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Nuclear Fuels Storage & Transportation Planning Project
 Office of Fuel Cycle Technologies
Nuclear Energy

Transportation Plan Working Group

Jay Jones
 Office of Nuclear Energy
 Department of Energy

National Transportation Stakeholders Forum
 Bloomington, MN
 May 15-13, 2014




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Agenda

- Transportation Plan Overview – Jay Jones, DOE
- Routing Methodology Process– Jay Jones, DOE
- Stakeholder Tool for Assessing Radioactive Transportation (START) – Mark Abkowitz, Vanderbilt University
- Transportation Plan Discussion – Working Group

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Overview and Work Scope

- **Prepare a draft National Transportation Plan (NTP) in a collaborative effort with stakeholders**
 - Focuses on the goals of the Blue Ribbon Commission recommendations and the Administration's Strategy
 - Addresses the NAS recommendations related to transportation of Used Nuclear Fuel
 - Integrates with technical activities
 - Is consistent with DOE transportation policy, guidance, and prior shipping experience (including Waste Isolation Pilot Plant and Foreign Research Reactor Fuel campaigns)
 - Considers stakeholder comments on prior DOE National Transportation Plans (2009 Office of Civilian Radioactive Waste Management Transportation Plan)

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Plan Objectives

- **Inform interested parties about the planning process and activities to be completed in order to ship UNF from reactor sites**
- **Describe other documents that would inform the Plan as issues are identified and/or resolved**
 - Completed technical studies
 - Rail and cask procurement plans
 - Future Campaign Plans
- **Outline features of a working transportation plan by combining elements from other successful shipment campaigns**

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Considerations in Development of Plan

- **How to involve key stakeholders in both planning and conducting transportation activities**
- **What is the status of issues (both resolved and unresolved)**
- **How can the NTP best describe both current project activities and outline the key features of an operational system**
- **What future technical, institutional and operational activities specific to transportation should be included in the NTP**
- **Should site or campaign-specific plans be appended to the NTP as they are developed (or stand alone?)**

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National Transportation Plan Recent History

- **Work Accomplished Since NTP Webinar in June 2013**
 - Transportation Planning Report outline expanded in July/August, 2013
 - Received and incorporated comments from DOE and technical reviewers in August
 - Draft Transportation Planning Report (a contractor report) submitted September
 - DOE decided to make the Report a DOE National Transportation Plan in January 2014
 - Draft National Transportation Plan distributed to State Regional Groups, tribes and the Transportation Plan Working Group members in April

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NTP Revisions: Next Phases

- **The NTP is “dynamic” and will be updated:**
 - Based on feedback from States and Tribes
 - Based on Routing/180(c) Workshop Information
 - As more information is acquired from technical studies
 - As issues are identified and resolved
 - As decisions are made about specific campaign features such as routes, modes, scheduling, and specific site shipments
 - As Administration/DOE policy is set
 - As future organizational responsibilities are defined

7 

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Additional Considerations

- **Potential new lessons learned from any upcoming shipping campaigns**
 - Little recent experience with UNF rail shipments since DOT issued rail routing rules and NRC issued revised security rules
- **Tabletop with stakeholders being planned for Routing and Section 180(c) could influence or change the NTP**
- **Integration with technical and policy work is crucial to the NTP**
- **The NTP will be revised and kept up to date as future events may influence and change the contents**

8 

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Routing Methodology Process

Presented by Jay Jones

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9 

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Preliminary Routing Activities

- **Development of Routing Process Paper formalizing routing methodology for stakeholder interactions**
 - Evaluation of available transport modes
 - Development of primary and secondary routing criteria
 - Test criteria through evaluation of primary and alternate routes from shut down sites to the nearest Class 1 railroad

10 

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Input on Routing

- **Several DOE programs have engaged stakeholders in interactive route planning:**
 - Waste Isolation Pilot Plant (WIPP)
 - Foreign Research Reactor (FRR)
 - West Valley Demonstration Project (WVDP)
- **No formal or standardized process for route assessment has been developed**

11 

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Input on Routing (continued)

- **A standardized process has been recommended by:**
 - State Regional Groups (SRG)
 - Transportation External Coordination (TEC) working groups
 - The National Academy of Science (NAS) in their 2005 study “Going the Distance”
 - The Blue Ribbon Commission (BRC) on America’s Nuclear Future

12 

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What has changed?

- A draft “*approach to route identification*” was introduced by OCRWM in 2007. While much of the information is still relevant, significant changes have taken place since that time:
 - Pipeline and Hazardous Materials Safety Administration (PHMSA) final rule on rail routing - 49 CFR 172.820, 172.822 Appendix D
 - Increased knowledge and experience on complexity of routing through regional routing studies
 - Advancement in development of a user friendly GIS based tool for route assessment (START) including the availability of new robust data sets that inform route planning and analysis

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Route Selection Process Document

- Starting with a basic set of safety principles, best practices from previous campaigns and guidance in DOE Manual 460.2-1A, the document should:
 - Identify stakeholders who should be included in the routing dialogue
 - Propose a method for engaging stakeholders in evaluation and analysis of site specific modal options

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Route Selection Process Document (continued)

- Propose a method for engaging stakeholders in development of primary and secondary routing criteria
- Propose methods for testing criteria for applicability, efficiency, regulatory compliance and operational viability
- Document a comparative analysis of routing regulations for highway (49CFR 397), rail (49CFR 172.800, 172.822 and Appendix D), and NRC routing/physical protection guidance (NUREG 0561-2) to identify common elements
- Propose methods for documenting results

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The Path Forward

- The proposed path forward for completion of the routing process document will include:
 - Development of an annotated outline – shared with stakeholders
 - Webinars with SRGs and Tribes
 - Solicitation of input from federal regulators and carriers on routing standards for different modal options
 - Development of “test cases” to evaluate the ability to produce routes that are safe, efficient and operationally viable
 - Proposed methods for documenting results

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Interactive Process for Route Planning

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    A[DOE and Stakeholder Groups develop Safety Principals that apply to route selection and transportation operations] --> B[DOE and Stakeholder Groups develop primary and secondary routing criteria]
    B --> C[Incorporate safety principals and routing criteria into START Routing Model]
    C --> D[Run START for individual closed sites to identify and evaluate possible modes and analyze routes to nearest Class 1 Rail Road using the criteria and methodology defined in the routing process plan]
    D --> E[Evaluate impacts of mode and route analysis on implementation of 180c Policies in affected jurisdictions]
  
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Routing Model

Stakeholder Tool for Assessing Radioactive Transportation (START)

Presented by Mark Abkowitz
Vanderbilt University

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Overarching Objective

Utilize a decision-support tool for NE's Nuclear Fuel Storage Transportation (NFST) project:
 ...to evaluate transportation routing and emergency preparedness options in the waste management system
 ...representing a wide range of operating scenarios and performance objectives
 ...with an emphasis on providing flexibility.

GOAL

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Decision-Support Requirements

- Cover the entire continental U.S.
- Represent physical and operating characteristics of freight surface transportation modes
 - Highway
 - Rail
 - Barge
- Include relevant proximate features (e.g., tribal lands, emergency responders, schools, environmentally-sensitive land use)
- Flexible, modular system architecture to support functionality, feature and data updates
- Leverage geographic information systems (GIS) technology
- Support users via web-based application with secure internet access

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Review of Existing Tools

- Study undertaken to review capabilities of existing tools
- Found that none were capable of fulfilling NFST objective without major overhaul at significant expense
- Recommendation made to develop a new tool to leverage advances made in information technologies leading to a system that is:
 - More comprehensive
 - More economical
 - More user-oriented
 - Easier to maintain and update
- ESRI ArcGIS recommended as tool development platform

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START Design Considerations

- Analyze alternative routing criteria
- Include detailed transportation system attributes
- Provide emergency response information
- Include radiological risk estimates on the "front-end"
- Provide integrated system enabling user to get the "whole story"
- Create an intuitive menu structure consistent with stakeholder needs



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START Support Roles

- Development of transportation plan
- Route selection process and preliminary routing analysis activities
- 180(c) policy development
- Data collection activities at shutdown sites
- Coordination with waste management data and systems integration tool development initiatives





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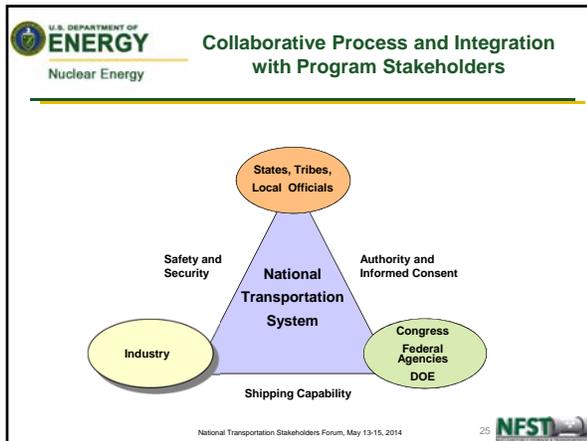
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Next Steps

- Make program modifications based on beta test feedback
- Prepare user manual
- Perform case studies illustrating how START can be used to support stakeholder needs
- Plan START roll-out
 - Credentialing
 - Training sessions
 - Conference presentations
 - Workshops



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- ### Questions to Consider As You Review the NTP
- Does the NTP provide a general outline of the approach to transportation planning that meets the readers' expectations?
 - What is missing or needs to be expanded?
 - Does the concept of a general plan supported by separate site specific transportation plans seem workable?
 - What key issues still need explanation and how do you want them addressed?
 - Is the transportation system development adequately described?
 - What policy questions or technical issues need to be included?
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- ### Questions to Consider As You Review the NTP (continued)
- Is the process outlined for completion of the Plan workable?
 - Interactions with the working group
 - Meetings with the Core Group of SRGs, states and tribes
 - Discussions at the NTSF
 - Other communication with program stakeholders
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Schedule for National Transportation Plan

■ Distributed Draft Plan	April 2014
■ NTSF Session - initial feedback	May
■ Revise Draft Plan and resend to Working Group	July
■ Prepare Comment Response document	July
■ Webinar to discuss comments/changes	August
■ Issue revised National Transportation Plan	September
■ Second comment period	Oct.-Dec.
■ Second Revision	Jan. 2015
■ Webinar	February
■ National Transportation Plan discussed at NTSF	May

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Contact Information

Questions or Comments?

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29 NEST