

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



RECIPIENT: LanzaTech, Inc.

STATE: IL

PROJECT TITLE : A New Supply Chain for Sustainable Acetone

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002553	DE-EE0010207	GFO-0010207-001	

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 LanzaTech, Inc. to develop a gas fermentation process to produce acetone using the industrial off-gas from a silicon carbide (SiC) chemical plant. The project would be completed over two Budget Periods (BPs) with a Go/No-Go decision point between each BP. This NEPA determination is applicable to both BPs.

Project participants would analyze the SiC off-gas, adapt its fermentation properties, and monitor biocatalyst activity. An engineering design for an advanced acetone recovery system would be developed. The process would be demonstrated in bench scale continuous stirred tank reactors (CSTR) and then upscaled to take place in pilot loop bioreactors in two pilot production runs. Acetone recovered in the production runs would be purified to commercial specifications and multiple 10 kg samples would be sent to potential customers for evaluation in their processes. A third pilot run would evaluate fermentation in a pilot reactor using SiC off-gas captured from the Washington Mills manufacturing facility.

Proposed project activities by location are listed below:

- LanzaTech, Inc. Skokie, IL – Gas fermentation in CSTR bench reactors and loop pilot reactors. Acetone and ethanol product recovery. Conduct techno-economic analysis and lifecycle assessment.
- LanzaTech Freedom Pines Biorefinery, Soperton, GA – Site of additional pilot scale reactors. Scale up gas fermentation conditions.
- Washington Mills, Hennepin, IL – Characterize and capture existing industrial gasses to assess in-situ variability and conditions for feasibility.

Washington Mills would install a manifold at their Hennepin, IL site from the line that leads to their thermal oxidizer to allow for gas extraction during operation. This would not cause a change in the use, mission, or operation of the existing facility. No further modifications to facilities would be made and no additional permits would be required in order to conduct any of the work activities.

Project activities would involve the use and handling of various hazardous materials, including toxic, flammable, and

compressed gases. Any risks associated with the handling of these materials would be mitigated through adherence to established health and safety policies and procedures. Protocols would include employee training, the use of personal protective equipment, engineering controls, personal carbon monoxide monitoring devices, and lab safety audits. Biocatalysts that are genetically engineered may be used. LanzaTech would handle cultures according to appropriate techniques and precautions to ensure safety and to prevent live bacteria from being introduced into the public waste stream. All waste products would be disposed of by licensed waste management service providers. LanzaTech and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advanced Manufacturing Office
Review completed by Shaina Aguilar on 8/1/22.

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: 8/1/2022

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: _____