

The Other Nuclear Problem

States are stuck with tons of nuclear waste while the federal government struggles with where to store it.

BY MELISSA SAVAGE

The nuclear catastrophe that shook Japan in March has people reconsidering the wisdom of building new plants in the United States and revived fears of a reactor meltdown.

There is another problem, however, that has long concerned policymakers studying the future of nuclear power—waste.

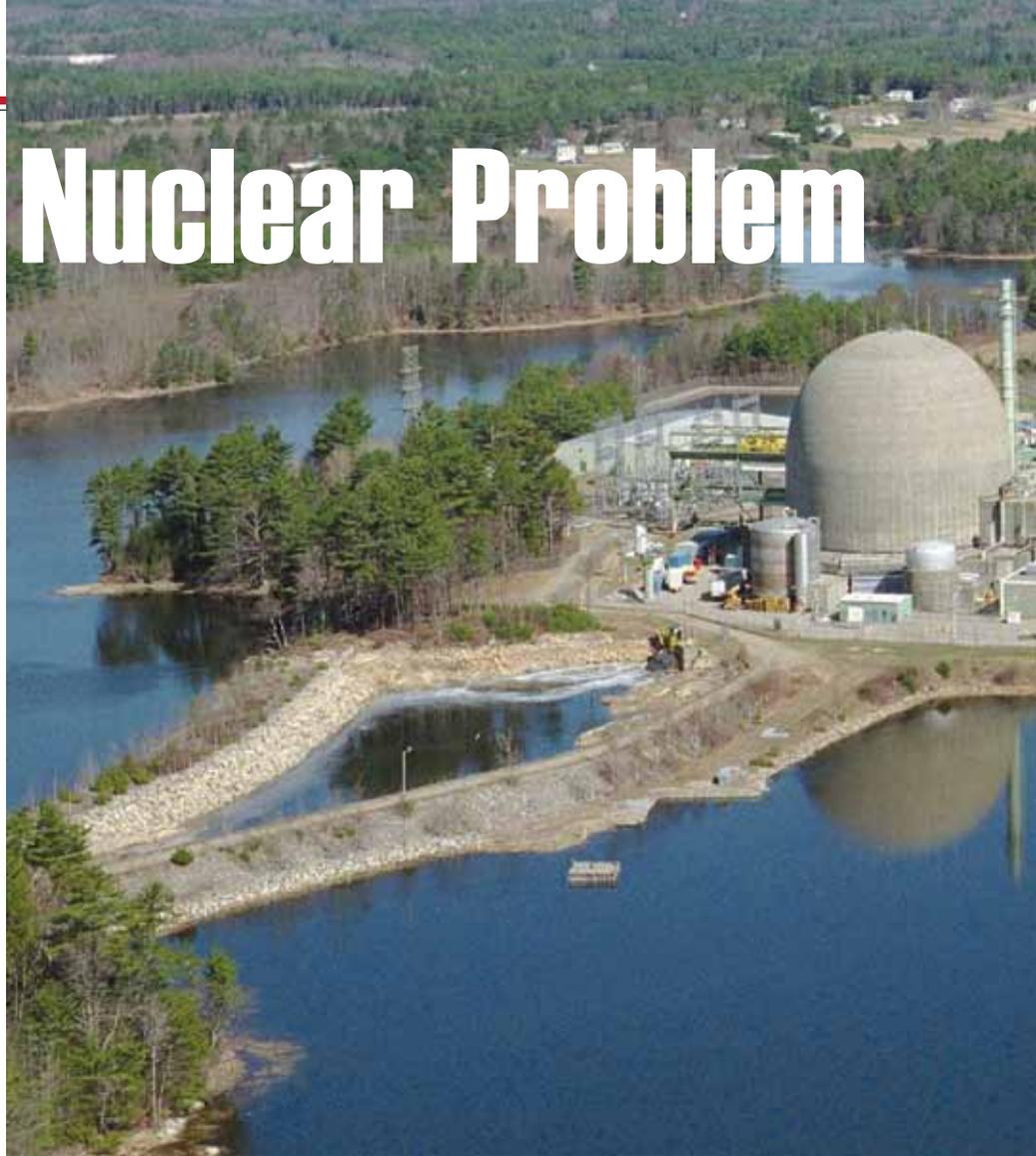
There are 104 nuclear reactors in 31 states, and those facilities are storing about 70,000 tons of spent nuclear fuel, all in temporary storage facilities awaiting a safe, permanent solution. The average plant in this country generates about 20 tons of waste a year.

The plan was to begin storing the material back in 1998 at Yucca Mountain in Nevada, a facility in the windswept desert just 100 miles from the glittering lights of Las Vegas. It was developed by the federal government at a cost of about \$12 billion.

The plan, however, was never popular in Nevada because of fears of seismic activity, its proximity to a large population center and other technical issues. Those concerns led to a decades-long debate over how, when and why it should or shouldn't open.

Under the George W. Bush administration, the U.S. Department of Energy (DOE) had finished structural work on the site and submitted the license application to the Nuclear Regulatory Commission (NRC) for approval to start accepting nuclear waste.

That process came to a halt when DOE under the Obama administration decided in March 2010 to withdraw the license application from the NRC. Over the last year, several lawsuits have challenged the authority of DOE to do that. Meanwhile, the NRC quietly dodges the question of whether it will make a final decision on



the license application.

The strong opposition to Yucca Mountain is in sharp contrast to the welcoming attitude found in New Mexico. About 40 years ago, the small community of Carlsbad in the southeastern part of the state volunteered to open its underground salt bed to store some of the nation's nuclear waste.

This geological formation, which is more than 250 million years old, underwent 20 years of scientific study and planning before opening for business in 1999. The site—called the Waste Isolation Pilot Plant or WIPP—has fulfilled the city's hope for new jobs and has boosted the economy in this remote area. Today, Carlsbad, with a population of about 30,000, has one of the lowest unemployment rates in New Mexico and stable tax revenues, something many cities and towns across the country might envy. Now the community hopes the demise of Yucca Mountain could make things even better for Carlsbad.

Under the 1982 Nuclear Waste Policy Act, the federal government was supposed to trans-

port waste to Yucca Mountain in 1998. With it highly unlikely Yucca will ever open, many wonder if the waste will ever find a permanent home.

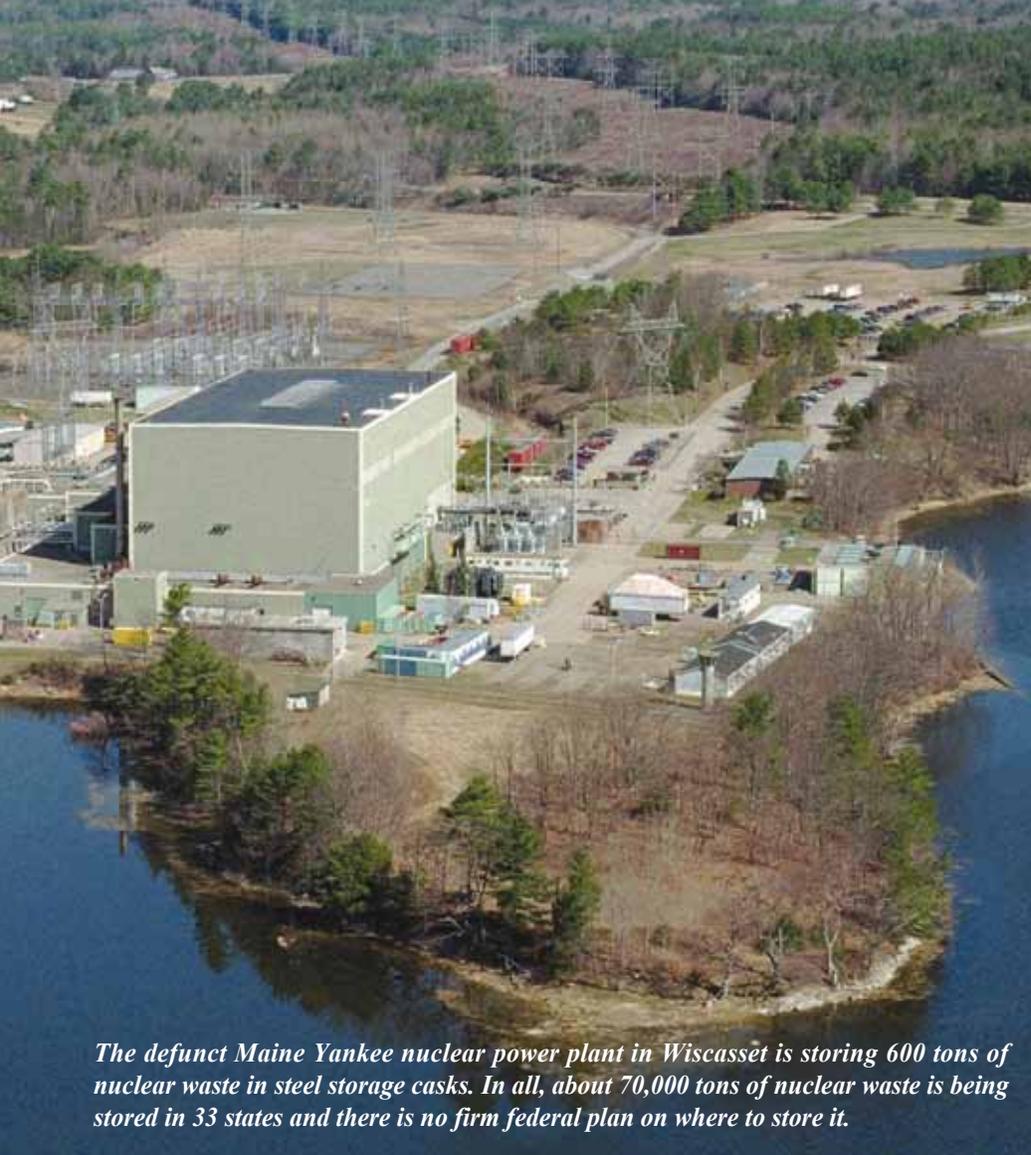
As policymakers debate where the waste will ultimately go, 33 states—Colorado and Maine are storing waste but no longer have operating nuclear plants—are left with a very big problem. They've paid about \$24 billion into a federal fund over the past 30 years to develop a safe place to store potentially hazardous nuclear waste, which is largely spent nuclear fuel rods. But at this point they have nowhere to send the waste and nothing to show for their money.

Now with the federal government's slow pace at resolving the nuclear waste problem and the devastating events in Japan, the future development of any new nuclear power plants is uncertain.

CHANGING ATTITUDES

The nation's nuclear power plants currently provide about 20 percent of our energy needs.

Melissa Savage tracks nuclear issues for NCSL.



The defunct Maine Yankee nuclear power plant in Wiscasset is storing 600 tons of nuclear waste in steel storage casks. In all, about 70,000 tons of nuclear waste is being stored in 33 states and there is no firm federal plan on where to store it.

ASSOCIATED PRESS/ROBERT F. BUKATY

Most of these operational reactors were designed and built 40 years ago. Illinois and Pennsylvania rely heavily on nuclear power and together produce one-fifth of the total nuclear power generated in the United States. They also have the most waste stored in their states—8,450 tons and 6,200 tons, respectively.

Maine turned to nuclear in the 1970s. The Maine Yankee plant, located on Bailey Point Peninsula in Wiscasset, generated power from 1972 to 1996. The plant was shut down permanently in August 1997, and the decommissioning process started. Today, Maine Yankee has been reduced to storing about 600 tons of waste in containers sitting on a concrete pad. Although there are no functioning nuclear reactors in Maine, there is plenty of waste waiting for a home.

In the states where nuclear plays a role in the overall energy supply, the waste remains in on-site storage. The spent material spends about five years in the pools before it can be transferred to dry steel casks.

The Nuclear Regulatory Commission is

responsible for regulating both spent fuel storage pools and dry cask storage. Both storage types undergo rigorous tests to ensure safety from a variety of natural disasters and attacks. In light of the events unfolding in Japan, the NRC announced in March that it plans to conduct a 90-day safety review of nuclear power plants, including storage of spent fuel.

Thirteen states have laws prohibiting energy utilities from even considering adding new nuclear reactors until the waste problem has been solved. Lawmakers passed many of these laws decades ago when states could afford to take a wait-and-see approach.

Early this year, some states were moving forward with plans to increase their nuclear capacity even before solving the waste problem. In Georgia, Southern Company has plans to build two new reactors near Waynesboro. In addition, Illinois and West Virginia lawmakers have debated repealing their nuclear bans. Also, two bills in Vermont would lift the requirement that the legislature approve any extension of a nuclear plant's operating permit. It's unclear

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how events in Japan may now affect these plans.

In Minnesota, Xcel Energy submitted a request to the Nuclear Regulatory Commission to extend the licenses of two 38-year-old reactors at Prairie Island until 2030. Currently, they are licensed to operate until 2013 and 2014. The nuclear waste is stored at the site in steel casks. Until recently, Minnesota law—passed in 1994—prohibited even talking about increasing nuclear capacity.

But in February, the Legislature passed a bill to reverse the moratorium. Senate Majority Leader Amy Koch co-sponsored the legislation. “Minnesota should not move into the future with one hand tied behind its back,” she says.



SENATE MAJORITY LEADER
AMY KOCH
MINNESOTA

Under the new law, the Public Utility Commission may issue a certificate of



REPRESENTATIVE
JOYCE PEPPIN
MINNESOTA

need to build new reactors or expand existing facilities.

Representative Joyce Peppin, is careful to point out that passing the legislation and lifting the moratorium “doesn’t mean there’s going to be a new power facility tomorrow.”

In fact, Governor Mark Dayton has said he will not sign the legislation unless it’s amended to require a permanent federal solution to the waste storage problem before a new reactor could be built in the state, probably putting off any new construction for decades.

FEDERAL COMMISSION

While state legislatures debate the safety and future of adding nuclear reactors to the grid, the Obama administration is hanging its hopes on the work of the Blue Ribbon Commission on America’s Nuclear Future, which has been given the task of solving the storage problem along with

ANOTHER APPROACH TO NUCLEAR WASTE



The French do it, China is thinking about it, but not the United States.

A facility on the northern coast of France known as La Hague can reprocess nuclear fuel from 80 to 100 nuclear reactors annually. Once nuclear fuel has been discharged from a reactor, about 96 percent of it can be recycled and used in a reactor again. The reprocessing or recycling of this spent fuel reduces the amount of waste significantly.

The French get about 80 percent of their electricity from nuclear power and have been recycling the fuel safely for decades. Not only does La Hague reprocess fuel from the French reactors, but also from other countries such as Japan and Germany.

France, like the United States, has struggled to find an adequate geologic repository for spent nuclear fuel. The difference is that the United States doesn't recycle and has a bigger storage problem to solve.

In the late 1970s, the United States successfully developed the technology necessary to recycle nuclear fuel. Citing fear of nuclear weapons proliferation, however, President Jimmy Carter banned the reprocessing of commercial spent nuclear fuel. In 1981, President Ronald Reagan lifted the ban but no funding or subsidies were provided to push the industry forward.

the DOE. It is expected to issue an interim report this summer and a final report in January.

The commission has spent the last year listening and learning. Composed of former lawmakers, energy company executives and scientists, the group led by Brent Scowcroft and Lee Hamilton has heard testimony on all aspects of the future of nuclear energy in the United States. Ask anyone linked to the commission and they'll tell you it is considering way more than just the storage problem. The commission has heard about storage, transportation, recycling and the overall future energy needs of the country. It will make a recommendation on storage, but will not propose a substitute to Yucca Mountain. It's also unclear how the crisis in Japan caused by the earthquake and tsunami will affect its recommendations.

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—FORMER NEW MEXICO REPRESENTATIVE JOHN HEATON

Earlier this year, members of the commission visited Carlsbad to tour the WIPP facility. They heard from people in the community pleased by what WIPP has brought them and upbeat presentations on how the facility is ready to pick up where Yucca Mountain left off.

The governor and the attorney general are supporters and have promised to consider results of scientific studies to ensure the safety of the facility before increasing capacity and accepting additional waste. Only a small portion of the site is being used, and by some estimates WIPP could store all of the nation's nuclear waste for the next 100 years.

Former New Mexico Representative John Heaton was born in Carlsbad. He thinks the facility could start accepting the waste that was to go to Yucca within 10 years and, more important, "save the United States \$30 billion and 30 years."

"If we base the timeline for identifying another geologic storage facility on the Yucca experience," Heaton says, "we're talking about not being able to move waste into storage until

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2040. Not to mention the expense of conducting the identification process and all the studies and environmental impact statements."

Heaton says WIPP has space available.

"Because of the Japan event, it's now apparent our over-packed cool-down pools may create the highest risk," he says. "Mitigating that risk will require unpacking those pools, placing that used fuel into dry-cask storage and moving it from the densely populated areas into an isolated central interim storage facility as soon as feasible. Carlsbad has 2-square miles designated for this purpose."

Heaton thinks expanded use of WIPP could easily work through the Nuclear Regulatory Commission's licensing process within 10 years.

The process is shortened considerably since the public is supportive and "you won't have the same political challenges in New Mexico that you had in Nevada."

Additionally, the facility could be used as an interim storage spot. Having this as an option would help not only commercial reactors looking to increase their storage capacity, but also federal facilities such as the national labs with waste of their own that needs to be stored.

The Blue Ribbon Commission not only took tours over the last year, it also heard expert testimony.

"It was important that members of the commission hear the state legislative perspective," says Maryland Delegate Sally Jameson about her experience regarding the nuclear power plants in her district. "We are in a position of developing energy policy in our states, and we at least need to be able to consider all sources."

"Nuclear might not be the right fit for every state, but it's important that we are able to have it as a possibility," she says. "We can't until we start making real progress on finding an answer to the storage question."



DELEGATE
SALLY JAMESON
MARYLAND



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—IOWA SENATOR JOE BOLKCOM

LAWMAKERS REACT

But now, since the events in Japan, what will happen to this renaissance in statehouses?

Iowa lawmakers were debating a bill to pave the way for additional reactors when the earthquake and tsunami hit Japan. Iowa Lieutenant Governor Kim Reynolds, asked if that might change the debate, says, “No, I hope not. I think it’s a different day. Technology is different. We’re looking at smaller facilities across the state of Iowa, so there’s a lot of opportunity there. And we need to continually research that.”

Since building a new nuclear reactor takes a lot of time, she adds, working through the regulatory process ensures a slow, careful approach considering safety and security along the way.

Iowa Senator Joe Bolckcom is not so sure.

“This thing appears to be on a fast track,” he says of the legislation. “But I don’t think there’s any real rush. Clearly what’s happened in Japan gives people pause for the safety and, frankly, the liability for who is going to pay when there are problems.”

In Minnesota, where legislation had passed the Legislature and was on the way to the governor, Senate Majority Leader Amy Koch, sponsor of the bill, believes the legislation should not be derailed by events in Japan.

“This law doesn’t build a nuclear plant, this just puts it on the table for discussion.”

Public attitudes nationwide seem to have shifted only a little as a result of the events in Japan.

Three years ago, a Harris Interactive Media poll indicated 49 percent of respondents favored building new nuclear plants while 32 percent were opposed. At the end of March, a similar poll found 41 percent supported new nuclear plants and 39 percent opposed.

As the people of Japan work to rebuild and clean up after the earthquake and tsunami in March, the world is watching.

For many policymakers in the United States, the damage to the Fukushima Daiichi nuclear plant raises a troubling question: Could the same thing happen here?

The answer is crucial because during the last few years the nuclear industry in the United States has experienced something of a renaissance. States have been looking at nuclear energy once again as a way to meet ever expanding energy needs with clean, carbon-free sources. Many think our future energy demands can’t be satisfied without including nuclear.

Even though the Obama administration has closed the door on Yucca Mountain as a geologic repository for nuclear waste, the U.S. Department of Energy has supported expansion of nuclear power. States with laws preventing utilities from even considering new nuclear plants until a permanent storage facility is identified have debated—at least before Japan’s disaster—legislation to repeal those statutes.

Although it’s difficult to say with certainty

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KIM REYNOLDS

whether a similar catastrophe in could happen in this country, the nuclear industry is careful to point out that it is always learning, just as it did following the terrorist attack on Sept. 11, 2001.

The industry at that time scrutinized the overall security and safety of plants, reactors and waste. This led to upgrades and changes to operator and redundancies in procedures to ensure, for example, uninterrupted electrical power to each plant. Today, the industry believes nuclear plants are extremely safe and secure.