

PMC-ND

(1.08.09.13)

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

**RECIPIENT:** Regents of the University of Minnesota**STATE:** MN

PROJECT TITLE: Enhancement of Iron Ore Pellet Chemistry to Allow More Efficient Natural Gas Based Direct Reduced Iron Production and Subsequent Conversion of the Metalized Product to Gangue Free Metallic

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002252	DE-EE0009393	GFO-0009393-001	G09393

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 federal funding to the Regents of the University of Minnesota (UMN) to modify ore materials to enhance both direct reduced iron (DRI) and electric arc furnace (EAF) productivity to improve both manufacturing and energy efficiency. The project would be completed over three Budget Periods (BPs), with a Go/No-Go Decision Point in between each BP. This NEPA Determination is applicable to all three BPs.

Proposed project activities include prefluxing iron ore pellets to enhance the high temperature properties of the iron feed to gas-based DRI process and then subsequent post treatment of the enhanced DRI in an auxiliary smelting furnace to produce iron nodules or pig iron for direct charging to an EAF. The work would involve preparation and processing of raw materials, preparing mixtures for induration to fire pellets, reduction of pellets to DRI pellets and processing to form nodules. All process associated work would occur at UMN's Coleraine Laboratory of the Natural Resources Research Institute (NRRI) in Coleraine, MN. Some analytical testing could occur at NRRI's Duluth, MN site.

Project activities would occur at existing facilities. No new permits, additional licenses and/or authorizations would be necessary. No ground disturbing activities, no changes in the mission of the facilities, and no installation of equipment outdoors would occur for project activities. Two new pieces of equipment would be added at the UMN NRRI facility, a clustering furnace and a DRI Simulator. Installation of the clustering furnace would require no building modification. A new concrete slab would be poured within the facility to limit vibrational interference and allow accurate measurements during testing with the DRI Simulator. The DRI Simulator would also require installation of a small flare system for off-gas. The volume of off-gas generated would be a bench-scale level with maximum of a few kilograms of gas during experimentation. These values would be below those currently permitted for the facility. Project work would involve the use of mechanical equipment, gas atmospheres (hydrogen, carbon monoxide, and nitrogen), higher temperature processing, and smelting. NRRI has safety and process hazard protocols in place for all of these activities that fall within a routine mode of operations for the facility. Excess concentrate from iron ore and fluxes generated during the production of indurated pellets would be handled in a similar manner to that already done at the facility. No hazardous material would be generated from pellet production. For iron nodule production, slags consisting of fully neutralized calcia and silica are likely that would be similar to blast furnace slag used in road construction. The recipient would observe all applicable Federal, state, and local health, safety, and environmental regulations. DOE does not anticipate any impacts to resources of concern due to the proposed activities of the project.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

[Advanced Manufacturing Office](#)

[This NEPA determination does not require a tailored NEPA provision.](#)

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: _____



Casey Strickland

NEPA Compliance Officer

Date: 4/26/2021

FIELD OFFICE MANAGER DETERMINATION

- 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: _____

Field Office Manager

Date: _____