

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 :** NWTC - Strategic Aerospace Unmanned Aerial System Wind Turbine Inspection Demonstration; NREL Tracking No. 14-021

<b>Funding Opportunity Announcement Number</b>	<b>Procurement Instrument Number</b>	<b>NEPA Control Number</b>	<b>CID Number</b>
	DE-AC36-08GO28308	NREL-14-021	GO28308

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

**CX, EA, EIS APPENDIX AND NUMBER:**

Description:

<b>A9 Information gathering, analysis, and dissemination</b>	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.)
<b>A11 Technical advice and assistance to organizations</b>	Technical advice and planning assistance to international, national, state, and local organizations.
<b>B3.2 Aviation activities</b>	Aviation activities for survey, monitoring, or security purposes that comply with Federal Aviation Administration regulations.
<b>B3.6 Small-scale research and development, laboratory operations, and pilot projects</b>	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:

This proposed project would consist of developing techniques for inspecting wind turbines with Unmanned Aerial Systems (UAS) at the National Renewable Energy Laboratory's (NREL's) National Wind Technology Center (NWTC), located southeast of the intersection of Colorado Highway (CO) 93 and CO-128 in Jefferson County, Colorado. The NWTC is a federally-owned facility that consists of 305 acres and is primarily utilized for wind energy research, development, and testing.

Strategic Aerospace International Inc. (Strat-Aero) would operate Unmanned Aerial Systems (UAS) i.e. drones, for the inspection and surveillance of wind turbine blades and nacelles. NREL Subject Matter Experts (SMEs) would provide information on wind turbine systems, current practices/technologies used for inspections, and information on sensing systems used in the wind industry. NREL would also provide technical expertise on performance objectives and safety requirements. This information would be used by Strat-Aero to develop a system for inspections.

Strat-Aero would be responsible for providing all hardware needed for the project, including a UAS, equipment, and support devices necessary to operate the UAS. Construction of the UAS would be performed by Strat-Aero offsite. Strat-Aero would build and test the functionality of the UAS before operating at the NWTC. Strat-Aero would be responsible for operation of the drone and would be required to abide by NREL safe operating procedures at the NWTC. The UAS would be battery powered and contain a visual camera and an infrared camera. The UAS would be flown around the turbine blades and nacelle while capturing images to review for signs of damage or wear.

NREL would make a utility-scale turbine at the NWTC available for three days to Strat-Aero for the demonstration of the flight package. The UAS would be flown within the rotor disk of a turbine at a height just above the largest turbine onsite (160 meters) and within 30 m of other turbines at the NWTC. NREL would host Strat-Aero staff while visiting the NWTC and operating the UAS. NREL would provide technical input on the interpretation of the data and images collected during the UAS inspections, and also would determine what information obtained during the inspections could be available for public dissemination.

No cultural resources, threatened or endangered species, wetlands, floodplains, or prime farmlands would be impacted by this proposed project. No construction or ground disturbing activities are proposed. Strat-Aero would be responsible for receiving a Certificate of Authorization (COA) from the Federal Aviation Administration (FAA). NREL and contractors would follow federal, state, local safety and security regulations including obtaining an FAA COA to operate the UAS at specified heights at the NWTC. NREL staff trained in outdoor safety precautions in the vicinity of onsite turbines would host personnel from Strat-Aero. In addition, NREL's EHS department would prepare a Safe Operating Permit with the conditions that Strat-Aero must follow while onsite. Finally, the drone package would require approval by the NREL SMEs prior to deployment at the NWTC.

DOE has determined that this proposed action would be consistent with the actions contained in DOE categorical exclusions:

- A9 "Information Gathering, Analysis and Dissemination;"
- A11 "Technical Advice and Assistance to Organizations;"
- B3.2 "Aviation Activities;" and,
- B3.6 "Small-Scale Research and Development, Laboratory Operations, and Pilot Projects."

#### NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Prepared by Amy Van Dercook, P.G., NEPA Specialist on 9/30/2014.

#### SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: \_\_\_\_\_

Electronically  
Signed By: Lori Gray  
NEPA Compliance Officer

Date: 9/30/2014

#### FIELD OFFICE MANAGER DETERMINATION

☐ Field Office Manager review required

#### NCO REQUESTS THE FIELD OFFICE MANAGER REVIEW FOR THE FOLLOWING REASON:

- ☐ Proposed action fits within a categorical exclusion but involves a high profile or controversial issue that warrants Field Office Manager's attention.
- ☐ Proposed action falls within an EA or EIS category and therefore requires Field Office Manager's review and determination.

#### BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: \_\_\_\_\_

Field Office Manager

Date: \_\_\_\_\_