



*Ideas into Action for
Peace, Justice, &
the Environment*

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MEMORANDUM

From: Robert Alvarez, Senior Scholar, Institute for Policy Studies

Subject: Review and comments of the U.S. Senate Energy Draft legislation to amend the Nuclear Waste Policy Act

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Nuclear reactors in this country are no longer just about generating electricity. More and more, these facilities are becoming major radioactive waste management operations involving some of the largest concentrations of artificial radioactivity in the country. Unfortunately, reactor operators and its regulator, the Nuclear Regulatory Commission (NRC), are motivated more by economics than the growing necessity of more secure and safe radioactive waste storage. The economics of an aging U.S. reactor fleet, in this marketplace of abundant and cheap natural gas, weigh heavily on merchant operators that have no captive rate base to recover growing expenses.

Overall the draft tracks the recommendations of President Obama's Blue Ribbon Commission on America's Nuclear Future (BRC) issued last year; and the Energy Department's January 2013 strategic plan to implement the BRC's recommendations.

Major elements of the DOE's strategic plan include:

- Establishment of a pilot interim storage facility by 2021 for spent nuclear fuel from closed reactors. Currently, there are 17 closed commercial power reactors with spent fuel stored onsite.¹ Announcements were recently made to close two more reactors in Wisconsin and Florida. By the 2021 there may be additional closed reactors.
- Establishment of a larger interim storage spent nuclear fuel storage facility by the year 2025. The option of expanding the pilot interim storage facility is not ruled out; and
- To make a permanent geologic repository for permanent disposal available by 2048.

A pilot consolidated SNF storage site would likely involve approximately 5,000 metric tons of SNF from 17 reactors and a failed reprocessing plant in Illinois.² If this quantity of commercial spent power reactor fuel is sent by rail to a pilot facility it would result in an estimated 280 to 500 rail shipments.³ Upgrading long-distance rail lines to

¹ Nuclear Energy Institute, Spent Fuel Status December 31, 2011.

² Ibid.

³ International Panel on Fissile Materials, Managing Spent Fuel from Nuclear Power Reactors, Experience and Lessons from Around the World, September 2011, p. 128.

accommodate transport of several 100+ ton transport casks at a time remains an unresolved issue. If sent by truck, this could result in approximately 2,500 shipments.⁴ If a pilot storage facility were expanded to accommodate 20,000 metric tons of spent fuel this could result in as many as 2,000 shipments by rail or 10,000 shipments by truck.⁵

The draft bill does not deal with the issue of high-density spent fuel pools, operating reactors, or the likelihood of long onsite spent fuel storage times, even under the most optimistic assumptions regarding the opening of consolidated storage and disposal sites. The timelines for consolidated storage, much less, a geological repository, contain strong elements of speculation. In effect, the bill does not address the failed default policy of onsite SNF storage at operating reactors, based on a fundamentally flawed premise of timely removal and disposal offsite

Adding uncertainty is the matter of safe transport of high burnup spent fuel⁶, generated for the past 20 years. In 2012, experts at the National Academy of Sciences raised concerns stating, “the technical basis for the spent fuel currently being discharged (high utilization, burnup fuels) is not well established... the NRC has not yet granted a license for the transport of the higher burnup fuels that are now commonly discharged from reactors. In addition, spent fuel that may have degraded after extended storage may present new obstacles to safe transport.”⁷

Nor does the draft explicitly address the prospects of reactor closures with prolonged SAFSTOR timelines, where SNF could remain in wet storage for decades. Nearly all U.S. reactors utilize high-density storage in pools originally intended to hold spent fuel for 3-5 years and will run out of wet storage space by 2015. The draft bill provides no incentives to reduce spent fuel pool densities and to expand inherently safer onsite dry cask storage. The Electric Power Research Institute estimates that it would cost approximately \$3.5 billion to thin out the pools at all U.S. reactors.

Last year the Federal Court of Appeals the Court for the District of Columbia struck down the Nuclear Regulatory Commission’s Waste Confidence Rule allowing for high density pool storage. According to the court: “We conclude that the Commission’s EA [Environmental Assessment] and resulting FONSI [Finding of No Significant Impact] are not supported by substantial evidence on the record because the Commission failed to properly examine the risk of leaks in a forward-looking fashion and failed to examine the potential consequences of pool fires.”

The draft bill retains the existing definition of high-level radioactive waste in the 1982 Act. In 2005, Congress authorized DOE to deviate from this definition and to self-regulate onsite

⁴ Ibid.

⁵ Ibid.

⁶ Since the early 1990s, the Nuclear Regulatory Commission (NRC) has permitted reactor operators to increase burnup by increasing fuel enrichment to 4.8 weight percent of uranium-235. This allows a fuel assembly to remain as long as six years in the reactor core and for shutdowns for refueling to be extended from one to two years. It also results in a much larger generation of high-heat fission products (i.e. Cs-137 and Sr -90) and impacts fuel cladding.

⁷ National Academy of Engineering, Managing Nuclear Waste, Summer 2012, pp 21, 31..
<http://www.nae.edu/File.aspx?id=60739>

disposal of HLW at the Savannah River Site and the Idaho National Engineering Laboratory. Because of opposition by the Pacific Northwest Congressional delegation, the Hanford site was excluded. The draft also addresses concerns of states with DOE sites storing defense high-level wastes by requiring their removal under existing compliance agreements.

The bill attempts to jump-start the site selection process by requiring the new Nuclear Waste Authority to establish a mission statement and storage and disposal guidelines within a year of enactment.

The consent process involves the governor, local government and/or Indian tribe. It is a double-tier consent process, which explicitly supports preference for co-location of a consolidated storage with disposal. Funds from user fees, now placed in Working Capital Fund can be used for compensation to host communities, economic development and other sweeteners.

The bottom line is that this draft does not address the likely prospects that spent nuclear fuel and defense HLW will remain at the generating sites for decades to come. A safe containment strategy for defense HLW, particularly at the Hanford site (with 60% of its aged 177 tanks experiencing leaks), should be mandated in the proposed legislation.

Finally, the bill does not address the impacts of reactor closures on the economies of communities and states left stranded with spent nuclear fuel for an indefinite period. At the minimum, states and communities hosting closed reactors should be provided with funds from the user fees collected under the NWPA for safer dry onsite storage and "payment in lieu of taxes," until the wastes are removed.

SPECIFICS

The draft bill:

- Establishes a new Nuclear Waste Administration (NWA) that is responsible for establishing centralized storage and a permanent disposal site for defense high-level Wastes (HLW) and commercial SNF, as well as their transport. The Nuclear Regulatory Commission retains its authority to license storage and disposal. The NWA must submit a "mission Plan" no later than 1 year after enactment for comment by the Congress, the Oversight Board, the NRC the Nuclear Waste Technical Review Board, the States, Affected Indian tribes and "such other interested persons as the Administrator considers appropriate." The NWA is also required within 1 year to issue general guidelines for the consideration of candidate sites for storage and disposal. "As soon as practicable after the guidelines are issued The Administrator shall evaluate potential candidate sites, subject to approval by the governor of the host state, the local government of the candidate site or an affected Indian tribe. There are to be subsequent public hearings and formal cooperative agreements for site characterization with the above named.
- Supports a preference for the co-location of a consolidated storage and repository site. A final determination is made by the Administrator in accordance with EPA radiation protection standards and NRC licensing standards. There are to be public hearings before

a final determination is made. The terms and conditions of such agreements involve: (a) financial compensation; (b) economic development assistance; (C) regulatory oversight authority; and (d) an enforceable deadline for removing nuclear waste from a storage facility.

- Establishes a Nuclear Waste Oversight Board to "oversee and administration of this Act and protect the public interest in the implementation of this Act." The board is made up of 2nd tier officials from OMB, the Corps of Engineers, and the DOE. The Board performs oversight over the management, expenditure and schedule of the NWA in meeting its obligations. It has no regulatory powers but makes recommendations to the President and the Congress.
- Establishes a Working Capital Fund derived from user fees under the NWPA and additional appropriated funds necessary for storage and disposal of defense HLW.
- Repeals the 70,000 MTU volume limit set for Yucca Mt. under the 1987 amendments to the Act.
- Allows for the same judicial review as in the existing law -- giving the US Court of Appeals In Washington D.C. and the Supreme Court jurisdiction. Judicial review extends to NEPA, failure of the NWA or the NRC to make any decision or action under the proposed law. Actions must be brought within 180 days.
- Eliminates the legislative veto under the existing law.
- De-links storage from disposal under the concept of "parallel programs." The Administrator of the NWA has to certify to Congress that sufficient progress is being made towards establishing a permanent disposal site. If the Administrator or the Nuclear Waste Oversight Board determines that insufficient progress is being made to establish a permanent disposal site, then shipments of wastes other than "emergency" shipments will be suspended.
- Does not address the use of NWPA funding for on-site dry storage of operating reactors. Funds collected under the NWPA cannot be used until a centralized storage and /or sites are chosen. Establishment of a pilot central SNF storage site for "Priority" waste are those at decommissioned reactors -- similar to that outlined in DOE's January 2013 Strategic Plan following up on the BRC recommendations.
- Accords the rights of Indian tribes the same level of recognition as in the current law, with the Interior Secretary deciding "affected tribe" status.
- Defines "priority waste" as "spent nuclear fuel removed from a civilian nuclear power reactor that has been permanently shut down." This offers a glimmer of hope that the NWPA funds can be used for onsite dry storage in order to avoid a multi-decade

SAFSTOR wet storage scenario. However, the draft defines "storage facility" to mean "a facility for the storage of nuclear waste from multiple contract holders [centralized storage] or the Secretary pending the disposal of spent nuclear fuel in a repository." This needs further clarification.

- Maintains the same definition of HLW as in the 1982 act, which does not permit the DOE to "move the goal posts" for disposal of HLW on the Hanford site. Unfortunately, this is not the case for SRS and INL, which are subject to Section 3161 of the 2005 Defense Authorization Act, which gives DOE regulatory authority over disposal of HLW at those sites.
- Leaves the issue of who pays for onsite dry storage of operating reactors up to the reactor operator and/or the resolution of the pending lawsuits against DOE for failing to meet the Jan 1998 deadline in the 1987 amendments to the NWPA the government cannot title to the waste until a settlement is reached. For those settlements already reached, this may mean that the government can assume title. This section needs clarification.
- Does not address the issue of regional equity that ensures that less populated states that do not receive the benefits of nuclear-generated electricity are not targeted. This issue is probably looked upon as a "poison pill," guaranteed to outrage eastern states. The regional equity provisions in the original 1982 Act is what led to a public uproar in eastern states that prompted Congress to pick Yucca Mt. in 1987, while removing all other candidate sites from consideration.
- Requires DOE to remove defense HLW from a site if there is a compliance agreement in place to do so. Defense HLW can be stored at a centralized facility along with SNF, through a MOU between the Administrator of the New Agency and the DOE. "emergency delivery" of HLW to a storage site includes defense HLW.
- Allows co-mingling of disposal of defense HLW and Commercial SNF, subject to a formal agreement between DOE and the NWA. . If one or more separate permanent disposal sites are required for defense HLW the Administrator, with the concurrence of the President can proceed to end co-mingling disposal of the two wastes. The DOE has to enter into a MOU with the Administrator of the new organization to provide the funds necessary for storage and disposal of defense HLW.
- Allows for technical cooperation and financial assistance to foreign governments, including nuclear weapons states, seeking storage and disposal.

- Establishes a Nuclear Waste Oversight Board to "oversee and administration of this Act and protect the public interest in the implementation of this Act." The board is made up of 2nd tier officials from OMB, the Corps of Engineers, and the DOE. The Board performs oversight over the management, expenditure and schedule of the NWA in meeting its obligations. It has no regulatory powers but makes recommendations to the President and the Congress.