

BBYUCCA MOUNTAIN – LESSONS TO BE LEARNED AND A STRATEGY FOR THE FUTURE

**Presented By: Bruce Breslow, Executive Director,
State of Nevada, Agency for Nuclear Projects**

Part 1 – What Went Wrong?

The U.S. Department of Energy was probably the wrong entity to implement the federal high-level radioactive waste program and placing the program within DOE may have doomed it from the start.

- The original Nuclear Waste Policy Act of 1982 was a complex piece of legislation that sought to balance numerous competing interests and constituencies. The very character of DOE, with its culture of secrecy, its ‘we know best’ decision-making, its schedule-driven approach, and its inability to work in a cooperative manner with states and communities, made it difficult to implement a program that required the level of sophistication needed to effectuate the difficult compromises embodied in the Act.
- In Nevada, DOE created a hostile atmosphere almost from the beginning by trying to interfere with the state’s Yucca Mountain oversight program, and insisting on approving all activities the state proposed to implement. As early as 1984, the State was forced to go to court to secure its independent oversight role. The court strongly admonished DOE, finding that allowing DOE to approve or disapprove the state’s specific oversight work would be akin to “permitting the fox to guard the chicken coop.”
- Even after the court ruling, DOE continued to interfere with Nevada’s oversight by withholding, delaying and otherwise impeding needed funds, hampering site access, and making it difficult for Nevada personnel to gain access to needed data and information.
- The Alternative Means of Financing and Managing (AMFM) Panel¹ as early as 1984 recommended that the high-level waste management program be removed

¹ Section 303 of the Nuclear Waste Policy Act of 1982 required the Secretary of Energy “to undertake a study with respect to alternative approaches to managing the construction and operation of all civilian radioactive waste management facilities, including the feasibility of establishing a private corporation for such purposes.” The section was in response to concerns, even as early as 1982 and before, that housing the waste program in a federal agency would doom it to failure due to the undue influence of politics and the vagaries of changing administrations. The AMFM Panel released its report, “Managing Nuclear Waste – A Better Idea,” in December 1984 which concluded that “[t]he Panel’s preferred long-term alternative to the Office of Civilian Radioactive

from DOE and set up as a quasi-governmental corporation to insulate it from political influences and to provide the program with stability and continuity over the long period of time that would be required to site, construct and operate one or more repositories.

- Because of the heavy-handed manner in which DOE has implemented the Yucca Mountain program and the history of instability in leadership, mismanagement, faulty science and data irregularities, and a host of other serious problems over the years, it would be next to impossible for a similar siting program implemented by DOE to obtain the level of trust and confidence necessary for a successful program.

The Nuclear Waste Policy Act, as amended in 1987, created an adversarial role between DOE and the State of Nevada.

- The amended NWPA stated that: “The State or Indian tribe that is party to such agreement waives its rights under Title I to disapprove the recommendation of a site for a repository.” Several Nevada Attorneys General opined that Nevada would forfeit its rights to participate in critical safety and environmental issues during NRC licensing if it even began to negotiate with DOE on a limited benefits package offered by the NWPA.
- Even if Yucca Mountain had turned out to be a suitable site (which it did not), Nevada was offered only \$10 million a year after license approval and \$20 million a year once waste was shipped to Yucca Mountain. That wouldn’t even cover the cost of escorting and overseeing the shipments through the State.

Early on, it was known that the Yucca Mountain site had serious geotechnical problems, but DOE ignored or trivialized them and proceeded as if its mandate was to do whatever it took to make Yucca work.

- The focus of DOE’s work on the project changed after the 1987 amendments to the Nuclear Waste Policy Act singled out Yucca Mountain as the sole site for characterization. DOE went from asking, “Is Yucca a suitable site?” to “What do we need to do to make the site work?” And that quickly evolved to, “What regulations and standards have to be changed?” and “How do we engineer the facility so as to try to overcome the site’s physical flaws?” This led to a series of ever-more-exotic engineering “fixes.” For example, the current license application includes covering all the waste canisters with 11,500 titanium drip shields to protect them from rock fall and highly corrosive groundwater. But the

Waste Management (OCRWM) for managing the nation’s high-level radioactive waste program is a public corporation chartered by Congress.”

\$10 to 12 Billion needed for the drip shields is not part of the budget, and the drip shields themselves are only proposed to be installed 80 to 100 years AFTER the waste is put into the mountain. And since the site is physically and radiologically too hot for humans, robots would have to install the shields inside of the tunnels with no margin for error.

- The “science” at Yucca deteriorated as time went on and more and more unfavorable findings surfaced. DOE’s site characterization program appeared to be designed NOT to identify anything that might disqualify the site.
- Despite this, potentially disqualifying conditions were revealed at the site (i.e., fast groundwater pathways, unacceptably high level potential for escaping radioactive gasses, recent volcanism, high levels of seismicity, etc.). **To get around this, DOE petitioned Congress to exempt the site from health and safety regulations and then scrapped its own site evaluation guidelines altogether.**
- The fact that Yucca was an unsuitable and unsafe site made it impossible for the State to even consider cooperating with DOE.

Yucca Mountain failed for a lot of reasons, but a critical element was unquestionably the forced nature of the siting process – i.e., Congress directed that Yucca Mountain be the only site to be studied; DOE used that directive as the basis for pushing ahead with the project even when the data showed serious flaws in the site and in the face of strong and determined opposition from the state.

- If DOE had been required to obtain the State’s informed consent to continue with the project, Yucca would have been disqualified years earlier (saving billions of dollars and years of effort) and DOE would have had to move on to identify a truly suitable location.
- The notice of disapproval contained in the Nuclear Waste Policy Act was essentially meaningless, because the bar was (intentionally) set so high that a small state like Nevada could not be expected to obtain two-thirds of the votes in both the House and Senate needed to sustain the State’s veto in the face of an administration determined to force the site on the State and a Congress anxious not to risk exposing members’ states to a new siting effort.
- There was no incentive for DOE to work with or listen to the State, since DOE believed all along that it would be able to force the decision on Nevada, regardless of concerns about the site.

Congress shares a large portion of the blame for the failure of the federal high-level radioactive waste program to produce a repository.

- The original Nuclear Waste Policy Act of 1982 was a complex and cumbersome law that sought to balance a variety of competing and often conflicting interests. But the Act represented significant agreement on the part of diverse affected parties and might have had a chance of succeeding, if politics had not intervened in 1986 and if Congress had held DOE's feet to the fire, (requiring DOE to implement the original Act as intended,) and had not gutted the Act in response to political considerations in 1987.²
- While a repository (or other nuclear facility) siting process cannot realistically be insulated from politics completely, there are things that can and must be done to minimize political influence and increase the likelihood that a sound, scientifically-based and credible process can go forward.

Part 2- The Future

HOW can the federal government successfully sight and build a deep geologic repository(s) in the future?

- Let me preface these remarks by saying that my observations are based on Nevada's experience with the failed Yucca Mountain project. Nothing in the remarks should be construed as suggesting in any way that the Yucca Mountain site can somehow be fixed or made acceptable to the State of Nevada. I am merely using our experience to suggest some key findings with regard to how a future siting process might benefit from Yucca's failure.
- In thirty years, no State has come forward and offered to host a HLW repository. There's a big risk that immediately makes the public skeptical from the outset, and energizes the anti-nuclear groups around the country. States are currently suing to keep DOE from withdrawing the Yucca Mountain License, citing that

² During the election cycle of 1986, the Reagan Administration, responding to political pressure from eastern states that had potential sites being examined for a second repository, directed DOE to suspend the second repository program (an important component in the Act to insure regional equity). In 1987, powerful states with potential first repository sites (esp. Louisiana, Texas and Washington) successfully managed to gut the carefully crafted selection process for the first repository, get their states off the hook and single out Nevada's Yucca Mountain based on political considerations [i.e., Nevada's political weakness vs. the clout of Senate Energy Committee Chairman J. Bennett Johnston (LA), House Speaker Jim Wright (TX) and House Majority Leader Tom Foley (WA)].

The final decision must be voluntary

- A successful siting effort must begin with a clean slate, looking for the best sites science can find. No State or physical medium should be exempt from the scientific search. However, the final “choice” or choices must be fully voluntary. Without the opportunity to say NO, a State will have a hard time engaging in any conversation. Sites should be thoroughly characterized first, prior to being selected. No state should be allowed to opt out of the initial site search.

There must be credibility developed on the local, regional and State level.

- A full partnership must be part of the structure with the State, Tribe, County and local entity. This means being a full partner with DOE or whatever entity is identified to implement the effort to develop a credible repository program. It's typical that a voluntary local entity will want the high paying jobs, while the County will have to provide regional services and the State will have to maintain the proper transportation infrastructure, scientific oversight, escorts and safety inspections. All of these entities should work together in a full partnership where every study, report, decision, and plan is fully transparent. With comprehensive “buy-in” from all appropriate sectors, when problems are found, they are everyone's to resolve. If safety concerns cannot be alleviated, then the State must have the final decision to opt out. Without this, no state will be willing to go down the road on a repository project.
- Once there is a commitment to a scientifically-based and truly voluntary siting process, the entity responsible for the program might then be able to build credibility by offering meaningful incentives for hosting a facility. Such an inducement might include establishing prestigious nuclear energy research facilities near the site including a new national laboratory. It would be viewed as a risk/reward for the local community by bringing experts to the State and locality and making them part of the site, project, and community. As these prestigious scientists and experts become part of the local fiber of the community, they bring their credibility to the area and eventually the project, in effect, calming the nerves of all involved. But this can only work if the site is scientifically suitable and the participation of the host state is voluntary.

There must be compensation

- A State must also be financially compensated for hosting a repository. However, the amount of compensation must be substantial enough for a state to consider it a true incentive. The Nuclear Waste Policy Act contained an essentially meaningless provision for benefits in the amount of \$10 Million dollars per year (\$20 Million after receipt of waste) with the caveat that the state must give up all safety and licensing participation for the funding. A State cannot give up its rights to ensure safety and provide appropriate oversight. For an incentive to be meaningful to even a small state, it would take compensation in the billions of dollars a year to even begin discussions. For a fraction of a cent added to every nuclear produced kilowatt hour of electricity, the program would have the necessary funds to allow a State to not only help mitigate the risks, but provide for proper oversight and infrastructure improvements to accompany the project. These funds and the other substantial inducements must be set up contractually so they are not at the mercy of future national politics. Half of the funds should start after a site is licensed and then the rest of the funds should be paid once waste begins being transported to the site.

A repository cannot be a federal project. It must be a COMMUNITY project, run by DOE (or whatever entity is ultimately tasked with implementing the project), with its State, County and local partners.

A successful repository project can be achieved, but only if it's an open process fully involving the state, region and local communities. It's a risk/reward venture that everyone must share in developing.