DOCKET	
09-ALT-1	
DATE	9/25/2009
RECD.	9/25/2009

September 25, 2009

Leslie Baroody
Emerging Fuels and Technologies Office
Fuels and Transportation Division
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: AB118 Investment Plan for 2010-2011
Docket 09-ALT-1

Dear Ms. Baroody:

BKS Energy, LLC (BKS) is pleased to provide comments to the California Energy Commission (CEC) for planning purposes related to the 2010-11 version of the AB118 Investment Plan. BKS notes with interest that no investment in low-energy pipeline LNG production was included in the 2009-2010 plan, but was primarily focused on fueling infrastructure, natural gas vehicles and production of biomethane. BKS respectfully submits that this may be a strategic oversight of the CEC, given that the emissions-reduction potential of localized LNG production – and in particular, that which utilizes the Idaho National Laboratory ("INL") process to produce distributed LNG with virtually no energy usage – is significant. Additionally, distributed LNG production in California provides a cost-saving platform that benefits fleet managers and end-users, thereby spurring greater and faster adoption of alternative fuel vehicles. In this respect, BKS would like to provide information related to small-scale low energy liquefaction for consideration of CEC in the upcoming AB118 Investment Plan

One of the barriers to increased use of LNG and CNG is a lack of both locally produced fuel supply and retail stations located on the major transportation corridors. The lack of local production forces fuel to be transported hundreds of miles to end users in the San Joaquin Valley, the Bay Area, Sacramento, and Northern California. This transportation typically uses diesel fuel, causes air emissions, and incurs costs which are necessarily passed to the end fuel user. BKS is commercializing a small scale, distributed LNG production technology developed by the INL, Pacific Gas and Electric (PGE) and Southern California Gas (SCG).

The INL Technology

The INL small scale liquefier technology as implemented in BKS's business approach would produce 20,000 gallons per day from a modular design frame using technology developed in the US and fabricated in the US from off-the-shelf components. The novel technology uses pressure energy in the natural gas pipeline system (that is currently wasted to the environment as heat transfer) as the primary power source, making it a cost-effective, low greenhouse gas emitting production process. The process produces LNG which can be used in fleet trucking operations as a replacement for diesel or used to make compressed natural gas (CNG) as a replacement for gasoline. In this way, LNG can be used to supply CNG to locations without the necessary pipeline infrastructure to compress natural gas at fueling stations.

BKS Energy, LLC · 1962 Hillcrest Road · Los Angeles, California · 90068
Phone - 323.493.4227 · Fax - 323.512.5661 · Email - info@bksenergy.com

Distributed LNG Production

LNG for transportation fuel is produced in the United States at large, industrial-sized complexes which produce hundreds of thousands of gallons per day. Because of the magnitude of these operations, they are typically located hundreds of miles from the nearest population centers and end users. Transporting the LNG from the production plant to the end users involves trucking (mainly with diesel trucks) which produces diesel particulate emissions and increases cost which is transferred to the end user. This added transportation cost to California's Central Valley ranges from $0.20-$0.50 per gallon depending on the production location and the end user location in the Valley.

It also should be pointed out that the INL process utilizes a modular design with significant potential for capital cost savings in the construction of distributed production facilities. Compared to more traditional modes of LNG production, such facilities can afford production cost savings of up to 10% compared to large-scale production technologies. Coupled with the avoidance and/or lowering of variable transportation costs otherwise incurred in the current LNG market, the introduction of distributed LNG production provides additional economic incentives to switch from diesel to alternative fuels, thereby lowering the present reliance on federal, state, and local subsidies to incent change.

Small-scale liquefaction solves several hurdles associated with the current embodiment of the natural gas fueling industry. Because of the small-scale and modular design, these units can be located within the communities and local regions they serve. For example, the demonstration facility constructed by INL and Pacific Gas and Electric is located near the Historic District in Sacramento, California and immediately adjacent to I-5. Also, with users a close distance from production, fuel can be provided not only more efficiently, but with more surety. As such, a local supply is not only in direct support of local fleets, but will encourage fleet changeover.

This liquefier technology derives power from the existing pressure difference between the high-pressure transmission pipeline and lower pressure distribution pipeline. This power is currently wasted to the environment as heat transfer as the pressure is lowered during routine pipeline operations. The pipeline pressure drop is used to power a turbo-expander process, which then, through a series of heat exchangers and valves utilizing the Joule-Thompson effect, creates low enough temperatures to affect liquefaction of natural gas. Gas that is not liquefied, as well as other trace natural gas components are re-gasified and expelled in the closed system to the downstream low pressure pipeline. The process results in low energy-input liquefaction, effectively using existing waste energy. Based on a well-to-wheels greenhouse gas emission study conducted on the process, the carbon footprint of the fuel is equivalent to or less than producing CNG from North American Pipeline sources, approximately 8% less than conventional LNG (not including transportation emissions), and 30% less than the diesel baseline on a gCO2/MJ basis.

Greenhouse Gas Emissions

Traditional transportation fuels and associated emissions account for 40% of California's annual greenhouse gas emissions according to the California Energy Commission. In order to reduce the greenhouse gas impact from California's use of traditional transportation fuels, AB 32

establishes an initial goal of reducing the carbon intensity of California's passenger vehicles by at least 10% by the year 2020 through the use of low carbon fuels.

In a recent study it was found that on a full life cycle (the so-called "well to wheels" supply chain), natural gas as a feedstock for alternate transport fuels results in greenhouse gas reductions of up to 27% for light-duty vehicles and up to 21% for medium and heavy-duty vehicles.[1]

The INL-based technology utilized by this project to produce low-cost LNG as an alternate transport fuel will provide even greater green-house gas reductions than the data cited above due to inherent lower energy to produce. BKS has commissioned a well-to-wheels study to build upon previous lifecycle studies for LNG and anticipates that LNG produced by BKS installations may qualify as a low carbon fuel under California's Low Carbon Fuel Standard.

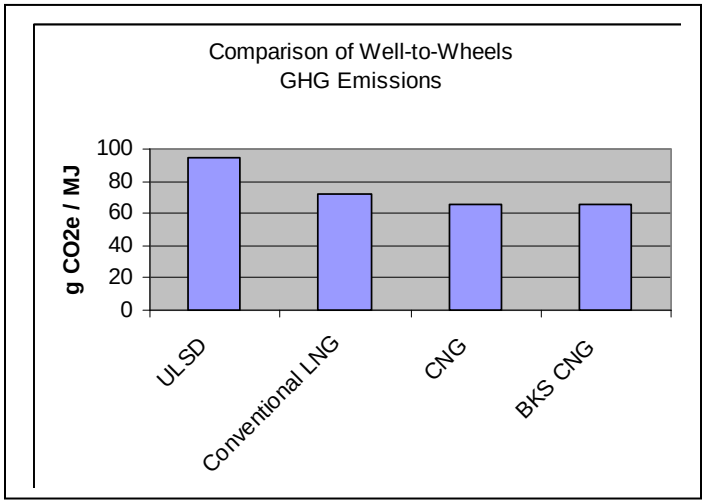
Ryerson Master and Associates, Inc. (RMA) assisted BKS with an evaluation of the carbon reduction potential from an innovative liquefied natural gas (LNG) production process being readied for deployment by BKS. As previously stated, the technology under consideration has been developed by the INL and is being commercialized by BKS.

The liquefier will produce LNG at a utility-operated natural gas pipeline regulating station where it can take advantage of the energy available at existing pressure let-down stations in natural gas transmission and distribution systems. The technology has the potential to reduce upstream carbon emissions from the production process (relative to existing LNG production) and downstream emissions when the LNG is used to replace diesel fuel.

The results of this analysis are summarized in the following table and graph:

	ULSD	Conven-tional LNG	CNG	BKS LNG	Units
a) Recovery, processing or refining, transmission and distribution)	20,957	8,624	8,624	8,624	gCO2e/mmBtu
b) Liquefaction/ compression back into pipeline/ CNG compression	0	6,843	2,257	576	gCO2e/mmBtu
c) Combustion in vehicle	79,020	60,115	58,687	60,115	gCO2e/mmBtu
Total Well-to-Wheels	99,977	75,582	69,568	69,314	gCO2e/mmBtu
Total Well-to-Wheels (g/MJ)	94.76	71.64	65.94	65.70	gC02e/MJ
Total Well-to-Wheels (g/mi)	2,393	2,010	1,850	1,843	gCO2e/mi

[1] TIAX, LLC (2007)



The BKS LNG fuel pathway has a number of promising advantages as a low carbon fuel alternative to ULSD:

- The BKS LNG production process results in CO2e emissions that are 31% less than for ULSD and 8.3% less than conventional LNG when compared on the basis of emissions per mile.
- There are no complex land use change issues (and associated emissions) with this fuel.
- Fuel production can be made available in a very short time frame, so this alternative has excellent potential to satisfy California's need for lower carbon fuels in the near term.

The RMA study did not evaluate emission reduction potential associated with the utilization of biogenic gases eligible for introduction into LDC and trunk line gas transmission systems. BKS believes such a review would demonstrate conclusively that such biogenic feedstocks would lower even more dramatically the emissions profile associated with distributed LNG production.

Summary and Conclusion

As set forth above, the BKS LNG fuel pathway has a number of promising advantages as a low carbon fuel alternative to ULSD.

Its production process results in CO2e emissions that are 27.3% less than for ULSD and 7.9% less than conventional LNG (when compared on the basis of emissions per unit of energy). There are no complex land use change issues (or associated emissions) with this fuel. Additionally, fuel production can be made available in a very short time frame, so this alternative has excellent potential to satisfy California's need for lower carbon fuels in the near term.

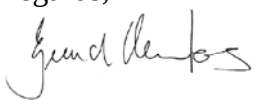
The Low Carbon Fuel Standard regulation is targeted to reduce the Well-to-Wheels carbon intensity of the combination of diesel and fuels that replace diesel by 10% by 2020. The carbon intensity of diesel fuel is 94.71 gCO2e/MJ and the target is 85.24 gCO2e/MJ. The LNG produced by BKS, with a carbon intensity of 68.83 gCO2e/MJ can be a big player in achieving this goal.

RMA estimates that the BKS LNG alone can achieve 20% of California's diesel carbon intensity goal by operating 54 plants, assuming they each can produce 20,000 gallons of LNG per day from 2011 through 2020.

Lastly, these emission reductions are accompanied by dramatic cost savings that can be passed on to the fleet manager and end-user with the increasing result that market forces – not simply subsidies – drive alternative fuel adoption.

We look forward to talking with you and your staff regarding this exciting work. I can be reached directly at (323) 493-4227 or via email at bs@bksenergy.com should you have any questions.

Regards,



Bernd Schaefers
BKS Energy, LLC