The Time Needed to Implement the Blue Ribbon Commission Recommendation on Interim Storage – 13124

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ABSTRACT

The report of the Blue Ribbon Commission on America's Nuclear Future [1] makes a number of important recommendations to be considered if Congress elects to redirect U.S. high-level radioactive waste disposal policy. Setting aside for the purposes of this discussion any issues related to political forces leading to stopping progress on the Yucca Mountain project and driving the creation of the Commission, an important recommendation of the Commission was to institute prompt efforts to develop one or more consolidated storage facilities. The Blue Ribbon Commission noted that this recommended strategy for future storage and disposal facilities and operations *should be implemented regardless of what happens with Yucca Mountain.* It is too easy, however, to focus on interim storage as an *alternative* to geologic disposal.

The Blue Ribbon Commission report does not go far enough in addressing the magnitude of the contentious problems associated with reopening the issues of relative authorities of the states and federal government with which Congress wrestled in crafting the Nuclear Waste Policy Act [2]. The Blue Ribbon Commission recommendation for prompt adoption of an interim storage program does not appear to be fully informed about the actions that must be taken, the relative cost of the effort, or the realistic time line that would be involved. In essence, the recommendation leaves to others the details of the systems engineering analyses needed to understand the nature and details of all the operations required to reach an operational interim storage facility without derailing forever the true end goal of geologic disposal.

The material presented identifies a number of impediments that must be overcome before the country could develop a centralized federal interim storage facility. In summary, and in the order presented, they are:

1. Change the law, HJR 87, PL 107-200, designating Yucca Mountain for the development of a repository.
2. Bring new nuclear waste legislation to the floor of the Senate, overcoming existing House support for Yucca Mountain
3. Change the longstanding focus of Congress from disposal to storage
4. Change the funding concepts embodied in the Nuclear Waste Policy Act to allow the Nuclear Waste fund to be used to pay for interim storage
5. Reverse the Congressional policy not to give states or tribes veto or consent authority, and to reserve to Congress the authority to override a state or tribal disapproval
6. Promulgate interim storage facility siting regulations to reflect the new policies after such changes to policy and law
7. Complete already underway changes to storage and transportation regulations, possibly incorporating changes to reflect changes to waste disposal law

8. Promulgate new repository siting regulations if the interim storage facility is to support repository development
9. Identify volunteer sites, negotiate agreements, and get Congressional approval for negotiated benefits packages
10. Design, License and develop the interim storage facility

The time required to accomplish these ten items depends on many factors. The estimate developed assumes that certain of the items must be completed before other items are started; given past criticisms of the current program, such an assumption appears appropriate. Estimated times for completion of individual items are based on historical precedent.

INTRODUCTION

The recommendation of the Blue Ribbon Commission marks the second time a program of interim storage has been formally recommended subsequent to the passage of the Nuclear Waste Policy Act, which placed the need for disposal of used nuclear fuel above the commitment of a program of storage. Notably, the Nuclear Waste Technical Review Board made this point to Congress in their annual report in 1996 [3]. The Nuclear Waste Technical Review Board presented a systematic analysis of the sequence of steps that needed to be accomplished to implement a storage program that complemented the disposal program then planned for Yucca Mountain. Their focus was on determining the suitability of the Yucca Mountain site as the primary objective of the Department of Energy's waste management program, and not assigning significant new activities that could compete for funding and other resources with the site characterization and repository development efforts at the Yucca Mountain site. The Board, created by Congress to advise Congress and the Secretary of Energy on a range of issues including the packaging and transportation of waste, argued that although prohibited by law, there was no technical reason why a centralized storage facility (and supporting transportation infrastructure) could not be constructed prior to repository construction. In fact, because of the lead time needed for planning and development, the Board believed it would be practical to begin planning then for a federal storage facility that could achieve full scale operation by 2010. It is important to note that Congress did not act on that recommendation. The Blue Ribbon Commission, on the other hand, focused on the concept of a consensual approach to siting a repository and the concomitant need to address the fact that lack of progress on developing a repository exacerbates the problems caused by the failure of the federal government to meet the conditions of contracts with utilities to take the used nuclear fuel.

The Blue Ribbon Commission report does not fully recognize the magnitude of the contentious problems associated with reopening the issues of relative authorities of the states and federal government with which Congress wrestled in crafting the Nuclear Waste Policy Act. The Blue Ribbon Commission recommendation for prompt adoption of an interim storage program does not appear to be fully informed about the actions that must be taken, the relative cost of the effort, or the realistic time line that would be involved. In essence, the recommendation leaves to others the details of the systems engineering analyses needed to understand the nature and details of all the operations required to reach an operational interim storage facility without derailing forever the true end goal of geologic disposal.

Suspending the Yucca Mountain program and changing federal waste management strategy creates a problem as large as or larger than that which existed under the Nuclear Waste Policy Act. Issues that have haunted U.S. programs since before passage of the Nuclear Waste Policy Act, such as a meaningful long term political commitment to the final disposal solution, are blatantly disregarded with the new recommendations. Even if the siting of the interim storage facilities, actual land acquisition by

condemnation under Federal government eminent domain, or the issue of repackaging of large quantities of spent fuel for final disposal can be addressed and solved, what entity will take the risk of hosting an interim storage facility absent a repository? The Nuclear Waste Policy Act program was supposed to be a program that once put in place would endure. While it is true that Congress acted outside the original intent of the law when it selected Yucca Mountain as the only site to be studied, it did not dismiss outright the question of the need for a second repository. The conclusion that disposal is needed and that deep geologic disposal is the scientifically preferred approach has been reached by every expert panel that has looked at the issue and by every other country that is pursuing a nuclear waste management program. While there are likely benefits to a program of centralized interim storage, that program must not be allowed to take the place of disposal of used nuclear fuel.

It is important, therefore, to understand the steps that would be needed to accomplish centralized interim storage, and the magnitude of costs, particularly in time, required to do this.

AN ESTIMATED TIMELINE FOR DEVELOPING AN INTERIM STORAGE FACILITY

There are several significant time line issues that must be addressed satisfactorily if the U.S. is to develop consent based, consolidated interim storage ahead of a repository. The material presented identifies a number of impediments that must be overcome before the country could begin to develop a federal interim storage facility. To avoid the types of criticism levied against the current regulations, it would be appropriate to wait until new policy has been developed and codified in an amended Nuclear Waste Policy Act before promulgation of new standards and regulations. In summary, and in the order presented, they are:

Change U.S. disposal policy and enact it in law:

1. Change the law, HJR 87, PL 107-200, designating Yucca Mountain for the development of a repository.
2. Bring new nuclear waste legislation to the floor of the Senate, overcoming existing House support for Yucca Mountain
3. Change the longstanding focus of Congress from disposal to storage
4. Change the funding concepts embodied in the Nuclear Waste Policy Act to allow the Nuclear Waste fund to be used to pay for interim storage
5. Reverse the Congressional policy not to give states or tribes veto or consent authority, and to reserve to Congress the authority to override a state or tribal disapproval

Items 1 through 5 all deal with changing U.S. disposal policy and enacting it in law. It is very difficult to estimate the amount of time that it would take to change the Nuclear Waste Policy Act; it is also difficult to imagine that all five of these impediments could be overcome in a single action. Suffice it to say that it is not likely that the action could be initiated today, given the current stances of the House and Senate, and that it is not likely that the dismantlement of the Nuclear Waste Policy Act could occur on a schedule faster than it took to develop it, considering the major policy changes that would have to be worked out. An estimate of 2 to 4 years to enact these changes years is probably optimistic.

Promulgate new Regulations:

6. Promulgate interim storage facility siting regulations to reflect the new policies after such changes to policy and law
7. Complete already underway changes to storage and transportation regulations, possibly incorporating changes to reflect changes to waste disposal law

8. Promulgate new repository siting regulations if the interim storage facility was to support repository development

There is, however, precedent for developing regulations and standards to implement the Nuclear Waste Policy Act (items 6, 7 and 8). The legislative guidance for the Yucca Mountain site specific regulations was given in 1992, and the required National Academy of Sciences input was available by 1995. Drafts of the Environmental Protection Agency, Nuclear Regulatory Commission, and Department of Energy regulations were available by 1999, and were finalized by 2002. Lawsuits over the licensing regulations dragged out the process another 6 to 7 years, but the siting criteria were not overturned. From the completion of the National Academy of Sciences guidance to application of the siting criteria took 7 years, which is probably not an unreasonable estimate of the minimum amount of time to develop these types of regulations, given the Blue Ribbon Commission recommendations for the types of regulations, the fact that to strictly meet the recommendation the regulations could not be developed parallel, and the sophistication of the opponents of nuclear power and waste disposal in prolonging such matters. Furthermore, this estimate does not include the time already announced by the Nuclear Regulatory Commission for their comprehensive review of regulations related to extended storage and transport (item 7), which is expected to be complete in 2017. It also does not factor in the time the Nuclear Regulatory Commission expects to spend revisiting the Waste Confidence Rulemaking, which the Nuclear Regulatory Commission estimates to take 7 years as well.

Identify Sites:

9. Identify volunteer sites, negotiate agreements, and get Congressional approval for negotiated benefits packages

It does not seem likely that the time that would be required to identify sites, negotiate agreements, and get Congressional approval for negotiated benefits packages could be much less than 1 or 2 years. To be consistent with the Blue Ribbon Commission recommendations, this too could not start until the previous steps were complete.

Build Facility

10. Design, license and develop the interim storage facility

Considering the first three sets of activities to proceed sequentially results in an estimate of the amount of time to prepare for initiation of siting an independent storage facility on the order of 10 to 12 years. Adding the time to design, license, and develop an interim storage facility, in a location where the local community wanted it, which is on the order of 12 years, results in a total time to get to operation of a federal independent storage facility on the order of 25 years.

The estimates provided in the preceding paragraphs were used to prepare Figure 1. Additional information about the ten items and the bases on which the estimated times were developed are described in the following sections.

THE FIFTH BLUE RIBBON COMMISSION RECOMMENDAITON

The fifth recommendation of the Blue Ribbon Commission is: *[P]rompt efforts to develop one or more consolidated storage facilities.* There are six reasons given in support of this recommendation; consolidated storage would: allow for the removal of stranded spent fuel from shutdown reactor sites; enable the federal government to begin meeting waste acceptance obligations; provide flexibility to respond to lessons learned from Fukushima and other events; support the repository program; offer

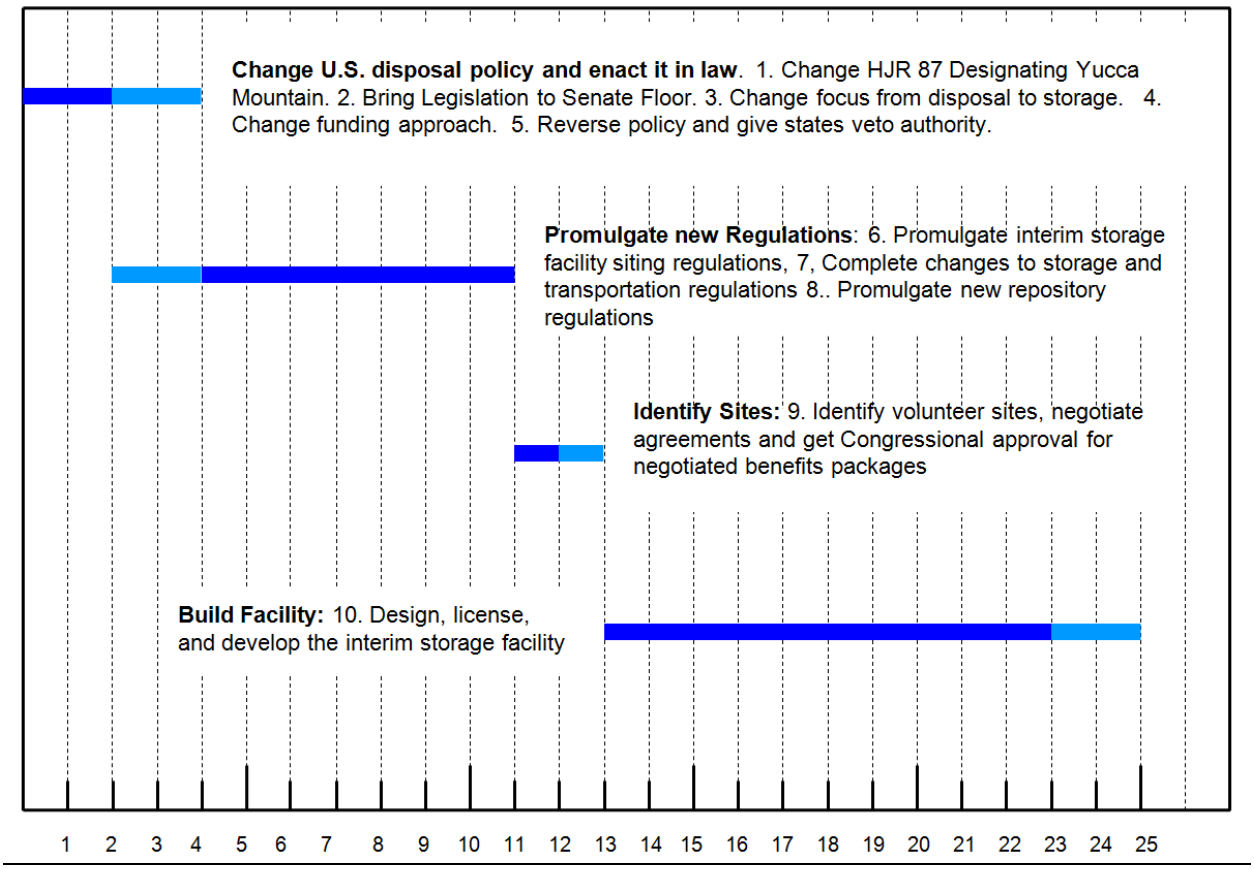

Figure 1. Timeline illustrating estimated time needed develop a federal interim storage facility.

technical opportunities for the waste management system; and, provide options for increased flexibility and efficiency in storage and future waste handling functions.

The Blue Ribbon Commission stated that the argument for moving stranded spent fuel to storage is the strongest, and that this fuel should be first in line for transfer in order that these plant sites can be completely decommissioned and put to other beneficial uses. In fact, in the absence of a repository, the opposite is true. Utilities have supported both the Multi-Purpose Canister and the Transportation, Aging, and Disposal initiatives, and today are not likely to support any packaging initiative without a well defined repository solution, given the temperature limits of a geologic repository and the associated need for either smaller packages, a surface aging facility, or aggressive ventilation of a repository. Package size will be limited for any repository by the capacity of rail casks and the need to avoid repackaging.

Moving used fuel from the stranded sites first ultimately will force utilities to place more of their used fuel into dry storage, in canisters that are likely too large for any repository other than a ramp accessible, open design such as Yucca Mountain. The “stranded sites” do not have the considerable infrastructure needed to transfer fuel or canisters to transportation overpacks, let alone to repackage the fuel in storage at these sites. Moreover, transferring fuel assemblies (usually done in a pool) subjects the fuel to multiple wetting and drying cycles with possible resulting damage to the fuel cladding and possible oxidation of

the fuel. These transfers are complex operations. The report does not address sufficiently the necessary costs and risks of transfer or repackaging used nuclear fuel once it has been placed in a storage facility.

The Blue Ribbon Commission report also states that the availability of consolidated storage will: provide valuable flexibility in the nuclear waste management system that could achieve meaningful cost savings for both ratepayers and taxpayers when a significant number of plants are shut down in the future; can provide back-up storage in the event that spent fuel needs to be moved quickly from a reactor site; and would provide an excellent platform for ongoing R&D to better understand how the storage systems currently in use at both commercial and DOE sites perform over time. While true, this is equally or more true if the used nuclear fuel is moved to a repository. The Commission also ignores the sad history of consolidated spent fuel storage: the one large scale licensed facility developed to take fuel from multiple reactor sites has never opened for business because of anti-nuclear opposition, and no one has tried to site another such facility. Did the Commission really think that siting storage casks for 70,000 MTU above ground with no eventual disposal path would be easier than siting a geologic repository? In crafting the Nuclear Waste Policy Act, Congress did not believe that to be the case.

The Blue Ribbon Commission and the Nuclear Waste Technical Review Board also do not address the condition of spent fuel that has been in surface storage for periods of time longer than covered by NRC licenses. Fuel currently in storage is licensed, in most cases, for 20 years. A few licenses for 40 years have been granted and a few 20-year licenses have been renewed. Observations of low-burnup fuel in storage for 15 years indicate that the fuel appears undamaged to visual inspection and the canister had only minor surface damage that could be readily remediated [4], but conclusions about much longer periods of storage cannot be extrapolated from this example. There is no assurance that fuel (canistered or uncanistered) that has been in storage for very long periods of time can safely be transferred to a transportation overpack and from that overpack into a repository without a massive and costly infrastructure.

Change U.S. Disposal Policy and Enact It in Law

As acknowledged tacitly by the Blue Ribbon Commission, under current law (HJR 87, PL 107-200), *"... there hereby is approved the site at Yucca Mountain, Nevada, for a repository, with respect to which a notice of disapproval was submitted by the Governor of the State of Nevada on April 8, 2002".* Yucca Mountain was designated by Congress pursuant to the Nuclear Waste Policy Act, and today is halted by political maneuvering that is under challenge in Court. This poses an interesting dilemma for the Administration. Any Senate action addressing the high-level radioactive waste program and implicitly, the Yucca Mountain project, would give the House an opportunity to push for completing the Yucca Mountain project. Given that the current situation regarding Yucca Mountain is driven by the Senate Majority Leader, it does not necessarily follow that the Senate would not follow suit. The designation of Yucca Mountain in 2002 was nearly prevented by the then Senate majority Leader, at the urging of the Senior Senator from Nevada, the current Senate Majority Leader. In the then Democratically controlled Senate, the strategy to prevent Yucca Mountain from going forward did not depend on votes, it depended on attempting to keep the vote off the Senate floor. The only difference today is the Senate Majority Leader has been successful in keeping Yucca Mountain related matters off the Senate floor.

The Nuclear Waste Policy Act process that designated Yucca Mountain succeeded over the objections of the State of Nevada because of carefully negotiated provisions in the Act that were designed to give the state an opportunity to object, but not an outright veto. As Downey [5] notes, in debates preceding passage of the Nuclear Waste Policy Act, a key issue was how to operationalize the concepts of

consultation and concurrence, which had been officially adopted by the Department of Energy as the role of potential host states in siting decisions. While generally accepted as an appropriate description of a potential host state's role, the concept was nothing more than an empty slogan unless an acceptable mechanism could be found for dealing with a state's non-concurrence. To legitimize the siting process politically, the Federal executive agency responsible for the implementation and the government of the selected state should have equivalent authority levels. Downey points out that the only mechanism that appeared to have a chance of gaining Congressional approval was for Congress to assume for itself a key role in the siting process. This the context within which the Congress had authorized and funded the creation of the waste to be disposed of in the repository. It was only the government that could provide the stamp of national consensus likely to be needed for each siting decision. This is the politically legitimate siting model embodied in the Nuclear Waste Policy Act, and it was the result of prolonged legislative discussions and consensus both within and between the two houses. It is difficult to imagine a scenario wherein Congress would revisit this contentious compromise, let alone rescind its carefully negotiated authority. In doing so, it would destroy the Congress' capability to control the physical remediation of the waste it authorized to be created.

In crafting the Nuclear Waste Policy Act, Congress considered interim storage both for emergency assistance to reactors and to support repository operations. In the Act, Congress found that the persons owning and operating civilian nuclear power reactors had the primary responsibility for providing interim storage of spent nuclear fuel by maximizing, to the extent practical, the effective use of existing storage facilities at the site of each civilian nuclear power reactor, and by adding new onsite storage capacity in a timely manner where practical ([2] §131).

There were strong reasons for this language in the Act. Following the political failure of the Lyons, KS site, the Atomic Energy Commission planed to provide Federal Interim Storage; this planned program continued under the Energy Research and Development Administration. The Energy Research and Development Administration decided that it would expedite matters if one or more of the site alternatives were located on federal land, preferably at a Department of Energy facility, and proposed the development of a surface storage facility at the Hanford Nuclear Reservation. In September 1974, the Atomic Energy Commission issued an Environmental Impact Statement in support of a Retrievable Surface Storage Facility. The Environmental Impact Statement drew critical comments from a wide range of groups and individuals including some Western Governors and the Environmental Protection Agency. In April of 1975, the Administrator of the Energy Research and Development Agency, Robert Seamans, in one of his first official acts, withdrew the Environmental Impact Statement, and requested that the proposed congressional authorization for the Retrievable Surface Storage Facility be deleted. The primary concern was that the Retrievable Surface Storage Facility would delay the efforts of the Federal Government to develop the method for the final disposal of high level radioactive waste. The Environmental Protection Agency objections to the Retrievable Surface Storage Facility Environmental Impact Statement were based on a concern that no disposal pathway was being considered. There were also concerns that it would defer geologic disposal efforts. These actions were no doubt still in the minds of Congress as it turned its attention to the waste disposal issue shortly after this.

To support repository operations, in the amendment of the Act, Congress specified licensing conditions for a monitored retrievable storage facility. The amended Act required that construction of such a facility could not begin until the Commission had issued a license for the construction of a repository. Until a repository first accepted spent nuclear fuel or high-level radioactive waste, the quantity of spent nuclear fuel or high-level radioactive waste at the facility at any one time could not exceed 10,000 MTHM. Following waste acceptance, the quantity at the site at any one time could not exceed 15,000 MTHM.

Further, construction of the facility or acceptance of spent nuclear fuel or high-level radioactive waste would have been prohibited during any time the repository license was revoked by the Commission or construction of the repository ceased ([2] §148). Here too, Congress sent a strong message that the repository was the principal goal, supported as needed by monitored retrievable storage.

The Blue Ribbon Commission has recommended that the Act be modified to allow for a consent-based process to site, license, and construct multiple storage facilities with adequate capacity when needed, and to clarify that nuclear waste fee payments can be used for this purpose.

Taking the second of these points first, there is nothing to clarify. The Act [2] is clear at §131 that Congress considers the cost of storage to be the responsibility of the Utilities. Further, the Act notes at §141, that the generators and owners of the high-level radioactive waste and spent nuclear fuel to be stored have the responsibility to pay the costs of the long-term storage of such waste and spent fuel. The Nuclear Waste fund was created to hold the receipts from the 1 mil per kW-hour fee from users of electricity generated by nuclear reactors to pay for disposal. While the Nuclear Waste fund would also hold money for interim storage, that money was to come from the generators and owners of the high-level radioactive waste and spent nuclear fuel.

Because the Department of Energy was unable to take the used nuclear fuel and high-level radioactive waste on the schedule committed to in the contracts prepared in accordance with the Nuclear Waste Policy Act, the Utilities sued for damages and were successful. Importantly, the money to pay for the storage required because the contract terms were not met does not come from Nuclear Waste fund; it comes from a Department of Justice judgment fund. The Utilities and Regulatory Utility Commissioners argued successfully that the Nuclear Waste fund could not be used for storage costs.

As to the first point, the recommendation that the Nuclear Waste Policy Act [2] be amended to authorize a new consent-based process for selecting and evaluating sites and licensing consolidated storage and disposal facilities in the future, is similar to the process established in the expired Nuclear Waste Negotiator provisions of the amended Act. Initiating a consent based process is not as simple as reinstating the provisions of the amended Act that created the Nuclear Waste Negotiator. The Act requires the Secretary to prepare an environmental assessment with respect to site selection for a Monitored Retrievable Storage facility in accordance with regulations issued by the Secretary. There currently are no such regulations. The required regulations would need to be promulgated. Furthermore, the Secretary must submit the environmental assessment to Congress at the time such site is selected to allow for a notice of disapproval.

Promulgate New Regulations

It is highly improbable given the close relationship between the repository and the interim storage facility, that the siting regulations could be promulgated independently from the criteria for a repository; while not explicit in the Act, it is clear that integration with the Nuclear Regulatory Commission would be required, as that agency already has siting criteria for independent spent fuel storage installations as well as for a repository. The history of promulgating regulations for the repository program provides an excellent experience base from which to project the effort needed to promulgate spent fuel storage siting regulations. Regardless of the status of a volunteer community and state, there will be disruptive forces that act to delay the promulgation of the regulations.

The Blue Ribbon Commission observed that, *efforts to develop consolidated storage must not hamper efforts to move forward with the development of disposal capacity. To allay the concerns of states and communities that a consolidated storage facility might become a de facto disposal site, a program to establish consolidated storage must be accompanied by a parallel disposal program that is effective, focused, and making discernible progress in the eyes of key stakeholders and the public. Progress on both fronts is needed and must be sought without further delay.* Realistically, this means that efforts to find a repository site must occur at the same time as efforts to site an interim storage facility. Here, changes to the Nuclear Waste Policy Act are more challenging, as the fundamental construct of the Act as passed originally was to screen among multiple sites and select from that group, one for licensing. Those provisions are still in place should Congress elect to reinstitute the second repository program, which means that a single volunteer site is insufficient.

Changing that provision of the Act is not likely to be better received than was amending the Act to study only Yucca Mountain, the action that led to the situation today. Whatever path forward is developed for a new repository site, it is clear that Nuclear Regulatory Commission regulations as well as Department of Energy siting guidelines that are tied to them, and possibly Environmental Protection Agency standards, would have to be repromulagated. The most recent repository siting regulations are Yucca Mountain specific, and tied to Yucca Mountain specific licensing standards. While it is true that the original Department of Energy repository siting guidelines are still in force, the Nuclear Regulatory Commission has publically stated that the licensing regulations to which they are tied do not reflect current thinking [6]; therefore, not only do the Department of Energy regulations need to be repromulgated, the Nuclear Regulatory Commission licensing regulations likewise need to be repromulgated.

These two points suggest another impediment to implementing the recommendations of the Blue Ribbon Commission. Considering the suitability of a volunteer site before all the regulations are in place, and without the comparative screening possible when multiple sites are studied, will inevitably lead to questioning about whether or not a better solution was possible. Developing new regulations, identifying possible sites, performing comparative screening, and negotiating with the appropriate government agents, as was the original construct of the Nuclear Waste Policy Act runs the risk of a result wherein the volunteer site is not ranked as highly as other sites. Moving forward with that site would engender criticism not dissimilar to that seen today.

Identify Sites

Siting a facility depends on a demonstration of protection of public health and safety and the environment. Beyond this threshold criterion, finding sites where all affected units of government, including the host state or tribe, regional and local authorities, and the host community, are willing to support or at least accept a facility has proved exceptionally difficult. In amending the Nuclear Waste Policy Act, Congress created a Nuclear Waste Negotiator to seek to enter into negotiations with the Governor of any State or any Indian tribe to attempt to reach a proposed agreement specifying the terms and conditions under which such State or tribe would agree to host a repository or monitored retrievable storage facility ([2] § 403). A negotiated, voluntary agreement, which appeared to be the best hope for siting a Monitored Retrievable Storage facility that would allow the Department of Energy to meet its obligation to begin accepting spent nuclear fuel in 1998, turned out not to be the answer, after discussions with numerous potential host communities and Indian tribes failed to result in a viable site. While several communities had formally notified the government of their interest in being considered, in no case was a host state supportive of moving forward in development of a facility. Whether enough has changed today to lead to a different result remains an unknown. The seven year duration ([2] § 410; originally five

years, amended by [7]) of the Nuclear Waste Negotiator's efforts failed to identify a site when there was a viable repository program. It is difficult to understand how a new approach, particularly one undertaken absent a real commitment to a repository, could identify a site and complete negotiations in anything less than 1 or 2 years.

Build Facility

There is an example of an interim storage facility such as that envisioned by the Blue Ribbon Commission: Private Fuel Storage successfully licensed an independent spent fuel storage installation in Skull Valley, Utah. Privately held and licensed under existing Nuclear Regulatory Commission regulations, the facility was developed with the consent of the appropriate authority, the Skull Valley Band of Goshutes. While not strictly applicable in this case, the Nuclear Waste Policy Act, which would govern a federal interim storage facility, recognized states and tribes separately – *[t]he Negotiator shall attempt to find a State or Indian tribe willing to host a repository or monitored retrievable storage facility at a technically qualified site.* While the Private Fuel Storage facility was not built, it was not the state of Utah that stopped it. Private Fuel Storage was created in 1995 and submitted a license application by mid 1997; its license was granted in February 2006 [8]. Assuming an optimistic construction schedule of one year, a reasonable estimate of the time to design, license, and develop an interim storage facility, in a location where the local community wanted it, is thus on the order of 12 years. If the Blue Ribbon Commission observation that: *[a] notional timeframe for siting and developing a consolidated storage facility . . . . on the order of 5 to 10 years* was for the time after the policy, law changes, and development of regulations had occurred, then it would seem that the high end of their estimate would be appropriate. If their estimate included the time to implement new policy, laws, and regulations, then it would seem to be a significant underestimate.

A PATH FORWARD

When Congress acted to select Yucca Mountain as the only site to be studied, it did not dismiss outright the question of the need for a second repository. In fact, the amended language at [2] §161, *[t]he Secretary may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities,* is clear that Congress can restart the second repository program through appropriations. The amended language further required the Secretary of Energy to report to the President and to Congress on the need for a second repository. In his report on the need for a second repository [9], the Secretary of Energy found that unless Congress raised or eliminated the statutory capacity limit of 70,000 MTHM in the Nuclear Waste Policy Act, the Nation will need a second repository for spent nuclear fuel and high-level radioactive waste. The Secretary recommended that the preferred course of action would be legislative removal of the statutory capacity limit of 70,000 MTHM, which would defer the urgency in evaluating the issues associated with a second repository

If a principal reason for the Nevada objection to selecting Yucca Mountain was the change in the Nuclear Waste Policy Act policy that no one state would have to take all of the waste, then reinstating the second repository program should alleviate that concern. Nevada has also argued that the science behind the Yucca Mountain suitability decision was bad and that that the license application is grossly inadequate [10]. All evidence points otherwise. The nature of the draft Safety Evaluation Report, as reflected in the Technical Evaluation Report [11] published by the Nuclear Regulatory Commission staff, and the report [12] of the House Committee on Science, Space, and Technology, which reviewed an unredacted copy of the draft Safety Evaluation Report, strongly support a conclusion that the Nuclear Regulatory

Commission staff was prepared to go to the licensing hearings. As to the U.S. Administration seeking to withdraw the license application, it is clear that was politically motivated. In response to a challenge by Congress to provide technical evidence that the site was in fact unsuitable, the Secretary was unable to do so [see, for example, 13]. It would seem that if the state of Nevada, supporting the Department of Energy's effort to withdraw the license application, had technical information that would have substantiated arguments of the supposed inadequacy of the license application, they should have been brought forward at that time and given to Congress. Here too, it would seem that the most appropriate course of action would be to openly resolve these technical questions; the most appropriate venue would be to follow existing law and complete the license application review.

In addition to restarting the second repository program and completing the license application hearings, the Department of Energy should be directed to make every effort to enter into discussions with the State of Nevada and the affected units of local government to understand the types of benefits that would be of interest to the various parties. The Nuclear Waste Policy Act ([2] §117) requires the Secretary to consult and cooperate with the Governor and legislature regarding the public health and safety, environmental, and economic impacts of the repository and take concerns into account for: addressing the possible public health and safety, environmental, social, and economic impacts of the repository; impact reports and requests for impact assistance; resolving concerns about liability arising from accidents, necessary road upgrading and access to the site, ongoing emergency preparedness and emergency response; notification about and monitoring of transportation of high-level radioactive waste and spent nuclear fuel; reasonable independent monitoring and testing of activities; and, resolving objections at any stage of the planning, siting, development, construction, operation, or closure through negotiation, arbitration, or other appropriate mechanisms.

It is important for the people of Nevada to know that the opportunity to receive compensation and benefits in exchange for hosting the repository exists. Surveys of Nevada residents are biased by the unanswered assertion that there is no money available for compensation and benefits for the repository program. An overt effort that would inform the public that the government is serious about negotiating with the State and the affected units of local government for benefits and compensation could dramatically impact public perception of the value of the repository to Nevada. For example, if the citizens of Nevada were aware that the government was serious about negotiating for an intervention process that included substantive local and State participation in oversight of the repository, and a monitoring process involving Nevada's Universities that would focus on public health and environmental activities designed to provide long-term protection for the site county, the State, and potentially affected residents, that could impact the perception of being forced to accept something beyond the State's control.

Further, commitment to a process that can provide benefits and impact mitigation also could impact public perception of the value of the repository to Nevada. Areas of potential interest to Nevadans include: allocation of water resources eliminating the need for the Southern Nevada Water Authority pipeline from northern Nevada; land transfers to allow more State and private ownership; privatization of program implementation activities including building the railroad, highways and the repository itself.; and direct payments, including grants to Nevada and its local communities of potentially hundreds of millions of dollars per year to accept the burden of hosting the repository.

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REFERENCES

[1] Blue Ribbon Commission on America's Nuclear Future, 2012, *Report to the Secretary of Energy*

[2] Nuclear Waste Policy Act. 1983. Public Law 97-425; 96 Stat. 2201, as amended by P.L. 100-203, Title V, Subtitle A (December 22, 1987).

[3] Nuclear Waste Technical Review Board, 1996, *Disposal and Storage of Spent Nuclear Fuel – Finding the Right Balance*

[4] Nuclear Regulatory Commission, 2001. *Characterization Project – Phase 1: CASTOR V/21 Cask Opening and Examination*, NUREG/CR--6745, INEEL/EXT-01-00183, Office of Nuclear Regulatory Research, Nuclear Regulatory Commission, Rockville, MD.

[5] Downey, Gary L., 1985, *Politics and Technology in Repository Siting: Military Versus Commercial Nuclear Wastes at Waste Isolation Pilot Plant 1972-1985*, Technology in Society, v. 7, pp. 47-75

[6] McCartin, T. 2012. *United States Nuclear Waste Technical Review Board, Spring Board Meeting.* Transcript from March 7, 2012.

[7] Energy Policy Act, 1992, *Office of the Nuclear Waste Negotiator,* § 802, Public Law 102-486, 106 Stat. 2776

[8] Nuclear Regulatory Commission, 2006, *NRC Issues License to Private Fuel Storage for Spent Nuclear Fuel Storage Facility in Utah*, Office of Public Affairs, No.06-028.

[9] Department of Energy, 2008, *The Report to the President and the Congress by the Secretary of Energy on the Need for a Second Repository,* DOE /RW-0595

[10] Thorne, M.C., 2012, *Is Yucca Mountain a Long-Term Solution for Disposing of U.S. Spent Nuclear Fuel and High-Level Radioactive Waste?*, Journal of Radiological Protection, volume 32. pp. 175 to 180,

[11] U.S. Nuclear Regulatory Commission, 2011, *Technical Evaluation Report on the Content of the U.S. Department of Energy's Yucca Mountain Repository License Application: Postclosure Volume: Repository Safety after Permanent Closure,* Office of Nuclear Materials Safety and Safeguards, Division of High-Level Waste Repository Safety.

[12] U.S. House of Representatives, 2011, *Yucca Mountain: The Administration's Impact on U.S. Nuclear Waste Management Policy*, Report by the Majority Staff of the House Science, Space, and Technology Committee.

[13] House Appropriations Subcommittee on Energy and Water Development, 2010, *Hearing on President Obama's Fiscal 2011 Budget Request for the Energy Department,* CQ Congressional Transcripts, Congressional Hearings, Mar 10, 2010