

NPPD's Gerald Gentleman Station to be part of demonstration project for CO₂ capture

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Columbus, Neb. – A demonstration project involving Nebraska Public Power District's Gerald Gentleman Station will be used as part of a Department of Energy grant to study the potential of a new CO₂ capture process.

The Department of Energy is funding \$15 million towards the project that will involve ION Engineering, Inc., based in Boulder, Colo., the University of North Dakota Energy and Environmental Research Center (EERC) located in Grand Forks, N.D., the University of Alabama Department of Chemical and Biological Engineering, and NPPD. Total cost of the project is \$19 million with NPPD's share being in-kind services amounting to \$750,000. This will be the first demonstration project testing ION's unique solvent outside of a laboratory setting.

The EERC identified ION Engineering's solvent as being a potential low-cost solution for carbon capture from the Partnership for CO₂ Capture Program. The EERC contacted NPPD to determine interest in hosting a pilot carbon capture project. NPPD is a member of the Partnership for CO₂ Capture (PCO₂C), a partnership administered by the EERC.

"NPPD is interested in the project because our coal burning generating resources bring significant value to our customers," said NPPD Vice-President and Chief Operating Officer Tom Kent. "We also want technologies that can capture CO₂ in a cost-effective manner. Testing such technologies should be done on a larger scale to collect 'real world' data. We are pleased to be a participant in this project and hope to learn if the potential exists to capture carbon and advance the technologies in this area for the power industry."

Initial laboratory test results with the solvent conducted by ION Engineering and the EERC indicate it potentially could be a more cost-effective solution for carbon capture than other solvents currently being proposed or tested. "ION is very pleased to have this opportunity to work with DOE and our project team, which includes some of the world's leading experts in CO₂ capture technology and organizations strongly committed to developing sustainable energy solutions," noted Alfred Brown, ION Engineering's CEO and Chairman.

"The EERC is extremely pleased to be working with ION Engineering and NPPD on this project," said EERC Director Gerald Groenewold. "The performance of ION's solvent was a direct result of the EERC's Partnership for CO₂ Capture Program, which has been working with an esteemed group of corporate partners to advance the state of CO₂ capture by evaluating and demonstrating technologies with the most commercial viability for utility applications. Based on the program's results, ION's technology performed very well and has the potential to meet DOE's goals for CO₂ capture and associated costs."

The demonstration project will be operated by ION Engineering and will be designed so that the carbon dioxide capture equipment installed will divert a small percentage of the exhaust gas from Unit 2 at Gerald Gentleman Station, a 700-megawatt unit. Less than one-half of a percent of the exhaust gas will be diverted for carbon dioxide capture and then will be returned to the unit's exhaust. It is anticipated this process will have minimal impact on the plant's operations. The

facility footprint needed for the demonstration project is small and will utilize sectionalized pre-fabricated carbon dioxide capture equipment delivered by tractor trailer and modular home-styled offices for personnel and data management equipment. Personnel from the ION Engineering and EERC will monitor the project and analyze testing results.

The project will begin October 1 and will be conducted in three phases (e.g. site prep/design; construction; testing/deconstruction) with each phase lasting approximately 15 months; and concluding June 30, 2017. NPPD will be securing the appropriate permits for the pilot project with the Nebraska Department of Environmental Quality.

NPPD will provide oversight for the engineering, construction, operations, maintenance, safety, security, procurement, environmental permitting, etc., as well as operational support for the test facilities.