

# Overview

April 30, 2007

The Weekly Report to Members of the Nuclear Energy Institute



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## NRC Proposes Aircraft Impact Assessments for New Reactor Design

The Nuclear Regulatory Commission last week recommended that design certification for new reactors include an assessment of nuclear power plant capabilities to address deliberate commercial plane crashes.

The proposal would require applicants for a reactor design certification or a new-plant license to describe the design features, functional capabilities and strategies to avoid or mitigate the effects of a large aircraft impact.

"This is the most recent step in a broad, proactive effort to improve the security of reactors initiated by the NRC after Sept. 11, 2001," NRC Chairman Dale Klein said. A rule proposed in January that tightened security requirements for operating nuclear reactors did not include aircraft attacks in the design basis threat (DBT)—the maximum security threat against which commercial nuclear power plant security programs must be able to defend.

Adrian Heymer, NEI senior director for new-plant deployment, said the proposed requirements will ensure aircraft impact is addressed appropriately during the design certification process. Heymer said the approach is also in line with pending new-plant regulations dealing with other specific events that are beyond the design-basis threat.

"Many security-related activities at nuclear plants during the past five years have focused on mitigating the effects of unlikely events like aircraft impacts. This requirement will enhance the defense-in-depth security philosophy that is used in designing new nuclear facilities," Heymer said.

The proposed rule will be available for comment later this year.

## DOE Inaction on Loan Guarantee Program Frustrates Congress

Members of the House Energy and Commerce Subcommittee on Energy and Air Quality voiced frustration last week with the Department of Energy's failure to implement a loan guarantee program for energy projects that have no or low greenhouse gas emissions.

In April 24 testimony before the subcommittee, DOE Acting Undersecretary Dennis Spurgeon said the department is moving "aggressively" to finish the rulemaking on loan guarantees. He said DOE is working with the Office of Management and Budget to implement the loan guarantees for large projects like new nuclear plants. Spurgeon said Energy Secretary Samuel Bodman is "dedicated" to implementing such a program.

But subcommittee members across party lines grilled Spurgeon, asking him to explain why no loan guarantee has been issued since Congress passed the Energy Policy Act in 2005.

## Democratic Leadership Council Advocates Expanding Nuclear Power

The federal government should encourage the expansion of nuclear power, the Democratic Leadership Council said in its congressional agenda, released April 20.

“Nuclear power produces no greenhouse gas emissions, and new plant designs can produce power more safely and economically than first-generation facilities,” the council said in the agenda, “Opportunity in the 21st Century.” “Congressional lawmakers should support efforts to expedite the process of bringing the next generation of nuclear power facilities on line.”

The council cited an October 2006 energy report by its affiliated think tank, the Progressive Policy Institute, that called for more nuclear energy as part of a broad national strategy (see Nuclear Energy Overview, Oct. 23, 2006). To read the report, visit [www.dlc.org/documents/Energy\\_Platform-101606.pdf](http://www.dlc.org/documents/Energy_Platform-101606.pdf).

## This Week on NEI's Blog: More Progressive Support Online for New Nuclear

Read about this and other industry news 24/7 at [neinuclearnotes.blogspot.com](http://neinuclearnotes.blogspot.com).

“Your answers puzzle me, and the fact that in 20 months not a single loan guarantee has been issued indicates a lack of will by DOE to make decisions so this program will work,” said Rep. Dennis Hastert (R-Ill.)

Subcommittee Chairman Rick Boucher (D-Va.) said he is concerned that DOE will not have the proposed rulemaking completed by August, the two-year anniversary of the energy bill. Boucher said he is considering adding loan guarantee fixes to upcoming energy independence legislation to kick-start the program.

Boucher also rebuked Spurgeon for citing the lack of appropriations, owing to a continuing funding resolution in Congress, for impeding progress on the program.

“It appears less than clear to DOE that the program is financed by the applicants and it doesn’t need appropriations for every project, and that was quite transparent in the legislation,” Boucher said.

Subcommittee members expressed that their greatest frustration is over the percentage of a project’s cost the federal government should guarantee under the program’s provisions. Texas Rep. Joe Barton, ranking Republican on the House Energy and Commerce Committee, said the law was clear in specifying that the loan guarantees would cover 80 percent of the total project cost.

But DOE’s preliminary guidelines, issued in August 2006, indicated that the agency intended to provide the loan guarantees for 80 percent of the project debt. Barton pointed out that this actually reduces the federal support to 64 percent of the project cost.

“The percentage of coverage shouldn’t even have to be discussed, as we made it clear in the energy bill that 80 percent means 80 percent of the full project cost,” Barton said.

Christopher Crane, senior vice president at Exelon Corp., said it is vital for the loan guarantee to cover 80 percent of the total project cost, as it “addressed the most significant financing challenge facing new nuclear power plant construction.”

Crane explained that new nuclear projects are expected to cost \$4 billion to \$5 billion, which makes them large capital projects for electric utilities. Energy projects outside the electric utility industry normally are built by companies with market capitalizations 10 to 15 times higher than the largest electric companies.

“The combined market values of all 16 companies developing license applications for new nuclear power plants represent approximately one-half the market value of ExxonMobil,” Crane said. “Even Exelon, with a market value of approximately \$50 billion and the largest U.S. electric power company, is not large enough to finance a single nuclear plant without the federal loan guarantees.”

## Effective Reactor Oversight Precludes Independent Safety Assessments, NRC Tells Senate

**T**he Nuclear Regulatory Commission remains committed to ensuring the safety and security of today’s nuclear plants as it prepares to review license applications for new reactors, NRC commissioners told a Senate panel last week.

The commissioners discussed the reactor oversight process (ROP) and work force needs for new plants during an April 24 NRC oversight hearing of the Senate Environment and Public Works Subcommittee on Clean Air and Nuclear Safety.

“Reactor oversight is robust, and we always look to make it more robust. We communicate the results of our investigations,” NRC Chairman Dale Klein said.

Sen. Hillary Clinton (D-N.Y.) expressed “continuing significant concerns” about per-

## U.S., Japan Sign Nuclear Energy Action Plan

The United States last week signed an agreement with Japan to collaborate on commercial nuclear energy. The Joint Nuclear Energy Action Plan is the result of a January commitment by Department of Energy Secretary Samuel Bodman and Japanese Minister Akira Amari to draft a cooperative nuclear energy agreement.

“By strengthening our joint cooperation in civil nuclear energy, the United States and Japan will also strengthen our strategic interests,” said Bodman.

Areas of planned collaboration include: research and development, new-plant construction policies and programs, establishment of a nuclear fuel supply assurance mechanism, and safe expansion of nuclear energy in interested countries.

formance at the Indian Point plant, “and about the adequacy of the oversight the NRC is providing.” In February, she introduced a bill that would require an independent safety assessment (ISA) at Indian Point.

Commissioner Gregory Jaczko noted that the issues at Indian Point are not of “tremendous safety significance” but acknowledged that the NRC could better communicate that message to the public.

Sen. Bernie Sanders (I-Vt.) also introduced legislation that would require the NRC to conduct an ISA at any reactor during license renewal or power uprate proceedings if requested by a governor or public utility commission (see Nuclear Energy Overview, April 2).

Commissioner Edward McGaffigan Jr. noted that the only ISA conducted to date, at Maine Yankee in 1996, was a one-time snapshot of the plant, whereas the current ROP is much more thorough and ongoing.

ISAs would be “arbitrary and capricious” because the ROP is effective, and additional inspections are conducted consistent with performance, Commissioner Jeffrey Merrifield said. His fellow commissioners agreed that ISAs at nuclear plants would be “punitive and unwarranted.”

### WORK FORCE NEEDS PRESENT ‘HUGE CHALLENGE’ TO NRC, INDUSTRY

The NRC’s newly created Office of New Reactors will enable the agency to review design certification and license applications while continuing oversight of operating reactors, Klein said. In addition, the NRC will continue to review license renewal and power uprate applications.

These activities will keep the agency at “critical hiring need for at least the next four years,” Klein said. “In the 2008-2009 timeframe, we expect hiring competition from utilities and nuclear manufacturers to intensify as they begin to staff up for construction of new nuclear plants. In addition, we face competition from other government agencies, the national laboratories and academia.”

The NRC has to hire 400 new workers for a net gain of 200 to offset retirement and attrition, McGaffigan said. He urged Congress to fund university nuclear engineering programs.

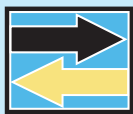
The nuclear industry faces a more significant challenge than the NRC, Merrifield said. In addition to nuclear engineers, the industry will require more skilled craft workers such as electricians, welders and pipefitters. “There has to be a real commitment from our government, industry and labor unions to make sure the technical work force is available,” Merrifield said.

## Third Way Backs Nuclear Expansion As Part of Global Warming Solution

**N**uclear energy “is one important key to solving the global warming crisis,” the Third Way organization said in a report released April 23.

Third Way is a progressive policy organization. Sens. Blanche Lambert Lincoln (D-Ark.), Evan Bayh (D-Ind.) and Tom Carper (D-Del.) serve as honorary Senate chairs. Honorary vice chairs include Sens. Mary Landrieu (D-La.), Mark Pryor (D-Ark.) and Ken Salazar (D-Colo.)

The report, “Another Inconvenient Truth: Solving Global Warming and Energy Security Requires Nuclear Power,” stresses that the expanded use of nuclear energy in the United States could play a major role in preventing greenhouse gas emissions. It

**transitions****Industry**

**Ronald Peterson**, vice president of Avista Corp. and vice president of energy resources and optimization for Avista Utilities, will retire in August. Peterson has been with Avista since 1975. **Dennis Vermillion**, currently Avista Energy's president and chief operating officer, will replace Peterson as vice president of energy resources and optimization for Avista Utilities. Avista Corp. has not yet appointed a new vice president.

Central Hudson Gas & Electric Corp. has named **Paul Haering** its new vice president of engineering and environmental services. Haering has been with the company since 1986.

**Robert Powell** has been named Pacific Gas and Electric Co.'s chief financial officer. Powell is presently vice president and controller of both Pacific Gas and Electric Corp. and the subsidiary.

FirstEnergy Corp. announced that **Nicholas Lizanich** will rejoin the company as vice president of asset oversight. Lizanich was most recently executive vice president of operations at Patrick Engineering Inc. Prior to that, he was director of transmission and substation engineering at FirstEnergy.

Westar Energy CEO **James Haines** will retire at the end of June. **William Moore** has been named Haines' successor. Moore joined the company in 2002 and is currently president and chief operating officer.

points out that nuclear energy has been ignored or opposed in many global warming discussions.

"Few in the environmental community or their allies in policymaking have championed—indeed, most have actively opposed—the one climate change solution that can make a substantial difference in the near term: nuclear power," the Third Way report said.

"This raises a serious problem," it continued. "There does not seem to be a realistic path to resolving climate change that does not significantly expand nuclear energy, but most of those at the frontlines of fighting climate change have not embraced it. We must resolve this contradiction if we are to confront global warming effectively."

The public debate should consider a range of options, including greater use of alternative energy sources and conservation, and controls on carbon emissions, the report said. It also acknowledged issues regarding nuclear energy, such as storage of used fuel.

Third Way concluded that "embracing nuclear power by progressive leaders would have a galvanizing impact on the public, demonstrating the severity of the climate change problem and the need for everyone to make hard choices."

The report can be accessed at [www.third-way.com/products/84](http://www.third-way.com/products/84).

## Senate Passes Bill to Help Fund New, Existing University Nuclear Programs

**T**he Senate last week passed legislation that would establish a program to "expand and enhance" nuclear science education at the nation's universities.

The "America Competes Act," S. 761, aims to strengthen educational opportunities in science, technology, engineering and mathematics from elementary school to graduate school. It includes a section dedicated to increasing "the number of graduates with degrees in nuclear science, an area of strategic importance to the economic competitiveness and energy security of the United States." Senate Majority Leader Harry Reid (D-Nev.) introduced the bill.

The bill calls for up to three grants each fiscal year for universities that establish new academic degree programs in nuclear-related fields—nuclear science, nuclear engineering, nuclear chemistry, radio chemistry and health physics. Universities that partner with a national laboratory or similar organization would be eligible to receive up to \$1 million each year for five years.

Additionally, the legislation would establish up to 10 grants each year for universities with existing nuclear science degree programs, with the goal of increasing "the number and academic quality of graduates." The grants also would "bolster or sustain nuclear infrastructure and research facilities," such as research and training reactors or laboratories. Eligible universities would receive up to \$500,000 each year for five years.

The House of Representatives last week passed similar legislation that does not include sector-specific programs. The two houses of Congress likely will conference to resolve differences between the two bills.

## New Jersey Challenges NRC's Decision to Not Consider Terrorist Attacks in Oyster Creek Environmental Review

**N**ew Jersey's attorney general last week filed a petition with the 3rd U.S. Circuit Court of Appeals challenging the Nuclear Regulatory Commission's decision to

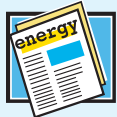


**on the hill**

**Senate Finance Subcommittee on Energy, Natural Resources and Infrastructure** hearing, “Advanced Technology Vehicles.” The hearing will be held May 1, 10 a.m. (215 Dirksen Building).

“ I will not take nuclear power off the table. ... If you're truly interested in reducing, as we should, the use of fossil fuels and nonrenewable sources of energy, then you've got to have that option on the table at least for consideration. ”

— Sen. Christopher Dodd  
(D-Conn.)  
April 23



**new from nei**

**Industry Supports Integrated Used Fuel Management Strategy**—May 2007  
Policy Brief (Revised)

**Christopher Crane, Exelon Nuclear, Testimony for the Record**—House Energy and Commerce Subcommittee on Energy and Air Quality, April 24

**Nuclear Energy Insight**—April 2007

exclude the possibility of a terrorist attack in its environmental review for the license renewal of the Oyster Creek nuclear plant.

The NRC issued orders as part of the Oyster Creek license renewal proceedings that the National Environmental Policy Act (NEPA) does not require consideration of the environmental consequences of hypothetical terrorist attacks on facilities licensed by the NRC (see Nuclear Energy Overview, March 5).

The NRC also directed its staff to supplement the environmental review of the planned independent used fuel storage installation at California’s Diablo Canyon plant by addressing both the probability and consequences of a terrorist event. This action complied with a June 2006 decision by the 9th U.S. Circuit Court of Appeals that said the NRC could not categorically dismiss the possibility of a terrorist attack on the used fuel storage facility.

The NRC chose not to apply the 9th Circuit’s ruling to its review of other licensing board decisions, including license renewal proceedings at Oyster Creek because the plant is outside the 9th Circuit, and because the commission had previously examined terrorism in the context of license renewal. NEPA “imposes no legal duty on the NRC to consider intentional malevolent acts,” the agency said.

## Nuclear Revival Challenges Fuel Supply, Say Speakers at International Conference

Two of the nuclear energy industry’s most compelling issues took center stage at the World Nuclear Fuel Cycle conference this month in Budapest: the availability of uranium and the condition of the industry’s infrastructure.

The annual conference—a collaborative effort by NEI and the World Nuclear Association—drew more than 350 participants to Hungary’s capital city. This nation of some 10 million inhabitants is a major consumer of nuclear-generated electricity.

Although heavily dependent on natural gas, Hungary obtains 40 percent of its electricity from the four-reactor Paks nuclear power station, said Tamás Janos Katona, president of the Hungarian Atomforum. Still, he said, “the volatility of the energy market is influencing the Hungarian economy in a significant way.”

Hungary is uprating its sole nuclear station, Katona said, and its parliament has approved extending its license for 20 years.

However, “the success of nuclear energy in Hungary and around the world depends on a strong fuel supply industry,” Katona said.

For years, demand for uranium was so limited—and the price was so low—that few had the interest or funding to explore new deposits or develop facilities for conversion and enrichment. As the nuclear energy industry stands on the verge of a new wave of reactor construction, it must work to address the need for increased fuel supply and robust manufacturing infrastructure.

“The nuclear renaissance has revealed massive infrastructure problems,” said Alexei Grigoriev, first deputy director general, Techsnabexport. The industry must pay attention to these problems if the renaissance is to continue, he said.

“One has some unease [about] whether the world uranium industry can respond in time to produce the fuel needed,” Grigoriev said. “Will there be enough enrichment service available?”

Russia could help meet fuel supply needs, Grigoriev said, if the European Union and the United States removed current trade restrictions.

Others, including David Miller, president and CEO of Strathmore Minerals Corp.,

“We haven’t built a new reactor in this country since 1973, and it is time we do.”

— Rep. Dennis Hastert (R-Ill.)  
Roll Call  
“Time to Act on Building Nuclear Reactors”  
April 23

“As for new sources of energy, ‘the only rational answer,’ [New York City Mayor Michael] Bloomberg said, is to look towards nuclear power.”

— The New York Observer,  
“The Politicker”  
April 20

“[Nuclear energy] represents one of the most important technologies that can reduce emissions and make America more energy independent.”

— Rep. Heather Wilson (R-N.M.)  
The Santa Fe New Mexican  
“Bush Plan to Expand Nuclear Power Moves Forward”  
April 16

shared Grigoriev’s concerns about the industry’s ability to ramp up in response to demand.

“Ninety percent of the companies exploring [for uranium deposits] are in the early stages, and 90 percent of them will fail to find any significant ore bodies,” Miller said. However, he also noted that—with the spot price for uranium exceeding \$100—the United States has 1.4 billion pounds of uranium reserves that would be economic to produce. If the price of uranium remains high, he said, the United States could supply much of its own uranium. He added that the United States currently has only two mills capable of producing at a significant level, but said a significant portion of domestic uranium resources can be exploited by *in situ* (solution) mining methods.

Miller addressed the lingering question—and diverging views—on the adequacy of uranium supplies to meet the needs of current and future (planned) reactors.

“We will not run out of uranium from a geologic perspective, but political issues could mess up the supply situation,” Miller said. In the United States, for example, permitting is a problem for new mills. “I think we will get them [the permits]. The question is whether the price [of uranium] will be high enough to support these mills.”

The availability of uranium depends on its selling price—whether a certain deposit or source is economic to develop. For example, if uranium were to reach \$200 per pound, it would become economic to recover uranium from seawater, said Thomas Neff, senior researcher at the Massachusetts Institute of Technology’s Center for International Studies.

“We are absolutely confident that abundant uranium can be available to supply present and future reactors,” said Jay Thayer, NEI vice president for nuclear operations. The uranium supply will be tight from 2011 to 2015, he said, “but the market will rise to meet increased demand.”

### ‘CIGAR LAKE WILL BE DEVELOPED’

One of the world’s richest deposits of uranium—Cameco’s Cigar Lake mine in northern Saskatchewan—flooded last October and now is in remediation. It is the largest undeveloped deposit of uranium in the world, said Terry Rogers, senior vice president of Cameco Corp., with an average ore grade of 21 percent.

The percentage of uranium found in ore varies widely, but deposits having as little as 0.1 percent now are being exploited profitably.

Despite the high cost of remediating the mine, “Cigar Lake will be developed,” Rogers said.

The stunningly rich Cigar Lake deposits lie deep underground, in an unstable rock formation subject to influxes of water. The mining process will involve freezing portions of the deposit to stabilize it while workers extract the uranium using state-of-the-art remotely controlled equipment.

Rogers outlined a complex remediation process. Among other things, the remediation phase requires Cameco to pour large amounts of concrete into areas of the underground workings where the rock falls allowed groundwater influx.

Cameco expects Cigar Lake to start producing uranium in 2010. “We expect to ramp up production to 18 million pounds per year within two years,” Rogers said.

He said the total capital cost for the mine is now just over \$1 billion, up from \$660 million. The increase stems from higher costs for labor and other aspects of the project. In addition, he said, the remediation will cost an estimated \$90 million.

## Duke Executive Calls for New Organization to Manage Used Fuel

The time may have come to shift responsibility for America's used fuel management program from the Energy Department and create a new entity solely focused on managing used nuclear fuel and high-level radioactive waste, said Duke Energy Corp. executive Brew Barron at the World Nuclear Fuel Conference this month in Budapest.

He also believes the United States should reconsider its stance on recycling used nuclear fuel—harnessing the vast energy that remains, rather than disposing of the material.

“The U.S. mindset is that all roads lead to [direct disposal of used fuel at a repository at] Yucca Mountain. I don't believe that.”

Barron is group executive and chief nuclear officer at Duke Energy. Although he advocates looking at improving the management structure for the nation's radioactive waste, Barron finds no fault with DOE's current management. Edward Sproat, director of DOE's Office of Civilian Radioactive Waste Management, “is doing a great job, moving the program forward,” Barron said. Yet, the chances are low that such progress can continue through a change of administration, a new energy secretary and probably a new program manager as well.

The new entity that Barron envisions would apply private-sector governance principles within a government organization. He dismissed the idea of creating a private organization to manage used fuel because the entity would be a monopoly. “We don't want competing disposal technologies,” Barron said. However, the waste management organization could form arrangements with the private sector to fulfill its mission, he said.

In addition, the federal government must retain the obligation for used fuel disposal, as is the case under current law, Barron added.

He also stated bluntly that “the funding mechanism is broken”—not in how it collects funds, which works very well, but in the way congressional appropriators handle it.

“The Nuclear Waste Fund is not tax revenue. It is to pay for waste management,” Barron said.

In practice, appropriators tend to withhold much of these funds from their intended purpose, using them instead to help balance the U.S. budget in other areas.

“We need accountability to the people who paid the money,” Barron said, referring to electricity customers. In addition to making the nuclear waste fees available for their intended purpose, he said, Congress should create a separate commission that would be accountable for authorizing and overseeing the use of Nuclear Waste Fund expenditures.

The Duke executive also called on the United States to overcome its longtime aversion to recycling used nuclear fuel.

“If we're really going to have a renaissance of nuclear power in the United States, it's time to consider recycling low-enriched fuel,” Barron said. Recycling the used fuel now stored in pools at reactor sites around the nation could displace 250 million pounds of uranium and supply enough fuel for the U.S. nuclear industry for seven years, he said.

“I do not understand the argument that introducing into the United States a technology [recycling] that exists elsewhere in the world could contribute to proliferation,” Barron said. In fact, he said, recycling would reduce the amount of fissile material that potentially could be diverted.

Barron said it is time to revisit U.S. policies concerning the fuel cycle. He added that

“The barriers to nuclear energy are political not technological. We've let the fears of 30 years ago and an endless political squabble over the storage of nuclear spent fuel make it virtually impossible to build a single new plant that produces a form of energy that is safe and non-polluting.”

—Sen. John McCain (R-Ariz.)  
“Energy Policy and National Security”  
Decision 2008 Presidential Candidates Forum  
The Center for Strategic and International Studies  
April 23

“I think nuclear is at some level unavoidable. When we think about what the energy mix will be for stationary power, say, 30 years from now or 40 years from now, it's very hard to see how you're going to avoid the use of nuclear power.”

—Dr. Robert Rosner  
Director, Argonne National Laboratory  
E&ETV, “OnPoint”  
April 25

“The frame of reference for these young job seekers also includes modern-day environmentalism. They worry about nuclear waste but believe it can be disposed of safely. Many insist it’s a political problem, not a technical one. These students hope by the time they retire, nuclear power will provide the majority of the electricity in the United States.”

—National Public Radio  
“Marketplace” report on  
American Nuclear Society’s  
annual student conference  
April 26

the U.S. must ensure its approach to managing used nuclear fuel is not “subject to different views every time the political situation changes.”

Barron said that building the repository at Yucca Mountain “is the right thing to do” if the United States intends to continue to use existing reactors and shut them down at the end of their operating lives. Removing the legislative limit on the repository’s capacity could provide enough space for all the nation’s used light-water reactor fuel, he said.

He added that, while Yucca Mountain is fine for light-water reactor fuel, “it is not necessarily the best or more economical place to put vitrified wastes,” which could result from new waste processing technologies.

“I believe we should look for alternative repositories—not to replace Yucca Mountain, but for other types of waste materials,” Barron said.





**upcoming events**

For information on logistics for all NEI meetings, contact Linda Wells at 202.739.8039 or [registrar@nei.org](mailto:registrar@nei.org).

- **Dry Storage Information Forum**  
May 15-17, Sheraton Sand Key Resort, Clearwater, Fla.  
Contact: Everett Redmond, 202.739.8122 or [elr@nei.org](mailto:elr@nei.org)
- **North American Young Generation in Nuclear**  
May 22-23, The Fairmont Turnberry Isle, Miami, Fla.  
Contact: Carol Berrigan, 202.739.8050 or [clb@nei.org](mailto:clb@nei.org)
- **Nuclear Energy Assembly**  
May 23-25, The Fairmont Turnberry Isle, Miami, Fla.  
Contact: Lisa Steward, 202.739.8006 or [lis@nei.org](mailto:lis@nei.org)
- **Emergency Preparedness and Communication Forum**  
June 11-12, The Royal Sonesta Hotel, New Orleans, La.  
Contact: Alan Nelson, 202.739.8110 or [apn@nei.org](mailto:apn@nei.org)
- **Emergency Preparedness Training Course**  
June 13-15, The Royal Sonesta Hotel, New Orleans, La.  
Contact: Alan Nelson, 202.739.8110 or [apn@nei.org](mailto:apn@nei.org)
- **Regional Communications Roundtable**  
June 13, The Royal Sonesta Hotel, New Orleans, La.  
Contact: Scott Peterson, 202.739.8044 or [jsp@nei.org](mailto:jsp@nei.org)

*continued on next page*



**May 22-23**

**The Fairmont Turnberry Isle  
Miami, Fla.**

The 2007 North American Young Generation in Nuclear (NA-YGN) Annual Workshop will be held May 22-23, just prior to the Nuclear Energy Assembly in Miami, Fla. The theme of this year's workshop is "Make a Difference: Be a Leader." The preliminary agenda includes sessions on promoting nuclear science and technology, building project management skills, understanding how to be a change agent, ethics, and more.

Local chapter leaders are invited to attend a working group meeting the morning of Tuesday, May 22. In addition, young professionals interested in serving on international committees are encouraged to attend an organizational meeting the morning of Thursday, May 24.

Young professionals and students in all areas of nuclear science and technology are encouraged to attend the workshop. Registration information is available at [www.nei.org](http://www.nei.org).

**Program Content**

Carol Berrigan  
202.739.8050  
[clb@nei.org](mailto:clb@nei.org)

**Registration**

Linda Wells  
202.739.8039  
[registrar@nei.org](mailto:registrar@nei.org)



**upcoming events**

- **National Nuclear Security Conference**  
 June 24-28, The Henry B. Gonzalez Convention Center, San Antonio, Texas  
 Contact: Doug Walters, 202.739.8093 or [djw@nei.org](mailto:djw@nei.org)
- **Women in Nuclear**  
 July 15-17, Hilton Anaheim, Anaheim, Calif.  
 Contact: Carol Berrigan, 202.739.8050 or [clb@nei.org](mailto:clb@nei.org)
- **Nuclear Fuel Supply Forum**  
 July 24, The Willard InterContinental, Washington, D.C.  
 Contact: Suzanne Phelps, 202.739.8119 or [srp@nei.org](mailto:srp@nei.org)
- **Health Physics Forum**  
 July 29-Aug. 1, Hyatt Coconut Point, Bonita Springs, Fla.  
 Contact: Ralph Andersen, 202.739.8111 or [rla@nei.org](mailto:rla@nei.org)
- **Fire Protection Information Forum**  
 Sept. 17-19, Chateau Sonesta Hotel, New Orleans, La.  
 Contact: Brandon Jamar, 202.739.8043 or [btj@nei.org](mailto:btj@nei.org)

For more detailed program and registration information, visit the “NEI Conferences” area of NEI’s member Web site at [member.nei.org](http://member.nei.org).

# The Changing Climate For Nuclear Energy



**Nuclear Energy Assembly 2007  
 The Fairmont Turnberry Isle  
 Miami, Fla. • May 23-25**

Possibilities pulse through the nuclear energy industry with more vigor than in decades. Nearly half of today’s reactors have renewed their licenses for another 20 years of safe, reliable and efficient operation, and the industry is drawing up plans to build more than 30 new reactors. Amid a plethora of energy and environmental issues, policymakers and the public recognize the benefits of nuclear power as part of the nation’s diverse energy portfolio.

Discover this changing climate for nuclear and the possibilities ahead at the Nuclear Energy Institute’s **2007 Nuclear Energy Assembly**—the annual meeting of members of the Nuclear Energy Institute and other influential leaders engaged in the nuclear energy marketplace.

**Register today for the 2007 Nuclear Energy Assembly, May 23-25, at The Fairmont Turnberry Isle in Miami, Fla!**

For more information, go to [member.nei.org](http://member.nei.org) or contact Lisa Steward at 202.739.8006 or [lis@nei.org](mailto:lis@nei.org).

**Program Content**

Lisa Steward  
 202.739.8006  
[lis@nei.org](mailto:lis@nei.org)

**Logistics**

Ken Morton  
 202.739.8014  
[kwm@nei.org](mailto:kwm@nei.org)

**Registration**

Linda Wells  
 202.739.8039  
[registrar@nei.org](mailto:registrar@nei.org)

**REGISTER NOW!**

**NUCLEAR ENERGY OVERVIEW** is published weekly for members of the Nuclear Energy Institute, the policy organization of the nuclear energy industry.

**E-mail:** [overview@nei.org](mailto:overview@nei.org)

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<b>EDITOR</b> <i>Richard Bickers</i>	<b>CONTRIBUTING EDITORS</b> <i>Jarret Adams</i>
<b>LAYOUT DESIGN</b> <i>Mark Flanagan</i>	<i>Janice Cane</i>
<b>EDITORIAL SPECIALIST</b> <i>Christy Hall</i>	<i>Lynne Neal</i>
	<i>Mitch Singer</i>
	<i>JoAnn Sperber</i>

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The forum provides updates on industry initiatives and panel discussions directed toward those who shape emergency preparedness. The program focuses on views from NEI, INPO, the Nuclear Regulatory Commission, Department of Homeland Security/Radiological Emergency Preparedness Program, and state/local representatives targeting emerging issues and regulatory activities. Sessions address responses to real events, industry on-site and off-site performance, status of the EP/security drill and exercise initiative, and regulatory rulemaking. The program also offers insights from inspections and addresses outreach, public confidence, communication issues and new challenges.

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**CONTACTS**

**Program Content:**  
Alan Nelson  
202.739.8110  
[apn@nei.org](mailto:apn@nei.org)

**Logistics:**  
Kim Shear  
202.739.8028  
[kms@nei.org](mailto:kms@nei.org)

**Registration:**  
Linda Wells  
202.739.8039  
[registrar@nei.org](mailto:registrar@nei.org)



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1776 I Street, N.W., Suite 400  
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March / April 2007

Policy Matters That Affect Your Business

**In This Issue...**

The U.S. Energy Department's used nuclear fuel management program is under new leadership. New approaches to the fuel cycle are afoot, and the federal government still is responsible for managing used fuel from commercial nuclear power plants. The national repository at Yucca Mountain, Nev., has broad support but vocal opponents. Given these complexities, what can the nuclear energy industry expect next? This issue of Nuclear Policy Outlook answers that question.

**Nuclear Energy's Growth Prospects Drive New Strategies for Used Nuclear Fuel Management**

In four decades of nuclear technology experience, Acting Undersecretary of Energy Dennis Spurgeon has advised a U.S. president, served as a senior industry executive and a reactor developer. But these experiences pale in comparison to the opportunity and challenges that confront Spurgeon as chief nuclear technology officer for the federal government.

*Dennis Spurgeon*

Well-schooled in nuclear engineering at the U.S. Naval Academy and the Massachusetts Institute of Technology, Spurgeon served in the U.S. Navy before beginning his civilian career. He managed the N-reactor at the federal government's Hanford site, advised President Ford and Atomic Energy Commission Chairman Glenn Seaborg on nuclear matters, and, more recently, served as chief operating officer at USEC Inc.

"To have the chance to make a meaningful contribution to the rebirth of nuclear energy in the United States is a once-in-a-lifetime opportunity," said Spurgeon, now the acting undersecretary of energy and assistant secretary for nuclear energy.

Spurgeon is the first assistant secretary for nuclear energy in more than a decade. The recreation of the position in 2005 was in itself a statement on the resurgence of nuclear energy in America. Spurgeon's ultimate challenge, however, is as point man on the administration's policy to develop advanced used nuclear fuel recycling in the United States. Capturing a significant percentage of the energy content remaining in reactor fuel after it has been used once seems only logical in this era of recycling, but it comes with certain political, technological and economic challenges.

The federal government has the legal and contractual responsibility to take full responsibility for, and dispose of, used fuel from commercial nuclear power plants. The government's plan of record is to develop a national repository for the disposal of commercial used fuel and high-level radioactive defense waste at Yucca Mountain. The repository has encountered delays and funding shortfalls, yet the administration has taken concrete steps over the past two years to move the program forward. Even with a change in policy to review the option of recycling used nuclear fuel, continued progress toward licensing Yucca Mountain is vital.

Fast-growing electricity demand and nuclear energy's role in reducing greenhouse gases are prompting strong bipartisan support for expansion of nuclear energy and leading policymakers and industry leaders to consider new approaches to the nuclear fuel cycle. Putting the government's used nuclear fuel management programs on the right path, Spurgeon said, is one of his top priorities.

## Key Elements of Integrated Used Fuel Management Strategy

- Interim storage until recycling or permanent disposal—or both—are available
- Research and development of advanced fuel treatment technologies
- Developing a permanent disposal facility

“The priority for the industry is for the government to live up to its responsibility to manage commercial used fuel.”

— Scotty Hinnant  
 Senior Vice President and  
 Chief Nuclear Officer  
 Progress Energy

### USED FUEL SAFELY MANAGED ON SITE

Used fuel is safely managed at nuclear plant sites today and can be stored there for up to 100 years, according to the Nuclear Regulatory Commission. Although the Department of Energy has yet to remove used fuel from nuclear plant sites and is creating a multibillion-dollar liability for the federal government, it is not a roadblock to new nuclear plant construction. In fact, the nuclear renaissance has contributed to the emergence of a new policy on the entire nuclear fuel cycle—leading to a comprehensive program for advanced recycling of used fuel in a responsible way.

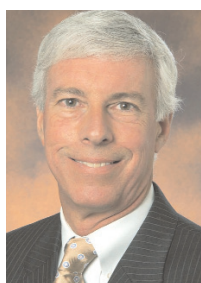
The nuclear energy industry advocates a comprehensive strategy that maximizes the energy content in the uranium fuel yet demonstrates convincingly that the government will manage the byproducts of the process. Such an integrated strategy includes three key elements: interim storage until recycling or permanent disposal—or both—are available; research and development of advanced fuel treatment technologies; and developing a permanent underground disposal facility.

“The priority for the industry is for the government to live up to its responsibility to manage commercial used fuel,” said Scotty Hinnant, senior vice president and chief nuclear officer at Progress Energy.

Centralized interim fuel storage at one or more sites could be an effective short-term option leading to one of two paths—recycling used nuclear fuel if new proliferation-resistant technology is developed by DOE or direct disposal at Yucca Mountain.

DOE is developing advanced nuclear fuel treatment technologies that could allow for recycling and reuse of used fuel while reducing proliferation risks. This advanced recycling could vastly decrease the heat, volume and radiotoxicity of byproducts that must be stored at Yucca Mountain and obviate the construction of additional repositories.

Congress has funded this technology development for several years. For fiscal 2008, DOE is requesting \$395 million in funding for the research, development, demonstration and commercialization of these technologies. This Advanced Fuel Cycle Initiative will take years and billions of dollars to accomplish. DOE is seeking public-private partnerships to carry out the effort.



Edward Sproat

Meanwhile, progress toward a repository has been delayed by political, legal and funding challenges, and has experienced numerous course corrections.

DOE is working to reinvigorate the Yucca Mountain project under another former industry executive, Edward “Ward” Sproat, director of the Office of Civilian Radioactive Waste Management since last year.

In March, the administration sent a legislative proposal to Congress nearly identical to a bill submitted last year. This legislation would allow for expansion of the Yucca Mountain facility, resolve regulatory issues related to the project and help facilitate its development. It also contains used fuel management provisions relating to new nuclear plant construction. However, as of this writing, no member of Congress has introduced the legislation.

### MAINTAINING THE FOCUS ON YUCCA MOUNTAIN

Used fuel recycling aside, the Yucca Mountain project will face challenges even if a member of Congress introduces the administration’s legislation. No doubt, it will face tough opposition from Senate Majority Leader Harry Reid (D-Nev.), a longtime

“The plan to develop Yucca Mountain has not changed. The idea that we need a repository has not changed. There has been no change to DOE’s commitment to accept used fuel.”

— Dennis Spurgeon  
 Acting Undersecretary  
 Department of Energy

opponent of Yucca Mountain. As the Senate’s top Democrat, Reid wields considerable influence and has pledged to use it to stop the project.

DOE remains committed to the Yucca Mountain project and to submitting a license application for the repository no later than June 2008. “The plan to develop Yucca Mountain has not changed. The idea that we need a repository has not changed,” Spurgeon said. “There has been no change to DOE’s commitment to accept used fuel.”

In DOE’s best-case scenario, the Yucca Mountain facility would open in 2017. However, Sproat has told Congress that 2021 may be a more realistic estimate. Originally, the agency was to begin accepting used fuel in 1998, and Spurgeon acknowledges that the repeated delays associated with the repository have saddled the project and DOE with a “credibility issue.”

“We need people to have confidence that the management of used fuel is something we can do now and as we move toward the future,” Spurgeon said. By focusing on permanent disposal at Yucca Mountain, “we have taken the harder route,” he said. Other nations have moved used fuel to interim storage facilities while developing repositories using a different approach than the United States.

Two-thirds of Americans support the continued development of Yucca Mountain as long as it meets NRC regulations, according to an April survey by Bisconti Research Inc. of 1,000 U.S. adults. The public is even more sanguine on recycling. Seventy-seven percent said that U.S. plans to recycle used fuel to make more electricity and reduce the amount of nuclear waste would make them more inclined to support new reactor projects.

DOE’s inaction has led to numerous lawsuits by the industry against the federal government for breach of contracts it signed with electric utilities to manage used fuel. Courts have awarded judgments to utilities in six cases. Sproat estimates that the total cumulative liability will be \$7 billion if the repository opens in 2017. Each additional year of government delay will cost taxpayers some \$500 million as a result of the continuing breach of contract.

Despite the court actions, industry leaders say the status quo is unacceptable.

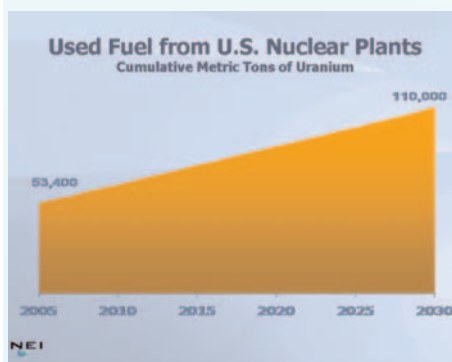
“Even if we can recover our cost, that does not yield the long-term answer to managing used nuclear fuel,” Hinnant said. “While you can store it safely at our plant sites, storing the material at one or two locations is better than leaving it at many sites across the country.”

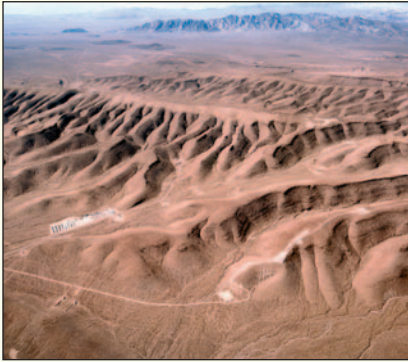
Spurgeon stressed that his goal is to put a spotlight on Yucca Mountain to address the needs of the program and move it forward. “A good program can stand the light,” he said.

By law, the capacity of Yucca Mountain is artificially constrained to 70,000 metric tons of fuel or high-level radioactive waste. The legislative proposal by the Bush administration would remove that statutory limit. America’s nuclear power plants already have produced more than 55,000 metric tons of used fuel. In addition, DOE plans to deposit high-level radioactive waste from defense programs at Yucca Mountain. Under the current capacity limitation, Yucca Mountain’s entire capacity will be committed before the repository opens.

An independent analysis by the Electric Power Research Institute last year found that the actual safe capacity of Yucca Mountain is six to nine times greater than the 70,000-metric-ton limit, assuming direct disposal of used fuel. Using advanced fuel cycle technologies, which would reduce the volume and radiotoxicity of the waste, a single, expanded national repository could be sufficient until the next century.

“Over the long term, we need to recycle nuclear fuel—the same way we recycle





Yucca Mountain, Nevada

“If DOE were to take used fuel from one site, it would provide proof of the principle that the government will meet its commitment.”

— Alan Hanson  
Executive Vice President  
AREVA

newspapers or aluminum cans. In the end, it gives us less material to deposit in the repository,” Spurgeon said.

DOE expects to spend \$447.5 million on Yucca Mountain in fiscal 2007 and has requested \$494.5 million for the program for fiscal 2008. Beginning in fiscal 2009, however, funding could near \$2 billion per year. According to DOE budget estimates released in March, the cost of developing and operating the repository will total \$26.9 billion between fiscal 2009 and 2023. Most of this funding will be provided by the Nuclear Waste Fund, financed by a surcharge of 1/10 of one cent per kilowatt-hour on all nuclear-generated electricity, not by taxpayers.

Construction of a repository is not a prerequisite to new reactor construction, but policymakers must have confidence that policies are in place that ensure the safe and secure disposal of used nuclear fuel. The NRC uses a “waste confidence” determination in considering used fuel management issues for new-reactor licensing.

A provision in the administration’s legislative proposal would have Congress declare its confidence in used fuel management as a matter of national policy. As a result, the NRC would not have to make a public policy waste confidence ruling as it licenses new reactors. The NRC has endorsed this approach.

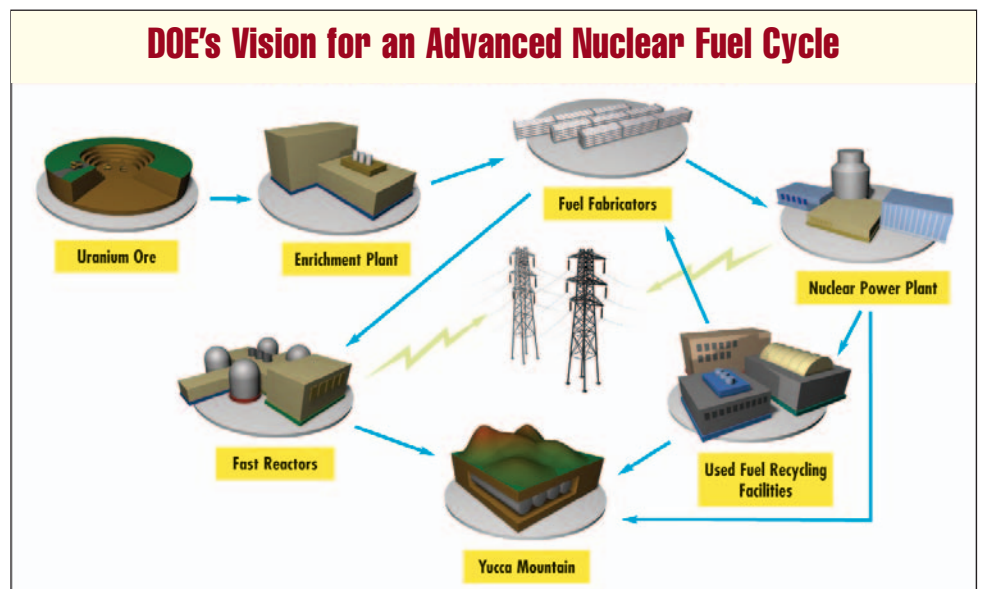
“The industry believes that this confidence already is evident in national law for managing used fuel. By underscoring and reaffirming this confidence, Congress can prevent frivolous legal actions that could slow the completion of new reactors,” said Alex Flint, senior vice president for governmental affairs at the Nuclear Energy Institute.

**REDUCE, REUSE, RECYCLE**

Even if the United States recycles used fuel, a repository is still necessary for the disposal of byproducts. Nations such as France that reprocess fuel also are developing repositories.

One advantage of the French model is that used fuel is moved directly from the small used fuel pools at the reactors to storage at the reprocessing facility at La Hague, which is operated by AREVA. “Consequently, stakeholders see the fuel leaving the plant sites,” said Alan Hanson, executive vice president of AREVA’s U.S. subsidiary.

DOE has been holding public hearings in 11 communities from South Carolina to New Mexico interested in hosting an advanced fuel cycle facility. Such facilities would



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**E-mail:** [outlook@nei.org](mailto:outlook@nei.org)

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**EDITOR**

Jarret Adams

**LAYOUT DESIGN**

Mark Flanagan



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1776 I Street, N.W., Suite 400  
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include interim storage facilities, advanced recycling, advanced fuel fabrication and perhaps advanced reactors.

The industry supports the development of advanced fuel treatment facilities and interim storage facilities and encourages DOE, in the near term, to develop a flexible, phased and sustainable program to pursue this goal.

In the medium term, the industry expects DOE to move used fuel to one or more temporary storage facilities, preferably located at volunteer sites adjacent to advanced fuel cycle facilities.

The industry broadly supports a centralized storage facility until the repository or recycling is available. Hanson adds that even a nominal program to begin moving used fuel would help build public confidence. "If DOE were to take used fuel from one site, it would provide proof of the principle that the government will meet its commitment," Hanson said.

Community opposition could be a roadblock to establishing an independent storage facility site, Hanson noted. DOE's approach of seeking volunteer communities willing to host a storage facility in conjunction with an advanced recycling facility is one way of addressing this concern.

**BUILDING TOWARD THE FUTURE**

Even as DOE moves forward with the NRC licensing process to build the Yucca Mountain facility, finding the optimal management structure for the project is another major challenge.

"How does the government put a structure in place to ensure that a used fuel management strategy will maintain momentum from one administration to the next?" asked Progress Energy's Hinnant. "Perhaps setting up a public-private model like those used for the national laboratories would be better suited than DOE to manage the Yucca Mountain program."

NRC Commissioners Edward McGaffigan and Jeffrey Merrifield proposed a similar approach recently.

Merrifield agrees that reconsidering the project's management structure may be in order. "We need to follow the course of our counterparts in Sweden and Finland and create a public-private partnership to bring this issue to a final resolution," Merrifield said at an NRC conference in March.



Scotty Hinnant

Some congressional observers say attention may turn to used fuel management issues later this year. Consideration of climate change legislation is bolstering the re-examination of nuclear energy in Congress and in state legislatures because it is the only expandable baseload electricity source that does not produce greenhouse gases.

Government and industry leaders view the drive toward building new plants as a major factor in resolving used fuel management issues. "Clearly a resurgence of nuclear power brings a focus on used fuel management," Spurgeon said.

The industry also plays an important role in helping the public understand the importance of nuclear energy to our nation's energy future.

"Unless the country sees the importance of building new nuclear plants, then it is difficult to convey the importance of addressing used fuel management issues," Hinnant said. "From the perspective of the public, we need to communicate better the connection between new nuclear plants, the benefits of nuclear power, and the importance of plausible sustainable progress toward managing used fuel."