



U.S. Department of Energy Categorical Exclusion Determination Form

Submit by Email

Proposed Action Title: Kohana Technologies Inc. - Blown Wing Technology for Low-Cost Wind Power

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Location(s) (City/County/State): Richmond, CA; Blacksburg, VA; Arhus, Denmark

Proposed Action Description:

Funding will support efforts to conduct laboratory-based, small-scale research and development activities to develop wind turbines with a control system capable of dynamically adjusting aerodynamic performance of the blades. Specifically, in Phase 1, the Project Team will continue developing controls for a forward blowing system and model the load reduction of forward blowing in a multi-megawatt turbine. In Phase 2, the Project Team will test its slotted blades in a multi-megawatt turbine.

No modifications will be made to existing facilities to accommodate the proposed work. Phase 1 of the proposed effort will take place in a wind tunnel at Virginia Tech University in Blacksburg, VA, while the location for Phase 2 project tasks is not yet determined. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local requirements. Project tasks conducted outside of the United States will involve only office-related and computer-based tasks.

Before proceeding to Phase 2 of the project, Kohana must submit an updated Environmental Impact Questionnaire for review by the ARPA-E NEPA Compliance Officer. In addition, the ARPA-E NEPA Compliance Officer must issue a new NEPA determination before the Project Team may initiate Phase 2 project tasks.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer:

Date Determined: 03/19/2015



U.S. Department of Energy

Categorical Exclusion Determination Form

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Project Title: 25A2942 - Adaptive Turbine Blades: Blown Wing Technology for Low-Cost Wind Power

Location: * - Multiple States - California, Georgia

Proposed Action or Project Description:

American Recovery and Reinvestment Act:

The United States will not achieve its goal of 20% Wind Energy by 2030 without a radical breakthrough in wind turbine technology that cuts the cost of manufacture and greatly expands the capacity to generate wind power in marginal areas. Circulation control technology or "Blown Wing" technology creates a virtual airfoil by jetting compressed air out of orifices along a wing and has the potential to introduce a radical simplification to the manufacture and operation of wind turbines. Unlike a fixed airfoil, a "blown wing" can be dynamically adjusted to maximize power under a wide range of wind conditions. And, unlike fixed airfoils which must be laboriously manufactured to high precision, an effective blown wing can be generated from a slotted extruded pipe that can be domestically manufactured at a fraction of the cost. Blown wing technology has been demonstrated on fixed and rotary wing aircraft by the DOD but no demonstration of blown wing technology has been attempted for wind turbines. We propose a 24-month program to analyze, engineer and prototype a blown wing wind turbine at the 100 kW scale. If we are successful, we could introduce a radically simplified turbine system to the marketplace, enabling the economic proliferation of distributed, medium-scale wind turbine technology in lower class wind sites throughout the United States

Categorical Exclusion(s) Applied:

X - B3.6 Siting/construction/operation/decommissioning of facilities for bench-scale research, conventional laboratory operations, small-scale research and development and pilot projects

*-For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, see Subpart D of 10 CFR10 21 [Click Here](#)

This action would not: threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive Orders; require siting, construction, or major expansion of waste storage, disposal, recovery, or treatment facilities, but may include such categorically excluded facilities; disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; or adversely affect environmentally sensitive resources (including but not limited to those listed in paragraph B.(4)) of Appendix B to Subpart D of 10 CFR 1021). Furthermore, there are no extraordinary circumstances related to this action that may affect the significance of the environmental effects of the action; this action is not "connected" to other actions with potentially significant impacts, is not related to other proposed actions with cumulatively significant impacts, and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

Based on my review of information conveyed to me and in my possession (or attached) concerning the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: /s/ William J. Bierbower

Digitally signed by William J. Bierbower
 DN: cn=William J. Bierbower, o, ou,
 email=william.bierbower@hq.doe.gov, c=US
 Date: 2010.01.14 12:18:26 -05'00'

Date Determined: 01/14/2010

Comments:

Webmaster:

