

an electrolysis unit for the production of hydrogen from water at Davis-Besse.

“This demonstration project will confirm how commercial nuclear utilities can produce—without carbon emissions—essential products, like hydrogen, at a scale needed by industry,” Hallbert said. “Nuclear energy can help meet the significant demand for hydrogen and other synthesized products while helping industrial users reduce their own carbon footprints.”

Funding for the cost-shared project was provided under a DOE Office of Nuclear Energy funding opportunity announcement (FOA): *U.S. Industry Opportunities for Advanced Nuclear Technology Development*. The DOE is contributing \$9,184,229, while non-DOE funding is \$2,299,391, for a total of \$11,483,620. The announcement was made as part of a sixth round of FOA funding, and like other projects, it will be led by industry and include participants from federal agencies, public and private laboratories, institutions of higher education, and other domestic entities.

Other utility participants include Xcel Energy, which owns and operates the Monticello and Prairie Island plants in Minnesota, and Arizona Public Service (APS), operator of the nation’s largest nuclear plant, Arizona’s three-unit Palo Verde.

According to a September 11 press release from INL, the initial plans for the two-

year project are to demonstrate and deploy a 1- to 3-MWe low-temperature electrolysis unit at Davis-Besse in 2020. Producing commercial quantities of hydrogen using nuclear energy will require major interface development, including dynamic controls to shift power output between the electrical grid and a low-temperature electrolysis unit. The project will culminate in a final report describing outcomes and business case opportunities to be shared with project partners and third parties interested in LWR hybrid energy systems.

“We are pleased to have been selected for this project by the Department of Energy and look forward to exploring the economic viability of H₂ generation at a nuclear power plant, and demonstrating the compatibility and synergy of the two technologies,” said Raymond Lieb, senior vice president of fleet engineering for FES.

FES’s two Ohio nuclear power plants have faced economic challenges, and until the recent passage of the controversial Ohio Clean Air Program Act (see article on page 22), Davis-Besse was scheduled for shutdown in 2020. Now, with plans to host a hydrogen production demo in 2020 instead, the site could become a symbol of changing industry economics.

“Thanks to the support provided to our Ohio nuclear plants by the state of Ohio,” Lieb said, “we are able to work with DOE

to explore new methods of keeping nuclear power plants competitive in any economic environment. This is a great opportunity to show that hydrogen can be effectively generated in a carbon-free and safe manner.”

Hydrogen from Davis-Besse may initially be used to fuel public transportation fleets, for direct iron reduction steel production plants, or for other commercial products. “The project will demonstrate how hydrogen from commercial nuclear operations can be used to produce ‘green’ products and commodities in significant quantities for domestic use and for export to international markets where green and low-carbon attributes are incentivized,” according to INL.

Xcel Energy is participating in the demonstration project to help determine if hydrogen production, together with flexible operations, can bring the company closer to its announced goal of reducing carbon emissions by 80 percent (from 2005 levels) in the upper Midwest by 2030 and reaching 100 percent carbon-free electricity by 2050.

“We’ve challenged our nuclear employees to find innovative ways to operate more efficiently, use technology, pursue new ideas, and reduce costs to make our plants more valuable for our customers,” said Tim O’Connor, chief nuclear officer for Xcel Energy. “Projects like this hydro-

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