

What's Holding Back the Nuclear Renaissance?

The stars would seem to be aligned for a renaissance of nuclear power in the United States. Fossil fuel prices are historically high, political uncertainty plagues several of the oil-producing regions, new reactor technology looks promising, and President Bush is promoting nuclear among the alternatives for electric power. Indeed, opinion polls suggest the public has an increasingly positive attitude toward nuclear power.

But the next surge of nuclear construction will never gain momentum unless two things occur. The first is to resolve the problem of long-term disposal of spent nuclear fuel by completing the Yucca Mountain repository in Nevada. The second is to find an executive in the industry who is sufficiently politic and motivated to step up and become a public champion for nuclear power, as Lee Iacocca did in the ailing U.S. auto manufacturing industry during the late 1970s.

Nuclear reactor technology has made a lot of progress in recent years, and the next generation of technology, such as the Westinghouse AP1000, whose design was recently certified by the Nuclear Regulatory Commission (NRC), promises to be safer and more reliable than previous designs. It's likely that a consortium of utilities will soon ask the NRC for a license, and several other utilities are considering filing for licenses. Because the NRC will have to staff up to handle license applications, some executives have expressed concern that simultaneous filings could create a logjam that would slow the process and make it more costly and inefficient.

Yet this may be putting the cart before the horse. The more complicated and longer-term problem is that a resurgence of nuclear power hinges on a resolution of the Yucca Mountain depository. Some background: To obtain a license for a new nuclear plant, the licensee must demonstrate that it has a plan for the storage of spent fuel, just as existing plants do. More new plants thus aggravate the long-term problem of what to do with radioactive waste once these plants run out of on-site storage capacity. U.S. commercial reactors have accumulated 50,000 metric tons of waste at roughly 70 nuclear sites around the country, and the plants are running out of room.

One option being discussed is to harness the significant amount of energy remaining in spent fuel rods through reprocessing. There is no existing reprocessing facility in this country, so we could ship the spent fuel overseas for reprocessing, or we could build a facility to the tune of more than \$20 billion. Either alternative would be controversial

because of the public funding and national policy considerations involved, as well as the technology challenges.

While it is not currently cost-effective for U.S. nuclear operators to replace fuel supplies with reprocessed fuel, technology advances over the next 50 years might make reprocessing an excellent alternative. It makes sense, therefore, to modify the depository at Yucca Mountain to permit retrieval of the spent fuel for reprocessing in the future. As a side benefit, this could help shift the debate away from the question of how many thousands of years of permanent protection the depository must provide.

Unfortunately, the Yucca Mountain project has been stymied by inadequate funding, poor management under several administrations, snafus over technology and record keeping, and the failure to include the participation of Nevada residents who are most affected by it. Blame is being doled out on all fronts. For Yucca Mountain to move ahead, the Congress, the president, and the industry must be willing to step back and take a fresh look at their strategies.

Yucca Mountain needs more money, as appropriated funding has been well short of what has been needed. So, Congress should increase funding and take steps to reduce the intense political pressure on DOE. But the money needs to be managed better, and the Department of Energy (DOE) should recognize its own role in this regard.

One practical step would be for the Administration and the Congress to establish a quasi-governmental agency, similar to the Tennessee Valley Authority (TVA), which is insulated from short-term partisan politics and can manage the Yucca Mountain depository more as a business than as a government program. This "Fedcorp," which is an old idea whose time has come, could be structured with a board of directors appointed by the President and confirmed by the Senate. The board, in turn, could appoint a chief executive officer who was insulated from the politics of the moment.

More broadly, the utility industry needs to

Exhibit 1 **Conceptual design of Yucca Mountain depository**



1. Canisters of waste, sealed in special casks, are shipped to the site by truck or train.
2. Shipping casks are removed, and the inner tube with the waste is placed in a steel, multilayered storage container.
3. An automated system sends storage containers underground to the tunnels.
4. Containers are stored along the tunnels, on their side.

define and publicly articulate its role in U.S. energy provision over the next few decades, instead of allowing politicians and other outside parties to do so. Since nuclear power should be a major component of America's energy future, the industry must take control of the issue.

To do so, the industry needs a strong and highly visible leader who can articulate in plain English a compelling plan for addressing the waste storage and license application challenges. There are many strong and capable candidates, but none has yet been willing to step up to this role, which was so forcefully played by Lee Iacocca in the late 1970s. Iacocca, who had been president at Ford, joined Chrysler as it was on the verge of going out of business and needed a significant infusion of cash to survive. In asking the Congress for a loan guarantee, Iacocca offered a vision of a leaner, more responsive, and more productive company—a vision that carried over to other U.S. manufacturing sectors as well.

Such a leader should express a willingness to make changes in the Yucca Mountain project, including engaging Nevada residents

and their representatives in a constructive discussion. For example, if the country asks the citizens of Nevada to host the storage of high-level nuclear waste, perhaps Nevada should receive compensation for doing so. Quasi-governmental agencies such as the TVA often are exempt from taxes but compensate the states in which they operate with annual payments in lieu of taxes. Such payments from TVA are based on the amount of generation from each of its power plants; at Yucca Mountain, a similar formula might be based on the weight or volume of waste stored.

Nevadans, provided with higher-quality information and genuine involvement in the process, can be expected to act rationally. In Finland, for example, communities can veto repository proposals; the final underground disposal site received support from 78% of local residents. Identifying and evaluating forms of compensation for Nevada residents makes economic and political sense, given that they will be accepting waste from other states. Finland, Japan, Sweden, and Switzerland all plan to design compensation packages to build support among potential host communities; several nations have already engaged in negotiations with local representatives.

Nuclear waste is accumulating, and local plants can't handle much more. Moreover, the nuclear construction industry, once presumed an endangered species, has an ambitious agenda to build more plants. For the agenda to become reality, the industry and its central spokesman will need more than the facts and analysis on their side; they must also be more creative and compelling in how they tell the nuclear story to the public and how they negotiate to resolve Yucca Mountain. ❖

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