

PMC-EF2a

(201002)

**U.S. DEPARTMENT OF ENERGY  
EERE PROJECT MANAGEMENT CENTER  
NEPA DETERMINATION**

**RECIPIENT:**The University of Connecticut**STATE:** CT**PROJECT TITLE :** BioEnergy Initiative for Connecticut

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
FY10 CDP	EE0003116	GFO-10-469	0

**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 (including, but not limited to, literature surveys, inventories, audits), data analysis (including computer modeling), document preparation (such as conceptual design or feasibility studies, analytical energy supply and demand studies), and dissemination (including, but not limited to, document mailings, publication, and distribution; and classroom training and informational programs), but not including site characterization or environmental monitoring.
- B5.1** Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.
- B3.6** Siting, construction (or modification), operation, and decommissioning of facilities for indoor bench-scale research projects and conventional laboratory operations (for example, preparation of chemical standards and sample analysis); small-scale research and development projects; and small-scale pilot projects (generally less than two years) conducted to verify a concept before demonstration actions. Construction (or modification) will be within or contiguous to an already developed area (where active utilities and currently used roads are readily accessible).

## Rational for determination:

The University of Connecticut is requesting US Department of Energy (DOE) funding to further evaluate the viability of poplar trees as a bioenergy crop. The initiative would also include field evaluation and genetic improvement of poplar trees to improve their bioenergy capabilities. The expected outcomes of this project would be improved poplar trees as bioenergy feedstocks; new catalysts and lab reactors for biomass conversion; newly designed biofuel processing systems; outreach activities for educating the public about biofuels, inventories of bio-feedstocks; and analyses of economic impact of biofuels in Connecticut.

The project would consist of 10 primary Tasks:

## Task 1

The recipient would be identifying poplar varieties for demonstration, planting selected varieties and 30 replicates of each variety on both agricultural land and non-agricultural land. This would allow for collecting data on growth, performance, weather conditions, and physical and chemical properties. The University owns the land where the trees will be planted and approval from the University has been obtained.

## Task 2

Characterization of genetically improved poplar that was previously produced, harvested, and stored in the laboratory.

## Task 3

A method for genomics guided mutation breeding of poplar for bioenergy applications would be developed. Also, mutation breeding techniques would be used to improve poplar plants for bioenergy applications.

## Task 4

Heterogeneous catalysts for biomass conversion including transesterification, esterification, and Fischer Tropsch would be prepared and characterized. The goal is the development of catalysts with long term activity, selectivity, and stability for use in the biomass conversions stated above.

Task 5

Development of lab scale reactors for biomass conversion, catalytic testing, and determination of mechanistic information about each reaction. The catalysts developed in Task 4 would be characterized before, during, and after each reaction.

Task 6

A prototype biodiesel production system would be built and tested. The biodiesel production systems' pretreatment tank would be designed to hold 100 gallons and treat 1 gallon per minute of feedstock. The Biodiesel production system will be assembled in an already constructed building in the Center for Environmental Science and Engineering. There will be no building construction or expansion.

Task 7

This task would be to identify industrial partners to develop a prototype production facility using the UCONN biodiesel technology.

Task 8

Continuous biobutanol production would be performed by running laboratory scale, continuous biobutanol system using a separation membrane to continuously remove butanol from a fermentor.

Task 9

Development of database platforms for feedstocks from forest and agricultural residues and idle and marginal land for energy crops.

Task 10

The Connecticut Center for Economic analysis would develop analyses to measure the current and potential net economic impact of developing the biofuels industry in Connecticut.

No GMO's will be used as part of this project.

Safety protocols are in place in all areas of research by a University-wide Environmental Health and Safety (EHS) organization, a University-wide radiation safety office. The EHS is responsible for radiation safety for use of X-ray equipment, safe use and disposal of chemicals, chemical health and safety, radiation safety, biological health and safety, occupational health and safety, handling of gases, handling of chemicals and heavy metals. The labs include fume hoods, fire alarms and scrubbers for evolving species.

This project comprises information gathering, conceptual design processes, design testing and conventional bench-scale research. Based on the information above, the DOE deems this project does not pose a significant impact to the human or natural environment; therefore Categorical Exclusions A9, B3.6, and B5.1 apply.

**NEPA PROVISION**

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Douglas Eichler, 7-29-10  
Logan Sholar, 8/28/2010

**SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.**

NEPA Compliance Officer Signature: Kristin Kerwin Date: 8/24/2010  
NEPA Compliance Officer

**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