

Item #8
November 3, 2010
Energy Commission Business Meeting

GREAT VALLEY ENERGY, LLC

Grant Agreement
For

Agricultural Feedstock Separation Technology
Development and Pilot Testing

Summary

Great Valley Energy, LLC (GVE) will determine the feasibility of building a bio-refinery to produce ethanol and high-value co-products from sweet sorghum. GVE will partner with KTC Tilby and Lang Technologies to install a pilot facility in Hanford, California, for separating and analyzing fractions of sweet sorghum for co-products. They will also conduct economic feasibility and market analyses of all co-products, as well as sweet sorghum crop trials in the San Joaquin Valley.

This project is needed to demonstrate the feasibility of integrated biofuel and waste material utilization, from a salt tolerant crop with low water requirements, which will grow on soils with salinity and boron contamination that are unsuitable for food crops. It could replace declining cotton acreages and boost economic activity to the San Joaquin Valley, a region of high unemployment.

GVE will also examine the viability of smaller-scale, distributed plants with lower transport costs that are more easily replicated across the Valley. GVE is attempting to use all parts of the sweet sorghum plant to produce high-value co-products that diversify and amplify the project's economic feasibility.

The Energy Commission is providing \$1,989,010 in Alternative and Renewable Fuel and Vehicle Transportation program funds. The project participants are providing \$2,000,270 additional match funding.

Benefits

Successful completion of this project could provide the foundation for a substantial biofuels production capacity in the San Joaquin Valley beyond Kings County. Each commercial facility could create 20 jobs in counties with unemployment rates as high as 20 percent.

Great Valley estimates that by 2020, there could be up to 15 small, dispersed sweet sorghum biorefineries operating in the Valley. With a production capacity of 3.15 million gallons per

year, the fleet of 20 biorefineries would have a total capacity of 47.25 million gallons, a total petroleum displacement of 7.06 million barrels and a total CO2 reduction of 1.6 million tons. Based on the Energy Commission investment of \$1,989,010, displacement efficiencies would be \$0.28 per barrel of petroleum and \$1.24 per ton of CO2.

Life Cycle GHG emissions for sweet sorghum are estimated to be 15 grams of CO2-equivalent per megajoule of energy (gCO2-e/MJ), or an 85 percent reduction compared to the gasoline baseline. GVE believes that their proprietary, energy-saving process technology will lower their GHG footprint even further. Indirect land-use impacts would be avoided because the crop can be grown on abandoned, salt-affected farm lands, and can use lower quality irrigation water.

The Project will develop Best Management Practices for sweet sorghum production, and will follow the Principles and Criteria for Sustainable Biofuel Production by the Roundtable on Sustainable Biofuels. Project design activities include the optimization of energy and water use, including the re-use of by-product water from sweet sorghum processing. Sweet sorghum uses one third less irrigation water than California-grown cotton or grain corn.

Participants

Great Valley Energy, LLC, a California-based company, was founded in 2006 to permit and build a biofuels facility in the San Joaquin Valley. In addition to KTC Tilby and Lang Technologies, other participants include Jojack, Inc., Tapis Energy Group, Lyles Construction Group, the California Biomass Collaborative at UC Davis, and Pederson Farms of Kings County.

Implementation Schedule

Crop Trials/Planning

Process Testing

Market Analysis

Economic Feasibility Study

Project Completion Date:

Completion Date

November 1, 2011

December 1, 2011

April 1, 2011

April 1, 2012

April 1, 2012