

## REDIRECTING THE U.S. NUCLEAR WASTE PROGRAM

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*Recent political and policy developments have created an opportunity to significantly alter the direction of the U.S. nuclear waste program by adopting a voluntary approach to site selection for storage and disposal facilities, by removing the program from the U.S. Department of Energy (DOE), and by focusing on consolidated interim storage of spent nuclear fuel in the next decade. The Blue Ribbon Commission on America's Nuclear Future (BRC) recommended such redirection in January 2012. The U.S. Senate began serious consideration of legislation to redirect the waste program along the lines suggested by the BRC, resulting in introduction of the Nuclear Waste Administration Act (NWAA) of 2013, S.1240. A new Congress (the 114<sup>th</sup>) convened in January 2015, and many parties expect a new bill based on S.1240 to provide a vehicle for program redirection. The authors examine key provisions of S.1240, including the proposed creation of an independent federal agency to manage the program, and the proposed restructuring of the Nuclear Waste Fund. The authors suggest amendments to any new legislation based on S.1240 requiring written consent agreements with governors of potential host states for all facilities constructed using the Fund; applying the same siting and licensing requirements for commingled and separate disposal facilities for civilian and military high-level nuclear wastes; and enhancing nuclear waste transportation safety and security, and public acceptance, by requiring adoption of risk management measures recommended by the National Academy of Sciences in 2006, and endorsed by the BRC in 2012.*

### I. INTRODUCTION

The nation's efforts to consider and adopt new approaches to nuclear waste management have been gridlocked with few new initiatives until recently. Since

the passage of the Nuclear Waste Policy Amendments Act (NWPAA) in 1987, the U.S. Department of Energy (DOE) has made little progress developing a geologic repository for spent nuclear fuel (SNF) and high-level radioactive waste (HLW) at Yucca Mountain in Nevada. The State of Nevada has adamantly and successfully opposed the Yucca Mountain project. The Yucca Mountain repository was already twelve years behind schedule, and was expected to open twenty years late, when DOE terminated the project in 2010.

Applying the policy process insights developed by political scientist John Kingdon, the authors of this paper<sup>1</sup> have previously written that the ascension of Senator Harry Reid of Nevada to U.S. Senate Majority Leader in 2007 and the election of President Barack Obama in 2008 not only shifted the balance of political power against Yucca Mountain, but also opened a policy window allowing an opportunity to redirect the nation's nuclear waste management program. (Ref. 1) The possibility of a new direction was and is most visible in the recommendations of the Blue Ribbon Commission (BRC) on America's Nuclear Future Final Report issued in January 2012. (Ref. 2) A consensus among the affected states, regional associations, and other stakeholders had already emerged on some key issues, particularly loss of trust and confidence in DOE and the need for interim storage of spent fuel at shut-down reactor sites, prior to the BRC Report. (Ref. 1) The BRC Final Report repeatedly refers to the impact of the March 2011 Fukushima Daiichi nuclear accident on the BRC's public meetings and deliberations. (Ref. 2) The U.S. Senate began consideration of the BRC recommendations in

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<sup>1</sup> The views expressed here are the personal opinions of the authors and do not represent the official position of the State of Nevada, any other State, the Western Governors' Association, or the Western Interstate Energy Board.

2013 and 2014. However, the November 2014 congressional elections have again altered the political environment in Washington, DC, creating new uncertainties about the policy window for restructuring the nuclear waste program through legislation. (Ref. 1)

The current policy situation in 2015 is essentially unchanged from the BRC finding in January 2012: “The Obama Administration’s decision to halt work on a repository at Yucca Mountain in Nevada is but the latest indicator of a policy that has been troubled for decades and has now all but completely broken down. The approach laid out under the 1987 Amendments to the Nuclear Waste Policy Act (NWPA)—which tied the entire U.S. high-level waste management program to the fate of the Yucca Mountain site—has not worked to produce a timely solution for dealing with the nation’s most hazardous radioactive materials. The United States has traveled nearly 25 years down the current path only to come to a point where continuing to rely on the same approach seems destined to bring further controversy, litigation, and protracted delay.” (Ref. 2, p.vi)

Nevada’s opposition is unchanged. Nevada Governor Brian Sandoval advised the Secretary of Energy “that Nevada wholeheartedly supports the recommendations of the BRC and believes that the consent-based approach represents the best chance for ultimately solving the nation’s nuclear waste management problem. However, Nevada will not consent to an interim storage facility or repository being considered in the state.” (Ref. 3)

At the 27<sup>th</sup> anniversary of the Nuclear Waste Policy Amendments Act (NWPAA), there was no repository at Yucca Mountain, there was no final repository design, there was no final waste package design, there was no license to construct a repository, and there was no rail line to transport SNF and HLW to the repository, should one ever be constructed. Between Fiscal Years 1983 and 2007, DOE spent about \$14.5 billion (2008 dollars) on the Yucca Mountain repository project. DOE estimated that an additional \$82.5 billion (2008 dollars) would be required for construction and operation, for a total life-cycle cost of about \$97 billion (2008 dollars). The primary infrastructure currently existing at the site, about 5.1 miles of exploratory tunnels, cannot be used as is for waste storage or disposal. DOE would need to construct another 42 miles of tunnels and emplacement drifts, for a total of about 47 miles, to accommodate the proposed action, emplacement of 70,000 metric tons of SNF and HLW. Yet another 45-91 miles of tunnels and drifts would be needed if no second repository were to be constructed. (Ref. 4, 5, 6, 7)

Nevada’s opposition to Yucca Mountain was strengthened when Senator Reid of Nevada became the U.S. Senate Majority Leader in 2007. After the election of President Obama in 2008, DOE began dismantling the Yucca Mountain program in 2010, and requested no new funding for the project after Fiscal Year 2011. Senator

Reid made sure that Congress appropriated no additional funds for Yucca Mountain. The NRC licensing process that began in 2008 was suspended in 2011 because of insufficient funding. Before suspension, the NRC licensing board had admitted 219 technical safety and environmental contentions filed by the State of Nevada in opposition to DOE’s license application. (Ref. 8)

In August 2013, the U.S. Court of Appeals for the District of Columbia Circuit (CADC) ordered NRC to resume the Yucca Mountain licensing proceeding [Aiken County et al, Case #11-1271]. The 2-1 decision by the CADC acknowledged that NRC did not have sufficient funds to complete the legally-mandated proceeding, with Chief Judge Garland dissenting that the court was ordering NRC to do “a useless thing.” (Ref. 9) In November 2013, NRC issued an order directing NRC staff to restart the non-adjudicatory portion of the licensing proceeding, acknowledging the limited funds available. (Ref. 10)

As calendar year 2015 begins, NRC staff has just completed the five-volume Safety Evaluation Report (SER), but has not yet begun preparing a required groundwater supplement to the environmental impact statement (EIS). (Ref. 11) Lack of funds may prevent NRC from resuming or completing the adjudicatory proceeding (discovery and trial-like hearings).<sup>2</sup> Lifting the suspension would require a vote by the Commission. If the full proceeding with discovery and trial-like hearings were to resume, Nevada intends to fully prosecute the 219 admitted contentions, and submit new contentions as appropriate. Nevada and other parties would likely resume lawsuits currently in abeyance regarding radiation protection standards, water permits, and DOE selection of a preferred rail construction route.

The path forward for the U.S. nuclear waste program is unclear. Major uncertainties include: (1) the availability of funding for, and the schedule and scope of, the restarted NRC licensing proceeding for the Yucca Mountain repository; (2) the role of DOE as an unwilling applicant in the restarted NRC licensing proceeding; (3) the resumption of State of Nevada legal challenges against DOE, NRC, and the Environmental Protection Agency (EPA); (4) the recent DOE assessment of separate disposal options for defense high-level radioactive waste and DOE-owned spent fuel; and (5) the implications of the recent NRC final rule governing continued storage of

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<sup>2</sup> Nevada estimates that NRC would need at least \$100 million to conduct the legally-mandated proceeding. NRC had about \$14 million in prior-year Yucca Mountain appropriations when the restarted proceeding resumed in 2013, and is estimated to have no more than \$4 million remaining when the non-adjudicatory portion of the proceeding is completed in early 2015. In 2008, DOE estimated that it had spent about \$670 million (2007\$) on licensing between 2003 and 2006, and would require an additional \$1.66 billion (2007\$) for a successful licensing effort between 2008 and 2017. (Ref. 6) DOE had about \$20 million in unobligated funds and about \$21.7 in obligated funds available for Yucca Mountain licensing at the end of 2014. (Ref. 12)

spent fuel at reactor sites. When the new Congress convenes in 2015, however, many parties see S.1240 as the likely basis for subsequent legislation.

## **II. THE NUCLEAR WASTE ADMINISTRATION ACT OF 2013, S. 1240**

The current version of S.1240 had its origin in a bill (S. 3469) introduced in August 2012 by the retiring U.S. Senator from New Mexico, Jeff Bingaman, with the goal of starting a discussion on the BRC report. Referred to the Senate Committee on Energy and Natural Resources, that bill died in committee. However, on April 25, 2013 the Committee issued a “discussion draft” of legislation “intended to implement the recommendations” of the BRC. Over the next month, the Committee received more than 2,500 public comments on the discussion draft bill. (Ref. 1)

The Nuclear Waste Administration Act (NWA) of 2013, S.1240, was introduced in the U.S. Senate on June 27, 2013. It was originally scheduled for amendments and debate in early 2014. The bill represented the collaborative work of the Committee’s Chairman (Wyden, D-OR) and Ranking Member (Murkowski, R-AK) and the Chairman (Feinstein, D-CA) and Ranking Member (Alexander, R-TN) of the Senate Appropriations Subcommittee on Energy and Water Development. In March 2014, work on the bill was tabled due to a change in chairmanship of the committee. (Ref. 1)

Now that the new Congress has convened in 2015, many parties see S.1240 as the basis for future program redirection. At the heart of S.1240 is removal of the program from DOE, restructuring of the Nuclear Waste Fund, and consent-based site selection for all new nuclear waste storage and disposal facilities. The proposed consent-based siting process would not, however, apply to Yucca Mountain.

The BRC Final Report recommended legislative action to establish a new waste management organization: “Responsibility for implementing the nation’s program for managing spent nuclear fuel and high-level radioactive wastes is currently assigned to the U.S. Department of Energy. Legislation will be needed to (1) move this responsibility to a new, independent, government-chartered corporation focused solely on carrying out that program and (2) establish the appropriate oversight mechanisms.” (Ref. 2, p. viii)

S.1240 would create a new executive-branch agency, the Nuclear Waste Administration (NWA), and transfer to it all of the responsibilities currently assigned to the DOE Office of Civilian Radioactive Waste Management (OCRWM). In this respect S.1240 differs sharply from the BRC report, which recommended creation of a government-chartered corporation, modeled after the Tennessee Valley Authority (TVA). The NWA would be headed by an Administrator and a Deputy Administrator,

appointed to a six-year term by the President with the advice and consent of the Senate. Additional NWA staff would be appointed by the Administrator. An Inspector General and a five-person Oversight Board would also be appointed by the President and confirmed by the Senate.

There is a strong case for removing the nuclear waste program from DOE. Because of the way it conducted siting for the first and second repositories and the Oak Ridge MRS proposal, DOE lost the confidence of those previously identified potential repository host states and Indian Tribes. DOE’s handling of the now-terminated Yucca Mountain project has damaged DOE’s credibility with the nuclear industry and with state public utility regulators. The recent contamination incident at the Waste Pilot Isolation Project has damaged DOE’s long favorable credibility in New Mexico. DOE’s role in nuclear weapons stewardship, its role promoting civilian nuclear power, and its past record of environmental contamination at facilities around the country, combine to seriously undermine DOE’s credibility with influential segments of the public in many states. (Ref. 1, 13)

The authors believe that the S.1240 provisions for transfer of functions from the DOE OCRWM to the new NWA provide the minimum sufficient basis for implementation of the other BRC recommendations, as would transfer to a government-chartered corporation as recommended by the BRC. The nuclear industry has long advocated transfer of authority to a government-chartered corporation. (Ref. 14) The executive agency approach has not been endorsed by the nuclear industry and by state utility regulators, and their support will be critical. Conversely, there is considerable congressional skepticism about transferring the nuclear waste program to a government-chartered organization based on the TVA model. Resolving differences over the new management option will likely be the single greatest challenge in moving forward with new legislation. The authors also note that the advice and consent provisions of Title II would require eight Senate confirmation proceedings in the first year of operation and, because of the staggered terms and term limits, one or more Senate confirmation proceedings would be required each year for the first six years of operation. Such a large number of confirmations could provide a significant challenge to implementation of the NWA.

The BRC Final Report recommended legislative action to ensure access to dedicated funding: “Current federal budget rules and laws make it impossible for the nuclear waste program to have assured access to the fees being collected from nuclear utilities and ratepayers to finance the commercial share of the waste program’s expenses. We have recommended a partial remedy that should be implemented promptly by the Administration, working with the relevant congressional committees and the Congressional Budget Office. A long-term remedy requires legislation to provide access to the Nuclear

Waste Fund and fees independent of the annual appropriations process but subject to rigorous independent financial and managerial oversight.” (Ref. 2, p. viii))

S.1240 would partially implement the BRC recommendation. Section 401 would create a new Working Capital Fund, comprised of annual utility fee payments under the existing standard contracts, which would be available to the NWA without congressional appropriations. The status of these fees is currently uncertain. A Federal court decision in 2014 ordered DOE to suspend collection of these fees. Utility payments totaled \$765 million in 2012 and were projected to average about \$730 million (in 2012\$) per year over the next decade (2013-2022). DOE has projected that future utility fee payments would total \$27.1 billion (\$20.5 billion in 2012\$) through the year 2095. (Ref. 7) The Working Capital Fund also would receive congressional appropriations for defense waste expenditures and interest on the unexpended balance of this new fund.<sup>3</sup>

Section 402 would continue the current system under which the fees already collected and interest payments on the accrued fees would be made available to the NWA by congressional appropriation. The balance in the Waste Fund totaled about \$28.2 billion in August 2012 (2012\$). This amount, often referred to as the “corpus” of the Waste Fund, has grown significantly through interest earnings. Using the range of future interest rate estimates considered by DOE in its recent fee adequacy report, interest on the current balance would be expected to accrue at \$1 billion or more per year. (Ref. 7) The authors believe that the new Working Capital Fund, which would not require congressional appropriations, would likely be sufficient to support all of the activities authorized under the NWPA and the NWAA, except for construction and operation of one or more geologic repositories.<sup>4</sup>

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<sup>3</sup> According to the BRC, cumulative defense appropriations for the waste program totaled about \$3.8 billion through FY2010, about 35 percent of total appropriations from the Fund; defense costs projected forward are estimated to total about 20 percent of life-cycle program costs.

<sup>4</sup> We estimate that siting, construction and operation of a 60,000 MTU capacity interim storage facility for commercial SNF, for 50 years, could be about \$4.0 billion (2012\$), not including transportation costs or benefits payments, and assuming no repackaging of canisters at the facility. Our estimate is based on DOE estimates of costs derived from J. Kessler, *Cost Estimate for an Away-From-Reactor Generic Interim Storage Facility (GISF) for Spent Nuclear Fuel*, 1018722, Technical Update (May 2009.) DOE’s most recent total system life-cycle cost estimate for a waste program based around a repository at Yucca Mountain is about \$97 billion (2008\$), which includes about \$14.5 billion (2008\$) already spent between FY1983 and FY2007. Direct repository costs for Yucca Mountain are estimated at \$51.3 billion (2008\$), in addition to funds already spent on Yucca Mountain. Disposal in bedded salt or an open mode shale repository could be “about half the cost of the YM repository,” while other options (crystalline rock, enclosed shale) could be up to 80 percent higher. (Ref. 7, pp.B-21 to B-23)

### III. CONSENT-BASED SITING AND S. 1240

The BRC Final Report recommended legislative action to establish a new facility siting process: “The NWPA, as amended in 1987, now provides only for the evaluation and licensing of a single repository site at Yucca Mountain, Nevada. The Act should be amended to authorize a new consent-based process to be used for selecting and evaluating sites and licensing consolidated storage and disposal facilities in the future . . . .” (Ref. 2, p. viii)

Title III of S.1240 would direct the NWA to assume responsibility for siting and operating a geologic repository for spent nuclear fuel and high-level radioactive waste and to site and operate a pilot spent fuel storage facility and one or more consolidated storage facilities. This title would create a consent-based site selection process for such new facilities, together with siting and licensing requirements. Separate subsections would govern the siting process for storage facilities (Section 305) and repositories (Section 306) and spell out specific requirements for written consent agreements with state, local, and tribal governments.

These provisions resolve one stakeholder criticism of the BRC recommendation for consent-based siting – the lack of a specified role for state Governors. S.1240 would require consultation with Governors of potential host states and public hearings would be required before selecting sites for development of storage facilities and for repository characterization. A written consent agreement with the Governor or authorized official of the State, in addition to local and tribal governments, would be required upon a final determination of site suitability but before submission of a license application to NRC. This provision is consistent with the Western Governors’ Association (WGA) policy resolution that no centralized interim storage facility “shall be located within the geographic boundaries of a Western state or U.S. flag island without the written consent of the governor, in whose state or territory the facility is to be located.” (Ref. 15)

But S.1240 does not require prior approval of the Governor (only consultation) for sites recommended by local governments or tribal governments. The authors believe consent of the Governor must be obtained as early as possible in the siting process. Also, neither Section 305 nor 306 explicitly consider the need for consent agreements to address the potential impacts of nuclear waste facilities on neighboring local units of government and Native American lands. Adjacent and/or nearby counties, cities, and tribes could be heavily affected by transportation, socioeconomic, and environmental impacts. The authors believe the Administrator should be explicitly required to address such impacts.

While Section 306 (a) requires the Siting Guidelines to be consistent with NWPA 112(a), there is no requirement for consistency with EPA and NRC repository rules. Sections 306 (c), (d), (e) and (f) do not explicitly require the Administrator to prepare an Environmental Impact Statement (EIS) prior to submission of a license application to NRC.

The BRC Final Report side-stepped the future consideration of Yucca Mountain: “We have not. Rendered an opinion on the suitability of the Yucca Mountain site or on the request to withdraw the license application for Yucca Mountain. Instead, we focused on developing a sound strategy for future storage and disposal facilities and operations that we believe *can and should be implemented regardless of what happens with Yucca Mountain.*” (Ref. 2, p.viii, italics in original)

Following the BRC approach, S.1240 mentions Yucca Mountain only in the findings section, which concludes “in 2009, the Secretary found the Yucca Mountain site to be unworkable and abandoned efforts to construct a repository.” [Sec. 101 (5)] However, three provisions would impact Yucca Mountain: (1) Section 506 (a) states “This Act shall not affect any proceeding or any application for any license or permit pending before the Commission on the date of enactment of this Act.” This provision would allow the Yucca Mountain licensing proceeding to continue, as mandated by the U.S. Court of Appeals for the District of Columbia Circuit in August 2013, and restarted by NRC order in November 2013; (2) Section 301 transfers to the new Administrator all functions vested in the Secretary of Energy by the NWPA, including the construction and operation of a repository at Yucca Mountain; and (3) Section 306(e) requires that the NWA Administrator enter into a written consent agreement with the Governor (or other authorized official) of the potential repository host state, before submitting a repository license application to NRC. Since the Yucca Mountain license application has already been submitted, this provision would not apply to Nevada.

By these three provisions, S.1240 would continue the current deadlock over Yucca Mountain. They also create uncertainty regarding the future status of the proposed Private Fuel Storage (PFS) facility, located on the Skull Valley Goshute Reservation in the State of Utah. The PFS project, which is opposed by the State of Utah, received an NRC license for construction and operation in 2006, but has not obtained other necessary federal agency approvals. The NRC license is effective for a period of 20 years, raising the possibility that the new NWA might seek to move PFS forward as a federal interim storage project. Under U.S. Senate rules, opposition by the States of Nevada and/or Utah could endanger passage of S. 1240. The authors recommend that Section 306 be amended to require a consent agreement before construction of any repository or storage facility authorized under this Act or current law (the NWPA).

Alternatively, a new provision could be added to Title IV prohibiting use of Nuclear Waste Fund monies for construction of any repository or storage facility without a written consent agreement as specified in Section 305 or 306. These changes would also ensure consistency with the WGA policy resolution on storage and disposal facilities.<sup>5</sup>

#### IV. SNF AND HLW TRANSPORTATION

Building upon the 2006 National Academy of Sciences (NAS) transportation report, and a 2011 WGA resolution, the BRC Final Report recommended a number of legislative and administrative actions to enhance transportation safety and security and to address public perception of transportation risks. The NAS report found “no fundamental technical barriers to the safe transport” of SNF and HLW, but noted “a number of social and institutional challenges to the successful initial implementation” of large-scale shipping campaigns, and cautioned that “the challenges of sustained implementation should not be underestimated.” (Ref. 16, pp. 2-3) The NAS recommended 14 specific actions, some involving multiple steps, to be carried out before the beginning of shipments to a repository or centralized storage facility. (Ref. 16, pp. 7-23) The WGA 2011 resolution<sup>6</sup> on radioactive materials transportation endorsed all of the NAS recommendations, plus specific extra-regulatory measures that had been demonstrated to enhance safety and public acceptance during the first 12 years of transuranic waste shipments to the Waste Isolation Pilot Plant (WIPP) in New Mexico. (Ref. 17)

The BRC highlighted legislative action to broaden support to jurisdictions affected by transportation. “The NWPA provides funding and technical assistance for training public safety officials to states and tribes whose jurisdictions would be traversed by shipments of spent fuel to a storage or disposal facility. The Act should be

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<sup>5</sup> A related issue is that Section 509 would repeal the current 70,000 MTU capacity limitation for SNF and HLW emplacements in the first repository, included in the NWPA to assure geographic equity by requiring the construction of a second repository. That amount is one-half the projected total inventory of wastes requiring deep geologic disposal, assuming no new reactor construction.

<sup>6</sup> When the WGA renewed its policy resolution in 2014, the Governors’ also resolved: (1) “it is the responsibility of the generators of spent nuclear fuel and HLW and the federal government, not the states and tribes, to pay all costs associated with assuring safe transportation, responding effectively to accidents and emergencies that may occur, and otherwise assuring public health and safety. This includes costs associated with route evaluations and inspecting and escorting shipments;” and (2) that commercial SNF should stay at reactor sites until “DOE, the U.S. Department of Transportation and the nuclear utility companies have ensured and funded adequate state and local emergency and medical responder training and resources in case of an accident or terrorist attack while shipping this waste.” (Ref. 18)

amended to give the waste management organization the broader authorities given to DOE in the WIPP Land Withdrawal Act that supported the successful large-scale transport of transuranic waste to WIPP (including a public information program, support for the acquisition of equipment to respond to transportation incidents, and broad assistance for other waste-related transportation safety programs).” (Ref. 2, p. viii)

The BRC Final Report also recommended adoption of the specific 2006 NAS transportation recommendations to improve safety, including “full-scale cask testing, more systematic examination of social or societal risk and risk perception, making planned shipment routes publicly available, shipping stranded spent fuel from shutdown reactor sites first, and executing technical assistance and funding under NWPA, Section 180(c).” (Ref.16, pp. 81, 150) The BRC also noted stakeholder concerns regarding “DOE’s plans to use its own self-regulating authorities under the Atomic Energy Act” and recommended requiring full NRC and DOT regulation of future SNF and HLW shipments: “... a new waste management organization should be subject to independent regulation of its transport operations in the same way that any private enterprise performing similar functions would be – in other words, the new organization should not receive any special regulatory treatment. This will help assure regulatory clarity and transparency” (Ref. 16, p. 83)

The NAS, WGA, and BRC transportation recommendations address shared concerns about large-scale, decades-long, and nation-wide SNF and HLW shipping campaigns. Both routine shipments and transportation accidents and incidents would create the potential for radiation exposures to workers and members of the public. Large-scale shipping campaigns would heighten perceived risks despite actual radiation exposures likely to be far below regulatory concern. Once regular shipments of SNF and HLW to a centralized storage facility or repository begin, dozens of states and Indian tribes would be affected, along with hundreds of local government jurisdictions.<sup>7</sup>

The transportation provisions of S.1240 must be amended to reflect stakeholder concerns and fully incorporate the BRC transportation recommendations. It is particularly important to require the implementation of the transportation risk management measures (such as shipment of older fuel first, full-scale testing of shipping casks, cooperative identification of shipping routes, and creation of a social impact management program) before

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<sup>7</sup> The “representative routes” identified by DOE for Yucca Mountain shipments would have traveled 22,000 miles of railways and 7,000 miles of highways, traversing 44 states, the District of Columbia, and more than 30 Indian nations. According to the 2010 Census, about 56 percent of the total US population, about 177 million people, lived in the 955 counties that would have been traversed by those routes. (Ref. 19)

commencement of large-scale shipping campaigns.<sup>8</sup> The authors recommend the following changes: (1) all transportation of SNF and HLW conducted under the Act should be subject to licensing and regulation by NRC and by U.S. Department of Transportation (DOT) as provided under existing law; (2) the Administrator should be required to report to the President, within two years of enactment, on measures already taken, or to be taken, to implement the transportation recommendations of the NAS and the BRC before the commencement of any shipments under the Act; (3) the Administrator should be required to implement by administrative rulemaking the Transportation Assistance program described in Sec. 308 (d) before the commencement of any shipments under the Act; and (4) the NWAA should restate Section 9 of the NWPA: “Nothing in this Act shall be construed to affect Federal, State, or local laws pertaining to the transportation of spent nuclear fuel or high-level radioactive waste.”

## V. DEFENSE WASTE DISPOSAL OPTIONS

The BRC did not take a position on the merits of the 1985 waste commingling decision or on comments it received regarding the possibility of a separate repository for defense wastes requiring geologic disposal. The BRC Final Report did, however, urge the Administration “to launch an immediate review of the implications of leaving responsibility for disposal of defense waste and other DOE-owned waste with DOE versus moving it to a new waste management organization.” (Ref. 2, p.65)

In October 2014 DOE issued a report on defense high-level waste disposal options. (Ref. 20) Defense HLW and DOE-owned SNF are expected to account for about 10 percent of the total inventory of nuclear wastes requiring deep geologic disposal. DOE concludes that a separate repository for DOE-managed HLW and SNF not of commercial origin would be technically feasible, advantageous from a technical and institutional

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<sup>8</sup> Under Section 309, the NWA would be responsible for all transportation to storage and disposal facilities constructed under the Act. The NWA would be directed to provide financial and technical assistance to affected States and Indian tribes, including conducting “a program to provide information to the public about the transportation of nuclear waste.” [Sec. 309(d)(1)] The NWA would be required to use transportation packages explicitly governed by some but not all NRC regulations. The NWA would be required to provide advance notification to affected States and Indian tribes, but is not explicitly subject to existing NRC regulations regarding notification. S.1240 fails to address regulatory gaps, for example the exemption of DOE shipments from the NRC transportation security and safeguards regulations (10 CFR 73.37), and creates a new regulatory gap by failing to mention NRC requirements for advance notification to affected States and Indian tribes (10 CFR 71.97). Moreover, the transportation assistance provisions do not require implementation through rulemaking, a key objective of most transportation-affected state regional groups (SRGs) for the past three decades.

standpoint, and could be sited and developed by DOE under current law, although it would require a separate defense nuclear waste appropriation. Current law provides no mechanism whereby DOE could “re-purpose” the Yucca Mountain repository for disposal of HLW and SNF “resulting exclusively from atomic energy defense activities, research and development activities of the Secretary [of Energy], or both....” (Sec. 101). The NWPA would have to be amended by Congress to allow such a change in mission.

S. 1240 includes a number of provisions designed to facilitate construction and operation of a separate defense waste disposal facility. Section 308(e) provides that not later than 1 year after enactment, the Secretary of Energy will notify the President and Congress of whether the previous (1985) decision by the President to commingle civilian and defense wastes will be reevaluated. If the Secretary finds separate storage or disposal facilities are “necessary or appropriate for the efficient management of defense wastes”, the Administrator may proceed, with the concurrence of the President, to site, construct and operate one or more separate facilities for the storage or disposal of defense wastes. The authors believe S.1240 should be amended to (1) require congressional approval before any decision is made to construct and operate separate defense waste facilities; (2) expand the basis of the Secretary’s decision to include “cost efficiency, health and safety, regulation, transportation, public acceptability, and national security,” as specified in the section 8 of NWPA of 1982; (3) clarify that siting, construction and operation of separate facilities for defense wastes must fully comply with all other provisions of Title III regarding siting, consent agreements, and licensing by the NRC; and (4) clarify the funding requirements for defense-only facilities.

## VI. CONCLUSIONS

As calendar year 2015 begins, the nuclear waste policy situation is essentially the same as in January 2012: “The Obama Administration’s decision to halt work on a repository at Yucca Mountain in Nevada is but the latest indicator of a policy that has been troubled for decades and has now all but completely broken down. The approach laid out under the 1987 Amendments to the Nuclear Waste Policy Act (NWPA)—which tied the entire U.S. high-level waste management program to the fate of the Yucca Mountain site—has not worked to produce a timely solution for dealing with the nation’s most hazardous radioactive materials. The United States has traveled nearly 25 years down the current path only to come to a point where continuing to rely on the same approach seems destined to bring further controversy, litigation, and protracted delay.” (Ref. 2, p.vi)

The Obama Administration and the new 114<sup>th</sup> Congress inherited this situation in January 2015. Major uncertainties include: (1) the availability of funding for, and the schedule and scope of, the restarted NRC licensing proceeding for the Yucca Mountain repository; (2) the role of DOE as an unwilling applicant in the restarted NRC licensing proceeding; (3) the resumption of State of Nevada legal challenges against DOE, NRC, and EPA; (4) the recent DOE assessment of separate disposal options for defense high-level radioactive waste and DOE-owned spent fuel; and (5) the implications of the recent NRC final rule governing continued storage of spent fuel at reactor sites.

The 114<sup>th</sup> Congress also inherited a policy window of opportunity almost eight years in the making. Legislation developed in the last congress, S. 1240, could provide a vehicle to significantly alter the direction of the U.S. nuclear waste program by adopting a voluntary approach to site selection for storage and disposal facilities, by removing the program from the U.S. Department of Energy (DOE), and by focusing on consolidated interim storage of spent nuclear fuel in the next decade. The results of the 2014 midterm elections will weigh significantly on the opportunity to utilize the opened policy window. Such opportunities, as John Kingdon has reminded us, may quickly fade. (Ref. 1) Whether the policy window closes or remains open for a little longer should become clear in the next few months with the new Congress, and new congressional committee chairpersons.

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