

The Diablo Canyon nuclear power plant in California



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Nuclear power industry reasserts itself after 3-decade lull

Stoked by new federal subsidies and worries over global warming, the nuclear power industry is beginning to glow brightly once again. The Nuclear Regulatory Commission received seven applications for new power plants last year and is expecting a dozen more by the end of December. The applications, combined, will cover a total of 22 reactors since more than one is proposed at some sites, spokesman Scott Burnell said.

"Nobody had started the applications process for 30 years until last year," Burnell said.

Even in California, where state law bars new plants from being constructed until a permanent repository opens to hold the highly radioactive spent fuel, business is picking up.

Westinghouse Electric Co., a Pittsburgh-based Toshiba Group Co. subsidiary, announced this month that it is opening a San Jose office "to support the growth of its boiling water reactor nuclear power business."

Some are even beginning to plan ways around the state's 1976 moratorium, which has effectively capped the number of operating reactors at four – two at San Onofre in San Diego County and two at Diablo Canyon near San Luis Obispo.

Former labor union leader John Hutson is head of the fledgling Fresno Nuclear Energy Group, which wants to build a 1,600-megawatt power reactor on 80 acres of city land, using effluent from a wastewater treatment plant for cooling.

"This is not Wall Street businessmen," Hutson said. "These are farmers. They are salt-of-the-earth guys who know how to get things done."

Hutson said his idea is to avoid the state moratorium by not producing waste. Used fuel would be shipped to France for reprocessing, rather than encased in steel and concrete and stored on site awaiting a permanent repository at Yucca Mountain in Nevada.

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DOE - Expect license application after all

Managers postponed work on a Nevada rail line and other segments of the Yucca program, and redirected money and personnel to reach the most pressing goal of meeting a June 30 license application deadline, according to Ward Sproat, director of the Office of Civilian Radioactive Waste Management.

The Energy Department has also readjusted its Yucca Mountain work plans after a deep budget cut and will be ready after all to apply for a license in June to build a Nevada nuclear waste repository.

Applying for a construction license has been a long-sought but out-of-reach milestone for DOE at Yucca Mountain. The department has encountered legal and budget problems, and a number of internal missteps in recent years.

Speaking at a conference organized by the Nuclear Regulatory Commission, Sproat expressed confi-

dence the application will pass initial muster to be docketed by the NRC for more thorough safety reviews and hearings.

Cutbacks will reduce the work force from 2,600 to 1,500-1,700. The Energy Department has singled out key scientists and engineers within DOE, the U.S. Geological Survey, the national laboratories and contract firm Bechtel SAIC who will be needed to defend the license.

"We have identified who those people are to make sure they know their jobs are not in jeopardy," Sproat said. "We have an army of national lab PhDs and engineers on our defense team."

Sproat's upbeat assessment came minutes after a lawyer who represents Nevada in its ongoing battle against Yucca Mountain declared the program is on a "death watch" and is destined for failure.

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Nuclear power industry (continued)

Pie in the sky? Maybe. But 30 years ago when Pennsylvania's Three Mile Island plant nearly melted and leaked radioactive gases, nuclear power looked dead. After a largely clean safety record since then, nuclear power is now being touted alongside wind and solar energy as a solution to global warming.

Most power produced in the United States comes from plants fueled by coal or natural gas. Burning coal is a leading emitter of carbon dioxide, which contributes to global warming, but even natural gas is not pollution-free.

"In a July poll by the Public Policy Institute of California, 39 percent of Californians surveyed said they supported the building of additional nuclear power plants, while 52 percent opposed the idea. A year earlier, the results were 33 percent in support and 59 percent opposed." Source: Chronicle Sacramento Bureau, 4/2007

Nuclear plants release virtually no greenhouse gases.

Steve Kerekes, spokesman for the Nuclear Energy Institute, said billions of dollars in plant subsidies included by Congress in a 2005 energy bill also are helping power the industry's revival.

He said the subsidies are needed because nuclear plants are so expensive to build – about \$5 billion apiece.

Nuclear critics maintain that federal taxpayers are being zapped, and that the 2005 law's inclusion of \$13 billion in subsidies and tax breaks will compound the intractable problem of what to do with all the waste.

Some think the cost to taxpayers will be far higher.

According to the NRC, the seven license applications filed last year call for 11 new plants in Texas, South Carolina, Virginia and Maryland. Burnell, the commission's spokesman, said the first of the new plants could be licensed as soon as 2011.

But California Energy Commission Vice Chairman James Boyd said that with waste problems unsolved and popular opinion running 54-37 percent against more plants, a groundbreaking in California is many years away.

"The likelihood of a new nuclear power plant being built in California within the next decade," he said, "is low. Source: Las Vegas Review Journal

Nuclear industry to push stopgap waste sites

The lobby of the headquarters of the Nuclear Energy Institute in Washington features the organization's name glowing in an artsy blue and white light projected on the floor.

Walking over the glow to the receptionist's desk gives an Austin Powers vibe, a mix between what someone thought the future was supposed to look like and what really happened, which may be the predicament the industry finds itself in today.

The last nuclear plants were built 30 years ago, but as the nation hungers for new power sources — particularly those that do not increase the carbon footprint — nuclear energy emerges as an increasingly attractive option.

But what to do with the nuclear waste is still a problem.

Nevadans have fought for more than 20 years the government's proposal to build the nation's nuclear waste repository 90 miles northwest of Las Vegas. Odds are they are winning.

The dump was supposed to open 10 years ago, and now isn't projected to open until after 2017. Patience is wearing thin. The industry wants new nuclear power plants and wants a solution for the waste.

Now, the Nuclear Energy Institute, the main trade group representing the industry, is trying a new approach. The institute is quietly talking to communities across the nation to see if they are interested in hosting a temporary waste storage site — perhaps not just a dump, but a nuclear industrial park that could support ancillary businesses and bring in jobs.

The institute envisions two, maybe four, sites in rural communities that might see something in it for them. These sites wouldn't replace the need for a long-term repository at Yucca Mountain, the institute is quick to add, but would be caretakers of the waste for the next 100 years.

Since fall, the institute's new point man on the project, Marshall Cohen, has visited a few communities and is trying to reach out to more. He

has spoke publicly at about a half-dozen industry events. He gave a printout of his 12-slide PowerPoint presentation to the Sun.

The sign taped to Cohen's office door reads: "Think outside the Beltway." He must be reading that sign every day because what he's about to say next doesn't sound like the old nuclear industry Nevadans know so well.

"It is our belief that this only works if there are some communities who express interest and would be willing to consider and discuss and host this kind of facility," Cohen says.

The bill Congress passed in 1987 that singled out Yucca Mountain as the sole site under consideration for the repository became known as the "Screw Nevada Bill."

When President Bush signed legislation in 2002 that determined the Nevada site would become the dump, he did so over the objections of the state's governor. Much of Nevada's antagonism with the

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DOE - Expect license application (Continued)

Martin Malsch, of the firm Egan, Fitzpatrick & Malsch, said DOE will continue to face increasingly severe budget problems. He said DOE's application will be rushed and incomplete and predicted a "huge dispute" over whether it should be accepted for review by regulators. Beyond that, Nevada is poised to challenge DOE's qualifications and other key aspects of the project, he said. On top of that, both Democratic presidential candidates have pledged to stop the program if elected.

For instance, work on a proposed Nevada rail line to the site has been pushed back.

To save money further, technical specialists were rotated in for short periods to perform specific tasks and then let go, Sproat said.

Questions remain about the repository, which would need billions of dollars to be built. Sproat confirmed the Bush administration is considering a proposal to reorganize the Yucca project and other nuclear

posals has been at the White House for consideration since at least December. Sproat could not confirm that, saying he understood the concept still was being mulled within DOE.

"I personally don't expect we are going to make anything significant happen on this over the next three to six months," he said.

Steve Kraft, senior director for used fuel management at the Nuclear En-



"Yucca Mountain's breaths are short and its heartbeat is faint," Malsch said. "I really don't think it has very long to continue."

In response, Sproat said: "The death watch is going to continue for a very long time because I see this program being very alive and well."

The Energy Department was sent back to the drawing boards late last year when Congress cut the 2008 Yucca Mountain budget by \$108 million, a 22 percent reduction.

Sproat initially expressed doubt DOE would meet its deadline, but he said managers deferred work on all but the most pressing tasks.

waste programs into a government-chartered corporation similar to the Tennessee Valley Authority or the Bonneville Power Administration.

Promoters contend such an organization would have the advantages of a private business to hire and fire managers, set salaries to attract talent and promote accountability. Sproat said it would stop a revolving door that has seen numerous top managers trying to run the Yucca program for short terms.

But such a big change would require a number of fundamental changes and approval by Congress, which might not be willing to give up control.

The Energy Daily in a Feb. 26 story quoted sources saying the DOE pro-

ergy Institute, said a "move like that would greatly enhance the chances of success of the Yucca Mountain project and recently Congress is not inclined to enhance the success of the Yucca Mountain project."

Sen. Harry Reid, D-Nev., long has been declaring Yucca Mountain dead and his spokesman said no new plan would change that. *Source: AP: Stephens Washington Bureau*

Heritage Panel on Yucca concludes that Yucca remains top priority

Nuclear power is emerging as a solution to not only global energy demand but also America's energy concerns for clean, safe affordable energy. The 104 reactors in the United States alone supply the country with 20% of its electricity. The same reactors also generated nearly 56,000 tons of spent nuclear fuel that remains on site in 39 states. Managing this spent fuel has become the subject of both scientific and political debate.

The Heritage Foundation hosted an event titled, "Yucca Mountain and the Nuclear Renaissance: Assessing the Safety and Viability of a Vital National Asset" to address these points of contention. The event featured keynote speaker Edward F. Sproat III, Director of the Office of Civilian Radioactive Waste Management for the Department of Energy. Following Mr. Sproat was a distinguished panel of three experts with unique, specialized knowledge on the issue of Yucca Mountain. The event can be viewed here.

One point that was repeated amongst the panel was that while recycling spent fuel or placing it in interim storage may have a role to play,

America's focus must remain on opening Yucca Mountain in a timely fashion. Despite whatever other technologies are developed, there is an enduring need for permanent geologic storage.

On the technical side, although there is a significant amount of spent nuclear fuel, it is technologically feasible to manage. There is nothing scientifically



***Dominion Nuclear Power Plant,
Waterford, Connecticut***

barring legislation to open Yucca Mountain. There are volumes of technical data being prepared that attests to the safety of the repository. This data has been generated by numerous sources, including industry as well as local and federal government entities. Moreover, technology is rapidly developing that permits a more thorough understanding of how different recycling and reprocessing applications will affect Yucca's long-term viability. National Laboratories are studying how to treat spent nuclear fuel and how recycling and a permanent geological repository can work together.

The legislative process is moving forward as well. In January, Senator

James Inhofe (R-OK) introduced the Nuclear Waste Policy Amendments Act of 2008 (S. 2551) to help to provide the flexibility and clarification for the United States government to set rational policy for managing spent nuclear fuel. As The Heritage Foundation's Jack Spencer notes, one of the key provisions of the Amendments Act is a phased licensing system for spent nuclear fuel.

Finally, the panel addressed questions of alternative locations for potential repositories. The conclusion was that a comprehensive vetting process had already taken place that included considerations of 37 other states. For better or worse, the Yucca location was chosen. Now, having spent billions of dollars on Yucca, without any scientific or technical reason to not go forward on the project, it would make little sense to stop the project given its enduring value to the nation.

It is inevitable that permanent geological storage will play a role in closing the fuel cycle; yet, political and public choice hurdles remain. With the potential for new reactor construction in the United States and the 56,000 tons of nuclear waste already sitting in the United States, Yucca Mountain must be a priority in moving forward with commercial nuclear energy. *The Heritage Foundation*

Nuclear industry to push stopgap waste sites (continued)

government over Yucca Mountain stems from how the deal went down: The small state couldn't stop what was being forced on it.

Cohen wasn't involved back then. His career was making its own arc, from working on Robert Kennedy's presidential campaign — he was with him in California the day before the candidate was shot

— to becoming a media-turn-around expert.

"We're in the very, very, very preliminary steps saying, 'How should we do this? Where can we find communities that would be interested in having us come and talk to them?'" he said. "That's what we're doing."

He uses words like "comfort level" as he describes his efforts to find what might

make a town want to volunteer as a host site.

"It's going to vary by community," he said. "Again, that's the key to it: community."

His own belief: An interim site could be on line and accepting waste within a decade. *Source: Las Vegas Sun*

A nuclear brain drain

The retirement wave comes at a crucial time, just as the nation's utilities are preparing to build the first new nuclear plants in several decades.

The nuclear industry is scrambling to replace its aging work force, much as it refits old power plants with new valves and pumps. Job opportunities suddenly abound at companies that design the plants, at the regulatory agency that licenses and inspects reactors, at the consulting firms brought in to navigate the complex licensing process and at contractor shops used for maintenance and construction.

In North Carolina alone, GE Hitachi Nuclear Energy in Wilmington has hired 500 workers in the past three years and could add up to 900 more within five years. Duke Energy in Charlotte is hiring 200 a year. Progress Energy in Raleigh hired 140 last year and plans to add as many this year.

The exodus of a generation of highly skilled senior workers is creating a wide open job market in an industry presumed moribund only a few years ago. To keep up with job demand, university nuclear engineering departments have quadrupled enrollment in the past decade to about 2,000 students today.

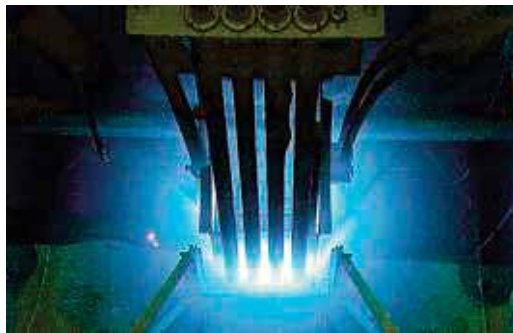
N.C. State University's nuclear engineering department stuck it out through shrinking enrollments during the lean years and managed to avoid the fate of more than two dozen college nuclear departments that no longer exist.

The university's nuclear engineering department is experiencing record enrollment: 196 students in pursuit of lifetime job security, high pay and professional advancement.

Despite the lingering stigma of nuclear power, advocates feel vindicated by this reversal of fortune.

"These are the best of times," said Mohamed Bourham, the interim department head of nuclear engineering at N.C. State. "And we hope that this trend continues for the sake of humanity."

Optimism is high at N.C. State, where nuclear engineering students hone their skills on a small nuclear reactor on campus and gain experience during paid summer internships at Progress Energy and Duke Energy nuclear plants. By the time they graduate, the students select from an average of 3.5 job offers in a field with median salaries that can reach \$92,000 a



NCSU nuclear engineering students can hone their skills on a small nuclear reactor on campus. The reactor was activated during a weekday experiment.

year.

N.C. State senior Mike Hershkowitz is a practical 22-year-old from Hagerstown, Md., who is set to graduate in December. Job security and high pay figure prominently in his choice of career, so much so that his parents refused to pay for Hershkowitz's first choice of study, international business, because he didn't speak a foreign language.

"There's going to be a mass retirement that's going to send salaries through the roof," said Hershkowitz, assessing his prospects in nuclear engineering.

Industry rebounds

All industries have ups and downs, but the prognosis for the country's nuclear industry had been especially bleak. Double-digit interest rates in the 1970s sent construction costs soaring during a period of ambitious expansion.

The 1979 meltdown at the Three Mile Island nuclear plant in Pennsylvania sealed the industry's fate, killing plans for about 60 nuclear reactors in various stages of planning and construction.

Hiring came to a standstill and a generation of nuclear workers sought their fortunes in more promising fields.

Today the average age of the nation's nuclear workers is about 50. Many will be eligible to start retirement at 55. Within five years, about 35 percent of the specialists who have been running U.S. nuclear plants for the past quarter-century -- about 19,600 people -- are expected to begin a mass retirement.

With the explosion in job opportunity, nuclear professionals are mobile again after years of stagnating in a low-turnover industry. Progress Energy is losing talent to the Nuclear Regulatory Commission, General Electric and Westinghouse, said Progress' chief nuclear officer, Jim Scarola. Utilities move quickly to sign promising students.

"The market is very competitive," Scarola said. "It's not uncommon to make a job offer before

the Christmas vacation to a student who won't graduate until May."

Skilled craftsmen are especially in demand. Some can enter the nuclear field with only a high school diploma or a two-year college degree.

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A nuclear brain drain (continued)

After background checks, psychological profiling and training and certifications, maintenance technicians can eventually make about \$66,000 a year performing tasks so precise that the standards are comparable to the aeronautical industry. *Source: New Observer*



N.C. State has one of a few remaining nuclear engineering departments. Students confer on a problem. Photo by Corey Lowenstein

Lander County Repository Planning and Oversight Program

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