NUCLEAR WASTE POLICY
Searching for Solutions

Tuesday, July 26, 2 p.m. EDT | Presented by CSG South/SLC and CSG Midwest/MLC
DOE Strategy for Consent-Based Siting for Integrated Waste Management System Facilities

Andrew Griffith
Office of Nuclear Energy
U.S. Department of Energy

Nuclear Waste Policy: Searching for Solutions
July 26, 2016
Our goal is to develop solutions to the long-term, sustainable management of spent nuclear fuel and high-level radioactive waste in a manner that protects safety, health, and the environment.

To achieve this goal, we are developing a process to site facilities collaboratively with the public, communities, stakeholders, and governments at the state, tribal, and local levels.

Our goal in successfully siting any facility is that any community that engages in the siting process is better off for having participated.
An Integrated Waste Management System is Needed

Nuclear Waste Policy: Searching for Solutions
Steps Planned

1. Engage with the public and interested parties on the elements of a consent-based siting process.
2. Design a consent-based siting process to serve as a flexible framework for engaging with potential host communities.
3. Use the resulting consent-based siting process to work with potential host communities.

Nuclear Waste Policy: Searching for Solutions
How Did We Get Here? (the abridged version)

Blue Ribbon Commission on America’s Nuclear Future

Administration’s Strategy

Presidential Memorandum

Secretary’s March 2015 Speech at Bipartisan Policy Center

Consent-Based Siting Kickoff Meeting

Invitation for Public Comment in the Federal Register
Public Meetings

Nuclear Energy

GOALS

- Provide opportunity for effective two-way dialogue and mutual learning
- Reinforce the Department’s commitment to public engagement
- Demonstrate openness to multiple viewpoints

AGENDA

- Consent-based siting and integrated waste management overview presentation by Acting Assistant Secretary John Kotek
- Panel discussion with a focus on local and regional perspectives
  - Working to include tribal and state interests on panels
- Facilitated small group discussions to receive input on the elements of a consent-based siting process

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Public Meetings Across the Country

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<td>Chicago, IL</td>
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Additional Engagement Opportunities

- Public webinars or conference calls
- Meetings with stakeholders and groups by request
- Opportunities to discuss consent-based siting at recurring, annual, or previously scheduled meetings and conferences
- Series of forums to gain perspectives about nuclear waste and consent-based siting from average Americans
What’s Next?

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Continued review of responses to the Invitation for Public Comment to Inform the Design of a Consent-Based Siting Process for Nuclear Waste Storage and Disposal Facilities

Public meetings hosted across the country

Proposed initial funding opportunity announcement aimed at enabling communities to seek information about consent-based siting and nuclear waste, and engage citizens in discussions about their community’s future

Summary report for public review and comment

Nuclear Waste Policy: Searching for Solutions
Proposed Funding Opportunity Announcement

Approximately $25M in FY17 Presidential Budget Request.

The purpose is to provide resources to local communities that are interested in learning more about nuclear waste management and consent-based siting.

Enables communities to begin exploring questions related to social, technical, and other areas of interest.

Fully contingent on appropriations and final FY17 budget allocations.
What We’ve Learned (so far)

Nuclear Energy

- Distrust of the Federal Government in general and DOE specifically
  - Need for a new organization/entity to assume the role of developing a durable solution
  - Need to DOE to get started; starting this program is too important to wait

- Concern over transportation risks
  - DOE recognizes the importance of safe and dependable transportation
  - Constructive relationships have been established with state/regional groups on transportation and emergency response (in line with NWPA sec 180(c))

- Environmental Justice is important
  - Reinforces DOE plans to make EJ a priority in our planning and outreach activities

- Shutdown Reactor Sites continue to bear an unplanned (and unwelcomed) burden while a solution is developed
  - DOE has little (if any) means to help, except to be successful is establishing a durable solution
QUESTIONS OR COMMENTS?

energy.gov/consentbasedsiting

consentbasedsiting@hq.doe.gov
Overview of WCS’ Proposed Consolidated Interim Storage Facility in Andrews County, Texas
July 26, 2016
Project Scope

- Environmental impacts analyzed with storage of 40,000 MTHM.
- 8 separate phases; storage of up to 5,000 MTHM in each phase.
- License for 40 years with multiple renewals of up to 20 years each.
- Initial SAR includes selected AREVA NUHOMS® and NAC International storage systems which prioritize shutdown sites.
  - Additional systems and sites to be added in future License Amendments.
  - Storage of used fuel from over 12 shutdown/decommissioned nuclear power plants will fit in Phase 1.
- Allows flexibility to transition beyond storage of fuel from currently decommissioned reactors.
- Ongoing discussions with DOE and the U.S. Congress on how to integrate the availability of an interim storage facility into the national strategy for used nuclear fuel management.
• License application submitted on April 28, 2016.
• WCS had the lead role in preparing the license application, with support from AREVA and NAC.
• The NRC began its review when they received the license application. Sent WCS a Request for Supplemental Information on June 22\textsuperscript{nd}.
• WCS responded with information in July
  – Remaining responses by October 2016
• WCS requesting that the Environmental Impact Statement (NEPA) review begin when all responses submitted and this is the longest time constraint for the application.
Initial License Application

• Priority on currently licensed systems for shutdown sites:

**NAC International**
- Maine Yankee
- Connecticut Yankee
- Yankee Rowe
- La Crosse
- Zion

**AREVA NUHOMS®**
- Rancho Seco
- SONGS Unit 1
- Millstone Unit 1
- Oyster Creek* (S/D scheduled 2019)

Indicates a “stranded” (ISFSI only) site identified in the 2012 Final Report of the “Blue Ribbon Commission on America’s Nuclear Future” (BRC)

* Fuel Burned less than 45 GWd/MTU

Initial License Application covers ~80% of UNF and GTCC at BRC “Stranded” Site
**Future License Amendments**

- License could be expanded to include all shutdown sites and “uncanned” HBU Fuel:

<table>
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<tr>
<th>NAC International</th>
<th>AREVA NUHOMS®</th>
<th>Other Vendors</th>
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<td>SONGS Units 2/3 (H)</td>
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<td>Crystal River</td>
<td>Crystal River (H)</td>
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<td>Vermont Yankee (H)</td>
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Plan to become a “universal” site through cooperative agreements with existing systems from other dry fuel storage vendors
Pad Layout for CISF

Conceptual Drawing
View of Deployed Systems for Phase 1 Pad

Conceptual Drawing
Thorough Environmental Characterization

- Environmental Impacts have been extensively analyzed in the region.
  - TCEQ conducted environmental reviews supporting issuance of LLW licenses.
  - NRC prepared an EIS for adjacent URENCO USA.
- WCS proposed approach allows addition of new storage systems as amendments, but ensures cumulative environmental impacts are analyzed.
Environmental Impact Statement

• Once the license application is accepted by the NRC, a notice of Intent to Prepare an EIS will be published in the Federal Register.

• The NRC will begin the scoping process and hold stakeholder meetings in the region to begin the process of collecting stakeholder comments.

• A Draft EIS will be published requesting public comment on the project.

• A Final EIS will be issued after public comments dispositioned.

• Construction of the CISF may only begin after issuance of EIS and License.
• WCS already has the infrastructure to support transportation of heavy loads to WCS.
• Rail lines recently upgraded to support shipments of steam generators 204 MT (450,000 lbs) to WCS.
• Four steam generators were barged down the Mississippi River to Houston, TX, transferred to rail line and transported to WCS.
The Texas legislature has – on three different occasions – approved radioactive waste disposal operations in Texas, and has specifically authorized waste from other states to come into Texas;

Andrews County Commissioners unanimously approved a resolution supporting an interim storage facility in Andrews County, Texas, in January 2015; and

The Texas gubernatorial appointed advisory board of radiation experts which issued a statement of support siting an interim storage facility in Texas in the fall of 2014, before WCS announced its plans.
Legislative Changes Related to DOE Contracts and Funding

• Legislation filed in 2015 by TX Congressman Conaway (R-TX) and in February 2016 by Congressman Mulvaney (R-SC) support interim storage.
  – Allows DOE to enter into contracts with a private company for interim storage.
  – Allows DOE to take title to the used fuel for storage.

• WCS proposed license conditions stipulate that a contract with DOE is required to fund operations and decommissioning prior to accepting SNF.
Near-term CIS Deployment Would Benefit the U.S. Repository Program for Permanent Disposition

• U.S. UNF Management program viewed as an integrated “system” vs. individual components

• A system with CIS and a repository for permanent disposition would be much more robust and would eliminate the current “single point of failure” vulnerability
  – A CIS would provide a Surge Volume/Buffer to allow continued operations despite problems at a single facility (e.g., WIPP incident)

• CIS deployment would remove barriers to repository implementation by resolving public concerns, technical issues, and licensing contentions in the near-term
Acting NOW to Remove Barriers to the U.S. Repository Program

• Provides an early demonstration of safety and effectiveness of the UNF transportation infrastructure that will also be essential for repository operations
  – Potential to address public concerns and remove transportation related contentions to repository operations well before the actual need date
  – Reduces the risk of further degradation of on-site infrastructure at permanently shutdown reactor sites
  – Waiting to resolve transportation and infrastructure degradation issues until a repository is built increases risk of further delay in successful repository operations

• Creates a robust facility which could be expanded to develop and deploy the repackaging technology to prepare the UNF currently in dry storage for final disposal in a repository
  – Repackaging may be needed before the 20,000+ MTU (and growing) of UNF in dry storage can go into the repository
  – Waiting to develop a CISF/repackaging facility until a repository is built increases risk of further delay in successful repository operation

CIS provides system-wide benefits and flexibilities to help advance a permanent geologic disposal program
Summary

• WCS proposed project is consistent with the BRC recommendations regarding need for consolidated interim storage and consent-based licensing.

• WCS, AREVA, and NAC have the qualifications and capabilities to license, construct, and operate the facility.
  – WCS site already has infrastructure supporting operating LLW facilities

• License Application covers ~80% of UNF and GTCC at BRC “Stranded” Sites.

• Site is environmentally well-characterized, enjoys broad local, state level and congressional support.

• A complement to and not a competitor to a permanent geological repository.

• See the website www.WCSstorage.com for updates.
A CENTRALIZED INTERIM STORAGE FACILITY FOR USED NUCLEAR FUEL

A PARTNERSHIP OF THE EDDY-LEA ENERGY ALLIANCE AND HOLTEC INTERNATIONAL

By: John Heaton, Chairman ELEA, LLC
What Are The Waste Solutions

• Consolidated Interim Storage
  – Most Immediate Solution (4-5 years)
  – Need Access to Nuclear Waste Fund (Law)

• Geologic Repository
  – Years From Reality
  – WIPP Clear Option – Takes LWA Change

• Technical Solutions
  – Reprocessing SNF
  – New Reactor Technology Could Burn SNF
Interim Dry Storage Sites in the U.S.

Map courtesy of Ux Consulting, StoreFuel, STF206, 10/6/15
Why Do We Need Consolidated Interim Storage?

- CIS is a perfect compliment to a future repository – not a permanent solution
- CIS is a safe and secure way to age the fuel before storage at a future repository site
- Recommended by the BRC
- At 7 decommissioned sites, the spent fuel stored on-site is all that prevents from releasing the land to other uses
- CIS is the shortest path for DOE to begin taking spent fuel and reduce the amount the government pays as a result of lawsuits
  - By 2020 projected cost to be $22 billion & $38 billion by 2048
  - Currently projected at $500M per year by 2020
- Provides the most flexibility for recycling, research, and disposal
- Dispels Arguments There Are No Solutions For SNF
WHERE ARE WE TODAY?

- 2015 Senate tried Producing Comprehensive Bill – DOA needs help
- 2015 House– Conaway produces CIS bill – DOA Shimkus kills
- 2016 House – Mulvaney produces CIS bil – DOA Shimkus kills
- 2016 Senate is working on S. 854 comprehensive BRC bill
- 2016 Alexander reported to be working on CIS bill
- House Still Working On Yucca Bill, But May Include CIS (reluctantly)
- House wants Yucca funding and Senate wants CIS, but no Yucca
  - Will Bill provide for a pilot CIS only?
  - Will Bill overcome CIS restrictions in NWPA?
- NE embarking on Consent Based Siting Process Development and finding
- DOE interested in Defense only repository
Who is the EDDY-LEA Alliance?

- Alliance of the Cities of Carlsbad & Hobbs and the Counties of Eddy & Lea
- Formed Under the Local Economic Development Act for Economic Development Purposes in 2006 & to Respond to Global Nuclear Energy Partnership (GNEP) Proposal from DOE
- ELEA purchased 1,000 acres of land approximately halfway between Carlsbad and Hobbs, N.M. for use
Why the ELEA Site?

- Land studied extensively during Global Nuclear Energy Partnership (GNEP) process
- Remote location
- Geologic stability
- Dry area
- Infrastructure present, including rail
- Preexisting robust scientific and nuclear operations workforce
- STRONG CONSENT FROM AREA
SE New Mexico’s Nuclear Corridor
Holtec International

- Established in 1986
- Excellent on-time delivery record
- No history of long-term debt
- Self financed company growth
- Highest industrial credit rating [D&B-5A1]

Business Mix:

- 72% Nuclear
- 15% Coal, 10% Gas & Renewables, 3% O&G
HI-STORM UMAX: The Safest Solution for C.I.S.

Holtec constructed the HI-STORM UMAX at a U.S. nuclear power plant
HI-STORM UMAX: Stores Spent Nuclear Fuel Completely Below Grade

Corrosion-Resistant Stainless Steel Spent Fuel Canister

Steel/Concrete Lid

Reinforced Concrete Top Pad

Steel Liner

Reinforced Concrete Base Mat
Phase 1 Construction

- Secure Area
- Rail Spurs from SWRR
- Operations & Security
- 200 HI-STORM UMAX Canisters
- Cask Transfer Facility
- Batch Plant
Excavation
CEC Placement
CLSM Pour
Form for Top Pad
Enhanced Security

- Configured to be visually inconspicuous
  - Profile is less than 610 mm (2 ft.) tall
  - A less visible target from the air
  - Reduced visibility from public land

- There are no areas on the ISFSI where a person may hide, making security an easily implemented activity
Turning Plans into Actions

- Holtec will support the prompt development of the consolidated interim storage site
  - ELEA believes Holtec underground dry storage technology is a perfect solution for a CIS facility
  - Holtec has partnered with Eddy Lea Energy Alliance, LLC to establish a CIS
  - Holtec will design, license and operate the CISF

- Holtec has constructed an underground dry storage facility in the U.S. which is now in use
EDDY-LEA ENERGY/HOLTEC
CONSENT STATUS FOR CISF

- Strong resolutions of support from counties and cities in area
- Legislature just passed two memorials supporting the CISF project
- Governor has written a strong letter of support for the project to Sec. Moniz
- Public Members (cities and counties) have endorsed contract with Holtec
- Holtec is proceeding with NRC license
NOW, WHAT ABOUT YOU?

• Why are you letting Shimkus & Upton kill any option to solve the problem? Illinois has the most nuclear power plants in the country?
• Holtec Private facility up and running by 2021
• 30 Total shuttered Reactors (7 ISFSI only, 4 license terminated, 3 in Decon, 3 Due to close, 13 in Safstor)
• 10 more considered at risk
• Others will fall into decommissioning status in the 2030’s
• There are 39 states with nuclear waste problems
• You Must Act to Motivate Your Cong Delegations
Questions?

Please submit them in the question box of the GoToWebinar taskbar.