



U.S. Department of Energy Categorical Exclusion Determination Form



Program or Field Office: Office of Energy Efficiency and Renewable Energy:
Phase III Xlerator Program

Funding Opportunity Number DE-FOA-0000397

Applicant Name: Renewable Algal Energy LLC

Location: Kingsport, TN

Project Title Algal Biodiesel via Innovative Harvesting and Aquaculture Systems

Proposed Action or Project Description American Recovery and Reinvestment Act:

As microalgae hold great promise as a high-yield, non-food source of lipids for biofuels, cost-effective and energy-efficient methods for cultivating, harvesting, and dewatering algae must be investigated. Renewable Algal Energy, LLC (RAE), is operating a large scale, integrated algal aquaculture system to demonstrate novel technology in these areas. RAE's objective in Phase III is to demonstrate aquaculture and harvesting technology at a scale that can be translated to a world-scale facility with low risk and at a price competitive with petroleum. In Phase I, the novel harvesting technology was demonstrated to recover 75% of the algae it was fed, and produce an algal concentrate with 5 wt% biomass in the algal concentrate. In Phase II, the capacity of the harvester was increased, and improvements were made that increased these parameters to 95% and 10 wt%, respectively. In the Phase II project testing was done on novel aquaculture techniques with an un-agitated pond and preconcentration methods that reduces the harvester size. Thus, in the Phase III project, RAE plans to operate 100 acres of algal aquaculture ponds at previously disturbed sites in continuous flow mode to feed the novel harvesting unit at the rate of 200 gallons of culture media each minute. This operation will demonstrate RAE's technology at a sufficiently large scale that only a ten-fold size increase will result in a commercial-scale algal biofuel facility. This small scale-up factor significantly reduces the risk of implementing algal biofuel and will, therefore, significantly speed the path toward broad implementation of algal biofuel technology. Furthermore, the energy required for harvesting step is 9% of the energy recovered from the algal oil (excluding the biomass). Commercial applications of RAE's technology could help facilitate United States energy independence, reduce carbon emissions, and produce transportation fuel that can be distributed in the existing system. Furthermore, algal biomass can be used for shrimp and fish food to help feed the world. The technology could be used by rural farmers that would create a completely new agricultural form, employing thousands of skilled and non-skilled workers.

Conditions: None

Categorical Exclusion(s) Applied: B3.6, B5.1

*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR 10 21

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.



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ORO NEPA Compliance Officer

James L. Elmore

Date Determined:

9/27/2010