

Nuclear power was fading before Japan

Written by

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Just when some thought nuclear power was on the verge of a renaissance in the U.S., the earthquake-induced crisis at Japan's Fukushima Dai-ichi plant has put advocates on the defensive again about safety and environmental risks.

These risks have been political obstacles for the acceptance of nuclear power for more than four decades, and no new nuclear plant has been built in the U.S. since the 1979 Three Mile Island accident. But environmental issues aren't the biggest deterrent to more nuclear power. It's the economics.

They are related because making plants safer costs more money, but the biggest reason nuclear plants aren't being built is that, even if the public is willing to accept that technology and regulatory oversight can make nuclear power safe, it has a tough time competing in the electricity market.

When the 104 existing reactors were built in the U.S., the theory was that though the capital costs were high, the electricity generated would be cheap because the fuel and operating costs were so low. The regulated utilities could finance the high

fixed costs of construction because regulation provided a way to recover those costs in approved rates.

But regulation began to change when, beginning with Oregon in 1989, state utility commissions began to adopt an integrated resource planning approach to evaluate utility resource decisions. They started asking utilities to compare the costs of different resource options, including energy efficiency, to determine which were the lower-cost and lower-risk alternatives.

Then in the 1990s the marketplace began to change. Natural gas turbines offered a low-cost alternative to nuclear, and changes in regulation allowed the development of a wholesale market from which utilities could buy power.

With these developments added onto the public's safety fears and consternation about cost overruns and unexpected rate impacts, the days of a big, expensive centralized nuclear plant were done.

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If regulators take a look at all the options, it becomes difficult to justify a nuclear plant that today could cost between \$7 billion and \$9 billion to build. To overcome the financial obstacles, President Barack Obama felt it necessary to propose \$54 billion in government loan guarantees to keep the option alive.

The nuclear comeback was to be fueled by the need to reduce greenhouse gas emissions and by a new generation of plant design. But adding an assumed value, or a tax as some would call it, on carbon emissions doesn't necessarily help nuclear power's economic position. The higher the value assigned to a ton of carbon, the more that high-cost energy efficiency measures become cost-effective. The same goes for natural gas. The higher the carbon tax, the more valuable its emission reductions relative to coal become.

The Congressional Budget Office estimated in 2008 that if natural gas market prices were to stay high, it would take a carbon tax of \$45 per ton to induce market interest in nuclear power. If natural gas prices returned to normal, which is the case, it would take an \$80 per ton tax.

Last year, two senior fellows at the free-market-leaning Cato Institute, Peter Van Doren and Jerry Taylor, wrote that if historical cost overruns were repeated, it would require a \$150 per ton carbon tax to enable nuclear power to be competitive.

They put it in simple terms. No one will put their own money at risk without government loan guarantees because nuclear power

"ties up more capital for longer periods of time than its main competitor, natural gas fire generation."

When you consider the options of energy efficiency, natural gas turbines, renewable portfolio requirements, refurbishing existing plants and the ability to purchase power from an open wholesale market, nuclear power has more to overcome than the public's concern about safety.

The earthquake in Japan might have poked a hole in the nuclear power comeback balloon, but there wasn't much air in it in the first place.

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