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Exelon, NET Power confident in planned carbon capture pilot project in Texas

By [Annalee Armstrong](#)

Carbon capture and sequestration technology has gotten off to a rocky start in 2015, and with projects like [Mississippi Power Co.'s Kemper County gasification power plant](#) and the [FutureGen 2.0 proposal](#) suffering major setbacks, it would be easy to think the technology is dead.

But one company, [NET Power LLC](#), is developing an innovative 50-MW, natural gas CCS demonstration project in Texas, the first of its kind, backed by heavy hitters in the energy industry such as [Exelon Corp.](#), [CB&I](#) and NET Power parent company [8 Rivers Capital LLC](#). The demo project, according to an October 2014 news release, will cost about \$140 million. [Toshiba Corp.](#) will provide a new supercritical CO2 turbine for the project, while 8 Rivers has developed a new Allam power cycle that will be used.

Instead of a combined-cycle seen in typical natural gas plants, the Allam cycle uses carbon dioxide as a "working fluid" to drive a combustion turbine, producing pipe-ready CO2 that can be either stored or captured and used in enhanced oil recovery. The CCS aspect is not treated as equipment to add on to the end of the turbine, but rather as an integral part of generation.

John Thompson, director of the Fossil Transition Project for the Clean Air Task Force, said the NET Power project is "encouraging," because it is taking a different approach to generation using CO2 as part of the process, rather than as a byproduct. The project has also attracted major investors and remains on course to begin testing in 2017. "That's a really encouraging sign. ... [I]t's been vetted by those who are really in a position to understand it and have the wherewithal to make the investment," Thompson said.

Exelon spokesman Bill Harris said what NET Power is doing is "like hand in glove for Exelon's goals" to be a part of a project developing cleaner, less expensive and more efficient generation. "Exelon is out there looking to do anything that is innovative, and the opportunity to collaborate with all the folks at 8 Rivers and CB&I is frosting on the cake," Harris said.

NET Power spokesman Walker Dimmig said the plant is designed to store, or capture and use, the CO2 it produces. That process can be done at a low enough cost that the plant, according to Dimmig, will be on par economically with a typical state-of-the-art natural gas, combined-cycle power plant with no CCS. "We don't think our economics are dependent on the sale of CO2. We think we can stand on our own, simply on a levelized cost of electricity basis," he said.

The company opted to attempt the project with natural gas, and Dimmig said it recognizes that coal is a leading emitter of CO2 and its use continues to grow around the world, but "we also want to be able to address emissions from natural gas."

Despite setbacks, CCS can still work

The U.S. Department of Energy in February announced it was pulling \$1.1 billion in funding from [FutureGen 2.0](#), a CCS project that has existed in various forms since 2003 but has suffered from a long line of delays and challenges. ■ [Reaction](#) to funding get pulled from [FutureGen](#) suggested it was up to the private sector to fund future projects, but the private sector and industry groups said the federal government should foot the bill for new CCS trials, especially as the U.S. EPA prepares its Clean Power Plan, which includes carbon capture as a possible route to compliance.

Also in February, the Mississippi Supreme Court ruled that state regulators [exceeded](#) their authority by approving millions of dollars in electric rate increases to pay for [Southern Co.](#) subsidiary Mississippi Power's long-delayed, over-budget power plant in Kemper County, which is intended to be one of the first fully commercial examples of carbon capture technology in the U.S.

While the setbacks are disappointing, CCS is still needed as the world shifts to cleaner sources of power, Thompson said. "FutureGen could have worked, and who knows, it's died so many times, and revived so many times, that I'm unwilling to say it's really dead until it's really dead," he said. Regardless of the financial problems of [FutureGen](#), Thompson believes whether the project had been successful or not, its completion and subsequent data would have been enormously helpful for the industry to move forward.

"The math points in the same direction: If you don't have CCS, it's game over on climate change," Thompson said. While power plants are a major contributor to air pollution, CO2 is also released from other industrial sources such as steelmaking, chemical production and oil refining — "and you can't swap a windmill for a steel mill, it just doesn't work," he said.

For now, the parties involved will develop the NET Power project and prove that at least one type of CCS technology is not on the back burner, but very much alive and well. Harris said Exelon will "put all of our genius and engineering expertise into this pilot project" to prove that it can be a "game changer" in the industry.