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

RECIPIENT: MF Fire **STATE:** MD

PROJECT TITLE: Fire MAPS - Secure Performance Monitoring and User Alerts System (for wood burning stoves)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002029	DE-EE0008915	GFO-0008915-001	GO8915

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.)
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.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to MF Fire to develop a novel system for monitoring the performance of wood stoves. The Fire Monitoring, Alerts, and Performance System (Fire MAPS) would combine thermocouple sensors, a smart controller, and software to provide real-time guidance and performance data for monitoring wood stoves and managing fire conditions. The technology would help to improve the operating efficiency of wood stoves and reduce associated emissions.

The proposed project would be completed over a three year period. The first year would focus on design/development of the smart controller's primary hardware components and software. An existing wood stove previously developed by MF Fire (i.e., Nova stove) would be used, along with two larger stoves for controller verification testing. By the end of the first year, a working prototype controller would be developed. The second year would consist of user testing of the prototype controller. Test units would be fabricated for testing. Testing would then be undertaken with two test groups. The final project year would consist solely of analysis and reporting activities.

Proposed tasks for each year are as follows:

Year 1
Task 1 – Initial Verification: Baseline data supporting project objectives and demonstrating capabilities of control wood stoves would be gathered and submitted to DOE.

Task 2 – Manufacture and Benchmark Control Stoves: Two wood stoves would be manufactured for use in testing, along with MF Fire's existing test unit, the Nova stove. The stoves would be sized to address the range of wood stoves found in the U.S. stove market. Manufacturing of the prototypes would be performed by an existing commercial steel fabricator. The fabricator would be selected after design work has been performed.

Task 3 – System Development: This task would consist of the development and testing of the Fire MAPS system and its sub-system components. Task work would include the development of a cybersecurity plan, controller system design, fabrication of a test unit, app development, operational guidance development, and systems testing. Controller fabrication would be limited to bench-scale assembly of off-the-shelf electronics and component parts.

Year 2
Task 4 – Fire MAPS Test Unit Production: This task would consist of the fabrication of Fire MAPS test units for user testing. Approximately two hundred (200) units would be produced. As in Task 3, controller fabrication would be limited to bench-scale assembly of off-the-shelf electronics and component parts.

Task 5 – User Testing: Participants would be recruited for Alpha and Beta testing. The Alpha group would validate that installation, system performance, and all related processes are functioning and well understood. System improvements would be made based on the results of this first group. Then, a Beta user group test would be organized to further test system performance and associated processes.

Test units would be sent to participants to install on stoves already owned by the participants. The test controllers would be used to monitor stove performance, but would not modify users' existing wood stoves in any way. Consequently, the controller would not affect any EPA-certified aspects of the wood stoves. Remote support would be provided for self-installations. Both Alpha and Beta group testing would last for approximately one month. A control test group would also be established by running emissions tests in a laboratory setting on the 3 test stoves fabricated as part of Task 2.

Candidate participants would be identified through cooperation with industry partners, using platforms including social media, newsletters, and blogs. Candidate participants would need to own an Environmental Protection Agency (EPA) certified wood stove to be considered for participation in the program. User testing locations would be limited to private residences across the United States. Consent forms would be drafted and vetting processes defined during the project. All candidates would be required to sign any associated agreements/waivers prior to participating in the testing.

Year 3
Task 6 – Project Analysis and Results: Test data would be assessed and user interviews would be conducted.

MF Fire would coordinate all project activities. All project work would be performed at existing, purpose-built facilities that regularly perform work similar in nature to the work included in the scope of this project. Design work, fabrication, and laboratory testing would be performed at MF Fire's headquarters in Baltimore, MD. Additional laboratory testing of the monitoring device would be performed at Biomass Emissions Solutions & Testing at its facilities in Colville, WA. No physical modification to existing facilities, construction of new facilities, ground disturbing activities, or changes to the use, mission, or operation of existing facilities would be required. Likewise, no additional permits or authorizations would be needed for the completion of project activities.

Risks inherent to design, laboratory testing, and fabrication activities would be mitigated through adherence to established corporate health and safety policies and procedures. Protocols would include employee training, the use of proper protective equipment, engineering controls, monitoring, and internal assessments.

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, 12/18/2019

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: 12/18/2019

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