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This public comment is being submitted as part of the *Biofuels Technical Workshop* to address the 2010 / 2011 Alternative and Renewable Fuel and Vehicle Technology Investment Plan, especially as it relates to biogas production. SynCH Energy Corporation, a producer of an alternative and renewable fuel from waste sources, requests

1. To have our product recognized by the CEC as an alternative and renewable fuel along with other biogas to biofuel products, and
2. To be considered eligible for funding under the 2010 / 2011 Alternative and Renewable Fuel and Vehicle Technology Investment Plan to build a commercial unit (estimated to be $500,000.)

SynCH Energy biogas to biofuel produces 94-octane CARBOB and

1. Requires zero cost to retrofit vehicles or the current fuel infrastructure,
2. Requires zero cost to for pipeline or other feedstock aggregation,
3. Produces distilled water as a process by-product, and
4. Does so at a cost per gallon of CARBOB produced of $0.77.

Biofuel Feedstock

SynCH Energy Corporation is a Belmont, CA-based company that utilizes methane gas from waste sources and transforms it into clean-burning, low-sulfur CARBOB gasoline. *(Low Carbon Fuel Standard compliance TBD.)* Synch Energy is unique in that our process handles biogenic gas by-products with high concentrations of carbon dioxide (CO_2,) transforming methane (CH_4) from wastewater treatment facilities, landfills, and agricultural operators. Our ability to place "mini-refinery" units at the greenhouse gas (GHG) source is the key to unlocking this underserved market.

Market Focus and Penetration

SynCH Energy's initial market focus is on California wastewater treatment facilities (WWTFs). The EPA estimates that California has about 120 WWTFs producing 3 or more MGDs of wastewater per day.[1] These facilities provide a well-aggregated source of GHGs and the opportunity to sign long-term contracts for a profitable, turnkey solution. Based on $2 / gallon wholesale price for our gasoline, SynCH has the potential to realize $100M in revenue in California alone.

Today, SynCH Energy has a test unit deployed at South Bayside System Authority, Redwood City (SBSA). In operation since October 2008, the unit has enabled SynCH to complete proof of chemistry and is now producing 10 gallons of gasoline per day using less than 5% of SBSA's digester gas.

We have LOIs in place with SBSA and West County Wastewater District, Richmond (WCWD). Discussions are underway with several Bay area WWTFs at this time. In 2010, SynCH Energy plans to deploy three (3) pre-commercial units with a gasoline production capacity of 250 gallons per day.

WWTFs are under regulatory pressure to reduce GHGs. Most WWTFs currently aggregate their GHGs in massive tanks, and then burn or "flare" the gases as they are released through an exhaust pipe into the atmosphere. The alternative to flaring is co-generation of electricity, which not only requires capital investment in excess of $1M in refinery-scale infrastructure and equipment but also significant ongoing expense for maintenance. Even though this option has

been available for more than a decade, today only 2% of anaerobic WWTFs employ co-generation.[2]

SynCH Energy provides an attractive alternative to flaring and / or co-generation. Our process can verifiably reduce CO_{2e} with no capital investment and no maintenance on the part of the WWTF operators. Our portable appliances are easily installed and connected to the anaerobic tanks through existing exhaust pipes. There is no need for additional infrastructure, and the appliances are up and running in days.

SynCH Energy places its portable refining units at WWTF sites at no charge, and maintains all appliances remotely, 24 hours a day, 7 days a week. In addition, SynCH Energy refining units offset WWTF operators' energy consumption through return of heat from the unit's transformation process. SynCH Energy shares a percentage of all revenue realized from the WWTF site with the operator, providing discretionary funds that can be used for capital improvements or other facility needs. For a WWTF that treats 10 million gallons of wastewater per day, income could be as high as $275,000 per year.

Technology Description

Our reaction methodology consists of four chemical reactions; H_2S scrubbing, reforming, methanol synthesis and gasoline synthesis. We remove small amounts of H_2S in the first reaction step, as it is poisonous to the downstream catalysts. Our second reactor does a combination of dry and steam reforming to create a mixture of carbon monoxide and hydrogen – often called synthesis gas. This synthesis gas is used to make methanol, which is then used via Mobil's methanol-to-gasoline (MTG) process to create high-quality gasoline.

The MTG process creates only gasoline, liquefied petroleum gas (LPG) and water as its products. The LPG will be utilized by our reaction unit to provide heat for the highly endothermic reforming reactions. The water will be recycled into the reformer or returned to the WWTF. This creates a closed-loop, sustainable reaction system that needs no extra feed chemicals or periodic byproduct removal.

We currently have two provisional patents filed that deal with our reaction engineering technology. One is a process patent that details the novel size and scope of our reaction units. This important piece of IP will secure our right to operate these reactors profitably. We also have filed a patent that pertains to the methanol synthesis reactor operation. We plan to use room-temperature ionic liquids as the liquid-phase in our bubble-column methanol synthesis reactors.

Production Technology Status

A demonstration-scale refining unit is currently in operation at a WWTF in Redwood City, California and has been since October 2008. During our tenure there, we have proven that each individual reaction is successful and capable of scale up to a larger reaction system. The entire system can be operated remotely 24/7, end-to-end.

Commercial units will be housed in standard 20 ft shipping containers and have an output capacity of 2000 gallons of gasoline per day. Scaling is accomplished by adding units on site to accommodate the digester gas flow.

In 2010 we will deploy three (3) pre-commercial units in order to operationalize the remote management, maintenance, and fuel unloading functions. These units will be located at WWTFs in the SF Bay area – two sites have already been identified and a third site is in process.

Production Economics

SynCH Energy's production costs are highly competitive with other alternative and renewable

fuels. No vehicle modification is required to use SynCH Energy fuel. We require a fraction of the capital investment of LNG, CNG, and hydrogen to produce a gallon of 94-octane CARBOB that can be used within California's existing vehicle fueling infrastructure.

Production Economics, cont'd

Capacity and Pricing:	
Gallons of gasoline produced per day	2,000
Gallons of gasoline produced per year	730,018
Tonnes CO_{2e} reduction per day	169
Tonnes of CO_{2e} reduction per year	61,837
California Premium Rack Rate (gasoline)	$2.00
Revenue Share to Methane Emitter	20%
Profit per Gallon:	
Revenue	$2.00
Less:	
Catalyst Costs	$0.07
Compression Costs	$0.56
Maintenance	$0.06
Permitting	$0.02
Headcount Allocation	$0.06
Costs per Gallon	$0.77
Gross Profit	$1.23
Revenue Share to Methane Emitter	$0.40
Net Profit	$0.83
Payback Period:	
Annual Net Profit generated by (1) SynCH Refining Unit	$603,725
SynCH Refining Unit Capital Cost	$350,000
Payback: Years	0.6
Payback: Months	7.0

Barriers to Commercialization

The only barrier to commercialization of SynCH Energy's portable refinery appliances is funding. Proof of chemistry and end-to-end production have been proven in our test unit. SynCH Energy is already in the process of designing the commercial unit. Performance improvements realized from the non-commercial 250-gallon capacity units will be incorporated into the final design.

Summary

SynCH Energy has developed an alternative and renewable biofuel that works today within the existing engine technology and refueling infrastructure. Utilizing a waste feedstock that is constantly replenished with no additional investment required, SynCH Energy reduces CO_{2e} emissions while producing a viable fuel for California's needs. SynCH Energy reaches and transforms methane at the source without costly investments in pipeline or other aggregation infrastructure.

We request that SynCH Energy's fuel technology and feedstock be considered as an alternative

and renewable fuel, as well as for future funding under the Alternative and Renewable Fuels and Vehicles funding plan for the next fiscal year.

Sincerely,

Omar Ahmad

Omar Ahmad
CEO, SynCH Energy Corporation

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[1] US Environmental Protection Agency Clean Watersheds Needs Survey, 2004 Report to Congress. www.epa.gov/cwns

[2] Federal Energy Management Program Biomass and Alternative Methane Fuels (BAMF) Super ESPC Program, US Department of Energy Energy Efficiency and Renewable Energy, 2004. www.eere.energy.gov/femp