INL small module reactor project on schedule

By: Sharon Fisher February 4, 2019 0

Idaho National Laboratory is on track to house a NuScale small modular reactor by 2026. Photo courtesy of INL.

A project to develop the next generation of nuclear reactor at Idaho National Laboratory (INL) is on schedule, with the reactor likely to be available by 2026.

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. 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 provides power to municipalities in five states, including Idaho Falls.

Joseph Campbell Photo by Sharon Fisher.

The Leadership in Nuclear Energy commission met on Jan. 23 and agreed to continue with the plan, said Joseph Campbell, nuclear science & technology communications at INL.

"They are sticking with the 2026 construction goal and working with UAMPS on the power purchase agreements," he said.

In addition, the U.S. Department of Energy's Office of Nuclear Energy has announced a Memorandum of Understanding between itself, UAMPS and Battelle Energy Alliance – which manages INL – on the SMR project.

The MOU highlighted the Department's intent to draw from two modules of the 12-module SMR, under UAMPS' Carbon Free Power Project.

“One module will be designated strictly for research activities (referred to as the Joint Use Modular Plant or JUMP program),” the department noted in a statement. “The research is expected to focus principally on integrated energy systems that support the production of both electricity and non-electric energy products.”

The other module can be used to provide electricity to INL itself, according to the statement.
Non-electric energy products include items such as hydrogen, which can be used in industry, Campbell said.

Douglas Hunter Photo by Sharon Fisher.

For its part, UAMPS currently has commitments from its utility partners to take 110 megawatts (MW) of power, and it needs 150 MW to go ahead, which it expects to get in a couple of months, said Douglas Hunter, general manager.

There’s nothing technologically or economically magic about the 150MW number — simply that it would take the production of three of the SMR’s 12 modules, which seemed like a reasonable starting point, Hunter said.

As far as pricing of the eventual energy produced, Hunter said he expected it to be comparable to the high end of a combined-cycle gas-powered electrical plant, like Idaho Power’s Langley Gulch. Natural gas prices might also go up depending on factors such as a particularly cold winter on the East Coast, he added.

SMRs are more needed now, Hunter said. Utility plants have increasingly been shutting down coal-fired plants because they’re no longer economical, he said, noting that coal has almost quadrupled in price since he started his career because the industry has mined all the low-hanging fruit already.

For example, Idaho Power announced in 2017 that it might shut down two units of its coal-fired Jim Bridger electrical plant in Wyoming ahead of schedule, due to economic reasons.

Idaho Power is not yet sure to what degree it would use power from the SMR. The company is currently in the process of revising its Integrated Resource Plan (IRP), which is due by June.

Mark Peters. Photo by Sharon Fisher.

“The 60MW SMR comes in at a relatively high capital cost and transmission cost when compared to other options,” said Brad Bowlin, communications specialist. “But it does show a high annual capacity factor (meaning it could be online virtually all the time except for routine maintenance) and a relatively long economic life. The bottom line is, it looks like a pretty expensive option at this point, but we are waiting to see what the computer model generates.”

Mark Peters, director of INL, told a meeting of the House Environment, Energy and Technology committee on Jan. 22 that he was in close communication with Idaho Power and that he was happy with nuclear power’s role in the Idaho Power IRP energy portfolio.