

Item #11
December 1, 2010
Energy Commission Business Meeting

BIODIESEL INDUSTRIES

Grant Agreement ARV-10-024
for

ARIES[®] Bioenergy Project

Summary

Biodiesel Industries and partners will build an integrated bioenergy system that will use the waste materials and co-products of conventional biodiesel production to produce nutrients and carbon dioxide for algaculture, and to generate renewable heat and power that will in turn provide power to produce the biodiesel. The entire system will be automated, will test the quality of the biodiesel in real time, and will generate more energy than required for the process. See Figure 1 on page 3. The project will be developed at the U.S. Naval Base Ventura County in Port Hueneme.

Biodiesel Industries delivered a portable biodiesel production unit to Naval Base Ventura County in April 2010. The system is currently configured to run on grid electrical power and natural gas using yellow grease as the predominant feedstock. This project will use raw glycerin and wash water from conventional biodiesel production to provide feedstock for a pilot-scale anaerobic digester. Biomethane from the digester will be burned in a combined heat and power microturbine. Electricity from the microturbine will be used to produce biodiesel. Effluent from the digester will be fed into one enclosed algaculture greenhouse and six 330-gallon tanks to demonstrate the viability of the applicant's proprietary system. The algaculture oil will be processed into biodiesel. Volumes are estimated at one liter of biodiesel per day.

Biodiesel Industries will collect detailed performance and cost data, and analyze environmental impacts, permitting requirements, and economic viability for a full-scale facility.

The Energy Commission will provide \$886,815 in Alternative and Renewable Fuel and Vehicle Transportation program funds and the project team will provide \$1,825,962 in match funds.

Benefits

The annual greenhouse gas reductions from the production plant will be 28,590 metric tons of carbon dioxide. Over the 20-year design life of the plant, greenhouse gas reductions are estimated at 571,795 metric tons.

The project will use production byproducts (glycerin and carbon dioxide) and will be a net producer of energy. In full production, the system would produce 3 million gallons of biodiesel, 3,000 megawatts of renewable electricity, 47 million megajoules of renewable heat, and 169 jobs.

The water used in the biodiesel production process will be combined with the raw glycerin and digested. The resulting effluent will be fed into the algaculture process along with carbon dioxide from the microturbines. Because ARIES[®] produces renewable energy from waste products and uses a feedstock that does not use potable or irrigation quality water, an estimated 473 million gallons of water use will be displaced each year.

The production facility will result in 58 permanent jobs and 19 temporary jobs.

Participants

The main participants are Biodiesel Industries, Aerojet, and U.S. Navy. Biodiesel Industries and Aerojet have been working together to develop the portable biodiesel production unit.

Implementation Schedule

Biodiesel Industries plans to begin operating the system starting in the sixth quarter after the project begins.

Figure 1. Integrated Bioenergy System from Page 1 of the proposal's executive summary.

