

PMC-ND

(108.09.13)

U.S. DEPARTMENT OF ENERGY

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

NEPA DETERMINATION

**RECIPIENT:** Global Algae Innovations, Inc.**STATE:** CA**PROJECT TITLE**
: Algae Production CO2 Absorber with Immobilized Carbonic Anhydrase

Funding Opportunity Announcement Number DE-FOA-0001162	Procurement Instrument Number DE-EE0007092	NEPA Control Number GFO-0007092-002	CID Number GO7092
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Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:**Description:**

- A9 Information gathering, analysis, and dissemination** Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
- B3.6 Small-scale research and development, laboratory operations, and pilot projects** Siting, construction, modification, operation, and decommissioning of facilities for smallscale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.
- B5.15 Small-scale renewable energy research and development and pilot projects** Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Global Algae Innovations (GAI) to develop a small-scale absorber system that would be designed, built, and tested. It would be tested first with neat solutions to explore the operating regimes and attain 80% CO2 capture. It would then be integrated with the operation of a small-raceway pond to demonstrate long-term viability with recycled algae media instead of neat solutions. In parallel with the development of the absorber system, the carbon utilization with carbonated media would be optimized to maintain high growth rates and achieve 90% carbon utilization. At the conclusion of the testing, the techno-economic analysis model would be updated to project cost and performance of commercial-scale implementation of the novel absorber system and improved carbon utilization efficiency.

Task 0 was completed to validate existing data and to complete the technical/financial data sheet and milestones and metrics for project progress. A NEPA review was completed (GFO-0007092-001; CX A9 on 9/8/2015) for Task 0. This NEPA review is for Task 1 and Task 2.

The proposed activities include the design and fabrication, as well as analytical and field testing of carbon dioxide (CO2) capture and recycle equipment. Field testing would occur at the Global Algae Innovation (GAI) algae farm in Lihue, HI. Analytical testing would occur at the GAI laboratory also in Lihue, HI with engineering and design work at an engineering/test facility in St. Louis, MO. Equipment testing would take place at GAI's algae farm, using flue gas from an adjacent electrical utility gas turbine power plant. The pipe connecting the algae farm and the power plant is already in place. CO2 would be absorbed into aqueous media from the flue gas. Algae would be grown in small

raceway ponds using the carbonated aqueous media, which would then be recycled for additional recarbonation and algae growth. A small flue gas absorber would be installed next to the existing larger absorber. Piping would be added to divert flue gas through the new absorber at the GAI farm. All other equipment for algae growth is already in use at the site. No other modifications would be required. All work would be completed under existing permits. All laboratory procedures would comply with applicable health and safety regulations. Any hazardous materials would be documented, collected, and disposed of by a private contractor with the necessary permits on the island of Kauai.

Based on a review of the project information, DOE has determined that the proposed project activities would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined that these activities are consistent with actions contained in DOE categorical exclusions A9 "Information gathering, analysis, and dissemination," B3.6 "Small-scale research and development, laboratory operations, and pilot projects," and B5.15 "Small-scale renewable energy research and development and pilot projects" and are categorically excluded from further NEPA review.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If the Recipient intends to make changes to the scope or objective of this project, the Recipient is required to contact the Project Officer, identified in Block 15 of the Assistance Agreement before proceeding. The Recipient must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved. If the Recipient moves forward with activities that are not authorized for Federal funding by the DOE Contracting Officer in advance of a final NEPA decision, the Recipient is doing so at risk of not receiving Federal funding and such costs may not be recognized as allowable cost share.

Note to Specialist :

Bioenergy Technologies Office

This NEPA determination does not require a tailored NEPA provision.

Review completed by Diana Heyder on 6/01/2016

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:



Electronically Signed By: Kristin Kerwin

NEPA Compliance Officer

Date: 6/2/2016

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- ☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- ☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature:

Field Office Manager

Date: