



U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: University of California, Los Angeles--Energy Plant Design

Program or Field Office: Advanced Research Projects Agency-Energy

Location(s) (City/County/State): Los Angeles, CA; Ardmore, OK; Denton, TX; Seattle, WA; Cambridge, MA

Proposed Action Description:

The University of California, Los Angeles, in conjunction with The Samuel Roberts Noble Foundation, University of North Texas, Metabolix, Inc, and University of Washington, will conduct indoor laboratory based testing and genetic modifications aimed at enhancing the photosynthetic efficiency of cyanobacteria and higher plants (Arabidopsis, Camelina, and switchgrass).

Project activities will take place in existing laboratory facilities. No outdoor field trials are included in this determination.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of 10 CFR Part 1021.

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal.

The proposal has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Based on my review of 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.

NEPA Compliance Officer:

Date Determined:08/15/2013



**PROJECT ENVIRONMENTAL REVIEW
MEMORANDUM TO THE RECORD**

Lead Organization: University of California, Los Angeles

Project Title: Energy Plant Design

Date: 8/15/2013

Approved: _____

William J. Bierbower
William J. Bierbower
ARPA-E NEPA Compliance Officer

Concurred: _____

Dr. Jonathan Burbaum
ARPA-E Program Director

INSTRUCTIONS: Please complete Sections I - V of this memorandum form. Please complete all relevant fields. Where a particular field is irrelevant to the project under review, please indicate "N/A" in the field.

SECTION I. PROJECT INFORMATION

Funding Opportunity Announcement (if any): DE-FOA-0000470 (Plus Up)

Lead Organization: University of California, Los Angeles

Other Participants (Subrecipients, Contractors, etc.): The Samuel Roberts Noble Foundation; University of North Texas; Metabolix, Inc; University of Washington

Locations of Work (City, State): Los Angeles, CA; Ardmore, OK; Denton, TX; Seattle, WA; Cambridge, MA

SECTION II. NEPA ANALYSIS

A. CATEGORICAL EXCLUSION(S) APPLIED

The activities to be conducted under this project fit within the class(es) of actions listed in Categorical Exclusion(s) B3.6. Categorical Exclusion(s) cover(s):

B3.6: Siting, construction, modification, operation, and decommissioning of facilities for small-scale 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.

The proposed activities satisfy the elements and requirements of Categorical Exclusion(s).

The University of California, Los Angeles (UCLA), in conjunction with The Samuel Roberts Noble Foundation (SRNF), University of North Texas (UNT), Metabolix, Inc, and University of Washington (UW), will conduct indoor laboratory based testing and genetic modifications of cyanobacteria and higher plants, including Arabidopsis, Camelina, and switchgrass to develop biofuel crops. UCLA and UNT will focus on pathway integration and optimization in cyanobacteria and Arabidopsis. SRNF will focus on transformation and plasmid design. UW will focus on pathway

UCLA will perform work on cyanobacteria and Arabidopsis, helped with UNT and SRNF for the cloning and transformation work. UNT and SRNF will also design a construct to transform switchgrass. Metabolix will perform work related to Camelina. UW will design constructs aiming at optimizing the key enzyme of the pathway and perform preliminary experiments to evaluate the solubility of the enzymes when expressed in the bacteria E. coli. UCLA will evaluate the activity of enzymes when expressed in E. coli, cyanobacteria and Arabidopsis.

Specifically, the project team will (1) Prepare a technology to market plan; (2) Implement an rGS cycle to improve carbon fixation in cyanobacteria, Arabidopsis, Switchgrass, and Camilina; and (3) Demonstrate and engineered enzyme can be lysed aerobically and activity can be measured aerobically.

The proposed activities will take place in existing laboratory facilities. No modifications are required to perform the proposed activities.

B. EXTRAORDINARY CIRCUMSTANCES ANALYSIS (All Categorical Exclusions)

The proposed project will involve the following:

- a. Use, handling, storage, transport, or disposal of radioactive, toxic, or hazardous chemicals or materials Yes No
- b. Use, handling, storage, transport, or disposal of genetically engineered organisms recombinant DNA. Yes No
- c. Use, handling, storage, transport, or disposal of nanoscale materials Yes No
- d. Use, handling, storage, transport, or disposal of solid wastes Yes No
- e. Emissions into the ambient air Yes No
- f. Release of pollutants/contaminants into water resources Yes No
- g. Substantial noise pollution Yes No
- h. Adverse community-based environmental impacts Yes No

Comments:

Project activities will include the use, handling, storage, and disposal of hazardous materials (small quantities of industrial solvents), recombinant DNA, and solid wastes.

The proposed activities require the use of several industrial solvents. The lead organization and other participants all have dedicated hazardous material use and disposal practices which will be followed. All hazard materials will not be contacted by unrelated persons and will not be allowed to leave the lab. In addition, all staff have been trained in the proper use, storage, handling, and disposal of these materials, and proper safety equipment is provided.

The proposed activities require the use of recombinant DNA. All activities will be performed in dedicated laboratory facilities and plant growth facilities that maintains a high degree of security and meets or exceeds the Biosafety Level 1 containment standards and all activities will be performed in accordance with NIH Guidelines for Research Involving Recombinant DNA Molecules.

C. INTEGRAL ELEMENTS ANALYSIS (Appendix B Categorical Exclusions Only)

The proposed project will:

- a. Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health or similar requirements of DOE or Executive Orders.

Yes No

- b. Require siting/construction or major expansion of waste storage, disposal, recovery, or treatment facilities.

Yes No

- c. Disturb hazardous substances, pollutants, contaminants, or petroleum/natural gas products that preexisted in the environment, resulting in an uncontrolled/unpermitted release.

Yes No

- d. Have potential to cause significant impacts on environmentally sensitive resources.

Yes No

- e. For projects involving genetically engineered (GE) organisms, synthetic biology, governmentally designated noxious weeds, or invasive species:

- i. Such organisms will be contained and confined in a manner designed and operated to prevent unauthorized release into the environment.

N/A Yes No

- ii. Activities involving recombinant DNA will be conducted in accordance with NIH Guidelines for Research Involving Recombinant DNA Molecules

N/A Yes No

- iii. Activities involving GE organisms with pesticidal qualities will be conducted in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 U.S.C. § 136 et seq.) and EPA's FIFRA Implementing Regulations (40 C.F.R. Parts 150-189).

N/A Yes No

iv. Activities involving GE organisms that may pose a risk to plant/animal health will be conducted in accordance with the APHIS Regulations (7 C.F.R. Part 340).

N/A Yes No

v. Activities involving new GE organisms will be conducted in accordance with the Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601 et seq.) and EPA's TSCA Implementing Regulations (7 C.F.R. Parts 700-790).

N/A Yes No

Comments: Indoor research and testing will take place in enclosed facilities. Proper protective measures will be taken in accordance with NIH and established facility requirements to ensure recombinant DNA is contained and not released into the environment. The proposed activities do not include organisms with pesticidal qualities, that pose a risk to plant/animal health, or that involve a new genetically engineered organism.

SECTION III. ADDITIONAL COMMENTS/ANALYSIS

The proposed action consists of small scale research and development activities conducted in existing laboratory facilities that do not require additional modification to perform the project activities. The proposed action fits squarely within Categorical Exclusion B3.6, presents no extraordinary circumstances, and satisfies the integral elements for projects categorically excluded under Appendix B of 10 C.F.R. Part 1040.

SECTION IV. RECOMMENDATION FOR CONDITION ON AWARD

It is recommended that the following condition be included in the award:

No NEPA-related condition need be included in the award.

SECTION V. RECOMMENDATION FOR CATEGORICAL EXCLUSION

The activities to be conducted under this project fit within the class of activities identified under the Department of Energy Categorical Exclusion(s) identified above.

The review has not identified any extraordinary circumstances related to the specific project that may affect the significance of the environmental effects of the project.

It is recommended that no further review under NEPA is required; however, any changes to the project may require further review.

Please find attached the selectee's completed and signed NEPA Questionnaire.