PMC-ND
(1.08.09.13)

U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Purdue University Northwest - Steel Manufacturing Simulation and Visualization Consortium **STATE:** IN

PROJECT TITLE: Integrated Virtual Blast Furnace for Real-time Energy Efficiency Improvement

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002252	DE-EE0009390	GFO-0009390-001	GO9390

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:

A9 Information gathering, analysis, and dissemination	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.)
B3.6 Small-scale research and development, laboratory operations, and pilot projects	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:

The U.S. Department of Energy (DOE) is proposing to provide funding to Purdue University Northwest to design software and a non-invasive imaging sensor to improve the observability and operation of blast furnaces. This software would include interactive visualization modules that quickly and accurately define relationships between input and output parameters for the furnace. Using the simulation techniques employed to develop the blast furnace prediction software, novel alternative injected fuels would be evaluated for performance and scale-up potential. The final software package and sensor would be implemented and tested at U.S. Steel Gary Works in Gary, IN. There is potential for additional testing to occur at existing project participant facilities listed below. The project would be completed over three Budget Periods (BPs) with a Go/No-Go Decision Point between each BP. This NEPA review applies to all three BPs.

Proposed project activities by location are listed below:

Purdue University Northwest, Steel Manufacturing Simulation and Visualization Consortium – Hammond, IN

• Project management.
• Development of simulation models and analysis of simulation data from blast furnace modeling, development of visualization tools and modules, and the integration of all component modules into the final Integrated Virtual Blast Furnace (IVBF) software.

Purdue University – West Lafayette, IN

• Development of imaging sensor technology to measure blast furnace casting rate and temperature through laboratory experiments.

Oak Ridge National Laboratory – Oak Ridge, TN

• Provide High-Performance Computing expertise and resources and assist in development of reduced order models for rapid prediction modules of the proposed IVBF.

Linde Technology Center – Tonawanda, NY

• Laboratory scale analysis of alternative injection fuels to verify modeling of alternative injection fuel use developed during the project.
• Provide technical expertise.

Cleveland-Cliffs Inc. – Dearborn, MI and East Chicago, IN

• Provide technical expertise.

U.S. Steel Gary Works – Gary, IN

• Testing of new experimental imaging sensor technology on real-world blast furnace cast floor for calibration and future implementation. Sensor would be installed in tap holes on existing equipment.
• Provide technical expertise

Any risks associated with this project would be mitigated through adherence to established health and safety policies and procedures. All waste products would be disposed of by licensed waste management service providers. Purdue University Northwest and its project partners would observe all applicable Federal, state, and local health, safety, and environmental regulations. No modifications, new permits, or change in the use, mission, or operation of any facility would be required.

Any work proposed to be conducted at a federal facility may be subject to additional NEPA review by the cognizant federal official and must meet the applicable health and safety requirements of the facility.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Advance Manufacturing Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Shaina Aguilar on 3/30/21.

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 Date: 4/2/2021

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

- [x] 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: _____ Date: _____

Field Office Manager