

If Not Yucca Mountain, Then What?

- If you've asked that question before, you're not alone.
- Yucca proponents want you to believe Yucca Mountain has already been approved and that there is no alternative to the disposal of nuclear waste in Yucca's fatally flawed, porous geology.
- But Yucca has not been—and may never be—approved for construction.
- There are sound, economic alternatives to burying nuclear waste at Yucca.

Yucca May Never Be Approved or Opened

1. Nevada currently has six major lawsuits pending against the Yucca Mountain project. Five of these will be heard in the U.S. Court of Appeals in Washington D.C. in January 2004. (For a summary, *see* http://www.state.nv.us/nucwaste/news2003/pdf/nv_law0309.pdf.) Any one of these lawsuits could end the Yucca project or raise the safety standards to a level the repository cannot meet. The sixth will be heard in Federal Court in Nevada, involving the Government's entitlement to Nevada's water. It, too, could jeopardize the project.
2. The Department of Energy ("DOE") needs a license from the U.S. Nuclear Regulatory Commission ("NRC") to construct and operate the repository. 10 C.F.R. Part 63. Under Nuclear Waste Policy Act Section 114(b), DOE's application for a license was due over a year ago, but DOE doesn't yet have sufficient scientific data to complete it.
3. Getting an NRC license will be exceptionally difficult. DOE must prove in years of litigation that man-made containers in Yucca's corrosive environment will last for 10,000 years. 10 C.F.R. §§ 63.113, 63.311. For a summary of what's technically wrong with the Yucca site and why the Yucca project may be impossible to license, *see* http://www.state.nv.us/nucwaste/news2003/pdf/nv_wwrong.pdf.

4. Though the repository has been projected to cost \$58 billion, Nevada believes its actual cost may be closer to \$100 billion, since the government has yet to factor in the cost of building new rail and transport corridors to Yucca, and every additional month of delay costs millions in additional funds. Like almost every other major project undertaken by DOE, this one is likely to collapse under its own weight, at a vast cost to taxpayers and electric ratepayers.

Cheaper and Safer Alternatives are Available

THE DRY STORAGE ALTERNATIVE

1. NRC has determined that spent nuclear fuel can safely be stored at nuclear reactor sites in robust dry storage casks for at least the next 100 years. *See* NRC's "Waste Confidence Decision," 64 Fed. Reg. 68005 (1999); speech by NRC Chairman Ivan Selin at the International High-Level Waste Management Conference, May 1, 1995.
2. Utilities have already built 24 dry storage facilities and are planning an additional 21. NRC Spent Fuel Project Office Document, June 2002. Moreover, some large centralized facilities are being planned. *See, e.g.,* NRC's Private Fuels Storage docket. The industry, the U.S. General Accounting Office, and the NRC have repeatedly proclaimed these facilities safe against terrorists and natural disasters. *See, e.g.,* GAO-03-426 (July 2003) and NRC's June 20, 2003, comments on same; NRC News No. 01-112 (Sept 21, 2001); Nuclear Energy Institute News Release Dec. 23, 2002.
3. Nuclear industry leaders have testified to Congress that such storage can be safely and economically accomplished *for centuries*. *See* Senate Testimony of Sherwood Smith, Chairman, Carolina Power and Light Company, on the Nuclear Waste Policy Act, October 6, 1981.
4. A DOE study concluded that the cost of continued storage at reactors is not high enough to affect the economic competitiveness of nuclear power as an energy option. *See* Jason Technologies continual storage cost study for DOE, June 1997.

5. Dry storage facilities are located away from metropolitan areas, and are secured with double security fences, radar detectors, and heavily armed guards. *See* 10 C.F.R. Parts 72 and 100. Simply putting these facilities in a basement, 20 feet underground, can offer further protection against terrorists, if necessary. *See* GAO-03-426.
6. Dry storage facilities are in locales that now share the risks and benefits of nuclear electric plants. These communities have well-established emergency plans and workforces familiar with nuclear power. *See* 10 C.F.R. Parts 72 and 100.
7. Dry storage facilities permit easy human monitoring and maintenance. Their safety records worldwide are unblemished. *See* Nuclear Energy Institute Fact Sheet, “Used Nuclear Fuel Management,” January 2003.
8. Courts have ruled that DOE has the authority to take title to the spent fuel at the various reactor sites and can manage its continued storage. *See, e.g., Alabama Power Co. v. DOE*, 307 F.3d 1300 (11th Cir. 2002). This permits utilities to decommission their nuclear reactors, and to remove spent fuel liabilities from their corporate books.
9. In short, for at least the next 100 years, and probably for centuries thereafter, this nation faces no spent fuel emergency.

NEW DISPOSAL METHODS

1. U.S. national laboratories, researchers around the world, and various industry groups are exploring several alternate means of disposing of spent nuclear fuel. Years or decades from now, geologic repositories may no longer be the preferred means of ultimate disposal, or anywhere near the least expensive.
2. These technologies currently include use of nanotechnology to separate and neutralize waste elements, transmutation to convert waste elements into less harmful materials, genetically engineered microbes to “eat” the waste elements, reprocessing to remove useable fuels and higher-level radionuclides, and high-energy magnetic fields to separate waste components. It is almost inconceivable that progress in waste treatment and disposal methods will cease over the next century.

3. Scientists worldwide are also reevaluating deep borehole disposal technology, which has advanced dramatically due to petroleum industry extraction innovations over the last two decades. *See, e.g.,* <http://www.tech-db.ru/istc/db/pr.a.nsf/we/3084>.

A BETTER, SAFER REPOSITORY

1. The Yucca repository is the only repository under consideration in the world that is located above the water table, not below it. *See* OECD/IAEA Yucca Peer Review Report, at p. 3. It is the only repository being considered in porous volcanic tuff, and the only proposed repository site in an area of historically high seismic and volcanic activity. Most importantly, it is the only repository unable to demonstrate geologic isolation. Yucca was chosen largely for political—and not scientific—reasons.
2. The DOE has demonstrated, with its operating “WIPP” repository deep in the dry salt deposits of New Mexico, that it *is* possible to find a geologically suitable site for the permanent disposal of nuclear waste. At WIPP, superb geologic isolation was demonstrated, and the waste package became virtually irrelevant to repository safety. *See* 63 Fed. Reg. 27397 (1998).
3. It is less expensive, and less risky, to find and develop a new repository site than it is to proceed against all odds with Yucca, only to confirm years from now that it cannot be licensed, or that waste cannot safely be emplaced there—or that, even if built, the Yucca repository cannot safely be closed.
4. This very situation was contemplated in Section 113(c)(3) of the Nuclear Waste Policy Act, which instructs the Secretary of Energy to report back to Congress for new direction if “at any time” the Yucca site is determined to be unsuitable for nuclear waste disposal. That time has long since passed.

Yucca Won't Lower the Number of Waste Sites

1. Even if Yucca proceeds, it will be 60 to 100 years before rising spent fuel inventories at reactor sites are substantially depleted. As long as there are reactors operating, there will continue to be spent fuel stored above ground all across America. (*See* Senate Testimony of Yucca Program Director Lake Barrett, March 2002.)

2. The Yucca repository will not be capable of receiving waste until at least 2010, and probably much later. *See* Yucca FEIS at Summary.
3. There is already 46,000 tons of high-level nuclear waste stored around the country at more than 77 locations. *See* Yucca FEIS at Ch.1.
4. According to the industry, this total is increasing by more than 2,000 tons per year. *See* NEI Fact Sheet January 2003. By the year 2010, there will be 62,000 tons.
5. Even when the transport program reaches its peak—3,000 tons shipped per year (*id.*)—this will only gradually reduce the accumulated stockpile.
6. Yucca’s statutory design capacity is only 70,000 metric tons, far short of the amount to be produced by currently operating reactors. *See* Nuclear Waste Policy Act Section 114(d). By the time Yucca is filled to capacity in 2036, there will be at least the same amount of spent fuel still stored at reactors across the country as there is now, even if no new plants are built.
7. But the nuclear industry plans an additional 50 nuclear plants across America by 2020. (*See* Nuclear Energy Institute “Vision 2020” plan).
8. In short, Yucca will *never* solve the problem of spent fuel stored at reactor sites across America. It will only add one site.
9. The Secretary of Energy’s contention that Yucca is desirable for national security—that it is needed to consolidate the nation’s waste at one site—is simply nonsense.

DOE’s Track Record of Failures

1. Despite its good intentions, DOE has a track record of spectacular failures in its large, technically complex projects. *See* GAO/OCG-99-6 (January 1999); GAO/RCED-90-148BR (May 1990).
2. Big failures include the Clinch River Breeder Reactor; the Superconducting Supercollider; the Synfuels Program; Clean Coal Technology; Electric Cars; the Fast Flux Test Facility, and the nuclear weapons complex cleanup. In these projects, *billions* of dollars were spent, only to see schedules extend,

appropriations requests rise and, ultimately, the project being scrapped, dramatically scaled back, or altogether cancelled. *Id.*

3. DOE stands virtually alone among federal agencies in breaching its agreements with states, in tolerating contractor abuses, in oppressing whistleblowers, and in contaminating the American landscape with hazardous, toxic, and radioactive materials from its facilities. *See* DOE/OCG-99-6 (1999). Cleaning up just the current mess is projected to cost taxpayers hundreds of billions of dollars over the next 40 years, and some sites will never be cleaned.
4. Yucca is DOE's largest single project, and the most technically complex. The facts to date confirm the obvious: The Yucca Mountain project, too, will fail. The only question is when, and at what cost to taxpayers and ratepayers.