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EPRI Radiological Environmental Protection Program

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RETS-REMP Workshop & EPRI Groundwater Protection Workshop
June 25-27, 2013

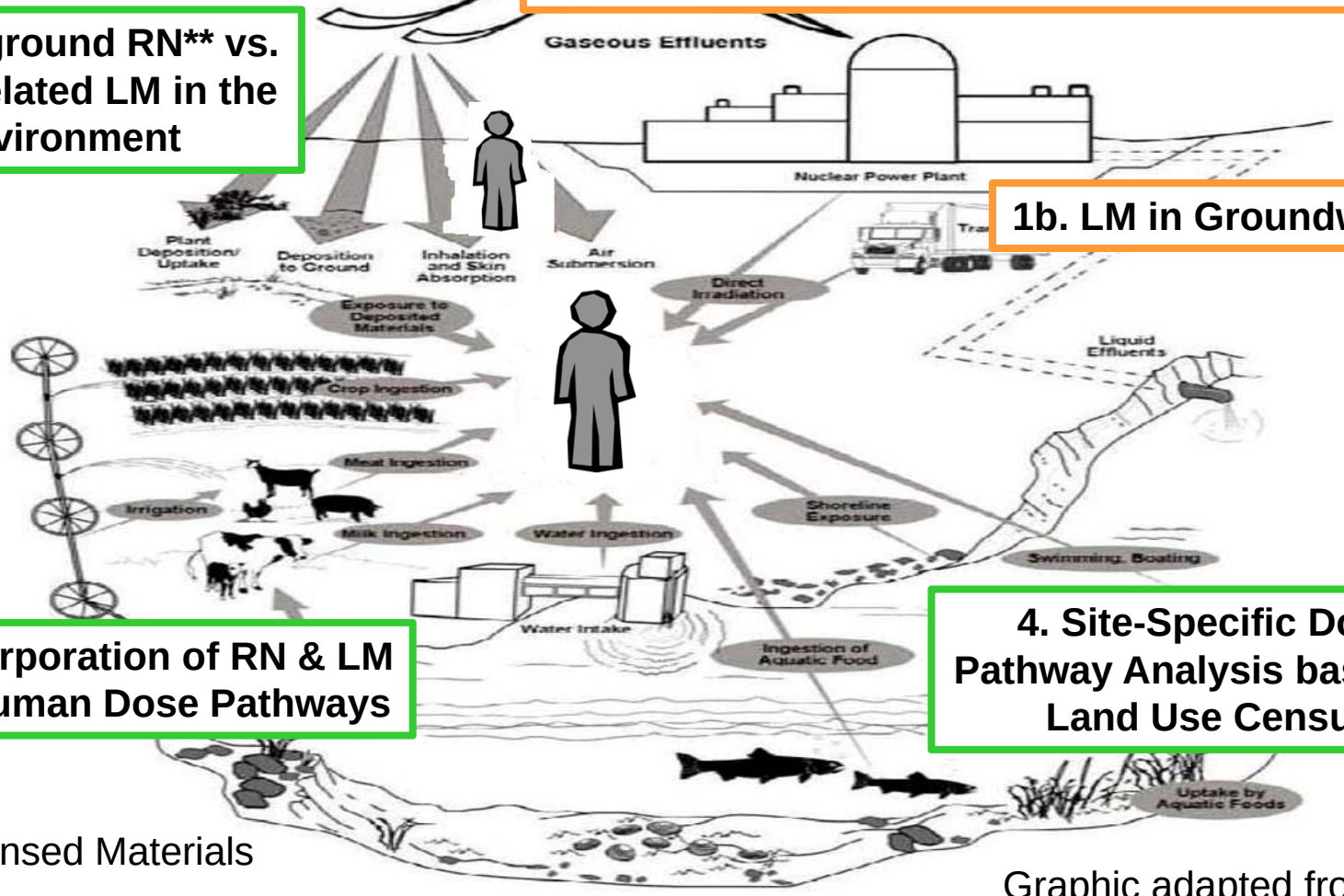
Westminster, Colorado

Radiological Environmental Protection

1a. LM* Generation and Release in Effluents

2. Background RN vs. Plant Related LM in the Environment**

1b. LM in Groundwater



3. Incorporation of RN & LM into Human Dose Pathways

4. Site-Specific Dose Pathway Analysis based on Land Use Census

*LM = Licensed Materials

**RN = Radionuclides

Graphic adapted from NRC.

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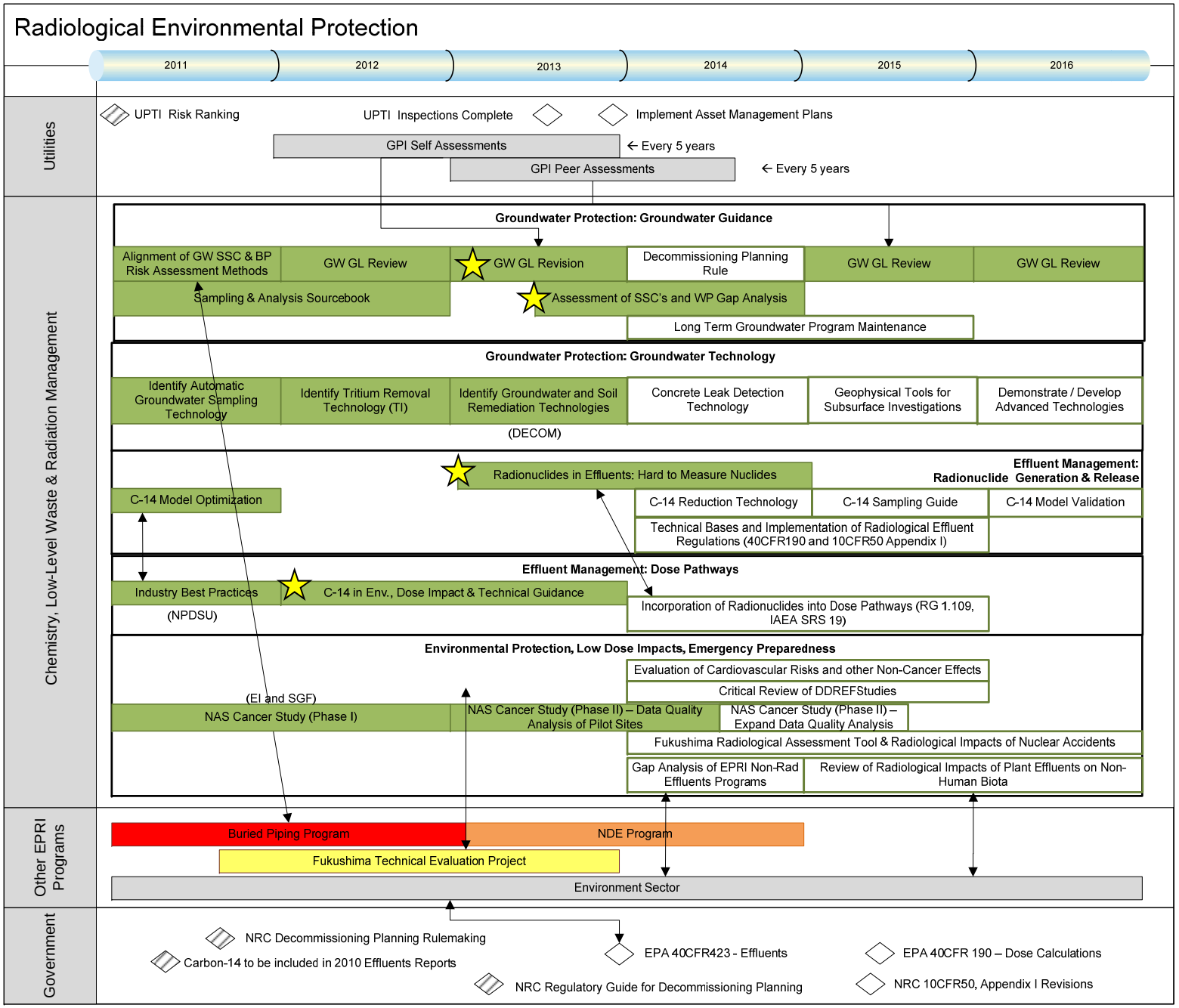
Radiological Environmental Protection



NUC_CLR_04_R2.2 Radiological Environmental Protection.vsd December 2012 (Updated by Karen June 2013)

★ To be discussed during Workshop.

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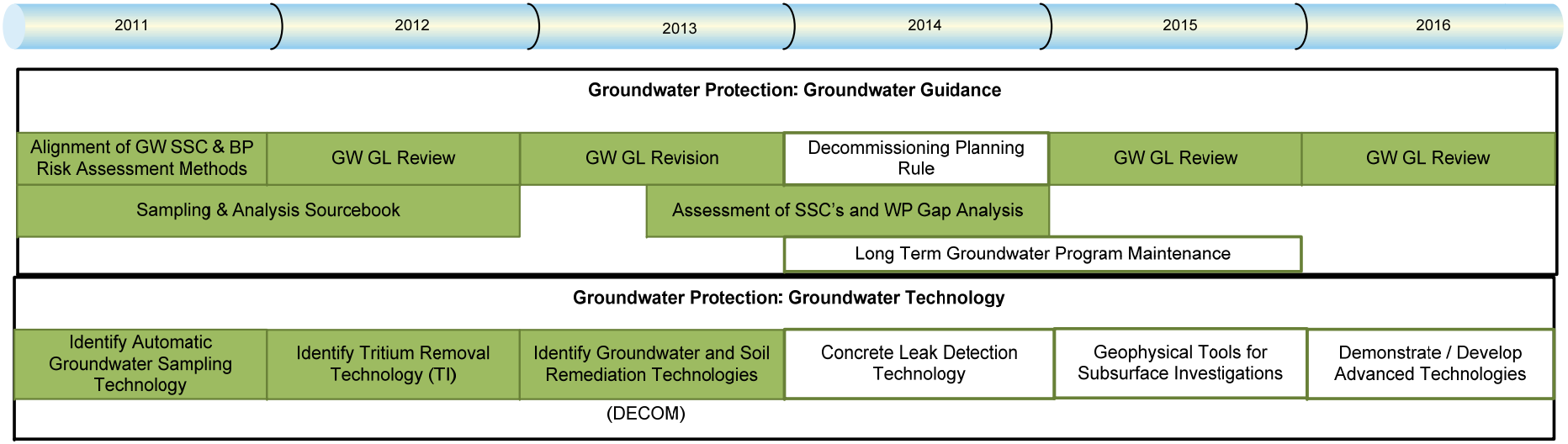
Groundwater Protection Guidance & Technologies



- Development and maintenance of EPRI Groundwater Protection Guidelines (Revision 1 in 2013.)
- Conduct research and develop detailed guidance on focused technical topics.
- Identify and assess advanced technologies for groundwater monitoring and remediation.

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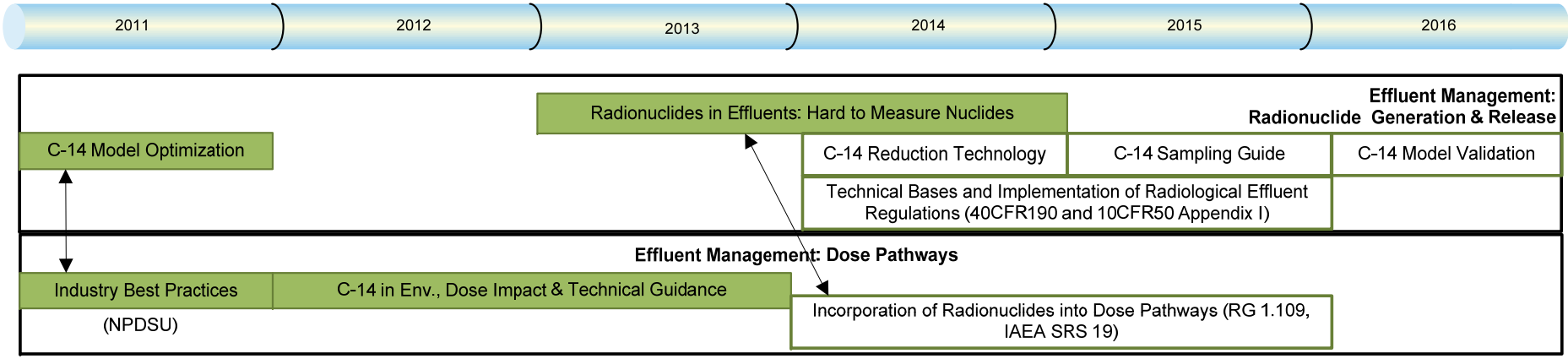
Effluent Management: Radionuclides Released and Dose Pathways



- Conduct research & provide guidance based on up-to-date science and technologies for:
  - Accurate estimation and reporting of radionuclides in effluents
  - Accurate estimation of dose to members of the public due to radionuclides in effluents

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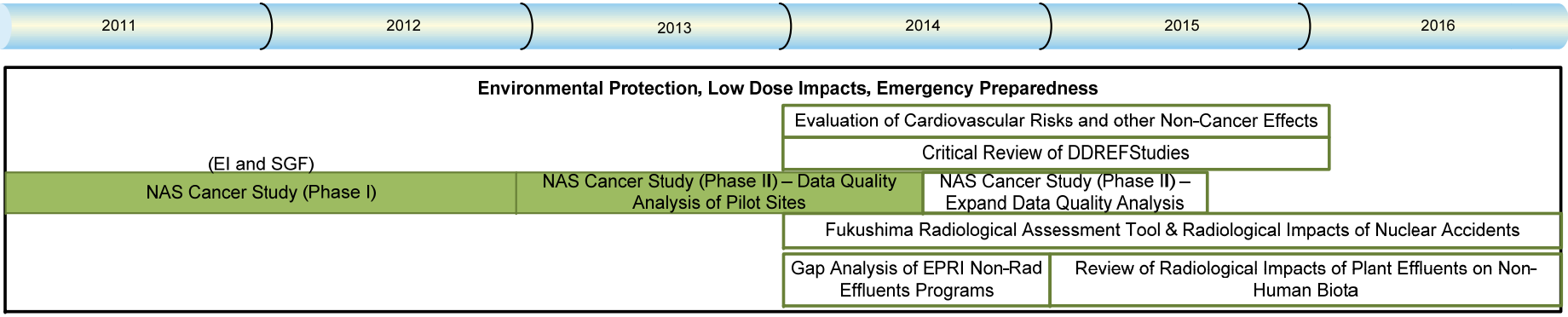
Environmental Protection & Low Dose Radiation Health Effects



- Low Dose Radiation Health Effects:
  - NAS Cancer Study
  - Dose/Dose Rate Effectiveness Factor (DDREF)
  - Cardiovascular health, others.

- Environmental Protection:
  - Non-radiological impacts
  - Protection of non-human biota
  - Long term impacts of nuclear accidents

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Radiological Environmental Protection Program

Key Takeaways

1. **Accurate Effluent & Public Dose Calculations**:
   Ensure that effluent and dose calculations are accurate and up-to-date based on current science and technologies.

2. **Minimization of Soil and Groundwater Contamination**:
   Develop guidance and technologies that support site specific and optimized efforts to minimize inadvertent releases to and control licensed materials in site soil and groundwater during operation and for decommissioning.

3. **Impacts of Nuclear Power Plant Operations on Humans & the Environment**:
   Ensure low dose radiation effect and environmental protection research that impact nuclear power plant operation are well informed and accurate.

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2012-2013 Radiological Environmental Protection Deliverables

- 1024829 - Advanced Technologies for Groundwater Protection: In-situ and Automatic Groundwater Monitoring Technologies (April 2012)
- 1024837 - Carbon-14 Dose Calculation Methods at Nuclear Power Plants (April 2012)
- 1025311 - Groundwater Sampling and Analysis Sourcebook for Nuclear Power Plants (September 2012)
- 3002000393 - Establishing a Groundwater Protection Program for New Nuclear Generation Units (March 2013)
- 3002000546 - EPRI Groundwater Protection Guidelines, Revision 1 (November 2013)
- 3002000545 - Background Carbon-13 in the Environment and Dose Calculation Methodologies (December 2013)

Visit http://www.epri.com and/or Low-Level Waste and Radiation Management Cockpit.

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