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(Previous Editions Obsolete)

**U.S. DEPARTMENT OF ENERGY - NETL**

# CATEGORICAL EXCLUSION (CX) DESIGNATION FORM

Project No.: DE-FE0031280 Recipient Name: Penn State University Project Location: State College, PA

Sub-recipient(s) and Locations:

Baylor University, Waco, TX; GE Global Research (cost share provider), Niskayuna, NY

NETL Sponsoring Org.: FE/TDIC/Coal/AES Team NETL Contact: Patcharin Burke

Brief Title of Proposed Action: Discrete Element Roughness Modeling for Design Optimization of Additively and...

Brief Description of Activities:

The overall project objective is the development, validation, and application of a new roughness modeling paradigm for Computational Fluid Dynamics (CFD) based design of turbine blades.

**THE PROPOSED ACTION FALLS WITHIN THE FOLLOWING CATEGORICAL EXCLUSION(S) FROM APPENDICES A AND B TO SUBPART D OF DOE NEPA IMPLEMENTING PROCEDURES (10 CFR 1021):**

General Administration/Management

- ☐ A1 – Routine business actions
- ☐ A9 – Info gathering, analysis, documentation, dissemination, and training
- ☒ A11 – Technical advice and planning assistance

Facility Operations

- ☐ B1.3 – Routine maintenance and custodial services
- ☐ B1.7 – Communication system and data processing equipment acquisition, installation, operation, removal
- ☐ B1.15 – Support building or structure, non-waste storage, construction/ operation

Safety and Health

- ☐ B2.1 – Modifications to enhance workplace habitability
- ☐ B2.2 – Installation/improvement of building/equipment instrumentation
- ☐ B2.3 – Installation of equipment for personnel safety and health

General Research

- ☐ B3.1 – Site characterization/environmental monitoring
- ☒ B3.6 – R&D or pilot facility construction/operation/decommissioning
- ☐ B3.7 – New infill exploratory, experimental oil/gas/geothermal well construction and/or operation
- ☐ B3.9 – Certain CCT demonstration activities, emissions unchanged
- ☐ B3.11 – Outdoor tests, experiments on materials and equipment components

Electrical Power and Transmission

- ☐ B4.4 – Power management activities (storage, load shaping, and balancing)
- ☐ B4.6 – Transmission support addition/modifications at developed facility site
- ☐ B4.11 – Construction of power substations and interconnection facilities
- ☐ B4.13 – Upgrading and rebuilding existing power lines (< 20 miles)

Conservation, Fossil, and Renewable Energy Activities

- ☐ B5.1 – Actions to conserve energy, no indoor air quality degradation
- ☐ B5.3 – Modification/abandonment of wells
- ☐ B5.5 – Short crude oil/gas/steam/geothermal/carbon dioxide pipeline const/oper within an existing right-of-way (< 20 miles) between existing facilities
- ☐ B5.13 – Experimental wells for injection of small quantities of carbon dioxide (< 500,000 tons)
- ☐ B5.15 – Small scale renewable energy research/development/pilot projects
- ☐ B5.22 – Alternative fuel vehicle fueling stations
- ☐ B5.23 – Electric vehicle charging stations

Other

- ☐ Specify category:
- ☐ Specify category:
- ☐ Specify category:

This action (1) would not present any extraordinary circumstances such that the action might have a significant impact upon the human environment; (2) is not connected to other actions with potentially significant impacts; (3) is not related to other actions with cumulatively significant impacts; and (4) is not inconsistent with 10 CFR 1021.211 - Interim Actions or 40 CFR 1506.1 - Limitations during the NEPA process.

**SELECT ONE OF THE FOLLOWING:**

- ☒ This Categorical Exclusion includes all tasks and phases in the Statement of Work or Statement of Project Objectives for this project.
- ☐ This Categorical Exclusion is only valid for the following tasks/phases . The DOE initiator acknowledges the responsibility to obtain a NEPA determination prior to initiating any activities outside the scope of this Categorical Exclusion.

**SELECT ONE OF THE FOLLOWING:**

- ☒ This Categorical Exclusion includes all locations and activities for this project.
- ☐ Additional sites, sub-recipients, or activities cannot be identified at this time. The DOE initiator acknowledges the responsibility to obtain a NEPA determination prior to initiating any activities outside the scope of this Categorical Exclusion.

**NOTE: ANY CHANGE(S) TO THE PROJECT SCOPE OR LOCATIONS MAY REQUIRE A NEW NEPA DETERMINATION.**

DOE Initiator Signature: PATCHARIN BURKE Digitally signed by PATCHARIN BURKE Date: 2017.09.13 09:38:47 -04'00' Date: 09 / 13 / 2017 (month / day / year)

NEPA Compliance Officer: FRED POZZUTO Digitally signed by FRED POZZUTO Date: 2017.09.20 10:19:39 -04'00' Date: 09 / 20 / 2017 (month / day / year)

The following special condition is provided for the consideration of the Contracting Officer: