

**Item #8**  
**December 1, 2010**  
**Energy Commission Business Meeting**

**MENDOTA ADVANCED BIOENERGY BEET COOPERATIVE**

**Grant Agreement ARV-10-028**  
**for**  
**Pre-Development Activities for the**  
**Advanced Bioenergy Center Mendota**

**Summary**

Mendota Advanced Bioenergy Beet Cooperative (MABBC), located in Mendota, CA, will use this grant to perform pre-development work for the design and build of the Advanced Bioenergy Center Mendota. The pre-development work will include exploring the project's technical feasibility, economic viability and environmental impacts through assessing properties of sugar beets and other feedstock materials, developing and optimizing integrated biomass processing and conversion technologies, pilot scale operations, and analyzing life-cycle environmental impacts and sustainability.

Once completed, the Advanced Bioenergy Center Mendota will incorporate four different technologies in one facility to produce ethanol, renewable biomethane, compost and fertilizer, and green electricity. The primary feedstocks will be sugar beets and almond orchard prunings. This integrated biorefinery combines the following renewable technologies: advanced ethanol production, anaerobic digestion, biomass gasification, water recycling, and wastewater treatment. The facility will convert 840,000 tons per year of locally-sourced sugar beets (11,000 to 22,000 acres), as well as 80,000 additional tons of almond pruning's and other agricultural waste, into 33.5 million gallons of advanced ethanol; 6.3 Megawatts (MW) of certified green electricity; 1.6 million standard cubic feet (SCF) of renewable biomethane for conversion into compressed natural gas (CNG), and high-nutrient compost and liquid fertilizer. The project will reclaim one million gallons of treated waste water per day that will be used for biorefinery operations, and operate at an annual net water balance of plus 365 acre-ft per year that will be used in farming and landscaping. Overall, the project is expected to maintain a carbon- and water-neutral footprint.

The Energy Commission is providing \$1,499,000 in Alternative and Renewable Fuel and Vehicle Technology program funds and the project team will provide \$1,578,461 in match funds.

## **Benefits**

If proven feasible, this project will create approximately 250 direct and 50 indirect jobs during project construction. The facility will then sustain 50 long term positions in biorefinery operations, and an additional 50 full time positions for feedstock operations. Approximately 160 labor and agricultural positions will be created to support sugar beet harvest and production on 40 area farms. All jobs created will be located in Fresno County which is a designated Enterprise Zone.

When fully operational, the Advanced Bioenergy Center Mendota is anticipated to reduce gasoline and diesel use by 23 million gallons per year with the production of biomethane and ethanol, which have GHG reductions of 86 percent and 45 percent respectively. Cogeneration processes will be used to produce steam and green-energy that will be reintegrated as process energy into the biorefinery process. Additional benefits will include decreased air quality impacts associated with the burning of agricultural waste, and production of high-grade soil amendments that can replace fossil based fertilizers.

## **Participants**

The Mendota Advanced Bioenergy Beet Cooperative, formed in 2008, is a farmer owned cooperative composed of 40 growers of sugar beets in the San Joaquin Valley. Combined, these growers have more than 110 years of collective experience in sugar beet production. The Cooperative will be responsible for overseeing all project activities.

The University of California Davis' Dr. Ruihong Zhang, PhD, has extensive experience with biomass pretreatment, ethanol fermentation, anaerobic digestion, composting, and wastewater treatment. She will be responsible for pre-design feasibility research, analysis of feedstock properties, development of scaled up models of bioconversion, and life cycle analysis.

IR1 Group provides biofuels industry clients with complete project development, design and engineering, construction management, operations management, and asset sale services. They will serve as the project developer.

## **Implementation Schedule**

The MABBC expects the construction contract to begin in fall of 2011. The biorefinery start up is planned for fall of 2012.