THE NUCLEAR OPTION

Maybe it isn't the answer for New England's energy needs. But neither is limiting our alternatives. By Barbara Moran

In May 2010, I wrote an article for this magazine about Vermont Yankee, the troubled nuclear power plant near that state's southern border. Vermont's Senate had just voted to block its license (the Nuclear Regulatory Commission renewed it anyway), and I wondered what this meant for New England. For good or ill, our region seemed to be resolutely ignoring the "nuclear renaissance" sweeping America.

Remember those heady days? Just three years ago, as citizens watched the Iraq War slog on and Deepwater Horizon spew oil into the Gulf of Mexico, public support for home-grown nuclear power climbed to a record high. In his 2010 State of the Union address, President Obama pledged to build a new generation of nuclear power plants, and later announced $8.33 billion in loan guarantees for two reactors in Georgia. The future of nuclear power in America seemed bathed in a golden glow.

A lot can change in three years, eh?

Now Vermont seems more bellwether than backwater. In August, Entergy Corp., which owns Vermont Yankee, said it will close the plant in 2014, making it the fifth American reactor whose retirement has been announced over the past year. Granted, a total of four nuclear reactors are under construction in Georgia and South Carolina, and Obama, in his June 2013 Climate Action Plan, still offered support for emerging nuclear technologies. But enthusiasm from the White House (and other quarters) seems dampened: I didn't hear any ringing calls for more nuclear power in this year's State of the Union address. In much of the United States, the nuclear renaissance seems to be falling victim to the three F's: fracking, funding, and, to a much lesser extent, Fukushima.

Let's talk about Fukushima first. When Japan's Fukushima Daiichi nuclear plant melted down in March 2011, critics of Vermont Yankee quickly pointed out similarities between the plants. Both were about the same age and used Mark 1 boiling water reactors. Furthermore, the Vermont plant had been dogged by a couple of problems—a partial cooling tower collapse in 2007, a radioactive tritium leak in 2010—that lowered citizens' confidence. Vermont-based environmentalist Bill McKibben told me his state's plant was "a Fukushima in waiting."

Fukushima galvanized the already strong antinuclear movement in Vermont, creating an increasingly unhappy political environment. While this alone didn't kill Vermont Yankee, it certainly didn't help. But interestingly, Fukushima had little effect on nuclear enthusiasm in the rest of the country. In March 2011, just before the Fukushima disaster, a Gallup Poll indicated that 57 percent of Americans favored nuclear power. A year later, after Fukushima, that percentage was exactly the same.

So if fear isn't killing the nuclear renaissance, what is? It's the other F's: fracking and funding. Fracking, properly known as hydraulic fracturing, is when water, sand, and chemicals are pumped into a well to crack rocks and release natural gas. Fracking, while controversial, has helped to dramatically lower the cost of natural gas over the past five years. Meanwhile, the slower economy has lowered demand for electricity. Nuclear energy, while still generating cheap, reliable electricity (or, rather, cheap once the plant is paid off) has become both less competitive and less needed.

And the natural gas won't stop flowing anytime soon. The US Energy Information Administration expects our natural gas production to increase 44 percent by 2040. Building a nuclear reactor costs billions of dollars, and investors don't fork over that much cash without a good promise of future profit. And that's where the third F comes in.

By funding, I really mean regulation and subsidies. (OK, it's a stretch, but I wanted three F's.) In regulated energy markets, like many Southern states have, plant investors know they will be able to sell nuclear-generated power at a competitive rate. In deregulated states, like those in New England, there is no such guarantee. On the contrary, says Jacopo Buongiorno, an associate professor of nuclear science and engineering at MIT, the market here has been "poisoned" by state and federal subsidies for renewables. "Utilities are forced to buy electricity generated by wind, even though it costs more," says Buongiorno. "It seems like an unnatural interference in the market."

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Vermont Yankee is the fifth US reactor whose retirement was announced over the past 12 months. In Montpelier (facing page), antinuclear activists mark the news.

Of course, one man's poison is another's honey. The closing of Vermont Yankee, McKibben told me, "will offer Vermonters a real chance to change up their energy mix. Hopefully we will unite behind wind and sun."

It's hard to foresee the future of nuclear power in New England or the rest of America. Nuclear power may be an awkward fit for our region, but it's troubling to see so many eggs in the natural gas basket. According to the Energy Information Administration, natural gas fueled 52 percent of the electricity generated in New England in 2012, up from less than 30 percent in 2001. This gas glut can't always fit through our pipelines, especially in winter, which leads to extreme spikes in our electricity prices, as happened in January and February 2013. As Buongiorno says, if the United States starts exporting more natural gas, or regulators crack down on fracking, nuclear's prospects may change rapidly.

Who knows, in another three years, the nuclear renaissance may return. But not, it's safe to say, in Vermont.

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