# Fuel Cycle Information Exchange

## Updating the Regulatory Framework for LWR Fuel Recycling Facilities

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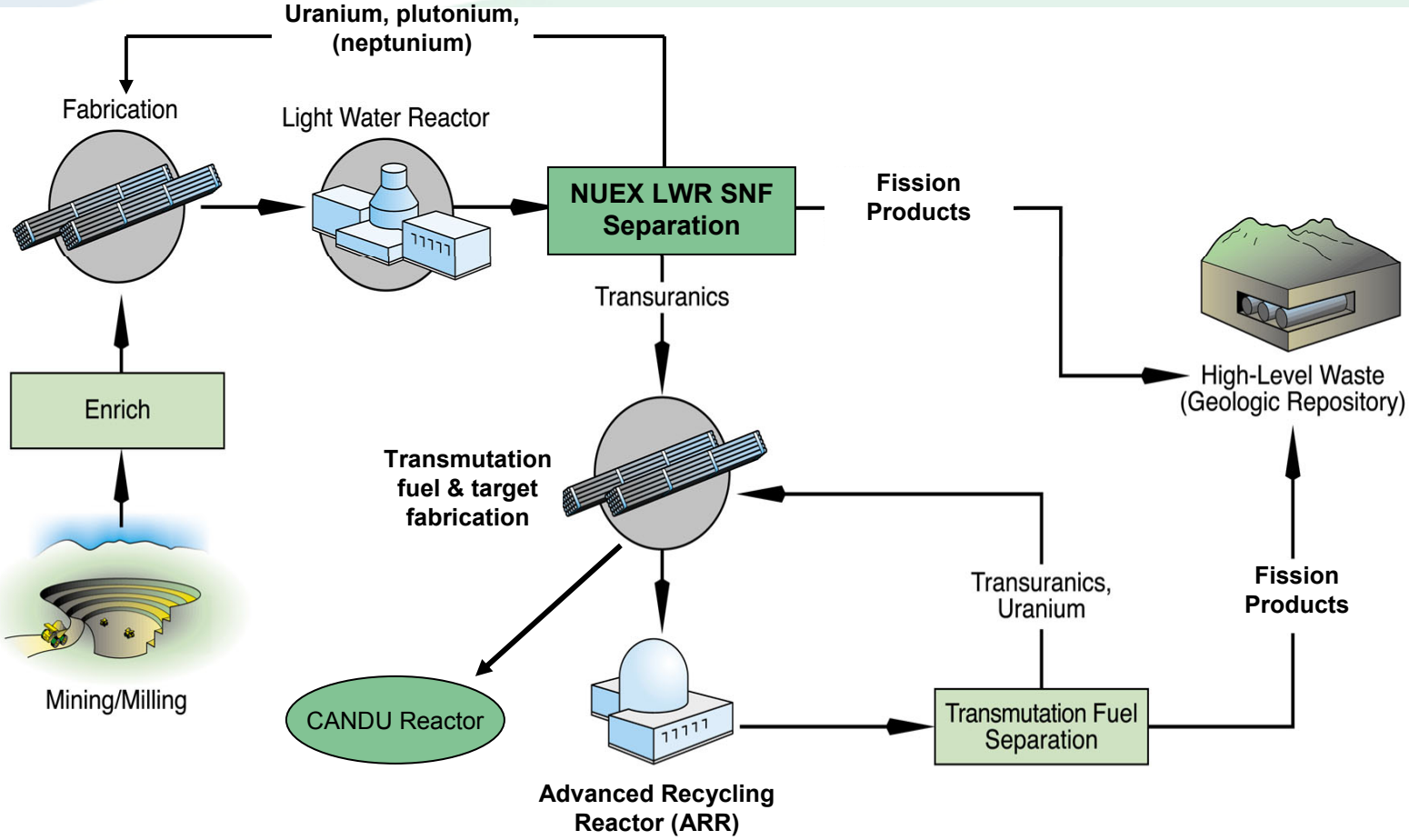
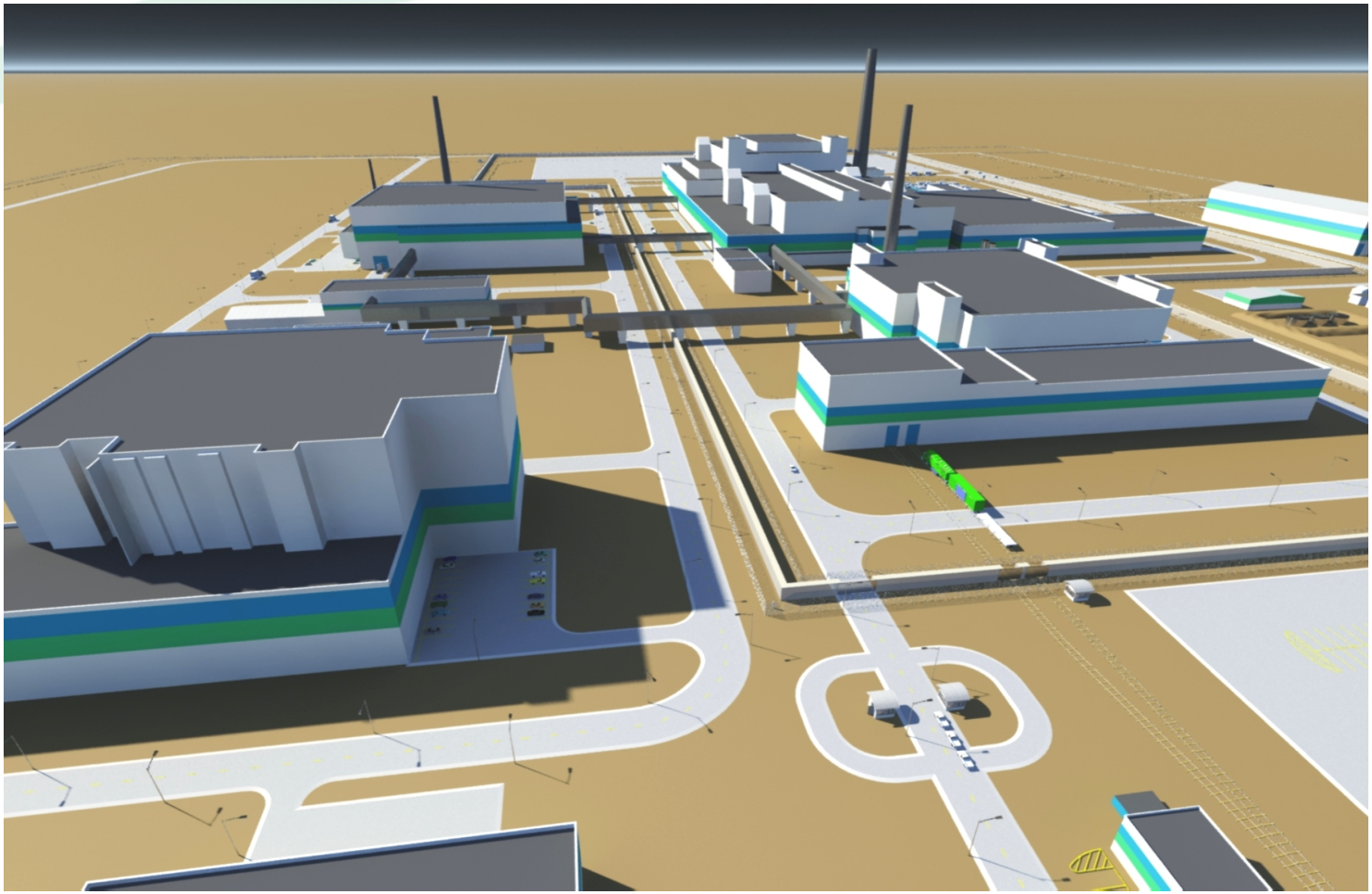
# NUEX and the Recycling Vision



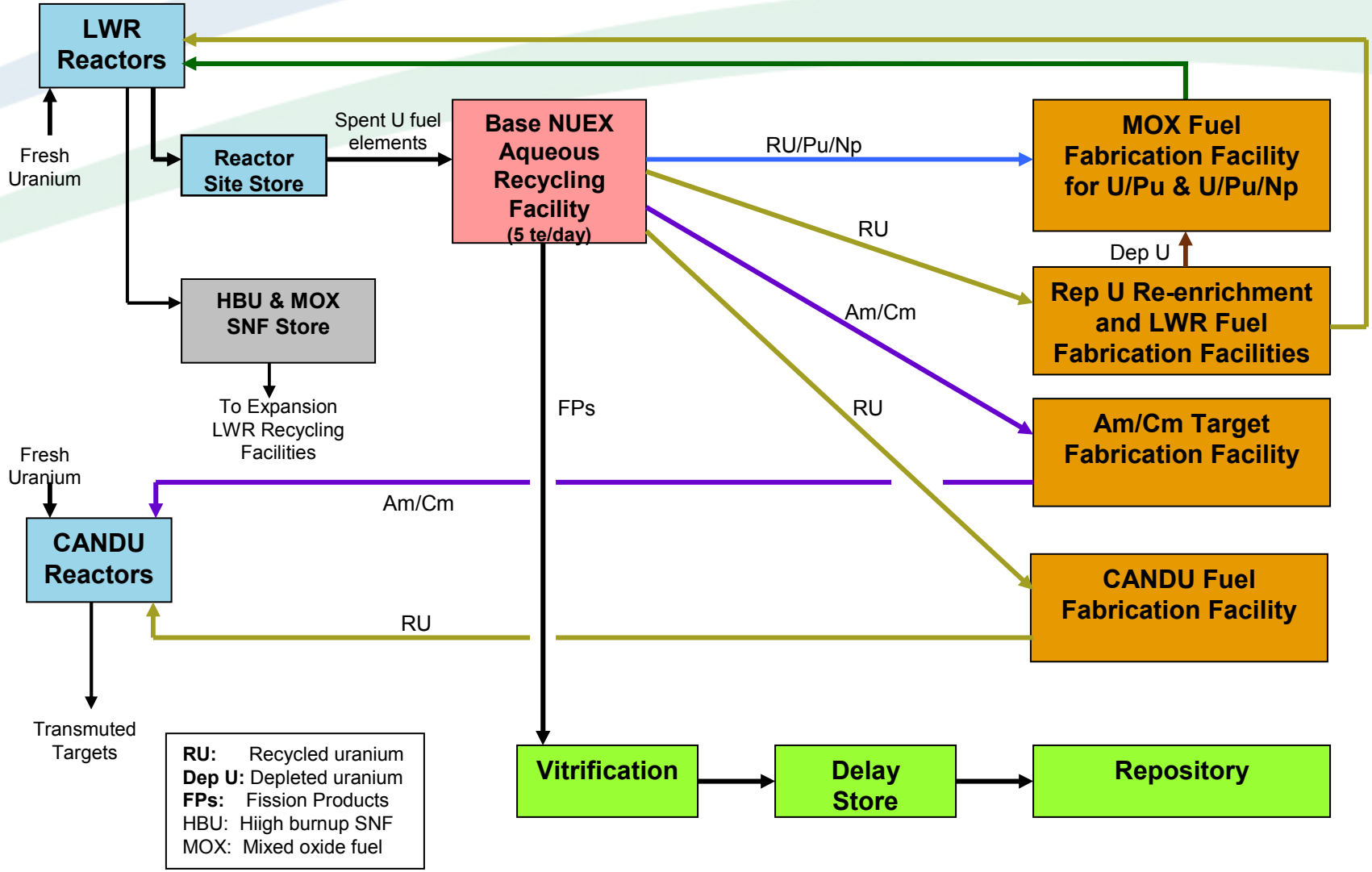
# The NUEX Recycling Facility



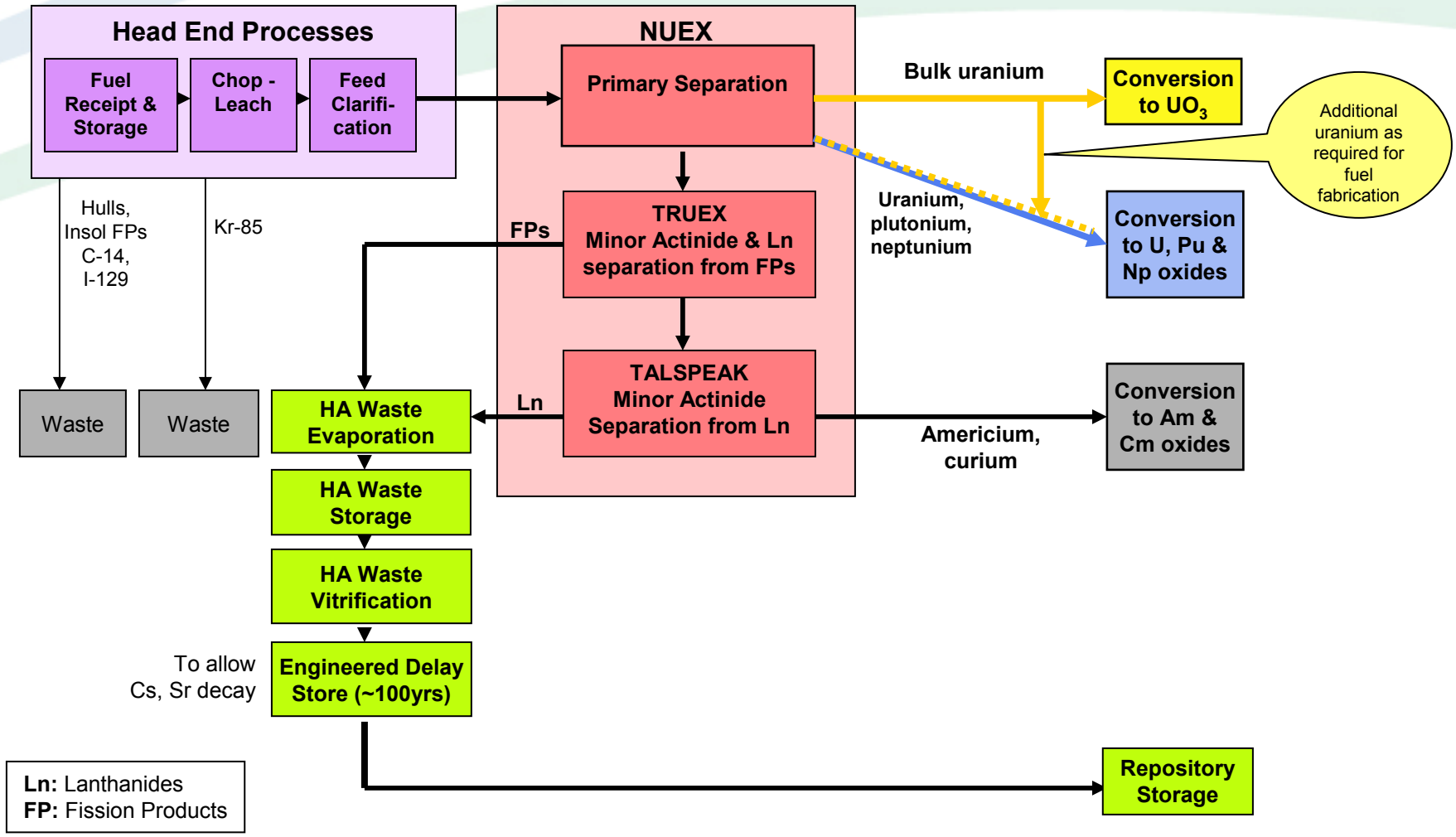
# What is NUEX?

- EnergySolutions' NUEX SNF separation process builds on industrially proven recycling processes
- Flexible flowsheet: ability to make products with differing proportions of uranium, plutonium and neptunium
- Does not separate pure plutonium. Instead the products are:
  - **Bulk uranium oxide ("RU")**
  - **Mixed uranium, plutonium, neptunium oxides**
    - Proportions of U, Pu, Np can be varied by altering reagents
  - **Americium, curium for target manufacture**
- Uses improved "salt-free" reagents
  - **Nearly all liquid wastes can be vitrified**
- Zero or near-zero liquid discharges
  - **Recycle of most water as reagent make-up**
  - **Purge water is cement-encapsulated**
- Tritium (H-3), krypton-85, iodine-129, carbon-14 captured
  - **Economics of tritium separation under continued review**

# NUEX Recycling can be in operation by 2023



# NUEX meets the requirements for actinide separation & burning



# NUEX – technology ready to deploy

# Regulatory Points for discussion

- Scope of facilities & technology readiness
- Release limits
- Schedule
- Creating an environment for success
- Primary licensing
  - One step?
  - Gaps in current framework
  - Problem areas in current framework
- Waste classification
- Waste disposal
- Path forward

# Proposed Framework for Primary Licensing

- Amend Part 50 to provide for licensing reprocessing plants under part 70
- Provide for a combined licensing process
- Development of inspection, tests, and acceptance criteria necessary for a combined licensing approach
- Utilize a risk informed performance based approach based on the Part 70 model
- Regulations need to be sufficiently flexible to address a variety of technologies
- Need for a SRP similar to NUREG -1718, SRP for MOX Fuel Fabrication
- Recognize need  to address challenging technical issues together

# An environment for success

- Management commitment &leadership
  - Clear & shared policies
  - Adequate resource
  - Timely & adequate information
  - Open & proactive communication
  - Positive support &recognition
  - Open mind
- Safety Management Systems
- Employee engagement & commitment