



U.S. DEPARTMENT OF
ENERGY

Nuclear Energy

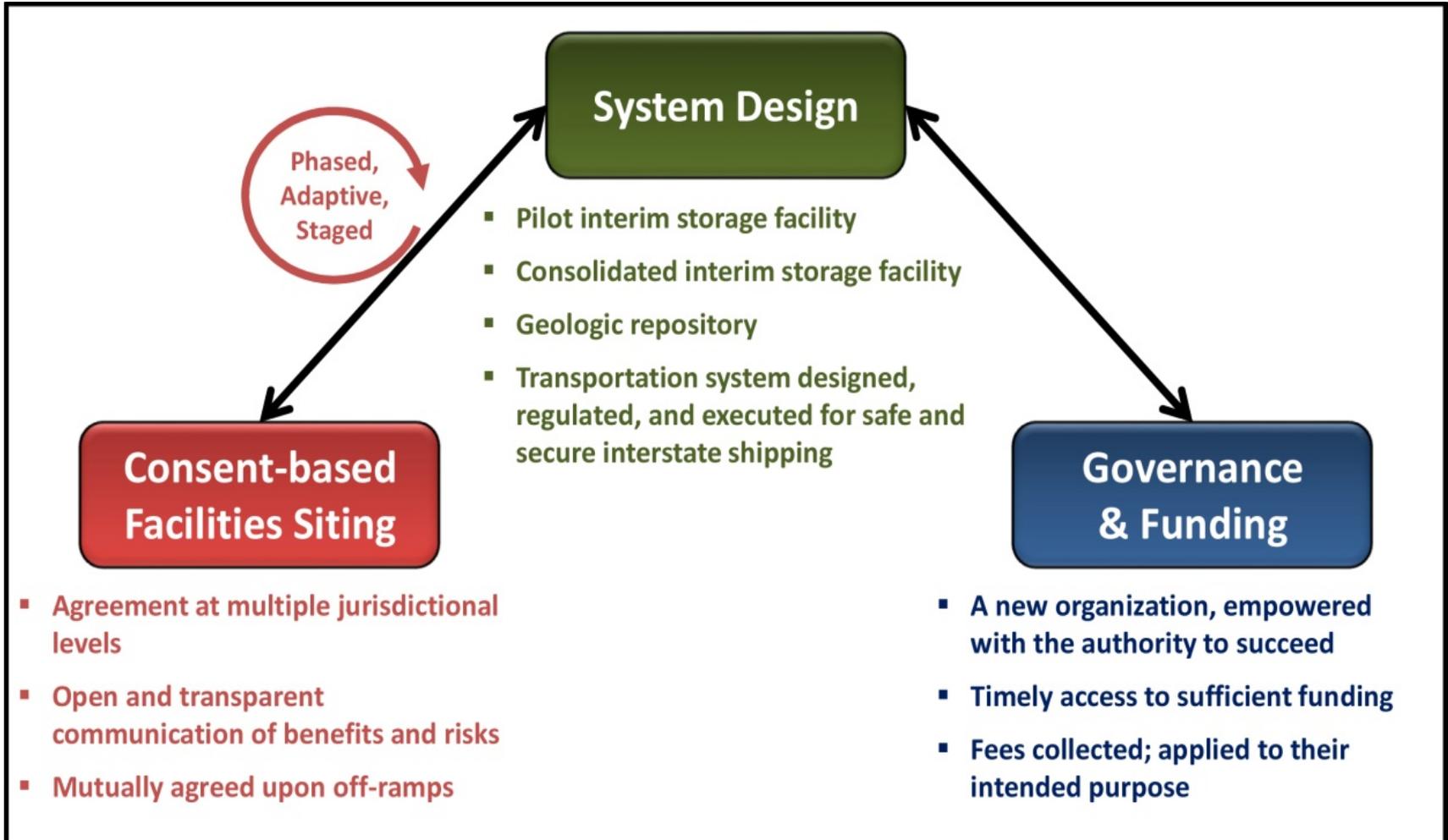
Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste in the United States

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Key Elements of Administration Strategy



Strategy Implementation

- **Facilities sited using consent-based process and licensed by the Nuclear Regulatory Commission**
- **Pilot-scale interim storage facility**
 - Operational in 2021
- **Consolidated interim storage facility**
 - Operational in 2025
- **Geologic Repository**
 - Sited using consent-based process by 2026
 - Designed and licensed by 2042
 - Operational in 2048

Used Nuclear Fuel Disposition Mission

- **Used Nuclear Fuel Disposition R&D Campaign** – *Identify alternatives and conduct scientific research and technology development to enable storage, transportation and disposal of used nuclear fuel and wastes generated by existing and future nuclear fuel cycles.*
- **Nuclear Fuels Storage and Transportation Planning Project** – *Lay the groundwork for implementing interim storage, including associated transportation, per the Administration’s Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, and develop a foundation for a new nuclear waste management organization.*

Used Nuclear Fuel Disposition: Interim Storage Planning

Begin laying the ground work for implementing interim consolidated storage:

- **Perform systems analysis and design studies for interim storage facilities**
- **Promote better integration of storage into waste management system**
- **Compile lessons-learned relative to siting process**
- **Evaluate system benefits of standardization**



Used Nuclear Fuel Disposition: Transportation Planning

Prepare for the eventual large-scale transport of used nuclear fuel and high-level waste:

- Collaborate with stakeholders on revised NWPA Section 180(c) Policy and National Transportation Plan
- Evaluate the inventory, transportation interface, and shipping status of used nuclear fuel, initial focus on shut-down reactor sites
- Assess and address transportation needs, (e.g., rail cars, casks, support and security).



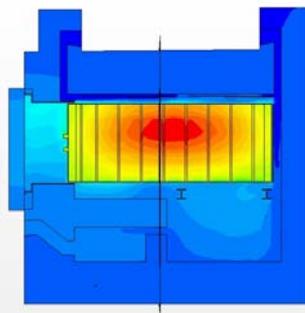
Facilities and railcars at Valognes Railway Terminal



Used Nuclear Fuel Disposition Extended Storage & Transportation R&D

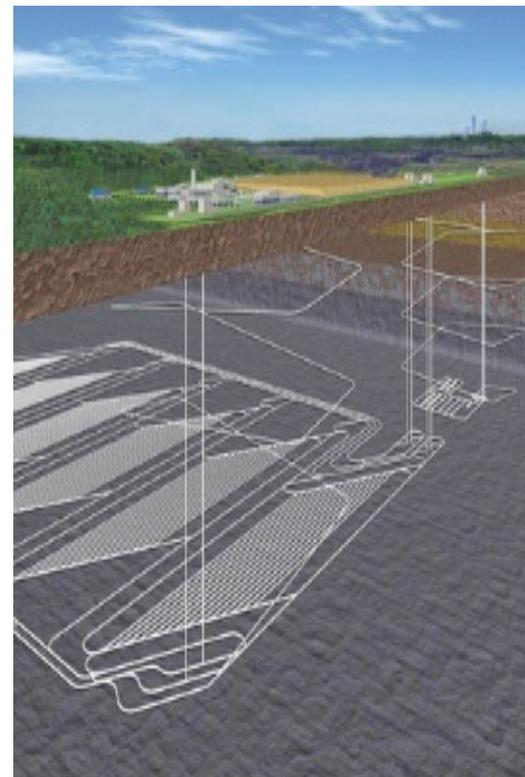
Better understand potential degradation mechanisms in long term dry cask storage including:

- Develop the technical bases to demonstrate used fuel integrity for extended storage periods
- Develop technical bases for fuel retrievability and transportation after long term storage
- Develop technical basis for transportation of high burn-up fuel



Used Nuclear Fuel Disposition Disposal R&D

- Provide a sound technical basis for the assertion that the U.S. has multiple viable disposal options
- Increase confidence in the robustness of generic disposal concepts
- Evaluate the BRC recommendation for developing a near term plan for taking the borehole disposal concept to the point of a demonstration



Conclusions

The DOE Office of Nuclear Energy is actively developing used nuclear fuel management strategies and technologies and continues to conduct R&D on both open and closed fuel cycle technologies.

■ **The Used Nuclear Fuel Disposition program is:**

- Laying the foundation for the development of storage, transportation and disposal options.
- Evaluating the behavior of used high burnup used nuclear fuels during storage and transportation.
- Evaluating the feasibility of direct disposal of large dual purpose canisters.
- Evaluating disposal options in several geologic media.

Please visit the Office of Nuclear Energy web site for further program activities and information.

<http://energy.gov/ne/office-nuclear-energy>