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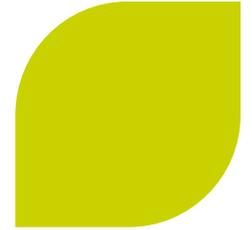


Potential Improvements to the Licensing Process for a Recycling Plant

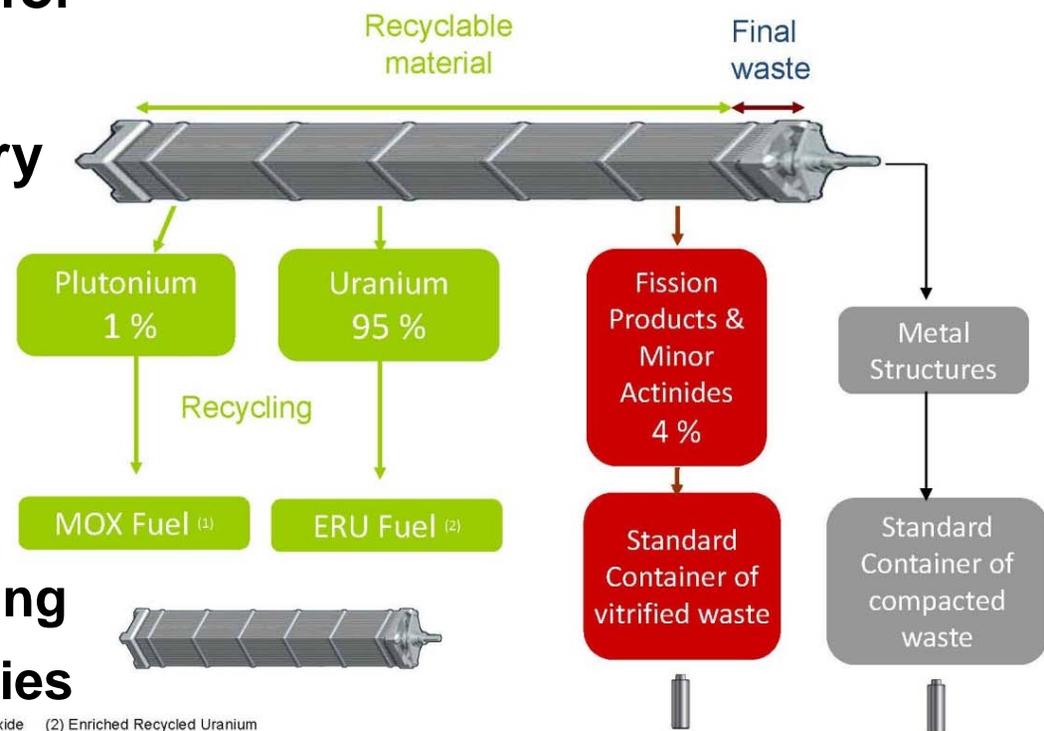
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Overview

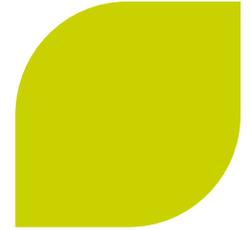


- ▶ **Licensing Milestones for Recycling**
- ▶ **Overview of Regulatory Activities**
- ▶ **SRM Summary**
- ▶ **Select SRM Topics**
 - ◆ **PRA vs. ISA**
 - ◆ **Wastes from Recycling**
 - ◆ **Integration of Activities**
 - ◆ **National Policy Directions**
- ▶ **Conclusions & Status**



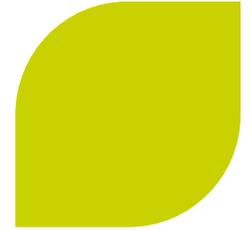
(1) MOX : Mixed Oxide (2) Enriched Recycled Uranium

Licensing Milestones Related to Recycling Activities



- ▶ 03/06 – SECY-06-0066 (NRC’s initial request for resources)
- ▶ 05/07 – SECY-07-0081 (NRC’s support GNEP)
- ▶ 11/07 – SECY-07-0198 (NRC initiates Gap Analysis)
- ▶ 07/08 – NEI Task Force formed on “Closing the Fuel Cycle”
- ▶ 09/08 – SECY-08-0134 (NRC’s 2nd Gap Analysis & Technical Basis)
- ▶ 12/08 – NEI White Paper with Proposed 10CFR7x
- ▶ 05/09 – **SECY-09-0082 (NRC’s Gap Analysis Results – 23 Gaps)**
- ▶ 10/09 – NEI White Paper on Waste Incidental to Reprocessing (WIR)
- ▶ 09/10 – NEI White Paper on Appropriateness of ISA (over PRA)
- ▶ 12/11 – **SECY-11-0163 (NRC’s Draft Regulatory Basis for Recycling)**
- ▶ 08/12 – **SRM requesting additional details on issues**
- ▶ ~8/13 – **NRC Staff response to SRM due**
- ▶ 2019?– **NRC issues Final Rule on Recycling**

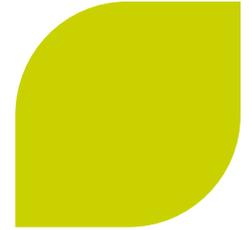
Staff Requirements Memorandum – SECY-11-0163 (Summary)



- ▶ Commission approved & disapproved in part proposed path forward for reprocessing rulemaking in SECY-11-0163
- ▶ Commission wants voting paper in 1 year that should address:
 - ◆ *whether a PRA-based or qualitative risk assessment methodology should be applied*
 - ◆ *the pros and cons of various approaches to the gaps the Staff identified as Commission policy decisions (e.g., WIR)*
 - ◆ *rationale for any recommendations that differ from previous Commission policy or agency precedent*
 - ◆ *integration of activities with other federal government activities related to reprocessing*
 - ◆ *prioritization of gaps remaining in Regulatory Basis*
 - ◆ *national policy directions that may impact this activity*



PRA and ISA



► Industry supports use of PRA in safety analyses, but not necessarily as a licensing requirement

◆ NEI issued (9/10) white paper on appropriateness of ISA

- ISA is a risk-informed, performance-based way of achieving and maintaining safety
- ISA is an effective and efficient approach to achieving and demonstrating facility safety either qualitatively or semi-quantitatively

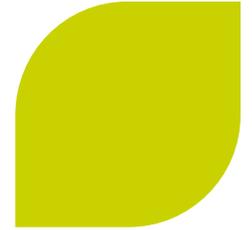
◆ Recycling Experience

- La Hague & MELOX performed no PRA, but are designed to both prevent & mitigate potential events
- Rokkasho did use some simplified PRA, but study showed no change in design to mitigate/prevent events as a result of usage over ISA
- MOX Fuel Fabrication Facility implemented ISA process, but some PRA is being utilized to levelize risks

◆ ANS is in process of producing an ISA Standard (at NRC request)



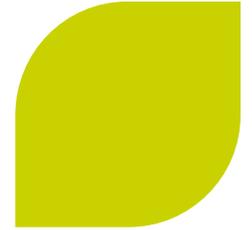
Wastes from Recycling



- ▶ **Industry and DOE have performed studies to quantify and classify wastes associated with recycling with issues only related to legislative and regulatory nuances (WIR and regulation based on wastes produced from reactors, not risk informed and with no free release limits)**
 - ◆ **NEI issued (10/9) white paper on WIR**
 - Provides clear basis for definition of WIR and HLW
 - WIR is not HLW
 - ◆ **Industry studies performed under IDIQ #9 for standard input (results presented at WM2013, IHLWRM, & Global 2013)**
 - ◆ **DOE studies documented under FCRD-USED-2010-000033**
 - ◆ **With a repository, no wastes identified as orphaned**



Integration of Activities



- ▶ **Industry has continued to discuss and work with integrating activities among the various government agencies related to recycling including with:**

- ◆ **DOE**

- Reference Flowsheet
- Fuel Cycle Options Study
- Feasibility Study on Isotopic Recovery
- Off-Gas Sigma Team Activities

- ◆ **EPA**

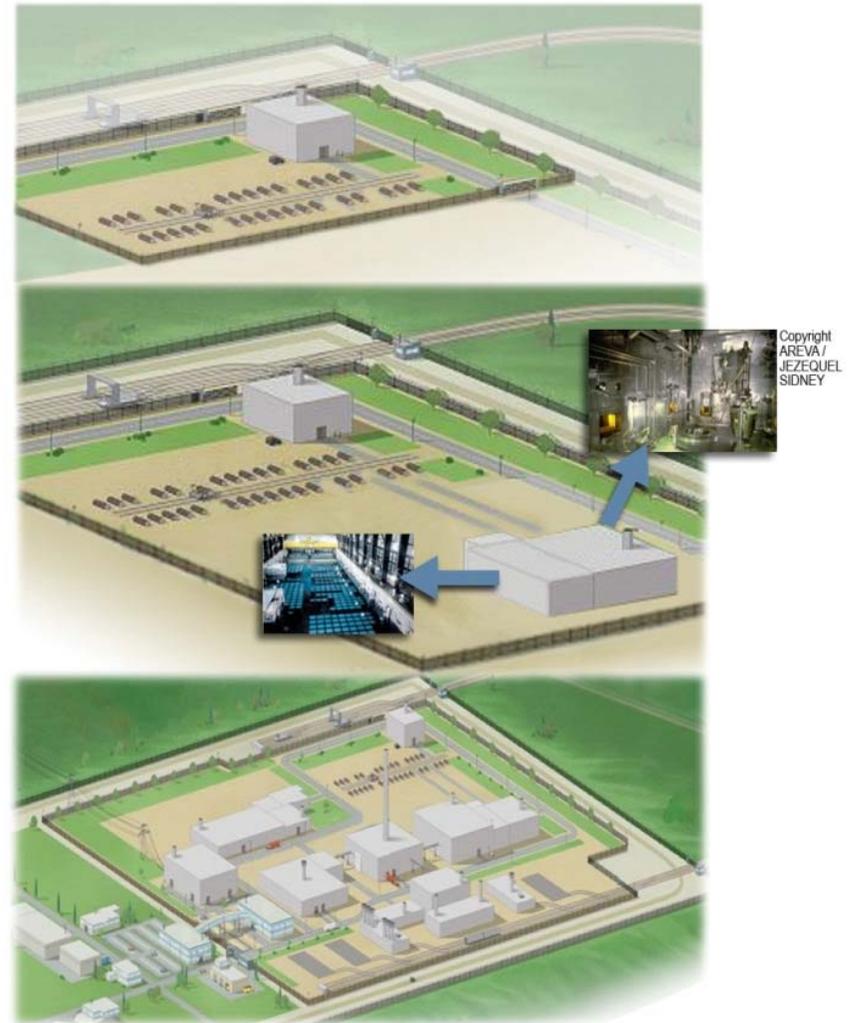
- Discussion of Sandia analysis of basis for 40CFR190 (SAND2010-3757)
- Presented overview of recycling

- ◆ **State Department (proliferation concerns)**

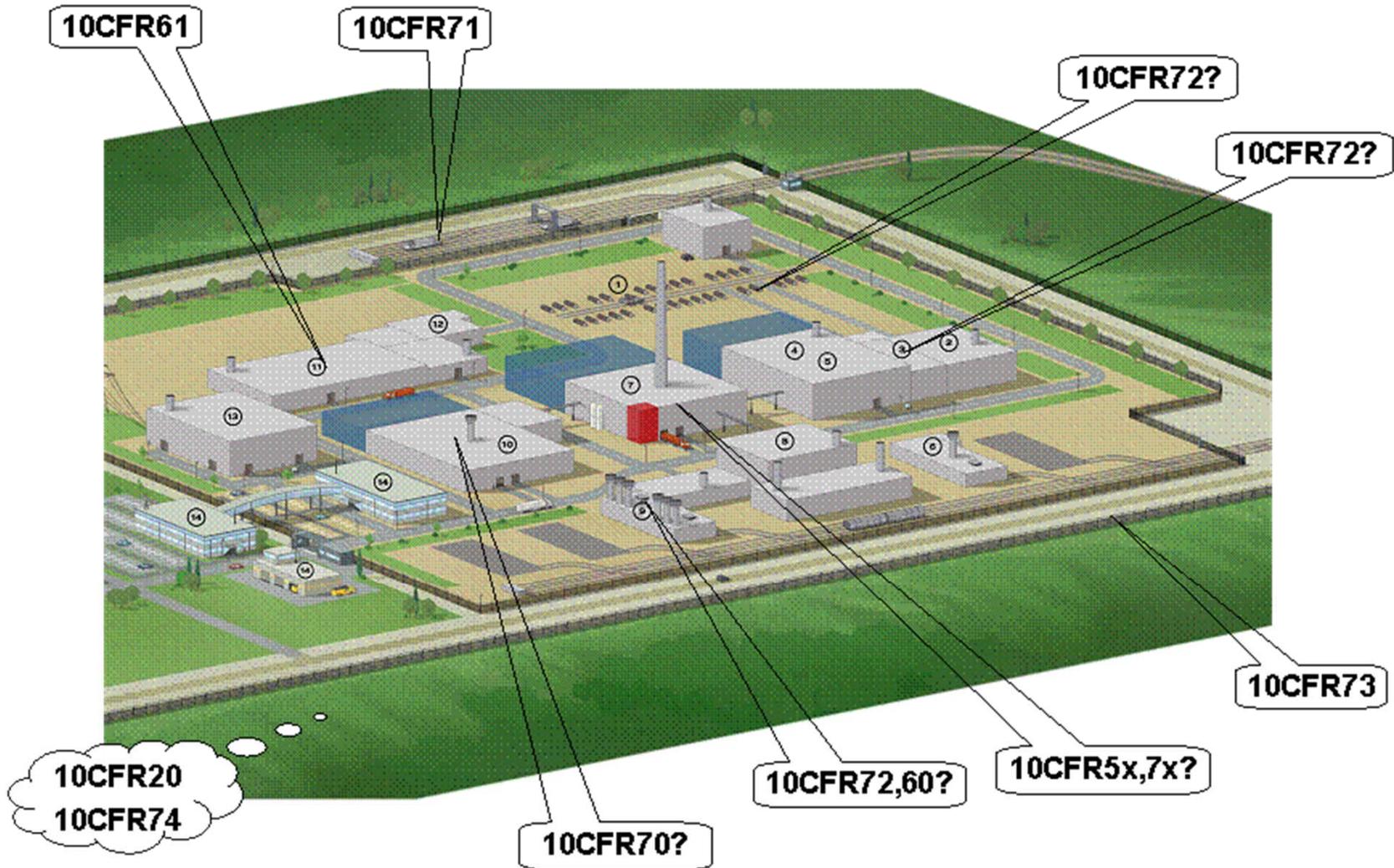
- ◆ **OSHA (Chemical exposure limits in 10CFR7x)**

National Policy Directions

- ▶ An integrated used fuel management approach
- ▶ Employs a consensus-driven approach that engages all stakeholders
- ▶ Envisions a phased integrated site
 - ◆ Centralized Storage
 - ◆ Test & Evaluation Facility
 - ◆ Transportation/storage manufacturing facilities
 - ◆ Pilot recycling facility
- ▶ Includes facilities/infrastructure for science and technology community to perform R&D
- ▶ Is flexible - leaves options open as future strategies are defined



Some of the NRC Regulations Potentially Impacting Recycling Facility Design



Conclusions & Status



- ▶ **Need Regulatory Structure and Stability to Effectively and Efficiently:**
 - ◆ Design a Recycling Facility
 - ◆ Tailor Waste Streams for Disposal
 - ◆ Make an Economically Viable Case
 - ◆ License a Recycling Facility

- ▶ **NRC Staff response to recycling SRM due ~8/13**

- ▶ **NRC Commission to vote on response to SRM to decide fate of these regulatory activities on recycling prior to end of year (est.)**

A Sustainable Back-End Solution

