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Fuel Cycle Technologies

Near Term Planning for Storage and Transportation of Used Nuclear Fuel

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Nuclear Fuels Storage and Transportation (NFST) Planning Project

Presented to the

Southern States Energy Board

Joint Meeting of the Radioactive Materials Transportation Committee and the Transuranic Waste Transportation Working Group

November 27, 2012

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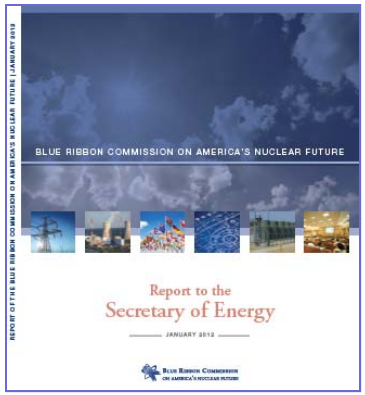
Used Fuel Disposition – Background and Status

- **Blue Ribbon Commission for America's Nuclear Future established (March 2010)**
  - The committee conducted a comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing, and disposal of civilian and defense used nuclear fuel, high-level waste, and materials derived from nuclear activities. Final report Jan 2012.



- **Ultimately, the Nuclear Waste Policy Act (NWPA) will have to be modified to implement a new used fuel management strategy**
  - Technical feasibility does not appear to be in question
  - The process appears to be the challenge

- **Current strategy stores UNF at reactor sites**

- **Future decisions are pending on**
  - Policy/legislation
  - Budgets
  - Amendments to the NWPA

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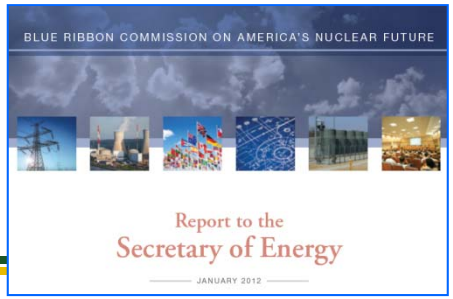
BRC Recommendations



1. A new, consent-based approach to siting future nuclear waste management facilities
2. A new organization dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed
3. Access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management
4. Prompt efforts to develop one or more geologic disposal facilities
5. Prompt efforts to develop one or more consolidated storage facilities
6. Prompt efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available
7. Support for continued U.S. innovation in nuclear energy technology and for workforce development
8. Active U.S. leadership in international efforts to address safety, waste management, non-proliferation, and security concerns

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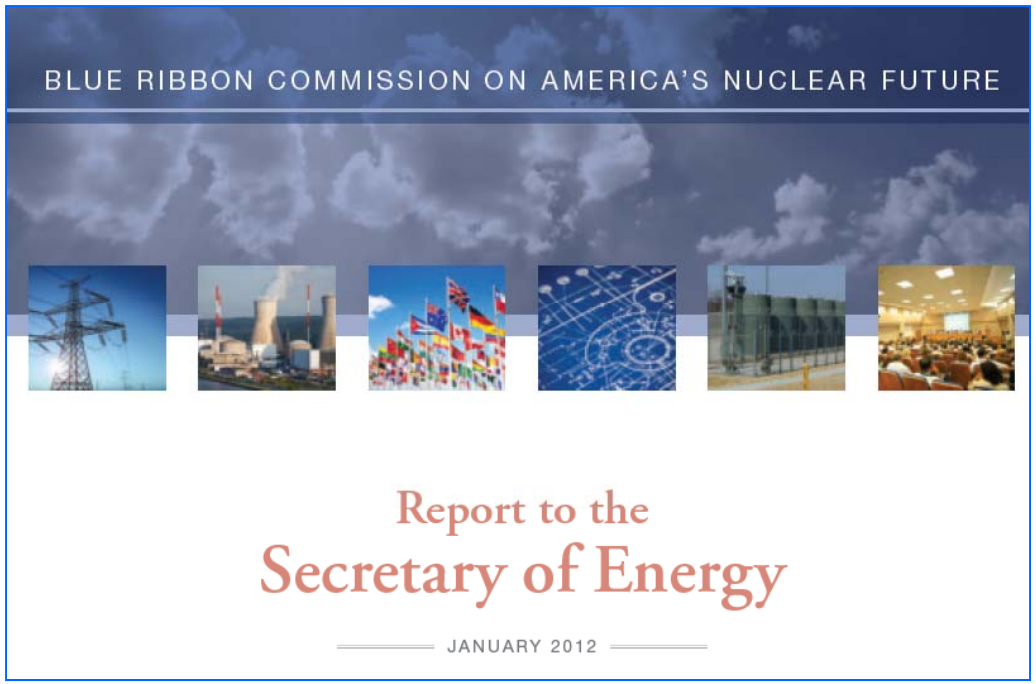
The BRC Recommended: *CSFs, Transportation Preparation, and Stranded Sites "First"*

"Prompt efforts to develop one or more consolidated storage facilities"

"Early preparation for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities"



"Consolidated storage would allow for the removal of 'stranded" spent fuel from shutdown reactor sites: …the Commission recommends that spent fuel currently being stored at shutdown reactor sites be "first in line" for transfer to a consolidated storage facility."

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BRC Chapter 13 Near-Term Actions

"DOE remains responsible for nuclear waste management activities of the Federal Government, it is important that those steps that do not require the new organization to be in place be initiated as soon as possible."

DOE should :

- **Begin laying the groundwork for implementing consolidated storage (perform system analyses, design studies)**
- **Prepare to respond to information requests from communities, states, and tribes interested in hosting a consolidated storage facility**
- **Begin providing funding, for working with state and regional-state government groups and training local and tribal officials in preparation for movement of spent fuel from shutdown reactor sites to consolidated storage**
- **Work with nuclear utilities, the nuclear industry, and other stakeholders to promote better integration of storage into the waste management system, including standardization of dry cask storage systems**

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NFST Planning Project established to respond to BRC recommendations

- **Initial focus consistent with BRC recommendations for near-term actions**
  - Design of consent-based process, technical studies, siting, and preparation for transportation from shutdown sites to a pilot consolidated storage facility
  - Identify and promote opportunities for integration and standardization in waste management system
- **Purpose is to make progress on this important national issue**
  - Build foundation that could be transferred to a new Nuclear Waste Management Organization
- **Activities consistent with BRC recommendations and existing NWPA constraints**
- **Est. FY2013**

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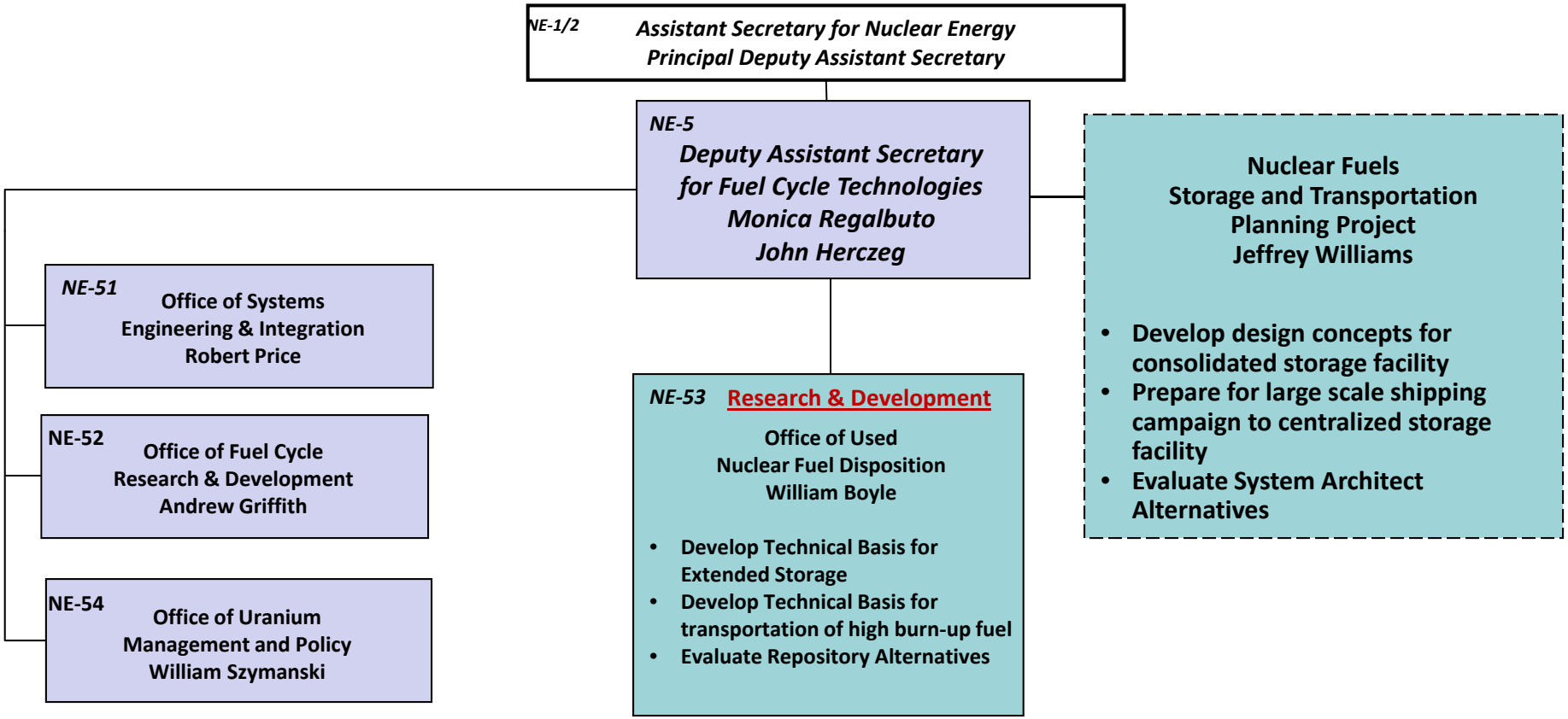
NFST established as a *Planning Project* within Fuel Cycle Technologies



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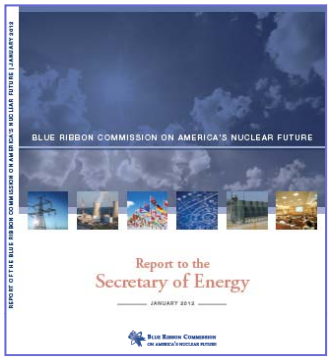
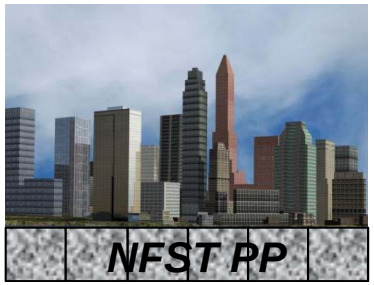
NFST Work Breakdown Structure

- Nuclear Fuels Storage & Transportation (NFST) Planning Project 1.02.09
  - Storage (ST)
    - Design Concepts 1.02.09.08
    - Conceptual Design 1.02.09.09
    - Regulatory 1.02.09.10
  - Transportation (TR)
    - Institutional 1.02.09.11
    - Operational 1.02.09.12
    - Hardware 1.02.09.13
  - Strategic Crosscuts (SX)
    - Project Management 1.02.09.01
    - Systems Analyses 1.02.09.02
    - Data/Knowledge Management 1.02.09.03
    - Standardization and Integration 1.02.09.04
    - Consent-Based Siting Process 1.02.09.05
    - NEPA 1.02.09.06
    - Communication Products 1.02.09.07





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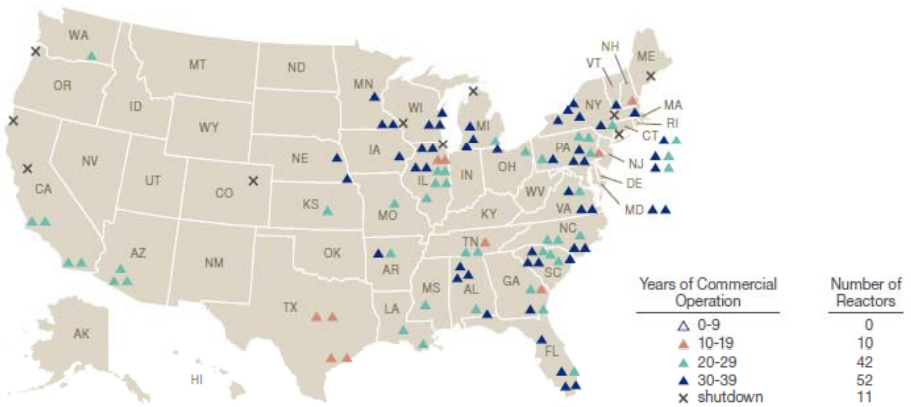
NFST Planning Project Transportation Activities

Objective:

Ensure the implementation of a staged, adaptive, consent-based transportation process for SNF and HLW

- Re-engage with regional groups to better understand stakeholder issues related to the movement of spent fuel
- *Employ successful approaches from past experiences*



Source: U.S. Nuclear Regulatory Commission

BRC recommends that the development of routes from shutdown reactors in the region be developed in a collaborative manner and in a similar process found in successful DOE shipping campaigns, such as WIPP

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NFST Planning Project Transportation Activities (cont'd)

- **Planning report for shipping stranded fuel from shutdown sites to a consolidated interim storage facility**
- **Publish revised NWPA 180(c) policy regarding financial and technical assistance to states along transportation routes for SNF**
- **Develop communication products**
- **Develop draft National Transportation Plan**
- **Draft preliminary routes for shipments from shutdown sites**

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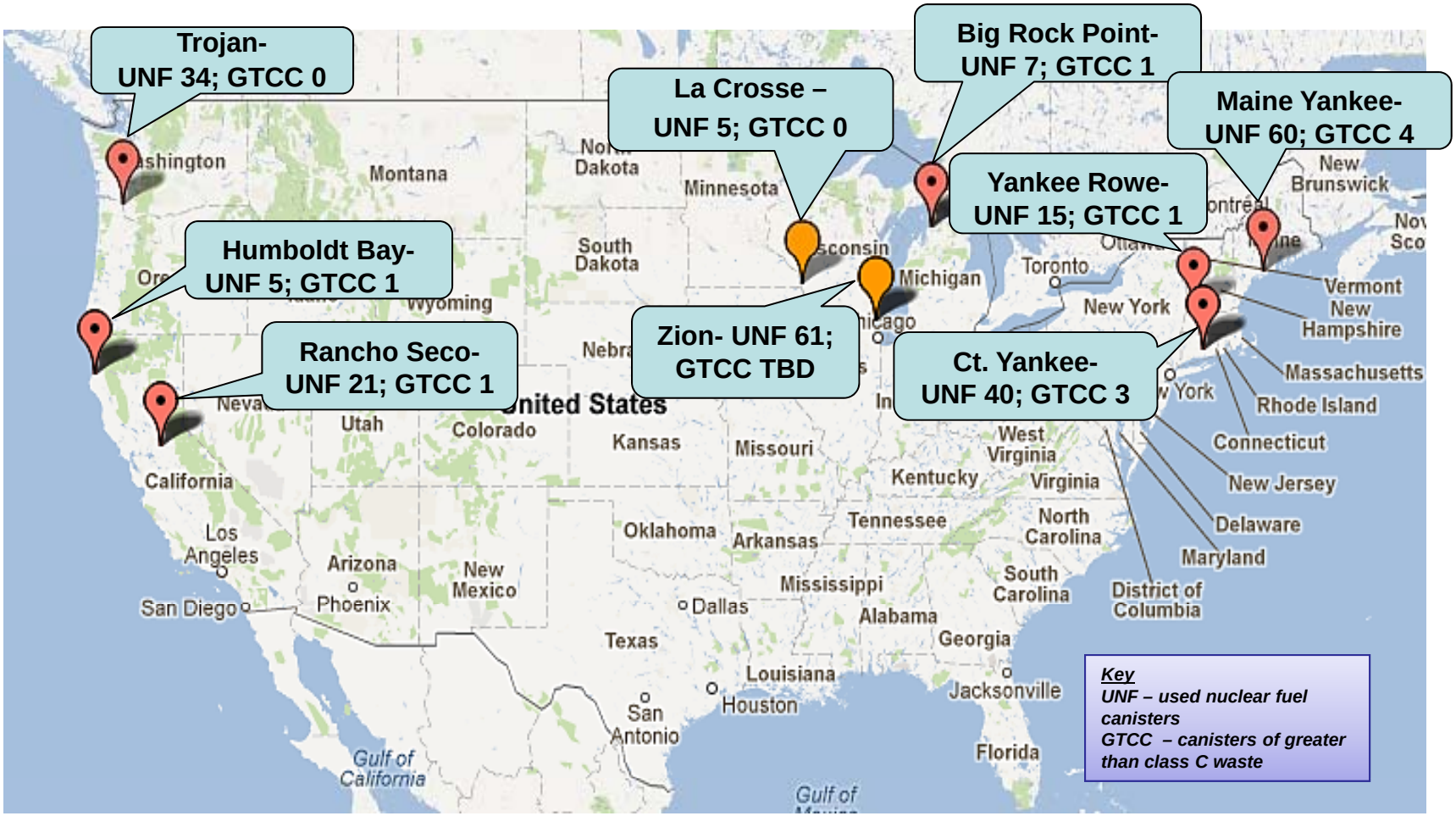
Stranded Spent Fuel at Shutdown Reactor Sites



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NFST Planning Project Storage Activities

Objective:

Begin laying the ground work for implementing consolidated storage

- **Build on previous DOE work and industry storage licensing efforts**
  - *Evaluation of design concepts for consolidated storage*
  - *Conduct system analyses on operational strategies*
  - *Develop communication packages which describe various attributes of a consolidated storage facility for use in interaction with potential host communities*
- **Siting – initiate development of consent-based process**
- **PEIS – evaluate the benefits of a Programmatic EIS**
- **Regulatory – evaluate the benefits of a generic Topical Safety Analysis Report**
- **Evaluate system benefits of standardized packaging**

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Initial SRG Activities under Cooperative Agreements

- **Resulting from the October 3-4, 2012 DC kick-off meeting:**
  - **State Regional Groups (SRGs) provide Principle of Agreement on mutual expectations and goals for the activities to be conducted**
  - **Section 180(c):**
    SRGs identify State members for NTSF Section 180(c) Working Group

    Participate in WG teleconferences every 2-3 weeks
  - **Routing:**
    Begin to analyze routes in the SRG respective regions, focusing on shutdown plants
  - **Risk Perception/Communications/Package Performance Study:**
    Participate in developing scope and study parameters for risk perception/communications study

    Participate in NTSF Communication WG to develop information products for the NFSTPP related to transportation

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Conclusions

- **DOE has initiated activities that align with the BRC near term action recommendations**
  - Planning project established to initiate actions
  - Evaluating consolidated storage options
  - Focusing initially on stranded fuel at shutdown sites
  - Established cooperative agreements with State Regional Groups for transportation planning

- **Great uncertainty with future program direction**
  - President FY 2013 budget request
  - Continuing resolution
  - House mark (proceed with Yucca Mountain Licensing)
  - Senate mark (proceed with Consolidated Storage)
  - Yucca Mountain litigation