

PMC-ND

(1.08.09.13)

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



RECIPIENT: NREL

STATE: CO

PROJECT TITLE: UAS Flights for Heliostat Imagery - Flatirons Campus

| | | | |
|--|--------------------------------------|----------------------------|-------------------|
| Funding Opportunity Announcement Number | Procurement Instrument Number | NEPA Control Number | CID Number |
| | DE-AC36-08GO28308 | NREL-21-003 | 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:

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|---------------------------------|--|
| 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 conduct flights with UAS to take aerial imagery of heliostats to detect and analyze distortions to increase concentrated solar power (CSP) efficiency in tower collector plants.

Flights would occur at the Flatirons Campus (formally called the National Wind Technology Center) located in Jefferson County, Colorado and are expected to occur over multiple days between November 23rd, 2020 and February 28th, 2021. Flights would be conducted along Row 4 road and the Building 251 visitor's parking lot (if necessary). A CSP environment would be simulated using a mock heliostat and the site's existing wind turbines and meteorological (met) towers located along the Flatirons Campus Row 4 research area which would be used as substitute CSP collector towers. Images of the tower reflected in the mock heliostat would be collected by the UAS carrying a digital camera. No alterations or peripherals would be attached to turbines or met towers. The heliostat would be placed in several locations off to the side of Row 4 road to simulate varying distances from a collector tower in an operational CSP installation. Equipment would be set up and dismantled daily and while in use, the mirror would be placed directly on the ground with no penetrations or permanent anchors but would be anchored to concrete barricades for wind protection. The UAS would be used to autonomously collect images of the heliostat from various altitudes ranging from approximately 30 feet to 399 feet above ground level (AGL) with varying vertical and horizontal profiles at a speed less than about 20mph. The UAS would fly via a waypoint file uploaded prior to flight with oversight and manual takeover capability by the Pilot in Command (PIC). The UAS would fly to specified waypoints, take still images of the heliostat, and return to the specified landing zone. This would be repeated for varying heliostat-to-tower distances and camera-to-heliostat distances with lenses of varying focal lengths.

Flights would consist of ascending and descending vertical maneuvers as well as forward and backward flight from ground level to 399 feet AGL. For flights along Row 4 road, the UAS would be restricted to an area between 50 feet to the east and 150 feet to the west of Row 4 road and would takeoff and land from the Row 4 road surface. All flights would maintain a minimum horizontal or vertical distance of 25 feet from structures. Measures would be taken to visually demarcate the launch/landing area with items such as cones, caution tape, or signage. Launch/landing areas would be determined by the PIC prior to each flight. Mission support staff would accompany the flight team when required to direct and control staff access during flights. Road closures may be necessary during flights and would be coordinated with the Traffic Authority Having Jurisdiction (AHJ) and Security. The UAS would be landed when large birds or bird flocks are present in the flight airspace.

Flights would be conducted below the 400 foot allowable 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. 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 adhere to and take place 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 set forth in an Aviation Safety Plan that was drafted 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. Per the aviation manager, "the identified flight risks for the Heliostat Research flights have been adequately identified and mitigated to low risk per the DOE-GFO 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.

Notes:

NEPA review completed by Casey Strickland on November 17, 2020.

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: 11/17/2020

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: _____