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(1.08.09.13)

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

**RECIPIENT:** West Virginia University Research Coop **STATE:** WV

**PROJECT TITLE :** The Development of an Advanced Infrared Hydrogen Fuel Flexible Boiler for Food and Beverage Industry

| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
|---|---|---|---|
| DE-FOA-0002804 | DE-EE0010849 | GFO-0010849-001 | GO10849 |

**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 the West Virginia University Research Cooperative (WVU) to research advancements in infrared hydrogen fuel flexible boilers for the food and beverage industry.

This project would design, fabricate, integrate, and test an innovative hydrogen flexible boiler capable of burning natural gas, hydrogen, and their mixtures. The award would be limited to intellectual and laboratory-scale activities, which would be conducted at four laboratories and two businesses.

The design and fabrication work would be conducted in Morgantown, West Virginia, at WVU laboratories, in Oak Ridge, Tennessee at the Oak Ridge National Laboratory (ORNL) and GTI energy Testing Laboratories (GTI) in Des Plaines, Illinois. The CSI Computer Laboratory (CSI) in Madison, Wisconsin would provide technical support in burner Computational Fluid Dynamics (CFD) model development. The integration of the boiler system and test of the final product would be conducted at GTI. CFD simulations would be conducted at the CSI. Natural gas and hydrogen application would occur at GTI.

The Mountaintop Beverage Laboratory and Manufacturing Facility in Morgantown, West Virginia would provide an in-laboratory beverage quality assessment and assessment of the beverage production process. The Neighborhood Kombuchery, LLC, located in Morgantown, West Virginia would provide an assessment of the beverage production process for potential CO2 reduction.

This project would involve the burning of hydrogen and natural gas in a laboratory setting, which has the potential/possibility for explosion risk in the West Virginia University, ORNL and GSI laboratories. This risk would be mitigated through safety trainings to engineers, technicians and students and any others involved in this project. This team would work closely with lab safety in each location to make sure the researchers are fully trained, and the leak detection devices are made available, and only the trained engineers, technicians, and graduate students are allowed to handle hydrogen and natural gas. Technical support, guidance and advisement would be sought from the National Energy Technology Laboratory hydrogen safety committee.

Nitrogen oxides and methane gas would be generated as a result of burning hydrogen and natural gas and would be released into the ambient air. The emission increases at all three laboratories are expected to be negligible and would

occur in current US Environmental Protection Agency-designated Attainment Areas. The research/assessments at Mountaintop Beverage and the Neighborhood Kombuchery, LLC would not increase consumption of energy or fuel and would not include any emissions.

It is expected that WVU's laboratory would need a permit authorizing of using hydrogen and natural gas in laboratory. Any and all permits required for the execution of the project at the above-referenced locations would be the responsibility of the recipient.

All project work would be performed at existing, purpose-built facilities. No modifications to existing facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. No licenses, or authorizations would be required. DOE does not anticipate any impacts to resources of concern due to the proposed award activities.

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:

Industrial Efficiency & Decarbonization Office
NEPA review completed by Chris Akios, 05/20/2024

**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: Andrew Montano Date: 5/24/2024

NEPA Compliance Officer

**FIELD OFFICE MANAGER DETERMINATION**

☑ 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