

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



RECIPIENT: OXY USA, Inc

STATE: CO

PROJECT TITLE : Geothermal Limitless Approach to Drilling Efficiencies (GLADE)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002656	DE-EE0010444	GFO-0010444-001	

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 federal funding to Occidental Petroleum USA Inc. (OXY) to drill twin high-temperature geothermal wells in the Denver-Julesburg Basin of Colorado using existing and novel drilling technologies. OXY and its partners from industry, national laboratories, and academia plan to drill to deeper and hotter depths than most existing geothermal operations and at a faster rate.

The proposed project would be comprised of two Budget Periods (BPs) separated by a Go/No-Go Decision Point. The goal of BP1, "Planning and Preparation," would be to develop a drilling plan and all efforts related to reaching a state of readiness to break ground on constructing the well pad. Tasks would include design and engineering work along with necessary permitting efforts. Laboratory and bench research and development would be conducted to bring novel tools, materials, and methods to the prototype-level for field testing and identify best practices prior to spud. Finally, the project team would request proposals from vendors and make appropriate selections for equipment and contractors to perform the work.

BP2, "Construction, Drilling Execution, Optimization, Intercept and Close Out," would involve the drilling demonstration activities and post drilling wrap-up. The wells would be drilled on a geothermal lease at Western Midstream's Latham natural gas processing plant in Weld County, CO. Exact wellhead locations along with the siting of a new 8-acre pad and access road have yet to be defined. Initial project tasks completed during BP1 would identify the specific area of project-related disturbance and certain other details of the full-scale drilling program, so there is insufficient information available at this time to complete a thorough review of the anticipated drilling activities and any potential associated impacts. BP2 will be reviewed once these details are submitted to DOE for further NEPA analysis.

The proposed project locations and activities associated with BP1 are as follows:

- Louisiana State University (LSU; Baton Rouge, LA): Well operation design, drilling data analyses, report writing, computer-based modeling and simulation work, laboratory thermal conductivity measurements of formation rocks and muds, and full-scale mud circulation, gas migration, and bullheading experiments at the Petroleum Engineering Research, Training, & Testing facility.
- Colorado School of Mines (CSU; Golden, CO): Computer modeling and small-scale drilling experiments in an underground test laboratory (the Edgar Experimental Mine).

- Los Alamos National Laboratory (Los Alamos, NM): Laboratory measurements of cement, fluid, and rock properties, and office work using supercomputer facilities.

- National Renewable Energy Laboratory (Golden, CO): Computer modeling and desktop-based drilling data analysis and resource assessment.

- Texas A&M (College Station, TX): Computer modeling and drilling performance analysis.

The proposed project activities associated with BP1 would occur entirely within existing offices and purpose-built R&D laboratories; therefore, no modifications or additional permits would be necessary. No change in the use, mission, or operation of existing facilities would arise out of this effort. Based on the types of activities proposed and their locations, DOE does not anticipate any impacts to resources of concern due to BP1 of the project.

Proposed activities at CSU and LSU would involve the use and handling of minor quantities of various drilling fluids and muds, respectively. All such handling would occur in-lab. Any hazardous materials, including a synthetic oil-based mud used in the LSU's circulation experiments, would be managed in accordance with applicable federal, state, and local environmental regulations. Existing university health and safety policies and procedures would be followed, including employee training, proper protective equipment, engineering proctors, monitoring, and internal assessments. Project workers would also undergo proper training for the safe operation of CSU's educational drilling rig.

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 conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Budget Period 1

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Budget Period 2

Notes:

Geothermal Technologies Office (GTO)

Review completed by Whitney Donoghue on 05/23/2023.

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature:  Electronically Signed By: Andrew Montano Date: 5/23/2023
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