PMC-EF2a
(2.04.02)

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

RECIPIENT: Iowa State University of Science and Technology **STATE:** IA

PROJECT TITLE : Liquefaction of Forest Biomass to "Drop-In' Hydrocarbon Biofuels

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-00005100	DE-EE0005974	GFO-0005974-001	EE5974

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.)
B1.31 Installation or relocation of machinery and equipment	Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.
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.
B3.8 Outdoor terrestrial ecological and environmental research	Outdoor terrestrial ecological and environmental research in a small area (generally less than 5 acres), including, but not limited to, siting, construction, and operation of a smallscale laboratory building or renovation of a room in an existing building for associated analysis. Such activities would be designed in conformance with applicable requirements and use best management practices to limit the potential effects of any resultant ground disturbance.

Rational for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Iowa State University (ISU) to generate a bio oil intermediate product using a continuous liquefaction unit with recycle (CLU-R). ISU would work with Catchlight Energy (CLE), Chevron, Weyerhauser and Mississippi State University to progress the solvent liquefaction technology through completion of proof of concept testing and switchgrass research. ISU would relocate CLE's continuous liquefaction research unit to its BioCentury Research Farm facility (BCRF), modify it to undertake the next stage of research and development, and operate it in continuous campaigns to generate process validation data and produce representative product bio-oils. Once representative product bio-oils are produced in the research unit, these would be shipped to the project partner, Chevron, who would conduct upgrading research on the bio-oil produced via the liquefaction process.

The CLU-R would be installed inside the existing BCRF facility, located at 1327 U Ave, Boone, Iowa 50036. Integrating the new and existing equipment at the BCRF Processing building would entail installing adequate support and access structures that would allow for safe operation of the equipment. ISU estimates approximately 1.5 gallons of liquid bio oil product would be produced per month during the operations phase. The biomass feedstock to be used in the solvent liquefaction unit would be clean pine sawdust, provided by Weyerhauser. ISU estimates in the first year that shakedown trials and initial campaign runs would process approximately 600 kg of material. In Year 2 (integrated operations), ISU estimates the unit would be operated for approximately 100 hours per month, using a total of 1200 kg.

The bio oil intermediate products would undergo full chemical and physical characterization using small samples at the Biorenewables Research Laboratory (BRL) on the ISU campus. Once they are characterized at the BRL, samples would be sent to two Chevron labs for upgrading to fuels and analysis: The Richmond Technology Center (RTC), located at 100 Chevron Way in Richmond, California and the Briarpark Technology Center (BRP) located at 3901 Briarpark Drive in Houston, Texas.

ISU and Chevron have completed an R&D questionnaire addressing the protocols for laboratory safety, risk management, chemical handling and waste disposal at the BCRF, BRL, RTC and BRP. The laboratories comply with standard safety procedures and all processes and procedures are monitored by the Environmental Health and Safety (EH&S) Departments. The laboratories have all applicable permits in place to conduct research. All handling and disposal of liquid effluent, toxic waste, gases and chemicals are executed by EHS personnel who comply with appropriate regulations of OSHA.

The ISU BCRF is a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) regulations. The proposed project should not generate enough waste material to elevate the generator status to Small or Large Quantity. Low levels of carbon monoxide (CO), carbon dioxide (CO2) and nitrous oxide (NOx) would be emitted. ISU maintains an EPA Title V operating permit. Emissions would be well below permitted levels.

Mississippi State University (MSU) would perform sustainability and feedstock production studies that would take place on managed timberlands sites (total of 600 acres) located near Scooba, Mississippi (32.866667,-88.55, Interior Flatwoods Resource Area). This work would examine the response of wildlife and plant communities to biomass removal and to the establishment of a native biomass crop (switchgrass) within intensively managed pine stands. The study would be conducted on research sites established by CLE on land owned and managed by Weyerhaeuser. A researcher would count bird eggs and nests and trap small mammals for counting purposes. Bird density and diversity would be estimated on the experimental and pilot stands using standard point count and distance sampling methodology to account for heterogeneous detection probabilities. Plant communities would be documented for abundance, richness and diversity, habitat structure, and production of browse for white-tailed deer.

Plant drying and weighing would occur at the MSU campus, located at 75 B. S. Hood Rd., Mississippi State University, Mississippi. Safety protocols are monitored internally under the authority of the Department Head of the Wildlife, Fisheries & Aquaculture department. The University operates under IACUC protocol for the safe capture and handling of animals.

The U.S. Fish and Wildlife Service (USFWS) Endangered Species Program website identifies two species in Kemper County, Mississippi: the Wood stork and Price's potato-bean. The Wood stork is primarily found in wetland habitats, where access to fish is available. Nesting habitats include cypress swamps and manmade structures. Price's potato-bean is found in open, rocky, wooded slopes and floodplain edges. Sites are usually under mixed hardwoods or in associated forest clearings, often where bluffs or ravine slopes meet creek or river bottoms. Due to the small scope of work, minimal ground disturbance and observational approach to the research, DOE has determined the proposed scope of work is not likely to adversely affect the threatened and endangered species in the area. Other resources, including wetlands, floodplains and cultural resources would not be adversely affected as they are not known to occur at the proposed location.

Based on the review of project information and the above analysis, DOE has determined that the research and development would not have a significant individual or cumulative impact to human health and/or environment. DOE has determined the proposed project is consistent with actions contained in DOE categorical exclusions A9 "information gathering," B1.31 "installation or relocation of equipment," B3.6 "small-scale research and development," B3.8 "outdoor terrestrial research," and is 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 you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Kelly Daigle 2/20/2013

DOE funding: $3,500,000

Cost Share: $875,000
Total Project Cost: $4,375,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 2/20/2013
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 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: _____ Date: _____
Field Office Manager