FINANCIAL DESK

Cheap and Abundant Power May Shutter Some Reactors

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Nuclear plants that provide 10 percent of the nation's nuclear power may be closed this decade because their operating costs are too high to compete against a rising tide of cheap surplus electricity, experts say.

More than 100 plants under construction were abandoned in the 1970's and 80's because of their cost. But the idea that an operating nuclear plant is not competitive with other sources of electricity violates the fundamental logic of nuclear power, which is that plants may be expensive to build but are cheap to run.

"It used to be that everyone said, once you built it, there wasn't any question that costs were lower," said Victor Gilinsky, an energy consultant and former member of the Nuclear Regulatory Commission. "Now they are more expensive to run than other plants." Aging Steam Generators

In the next few years, at least 10 utilities will need to replace steam generators, which are giant heat exchangers that have shown a tendency to rust and crack, said Gary R. Doughty, an expert on plant life extension with the Nielsen Wurster Group, a consulting firm in Hartford. The job generally runs about $150 million for each reactor.

Other utilities face questions about the condition of their reactor vessels, the great steel pots that hold the fuel. Years of bombardment by neutrons, the subatomic particles that sustain a chain reaction, are known to make metal more brittle, but the extent of the problem is not clear.

Some utilities that operate a single reactor may be tempted to pull the plug, he said, because that would allow elimination of an entire division.

In Rowe, Mass., the owners of the 32-year-old Yankee Rowe reactor decided in February that the plant was too small and too old to justify the investment needed to keep it in service, given the general power surplus in its region. Southern California Edison reached a similar judgment recently about its 24-year-old San Onofre 1 plant near San Clemente, although the plant has not yet been shut. And last year the Sacramento Municipal Utility District decided to shut the Rancho Seco plant as uneconomic at the age of 15. Others around the country were retired in earlier years, some at even younger ages.

With only a handful of additional plants likely to be finished and no new ones on order, the result could be an accelerated march to the extinction of nuclear power in the United States. Currently, 108 are

operating, producing about 20 percent of the nation's electricity. Some of those, however, are doing very well; in 1991, 25 plants set records for themselves in the number of kilowatt-hours produced.

John F. Ahearne, a former member of the Nuclear Regulatory Commission and now the director of Sigma Xi, the Scientific Research Society, said that plants that were not economic were more likely to be shut now than they would have been a few years ago. In the last 10 years, he said, the utilities have come to be dominated by business managers, replacing what he called "technologists," or "people who were committed to nuclear power because they thought it was just a good thing for this country." The Bottom Line

In the view of the business managers, he said, "the role of a utility is to make money." They are the people who canceled over-budget reactor construction projects in the 1980's, he said, and they are willing to shut plants now if there are cheaper alternatives.

The price of oil, which is currently low, plays a small role in keeping the electricity market highly competitive, especially in places like New York, which uses oil for about 20 percent of electricity generation. But nationally, electricity made from oil is less than 5 percent of total generation.

Natural gas plays a far larger role, because it represents about 10 percent of the utilities' fuel use nationally, and about half the generators recently completed or under construction use natural gas. On the basis of energy content, natural gas prices have been substantially below oil prices recently.

In addition, overall demand for power has been driven down by recession and by conservation measures, with utilities often subsidizing customers' installation of light bulbs, motors and other devices that will do the same work with less power. Price May Rise

Some experts believe that as the economy turns around, the demand for power will rise and hence its price. In addition, requirements of the new Clean Air Act will raise the cost of coal-fired power, and if the United States institutes a carbon tax in the next few years to stave off global warming, that would make nuclear power more competitive, too.

Experts are not sure how many nuclear plants will shut in this decade. The chairman of the Nuclear Regulatory Commission, Ivan Selin, said in a telephone interview that three or four were vulnerable soon. Mr. Ahearne said it could be 10 by the end of the decade.

Mr. Selin said it was unlikely that any utility would decide to close a plant that was running smoothly and was not in immediate need of any big investment. But if a plant required a large investment, he said, "that could push it over the brink." In that category he put the Consumers Power Company's Palisades plant, near South Haven, Mich., which opened in 1971, where the pressure vessel may now be brittle, the same weakness that was suspected at Yankee Rowe; Consumers Power's Big Rock Point plant, in Charlevoix, Mich., opened in 1965, which has no known significant flaws but is by far the smallest still operating, and Rochester Gas and Electric's Robert E. Ginna plant, near Rochester, which opened in 1970 and faces the expensive replacement of its steam generators.

All those plants are old and fairly small. Mr. Selin said it was far from clear whether the problem would extend into the large plants that entered service in the mid-1970's. But it might, he said in a telephone interview.

"There are two ways of looking at it," Mr. Selin said. "You can say each is different, and there is no trend, or you can say there's an underlying trend here. The financial people are beginning to worry

about an underlying trend."

In fact, Lehman Brothers organized a conference for utility investors last month on the question of whether old plants were still economic. It drew two dozen investment managers.

The Utility Data Institute, a firm in Washington that charts operating costs, reported recently that in 1990 fuel, operating and maintenance expenses at nuclear plants came to $21.89 for one thousand kilowatt-hours produced, about as much electricity as a typical household uses in two months. At a coal plant, the fuel, operating and maintenance cost for the same amount of energy was $20.24. The coal cost was up slightly in 1990 and the nuclear cost down compared with 1989, but nuclear has exceeded coal for the last several years.

Those figures are an average for all nuclear plants, meaning that some are significantly higher.
Relicensing a Question

The old reactors have a variety of factors working against them.

Mr. Doughty of Nielsen Wurster pointed out that a plant that was nearing the expiration of its 40-year operating license and needed major investments would have to face the economics of amortizing the expenses over the few remaining years of operation. The Nuclear Regulatory Commission has established a policy for granting license extensions, but no plant has yet applied and no one is sure how easy it will be to get one.

Carl A. Goldstein, a spokesman for the U.S. Council for Energy Awareness, the nuclear industry's public relations arm, said that more plants would probably be found to be uneconomic, but that the point at which a plant should be written off could not be defined until the Nuclear Regulatory Commission made clearer what would be required for a plant to be re-licensed. And nuclear economics could improve, he said, because plant operating and maintenance expenses could decline.

Mr. Doughty said that investing new money still made good sense for most plants, but that he feared that reactors with 6,000 megawatts of capacity, or about 6 percent of the nation's total nuclear capacity, would shut in the next few years. Reason to Stay Open

How much is ultimately closed may depend on how state rate regulators handle the costs, said Peter Bradford, the chairman of the Public Service Commission in New York and also a former member of the Nuclear Regulatory Commission. Mr. Bradford, a speaker at the Lehman Brothers session, said a utility with a large investment in a reactor might seek to keep it running so it could continue to collect depreciation, even if cheaper power were available elsewhere.

That, he said, would create a conflict between the interest of customers, who would want the plant closed, and the interest of the utility, which would want to let it run. The solution, he said, would be to allow utilities to write off plants that had become economically obsolete, and collect the investment from customers.

"Otherwise, the utility doesn't have the incentive to make the right decision," he said.

Photo: Utlities may be tempted to pull the plug on existing nuclear plants as they become too expensive to operate. Owners of the 32-year-old Yankee Rowe reactor in Rowe, Mass., closed it in February because the plant was too small and too old to justify the investment needed to keep it in service. (Associated Press) (pg. D25) Table: "Nuclear Plant Retirements" Plant, location Years in operation

Size, in megawatts San Onofre 1, San Clemente, Calif. 1968-1992 or 1993 436 Yankee Rowe, Rowe, Mass. 1961-1991 175 Rancho Seco, Sacramento, Calif. 1975-1989 918 Fort St. Vrain, Platteville, Colo. 1979-1989 330 La Crosse, Genoa, Wis. 1969-1988 50 Dresden 1, Morris, Ill. 1959-1978 207 Humboldt Bay, Eureka, Calif. 1962-1976 65 Shippingport, Shippingport, Pa. 1957-1982 60 Indian Point 1, Buchanan, N.Y. 1962-1980 265 Peach Bottom 1, Peach Bottom, Pa. 1966-1974 40 Fermi 1, Newport, Mich. 1963-1972 61 Elk River, Elk River, Minn. 1962-1968 22 CVTR, Puerto Rico 1962-1967 17 Pathfinder, Sioux Falls, S.D. 1964-1967 59 Piqua, Piqua, Ohio 1962-1967 59 Hallam, Hallam, Neb. 1962-1964 75 Graph: "At What Cost" shows average cost, in cents per kilowatt hour, for fuel, operation and maintenance of nuclear power plants, 1982-1990. The cost at the most economical nuclear plant was 1.21 cents per kilowatt-hour in 1990. The highest cost was more than 5 cents. (Source: Utility Data Institute) (pg. D25)