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(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Montana State University **STATE:** MT

PROJECT TITLE: Enhanced Feedstock Characterization and Modeling to Facilitate Optimal Preprocessing and Deconstruction of Corn Stover

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002029	DE-EE-0008907	GFO-0008907-001	

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), 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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to Montana State University (MSU) to develop tools and techniques for the optimization of corn stover feedstock processing during preprocessing and conversion processes. Extrapolative techniques would also be developed to predict composition, properties, and processing behavior.

Proposed project activities would consist primarily of physical and chemical characterization of fractionated corn stover samples. MSU would analyze the physical conditions that result in optimal fractionation and would assess the resulting impacts from the process. Based on the results of these analyses, MSU would develop characterization tools and predictive models for use in real world contexts.

Specific work activities to be performed would include the following tasks:

Task 1: Verification – This task would consist of project verification activities in order to determine baseline metrics for the fractionation processes to be developed throughout the process.

Task 2: Physical Fractionation of Corn Stover by Anatomy and First-Stage Fractionation – This task would focus on assessing the impacts of reducing the size of corn stover biomass prior to fractionation. Corn stover samples would be fractionated and characterized. The effects of fractionation pre-processing techniques would then be assessed on the overall process.

Task 3: Development and Assessment of Biomass Characterization Protocols – This task would focus on the development of new techniques for the characterization of fractionated corn stover. Different characterization techniques would be applied to fractions compositions (e.g. spectroscopy, wet chemistry compositional analysis) and assessed for their effectiveness.

Task 4: Determine the Effect of Second-Stage Comminution and Fractionation on Pith Isolation – This task would analyze the conditions and results of later-stage fractionation processing. Techniques including sieving/air classification would be assessed.

Task 5: Characterization of Physically Fractionated Corn Stover – Fractionated corn stover samples would be characterized and the data collected on the samples would be organized into data sets. Parameters to be assessed would include chemical composition, particle size, and water sorption behavior.

Task 6: Formulate and Validate Predictive Models – Computer modeling would be performed using the collected data. Predictive models would be developed for assessing preprocessing efficacy.

Task 7: Project Management – This would be an ongoing task throughout the project and would consist of all activities relating to administration and coordination of project activities.

All project activities would be coordinated by MSU and performed at existing, purpose-built laboratory facilities that regularly perform work similar in nature to that included in the scope of this project. Characterization and computer modeling activities would be performed by MSU at its campus in Bozeman, MT. Idaho National Laboratory ('INL' – Idaho Falls, ID) would fractionate corn stover samples and provide these to MSU for characterization. INL would also support characterization/analysis activities.

Project work would involve the use and handling of industrial chemicals and machinery operating at elevated temperatures/pressures. All such handling would occur in controlled, laboratory environments. To mitigate against any risks associated with the performance of project activities, MSU and INL would adhere to their respective health and safety policies and procedures. These include procedures for the handling, storage, and disposal of hazardous materials and standard operating procedures for the operation of heavy machinery. All personnel involved in project work would receive appropriate training for the work activities that they would perform. MSU and INL would observe all applicable Federal, state, and local health, safety, and environmental regulations.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Bioenergy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Jonathan Hartman, 03/03/2020

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) 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 proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action 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.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 3/3/2020

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- [x] Field Office Manager review not required
- [ ] Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____

Field Office Manager