

Office of Storage & Transportation Update

Jay Thomas

Office of Storage & Transportation
Projects & Integration Team

Northeast High-Level Radioactive Waste Transportation
Task Force Fall Meeting
Providence, RI
October 23, 2024

U.S. DEPARTMENT OF
ENERGY

Office of
NUCLEAR ENERGY

SPENT FUEL & HIGH-LEVEL
WASTE DISPOSITION



Disclaimer

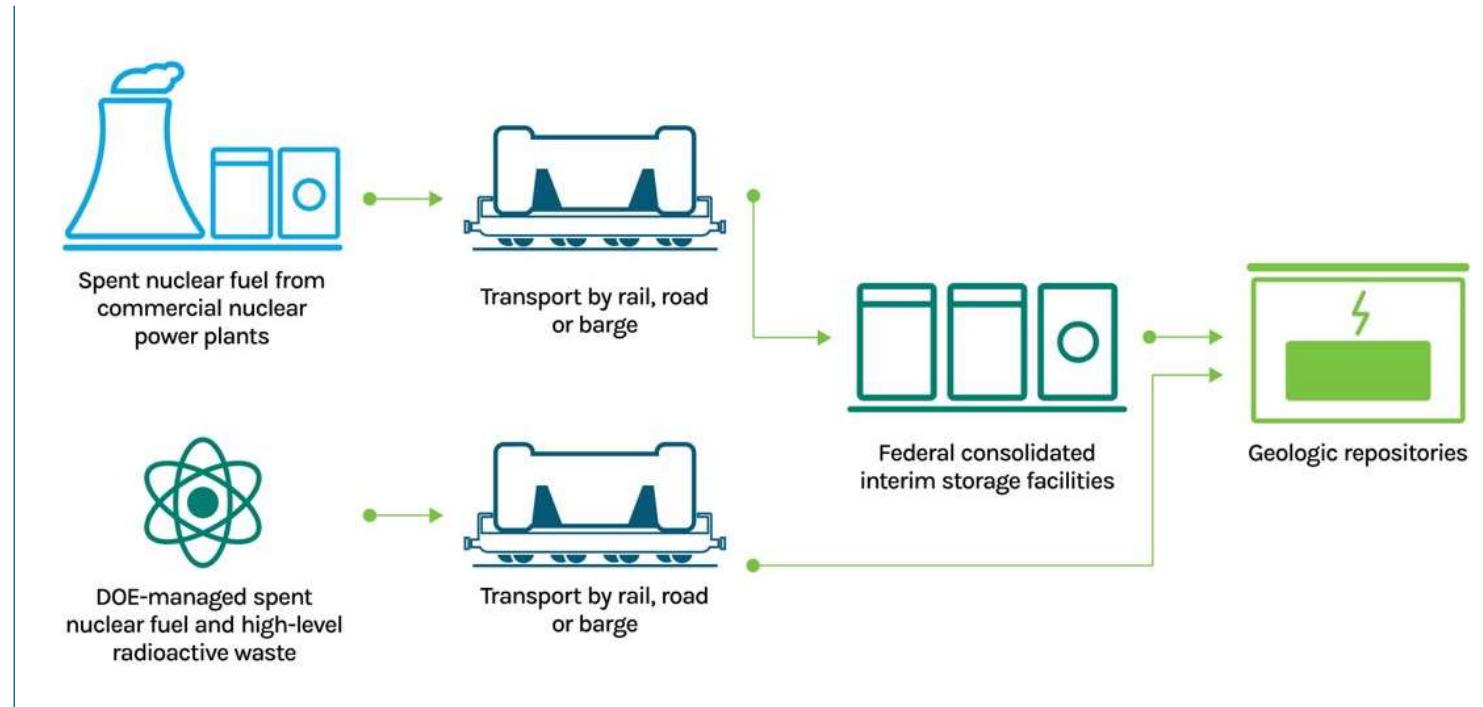
This is a technical presentation that does not take into account contractual limitations or obligations under the Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste (Standard Contract) (10 CFR Part 961).

To the extent discussions or recommendations in this presentation conflict with the provisions of the Standard Contract, the Standard Contract governs the obligations of the parties, and this presentation in no manner supersedes, overrides, or amends the Standard Contract.

This presentation reflects technical work which could support future decision making by the U.S. Department of Energy (DOE or Department). No inferences should be drawn from this presentation regarding future actions by DOE, which are limited both by the terms of the Standard Contract and Congressional appropriations for the Department to fulfill its obligations under the Nuclear Waste Policy Act including licensing and construction of a spent nuclear fuel repository.

Integrated Waste Management System for SNF & HLW

- Storage facility(ies)
- Transportation capability
- Disposal facility(ies)
- Interfaces



Spent Fuel & High-Level Waste Disposition Current Program Priorities

2024

Consent-Based Siting
/Public Outreach



2025 Issue an Expression of Interest

Design of Consolidated Interim
Storage Facility



2025 - 2031 Work toward CD-1, analysis of federal consolidated interim storage facility (CISF) design alternatives

2026 Establish the International Center of Excellence for the Research of Spent Nuclear Fuel (SNF) and conduct spent fuel research & development (R&D)

Transportation of
Spent Nuclear Fuel



2040

2027 Move high burnup cask to DOE Facility

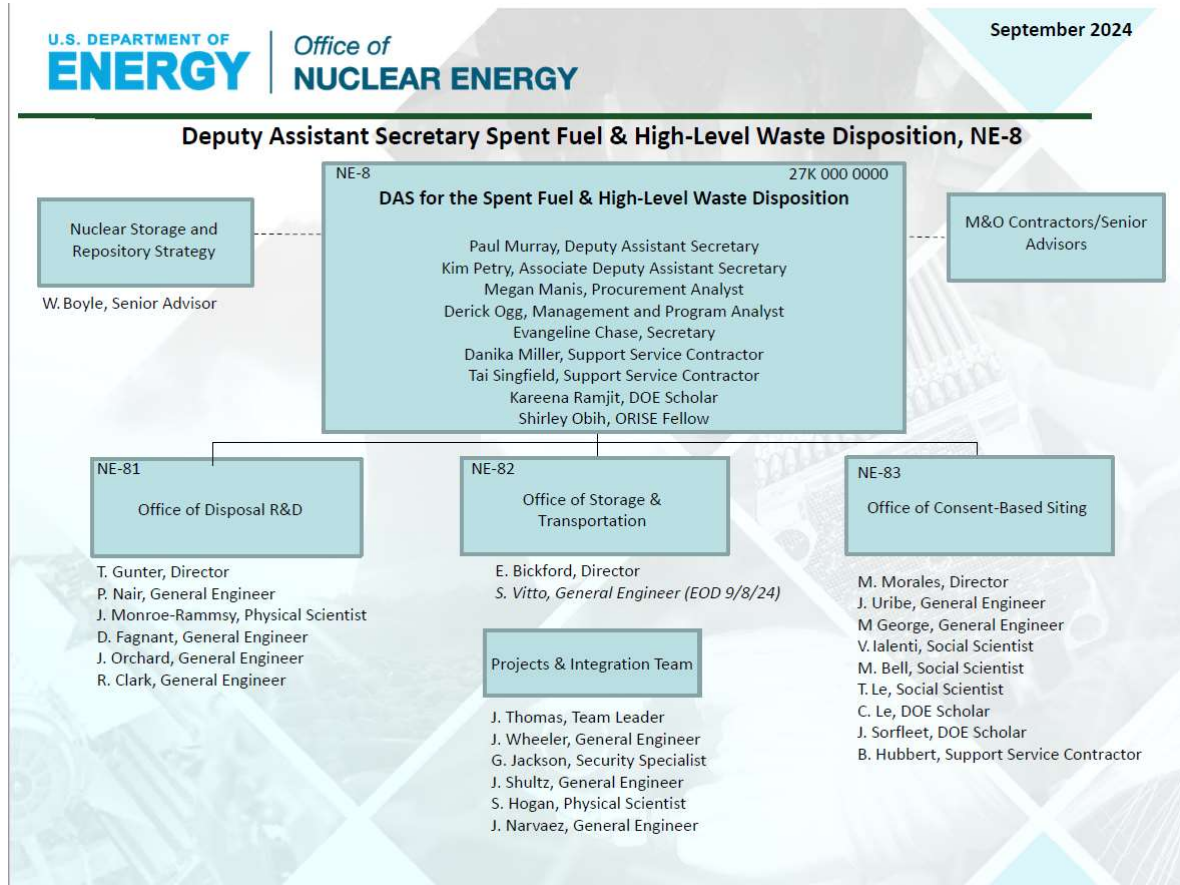
2028 - 2031 Conduct Package Performance Demonstration (PPD)*

2034 Build out transportation infrastructure for spent nuclear fuel

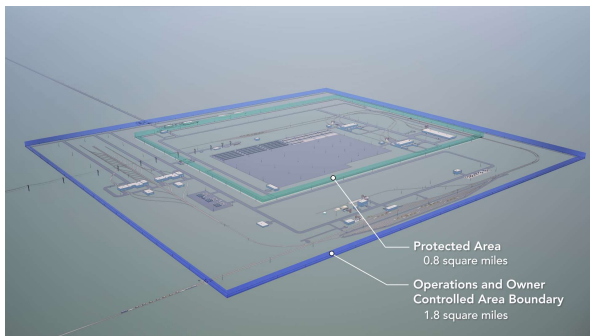
2038 - 2040 Begin transporting SNF to federal CISF

April 2024 Reorganization

- Appointed Jay Thomas as Team Leader for Projects & Integration team
- Created the new Research and Innovation team
 - Transfers CISF storage related research to new team
 - Focuses on CISF operations support
- Research & Development (R&D) Projects – moving
 - High-burnup fuel assemblies – post irradiation examination
 - Road Ready Demonstration
 - Considerations for advanced reactor SNF



Office of Storage & Transportation Priorities



Federal consolidated interim storage facility (CISF)/capital acquisition CD-1 and supporting activities



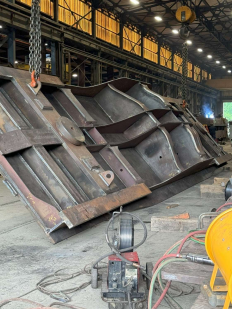
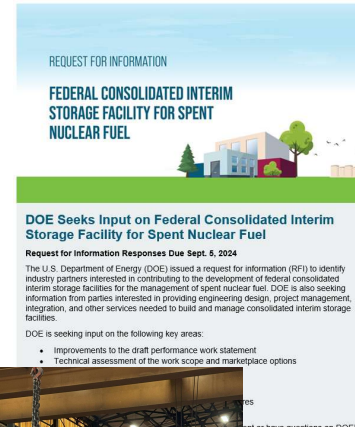
Package Performance Demonstration (PPD)
part of CISF project



Shipping the high-burnup demo cask (HBUDC) and supporting activities

FY24 – Key Accomplishments

- Consolidated Interim Storage Facility:
 - CD-0 (project approval)
 - Request for information (RFI) issued for engineering, project management and integration
- Package Performance Demonstration:
 - RFI issued to solicit feedback
- Transportation hardware:
 - Atlas railcar consist – Association of American Railroads (AAR) approval
 - Fortis – car body fabricated
- Transportation operations:
 - Site evaluation reports (February 2024)
- HBUDC shipment – Procured impact limiter fabrication



Request for Information (RFI)

SPENT NUCLEAR FUEL PACKAGE PERFORMANCE DEMONSTRATION (PPD)

The U.S. Department of Energy (DOE) is making preliminary plans to conduct physical demonstrations on a full-sized spent nuclear fuel (SNF) transportation rail cask. Inspired by a history of similar testing endeavors worldwide and recommended by the National Academy of Sciences and the Blue Ribbon Commission, the physical testing – called a Package Performance Demonstration (PPD) – is intended to address transportation safety concerns and build public trust and confidence in SNF transportation safety.

WHAT ARE WE DOING?

DOE is requesting responses to the RFI from sources capable of providing information, feedback, or services. The RFI is organized to gather input across multiple categories:

- Category A: Stakeholder Input and Feedback
- Category B: Cask Vendors
- Category C: Testing Facilities, Sites, and Services to Conduct Demonstrations
- Category D: Instrumentation, Data Collection, and/or High-Resolution Videography Services
- Category E: Miscellaneous Questions for Potential Vendors and Service Providers

WHY ARE WE DOING IT?

This RFI is intended to inform interested parties of DOE's preliminary plans for a PPD and gather feedback from stakeholders and potential suppliers. The responses will help the DOE assess interest and inform decisions regarding a potential PPD. Additionally, the feedback may identify parties and resources that might have interest in responding to a future Request for Proposal (RFP). This RFI is not a solicitation, but a way for the DOE to gauge interest, capacity, and capability in preparing for a potential PPD. DOE will ultimately decide how to proceed subject to the constraints of authorization, funding appropriations, and practical/technical feasibility.

WHEN ARE WE DOING IT?

Submission Deadline: Please submit your response by **6:00 PM EDT** on:

WHO SHOULD RESPOND?

DOE welcomes responses to the RFI from a wide range of sources, including parties with an interest in SNF transportation who can provide feedback on what kind of demonstrations DOE should conduct and other related information. In addition, we invite input from potential suppliers that could provide products and/or services for a proposed PPD. This includes cask vendors, testing facilities/sites to conduct demonstrations, and potential vendors to provide instrumentation, data collection, and/or high-resolution videography. International responses are welcome.

Eric Hines
Assistant Vice President
Technical Services
ehines@aar.org

ASSOCIATION OF AMERICAN RAILROADS
Submitted via email

Mr. Eric Beckford
Director, Office of Storage & Transportation
MS-82/Forsater Building
U.S. Department of Energy
1500 Independence Ave., S.W.
Washington, DC 20585

Subject: DOE Atlas Railcar Consist Conditional Approval: Multiple Car Test, Post Test Analysis, and Final Report Approval

Dear Mr. Beckford,

The AAA Equipment Engineering Committee (EEC) has accepted the performance of the DOE Atlas Car Consist, including the Atlas Car, Buffer Car, and Escort Vehicle, under AAR Standard S-2043. This acceptance includes the following acknowledgments:

- Satisfactory performance during Multiple Car Tests required by S-2043 paragraph 6.0 (Multiple Car Tests) through paragraph 6.4 (Demonstration Foot) based on MRR Rail Report P-23-030
- Satisfactory Post-Test Analysis as required by S-2043 paragraph 6.0 (MRR Rail Report P-23-031)
- Satisfactory Final Report required by paragraph 5-2043 9.0 (MRR Rail Report P-23-032)

The exceptions noted in TTCI Report No. P-23-030 were discussed by the EEC during their May 26, 2024 virtual meeting and comments can be summarized as follows:

- Stop Distance Tests, test train at maximum and minimum test loads.
 - Car to Car Anti-Rate: The exceptions were not a concern for safety.
- Stop Distance Tests, Atlas Car at minimum test load
 - Wheel Slip: The wheel slip exception that occurred on the Atlas Car during an empty car stop test was not a concern for safety, as it only happened on one axle during one set of six maximum test load/demagnetization applications/wheel cal runs. The event did not completely stop the wheelset from rotating, so the event could not have led to a slide flat. Also noted was that the car had previously demonstrated producing satisfactory brake ratios.
- Buff and Draft Curving Test, Buffer Car
 - Maximum vertical and lateral car body accelerations that exceeded the criteria on the buffer car were very short in duration, were not supported by visual or other data measurements, and are not thought to accurately represent the physics of the situation.

May 28, 2024
File 205.240

Nicholas Phipps
VPP Business Services / Executive
Director Health and Operations
nhipps@eop.gov

DOE

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'ACT?'
uploading updated
formation portal:

https://www.iaea.org/en/interactives/act

Sign up, which updates.

U.S. DEPARTMENT OF ENERGY

FY25 Budget

- Used Nuclear Fuel Disposition R&D:

- Disposal R&D
- HBUDC shipment
- Research and Innovation team R&D



House Mark

\$47M

(\$27M / \$20M)

Senate Mark

\$47M

- Integrated Waste Management Systems:

- Consent-Based Siting
- Tribal & State Transportation Cooperative Agreements
- Consolidated Interim Storage Facility Project
- Package Performance Demonstration
- Systems Engineering and Analysis



House Mark

\$25M

Senate Mark

\$53M

FY25 Key Activities – CISF and PPD

CISF:

- Conceptual design (CD-1)
- Associated research & development for transportation and storage



PPD:

- Review responses from the RFI
- Develop the Request for Proposal (RFP)



FY25 Key Activities – HBUDC and Transportation Hardware

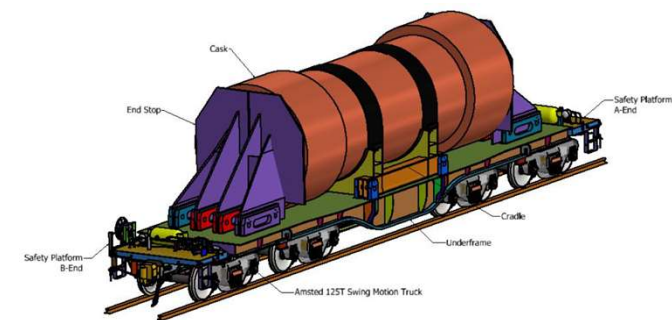
HBUDC Shipment:

- NEPA documentation development
- Integrated Safety and Security Monitoring System (ISSMS)
- Impact limiter and cradle fabrication



Transportation Hardware:

- Atlas rail car supplemental testing
- Fortis rail car – bi-span bolster fabrication



State & Tribal Engagement

- **National Transportation Stakeholders Forum (NTSF) Ad Hoc Working Groups:**

- SNF Rail/Routing
- Section 180(c)
- SNF Management – Communications and Outreach AHWG

- **Transportation Core Group**

- Washington DC March 19-20, 2024
- Boston Sept 11-12, 2024
 - Hosted by CSG-ERC



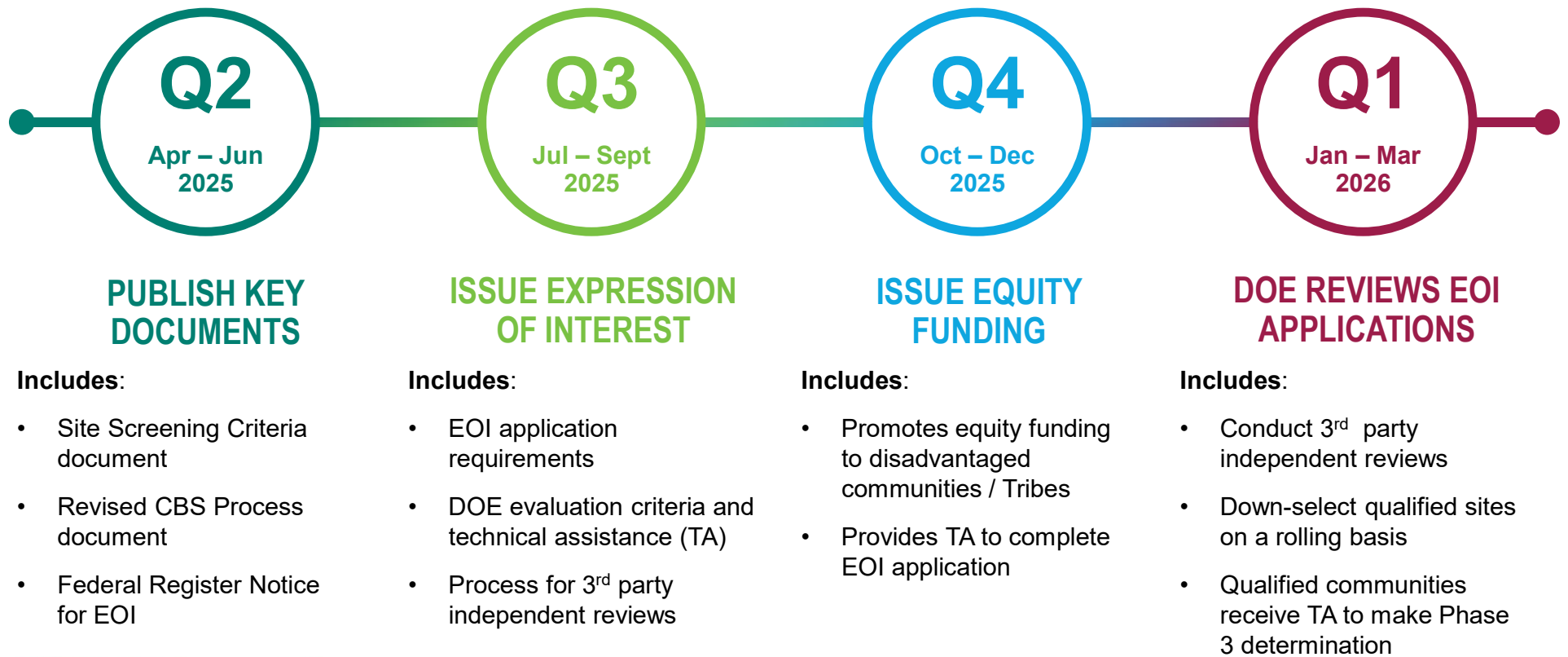
Consent-based Siting Program

Mission –

To implement interim storage for commercial spent nuclear fuel at a Federal consolidated interim storage facility following a consent-based siting process.



Consent-based Siting Near-term Roadmap



THANK YOU



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SPENT FUEL & HIGH-LEVEL
WASTE DISPOSITION



Backup Slides

CONSENT-BASED SITING CONSORTIA METRICS UPDATE SEPT 2024

Consent-based siting consortia support DOE's efforts to facilitate inclusive community engagement and elicit public feedback on consent-based siting, management of spent nuclear fuel, and federal consolidated interim storage. The 12 awardees are comprised of various organizations to help reach communities across the country and remove barriers to participate in DOE's consent-based siting process. Awardees have made significant progress in carrying out community engagement activities and providing direct grants to communities wanting to learn more.



Progress: DOE's Consent-Based Siting Process General Timeline



Progress: Consent-Based Siting Consortia Timeline



Updates reflect activities from September 2023 up to September 2024.



To learn more about consent-based siting, please visit energy.gov/consentbasedsiting or send an email to consentbasedsiting@hq.doe.gov

