U.S. Department of Energy Spent Nuclear Fuel Package Performance Project Update

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Spent Fuel and High-Level Waste Disposition



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### **Outline**

- PPP Background and Process
- PPP External Engagement
- PPP Request for Information/Sources Sought Notice (RFI/SSN)
- Options and Recommendations Report
- Next Steps





### **DOE Package Performance Project**

### What is the PPP?

- Physical demonstrations on a rail-sized spent nuclear fuel (SNF) transportation cask
- Previously referred to as a package performance study (PPS) and recently renamed from Package Performance Demonstration (PPD)

### Completion of a PPP depends on continued availability of funding and alignment with administration priorities.

Photos reproduced from National Academy of Sciences, *Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States*, 2006.



Truck tractor-trailer with SNF shipping cask.



Locomotive impacting a tractor-trailer system.



SNF package mounted in a railcar.



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# Why is DOE Planning a PPP?





## **PPP Methodology and Approach**





### External Engagement Expected Outcomes

### Short Term:

- Input into which demonstrations to perform and other parameters, where possible
- Input into how results are used and distributed
- Identify potential success paths and pitfalls

### ong Term:

- Improved knowledge base
- "Shareable" confidence
- Facilitated communication during future transportation campaigns



### Phased Audience Engagement



### Phase 1

• Parties closest to SNF transportation

### Phase 2

• Broader audience, including parties with interest in SNF transportation

Phase 3

• Broadest audience, including general public



# Phased Engagement Approach\*

### Phase 1: Preliminary Outreach

- Initial engagement
- Develop preliminary technical considerations
- Develop information portal
- Advises Request for Information (RFI)/Sources Sought Notice (SSN) development

MID-2023 - SUMMER 2024

Phase 2: RFI and Comment Period

- RFI published, gather responses, review feedback
- Increase breadth of outreach
- Webinars, listening sessions
- Informs request for proposal (RFP)

#### Phase 3: RFP through PPP Implementation

- RFP issued, responses received, DOE decisions on demonstrations
- Broadest outreach
- Educational/informational webinars, updates
- Informs PPP and post-PPP communications

#### FALL 2025 – 2028 (TARGET)

SUMMER 2024 – SUMMER 2025

\*Subject to approval and funding



## **External Engagement in Phases 1 and 2**

- Nuclear industry organizations and conferences
- State and Tribal organizations
- Other Federal partners
- International discussions
- Emergency management organizations
- Consortia
- ~35 External engagement interactions (not including informal)
- 4 Public webinars (400 unique attendees)





## **Request for Information and Additional Opportunity**

- Additional opportunity responsive to request for streamlined input mechanism
- Information sought July 31, 2024 through January 31, 2025
- The RFI/SSN and Additional Opportunity served as:
  - An opportunity for input from all interested parties
  - Market research for potential vendors for materials, facilities, and services for conducting a PPP



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



## Sample Questions from the RFI/SSN



Should DOE conduct a PPD? Why or why not?



What concerns could a PPD address? For example, are there specific real-world accident scenarios or aspects of SNF transportation of particular concern to you? Please describe how a PPD could help alleviate these concerns.



What would make a PPD credible to you (or your constituents/members)? For example, should DOE consider having specific parties with appropriate technical expertise (such as universities, the International Atomic Energy Agency, the NRC, or other entities) witness a PPD in person or having independent reviewers provide input to demonstration plans and data gathered as part of the demonstration(s)?



How would you or your organization recommend that information and results from a PPD be used and shared? How should those potential outcomes be considered in the design of a PPD?



## **DOE PPP Potential Demonstrations**

# **Considering** demonstrations based on tests described in NRC's 10 CFR Part 71



**Considering** other demonstrations. For example:

- Train collision with transportation package in a
  "realistic" type of scenario
- Immersion demonstration in a body of water/waterbody retrieval demonstration



CEGB public demonstration test. Image from, "Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States," The National Academies Press, Washington, D.C. (2006).



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## Summary Report of RFI/SSN Responses

- Two reports present overall results of RFI/SSN responses and overview of what responses entailed
  - Result of organizing responses received (e.g., by topic, category, and/or question number), and reviewing and analyzing responses
  - Key outcomes
- DOE-NE does not plan to respond directly to each submittal or publish individual responses to comments
- Reports are planned to be released publicly
  - Allows all respondents and those who are interested in a PPP but not planning to participate –

to see the results of the RFI/SSN







### **Options and Recommendations Report**

- Considered suggestions from literature, RFI/SSN responses, PPP team, and previous PPP-like projects
- Evaluated advantages and disadvantages, facilities available, potential casks, instrumentation needed; presented in report.
- DOE-NE may
  - Accept the recommendation
  - Request further analysis
  - Choose an alternative option
- Report will not be released publicly to protect business proprietary information
- DOE-NE will consider options for publicly releasing some information for the purpose of transparency in its decision-making process





### **Next Steps**

- DOE decision on PPP path forward (subject to authorization and funding)
- Market research
- Develop Performance Work Statement(s) and Request(s) for Proposals
- Contracting/procurement
- PPP



1970's tests conducted at Sandia National Laboratories



Stay Up to Date on PPP at <a href="https://curie.pnnl.gov/DOE-PPP">https://curie.pnnl.gov/DOE-PPP</a>

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