Breaking the Spent Nuclear Fuel Impasse

April 11, 2022

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Overview of Presentation

- What is GAO and why did we do this work
- How we did this work
- Key findings and recommendations
Why GAO Did This Work

• Who are we?

• Why did we do work on commercial spent nuclear fuel?
  o Large and growing inventory of commercial SNF with nowhere to go
  o Long-lasting political impasse on a path forward
  o Billions of dollars in federal financial liabilities
  o Implications for future of nuclear power
How GAO Did This Work

Objective:
To examine actions that experts identified as necessary to develop a solution for commercial spent nuclear fuel disposal

Methods:
• Reviewed DOE and other agency documents
• Interviewed 20 experts and 25 stakeholders from industry, nongovernmental organizations, and tribal and state groups.
• Reviewed key reports on spent nuclear fuel management
Recommendations

Actions for Congress
• Amend the NWPA to authorize a new consent-based siting process
• Create political insulation and continuity of leadership
• Restructure the Nuclear Waste Fund
• Direct DOE to develop an integrated waste management strategy

Actions for DOE
• Continue efforts to develop a consent-based siting process
Congressional Action #1: Amend NWPA

- Yucca Mountain is not a socially or politically viable option for the nation’s sole geologic repository
- Current policy (NWPA) ties federal interim storage and repository options to Yucca Mountain
- Amending the NWPA to allow options for a repository other than or in addition to Yucca Mountain is key to breaking the impasse
Congressional Action #2: Political Insulation

- SNF program must have political insulation and strong leadership
- SNF management will be a decades-long endeavor, but programmatic priorities can change every 2 to 4 years
- Strong leadership—with skills/experience in social sciences, conflict resolution, and negotiations—is necessary for success

<table>
<thead>
<tr>
<th>Year</th>
<th>SNF Management Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>Congress amends NWPA, directing DOE to study only Yucca Mountain</td>
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<tr>
<td>1998</td>
<td>DOE misses deadline to begin accepting spent nuclear fuel</td>
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<tr>
<td>2002</td>
<td>Governor of NV submits notice of disapproval; President signs joint resolution approving Yucca Mountain</td>
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<tr>
<td>2008</td>
<td>DOE submits license application for Yucca Mountain to NRC</td>
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<tr>
<td>2009</td>
<td>Administration determines Yucca Mountain is not a workable solution and DOE suspends work on the site</td>
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<tr>
<td>2012-2015</td>
<td>BRC recommends a consent-based siting approach, and DOE begins work on a draft consent-based process</td>
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<tr>
<td>2017</td>
<td>DOE issues draft consent-based process but does not finalize it due to different priorities of new administration</td>
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Congressional Action #3: Nuclear Waste Fund

- Reliable and sufficient funding is key to the success of the program
- NWPA established the Nuclear Waste Fund as a self-financing mechanism based on a user-pays principle
- Over the years, budgetary changes limited access to the Nuclear Waste Fund, and the fund no longer works as intended
- Experts said Congress should remove the Nuclear Waste Fund from the annual appropriations process
Congressional Action #4: Strategy

U.S. needs an integrated waste management strategy.

Currently, we have an ad hoc system for managing commercial spent fuel.

DOE cannot develop an integrated strategy until Congress provides a path forward for spent fuel management.
## DOE Action: Consent-Based Siting

### Elements for an Effective Siting Process

<table>
<thead>
<tr>
<th>Elements for an effective siting process</th>
<th>Experts</th>
<th>Canada</th>
<th>Finland</th>
<th>Sweden</th>
<th>WIPP</th>
<th>DOE’s draft Consent-based process</th>
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<tr>
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</tbody>
</table>
Conclusions

Figure: DOE’s SNF Liability Estimate, FY2006-2020, and Straight-Line Projections to FY2030

Dollars (billions)

Fiscal year

2006 2010 2015 2020 2025 2030

Source: GAO analysis of Department of Energy financial reports. | GAO-21-603
Selected GAO Reports

- **GAO-21-603**, COMMERCIAL SPENT NUCLEAR FUEL: Congressional Action Needed to Break Impasse and Develop a Permanent Disposal Solution (Sept. 23, 2021)
- **GAO-13-532T**, COMMERCIAL SPENT NUCLEAR FUEL: Observations on the Key Attributes and Challenges of Storage and Disposal Options (Apr. 11, 2013)
- **GAO-10-48**, NUCLEAR WASTE MANAGEMENT: Key Attributes, Challenges, and Costs for the Yucca Mountain Repository and Two Potential Alternatives (Nov. 4, 2009)