CATEGORICAL EXCLUSION (CX) DETERMINATION FORM

NETL F 451.1-1-1 P.1
Revised: 05.28.2026
Reviewed: 05.28.2026
(previous editions obsolete)

Funding Authority (Base, IIJA, IRA, CDS): Base
DOE Funding Office (HGEO, EERE, OE, etc.): HGEO
Solicitation (NOFO) Number: DE-FOA-0003612
Award Number: DE-FE0032794

Prime Recipient Name and Location:	Sub-Recipient Name and Location:
Regents of the University of Minnesota - Minneapolis, MN	Lawrence Berkeley National Laboratory - Berkeley, CA Pacific Northwest National Laboratory - Richland, WA

NETL Org.: Hydrocarbons and Geothermal Energy
NETL Project Manager: Natalie Iannacchione
Title of Proposed Action: Generative AI-Enabled Digital Twins for Subsurface Fracture Systems with Active Learning Multiphysics Data Assimilatio

Brief Description of Proposed Action:

Project management; literature/data review; computer modeling/simulation; development of generative AI and algorithms for digital twins; report writing; laboratory scale experiments (core-flooding, hydro-mechanical experiments); technical collaboration.

ADMINISTRATIVE AND ROUTINE ACTIONS EXCEPTED FROM NEPA REVIEW, 10 CFR 1021 APPENDIX A

☐ The NETL NEPA Division has reviewed all proposed project activities and has determined that NEPA does not apply.

THE PROPOSED ACTION FALLS WITHIN THE FOLLOWING CATEGORICAL EXCLUSION(S) FROM 10 CFR 1021, Appendix B

Facility Operation

☐ B1.3 - Routine maintenance
☐ B1.7 - Electronic equipment
☐ B1.13 - Pathways, short access roads, and rail lines
☐ B1.15 - Support buildings
☐ B1.31 - Installation or relocation of machinery and equipment

Safety and Health

☐ B2.1 - Workplace enhancements
☐ B2.2 - Building and equipment instrumentation
☐ B2.3 - Personnel safety and health equipment

Site Characterization, Monitoring, and General Research

☐ B3.1 - Site characterizations and environmental monitoring
☐ B3.2 - Aviation activities (aerial survey and mapping)
☑ B3.6 - Small-scale research and development, laboratory operations, and pilot projects
☐ B3.7 - New terrestrial infill exploratory and experimental wells
☐ B3.9 - Projects to reduce emissions and waste generation
☐ B3.11 - Outdoor tests and experiments on materials and equipment components

Electrical Power and Transmission

☐ B4.4 - Power marketing services and activities
☐ B4.6 - Additions and modifications to transmission facilities
☐ B4.11 - Electric power substations and interconnection facilities
☐ B4.12 - Construction of powerlines (up to 10 miles, or up to 20 miles if within previously disturbed or developed powerline or pipeline rights-of-way)
☐ B4.13 - Upgrading and rebuilding existing power lines
☐ B4.14 - Construction and operation of electrochemical-battery or flywheel energy storage systems

Conservation, Fossil, and Renewable Energy Activities

☐ B5.1 – Actions to conserve energy or water
☐ B5.3 – Modification or abandonment of wells
☐ B5.4 – Repair or replacement of pipelines
☐ B5.5 – Short pipeline segments (up to 20 miles)
☐ B5.12 – Workover of Existing Wells
☐ B5.13 – Experimental wells for injection of small quantities of carbon dioxide (up to 500,000 tons per geologic formation)
☐ B5.14 – Combined heat and power or cogeneration systems
☐ B5.15 – Small-scale renewable energy research and development and pilot projects
☐ B5.16 – Solar photovoltaic systems
☐ B5.18 – Wind turbines
☐ B5.21 – Methane gas recovery and utilization systems
☐ B5.22 – Alternative fuel vehicle fueling stations
☐ B5.23 – Electric vehicle charging stations

Other

☐ Specify category/categories in space below

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NETL F 451.1-1-1 P.2
Revised: 05.28.2026
Reviewed: 05.28.2026
(previous editions obsolete)

THE PROPOSED ACTION FALLS WITHIN THE FOLLOWING CATEGORICAL EXCLUSION(S) ADOPTED FROM OTHER FEDERAL AGENCIES PURSUANT TO SECTION 109 OF NEPA (42 U.S.C. 4336c) (APPENDIX C OF DOE'S NEPA IMPLEMENTING PROCEDURES).

This action (1) would not present any extraordinary circumstances such that the action might have a significant impact upon the human environment; (2) is not connected to other actions with potentially significant impacts; and (3) has not been segmented in order to meet the definition of a Categorical Exclusion.

SELECT ONE OF THE FOLLOWING

☑ This Determination includes all tasks, phases, recipients, and locations for the proposed action.

☐ This Determination does not includes all tasks, phases, recipients, and locations for the proposed action. Only the following tasks, phases, recipients, or locations specified below are included:

NCO Comment Only: The following comment is provided for the consideration of the Contract Specialist or Contracting Officer:

This CX determination (B3.6) covers lab activities to be performed at the University of Minnesota. Activities to be performed at Lawrence Berkeley and Pacific Northwest National Laboratories are exempt from NEPA review.

The NETL Project Manager acknowledges the responsibility to obtain a NEPA determination prior to initiating or modifying any activities outside the scope of this Categorical Exclusion determination.

DOE Project Manager Signature: NATALIE IANNACCHIONE Digitally signed by NATALIE IANNACCHIONE Date: 2026.10.15 13:53:04 -04'00' Date: 10/15/2026

NEPA Compliance Officer Signature: JOHNNA SHOLTIS Digitally signed by JOHNNA SHOLTIS Date: 2026.10.16 05:28:19 -04'00' Date: 10/16/2026

U.S. DEPARTMENT OF ENERGY – NATIONAL ENERGY TECHNOLOGY LABORATORY

CATEGORICAL EXCLUSION (CX) DETERMINATION FORM

The purpose of this form is to request and obtain approval for a Categorical Exclusion (CX) determination under the National Environmental Policy Act (NEPA) for National Energy Technology Laboratory activities and extramural awards.

Instructions

Provide the following information:

- Funding Authority
- DOE Funding Office
- Solicitation Number
- Award Number
- Prime Recipient Name and Location
- Sub-Recipient Name and Location
- NETL Organization
- NETL Manager
- Title of proposed action
- Brief description of activities

Check all the boxes that apply; Use the "Other" category and the space provide to list any information not already listed.

Acquire the signature of the initiator as well as the NEPA Compliance Officer

A space is provided above the signature blocks to list any considerations that may be valuable to the contracting officer.