PMC-EF2a
(2.06.02)

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

RECIPIENT: HCL CleanTech **STATE:** VA

PROJECT TITLE : Biomass Pre-extraction, Hydrolysis and Conversion Process Improvements for an Integrated Biorefinery

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0000337	DE-EE0005003	GFO-0005003-001	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:

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).

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.

Rational for determination:

DOE proposes to provide federal funding to HCL CleanTech to perform multiple research tasks that would test biomass energy conversion improvements including: processes for pretreatment of biomass, hydrolysis of biomass to sugars and conversion of the sugars to biofuel.

Five tasks would be performed through this award:

- Task 1: Pretreatment Improvements
- Task 2: Hydrolysis Improvements
- Task 3: Conversion Improvements and Integration
- Task 4: Improved Process Validation
- Task 5: Project Management and Reporting

This project would take place at six existing facilities; four belong to project subcontractors. These facilities would conduct biomass preparation, laboratory and/or pilot plant activities:

- Georgia Institute of Technology at Herty, Advanced Materials Development Center (Savanah, GA)
  - o Perform analytical testing only

- Crown Iron Works Company (Roseville, MN)
  - o Pretreatment of biomass – extractives removal

- LS9, Inc. (South San Francisco, CA)
  - o Modification of host biocatalyst GMOs
  - o Improved biofuel production experiments

- Andritz Pulp & Paper (Springfield, OH)
  - o Pulping and fiber processing techniques

- HCL CleanTech Hydrolysis Pilot Plant at the Institute for Advanced Learning and Research (IALR)[Located in the SENTEC building] (Danville, VA)
  - o Pilot plant testing at new building location

• HCL CleanTech (Herzlia Pituach, Israel)
o Laboratory scale hydrolysis and pretreatment research

All facilities would be research-ready, with the exception of the HCL CleanTech hydrolysis pilot plant relocation in Danville, VA. The installation of the hydrolysis pilot plant into the newly constructed SENTEC building would provide a 4,800 sq ft high bay area and adjacent office and laboratory spaces. The hydrolysis pilot plant building would be constructed on property which is part of the IALR campus. The SENTEC building would be used by HCL CleanTech on a rental basis.

Each laboratory or facility has procedures and/or permits to capture, treat, and/or dispose of contaminants produced in air, aqueous, and solid media. In addition, all the facilities that would be utilized in this award have the necessary environmental health and safety programs to comply with OSHA and/or state regulatory requirements.

The design and construction of the SENTEC facility is not part of the DOE funded project and will be completed regardless of the DOE funded activities. Therefore, DOE has determined that the construction of the SENTEC facility has independent utility beyond the proposed scope of this project and therefore the construction of the facility is outside the scope of this NEPA review.

Portions of the LS9 fuel processing research would involve the genetically modified organism (GMO) E. coli MG1655 as a biocatalyst host. E. coli MG1655 is a Biosafety Level 1 organism that is not pathogenic to humans or plants. This GMO would be disposed of using chemical bleaching in the laboratory and heat destruction at the pilot plant scale. LS9 has in-house protocols for inactivation and disposal of GMOs and adheres to National Institutes of Health guidelines.

The HCL CleanTech (Herzlia Pituach, Israel) laboratory is an overseas facility that would be required to meet locally applicable health, safety, and environmental protection procedures. Per Israeli law, the facility would be monitored by a Certified Safety Inspector. The safety inspector conducts and records regular safety inspections, training and emergency drills. The laboratory is currently certifying to the ISO 14000 Environmental Management standard, and has been certified by the local municipality and the Israeli Environmental Protection Ministry.

This project comprises a laboratory and pilot-scale project focused on demonstrating efficiencies in these renewable energy processes. CX 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:

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 :

John DuWaldt 9.19.2011

DOE Funding: $ 9,000,000
Cost Share: $6,317,297
Total Project Cost: $ 15,317,000

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Kristin Kerwin Date: 9/22/2011
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

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