

Sorry State: U.S.'s Nuclear Reactor Fleet Dwindles

A falloff in construction of new nuclear power plants will make climate change requirements harder to meet

By David Biello | Feb 17, 2015 | 0

The U.S.'s nuclear reactor fleet dipped below 100 for the first time in decades, when, at the tail end of 2014, Vermont Yankee shuttered its operations. The 604-megawatt power plant's termination did not come as a surprise: it had logged a slew of safety issues in recent years, including burst pipes, leaks and misplaced fuel rods. Nevertheless, it provided up to 4 percent of New England's power and one third of Vermont's. Its owner, Entergy, just did not have enough money to make the necessary upgrades, especially at a time of low electricity prices. The loss means more natural gas will be burned to meet New England's electricity needs, which undermines U.S. policy to move away from reliance on fossil fuels and control climate change.

This year is expected to be a bad one for the nuclear energy industry in the U.S., with several reactors, including a handful in Illinois and New York, at risk of shutting down. Yet the dwindling number still produce roughly 70 percent of the electricity in the country that does not exacerbate global warming.

The International Energy Agency's most recent blueprint for holding global warming to two degrees Celsius requires an expansion of nuclear power in every region of the world by 2040. Yet only 14 countries plan to build new reactors, and only China intends to build a significant number. Four advanced nuclear plants are under construction in the U.S., but with ongoing shutdowns, the fleet—once the largest in the world—now seems doomed to fade away, done in by cheap natural gas and policies that favor renewable resources such as wind energy.

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Without nuclear power, the Obama administration's Clean Power Plan, which would set limits on carbon dioxide emissions from all power plants, will become more costly to implement. And if states cannot meet the plan's requirements, the U.S.'s promise to China to cut greenhouse gas emissions by as much as 28 percent by 2025 may fall through.

The paucity of replacement reactors also presses the U.S. to depend on nuclear power plants built with designs from the 1950s that have known flaws. In fact, the U.S. still has 23 reactors with the same design that melted down after the 2011 earthquake and subsequent tsunami in Fukushima, Japan. These reactors are aging, too: components face a daily load of high temperatures, pressures, vibration



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and bombarding neutrons, which can render thick steel walls so brittle that cracks form at welds and joints.

New, safer reactor designs or the massive scale-up of wind, solar and, particularly, geothermal power—because of its ability to produce electricity at all times, as does fission or coal burning—could ultimately replace aging reactors. But swapping nuclear with natural gas is no way to help combat climate change.

This article was originally published with the title "Nuclear Letdown."

