ALASKA STATE LEGISLATURE
JOINT MEETING
HOUSE SPECIAL COMMITTEE ON ENERGY
SENATE SPECIAL COMMITTEE ON ENERGY
Anchorage, Alaska
October 13, 2010
1:41 p.m.

MEMBERS PRESENT

HOUSE SPECIAL COMMITTEE ON ENERGY

Representative Charisse Millett, Co-Chair
Representative Kyle Johansen
Representative Pete Petersen
Representative Chris Tuck

SENATE SPECIAL COMMITTEE ON ENERGY

Senator Lesil McGuire, Chair
Senator Bill Wielechowski

MEMBERS ABSENT

HOUSE SPECIAL COMMITTEE ON ENERGY

Representative Bryce Edgmon, Co-Chair
Representative Nancy Dahlstrom (Resigned 5/31/10)
Representative Jay Ramras

SENATE SPECIAL COMMITTEE ON ENERGY

Senator Lyman Hoffman
Senator Albert Kookesh
Senator Bert Stedman

OTHER LEGISLATORS PRESENT

Representative Paul Seaton (via teleconference)
Representative Bill Stoltze
Representative Craig Johnson

COMMITTEE CALENDAR

OVERVIEW(S): COAL TO LIQUIDS TECHNOLOGY

- HEARD

PREVIOUS COMMITTEE ACTION

No previous action to record

WITNESS REGISTER

JOHN D. McCLELLAN, P.E., Consultant
JDM Consultants, LLC;
Director
Tyonek Enterprise Development, Inc. (TEDI)
Tyonek Native Corporation ("Tyonek")
Anchorage, Alaska
POSITION STATEMENT: Presented a portion of the overview regarding coal-to-liquids technology.

ROCCO FIATO, Ph.D., Chief Technology Officer;
Vice President;
General Manager of Business Development & Planning
Accelergy Corporation
Houston, Texas
POSITION STATEMENT: Presented a portion of the overview regarding coal-to-liquids technology.

ACTION NARRATIVE

1:41:27 PM

CHAIR LESIL McGUIRE called the joint meeting of the House Special Committee on Energy and the Senate Special Committee on Energy to order at 1:41 p.m. Present at the call to order from the House Special Committee on Energy were Representatives Millett, Petersen, and Johansen; Representative Tuck arrived as the meeting was in progress. Present from the Senate Special Committee on Energy was Senator McGuire; Senator Wielechowski arrived as the meeting was in progress. Representatives Seaton (via teleconference), Stoltze, and Johnson were also in attendance.

Overview(s): Coal to Liquids Technology

1:42:16 PM

CHAIR McGUIRE announced that the only order of business would be an overview regarding coal-to-liquids (CTL) technology.

1:42:40 PM

JOHN D. McCLELLAN, P.E., Consultant, JDM Consultants, LLC; Director, Tyonek Enterprise Development, Inc. (TEDI), Tyonek Native Corporation ("Tyonek"), relayed that he would be speaking about a coal-to-liquids (CTL) project in the Cook Inlet - Susitna Province, which contains the second largest bituminous coal deposit in the world, and about how the legislature could help enable that project. Referring to his PowerPoint presentation, he noted that it contained maps and information about the area's coal resources and reserves. The coal with the highest value lies on Tyonek's property, and the coal leases around Tyonek contain over 2 billion tons of bituminous coal. The proposed CTL plant would be located at the existing industrial park and dock at North Foreland, and is estimated to produce 80,000 barrels [of equivalent liquids] per day using the coal from a lease located about 10 miles from the village of Tyonek, and the plant's resultant waste heat, once it's converted [to electricity], could produce about 400 megawatts of power per day, which is over half of what the Railbelt uses, and could essentially replace the output of an existing outdated power plant in the area. The typical cost of a waste-heat conversion plant is about $.05 per kilowatt hour (kWh).

MR. McCLELLAN relayed that even as recently as 2008, back when the United States Air Force had announced that half of its jet-fuel needs would be met by CTL products by the year 2016, Tyonek was considered to be the most cost-effective CTL site in North America due to the fact that both the fuel source and the plant would be at "tidewater." Federal legislation and a lack of suitable investors, however, prevented a Tyonek project from moving forward at that time. Since then, a company called Accelergy Corporation ("Accelergy"), which has the best CTL technology available and which is currently working on a Pennsylvania CTL project, has expressed enthusiastic interest in a CTL project with Tyonek. The first step necessary for such a project would be to obtain a matching grant of $500,000 from the State of Alaska in order to certify Tyonek's coal for the Air Force. He offered his understanding that any future royalty payments would make the Department of Natural Resources (DNR) the real beneficiary of certifying Tyonek coal, since most of that coal is owned by the DNR. Furthermore, legislation passed in 2010 - SB 220 - authorized the creation of an emerging energy technology fund, which could be used for the certification process, and Tyonek is prepared to submit a proposal to the State requesting funding for that certification. In conclusion, Mr. McClellan relayed that Tyonek is looking forward to seeing

enabling regulations, the appointment of a board, and the request for proposals (RFP) that would start the process.

CHAIR McGUIRE asked for an estimate of how many jobs would be created with Tyonek's CTL project.

MR. McCLELLAN relayed that even back in 2008, Tyonek estimated that such a CTL project could result in several thousand jobs during the construction phase, and several hundred jobs after construction was complete. In response to comments and further questions, he explained that Tyonek would only be seeking $125,000 of the amount it needs for certification to come from the aforementioned emerging energy technology fund; that one of the coal leases being developed in the Tyonek area has been transferred over to the [Alaska Mental Health Trust Authority (AMHTA)], as was the contract with the DNR for royalties; that only the coal mines on State land would pay royalty to the DNR, whereas the CTL plant itself would simply pay taxes, similar to any other industrial user; and that Accelergy's CTL technology is much more efficient than petroleum refining.

2:06:50 PM

ROCCO FIATO, Ph.D., Chief Technology Officer; Vice President; General Manager of Business Development & Planning, Accelergy Corporation ("Accelergy"), explained that when researching new alternative-fuel technology, Accelergy considers four performance parameters. The first parameter is energy security: specifically, the ability to provide energy security to the U.S. via the use of domestic resources - primarily coal supplemented with biomass and/or natural gas. The second parameter is resource sustainability: specifically, land use, the impact on land use, water use, the amount of water necessary to produce a barrel of alternative fuel, and the ability to institute a new technology and sustain it over a long period of time such that national energy volumes are impacted. The third parameter is environmental impact: specifically, the ability to produce an alternative fuel with a greenhouse-gas footprint at least as small as, if not smaller than, that occurring when refining petroleum into an analogous product - under federal law, any product that doesn't meet that criteria cannot be sold to the U.S. Air Force. The fourth parameter is economic viability: specifically, the ability to compete with crude oil at natural crude oil prices. Without ensuring that those four parameters are met, successfully instituting new energy technology is unrealistic, he opined.

DR. FIATO relayed that he's heard there are three rules to follow when [turning to] alternative fuels, with the first rule being that if it can't make money, the other two rules don't matter. Alaska, therefore, must ensure that any alternative-energy technology it pursues must be capable of standing on its own financially, as well as meet the other three aforementioned parameters. When that's the case, then such technology should be pursued by the State in order to help the country move forward and be competitive with the rest of the world. He referred to [integrated Coal-Biomass-to-Liquids (ICBTL) technology], and said that Accelergy is developing [this] new technology - based upon coal/biomass conversion - and indicated that China, for example, is already putting modern technology comparable with Accelergy's in place, and is very interested in Accelergy's technology, not only for itself but also for offshore applications as an investor. Furthermore, Pennsylvania, which has taken a bipartisan approach to resource development, is helping Accelergy promote an ICBTL [pilot] project in that state.

2:13:52 PM

DR. FIATO opined that Alaska should become involved with an ICBTL project as well. And because Accelergy has sufficient financial backing, the aforementioned desired matching grant, he assured the committee, would merely demonstrate the State of Alaska's interest, sincerity, and seriousness regarding ICBTL technologies. Accelergy is the leader in [ICBTL] technology, and has "licensed out" technologies from companies that are developing what he termed "indirect conversion," and biomass conversion technologies. He offered his belief that the U.S. Department of Defense (DOD) would agree that Accelergy has state-of-the-art "platforms" in those individual areas of technology. Furthermore, Accelergy is integrating those technologies into a novel, efficient platform for converting the resource into clean gasoline, diesel, or jet fuel, with the latter providing Alaska with a unique opportunity, given that over 65,000 barrels/day of jet fuel are consumed in Alaska. Accelergy has been aligning itself with what he called "clean coal project developers," and has started discussions with Tyonek and others. Accelergy, he explained, is a technology provider that will bring in project developers to help advance some of its concepts. Accelergy is supported by the U.S. Department of Energy (DOE), [the DOD], and several leading investors.

DR. FIATO said that according to the Stanford Research Institute International's (SRI International's) most recent assessment of global energy use, [over] 3 cubic miles of oil equivalents are used each year - just one cubic mile equals the landmass of Washington, D.C., filled eight feet deep with oil - with as much as .8 cubic miles of that oil equivalent being derived from coal. Substituting that amount of coal with some other form of energy would come at a cost of more than $7 trillion, so it's therefore unrealistic to think that coal could simply be dismissed as not being an important world energy source. Furthermore, coal is more abundant and more strategically located than oil or gas, with the coal reserves in North America alone exceeding the Middle East's combined oil and gas reserves, and with roughly half of North America's coal reserves being located in Alaska. Referring to his PowerPoint presentation, he indicated that through the use of ICBTL technology, and by using algae as the biomass, less than 820 acres of land would be needed to produce 10 percent of the U.S.'s liquid fuel needs - or the amount of jet fuel consumed in one day - but that it would be prohibitive, in terms of the land mass needed, to attempt to meet those fuel needs using any other form of biomass, such as palm [plants], corn, or soybean, or just algae alone. With ICBTL technology, the resultant carbon dioxide (CO2) from processing coal would be used to grow the algae that would then be converted into either fuel or synthetic fertilizer, both of which are a [byproduct] of traditional petroleum and natural gas production technologies.

2:18:04 PM

DR. FIATO said that through the use of sunlight, ICBTL technology can achieve a thermal-efficiency-to-product rate in excess of 90 percent; in other words, over 90 percent of the feedstock can be turned into useful product. In contrast, other forms of technology are still relatively expensive, have low thermal efficiency, don't produce an optimal product mix, have severe greenhouse-gas emission problems, and require a lot of land. He explained that ICBTL technology involves three steps, allowing the coal to be turned into cycloparaffinic fuel, and the algae biomass into triglyceride fatty acids which can then be converted into isoparaffinic fuels. Ultimately, via this ICBTL process, more fuel could be produced with less CO2 emissions than can be produced by refining petroleum or coal by itself. After again referring to China's interest in conversion technology, he relayed that the focus in North America is on high-performance, fighter aircraft fuel; on the Air Force's basic fuel requirements; on regular jet fuel such as that used

by commercial aircraft; and on fuel that could address the needs of "next-generation" military aircraft. Accelergy's interest in an Alaska project arises largely from the company's relationship with the Air Force, which has a base in Alaska, and with various commercial air carriers. Such a project presents a terrific opportunity, one that could provide various entities in Alaska, such as the Anchorage International Airport - Alaska's largest consumer of jet fuel - with a long term, sustainable resource; Alaska could become "the" low-cost producer of jet fuel, if done correctly.

DR. FIATO, referring to his PowerPoint presentation, indicated that ICBTL technology is going to provide Accelergy with the ability to produce fuels uniquely suited - in terms of molecular composition - for military applications, both as fuel and for weapons; hence, [the DOD's] interest in such technology and in having Tyonek coal certified. However, in order to appease private investors, financial involvement by the State of Alaska in the Tyonek project is critical, he remarked, adding that such is already occurring with the other states in which Accelergy has [or will have] projects. Again referring to his PowerPoint presentation, he then provided some information about Accelergy's other CTL projects around the U.S and in China, and mentioned that it would be helpful if [federal law] could get changed such that the military would be able to enter into 20-year purchase agreements, for example; that the CTL plants in China have proven successful at producing clean fuel [in an environmentally-friendly fashion]; and that other countries are also expressing interest in what China and Accelergy are doing, because the economics are very attractive.

2:36:40 PM

DR. FIATO, referring to the aforementioned Pennsylvania project, indicated that among the advantages of Accelergy's ICBTL technology are that it utilizes domestic resources while allowing for the sustainable use of land, water, and feedstock; avoids the need for carbon capture and storage, which is prohibitively expensive and requires an additional energy expenditure; meets federal standards; is thermally efficient; and beneficially uses CO2 as well as waste coal and coal bed methane (CBM). Referring to his PowerPoint presentation, he then mentioned some of the major objectives Pennsylvania has for its proposed ICBTL project, and opined that pursuing such technology is worthwhile regardless that some of the nation's past experiences with coal have left a lot of people with a negative view of coal as an energy source. For example, ICBTL

technology would allow CO2 to be used for producing algae, cycloparaffinic fuel, and bio-fertilizer; furthermore, studies indicate that the bio-fertilizer-production component of the ICBTL process could enable minimal land usage and increased food production. He then spoke further about Pennsylvania's proposed ICBTL project, but acknowledged that some of the specifics of that project wouldn't apply in Alaska. Spreadsheets included in the PowerPoint presentation illustrate the type and number of jobs estimated to be generated by the proposed Pennsylvania project.

DR. FIATO offered his belief that compared with other forms of CTL technology, ICBTL technology would allow for the production of twice as much fuel but only half as much CO2 per ton of domestic coal. Under typical performance measurements, this is a pretty good deal, he opined. The basic ICBTL platform employs state-of-the-art technology for coal conversion; it is economically viable and environmentally sensitive, producing [several] usable byproducts even from less-than-optimum feedstock. With regard to the proposed Tyonek ICBTL project, he explained that Accelergy believes that that project would meet the aforementioned four performance parameters; will be working with the DOD to formalize the plan in Alaska; is willing to take the Alaska project forward as far as it can be taken; is looking forward to involvement by the State of Alaska; already has a memorandum of understanding (MOU) in place with Tyonek; and has already established liaisons between Tyonek and entities in the Lower 48. Furthermore, Accelergy is planning to work towards having jet fuel produced in Alaska be used by the DOD in one of its programs, and is committed to the concept of training and hiring Alaskans. A positive response from the State of Alaska, he concluded, would help Accelergy justify and accelerate its focus on [an ICBTL project in Alaska], the objective being to have Tyonek's coal succeed - in terms of having the proper molecular makeup - in all three phases of the anticipated testing required for certification.

2:55:09 PM

CHAIR McGUIRE expressed interest in supporting an ICBTL project in Alaska, and in providing help with potential regulatory burdens.

DR. FIATO, in response to questions, indicated that Accelergy's ICBTL technology produces environmentally-safe effluent and byproducts, though long-term storage of such could still be problematic; that for the proposed Pennsylvania project,

Accelergy is intending to work further with environmental-protection agencies/groups to ensure that the public is informed about how environmentally safe the ICBTL process is; that Accelergy hopes to be as successful in Alaska as it has been in other states; that Accelergy welcomes input from the Alaska State Legislature, believing it will play a critical role; that the aforementioned certification process should address the fuel needs/restrictions of four different types of military aircraft; that if a fuel meets the specifications for military aircraft, it also meets those of commercial aircraft; and that the final certification of Tyonek fuel might not be completed until 2013.

3:09:16 PM

ADJOURNMENT

There being no further business before the committees, the joint meeting between the House Special Committee on Energy and the Senate Special Committee on Energy was adjourned at 3:09 p.m.