

TVA could take lead for 'mini nuke' plants

By: [Dave Flessner](#) Thursday, Nov. 11, 2010

The Tennessee Valley Authority is first in line to test a new type of modular nuclear plant that designers boast will be smaller, cheaper and safer than existing reactors.

TVA officials said Wednesday they have taken the first step toward gaining regulatory approval to build up to six new mini-nuclear reactors on the site of the abandoned Clinch River Breeder Reactor in Oak Ridge. In a four-page letter to the Nuclear Regulatory Commission, TVA Vice President Jack Bailey said the federal utility "is evaluating the feasibility" of erecting two of the new Babcock & Wilcox-designed "mPower reactors" by 2020.

Each of the new reactors would produce 125 megawatts of electricity -- about 10 percent as much as conventional reactors at TVA's other plants -- and could be built in controlled factory conditions to cut production costs and ensure construction quality.

"The mPower design makes substantial use of modular construction technology which enables major portions of the plant to be fabricated in controlled manufacturing environments and shipped to the site via rail and trucks," Bailey said.

If approved by the TVA board and regulators, TVA would be the first utility to build the new reactor design.

But critics question why TVA is pursuing a new plant design that is yet to be certified by the Nuclear Regulatory Commission.

"We are highly skeptical that these modular designs are going to deliver as promised," said Stephen Smith, executive director for the Southern Alliance for Clean Energy. "There is a whole set of issues that are likely to be raised about these plants so TVA, the NRC and the contractors should expect a real fight."

Smith said he is encouraged that TVA opted to pursue regulatory approval for any mPower units built in Oak Ridge under the NRC's older, two-step licensing process. Rather than the single combined-operating license process being used for other new plants, TVA will seek a construction permit to build the new units and a separate licensing permit once the units are completed.

TVA spokesman Terry Johnson said the utility is using the two-step licensing approach to allow more flexibility for TVA and the manufacturers of the mPower reactor to change the way the plant is designed and built over the next decade. Under the single combined operating license, the NRC must pre-approve the design and construction method for any new plant before any building work begins.

Johnson said the Oak Ridge site was deemed appropriate for a nuclear plant in the 1970s when the U.S. Department of Energy planned to build a breeder reactor on the Clinch River site. The nearby Oak Ridge National Laboratory, which helped develop the first atomic reactors in the post World War II "atoms for peace" program, could help support and use the power from at least one of the new reactors, Johnson said. TVA has set a goal of generating at least half of its power from noncarbon sources and the Oak Ridge lab has set a goal of being carbon-free in its own energy consumption by 2020.

Rick Bonsall, vice president of business development for Babcock & Wilcox, said the proposed TVA plant in Oak Ridge will be the launch site for the new mPower reactor. But he said B&W and its alliance partner, Bechtel Engineering Corp., are talking with several utilities also interested in using the new modular design reactors.

Although the design of the mPower reactor is still under regulatory review, Bonsall said it uses many of the technologies of existing pressured water reactors and the reactors will be small enough to be built underground to add extra containment.

"Any time you can do a lot of work in a factory environment, you have a lot more control on schedule and costs," he said.

TVA and B&W declined to release any early cost estimates for the new reactors, but Johnson said any units "will be competitive in price" with other power options available for the future.

The new reactor could be build as soon as 2020 as a follow-up to TVA's Watts Bar Unit 2 reactor scheduled for completion in 2012 and the Bellefonte Unit 1 reactor scheduled for possible completion as soon as 2018.