



Nuclear energy in New England, once unthinkable, now indispensable | Opinion

The region's growing demand for electricity combined with the dramatic improvement in nuclear technology makes it an idea worth exploring.

By Leonard Rodberg, PhD

Four of the New England states have long-standing restrictions on new nuclear plants. So why are [all six governors](#) pledging to consider building new reactors?

Because nuclear technology has improved dramatically, the demand for electricity has grown more pressing and their understanding of how renewables fit in with other energy sources has, as politicians like to say when they reverse themselves, “evolved.”

The New England region was once a pioneer in nuclear energy, building some of the earliest nuclear plants in the world. However, in the last 30 years, the region became a [center of opposition](#) to nuclear, and all but two of them have closed.

It is not yet clear that it will join the national trend toward nuclear renewal, but there are reasons that it ought to.

Most of all, the region needs the electricity. Growing numbers of residents want to replace the gasoline in their cars and the heating oil and gas in their homes with electricity. And imports of electricity are strained as New England's neighbors, Canada and New York, use more themselves and have less to spare. Furthermore, the New England states have ambitious carbon reduction goals, and none are enthusiastic about adding new natural gas-fired generation.

Wind and solar have, until now, been seen as the answer. People like the idea of wind and solar "farms," but not in their backyards. Today those two sources contribute only about 7% of generation, and rapid growth does not appear likely. Moreover, there is resistance to the transmission lines that are essential to bulking up wind and solar. All of this has become obvious to the governors.

The part that is less obvious but still critically important is that the output of the renewables and the system's needs are further out of sync than most advocates realize. I have [examined the region's electric grid](#) hour by hour using actual solar and wind output data and compared the demand for electricity with the supply from these renewables.

There is a large gap, especially during the winter but repeatedly throughout the year, between what the grid needs and what these variable, weather-dependent sources can provide. Filling this gap with power from backup batteries, and the extra solar panels and wind turbines needed to charge those batteries, would be much more expensive than the residents of the region could bear.

The practical and affordable solution is to build nuclear power plants, which are weatherproof, free of carbon emissions and reliable, operating 24/7 throughout the year. Furthermore, these plants are good neighbors, having little impact on the surrounding environment.

Nuclear reactors have improved, too. Seventy years of commercial experience and decades of innovation have yielded designs that are simpler to construct with safety features that rely on natural forces like gravity and convection and don't need any operator intervention.

Further, new nuclear systems can supply not only constant, always-on power but also flexible energy that responds as needed to the continuing variations in demand on the electric grid. When we return home after work, and turn on the TVs, the dishwashers and the washing machines, we want to the added power to be there.

And reactors can help beyond simply making electricity. They can supply heat for neighboring buildings. When demand is low, their heat and power can make hydrogen, a carbon-free fuel that can be stored and burned to supply electricity at peak hours. And they can provide heat and power to create carbon-neutral synthetic fuels for aircraft, ships and trucks that are hard to electrify.

Starting to build a few reactors now will be a conservative path to demonstrate the newer technology and preserve the option for further expansion. It's likely that we will need more clean, reliable electricity in the future. It's time to start building the nuclear portion now.

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