Idaho National Laboratory continues progress on Small Modular Reactor

By: Sharon Fisher December 4, 2019

A rendering of the campus around the small modular reactor. Image courtesy of NuScale

IDAHO FALLS – Development of the next generation of nuclear power is underway at Idaho National Laboratory (INL), which could bring it closer to home.

INL is working on the project with NuScale Power of Tigard, Oregon. The NuScale project is a small modular reactor (SMR) that uses technology similar to traditional nuclear reactors, said George Griffith, SMR coordinator for INL.

The U.S. Nuclear Regulatory Commission is expected to approve NuScale's design certification application in September 2020, and its first customer, Utah Associated Municipal Power Systems (UAMPS), is planning a 12-module SMR plant in Idaho slated for operation by the mid-2020s. UAMPS is an energy services interlocal agency of the State of Utah that provides power supply, transmission and other services to its members, which include public power utilities in six western states: Utah, California, Idaho, Nevada, New Mexico and Wyoming.

Construction is expected to start in 2023, with completion still on track for 2026, Griffith said.

As of 2018, when the project was announced, the capital cost was expected to be $2.9 billion. Each NuScale plant is expected to employ 360 people full-time, most of whom will receive an average salary of $85,000 a year. The facility will also create about 1,200 peak construction jobs, as well as 12,000 jobs in the domestic supply chain for manufacturing 36 modules per year. Citing the Idaho Department of Labor, with direct and indirect labor income and industry sales, the plant's construction will generate more than $5 billion.

Mobile nuclear reactor?

Once the technology is finalized, it could even be transportable, such as by being placed in a van, Griffith said. Such a "mobile microreactor" development would make it easier for the SMR to be used in military situations, as part of natural disaster response such as providing power to Puerto Rico after Hurricane Maria. It could also help power remote locations like villages in Alaska.

The SMR could also be used to supply power as part of an electric microgrid, backing up renewable energy sources such as solar and wind when they aren't available.

Mobility would also make it easier to update technology and replenish fuel.

“Every four years, you could unhook the old one, put in a new one, and take the old one back to the factory,” Griffith said.

While other researchers, such as at the University of Texas, also have microreactors, theirs aren’t mobile, he said.

Other parts on track

Other components of the SMR project are also moving along on schedule, with a number of developments happening in July.

For example, UAMPS said that it had reached the 150-megawatt subscription level it needed to trigger continued work on it, the Salt Lake City organization said in a press release. Altogether, 33 of the 47 UAMPS members are participating in the project, the organization noted.

Also in July, NuScale announced it had finalized agreements with Doosan Heavy Industries and Construction (DHIC) and Sargent & Lundy to support deployment of the SMR and provide cash investment in NuScale. DHIC will join the U.S.-led manufacturing team to build the NuScale Power Module, while Sargent & Lundy will proceed with development of the standard plant design to be used at multiple locations, including INL, and will provide additional architect-engineer support.

NuScale also said in July that the U.S. Nuclear Regulatory Commission (NRC) had completed the second and third phases of review of the company’s SMR design, six weeks ahead of schedule.

The review is now in Phase 4. Phase 2 involved publication of the safety evaluation report, while Phase 3 consisted of an independent advisor’s review.