

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



RECIPIENT: NREL

STATE: CO

PROJECT TITLE : NREL-22-004 UAS Flights AWAKEN CU Boulder - Flatirons Campus

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	DE-AC36-08GO28308	NREL-22-004	GO28308

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:

B3.2 Aviation activities	Aviation activities for survey, monitoring, or security purposes that comply with Federal Aviation Administration regulations.
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Rationale for determination:

The U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) is proposing to use uncrewed aircraft systems (UAS) to take aerial measurements of wake turbulence. Flights would be performed at the Flatirons Campus (FC) and adjacent Rocky Flats National Wildlife Refuge (Refuge) located in Jefferson County, Colorado and would be conducted by CU Boulder using CU UAS as outlined in the project Aviation Safety Plan. Flights would occur over multiple days between November 2021 and March 2022.

Following a set flight plan, a single UAS would takeoff from the FC and would perform various flight patterns to collect atmospheric data such as temperature, pressure, humidity, and turbulence. The patterns would be downwind of the 4.0 turbine and would extend approximately 400 yards into the Refuge to collect wake data from the turbine. Sampling locations would be spaced at increasing distances that are proportional to the rotor diameter. Flights would follow a "racetrack pattern" which would consist of transits between two end points to facilitate a steady level flight for as long as possible against a constant wind vector.

Once single UAS operations are complete, two UAS would be flown in close coordination but at different altitudes to mitigate any potential collision risk. Each UAS would have its own pilot and visual observer and could have up to two additional crew members respectively. Racetrack patterns would be conducted by a GPS-guided autopilot. The autopilot can be overridden at any point if needed to ensure personnel safety or to protect equipment and infrastructure. The only flight segment that would be controlled manually is take-off and landing operations, which would be oriented into the wind vector unless otherwise required. The planned take-off and landing patterns would be briefed by the Pilot in Charge (PIC) to the crew prior to set-up of the UAS and launch equipment.

Flights would consist of ascending and descending vertical maneuvers as well as level flight from ground level to 399 feet above ground level. All flights would maintain a speed of less than 50 mph and a minimum horizontal or vertical distance of 50 feet from structures. Visual markings for the take-off and landing area with items such as cones, caution tape, or signage would be implemented. Launch and landing areas would be determined by the PIC prior to each flight. Mission support staff would accompany the flight team as needed to direct and control staff access during flights and visual observers would be present to help monitor the airspace. Road closures may be necessary during flights and would be coordinated with the Traffic Safety lead and Security if required. The UAS would be landed when large birds or bird flocks are present in the flight airspace.

Flights would be conducted below the permissible 400-foot ceiling for UAS operations within the Class D airspace of Rocky Mountain Metropolitan Airport (KBJC) in winds less than 25 mph. Since flights would occur within the Class D airspace of KBJC, authorization would be obtained from FAA Air Traffic Control via the Low Altitude Authorization and Notification Capability (LAANC) process prior to flights and if a lost link event were to occur, KBJC would be contacted immediately.

NREL has a Special Use Permit with the U.S. Fish and Wildlife Service (USFWS) regarding the Refuge. Permissible activities under the permit include UAS flights. In accordance with the permit, NREL shall notify USFWS personnel via email not less than 48 hours before any flight.

Flight activities would be conducted by NREL staff as authorized in accordance with OPP 650-7, "Unmanned Aircraft

Systems” and under FAA Part 107 regulations. Flights would be conducted in accordance with NREL policies, procedures, and safety requirements for conducting UAS missions on DOE facilities. Based on the locations of flights and planned safety measures, no adverse impacts are expected due to the activity.

A risk assessment has been completed for flight activities. Operational parameters, hazards, and controls are identified and defined in an Aviation Safety Plan that was prepared in consultation with NREL Environment, Safety, and Health staff and the UAS Steering Committee. The Flight Plan for this project has been submitted and approved by the Golden Field Office’s Aviation Manager and Office Director. The Aviation Manager determined that the identified flight risks for the project “have been adequately identified and mitigated to low risk per the DOE Risk Assessment. If flight conditions change or the documented mitigation factors are unable to be implemented the mission will need to be paused so a reevaluation of hazards can occur.”

NEPA PROVISION

DOE has made a final NEPA determination.

Include the following condition in the financial assistance agreement:

All required notifications and permissions shall be obtained prior to commencing any flight.

Notes:

NREL
Nicole Serio, 11/15/2021

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: 11/16/2021

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: _____