PMC-ND
(1.08.09.13)

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

RECIPIENT: Washington State University (WSU) **STATE:** WA

PROJECT TITLE: Develop an efficient and cost-effective novel anaerobic digestion system producing high purity of methane from diverse waste biomass

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
FOA-DE-0002029	DE-EE0008808	GFO-0008808-001	GO8808

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 federal funding to Washington State University (WSU) to develop and test an anaerobic digestion system to produce high purity methane from diverse waste biomass.

The proposed project would include five tasks. In Tasks 1-3 WSU would conduct literature searches and information gathering as well as conduct a series of laboratory scale experiments. Initial laboratory experiments (Task 1) would include optimization of the hydrothermal treatment process (HTT), which is designed to rapidly break down solids, on both dairy manure and dairy manure mixed with food waste and bio feedstocks. Operating conditions, including changes in temperature, pressure, residence time, and solids loading would be examined.

In Task 2 WSU would test effects of varying hyperthermophilic conditions, adjusting temperatures to examine acidification reaction rate and hyperthermophile (microbial) population.

In Task 3 WSU would examine methods and effectiveness of removing ammonia from the digestion process, and changing levels of pressurization.

In tasks 1-3 WSU would use approximately 10 kg of dairy manure, 5 kg of food waste, and 5 kg of biosolids. All work in these tasks would occur at L. J. Smith Hall, a preexisting purpose built university laboratory facility. The laboratory work would produce very small amounts of solid digestate and waste water which would be disposed of according to established university policy and in accordance with local, state and federal regulations.

WSU would then, in Task 4, analyze results and demonstrate progress to DOE (i.e., intermediate verification).

After Task 4 there would be a go no/go decision to determine whether to proceed to Task 5.

In Task 5 WSU would design, install, and operate a pilot project anaerobic digester for up to 12 months at the WSU compost facility. The pilot project would consist of four main components. These would include an Anaerobic Acidification Reactor, a Hydrothermal Reactor, a Thermophilic Anaerobic Methane Reactor, and a Mesophilic Anaerobic Methane Reactor. The Anaerobic Acidification Reactor will have a working capacity of about 3,672 gallons. The Hydrothermal Reactor will have a total volume of about 3 gallons. The Thermophilic Anaerobic Methane Reactor and the Mesophilic Anaerobic Methane Reactor will each have a working volume of 600 gallons. The system would also include controls, electrical and plumbing connections, and a feedstock conveyer with screw feeder.

System components would be purchased from and installed by Regenis, LLC in Ferndale, WA. Regenis fabricates and installs anaerobic digesters and components in it's ordinary course of business.

Regenis would install the system at the Compost Facility on the WSU main campus in Pullman, WA. The compost facility is a preexisting industrial facility comprised of numerous buildings, large paved areas used for storage and parking, as well as previously disturbed soil storage areas. The installation would occur outdoors, adjacent to the Compost Facility buildings, on previously disturbed soil and/or pavement. The system would be connected to the existing compost facility and dairy waste system.

Once installed, the system would be operated by WSU for up to one year. Operation of the system would start with the feedstock conveyer, which would supply approximately 5.4 gallons an hour (130 gallons per day) of wet feedstock (dairy waste and compost) to the anaerobic digester system. The material would enter the Anaerobic Acidification Reactor. Solids from the Anaerobic Acidification Reactor would be conveyed to the Hydrothermal Reactor, while liquids would be conveyed to either the Thermophilic Anaerobic Methane Reactor, or the Mesophilic Anaerobic Methane Reactor.

The pilot project would produce nonhazardous digestate and waste water. All wastes would be disposed of according to established university Compost Facility policy, pursuant to existing permits, and in accordance with local, state and federal regulations. Existing safety practices, including training and use of protective equipment will be followed. No modification to the site or new permits would be needed for installation of or operation of the system.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

This NEPA determination does not require a tailored NEPA provision
BioEnergy Technology Office
Roak Parker 1/29/2020

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: 1/29/2020

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