PMC-ND

(1.08.09.13)

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

RECIPIENT: E2H2NANO, LLC **STATE:** NY

PROJECT TITLE : A Compact, Modular Membrane Reactor for Ammonia (NH3) Synthesis at Moderate Temperatures and Pressures

Notice of Funding Opportunity Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0003219	DE-EE0011811	GFO-0011811-001	GO11811

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:

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).
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 federal funding to E2H2NANO, LLC (Buffalo, NY) to scale up and prototype efficient ammonia production at moderate temperatures and pressures.

The proposed award activities would include data analysis, design, testing, techno-economic analysis (TEA), and laboratory research. Laboratory activities would catalyst and membrane development, production, evaluation, scale-up, and reactor design, fabrication and testing. Membrane development, scale-up, production, membrane reactor design, testing, TEA and marketing analysis would take place at UB Incubator at the University at Buffalo (Amherst, NY). Johnson Matthey (Reading, United Kingdom; Billingham, United Kingdom; Savannah Georgia) would assist with catalyst synthesis and characterization, TEA support, and project management. University of South Carolina (Columbia, SC) would synthesize ammonia catalysts and perform quality control.

All project activities would be completed in existing, purpose-built facilities. These facilities already carry out similar development, testing, and prototyping activities. Minimal modifications would be carried out, including the addition of additional piping, safe storage space for gases, and additional exhaust ducts. All activities would be carried out at the laboratory scale.

Potential hazards would include the use and handling of potentially hazardous materials, including sodium hydroxide, high-pressure hydrogen and nitrogen, ammonia, catalyst nanomaterials, and the operation of high-pressure and high temperature processes. All award activities would occur in-lab, in dedicated well-ventilated laboratory spaces. The catalysts are in the form of a support powder with nanoparticles attached to it. The powder will be handled according to environmental health and safety regulations, i.e., in a hood wearing personal protective equipment. Existing corporate health and safety policies and procedures would be followed, including employee training, proper protective equipment, monitoring, and internal assessments. All hazards would be 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.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Industrial Efficiency and Decarbonization Office (IEDO)
NEPA review completed by Alex Colling on 06/09/2026

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposal fits within a class of actions that is listed in Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures (June 30, 2025). To fit within the classes of actions listed in Appendix B to 10CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

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.

DOE has determined that work to be carried out outside of the United States, its territories and possessions is exempt from further review pursuant to Section 5.1.1 of the DOE Final Guidelines for Implementation of Executive Order 12114; "Environmental Effects Abroad of Major Federal Actions."

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: Nicole Serio Date: 6/9/2026

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