

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



RECIPIENT: Czero, Inc.

STATE: CO

PROJECT TITLE : Advanced High-Throughput Compression System for Medium- and Heavy-Duty Transportation

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002446	DE-EE0009626	GFO-0009626-001	

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 Czero, Inc. to design, develop, fabricate, and lab test a novel modular hydraulically driven hydrogen compressor designed to meet the challenges associated with high-flow hydrogen fueling stations. This project would take place over two budget periods (BPs) and two years.

All design, development, fabrication, and lab testing would take place at Czero, Inc in Fort Collins, CO. Argonne National Laboratory in Lemont, IL and PDC Machines in Warminster, PA would be performing only intellectual, academic, and analytic activity.

The initial BP would focus on refinement of the balance-of-plant and preparation of the compressor design, creating manufacturing prints for the mechanical and control systems, and developing and constructing two hydraulic power units (HPUs) which would power the compressor. HPU design would be updated to be compatible for a high-throughput prototype compressor, including the ability to increase throughput through higher actuation speeds. A DOE safety plan would also be developed.

The second BP would focus on constructing and testing a prototype compressor and its associated balance-of-plant. Project activities would also focus on simulating the system as part of a large-scale fueling system. The compressor prototype system would be commissioned and tested for functionality and performance. Stakeholders and potential pilot customers would provide prototype system functionality and modification feedback for a potential future pilot test. Engagement with the aforementioned parties would be facilitated in part by team members who have close ties with relevant organizations. Capital expenditures and operating expenses would also be evaluated.

Simultaneously to both BPs, a team would be evaluating the unique capabilities of the compressor technology in order to determine configurations for varying demands, as well as evaluating refueling strategies and optimization.

The proposed project activities would involve potential health and safety hazards, including megawatt level electrical power, high pressure hydraulics, and high pressure compressed inert gas. These potential hazards would be constrained to project workers so there would be no risk to the public. Czero has sufficient processes, safety systems, and training in place to ensure compliance with Federal, state, and local environmental and health and safety regulations. In addition, helium would be used in place of hydrogen for testing because it results in nearly equivalent performance with reduced risks. Emissions would be limited to electrical production required to power the system at

Czero, generated from the grid and produced in a powerplant, and on-site diesel generator sets.

There would be no modifications, ground disturbances, or changes in facility use. No new or modified permits, licenses, or authorizations are anticipated as being required for this project at any of the activity locations.

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 (HFTO)
This NEPA determination does not require a tailored NEPA provision.
Review completed by Alex Colling on 01/26/21.

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**
NEPA Compliance Officer

Date: 2/2/2022

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: _____