications**
 - **ANSI 18.1 and 3.1 qualify based on “time in job” without recognition of individual’s ability to perform tasks**
 - **Pilot would remove ANSI requirements from Standard Technical Specifications and replace with task qualifications.**

Inform and influence RP regulations

Inform and influence RP regulations

- **Draft Regulatory Guides**
- **Generic FSAR Templates For New Plants**
- **Interim Staff Guidance**
- **NRC Proposal To Revise RP Regulations**

Inform and influence RP regulations

- **Draft Regulatory Guides**
 - **DG - 8043 “Methods For Estimating Effective Dose Equivalent From External Exposure”**
 - **DG - 1199 “ Alternative Radiological Source Terms For Evaluating Design Basis Accidents At Nuclear Power Plants”**
 - **DG - 8032 “Planned Special Exposure”**
 - **Revision 1 to Regulatory Guide 8.35 (1992)**

Inform and influence RP regulations

- **Developed Generic FSAR Templates For New Plants**
 - **NEI 07-03 Radiation Protection Program**
 - **NEI 07-08 Occupational ALARA program**
 - **NEI 07-09 Off Site Dose Calculation Program**
 - **NEI 07-10 Process Control Program**
 - **NEI 08-08 Life Cycle Minimization of Contamination**

Inform and influence RP regulations

- **Preparing to provide feedback to NRC on Interim Staff Guidance (ISGs) for new plants**
 - **ISG 13 “Interim Staff Guidance on NUREG-0800 Standard Review Plan Section 11.2 and Branch Technical Position 11-6 Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Waste Tanks for Combined License Applications Submitted under 10 CFR Part 52”**
 - **ISG 14**

Potential Changes To Radiation Protection Regulations

- **SECY 08-0197 (June, 2008)**
 - **NRC Staff presented 3 options for revising radiation protection regulation framework:**
 - **Option 1: No action**
 - **Option 2: Update 10 CFR 50 and Appendix I only**
 - **Option 3: Align RP regulations with ICRP 103**

Potential Changes To Radiation Protection Regulations

- **NRC Commissioners approved Option 3**
 - directed the Staff begin engagement with stakeholders and interested parties...
 - to initiate development of the technical basis for possible revision to radiation protection regulations...
 - to achieve greater alignment with the 2007 recommendations contained in ICRP 103.

International Dose Limits

- **20 mSv in one single year**
 - Germany, Italy, The Netherlands, United Kingdom, Romania
- **20 mSv/year per 12 rolling months**
 - Belgium, France
- **100 mSv/5 years & 50 mSv/year***
 - Spain, Finland, Sweden, Lithuania, Russia, Japan, Slovak Republic, Switzerland, Czech Republic, Canada
- **100 mSv/5 years**
 - Hungary
- **50 mSv/year**
 - USA, Mexico**

*IAEA Basic Safety Standards are based on these limits

**Mexico proposes to go to 100mSv/5yrs & 50 mSv/yr

Potential Changes To Radiation Protection Regulations

- **Total Effective Dose**
- **Constraints**
- **Dose Limits**
 - **Occupational**
 - **Embryo/fetus of Declared Pregnant Woman**
- **Numerical values – tissue weighting factors**

Change Terminology from TEDE to TED

Current Regulations

- **Total Effective Dose Equivalent (TEDE)** is the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Proposed Regulations

- **NRC Option #1:** Make no change to current regulations.
- **NRC Option: #2:** Change the terminology in regulations from TEDE to TED. The term TEDE is no longer consistent with current industry consensus standards or international standards.

Use of Dose Constraints

Current Regulations

- **NRC regulations do not currently require the use of constraints.**
 - A dose constraint is a value above which specified licensee actions are required.
 - Many licensees already use planning values in ALARA programs

Proposed Regulations

- **NRC Option #1 :** Continue as is – no requirement for constraints in regulations.
- **NRC Option: #2:** Establish a 2 rem per year constraint or another value.
 - Establish dose constraints : numerical values as part of the radiation protection program

Occupational Dose Limits

Current Regulations

- An annual limit where the total effective dose equivalent shall not exceed 5 rem in any year.

Proposed Regulations

- **NRC Option #1 :** Regulation to remain as is.
- **NRC Option #2 :** Change the dose limit to 10 rem over any 5 year period, with a further limitation of 5 rem in any year.
- **NRC Option #3 :** Lower the occupational dose limit to 2 rem per year.

Declared Pregnant Woman's Occupational Dose

Current Regulations

- Dose equivalent to the embryo/fetus during the entire pregnancy shall not exceed 0.5 rem .

Proposed Regulations

- **NRC Option #1 :** Regulation to remain as is.
- **NRC Option #2 :** Dose equivalent to the embryo/fetus shall not exceed 100 mrem from declaration of the pregnancy for the remainder of the gestation period.
- **NRC Option #3:** Dose equivalent to the embryo/fetus shall not exceed 50 mrem from declaration of the pregnancy for the remainder of the gestation period.

Standardize RP practices

Standardize RP practices

- **Standardize RP practices due to changes in RP regulations**
 - **Identify**
 - **Prioritize**
 - **Develop practices or procedures**
 - **Implement**

Improve RP transparency and openness

The Resurgence of Nuclear Power

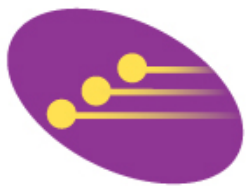
Impact on the Health Physics Profession

Health Physics News

Jul 08	Nuclear Power Generation
Sep 08	Uranium Recovery Industry
Nov 08	Uranium Conversion & Isotope Enrichment
Jan 09	Fuel Fabrication
Mar 09	History, Status & Outlook for Nuclear Power in the U.S.
Sep 09	Radiation Safety at Nuclear Power Plants
Jan 10	Impact on the Health Physics Profession

Health Physics Forum

- **Annual meeting each summer (3 days)**
- **Focused on plant and fleet radiation protection managers**
- **Emphasis is on regulatory issues, operating experience/lessons learned and top industry practices**
- **Major source of input to the industry RP agenda**



health
physics
forum

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**Sheraton Sand Key • Clearwater Beach, Florida
July 25-28, 2010**



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