

Nuclear power is safer than ever

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One of the best hopes for nuclear power's revival is also the least appreciated: the outstanding safety record of U.S. nuclear power plants.

Safety improvements have been spectacular. While there were 26 shutdowns of more than a year for safety reasons from 1987 to 1997 and 21 in the decade before, there has only been one over the past decade. With the improvement in safety, insurance premium costs for nuclear plants have gone down.

Nuclear plants today are up and running more than 90 percent of the time, up from 50 percent in the 1970s. Today nuclear power offers large quantities of electricity that is cleaner than coal, cheaper than natural gas and more reliable than wind.

Despite continuing efforts by anti-nuclear organizations to stop its growth, the tide is turning in nuclear power's favor. Electric utilities are gearing up to build a new generation of nuclear power plants, employing advanced versions of the same light water reactor technology used in today's plants, but with a difference. They are using simpler, standardized designs so they can order critical components, such as customized steel casings for the reactor core, for more than one project at a time, and thereby hold down construction costs. Utilities will be able to operate the plants more efficiently. Handling nuclear waste will be easier. Between four and eight units, mainly in the Southeast, are expected to begin operating by 2015.

Safety begins with plant design. Redundant safety systems provide "defense in depth." Also, reactor operators receive rigorous training. There also is an exhaustive inspection program. In addition to inspections by each plant operator, the Atlanta-based Institute of Nuclear Power Operations conducts detailed plant inspections that run two weeks each. And the Nuclear Regulatory Commission has at least two resident inspectors and as many as four at each nuclear site. Increasingly, policymakers are advocating full use of nuclear power as an effective way to reduce greenhouse-gas emissions and dependence on foreign oil. Alan Greenspan, the former Federal Reserve chairman, said at a recent energy conference in Houston that nuclear power is part of a clean-energy strategy that he would recommend to the next president.

Regarding nuclear waste, Greenspan acknowledged that the United States must continue to work toward a successful program for spent-fuel management. But it is a "resolvable problem," he said. "The French seem to have taken care of it . . . and we can, too."

France takes care of its spent-nuclear fuel by storing all of it in a centralized facility, then reprocesses it into new fuel for electricity production. The remaining nuclear waste is being stored until it can be permanently disposed of in a geologic repository. France obtains about 80 percent of its electricity from nuclear power, and largely because of it emits fewer greenhouse gases per capita than any other European country.

Here in the United States, the problem of nuclear waste disposal is more political than technical. Despite opposition from Nevada politicians and insufficient funding from Congress, the Department of Energy is moving ahead with licensing and construction of a geologic repository at Yucca Mountain. As it has been for decades, the spent fuel is being stored safely and securely at nuclear power plant sites. In fact, all the spent fuel that has resulted from nuclear electricity production could be stored on one football field to a depth of 7 feet. In time, reprocessing will extend uranium supplies and significantly reduce the volume and toxicity of nuclear waste.

For the nuclear industry, the mantra is diligence and accountability. That's the key to the extraordinary safety record of the U.S. Navy's nuclear-powered submarines and aircraft carriers. On daily patrols, a submarine captain bunks just a few feet from the vessel's reactor. Likewise, the workers at nuclear power plants typically live near the plants, and are understandably proud of the industry's stellar safety record.

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