

Statement of
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on the

**Recommendations from the Blue Ribbon Commission on
America's Nuclear Future for a Consent-Based Approach to
Siting Nuclear Waste Storage and Management Facilities**

Before the
Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
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Introduction

Mr. Chairman and members of the Committee, thank you for providing the Natural Resources Defense Council, Inc. (NRDC) this opportunity to present our views on the final report of President Obama's "*Blue Ribbon Commission on America's Nuclear Future - Report to the Secretary of Energy, January 31, 2012*" (hereafter "*BRC Report*" or "*Final Report*").

NRDC is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than one million members, supporters and environmental activists with offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing. We have worked on nuclear waste issues for the entirety of our existence and we will continue to do so.

While we were initially dismayed with the lack of balance in the composition of the BRC, we think the Commission delivered a useful, although limited, report that identified several components of what could become a successful strategy for the ultimate safe disposal of commercial and defense spent nuclear fuel and high-level radioactive waste. NRDC submitted both oral and written comments to the Commission and its subcommittees during the months the Commission conducted its work. We append our final comments on the BRC's *Final Draft Report* as a resource and an amplification of our presentation today. See Attachment 1, *NRDC Comments On "Blue Ribbon Commission On America's Nuclear Future - Draft Report To The Secretary Of Energy, July 29, 2011,"* November 1, 2011.

Next, I thank the Committee and the Chairman for holding this hearing. While the general approach of the BRC has merit, there is need for serious inquiry on several subjects prior to formulation of substantive, consensus legislation on this matter. This Committee needs no reminding that failure to achieve consensus legislation, especially with a history as fraught as that of nuclear waste, invites the likelihood of more political and legal gridlock down the road.

Today I offer five recommendations from NRDC for ensuring the success of any legislative outcomes to the BRC process – (1) incorporate concepts of intergenerational justice and consent into the legislation; (2) create a coherent legal framework before commencing any geologic repository or interim storage site development process; (3) arrive at a consent-based approach for nuclear waste storage via a fundamental change in law; (4) address interim storage; and (5) reject closed fuel cycle and reprocessing options from the charter of any new federal corporation created to implement the interim storage and ultimate disposal missions. We could cover these and other matters in greater depth, but I seek to focus NRDC's recommendations on these five key topics.

Importantly, our view on each subject area is premised on a single overarching caution: in order to avoid repeating the mistakes of the last three decades, Congress must create a transparent, equitable process incorporating strong public health and environmental standards insulated from gerrymandering or other distortions in order to license a site (or sites) that may not be suitable. What follows are NRDC's recommended prerequisites for establishing such a protective and robust process.

Summary Overview – Intergenerational Justice and Consent

There are two concepts the BRC appropriately highlighted but, unfortunately, failed to develop into clear guidance for Congress.

First, the BRC *Final Report* puts an emphasis on the concept of “intergenerational justice” as an ethical framework for a nuclear waste disposal program. NRDC agrees and views this concept as the principal basis for seeking geologic disposal of the nuclear waste. This generation’s ethical obligation to future generations regarding nuclear waste disposal implicates critical issues of security: including financial security, environmental protection, and public health. However, the Report failed to illuminate the history of U.S. policy under the Nuclear Waste Policy Act, 42 U.S.C. 10101 *et seq.*, (NWPA) and the Report’s summary of our national experience with the proposed repository at Yucca Mountain fails to tell the story of how the Environmental Protection Agency (EPA), the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC), the Justice Department, and the U.S. House and Senate together corrupted the process for developing and implementing licensing criteria for the Yucca Mountain repository. If Congress does not engage this history with clear eyes, there is little hope that a future repository will be sited and developed without undue risks to succeeding generations. The supporting record for any new legislation should detail this history in frank terms and the precise legislative direction should ensure the concept of “intergenerational justice” is at the forefront.

Second, much is made throughout the *Final Report* of a “consent-based, adaptive, and phased approach” for developing geologic disposal options. We agree with the general thrust of such a conceptual framework for developing repositories, but any such “consent-based” process will enjoy a far higher probability of success in concert with a simple, but profound, change in the law. As the *Final Report* acknowledges but fails to meaningfully discuss, current federal law, including aspects of the Atomic Energy Act (AEA), has the effect of preempting almost all forms of state regulation over a high level waste facility and, indeed, over regulation of radionuclides in general.

This Committee should recommend that Congress commence hearings to remove once and for all the AEA’s exemptions for radionuclides from our water and hazardous waste laws. These anachronistic exemptions from environmental law are at the heart of state and public distrust of both government and commercial nuclear facilities. As I noted at the outset, the BRC has made suggestions in its report that could build a better nuclear waste management system, but we submit that decades from now the Nation will return to the same predicament (no matter how improved the architecture of said system) unless States are provided with meaningful regulatory authority under existing environmental laws. We expand on this topic in our third recommendation.

Create a Coherent Framework Before Commencing the Nuclear Waste Siting Process

The BRC recognized that the 1987 amendments to the NWPA were “highly prescriptive” and “widely viewed as being driven too heavily by political considerations.” Those observations are insufficiently critical assessments of what happened. We recommend that Congress be clear about what happened to avoid repeating the mistakes of the past. Put bluntly, first DOE and then Congress corrupted the site selection process leading to Yucca Mountain as the only option. The original strategy contemplated DOE first choosing the best out of four or five geologic media, selecting a best candidate site in each media alternative, next narrowing the choices to the best three alternatives, and finally picking a preferred site for the first of two repositories. Such a

process, if it had been allowed to fairly play out, is precisely the adaptive, phased, and science-based process to which the BRC referred.

But instead, what happened was that DOE first selected sites that it had pre-determined. Then in May of 1986 DOE announced that it was abandoning a search for a second repository, and narrowed the candidate sites from nine to three, leaving in the mix the Hanford Reservation in Washington (in basalt medium), Deaf Smith Co., Texas (in bedded salt medium) and Yucca Mountain in Nevada (in unsaturated volcanic tuff medium). Next, all equity in the site selection process was abandoned in 1987, when Congress, confronted with cost of characterizing three sites, amended the NWPA of 1982 to direct DOE to abandon the two-repository strategy and to develop only the Yucca Mountain site. Not by coincidence, at the time Yucca Mountain was DOE's preferred site. The abandonment of the NWPA site selection process jettisoned a science-based approach, led directly to the loss of support from the State of Nevada, diminished Congressional support (except to ensure that the proposed Yucca site remained the sole site), and eviscerated public support for the Yucca Mountain project.

To avoid a similar fate, we urge Congress be explicit and state clearly in legislation that not only the standards for site screening and development criteria be in final form before any sites are considered, but generic radiation and environmental protection standards for any such site be established as well. See *Disposal Subcommittee Report*, at 74. The Subcommittee was right to state that the standard and supporting regulatory requirements to license a geologic repository should be generic – *i.e.*, applicable to all sites. Care must be taken to insulate any site standard, development or regulatory framework from adverse pressures applied by the Office of Management and Budget, the Department of Justice, DOE and the NRC. Indeed, it is our assessment that past administrations' failures to protect EPA from just such pressures is why the development of the EPA standard setting process was so problematic. Thus, we concur with the BRC that the existing generic standards are not adequate (*Final Report* at 91) and, we recommend, need to be strengthened. We look forward to future Congressional inquiry on just how those standards might be improved.

On a final note, some could argue that putting final form on siting criteria or radiation protection standards might unduly or unnecessarily restrict the number or type of sites under consideration. We have confidence that enough flexibility could be introduced into any generic standards to avoid a premature limitation of potentially appropriate sites from a science-based approach. But the alternative of *not* requiring the siting criteria or generic environmental standards to be in final form prior to developing potential storage and disposal sites ensures that the same gaming of the system will recur as unfortunately played out over the last two decades. And Congress is mindful of how that effort failed.

Arrive At a Consent-Based Approach Via a Fundamental Change In Law

On the consent-based approach to siting, the BRC *Final Report* tentatively approached a bright line that it should have boldly walked across. We suggest Congress, with its firm understanding of federalism, take the stronger course. Specifically, we refer to the role of the local, state and tribal governments in the BRC's prescription for a successful repository and waste storage program. We fully support the concepts embodied in the five qualities suggested by the BRC for developing a successful approach:

- (1) Consent-based—in the sense that affected communities have an opportunity to decide whether to accept facility siting decisions and retain significant local control;
- (2) Transparent—in the sense that all stakeholders have an opportunity to understand key decisions and engage the process in a meaningful way;
- (3) Phased—in the sense that key decisions are revisited and modified as necessary along the way rather than being pre-determined;
- (4) Adaptive—in the sense that process itself is flexible and produces decisions that are responsive to new information and new technical, social, or political developments; and
- (5) Standards – and science-based—in the sense that the public can have confidence that all facilities meet rigorous, objective, and consistently-applied standards of safety and environmental protection.

These aspirations are both laudable and necessary in light of the history of spent fuel and high-level radioactive waste disposal programs. As Congress is aware, much of the difficulty of finding workable disposal solutions for nuclear waste can be traced to inherent tensions that exist in federal, state and tribal regulatory relationships. We could have extensive inquiry into the origins of those inherent tensions, but none could deny the existence of such disputes. And without fundamental changes in the law to address that federal, state and tribal tension, we will never approach closure and consent on transparent, phased, and adaptive decisions for nuclear waste siting. Indeed, we suggest that decades from now there will have been little change and disputes that will continue unchecked unless Congress avails itself of the opportunity to finally suggest a decades-overdue change in the law that the BRC itself acknowledges in the Report text.

The *Final Report* states in pertinent part:

We recognize that defining a meaningful and appropriate role for states, tribes, and local governments under current law is far from straightforward, given that the Atomic Energy Act of 1954 provides for exclusive federal jurisdiction over many radioactive waste management issues. Nevertheless, we believe it will be essential to affirm a role for states, tribes, and local governments that is at once positive, proactive, and substantively meaningful and thereby reduces rather than increases the potential for conflict, confusion, and delay.

Final Report at 56 (citation omitted).

A meaningful and appropriate role for States in nuclear waste siting can and must be done straightforwardly. How can this be achieved? Such a change can be accomplished by amending the Atomic Energy Act (AEA) to remove its express exemptions of radioactive material from environmental laws. The exemptions of radioactivity make it, in effect, a privileged pollutant. Exemptions from the Clean Water Act and the Resource Conservation and Recovery Act (RCRA) are at the foundation of State and, we submit, even fellow federal agency distrust of both commercial and government-run nuclear complexes.

As this Committee is aware, most federal environmental laws expressly exclude “source, special nuclear and byproduct material” from the scope of health, safety and environmental regulation by EPA or the states, leaving the field to the DOE and the NRC. In the absence of clear language in those statutes authorizing EPA, or states where appropriate, to regulate the environmental and public health impacts of radioactive waste, DOE retains broad authority over its vast mess of radioactive waste, with EPA and state regulators only able to push for stringent cleanups on the margins of the process. Indeed, the BRC Report’s discussion of the WIPP facility and the State of New Mexico’s efforts to regulate aspects of the facility under RCRA is mentioned as a critical positive element in the development of the currently active site. *Final Report* at 21. The NRC also retains far reaching safety and environmental regulatory authority over commercial nuclear facilities, with agreement states able to assume NRC authority, but only on the federal agency’s terms.

As we noted in our July 2011 comments to the BRC, states are welcome to consult with the NRC and the DOE, but the agencies can, and will, assert preemptive authority where they see fit. This has happened time and again at both commercial and DOE nuclear facilities. Continuing the outdated regulatory scheme is at the heart of the distrust that has poisoned federal and state relationships involved in managing and disposing of high-level radioactive waste (HLW) and spent nuclear fuel.

If EPA and the States had full legal authority and could treat radionuclides as they do other pollutants under environmental law, clear cleanup standards could be promulgated, and we could be much farther along in remediating the toxic legacy of the Cold War. Further, we could likely avoid some of the ongoing legal and regulatory disputes over operations at commercial nuclear facilities. Any regulatory change of this magnitude would have to be harmonized with appropriate NRC licensing jurisdiction over facilities and waste and harmonized with EPA’s existing jurisdiction with respect to radiation standards: but such a process is certainly within the capacity of the current federal agencies and engaged stakeholders. Some states would assume jurisdiction over radioactive material, others might not. But in any event, substantially improved clarity in the regulatory structure and a meaningful state oversight role would allow, for the first time in this country, consent-based and transparent decisions to take place on the matter of developing geologic repositories.

Address Interim Storage

“First, we recommend that the United States establish a program that leads to the timely development of one or more consolidated storage facilities.” *Final Report* at 32.

With respect to interim storage of spent nuclear fuel, we take issue with the number of facilities and with the manner in which spent fuel should be managed pending disposal as insufficiently fact-based.

First, NRDC disagrees that multiple sites for consolidated interim storage are required. We see no need or justification for more than one government consolidated interim storage facility in the United States. Nor do we necessarily see need for expanding interim storage beyond sites that are currently storing commercial spent fuel. As indicated in Table 1 (p. 32) of the *BRC’s Report*, current total stranded spent fuel (SF) could be accommodated in approximately 250 casks. Even

twice this amount could be accommodated in a single hardened building the size of the Ahaus facility in Germany. A single site the size of the chemical processing area at La Hague in France could accommodate more than 100,000 tonnes (t) of spent fuel stored in dry casks storage, assuming 0.5 t SF/m². The development of multiple facilities would be an unnecessary expense considering the numerous other high-priority issues that exist relating to the safe handling of the already present waste.

With respect to spent fuel management, we concur with the BRC's admonition that there must be vigorous efforts by industry and by the appropriate regulatory authorities to ensure that all near-term forms of storage meet high standards of safety and security for the decades-long time periods that interim storage sites are likely to be in use. While NRDC agrees with the overall concept advanced by the Commission, the BRC cited no evidence for why continued reliance on densely-packed wet storage should be accepted as adequate in light of the health, safety and security risks that interim wet storage poses. Instead, the BRC was negligent in not recommending that Congress statutorily direct movement of spent fuel from wet pools to dry casks as soon as practical, *i.e.*, as soon as spent fuel has cooled sufficiently to permit safe dry cask storage, generally about five years. With less fuel in the pool, an accident scenario in which cooling is lost would be less problematic through the extended time allotted by the slower boiling rate in the lesser-filled pools and the radiation source term would be reduced. The now standardized practice of hardened dry-cask storage poses clear benefits in terms of the mitigation of an accident or act of terrorism, either of which could lead to the release of quantities of radiation exceeding a reactor core melt.

Moreover, as we and many others in the environmental and public health community noted to the BRC, current practice at U.S. reactor sites allows the spent fuel pools to be filled to near capacity, with most pools containing five times as much fuel as the reactor itself. We disagree with the Commission's politicized conclusion that it sees "no unmanageable safety or security issue associated with current methods of storage (dry or wet) at existing sites in the United States." *Final Report* at 32. This counter-factual conclusion is not borne out by the post-9/11 National Academy study of spent fuel storage, or by the recent post-Fukushima nuclear safety reviews at U.S. reactors that reveal significant deficiencies in back-up spent fuel cooling and instrumentation capability under the conditions of a station black-out. Particularly with respect to the 23 boiling water reactors (BWRs) in the United States, supplying emergency make-up water to a boiling pool inside the secondary containment can itself threaten, via excess heat and condensation, the performance of other critical reactor safety systems, and the elevated pools themselves are vulnerable to structural damage and debris from hydrogen explosions in a severe accident scenario, as occurred during the Fukushima accident.

In short, unprotected or lightly sheltered spent fuel pools outside containment are vulnerable to disabling of their cooling systems in a severe natural event – such as a tornado, earthquake, fire, or flood – and to direct destruction via a terrorist attack. On September 11, 2001, Flight 11 passed directly over the Indian Point nuclear reactors and spent fuel pools, containing tons of discharged fuel in wet storage. None of the above enumerated threats could be considered "well-managed" under current NRC regulations or current independent licensee efforts. Congress should confront this matter directly in any forthcoming legislation and require unpacking of the pools and into hardened onsite storage.

Reject Closed Fuel Cycles and Reprocessing

The analysis of advanced fuel cycle technologies contained in the BRC *Final Report* was inadequate and the broad sweeping conclusions are not supported by a more rigorous comparison of current once-through versus advanced closed fuel cycles. As we demonstrated time and again to the Commission in our comments (*see Attachment 1, NRDC November 1, 2011 comments at 7-14*), one can determine the relative attractiveness and economic outlook of various reactor and fuel cycle concepts and the likelihood that various options will be implemented in the United States. Consequently, rather than promoting a large research and development (R&D) program covering a wide range of alternative fuel cycles, Congress should look at the reality of the federal budget over the next decade and narrow the options and focus on those that are most promising. Given that there is no current or prospective closed fuel cycle that can economically compete with the current open cycle, Congress should prioritize R&D funding to support technologies that can mitigate climate change in the near-term at the least cost. This excludes government funded R&D on closed plutonium fuel cycles.

Conclusion

The BRC made several recommendations that could help build a better nuclear waste management system, but decades from now others will face our current predicament unless Congress creates a transparent, equitable process with strong public health and environmental standards that cannot be manipulated in order to license a site (or sites) that may not be suitable. To do that, as it writes our path forward, Congress must ensure we not repeat the mistakes of the past. Key to avoiding those mistakes is providing states with meaningful regulatory authority and creating a transparent, equitable process that incorporates strong public health and environmental standards at the outset.

Thank you again for this opportunity and I am happy to answer any questions.