

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



RECIPIENT: OCO, Inc.

STATE: WA

PROJECT TITLE : Formic Acid-based Hydrogen Energy Production and Distribution System

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-002792	DE-EE0010747	GFO-0010747-001	GO10747

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.

B3.15 Small-scale indoor research and development projects using nanoscale materials

Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to OCO, Inc. (OCO) to design, fabricate, and test two systems, a system to produce formic acid from water and CO₂ (i.e., formic acid electrolyzer system) and another system to make hydrogen gas from the formic acid (i.e., hydrogen evolution reactor system). The award aims to integrate these systems to create a formic acid-based hydrogen energy production and distribution system.

Award activities include outreach, education, training, data analysis, preliminary engineering/design, and laboratory research. The award will consist of two Budget Periods (BPs). BP1 would focus on the design, fabrication, testing, and optimization of the formic acid electrolyzer and hydrogen evolution reactor systems. The formic acid electrolyzer would be scaled by a production rate scale factor of four times and the hydrogen evolution reactor systems one hundred times in BP2.

OCO would utilize an existing Research and Development (R&D) laboratory at the Applied Process Engineering Laboratory (Richland, WA) which is a dedicated incubator facility for chemical process engineering based start-up companies. At this R&D laboratory, OCO would design, fabricate, test, and operate the pilot plant to produce formic acid and perform operational testing of the hydrogen generator. The Pacific Northwest National Laboratory (PNNL; Richland, WA) would be responsible for designing, fabricating, testing, and operating a 10 gram per hour production rate hydrogen generator system. Lastly, Johnston Engineering would fabricate and assemble the PNNL-designed, larger scale hydrogen generator at their fabrication facility in Spokane, WA. All facilities are preexisting purpose-built facilities for the type of work to be conducted for this award. Facility modifications would not be required.

Award activities would involve typical hazards associated with the use and handling of hazardous materials, including metals, caustic and acidic electrolyte mixtures, acidic chemicals, hydrogen gas, carbon monoxide, and bismuth nanopowder. All such handling would occur in-lab and in dedicated ventilated areas/vacuum-hooded structures. Nanomaterials would be handled using proper personal protective equipment (PPE), under fume hoods, and by

properly trained employees. Each facility is dedicated to proper hazardous material handling and disposal practices and all hazardous materials would be managed in accordance with federal, state, and local environmental regulations. Existing health, safety, and environmental policies and procedures would be followed to mitigate hazards to acceptable levels, including employee training, proper PPE, engineering controls, monitoring, and internal assessments. Mitigated hazards would pose negligible risks to the public and environment. All activities would comply with existing federal, state, and local laws and regulations.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders. A diversity, equity, and inclusion plan would be implemented to encourage the inclusion of individuals from underrepresented groups in fields of science, technology, engineering, and mathematics (STEM).

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:

Hydrogen and Fuel Cell Technologies Office
NEPA review completed by Corrin MacLuckie, 08/24/2023.

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:


NEPA Compliance Officer

Date: 8/24/2023

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: _____
Field Office Manager

Date: _____