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Inside Moniz's mission to reshape the Energy Department

Politico

March 25, 2016

The clock is ticking down on Ernest Moniz's three-year campaign to reshape the Energy Department's mammoth bureaucracy.

Even as he helped negotiate last year's Iranian nuclear deal and pressed the global effort to fight climate change, the energy secretary has sought to streamline the agency and improve how it oversees the national labs and approves new projects.

Unlike his predecessor, Steven Chu, who ran a department flush with \$35 billion in stimulus funding, Moniz has faced the budget sequester, a divided Congress and an agency bruised by bad press after the Solyndra solar imbroglio. And he's had to cope with that all while grappling with the still-unsolved problem of where to store much of the nation's nuclear waste.

"Some of these things are bigger and longer term than anybody who's in for a political term has the time and/or energy to deal with," said Dan Arvizu, who stepped down as director of the National Renewable Energy Laboratory last fall. "So, you pick your battles, pick what you're gonna do — your two or three things — and then recognize that your clock's going to run out before you know it."

Certainly Moniz, a high-ranking DOE official in the Clinton administration, entered the job knowing the challenges he faced.

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John MacWilliams, now a top official at the agency, recalled meeting with then-nominee Moniz at his Massachusetts Institute of Technology office in April 2013, while Cambridge was still under "shelter in place" restrictions after the Boston Marathon bombing.

"I walked in and every whiteboard in the office was filled with a detailed depiction of what became the reorganization of the department," MacWilliams said. By July of that year, Moniz unveiled his reorganization plan to the agency staff.

Many current and former DOE officials said Moniz's biggest agenda item was a relatively unheralded one: creating the role of undersecretary for management and performance. That job focused on what Moniz and his advisers saw as their most difficult task: project management.

DOE projects tend to come in one size: massive, not only in their dimensions but in delays and cost overruns. Project management problems have kept the department on the Government Accountability Office's infamous High Risk List for a quarter-century, soured its relationship with Congress and frustrated the network of research labs that report to it.

The Management and Performance office went over well with the White House, a former DOE official said. It also appealed to lawmakers on Capitol Hill, who hoped it might address the agency's terrible record on nuclear waste cleanup.

Many of the frustrations over waste stem from the political stalemate over the Yucca Mountain project, as well as criticisms that DOE's weapons cleanup mission has progressed at an painfully slow pace, allowing costs to spiral higher.

"Everyone thinks Moniz is so great, but he will be leaving the biggest mess I have ever seen for his successor," one former senior DOE official said in an

email. “By the time the real liability for nuclear waste is revealed, the cost estimate for refurbishing H Canyon [a nuclear chemical separations plant] is revealed, and every other mess he has left behind, Moniz will likely be the president of some prestigious university somewhere.”

The official added: “I wonder if after a while all we’ll be doing is paying fines and not doing any research, cleanup or management of fuels and [high-level waste].”

One conservative critic of the agency says waste cleanup, called environmental management, is DOE’s single most important task.

“And the spectacularity with which it fails at it should give pause to anyone supporting any DOE activity beyond that, as far as I’m concerned,” said Jack Spencer, an executive with the Heritage Foundation’s Institute for Economic Freedom and Opportunity. “DOE should be focusing on that mission and not worrying about reducing the cost of solar panels, nuclear reactors or anything else that the market is perfectly capable of taking care of.”

Much of the agency’s work to overhaul its project management falls to MacWilliams, now an associate deputy secretary focused on tackling some of DOE’s thorniest quagmires. He is also the agency’s first chief risk officer.

A former investment banker who worked at Goldman Sachs and JP Morgan Partners, MacWilliams created a risk committee stacked with some of the agency’s most senior project managers — people, he said, who know the “ground truth.”

But some of those decisions have generated political heat, such as the effort to defund the MOX project in South Carolina.

Moniz’s confirmation was held up for several weeks while Sen. Lindsey Graham (R-S.C.) sought assurances about the administration’s commitment to the project, which would process weapons-grade plutonium into nuclear fuel. But after Moniz came to power — and the release of several

studies — he had to explain that the MOX project, which was billions of dollars over budget and decades behind schedule, was a mistake. The state has since sued DOE for not collecting nuclear material from the unfinished facility on time and this week Republican Gov. Nikki Haley pressed Moniz to halt a shipment of weapons-grade plutonium from entering South Carolina.

Moniz and MacWilliams have pushed for a cheaper alternative to move the plutonium out of the state about two decades ahead of schedule. But that would likely mean laying off of hundreds of contractors, and the state opposes it.

To MacWilliams, MOX is emblematic of a flawed DOE review process. It was a first-of-its-kind project that was approved with only 25 percent of its design completed, so it wasn't a surprise when it soon fell behind its deadlines. DOE's new Risk Committee now requires designs to be 90 percent completed for large nuclear projects, and forces managers to address the panel at each critical decision point, so MacWilliams said these problems are unlikely to recur. "We'll make mistakes but not these kinds of mistakes," he said.

The goal, Moniz says, is "staying ahead of the projects before they turn into big problems" — addressing "little alligators" before they turn into "big alligators," as he is fond of telling his staff.

While it's critical to make structural changes to how projects are reviewed, Moniz told POLITICO, federal spending is another issue.

"We have the funding to make serious progress," he said in an interview in his office. "We don't have all the funding we could use effectively to fast-track projects and ultimately save life-cycle costs substantially."

However, the Senate hasn't confirmed either of the people Obama nominated for the Management and Performance undersecretary post.

Another priority for Moniz has been to improve relations with the 17 national labs — some of which felt they had been pitted against each other under Chu — and improve their collaboration.

“Before we leave here, it is our intent to do a major integrative report on the laboratories,” Moniz said. “That will be part of providing something that we can hand over to the next administration.”

The labs have operations in 14 states, so their directors can be some of Moniz’s best salespeople with the Senate if the department can gain the labs’ trust and generate results.

“You have really smart people and for a while they felt like they weren’t in the circle of trust,” said Jonathan Levy, who helped manage the transition between the two secretaries and eventually became a deputy chief of staff to Moniz.

The labs have long felt put upon by both Congress and DOE headquarters — “One of us gets cancer, and all of us get chemotherapy,” was how one former director of Sandia National Lab was known to describe the backlash from Washington. And although Chu had led a national lab himself, he didn’t embrace the agency bureaucracy the way Moniz has, said Arvizu, who says he’s briefed eight energy secretaries during his roughly 40 years in the lab system.

“Steven Chu’s a brilliant scientist. Certainly though, one of his favorite things is not to manage a bureaucracy,” Arvizu said. Where Moniz uses collaboration, Chu unintentionally fostered a competition that was “absolutely destructive” for the labs.

Moniz also instituted a tonal change that was “huge” among lab employees by insisting that no one at DOE headquarters call them “contractors,” preferring instead “strategic partners,” Arvizu said.

Arvizu said the lab directors see their relationship with headquarters as better than ever, but they fear that ties with Washington will erode under the next secretary. So the lab directors are looking to make permanent the councils and meetings that have been set up under Moniz.

“Institutionalize,” he said, has “been the watchword for the last year or so.”

Moniz is similarly boastful of how relations have improved with the labs.

“If you look out there you will see that the laboratories are doing a lot more work together now, collaboratively trying to be more than the sum of the parts,” he said.

Moniz has also tried to bring together the Energy Department’s agency’s “applied” and basic science offices, and he executed a long-expected merger between the science and energy undersecretaries.

That built on Chu’s efforts, said Brandon Hurlbut, Chu’s former chief of staff, who is now consults on energy-sector investing. But Chu also had to focus on carrying out a new president’s priorities and rolling out billions of stimulus dollars.

Also, changing the relationship between the applied and basic research runs counter to traditional roles inside the agency bureaucracy, said David Garman, who served as an energy undersecretary under George W. Bush, in an email.

“[T]he renewable energy interests, the nuclear interests, and the fossil interests each like having their own assistant secretary as their inside-the-administration cheerleader,” Garman said. “They would all probably oppose a rational reorganization, and they would incite their allies in Congress to fight it as well.”

Garman argues that DOE offices should be organized by energy use, like transportation or buildings, rather than by energy source, such as nuclear, and he helped write a proposal for DOE reform in 2013.

Though he praised many of Moniz's changes, Garman argued that both Obama's energy secretaries took a path of least resistance.

"Neither Secretary Chu nor Secretary Moniz wanted to take that fight on, so instead they implemented ARPA-E, the Innovation Hubs, the Energy Frontier Research Centers, and the Lab Councils while launching crosscutting initiatives on issues such as grid modernization," he wrote. "These are essentially workarounds that overlay the organizational stovepipes. Is it wasteful and duplicative?"

Yes. But it avoids upsetting the stakeholders and is thus politically convenient."

Savannah River Nuclear Solutions to build advanced manufacturing center on USC Aiken campus

Aiken Standard

March 24, 2016

[LINK](#)

Savannah River Nuclear Solutions, or SRNS, has announced it will develop an advanced manufacturing center on the campus of USC Aiken.

According to a news release, the new laboratory space will help promote partnerships between industry, academia and government in the creation and implementation of new technology.

The Aiken Standard reported last month that three Aiken County locations — USCA, the old Aiken County hospital/government complex and the Aiken Mall property — were possible landing spots for the facility that would employ roughly 110 staffers.

SRNS, the Savannah River Site's management and operations contractor, also operates the Savannah River National Lab, or SRNL.

The proposed 70,000-square-foot space will include chemistry labs, engineering fabrication labs, high bay and industrial work space and staff offices, the release stated.

"The Department of Energy is pleased with this new opportunity in advanced manufacturing. It is our duty to find smarter and safer ways to address the environmental management, national security and clean energy needs of our nation. It is only through the combined use of new technologies that these duties can be fulfilled," said Savannah River Site Manager Jack Craig in the news release.

Will Williams, president and CEO of the Economic Development Partnership, said in December that his group was interested in partnering with SRNS to develop a center and locate the facility in Aiken.

Williams said last month once the announcement has been made, SRNS is expected to begin moving forward with the permitting and bidding process, with hopes of choosing and occupying a facility by 2018.

"On a scale, this has the potential to be as impactful to Aiken County as Bridgestone was in 1997."

For an expanded version of this story read Friday's edition of the Aiken Standard.

Gov. Haley to feds: Stop sending nuclear material to S.C.

Aiken Standard

March 23, 2016

[LINK](#)

Fearing that her state is becoming a “permanent nuclear dumping ground,” Gov. Nikki Haley told the federal government Wednesday to either stop Japanese shipments of plutonium from going to the Savannah River Site or reroute the plutonium so that it doesn’t enter South Carolina.

Reports surfaced earlier this week that ships carrying 331 kilograms of weapons-grade plutonium from Japan will soon dock at the Charleston Naval Weapons Station before the plutonium is sent about 120 miles to SRS near Aiken.

The state’s acceptance of the material is the latest in a series of recent and upcoming shipments to SRS where the plutonium will be stored with no foreseeable pathway out of the state.

“It is imperative to the safety of our citizens and our environment that South Carolina not allow this to happen,” Haley wrote in a letter to U.S. Energy Secretary Ernest Moniz.

She went on to remind Moniz that South Carolina has already sued him and others for missing a deadline at the SRS Mixed Oxide Fuel Fabrication Facility.

The facility is part of the nation’s MOX program, which is designed to meet an agreement with Russia by converting 34 metric tons of weapons-grade plutonium into commercial nuclear fuel. The Japanese plutonium does not fall under the MOX program.

Per a 2003 agreement signed by the state and Department of Energy, either 1 ton of the MOX plutonium was supposed to be processed through the facility, or removed from the state by Jan. 1, 2016.

Neither happened, which is why, according to the agreement, DOE was supposed to begin paying South Carolina \$1 million a day. After a month of

waiting, the state filed suit on Feb. 9. DOE has yet to pay or respond to the suit.

“I was very troubled to learn that now in the midst of this lawsuit and before DOE has even filed a response, DOE is in the process of shipping upwards of 331 kilograms of defense usable plutonium from Japan to SRS,” Haley said.

Acceptance of the plutonium was outlined in President Barack Obama’s fiscal 2017 budget proposal. The proposal calls for the “removal of all HEU (highly-enriched uranium) and plutonium from Japan’s Fast Critical Assembly” before the start of the Nuclear Security Summit on March 31.

The state’s receipt of foreign nuclear materials isn’t expected to stop anytime soon. A December 2014 presentation on the U.S. Global Threat Reduction Initiative, which launched in 2004, outlined plans to remove an additional 1,431 kilograms of plutonium and uranium from foreign countries by 2022, with expectations for SRS to see most, if not all, of the material at some point.

“I think there’s definitely a trend we’re seeing where SRS is receiving foreign materials for economic reasons,” said Tom Clements, the director of watchdog group SRS Watch. “Unfortunately, there’s really no exit out of South Carolina, which makes it an environmental issue.”

While Clements and other watchdogs across the state have denounced SRS being used for additional storage, pro-nuclear groups near the site have lauded its capabilities.

Mike Johnson, the executive director of Aiken-based Citizens for Nuclear Technology Awareness, said bringing these materials to SRS is the right move because it’s the safest place for them. However, the federal government should continue seeking disposal options, Johnson said.

“It’s important for the Department of Energy to commit to a pathway out of South Carolina,” he said.

City representatives visit Washington, D.C.

Local 8 News

March 23, 2016

[LINK](#)

City representatives traveled to Washington, D.C., to meet with members of the Idaho congressional delegation to discuss issues affecting eastern Idaho.

They also met with representatives from the Department of Energy, Department of Homeland Security and U.S. Nuclear Regulatory Commission.

One of the main topics that was discussed at Wednesday's meeting was how well the environmental management clean-up mission is operating.

Mayor of Idaho Falls Rebecca Casper said it turns out some of the things we do here in Idaho are valued nationally and internationally.

"We've created a facility that does good work, we know this is a national asset. We can process waste more efficiently and save the country more money," Casper said.

Casper also touched upon how important nuclear energy is and how Idaho National Laboratory is playing a key role.

"Sen. Mike Crapo sponsored a bill that was passed 87 to 4, which is extremely unmeasurable bipartisan support," Casper said.

The bill would increase nuclear research efforts at the Idaho National Laboratory and other national labs through new partnerships between the public and private sectors.

Casper also said, "It's actually worth spending a little bit of resource on flights to send city leaders to Washington, D.C., because our support matters in terms of keeping projects and programs viable."

She also explained how these projects and programs that employ eastern Idaho citizens.

"We want to make sure that they are vibrant and robust, so that families can continue to thrive here in Idaho on the economy that is created by all the programs," Casper said.

House urges AG to let spent fuel in

Post Register

March 23, 2016

[LINK](#)

BOISE — A resolution calling on Idaho Attorney General Lawrence Wasden to issue a waiver that would allow Idaho National Laboratory to bring in a shipment of spent nuclear fuel has passed the House and will be taken up next in the Senate.

An earlier shipment slated to come to INL was blocked and rerouted to another lab because the U.S. Department of Energy failed to meet cleanup deadlines for the desert site. Wasden has indicated he won't waive the DOE's obligation to meet the terms of the 1995 Settlement Agreement before it brings in small quantities of waste for research purposes.

The resolution is being carried by Rep. Jeff Thompson, R-Idaho Falls. While Thompson said the intent is to support the attorney general during negotiations with the DOE, the resolution "strongly urges" Wasden to reverse course and issue a waiver to allow the second shipment into the state before the Integrated Waste Treatment Unit is functional, which would go against the agreement.

The waiver approach is supported by Gov. C.L. "Butch" Otter, who said at a news conference Tuesday he hopes the Legislature's message will be received.

“I hope the legislative support for that will make a turn for the better, because we’ve already lost one shipment,” he said.

Otter said the shipment offers hope for the future.

“The world is going to beat a path to our doorstep for our intellect and the research and development that we do. That could be bigger than the Idaho potato,” Otter, the former J.R. Simplot Co. executive, said.

Wasden declined to comment on the resolution.

Rep. Dell Raybould, R-Rexburg, said it’s time to let the spent fuel in.

“They need it for the research to take care of additional waste that comes from our nuclear reactors. ...Let’s encourage the attorney general to get back into negotiations,” he said.

The bill was opposed by Democrats who objected to it being introduced late in the session and rushed through, with no opportunity for the public to comment on the resolution.

“It may be the greatest idea since sliced bread to send this fuel to INL,” argued Rep. Ilana Rubel, D-Boise. “I don’t think that’s the issue here. I think it’s incredibly inappropriate for us to be taking these hot-button issues, waiting until the end of the session, knowing that they’re very controversial, and then using the time crunch as an excuse to avoid public input.”

Thompson said the issues were already well-known.

“This issue has been debated almost 25 years. ... We’ve debated this thoroughly at public events,” he said.

Government needs to thoroughly explain nuclear fuel cycle project to U.S.

Chicago Tribune

March 23, 2016

[LINK](#)

The following editorial appears in Wednesday's Yomiuri Shimbun:

The nuclear fuel cycle project, which reuses spent nuclear fuel from nuclear power plants, is the main pillar of Japan's nuclear power policy. In view of the serious energy situation, it is essential to make efforts to win understanding on this issue both at home and abroad.

U.S. Assistant Secretary of State Thomas Countryman has raised doubts over Japan's nuclear fuel cycle policy, stating at a Senate Foreign Relations Committee hearing, "I would be very happy to see all countries get out of the plutonium reprocessing business."

He expressed a negative view toward moves by countries such as China and South Korea to consider a nuclear fuel reprocessing plan, saying such moves would raise concerns about nuclear security and nonproliferation.

The United States will host the Nuclear Security Summit in Washington late this month. The remarks by the U.S. assistant secretary of state apparently aim to keep China and South Korea in check by stressing the U.S. stance of leading the nuclear nonproliferation drive.

The existing Japan-U.S. nuclear power cooperation agreement that entered into force in 1988 exceptionally allows Japan to reprocess spent nuclear fuel and enrich uranium.

Under strict inspections by the International Atomic Energy Agency, Japan has been promoting the peaceful use of nuclear materials and contributing to the international nuclear nonproliferation regime. The agreement is based on this record.

The agreement will expire in July 2018. We hope the Japanese government will do its utmost to help keep the accord's provisions intact.

Japan's plutonium for fuel

Japan possesses about 47.8 tons of plutonium, which some people point out is equivalent to about 6,000 nuclear weapons. However, this plutonium is stockpiled for reuse as fuel.

China criticizes Japan for possessing enough plutonium "to produce a large number of nuclear weapons." Is China, which keeps the actual situation concerning its nuclear weapons secret and is reportedly enhancing its nuclear capability, in a position to criticize Japan?

Following the expiration of the nuclear power cooperation agreement with the United States, South Korea signed a new accord in June last year. Washington has not granted rights to Seoul that are similar to the ones it granted to Japan.

In response to North Korea's nuclear development, the idea of possessing nuclear weapons is smoldering among the South Korean public. The United States is apparently concerned that tensions would rise on the Korean Peninsula if Seoul started using plutonium.

The challenge Japan currently faces is the practical application of the nuclear fuel cycle. If spent nuclear fuel is not reprocessed, storage pools of nuclear power plants will be filled with spent nuclear fuel, and those plants will become inoperable.

The reactivation of nuclear power plants must be accelerated and a so-called pluthermal project, in which plutonium is burned in normal nuclear power plants, must be put on track. Shouldn't the Monju fast-breeder reactor also be reactivated?

During the Nuclear Security Summit two years ago, Japan agreed to hand over surplus nuclear materials to the United States. A ship carrying such plutonium recently departed from Japan. This is a good opportunity for Japan to emphasize its strict control of nuclear materials.

Real Consent for Nuclear Waste Management Starts with a Free Market

Heritage Foundation

March 22, 2016

[LINK](#)

Getting nuclear waste management right is important if America is to continue benefitting from nuclear energy, which currently supplies 19 percent of the nation's electricity. The Department of Energy is seeking to define a consent-based process for siting interim and long-term storage facilities for commercial nuclear waste. Yet the faulty system of misaligned incentives to manage commercial waste remains in place, muddling not only the goal of attaining true consent, but also long-term storage. The nuclear industry is capable of, and should be responsible for, nuclear waste management. This naturally allows "consent" to take whatever shape communities or states deem best, without government coercion, and opens the possibility for innovation. The government should maintain the role of regulator. Finland, as the first country to license construction of a long-term repository, provides a good example.

KEY POINTS

- The Department of Energy (DOE) wants to develop a consent-based process to site nuclear waste facilities. Building interim storage does not support the goal of long-term storage and disposal for nuclear waste under the current broken system.
- A true consent-based process is not primarily politically brokered and managed, but a market-based process in which costs and benefits are negotiated by companies and communities and the nuclear industry, and the government fulfills its function as an unbiased regulator.
- The DOE plan is a stop-gap measure that would eliminate a powerful incentive for the government to fulfill its long-delayed promise to manage the nuclear waste for which it is legally responsible under the Nuclear Waste Policy Act.

- Congress should install the greater policy reforms necessary for nuclear waste management, namely establishing the nuclear industry's responsibility to manage its nuclear waste. This has been done in Finland with good results.

Last December, the Department of Energy (DOE) finally announced the next step in its plan to manage nuclear waste, as roughly outlined in its 2013 Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste.[1] In what the DOE characterized as a “critical step,” it opened a public comment period to gather input on how a new consent-based siting process for nuclear waste facilities might work. The DOE has yet to offer any technical framework or guidelines for what a desirable site would be.

A DOE blog post announcing the comment period states that the goal of this next step is “the long-term storage and disposal of spent nuclear fuel and high-level radioactive waste,” which is important “so that we can continue to benefit from nuclear technologies.”[2] However, this “critical step” does not ultimately address the goal of long-term storage nor does it increase the likelihood that Americans will continue to benefit from nuclear technology, regardless of the DOE's intent. In fact, the DOE is largely settling for the much more short-sighted goal of addressing government liability for commercial nuclear waste.

A truly consent-based process is not primarily politically brokered and managed, but a market-based process in which costs and benefits are fully negotiated by companies and communities and the nuclear industry, and the government fulfills its appropriate function as an unbiased regulator.

Side-Stepping Long-Term Storage

The DOE's December announcement specifically called for comments to develop a consent-based process to site the nuclear waste facilities outlined in its Strategy, namely a pilot interim storage facility, a larger interim storage facility, and eventually a long-term geologic repository. The problem is that building interim storage as the DOE proposes does not support the DOE's

stated goal of ultimately building long-term storage and disposal for nuclear waste.

When it became apparent that the DOE would not be collecting waste according to the 1982 Nuclear Waste Policy Act's deadline, industry worked with the Nuclear Regulatory Commission (NRC) to develop interim storage in cooling pools and dry casks.[3]

Consequently, most operating and decommissioned nuclear power plants are currently functioning as what the NRC dubs an Independent Spent Fuel Storage Installation (ISFSI).[4] In other words, the U.S. already has an interim storage system.

The DOE's plan for two interim storage sites is even less necessary because the current temporary storage managed by nuclear power plants is safe. The NRC has determined,[5] and the DOE itself recognized in its announcement, that "nuclear waste is safe and secure in these locations." [6] As commonly designed in the U.S., [7] an interim storage facility is little more glamorous than an expensive concrete pad for large concrete-encased casks of spent nuclear fuel or keeping fuel in existing pools for longer than planned. The DOE's proposed consent-based siting of interim storage—as opposed to the current private storage on nuclear power plant sites—does not mark a big technological step forward, only sideways.

Despite the existing interim storage situation, the DOE explains that there are other reasons for building interim storage, namely that "the purpose of a pilot facility is to begin...developing and perfecting protocols and procedures for transportation and storage of nuclear waste." [8] Though individual routes may have unique challenges, there is no technical unfamiliarity with the logistics and safety measures necessary for transporting nuclear waste. The World Nuclear Association estimates that since 1971 there have been some 20,000 shipments of 80,000 tons of used nuclear fuel and high-level waste around America and the world without injuries or damage to property. This is just a very small subset of nuclear material transported by road, rail, and ship from the medical, research, agricultural, mining, and other industries.[9]

Instead, DOE interim storage primarily meets the bare minimum requirements to alleviate the government's liability under the Nuclear Waste Policy Act, as amended.[10] Under this congressionally approved nuclear waste management plan, the DOE was to begin collecting and disposing of waste in a long-term repository at Yucca Mountain in Nevada. Despite the faults of the Nuclear Waste Policy Act, Congress at least created a means of keeping the DOE accountable to its promise to build a long-term nuclear waste repository by setting a deadline for the DOE to begin collecting waste by 1998. Failure to do so has left the federal government (and therefore the taxpayer) with growing liability as nuclear waste stockpiles have grown. Nuclear utilities have successfully sued, and the federal government has paid out \$5.3 billion in damages. The DOE projects future liability to be \$23.7 billion (assuming a pilot storage facility by 2021); the nuclear industry estimates at least \$50 billion in liabilities.[11]

Government interim storage, as the DOE proposes, then accomplishes the main purpose of getting nuclear waste out of utilities' storage facilities and into a DOE storage facility in order to end government liability for uncollected waste. This stop-gap move would eliminate a powerful incentive for the government to make good on its long-delayed promise to manage and dispose of the nuclear waste it is legally responsible for under the Nuclear Waste Policy Act. And it would dampen incentive to install the greater policy reforms necessary for nuclear waste management, namely establishing the nuclear industry's responsibility to manage its nuclear waste.

Why Long-Term Storage Matters: Benefitting from Nuclear Technology

How the U.S. solves the nuclear waste conundrum is important because this has long-term implications for the American nuclear industry and, as the DOE stated in its consent-based-siting announcement, for America's ability to "continue to benefit from nuclear energy." [12]

Roughly 74,258 tons of spent nuclear fuel [13] are currently stored safely on site at nuclear power plants, awaiting permanent long-term disposal. This is in addition to defense-related and government-owned nuclear waste. No matter how waste may be processed or used in the future, more than one

permanent repository will almost certainly be needed.[14] Unless new solutions to long-term nuclear waste management are developed, it is hard to see how a U.S. nuclear industry could thrive with a whole third of its fuel cycle (nuclear waste management) left uncertain, untended, and under government control.[15]

In fact, this has already been an issue. The NRC suspended all licensing activities in 2012 as a result of a lawsuit challenging the availability and safety of nuclear waste on-site storage, which became increasingly important given the federal government's inability to collect waste. In September 2014, the NRC determined that dry cask storage was safe indefinitely and restarted licensing activities.[16]

How to Best Achieve Long-Term Storage: Realigning Incentives. One of the biggest hurdles to a long-term storage facility and robust nuclear industry is not developing a consent-based process, as the DOE prescribes it. Instead, it is that the federal government, per the 1982 Nuclear Waste Policy Act, is responsible for managing and disposing of the nuclear waste produced by private businesses.

No doubt, finding communities able and interested in housing a nuclear materials management facility is difficult not just in the U.S. but in other countries as well. However, at different times over the decades there have been, and currently are, communities that have expressed consent. Among them: Wyoming (Fremont County); New Mexico (the Waste Isolation Pilot Plant and Eddy-Lea County Energy Alliance); Texas (Waste Control Specialists); Utah (the Goshute Indian Tribe and San Juan County); and Nevada (Nye County, where Yucca Mountain is located). Four states currently operate low-level waste disposal facilities.[17] Internationally, local consent has been achieved by nuclear waste management companies in Finland and Sweden, even when consent was not initially given, by improved community engagement, compensation packages, and tax arrangements.

The bigger problem is the government assuming responsibility to manage commercial nuclear waste. Not surprisingly, the incentives for action (or more often inaction in the case of nuclear waste) within a government bureaucracy are far different than in the private sector. The natural outcome is that the federal government has done little to fulfill its legal obligation to collect and manage waste, let alone develop innovative technologies throughout the fuel cycle (from fuel fabrication and reactor design to waste management and disposal) that take waste management into consideration.

In order for long-term management and innovation to happen in a sustainable and dynamic way, waste producers (nuclear power plants) must have a vested interest and responsibility in waste management.

Responsibility for nuclear waste management appropriately belongs with nuclear power plant operators as an aspect of producing commercial power, in the same way that other industries, such as health care, mining, farming, or manufacturing, are responsible for managing their own wastes. If waste management were a dynamic part of the bottom line, the nuclear industry would naturally be interested not only in efficient nuclear waste disposal, but also in cost-effective pre-disposal choices, such as interim storage options, fuel types, and reactor technology. Removing that responsibility from the commercial industry, however, significantly diminishes, if not eliminates any incentive to develop such capabilities.

Making producers responsible for nuclear waste they produce does not, however, remove the government's role altogether. Whereas nuclear waste management should appropriately be the responsibility of nuclear power operators, predictable regulations protecting health and safety are the appropriate responsibility of the federal government. The federal government could also retain ownership of any decommissioned permanent repository, having guaranteed longevity to credibly take long-term possession and liability.[18] The extant nuclear industry would pay for any associated upkeep.

The Example of Finland

A system with appropriately assigned waste management responsibilities for both industry and government is not just a theoretical ideal. The common theme in successful commercial nuclear programs around the world is that nuclear waste producers are responsible for their own waste management.[19]

Finland's nuclear industry, which by law is responsible for siting, constructing, and paying for intermediate and long-term nuclear waste storage, is an example. Two Finnish nuclear power companies created the joint venture company Posiva to conduct research and development, and eventually locate, build, and manage a waste repository. Sites were selected, yet the community at Olkiluoto (the site where a construction license would eventually be approved) initially and overwhelmingly opposed the proposal. This position eventually reversed almost completely with the local council voting 20 to seven in favor of the repository in 2000.[20] In November 2015, Posiva became the world's first to have a license approved for the construction of a nuclear waste geologic repository.[21]

Key to Posiva's success were the economic benefits to the community of a repository; the community's ability to reject the facility siting; the proven track record of Finland's nuclear industry; local participation through many open seminars and meetings; participation in environmental studies; and the accessibility of Posiva and of regulators to the community.[22] Ultimately, Finland's success was based on properly aligning responsibility by putting producers in charge of waste.

Conversely, in America, it has become a well-established fact that the public has lost confidence in the DOE. Some believe a new agency or federal corporation could be "less vulnerable to political interference." [23] But shifting waste management responsibilities from one government entity to a new government entity would only give the appearance of progress. It would be equally as prone to failure because such an approach does not address the underlying problems of the current system.[24] America should, as in

Finland, give the responsibility of waste management to the nuclear industry, and of establishing health and safety guidelines to the government.

The Free Market Delivers True Consent-Based Nuclear Waste Management
What the DOE is trying to accomplish through its new consent-based process without the appearance of coercion, the market does naturally. Private companies cannot use force and are thus inherently self-interested in doing what is necessary to build mutual trust with a community through long-term outreach, education, and mutually agreeable terms of business.

When nuclear power companies are responsible for waste management, regulating agencies can then be seen as simply that—regulators with a disinterested goal of protecting health and safety. The government can more transparently play the role of a neutral referee with reliable information. But as both a regulator and repository operator, the government appears to have a bias. Information is easily deemed suspect or distorted due to a conflict of interest, perceived or otherwise.

When the government is appropriately assigned the role of regulator rather than nuclear waste manager, a potential hosting community can be a truly equal partner in negotiations with a waste management company. This is as opposed to the role of an inferior party submitting to a federal government's will to locate a repository or a community finding itself facing a David and Goliath battle.[25] A truly consent-based process is not primarily a politically brokered and managed one, but a market-based one where costs and benefits are fully negotiated and realized by companies and communities, and the government fulfills its appropriate function as an unbiased regulator.

Conclusion

The DOE approach to waste management is narrow, envisioning only interim storage and a geologic repository. Opening waste management to the nuclear industry opens the possibility of a diversity of options and a thriving domestic market. It also allows consent to be in the eyes of the beholder,[26] taking whatever shape local communities or states deem best. Government

management of nuclear waste has achieved neither public consent nor permanent waste disposal. While progress is slowly being made to determine the viability of a permanent site at Yucca Mountain, it is high time that Congress got to work mending the broken system. This will only become more important.

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