

New technology puts new life in coal-to-liquids discussion

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Coal-to-liquids for Cook Inlet has been an on-again off-again topic of discussion for some 20 years, but has never happened. Now a new technology could bring synthetic jet fuel production to Southcentral.

Coal-to-liquids, or CTL, is an approach that Tyonek Native Corp. has been pursuing seriously in recent years because of plentiful coal in Southcentral. Tyonek worked first with Sasol but has recently partnered with a new player, Accelergy, John McClellan told a joint meeting of the Legislature's House and Senate energy committees recently.

There is high-quality bituminous coal all around Cook Inlet, McClellan said, but "the highest-value coal happens to lie right around Tyonek's property" on the west side of Cook Inlet. Tyonek is a surface land owner, he said, with subsurface belonging to Cook Inlet Region Inc., the Native corporation for the Anchorage region.

Things looked good for CTL in 2008, McClellan said, when Sasol was looking at Alaska as a site for a facility. The Air Force had said CTL products will meet half of its jet fuel needs by 2016, and it had a contest for a site for a facility the Air Force would finance and build.

He said several states responded to the competition. Alaska didn't, but Tyonek Native Corp. did. The company met with the Air Force at the Pentagon and pitched a Tyonek location as "the most cost-effective coal-to-liquids site in North America," based on both the fuel source and the plant being at tidewater.

McClellan said things looked pretty good until Congress passed a restriction, cutting the Air Force's ability to finance projects from 20 years to five years.

Because it couldn't finance a CTL project, the Air Force started looking for public-private partnerships.

Further congressional restrictions on CTL required that it meet or better the efficiency of a petroleum refining system.

"And that pretty much killed the ability of the Fischer-Tropsch process, which Sasol was using," McClellan said. Sasol turned its back on its U.S. projects, he said.

SEEKING A PARTNER

In 2009, Tyonek went in search of a new CTL partner, "someone who would be willing to come to west Cook Inlet and start developing our coal-to-liquids plant."

Mutual friends in Washington, D.C., introduced Tyonek to Accelergy Corp., "and we found that Accelergy had new technology," McClellan said.

The first step for an Accelergy project is to certify the coals, "and one of Tyonek's prerequisites is that the state participate in that certification," he said. Tyonek was unable to find state money for the certification, but it eventually realized, McClellan said, that "the Department of Natural Resources would be the real beneficiary of certifying Tyonek coals, because basically all the coal in west Cook Inlet is pretty much owned by the Department of Natural Resources -- even if it's under lease they would benefit by royalties."

But in early this year, the state of Pennsylvania discovered Accelergy and within a few weeks came up with \$10 million toward a plant there. Since then, McClellan said, Accelergy has been putting its time and effort into that project.

On the positive side, Senate Bill 220 created an emerging energy technology fund and that could provide startup funds to certify the coals.

"So that's where we're at now," he told the committees.

Tyonek has an application that it's prepared to submit for that funding, McClellan said. McClellan said Tyonek looks forward to enabling regulations for that technology fund.

THE NEW TECHNOLOGY

Rocco Fiato, Accelergy's chief technology officer, told legislators that alternative-fuel technologies must meet four performance parameters: provide energy security for the United States; use domestic resources sustainably; meet environmental standards; and be economically viable.

Accelergy is working on a new technology based on coal-biomass conversion, he said. The acronym, ICBTL, is a play on "ICBM" because of the Air Force connection -- jet fuels from this technology would meet synthetic fuel standards for the military.

Integrated coal-biomass-to-liquids, ICBTL, uses technologies licensed from Exxon Mobil and others, such as Raytheon, Fiato said.

Accelergy is integrating the technologies to produce gasoline, diesel or jet fuel, and the combined technology's "unique ability" to produce jet fuel is why Accelergy is interested in Cook Inlet, Fiato said. More than 65,000 barrels per day of jet fuel is consumed in the Cook Inlet area.

Accelergy needs to see evidence of commitment from the state but is not really after money.

"We're backed by Goldman Sachs and others; we have lots of money. It's not a matter of the money; it's a matter of demonstrating the willingness to support a concept," he told legislators.

SHRINKING FOOTPRINT

The problem with biomass on its own is the acreage required: 2.5 million acres of soybeans for an 8,000 barrel-per-day facility; 943,384 acres of corn; 12,264 acres of algae.

But a coal-biomass-to-liquids process requires only 4,000 acres; and Accelergy's process needs fewer than 820 acres.

The Accelergy process, he said, uses coal and converts processed CO₂ to algae -- further converted to fuel and/or synthetic fertilizer. The process meets greenhouse gas requirements in military fuel specifications and is cost competitive with today's price of crude oil.

McClellan's presentation included figures on coal: a measured resource of 1,300 million tons in the Cook Inlet area -- 700 million tons at Chuitna.

"Take the numbers you were told for Tyonek bituminous coal alone and do the math, and you'll understand the strategic significance of this," Fiato said.