

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:** NREL-21-010 UAS Flights for Crescent Dunes CSP Heliostat Research - Tonopah, NV

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
	DE-AC36-08GO28308	NREL-21-010	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.

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 complete areal measurement of solar collectors to enhance and validate performance of a tool used to directly measure a solar collector's optical error and assess the solar field performance based on the photography and videos taken.

Flights would occur at the Tonopah Crescent Dunes Solar Power plant near Tonopah, Nevada and are expected to occur over multiple days between May 24th, 2021 and June 30th, 2021. The UAS would take off and hover for photography at various locations using pre-defined waypoints and move in a defined path at various altitudes to capture groups of heliostats. Photogrammetry mapping data flight paths would use pre-programmed waypoints for autonomous programmed flight above one or multiple heliostats as needed to accurately gather measurement data.

Flights would consist of ascending and descending vertical and horizontal maneuvers as well as forward and backward flight from ground level to a maximum 399' above ground level (AGL) no closer than 25' from heliostats and 100' horizontal distance from the solar power tower. All flights would be conducted during daylight hours maintaining a speed of less than 15 mph. The proposed launch/landing area would be determined by the project sponsor and the pilot-in-command (PIC) to be within visual line of sight (VLOS) at all times. Flights would be conducted with a minimum of one visual observer in addition to the PIC/Pilot. Facility staff would be consulted to make sure flights are conducted at altitudes above or away from any reflected light beams. UAS would not fly over people or off-property unless in an emergency. All workers would maintain a minimum of at least 20 feet from the UAS when the UAS is operating. Flight activities would be conducted by NREL staff using DOE-owned UAS equipment and under FAA Part 107 regulations. All activities would be conducted in accordance with NREL policies, procedures, and safety requirements for the completion of UAS missions and would adhere to any facility-specific requirements identified by Tonopah Crescent Dunes Solar Power. All participating workers would go through a safety orientation of the site and wear appropriate PPE before commencement of activities.

All flights would occur below 400 ft. AGL, in steady winds less than 20 mph, within Class G airspace, which requires no notifications, authorizations, or permits. There is a Military Training Route (MTR) directly overhead at 1200 ft. AGL and Special Use Airspace (SUA) beginning at 500 ft. AGL on the western half of the Crescent Dunes facility. With flights occurring within Class G airspace, having a maximum altitude below 400 ft. AGL and being well below the height of the nearby CSP tower (653 ft.), no impacts to airspace are expected as a result of the UAS flights.

There are two threatened or endangered species of birds (Yellow-billed Cuckoo and Southwestern Willow Flycatcher) and one candidate butterfly species (Monarch Butterfly) that could occur within the area of the project. There are no critical habitats for either bird species at the project location. Visual observer(s) would be in attendance to monitor airspace and a provision to look for birds before takeoff and during flight would minimize the potential for a collision. Operations would be stopped if birds are flying in the flight area and the UAS would be moved away from their projected path and landed. Any birds in close proximity to the landing zone would stop the launch of the UAS and any birds moving into the landing zone after take-off would be monitored and an alternate landing area selected if needed. With implementation of these provisions, no effect to special status species are anticipated as a result of the proposed project activities.

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. 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.

Notes:

NEPA review completed by Casey Strickland on May 17, 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: 5/17/2021

**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: