EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Radwaste Processing for Advanced Nuclear Plants

WM '08

February 27, 2008

Karen Kim

Sean Bushart

# EPRI LLW Advanced Nuclear Plants Activities

Objectives

- Implement operating experience, lessons learned, and advanced technologies in the design, construction, and operation of new NPPs

- Liquid processing strategy flexibility and solid waste minimization

Benefits

- Improved operations
- Dose exposure reduction
- Waste volume reduction

- Environmental protection
- Cost savings

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

EPRI Project Strategy

EPRI | ELECTRIC POWER RESEARCH INSTITUTE
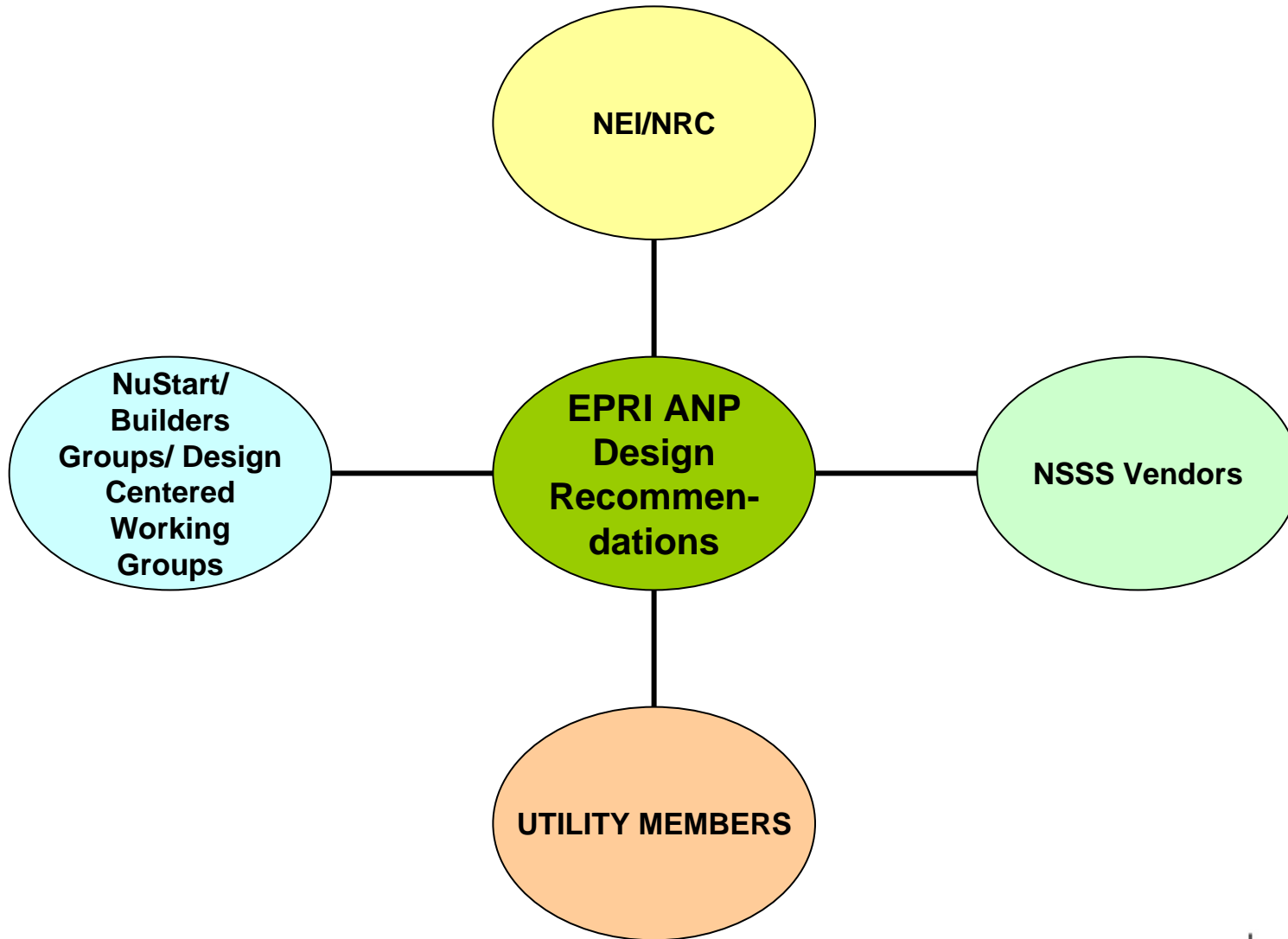
EPRI Radwaste Committee Participants

- Ameren UE
- AREVA, GE, Westinghouse
- Arizona Public Service Company
- Constellation Nuclear Services, Inc
- Detroit Edison
- Dominion Resources Services, Inc.
- Duke Energy Corporation
- Electricitie de France (EDF)
- Entergy
- Exelon
- FENOC
- Florida Power & Light Company
- INPO
- Nuclear Management Company
- NEI
- Ontario Power Generation

- Pacific Gas & Electric Company
- Progress Energy
- South Carolina Electric & Gas
- Southern California Edison
- Southern Nuclear Operating Company
- STP Nuclear Operating Company
- Tennessee Valley Authority
- TXU Electric
- Wolf Creek Nuclear Operating Company

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

EPRI Advanced Nuclear Plants Reports Related to LLW Management

- **Westinghouse AP1000:**
  - Review of Westinghouse AP1000 LLW Management Program (TR-1008016, 2003).
  - AP 1000 Radioactive Waste Management – Utility Position Report (TR-1008129 , 2004)
  - Mobile Processing and Treatment Systems (2005)

- **GE ESBWR:**
  - Technical Support for GE ESBWR Radwaste System Design (TR-1013503, Nov. 2006 Blue Chip Deliverable)

  Study Results Captured in <u>EPRI Utility Requirements Document</u> Chapter 12: Radwaste Management – *Completed Jan. 2007*
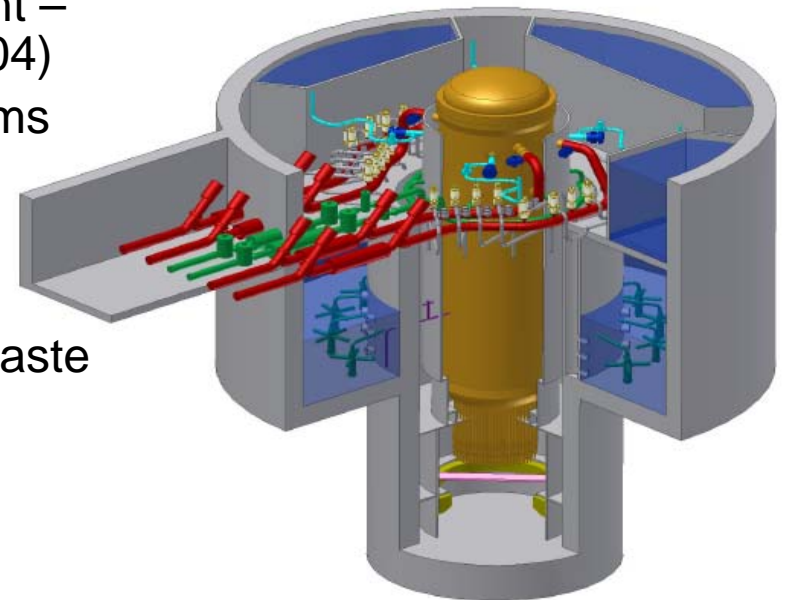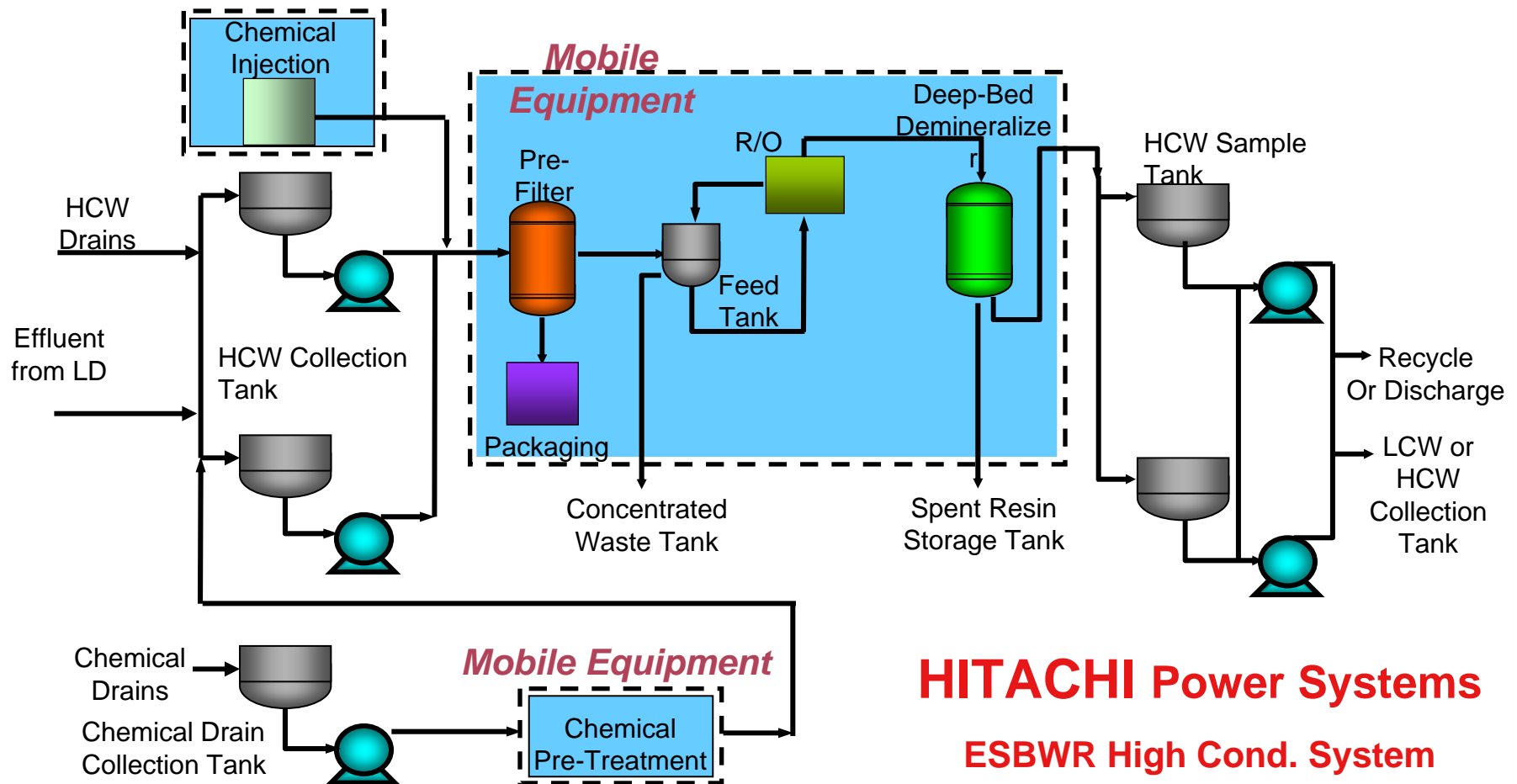
Image: GE ESBWR

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Example of Key EPRI Recommendation for Radwaste Management

- *Flexibility for Change - Mobile Processing Systems*
  - Installed components should be designed to support flexibility
  - Design should support the use of skid or transport container compatible modular compatible modular components and processes.

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Example of Waste System using EPRI Design Input

HITACHI Power Systems

ESBWR High Cond. System

EPRI | ELECTRIC POWER RESEARCH INSTITUTE

Path Forward – Future Projects

Design Certification Document (DCD) Reviews

- Areva US EPR

- Mitsubishi US APWR

Combined Construction and Operating License Application (COLA) Support

- Design Centered Working Groups

- Utilities

Technical Support for Detailed Design and Design Implementation

- Utilities and associated vendors (AE)

Capture Lessons Learned

EPRI | ELECTRIC POWER RESEARCH INSTITUTE