PMC-EF2a

(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: Cleveland State University **STATE:** OH

PROJECT TITLE: Wind Spires as an Alternative Energy Source

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
Congressionally Directed	DE-FG36-08GO88016	GFO-08-076-001	0

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:

B5.1 Actions to conserve energy, demonstrate potential energy conservation, and promote energy-efficiency that do not increase the indoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, designers), organizations (such as utilities), and state and local governments. Covered actions include, but are not limited to: programmed lowering of thermostat settings, placement of timers on hot water heaters, installation of solar hot water systems, installation of efficient lighting, improvements in generator efficiency and appliance efficiency ratings, development of energy-efficient manufacturing or industrial practices, and small-scale conservation and renewable energy research and development and pilot projects. The actions could involve building renovations or new structures in commercial, residential, agricultural, or industrial sectors. These actions do not include rulemakings, standard-settings, or proposed DOE legislation.

Rational for determination:

This project is a continuation from the previous year's project to include year 2 of the project tasks. The primary goal of this project is to construct a wind tower system with the performance and efficiency enhancements of the previous year's results & lessons learned.

The tower will consist of a wind deflector for amplifying the wind speed, four identical horizontal-axis wind turbines with bladed diameter of six to seven feet, and a passive turret. The tower will be equipped with voltage, current, and electric power metering devices in order to continuously monitor the level of power generation of each turbine. The system will further include a power consuming device such as a water heater or lighting system for consuming the electric power generated by the tower.
The tower will be located on top of progressive field where the Cleveland Indians play baseball and is symmetrically located between 2 light poles above the apex created by home plate on top of the stadium. Progressive field does not meet the eligibility of a historic structure, constructed 1994.

The use of wind turbines are known to have resulted in bird strikes. Migratory birds are known to inhabit the project area. Because of this, the proposed project has the potential of directly or indirectly impacting migratory birds. The wind turbine manufacturer publishes the following information regarding bird strikes:
"Species of birds known to be sensitive to the operation of large wind turbines (Golden Eagles, Geese, Swans, Harriers, Owls and divers) are less likely to fly near to industrial or domestic properties where small rooftop turbines will be located. The small diameter of the Swift turbines (< 2m) makes them comparable, as an obstacle, to a rooftop television aerial, mobile phone mast, or large satellite dish. It is extremely unlikely, therefore, that the location of a rooftop turbine will cause a significant increase in bird strike, beyond the rates already caused by existing buildings, windows and other obstacles. Larger, mast-mounted turbines may pose an increased threat, depending on location. Studies have shown that birds will adapt their flight patterns to take account of the presence of wind turbines and that well located turbines are unlikely to pose a significant threat to local populations."

The genesis of this location came about in January of 2009 when the Cleveland Indian Baseball Ballpark showed interests to install a 6 to 8 KW wind turbine on their Ballpark as a Green Energy initiative. The Ballpark has already installed a series of solar panels at the Ballpark, at the same power level range, for educational and demonstration purposes. When the Ballpark became familiar with the research at CSU, and further, when they found out about the blade size of the wind turbine (about 6 feet in diameter) versus a bald diameter of about 20 to 30 feet for a single standard turbine, the park started to show interests in the wind turbine system for safety reasons.

This is not the first green initiative to take place at Progressive Field. On June 14, 2007, architects designed and

installed 42 GE solar panels on a newly erected pavilion which was located on the south-facing upper deck concourse. The City of Cleveland is also no stranger to wind power. On March 29, 2010 a news report outlined the future development of more wind energy projects in the Cleveland area.

The applicant has provided DOE with an R & D questionnaire that thoroughly addresses chemical and safety handling protocols. Moreover, there are three professional and registered/licensed companies collaborating with CSU to design/fabricate and install the system at the Ballpark. The same Structural Engineering Company, that designed the infrastructure of the first functional prototype, is responsible for the structural design and stress analysis of the second system. The system is designed for a sustained 90 miles per hour wind to make sure that the structural integrity of the system is intact under high-speed wind conditions. The fabricator and installer of the second system will be the same company that erected the first prototype. Additionally, the Structural Engineering company of this project is in contact with and getting technical advices from the Structural Engineering Company that has designed the entire Ballpark. The wind loading on the plurality of the square shaped main light panels (giant tooth brush looking) of the Ballpark seems to be more than the wind load on the wind-deflecting-structure of the proposed prototype.

This project involves the construction of a prototype wind spire wind turbine for conserving energy for use by the ball park, therefore a CX B5.1 applies.

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

Note to Specialist :

Eugene Brown 6/1/2010

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 7/12/10

NEPA Compliance Officer

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: _____ Date: _____

Field Office Manager