# Senate re-introduces bill to help advanced nuclear technology

Enlarge / The Watts Bar nuclear power plant in Tennessee.

## reader comments

48 with 24 posters participating

## Share this story

Last week, a bipartisan group of 15 US senators re-introduced a bill to instate the Nuclear Energy Leadership Act (NELA), which would offer incentives and set federal goals for advanced nuclear energy. A smaller group of senators originally introduced the bill in September of last year, but the Congressional session ended before the Senate voted on it.

Specifically, the bill authorizes the federal government to enter into 40-year power purchase agreements (PPAs) with nuclear power companies, as opposed to the 10-year agreements that were previously authorized. Securing a 40-year PPA would essentially guarantee to an advanced nuclear startup that it could sell its power for 40 years, which reduces the uncertainty that might come with building a complex and complicated power source.

Advanced nuclear reactors are next-generation technology that improve upon the large light-water reactors that are in use today. Traditional light-water reactor nuclear power has struggled in the United States, because reactors cost billions of dollars to build and communities are reluctant to accept

new nuclear builds due to fears about reactor meltdowns and terrorist attacks. In addition to all this, nuclear waste is an unsolved problem in the US—there is currently no official disposal site for commercial nuclear waste, and while a solution to that problem is technically feasible, it has also been politically intractable.

But there is still political support for nuclear energy, because it's reliable, long-lived, and can produce massive amounts of power with no direct carbon emissions.

Advanced nuclear reactors try to address some of the problems posed by traditional nuclear reactors by making the reactors smaller and modular (thus making them less costly to build and, theoretically, safer in a shutdown scenario) or by constructing reactors that can operate on safer and less dangerous fuel.

## Finding common ground

Last week's bill was sponsored by a bipartisan group of senators led by Sen. Lisa Murkowski (R-Alaska), including Democrats from New Jersey, Delaware, Colorado, and Illinois, as well as Republicans from Tennessee, Idaho, Ohio, and West Virginia.

In addition to supporting a 40-year PPA to improve the economics of advanced nuclear reactor research from the private market, the bill directs the Department of Energy's Office of Nuclear Energy to develop a 10-year strategic plan to support advanced nuclear reactor research. The DOE must also "construct a fast neutron-capable research facility" if the bill passes, which Senate materials say "is necessary to test important reactor components, demonstrate their safe and reliable operation, and ultimately license advanced reactor concepts."

The bill also directs the federal government to make available

some “high-assay low-enriched uranium” for research and testing in advanced reactors. Traditional light-water reactors use low-enriched uranium in which the active U-235 isotope constitutes 3 to 5 percent of the nuclear fuel, according to the World Nuclear Association. High-assay low-enriched uranium, on the other hand, pushes enrichment levels to about 7 percent of the fuel and, in some cases, can go as high as 20 percent.

Finally, the bill directs the DOE to create “a university nuclear leadership program” to train the next generation of nuclear engineers.

On Thursday, Microsoft mogul Bill Gates tweeted his support for the bill. Gates is currently the chairman for an advanced nuclear reactor company called Terrapower, which is developing a traveling wave reactor that uses depleted uranium as fuel (depleted uranium is a by-product of uranium enrichment). Terrapower suffered a political setback earlier this year, as US rules against sharing nuclear technology with China forced the company to abandon its plans for conducting preliminary trials of its technology in that country.

Gates praised this new bill, writing “I can’t overstate how important this is.”

“To prevent the worst effects of climate change, we need to reach near-zero emissions on all the things that drive it—agriculture, electricity, manufacturing, transportation, and buildings—by investing in innovation across all sectors while deploying low cost renewables,” Gates tweeted. “Nuclear energy is one of these critical technologies. It’s ideal for dealing with climate change, because it is the only carbon-free, scalable energy source that’s available 24 hours a day.”

NuScale Power, a company that has made significant progress toward building a small modular reactor in Idaho, also praised the bill. In a statement to a market research company called

The Morning Consult, chief strategy officer of NuScale Power Chris Colbert said that “the bill would ‘absolutely’ make it easier and more certain to reach deployment.”

https://arstechnica.com/?p=1483469