



Jimi Lott/Seattle Times

The X-energy project is proposed to be built on a portion of a site now dominated by the dome of the Washington Public Power Supply System No. 1, seen here in 2001. The plant was never completed and construction was halted in 1982, when it was about 60% complete.

Power plant: Would be state's first new nuclear project since the 1970s

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the commercial framework to succeed, and succeed wildly," Sell said in March congressional testimony.

X-energy's four reactors would be able to generate 320 megawatts of power, less than one-third the amount of the roughly 1,200 megawatt capacity of the Columbia Generating Station.

The project, with a reactor dubbed Xe-100, would be the state's first new nuclear power development since the 1970s, when the Washington Public Power Supply System — the initial name for the Energy Northwest utility consortium — tried to build five large nuclear power plants but finished only one in a disastrous effort based on flawed forecasts of future power demand.

The unfinished plants left a bitter legacy — including the largest municipal bond default in U.S. history and, among some, a deep mistrust of the nuclear power industry.

One of the most visible reminders of the Washington Public Power Supply System, which detractors nicknamed "Whoops," is a massive concrete-domed building that dominates a 100-acre tract close to the Columbia Generating Station. This was supposed to be WPPSS No. 1 but construction halted in 1982 when it was almost 65% complete.

X-energy's proposal submitted to the Energy Department calls for installing the reactors on 22 acres of this site, which already includes water intakes from the Columbia River.

Next-generation tech

X-energy's website promotes the helium-cooled reactor as safely producing electricity "in a process that's as clean as wind and solar."

The reactor operates at much higher temperatures than the water-cooled nuclear plants now in operation. It is stocked, like a gumball machine, with the pebbles, each of which holds thousands of fuel particles.

The uranium in these fuel particles is enriched to increase the level of the fissionable U-235 isotope above 15%. This is far below the roughly 90% level required for atomic bombs but still more than triple the level of enrichment for the fuel of current generation reactors.

The heart of the safety case is the design of the fuel, which tucks the kernels of uranium inside three protective layers of carbon and ceramic-based materials.

This is called TRISO fuel. The federal Energy Department calls TRISO the "most robust nuclear fuel on earth." X-energy claims on its website the fuel retains waste and prevents meltdowns entirely.

Sell, in remarks in Kennewick on Oct. 28, said that this safety enables a dramatically simplified design that results in big cost savings. "I'm talking about a reactor that has one-tenth the number of required safety-related systems on it compared to Columbia Generating Station," Sell said.

The claims of a meltdown-proof fuel are dismissed as "absurd" by Edwin Lyman, a physicist with the Union of Concerned Scientists who has researched nuclear reactor safety for many years.

Lyman questions whether the X-energy reactor would be safe enough to justify a design that does away with costly leak-tight containment buildings standard for the current generation of water-cooled reactors.

He says the safety of TRISO fuel requires the ability to consistently manufacture it to exacting standards. So far, he said, that has not been demonstrated in the United States.

In a report he published this year, Lyman notes a 2019 test of the fuel at a national lab-

oratory in southern Idaho "had to be terminated prematurely" when monitoring indicated "the fuel began to release fission products at a rate high enough to challenge offsite radiation dose limits."

If the project moves forward, Lyman calls for the Nuclear Regulatory Commission to take a more cautious licensing approach that would first approve the reactor as a prototype before moving into commercial production.

"A lot of the rationale for why you would embark on this journey is not supported by the evidence," Lyman said.

X-energy officials dispute Lyman's critique.

"I've known Ed for a long time," Sell said. "He's committed to his anti-nuclear positions. That particular report, as it was related to us, relied on public information that is no longer current or relevant."

X-energy's project in Washington also is receiving pushback in from a Northwest tribe.

The Confederated Tribes of the Umatilla Indian Reservation does not support placing small modular reactors such as those proposed by X-energy or any new nuclear missions at Hanford, according to an Aug. 6 letter to the Energy Department from the chair of the tribes' board, N. Kathryn Brigham.

The federal Hanford reservation includes areas that rank as the most contaminated nuclear sites in North America. The massive task of treating 177 tanks storing a perilous brew of radioactive and chemical waste, some of which are leaking, represents a huge cleanup challenge.

The letter noted that 1855 treaties ceding millions of acres of land called for the preservation of important rights, including hunting, fishing and gathering. Hanford is partially within these treaty

territories, and new reactor development could impact those rights and resources, said Brigham's letter, which called for consultation to discuss the federal government's trust responsibility under the treaty.

The tribes' concerns are shared by the Columbia Riverkeeper, a Northwest environmental group that released a September report blasting small nuclear reactors as an "unacceptable solution to climate change."

X-energy has yet to apply for a Nuclear Regulatory Commission license to operate the reactor, a complex process that includes an extensive safety review, according to Scott Burnell, a commission spokesperson.

'This has to be competitive'

In the months ahead, drilling for soil samples is expected to begin at X-energy's Columbia River site.

Construction could begin by 2024, according to a tentative timeline.

At the Kennewick meeting organized in late October by Energy Northwest, there was plenty of optimism. Grant County's Nordt, appearing on a panel with Sell, talked about the value of a flexible source of nuclear power. And he urged other utility officials to consider signing up to take some of this power.

"I'd say, look to Grant, we'll take care of the details," Nordt declared.

But in a state where the earlier financial problems of the Washington Public Power Supply System still cast a shadow, any move by a utility district to finance a new nuclear project will get a lot of scrutiny.

Nordt acknowledges that.

"This has to be competitive. We're not doing this because we think the technology is cool," Nordt said. "This is our customer's money, which we take very seriously."

'THIS HAS TO BE COMPETITIVE. WE'RE NOT DOING THIS BECAUSE WE THINK THE TECHNOLOGY IS COOL. THIS IS OUR CUSTOMER'S MONEY, WHICH WE TAKE VERY SERIOUSLY.'

Kevin Nordt | Grant County Public Utility District's general manager

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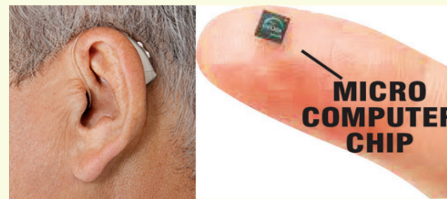
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