

Breaking the Spent Nuclear Fuel Impasse

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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



Source: Nuclear Regulatory Commission courtesy of Sandia National Laboratories. | GAO-21-603

Why GAO Did This Work

- Who are we?
- Why did we do work on commercial spent nuclear fuel?
 - Large and growing inventory of commercial SNF with nowhere to go
 - Long-lasting political impasse on a path forward
 - Billions of dollars in federal financial liabilities
 - 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

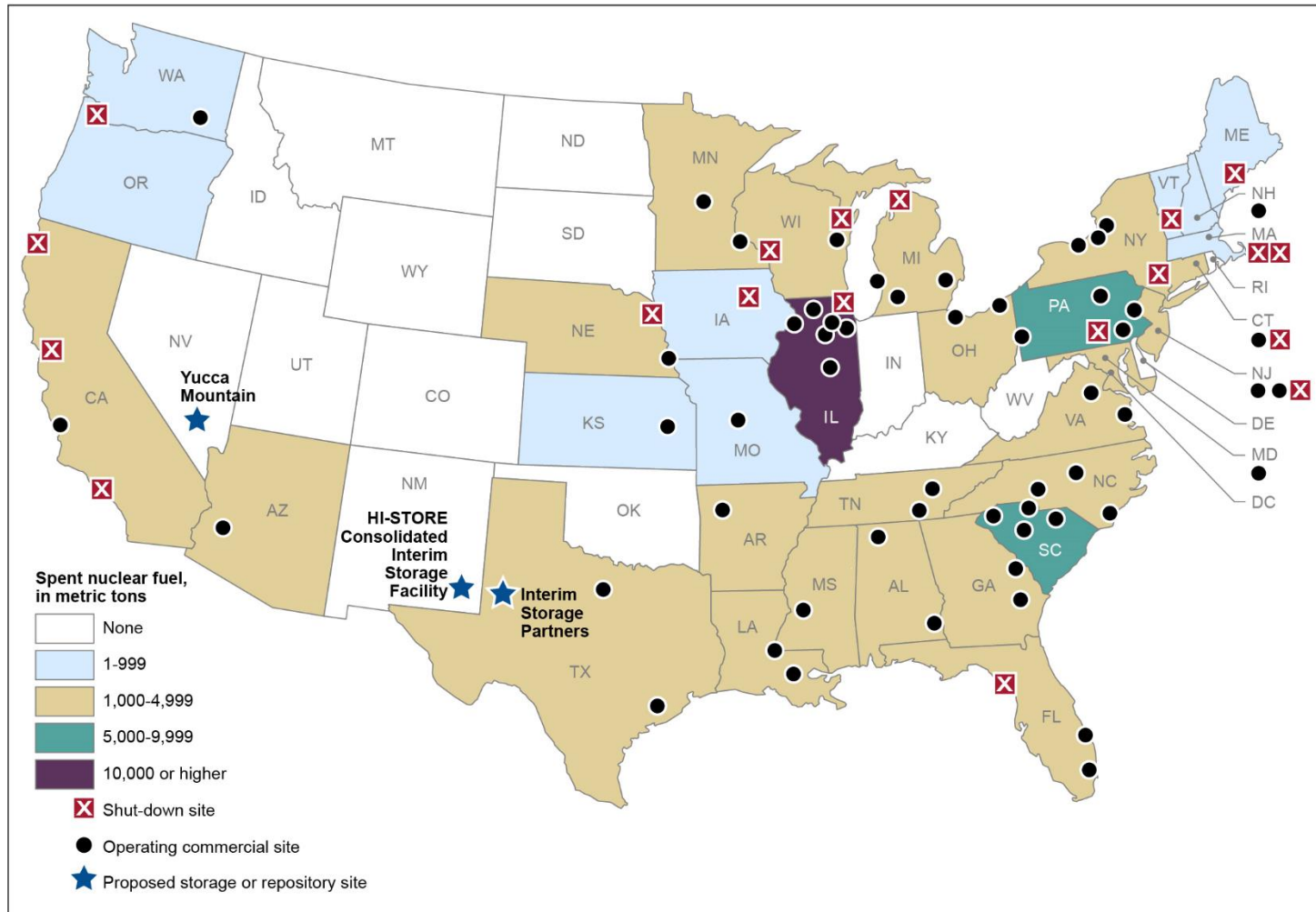
Actions for Congress

- 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

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

- 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

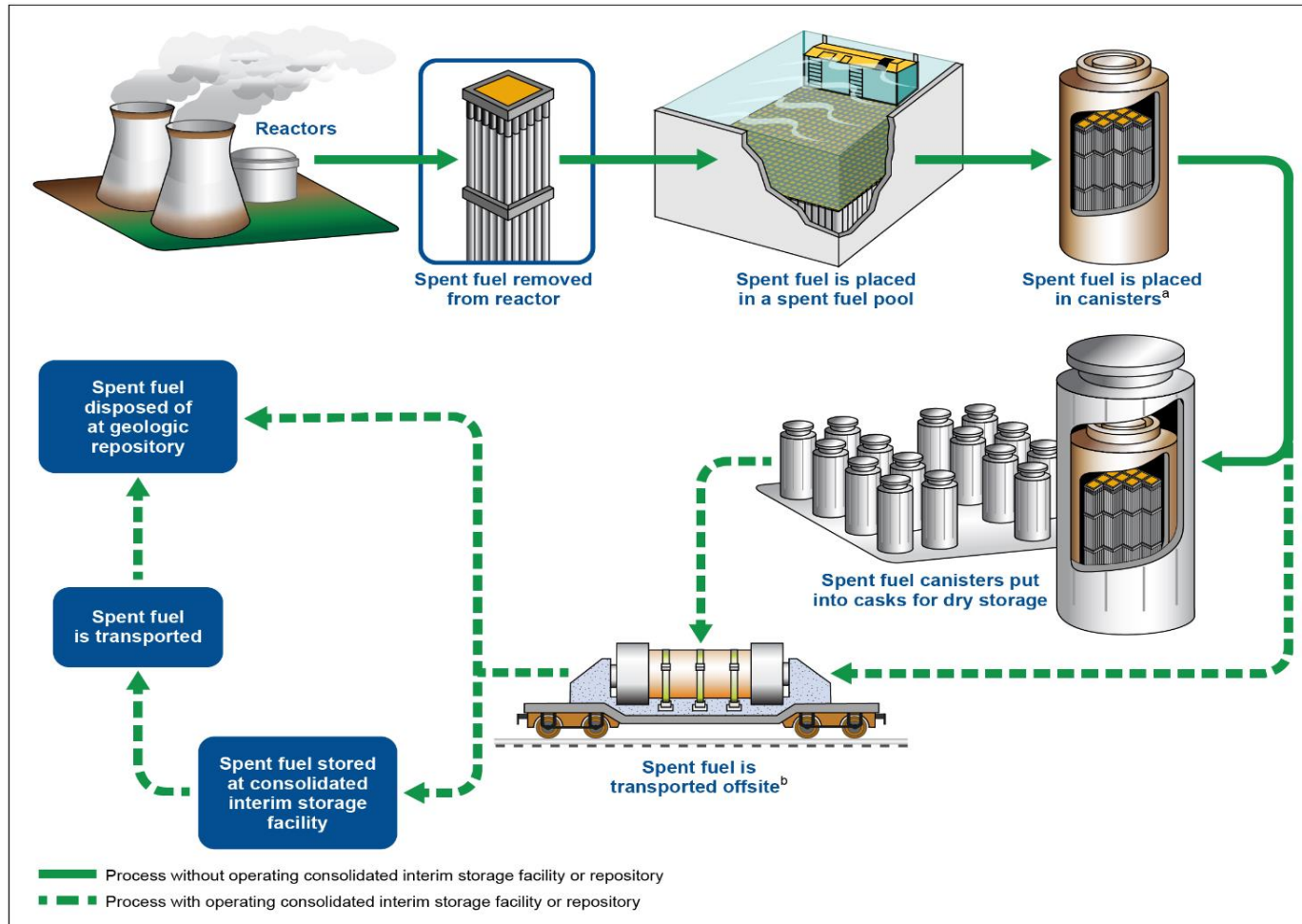
Congressional Action #3: Nuclear Waste Fund

- 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

Figure: SNF Management, including Storage, Transport, Disposal



- 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

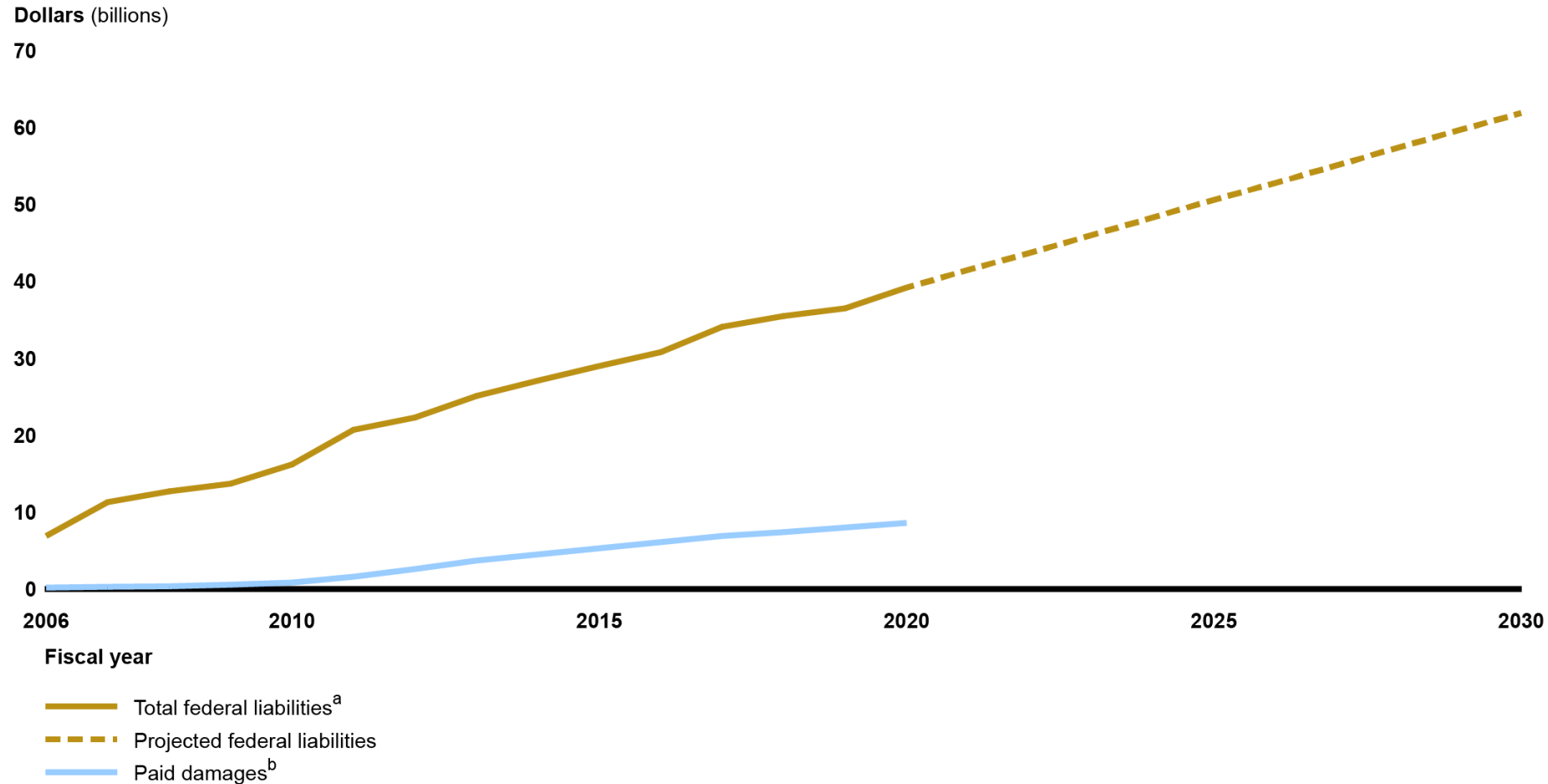
DOE Action: Consent-Based Siting

Elements for an Effective Siting Process

Elements for an effective siting process	Experts	Canada	Finland	Sweden	WIPP	DOE's draft Consent-based process
Early engagement and outreach	✓	✓	✓	✓	✓	✓
Key roles of tribes and states	✓	✓	n/a	n/a	X	✓
Phased adaptive approach	✓	✓	✓	✓	X	✓
Voluntariness	✓	✓	✓	✓	✓	✓
Informed consent	✓	✓	✓	✓	✓	✓
Tailored benefits	✓	✓	✓	✓	✓	✓

Conclusions

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



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-17-174](#), *NUCLEAR WASTE: Benefits and Costs Should be Better Understood Before DOE Commits to a Separate Repository for Defense Waste* (Jan. 31, 2017)
- [GAO-15-141](#), *SPENT NUCLEAR FUEL MANAGEMENT: Outreach Needed to Help Gain Public Acceptance for Federal Activities That Address Liability* (Oct. 9, 2014)
- [GAO-13-532T](#), *COMMERCIAL SPENT NUCLEAR FUEL: Observations on the Key Attributes and Challenges of Storage and Disposal Options* (Apr. 11, 2013)
- [GAO-11-229](#), *COMMERCIAL NUCLEAR WASTE: Effects of a Termination of the Yucca Mountain Repository Program and Lessons Learned* (Apr. 8, 2011)
- [GAO-10-48](#), *NUCLEAR WASTE MANAGEMENT: Key Attributes, Challenges, and Costs for the Yucca Mountain Repository and Two Potential Alternatives* (Nov. 4, 2009)

