PMC-EF2a

(2.04.02)

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

RECIPIENT: Avello Bioenergy, Inc. **STATE:** IA

PROJECT TITLE : Demonstration of pyrolysis based biorefinery concept for biopower, biomaterials and biochar

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
N/A (DNFA)	DE-EE0005275	GFO-0005275-001	EE5275

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.

Rational for determination:

DOE is proposing to provide federal funding to Avello Bioenergy, Inc. (Avello) to design, construct and operate a 2.5 ton per day integrated thermochemical (bio-oil fractionation) pilot plant at Iowa State University's (ISU) Biocentury Research Farm (BCRF). DOE funding would also be used to test the bioproducts.

The proposed pilot plant would convert agricultural and woody biomass resources into sustainable petroleum replacements including Bioasphalt® binder, Biofuel Oil™, Biochar, specialty chemicals and biofuel feedstocks.

The BCRF is a fully integrated biomass production and processing research facility located on a twenty-acre parcel west of U Avenue and south of US 30 in Boone County, Iowa (1327 U Ave, Boone, Iowa 50036). The site has been owned by ISU since 1960 and has been used for agricultural research plots. The surrounding area is agricultural land. Currently, the site has an existing biomass processing facility, three storage buildings, three hoop storage sheds, a 1,000 liter above-ground liquid nitrogen storage tank, and two water tanks used for plant wash down: one, 48,000 gallon underground storage tank and one, 260,000 above-ground storage tank. The proposed 2.5 ton per day pilot plant would be located on the Avello lease area located 100 feet north of these existing buildings.

The Avello lease area (proposed site) at BCRF totals 29,440 square-feet (2/3 of an acre). The majority of this area would be excavated. Site preparation would include topsoil stripping and excavation, filling, backfilling, compaction, site grading for positive water drainage, trenching (~500 feet) and groundwork for utilities (water, sewer, power and gas). The building foundation would be poured concrete measuring 80 feet X 85 feet and the building would be of similar dimensions. External construction activities would include installation of the structural components of the process building shell, exterior lighting and site improvements (parking lot and access drives, sidewalks, signage, drainage and fencing). Internal construction activities would include drywall, insulation, lighting, ventilation and safety systems, mezzanines and walkways, plumbing, electrical and utility interfaces.

Additional storage tanks and bins would be installed on the south side of the new process building including one, ~16,000 gallon underground storage tank for plant wash down water measuring 16 feet (h) X 14 feet (w) X 10 feet (d);

one, ~20,500 liter, above-ground liquid nitrogen storage tank measuring 20 feet (h) X 27 feet (w) X 8 feet (d); and two storage bins of prepared biomass measuring 9 feet in diameter. Because the 1,320 gallon threshold for above-ground storage will be exceeded, a Spill, Prevention, Control and Countermeasure (SPCC) plan is required.

The BCRF has the following permits in place:
• Iowa Department of Natural Resources (IDNR) Operation Permit for a Land Application System (Permit no. 08-00-1-08).
• The BCRF operates under a Research and Development exemption per Iowa Administrative Code 567-22.1(2)(kk), which requires a 12 month rolling average of total emissions of identified pollutants be recorded and kept by the BCRF. If the BCRF exceeds the established air emission limits, ISU EH&S will complete the required Iowa Department of Natural Resources air emission construction permits.
• The BCRF is a Conditionally Exempt Small Quantity Generator (CESQG) of hazardous waste. If the BCRF exceeds the established waste limits, ISU EH&S will apply for the required Large Quantity hazardous waste generator ID number.

The pilot plant would generate low levels of CO, NOx, SOx, PM and VOC's from the combustion of natural gas and non-condensable pyrolytic gas. A piloted flare would be installed to destroy most of the pollutants through a controlled combustion reaction. Air emissions generated during operation will be calculated and shared with BCRF to include in the facility totals, per the IDNR Research and Development exemption described above.

Laboratory work would be conducted at ISU's existing BCRF processing facility. ISU has completed an R&D questionnaire addressing the protocols for laboratory safety, risk management, chemical handling and waste disposal. ISU complies with standard laboratory safety procedures. Labs are inspected by University Environmental, Health & Safety (EH&S) staff and campus safety personnel. Lab wastes are collected by EH&S and managed at the Regulated Materials Facility on the ISU campus before they are shipped to the Treatment, Storage and Disposal Facility. ISU has all applicable permits in place to conduct research at the BCRF.

Additional laboratory bioproduct testing would be conducted by selected partners in their respective fields. Each partner will follow internal EH&S protocols pursuant to OSHA standards and applicable local, state and federal laws. All waste and liquid effluent will be disposed of at existing, fully-permitted waste facilities.

The proposed project would not impact threatened or endangered species, wetlands, floodplains or cultural resources, as these are not known to occur in the area.

Based on this information, DOE has determined the work outlined is consistent with activities identified in categorical exclusion 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 pilot projects).

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Cristina Tyler 5.17.2012

DOE Funding: $2,500,000
Cost Share: $6,467,012
Total Project Cost: $8,967,012

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Kristin Kerwin Date: 5/21/2012
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required