

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



**RECIPIENT:** Caterpillar Inc.

**STATE:** IL

**PROJECT TITLE :** Flexible Natural Gas/Hydrogen CHP System

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
DE-FOA-0002252	DE-EE0009422	GFO-0009422-002	G09422

**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.)

**B3.9 Projects to reduce emissions and waste generation**

Projects to reduce emissions and waste generation at existing fossil or alternative fuel combustion or utilization facilities, provided that these projects would not have the potential to cause a significant increase in the quantity or rate of air emissions. For this category of actions, "fuel" includes, but is not limited to, coal, oil, natural gas, hydrogen, syngas, and biomass; but "fuel" does not include nuclear fuel. Covered actions include, but are not limited to: (a) Test treatment of the throughput product (solid, liquid, or gas) generated at an existing and fully operational fuel combustion or utilization facility; (b) Addition or replacement of equipment for reduction or control of sulfur dioxide, oxides of nitrogen, or other regulated substances that requires only minor modification to the existing structures at an existing fuel combustion or utilization facility, for which the existing use remains essentially unchanged; (c) Addition or replacement of equipment for reduction or control of sulfur dioxide, oxides of nitrogen, or other regulated substances that involves no permanent change in the quantity or quality of fuel burned or used and involves no permanent change in the capacity factor of the fuel combustion or utilization facility; and (d) Addition or modification of equipment for capture and control of carbon dioxide or other regulated substances, provided that adequate infrastructure is in place to manage such substances.

**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 is proposing to provide funding to Caterpillar, Inc. (Caterpillar) to develop and demonstrate a 2.0 MW (electric) flexible natural gas/hydrogen combined heat and power (CHP) system.

DOE previously completed a NEPA Determination (ND) for BP1 and BP2 tasks and subtasks (GFO-0009422-001, 06/04/2021: A9, B3.6) which did not apply to BP3 tasks and subtasks. This ND applies to BP3 activities, which would include system installation and demonstration.

Project activities include design, development, and demonstration of a natural gas/hydrogen powered flexible CHP genset and advanced microgrid/grid compatibility controls. During BP1 and BP2, single cylinder engine research and development was performed at Caterpillar's Global Engine Development North America (GEDNA) facility located in Mossville, IL. Testing of a multi-cylinder engine system was done at SwRI, San Antonio, TX. Proposed BP3 activities would include installation and demonstration of the developed 2.0 MW (electric) CHP system at the District Energy St. Paul (DESP) facility in St Paul, Minnesota. Modeling, analysis, and safety assessment activities would be completed by the National Renewable Energy Laboratory in Golden, CO.

The CHP system would be installed in an industrial area at the existing energy generation facility at DESP. Installation of the CHP system would require disturbance of approximately 10,000 square feet of impervious asphalt and a small amount of soil just below the existing asphalt to accommodate a concrete foundation. Established material and runoff management best practices, including the project site Stormwater Management Plan, would be followed. Minor facility

modifications would occur for installation of piping and conduit required to connect the CHP system to the existing thermal and electrical system at DESP. A temporary source of hydrogen would be provided in the parking area of DESP for compressed hydrogen trailers to fuel the CHP system. The CHP system would be in an enclosed area of about 70 feet by 18 feet to minimize visual and sound impacts. The installed system would be operational for three months and would be completely removed by the end of the project.

DOE determined that Subpart B of 10 CFR 1022 is not applicable, as the proposed project activities would consist of minor modification of an existing facility or structure as per 10 CFR 1022.5(d)(3). The proposed equipment installation would be temporary and have a small footprint. In addition, the project activities would occur in an industrial area on an existing impervious ground surface (i.e., asphalt). The award recipient would adhere to provisions under the DESP Flood Response Plan and Stormwater and Spill Prevention plans.

The DESP facility has an existing Title V air permit from the Minnesota Pollution Control Agency for operations at the site. The proposed project activities would be added to that permit via a minor amendment. The project's engineering company, McKinstry LLC would obtain all required site-related permits for building, electrical, mechanical, conditional use, and hydrogen tube-trailers prior to installation of the CHP system.

The project would involve typical construction hazards during equipment installation, mechanical/electrical machinery operation, and operation of industrial process equipment (hot water, hydrogen fuel, etc.) Existing Environmental, Health, and Safety (EHS) policies and procedures would be followed. Training on EHS policies and procedures would be provided to all site personnel and contractors. The project would involve the use and handling of various hazardous materials, including engine-related fuels and lubricants. All hazardous materials would be handled and managed in accordance with federal, state, and local environmental 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.

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 and Decarbonization Office (IEDO)  
NEPA review completed by Melissa Parker, 02/14/24

## **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: 2/15/2024  
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