

Nuclear fuel disposal plans face political obstacles, not scientific

Allen Taylor | Feb 16, 2016



The Department of Energy will begin considering locations this year for interim storage facilities for spent nuclear fuel. How it proceeds may hinge more on politics than science.

The situation has its genesis in the passing of the Nuclear Waste Policy Act of 1982, when the Cold War was still a fact of life, wherein Congress mandated a 1998 deadline for the DOE to establish a central repository for used fuel from commercial nuclear power facilities as well as defense-related sources.

Starting in 1983, consumers of nuclear-powered electricity have been contributing to a fund established for that purpose. The fund has accrued more than \$30 billion to date at the rate of \$750 million per year plus interest.

After many years of site studies, a construction site application was filed in 2008 to build a nuclear waste repository at Yucca Mountain, Nevada. However, President Obama nixed that two years later and commissioned another plan. Meanwhile, the federal government is in breach of its contract, resulting in legal fees and court-awarded damages to compensate energy companies for the costs associated with storing spent nuclear fuel on their sites. To date, more than \$2 billion have been paid in damages. It's expected that by 2020 that number will rise to more than \$20 billion and up to \$500 million annually thereafter.

In 2010, Obama appointed a Blue Ribbon Commission to make a recommendation on how to treat nuclear waste storage and disposal going forward. The BRC made its recommendation in 2012 and settled on a consent-based siting plan that currently has two states - Texas and New Mexico - competing for the right to build an interim waste disposal facility. The intent is to move spent nuclear fuel from the power plant sites where it is currently stored to an interim facility while it awaits disposal.

"It's always been necessary to go from storage to disposal," Rod McCullum, senior director of used fuel and decommissioning programs at the Nuclear Energy Institute, said. "The scientific community doesn't agree on a lot of things, but geologic disposal has always been the preferred option for storage of spent nuclear fuel in the U.S."

Nuclear power plants that store spent fuel do so in one of two ways. The spent fuel generated by nuclear reactors exists in the form of bullet-sized pellets. One reactor may contain hundreds of tons of these pellets, which are loaded into long metal rods and bundled into fuel assemblies about 14 feet long. After five or six years, those fuel assemblies

are moved from the reactor to 40-foot deep storage pools where water pumps keep the water in the pool circulating in order to cool the radioactive waste. After the cooling period, the spent fuel is moved to dry casks on-site.

Maureen Conley, a spokeswoman for the Nuclear Regulatory Commission, the agency tasked with licensing and regulating the process, said, "The NRC believes both storage methods are safe." Both pools and dry casks are made of concrete and steel strong enough to prevent radioactive leakage. Historically, there have been no incidents of leakage from either storage method.

Eventually, nuclear reactor sites will run out of space to store spent fuel. Everyone agrees there needs to be a solution for disposing of spent fuel, but those in a position to craft a plan to do so can't agree on how it should be done. Both McCullum and Conley pointed out that the technical components of the process are easy to implement. The difficulty is at the political level. That's where the hang up is.

Nationwide, there are 74 licensed independent spent fuel storage installations in 34 states. All but four of those states - Colorado, Maine, Idaho, and Oregon - are home to operating nuclear reactors. Nevada would have been a fifth had the Yucca Mountain project gone on to completion.

Yucca Mountain is the prime example of the problem. The site was selected from among a handful of other potential central repository sites under the Bush administration. However, Sen. Harry Reid of Nevada opposed the project from the get-go. A statement on his website calls the Bush plan a "flawed, non-scientific and political process." Reid takes credit for proposing the creation of the Blue Ribbon Commission and champions the idea of consent-based siting rather than forcing communities to store nuclear waste.

Abandoning Yucca Mountain has effectively placed America's spent nuclear fuel in a state of political limbo. Current law still calls for the nation's spent nuclear waste to be transported and disposed of at that location, however, the NRC has suspended its review of the site since funding of the project has been halted. And, of course, it's election year, so no one is expecting a solution any time soon.

Nevertheless, McCullum believes a long-term solution will present itself. In fact, the BRC proposal outlines a three-step process for reaching that goal. The first step is the development of a pilot interim storage facility for storing spent nuclear fuel from reactor sites that have been decommissioned. The second step involves a larger interim facility with more capabilities. The final step in the process is to develop geologic repositories deep under the Earth's surface for ultimate disposal of nuclear waste.

"At some point, our political system will finish the job it started in 1982," McCullum said. "The country will find a way to use geologic repositories for permanent disposal."

Conley agreed. She also pointed out that the Yucca Mountain project generated 300 contentions. Even if the project wasn't killed, she said, her agency would have to address those contentions through judicial-like hearings that would have taken years. Instead, two companies working through the consent-based process to establish interim facilities will likely present their licensing applications this year.

Waste Control Specialists wants to build an interim storage facility in Andrews County, Texas, and has a resolution of support from the local government. The company plans to apply for licensing in April, Conley said. Approximately 100 miles west, in New Mexico, Holtec International and the Eddy Lea Energy Alliance want to build an interim storage facility. Conley expects to receive their licensing application this summer. If approved, those facilities could be licensed for storage for up to 40 years with provisions to renew for another 40. But, a long-term solution would still be needed for ultimate disposal.