2010 Fuel Cycle Information Exchange

Fuel Cycle Executive Leadership Forum

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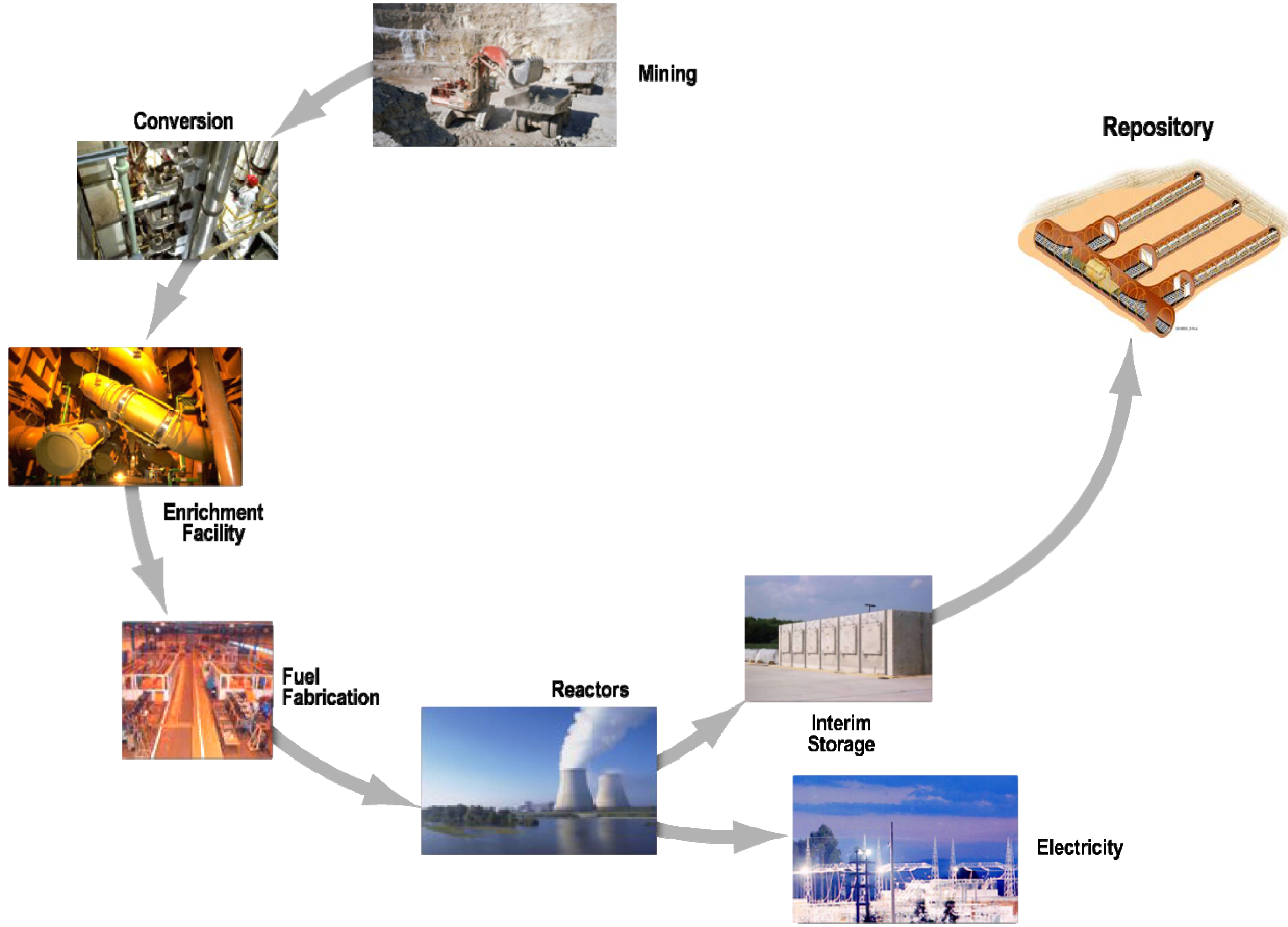
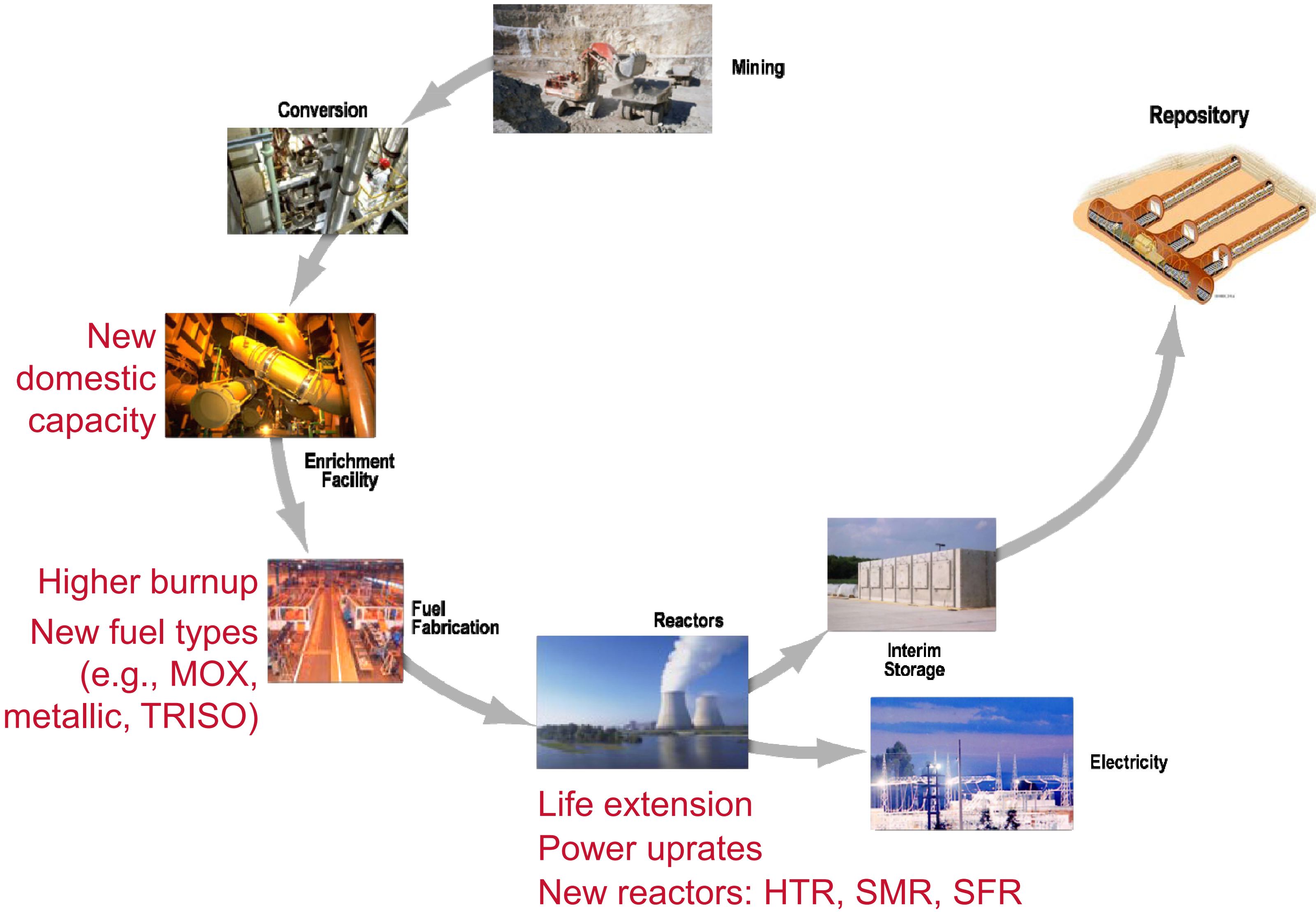
Growth Within the Nuclear Fuel Cycle

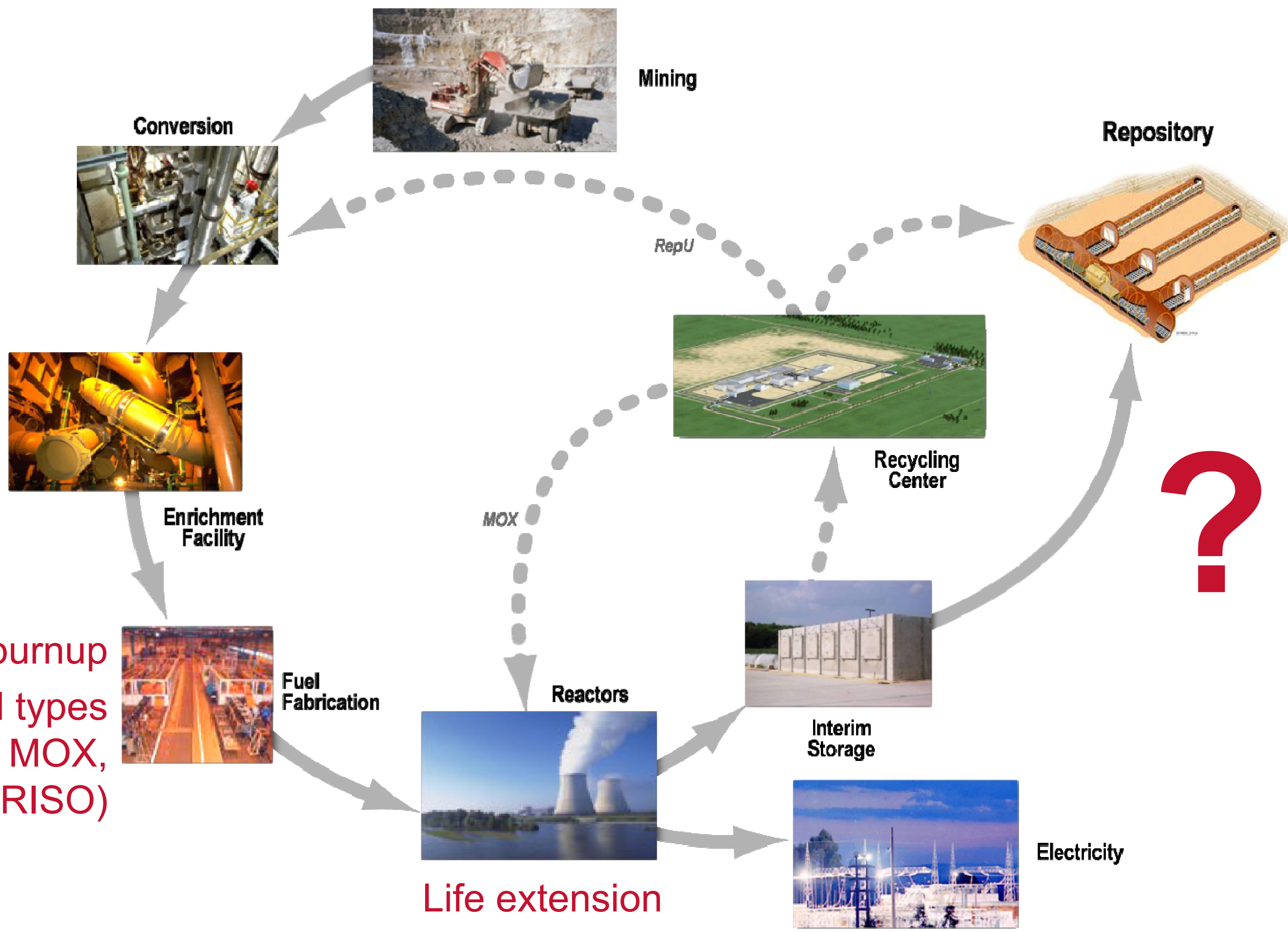


Growth Within the Nuclear Fuel Cycle



Growth Within the Nuclear Fuel Cycle

New domestic capacity



Higher burnup

New fuel types (e.g., MOX, metallic, TRISO)

Life extension

Power uprates

New reactors: HTR, SMR, SFR

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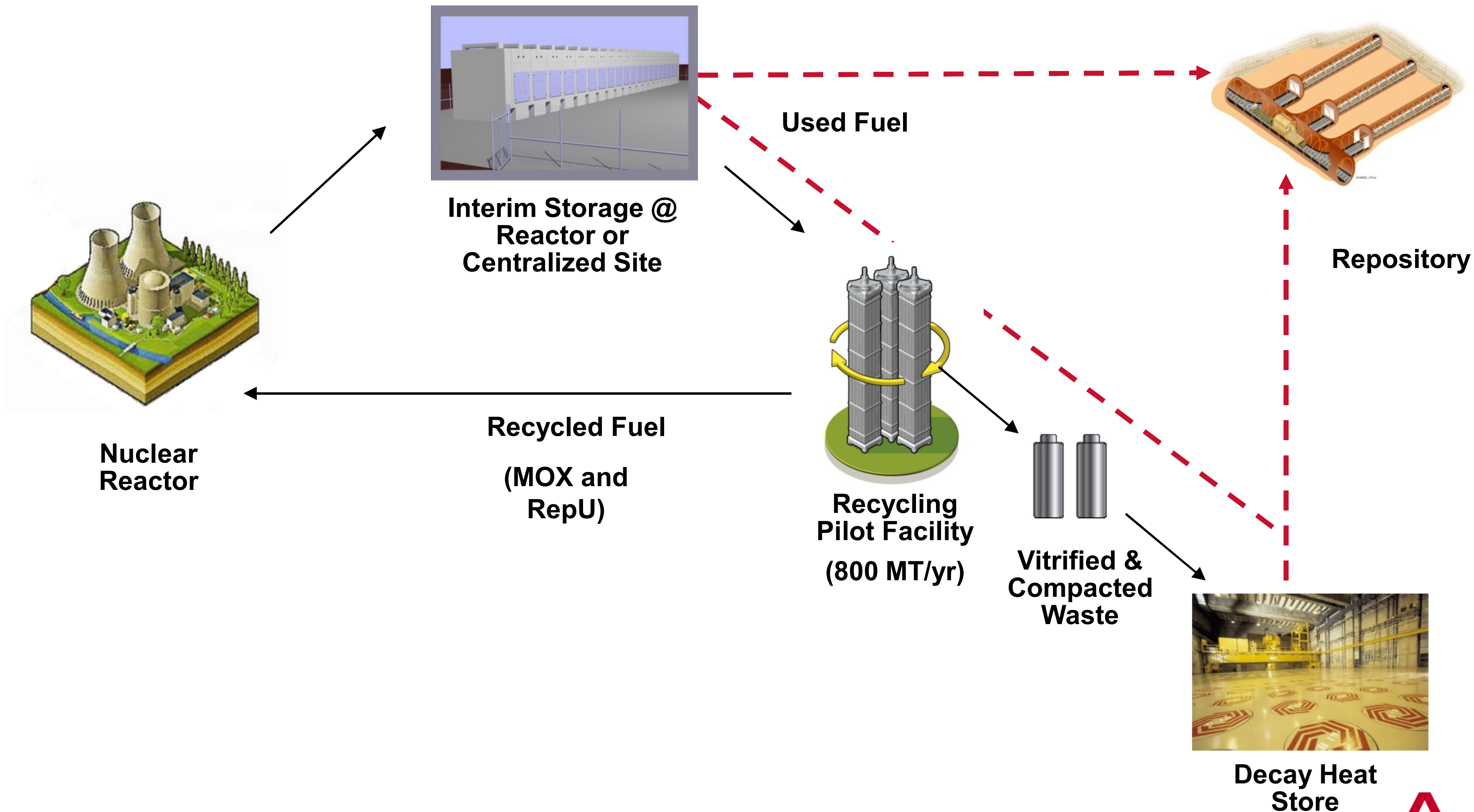
Options for "Near-Term" Used Nuclear Fuel Disposition



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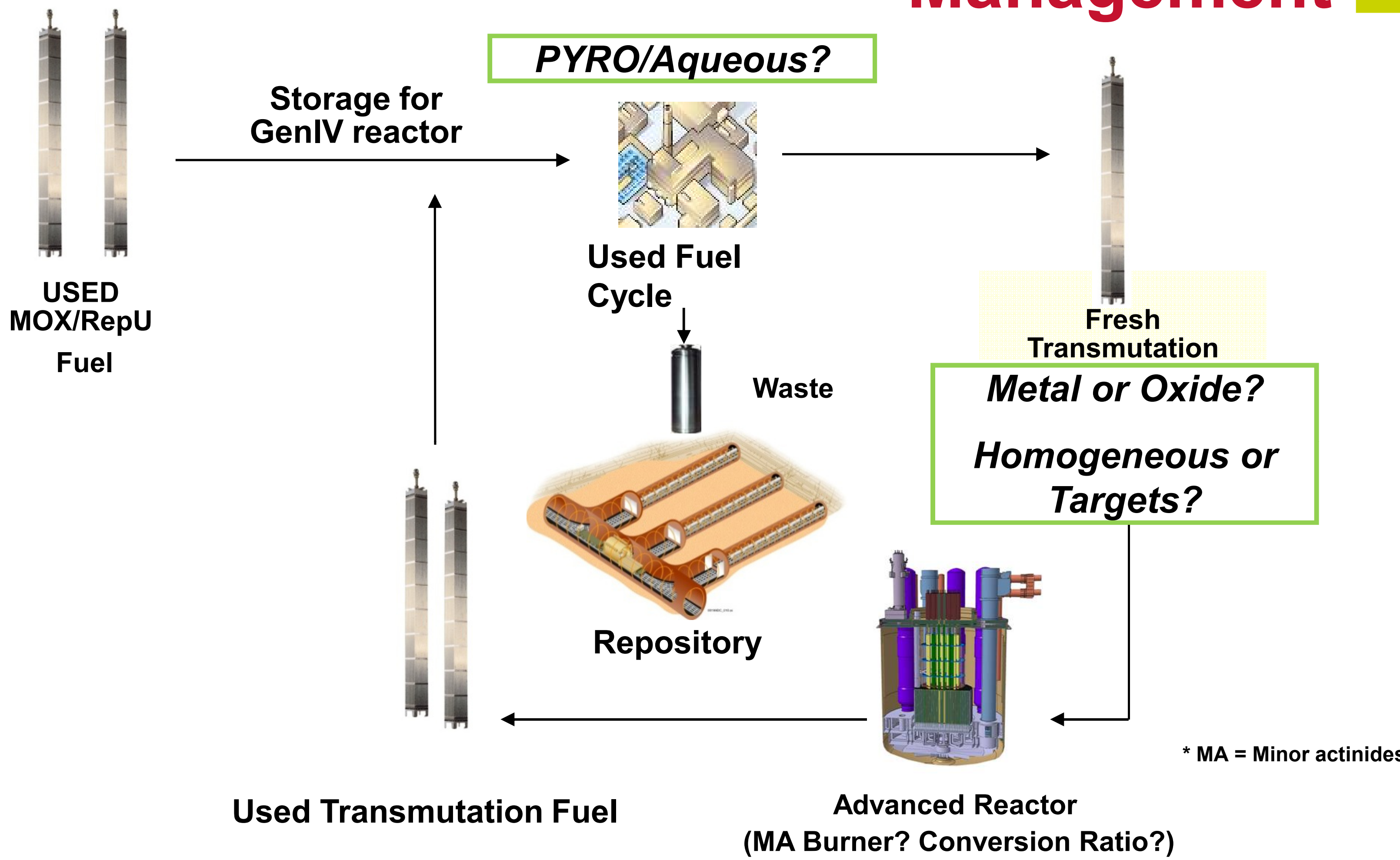
Long-Term Option for Used Fuel Management



R&D needed to define long-term approach – Don't wait on transformational technology – begin implementing

Why Close the Fuel Cycle?

If recycled, the ~60,000 metric tons of used fuel could provide enough fuel to power our 104 nuclear reactors for 6-7 years

- **Enhances security of fuel supply saving natural resources**
  - **96% of the content of the used fuel assembly is recyclable**
  - **Reduces uranium mining requirements by ~25%**
- **Reduces volume and toxicity of wastes that require geologic disposal, reducing repository requirements and costs**
- **Supports non-proliferation objectives**
  - **Proliferation resistant system**

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Challenges to be Addressed

- **Long-term national policy for integrated used fuel management codified in legislation**
  - **FedCorp to implement policy**
  - **Modification of NWPA**
- **Regulatory requirements for recycling**
  - **Critical path to design and fuel qual (e.g., MOX)**
- **Stakeholder acceptance**
- **Funding**
  - **To access private funding, need to start with proven technology to minimize risk**
  - **DOE working with industry to develop evolutionary technology that optimizes the security and waste management of initial recycling facility**
- **"Leapfrog" technology**
  - **Support the transformational technology development programs (e.g., advanced separations, advanced fuel, GenIV reactors)**

Need small steps moving forward to reach sustainable solutions

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Progress is Being Made

- **Recognition that nuclear will play key role in US energy mix**
  - **Legislation supporting nuclear and loan guarantees**
  - **Construction projects each with 1000+ people working (Watts Bar, Vogtle and Summer)**
  - **New enrichment facilities**
  - **AREVA Newport News LLC and Shaw manufacturing facilities**
- **Used Fuel Management**
  - **Blue Ribbon Commission established**
    - **Promote the need for a flexible integrated UNF management approach**
  - **Growing discussion and support for used fuel management policy including interim storage, recycling and disposal as options, and FedCorp for implementation of policy**
  - **NRC working on regulations for recycling with proposed rulemaking in 2015**
  - **Growing support from stakeholders expressing interest in back-end facilities**
    - **Continue the discussion**

Nuclear will have a significant future. Options for used fuel management including interim storage, recycling and disposal make sense