Virginia News

Carbon capturing about ready for prime time, experts say

■ Technology's cost a hurdle for energy firms, however

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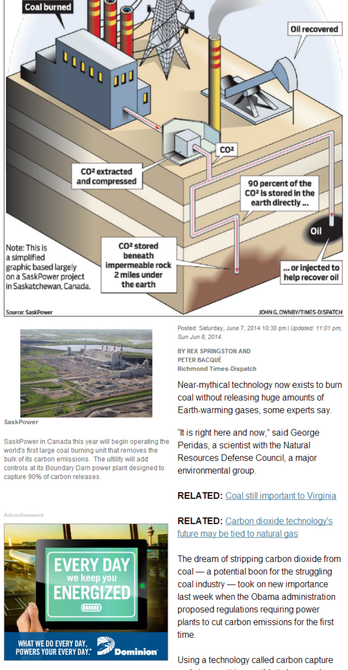

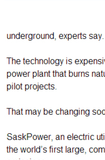

SaskPower

SaskPower in Canada this year will begin operating the world's first large coal burning unit that removes the bulk of its carbon emissions. The utility will add controls at its Boundary Dam power plant designed to capture 90% of carbon releases.

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BY REX SPRINGSTON AND PETER BACQUÉ
Richmond Times-Dispatch

Near-mythical technology now exists to burn coal without releasing huge amounts of Earth-warming gases, some experts say.

"It is right here and now," said George Peridas, a scientist with the Natural Resources Defense Council, a major environmental group.

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The dream of stripping carbon dioxide from coal — a potential boon for the struggling coal industry — took on new importance last week when the Obama administration proposed regulations requiring power plants to cut carbon emissions for the first time.

Using a technology called carbon capture and storage, it is possible to burn coal, remove the CO2 and sequester it deep underground, experts say.

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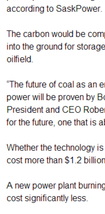

The technology is expensive, however, making it less attractive now than building a power plant that burns natural gas. Now, coal-burning plants remove carbon only in small pilot projects.

That may be changing soon.

SaskPower, an electric utility serving Saskatchewan, Canada, plans this year to operate the world's first large, commercial coal-burning unit that removes the bulk of its carbon emissions.

The project involves refurbishing a 110-megawatt unit at the utility's Boundary Dam power plant and adding controls designed to capture 90 percent of carbon releases, according to SaskPower.

The carbon would be compressed to a liquid-like state, carried off by a pipeline, injected into the ground for storage and also used to dislodge hard-to-get oil at a Saskatchewan oilfield.

"The future of coal as an environmentally and economically sustainable fuel for electrical power will be proven by Boundary Dam and other first-mover projects," SaskPower President and CEO Robert Watson said by email. "Coal will remain as an electrical fuel for the future, one that is abundant and affordable."

Whether the technology is affordable is another question. The Boundary Dam project has cost more than $1.2 billion, including a $220 million federal subsidy from Canada.

A new power plant burning natural gas, which releases about half the carbon of coal, can cost significantly less.

For example, Dominion Virginia Power is building its 1,329-megawatt Warren County gas-burning power station for $1.1 billion and its 1,358-megawatt Brunswick County gas-fired power plant for $1.3 billion.

In Virginia, one megawatt can provide enough electricity for 250 homes.

"We know you can build a plant that uses coal and emits less carbon pollution because projects with (carbon capturing) are permitted and being built today," said Liz Purchia, press secretary for the U.S. Environmental Protection Agency.

At its 1,300-megawatt Mountaineer Power Plant at New Haven, W.Va., American Electric Power operated the first carbon capture and storage project at an existing coal-fueled power station.

The Mountaineer facility captured more than 50,000 metric tons of carbon dioxide and stored more than 37,000 metric tons of the gas, according to AEP, the parent company of Appalachian Power, which serves about 500,000 electricity customers in western Virginia.

One of the nation's biggest emitters of carbon dioxide, the power company discontinued the facility's operation in May 2011, saying it had "achieved the objectives that we expected to achieve" from the validation-scale installation. Uncertainties about U.S. climate policy and the weak economy contributed to AEP's decision.

The project's total cost would have been $668 million. "It was one of those things we couldn't take to the next level," said Appalachian Power spokesman John Shepelwich in Roanoke. "It was on a relatively small level, (but) construction costs were astronomical, and also there was a notable decrease in the output of the plant. The plant itself had to lose capacity to operate the facility."

"It was just economically unfeasible to continue," he said.

Nonetheless, said John Smatlak, Dominion Generation's vice president for technical services, "carbon capture is a promising technology, and I believe it's important to the future of coal."

"We're waiting for the technology to further develop until it's able to be used on a large scale," Smatlak said, "and then we'd make a decision on which of our coal power stations could best use it."

Dominion Generation is a unit of Dominion Resources Inc., the parent company of Dominion Virginia Power, the state's largest electric utility with nearly 2.4 million customers.

Having coal available as a fuel source is integral to Dominion Virginia Power's strategy of fuel diversity aimed at keeping electricity rates low.

"If you have all your generating fuel tied to natural gas," Smatlak said, "and then the prices go very high, the price of power would be unbearable for our customers."

The EPA on Monday proposed regulations that would require existing U.S. power plants to cut carbon emissions 30 percent by 2030. The main options include switching old coal plants to natural gas and increasing energy conservation.

Another EPA proposal farther along the regulatory pipeline would require new power plants to capture roughly 30 to 50 percent of carbon emissions.

Rep. Morgan Griffith, R-9th, who represents Southwest Virginia's coal country, says it's better to wait for carbon-removing technology to mature before planning CO2 cuts.

Proposed EPA regulations "are making it hard for people to survive in the coal industry when we see technology coming down the pike that may very well solve the problems," Griffith said in a Feb. 11 congressional hearing.

In an interview Monday, Griffith added, "We don't (yet) have the science to accomplish what the president is trying to do."

Others say the proposed emissions cuts are precisely what's needed to boost carbon capturing.

"There has never really been a financial incentive to develop carbon-capture-and-storage technology because facilities could just pollute for free," said Michael Livermore, an associate professor at the University of Virginia School of Law.

"Why spend a billion dollars developing a new technology to cut pollution that you don't have to pay for? It doesn't make any financial sense."

Gas is relatively cheap now, contributing to coal-industry woes as many power plants switch from burning coal to gas. But if gas prices go up, or some parts of the country don't have easy access to it, carbon capturing could look like an option.

"That's something the market is going to have to tell us," said Livermore, an expert in environmental law and cost-benefit analysis.

If people say they know when carbon capturing will become economically attractive, or what it will look like in 10 to 20 years, "I think they are just fooling themselves," Livermore said.

Carbon capturing is encouraging, but oft-heard references to "clean coal" are misleading, some observers say.

Coal burning involves mining, mountaintop removal, the creation of dust that troubles coal-region communities and the creation after burning of ash like the toxic pollutant that spilled into the Dan River in North Carolina in early February.

"We have ample examples that coal is anything but clean," said Peridas, the scientist.

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