PMC-ND

(1.08.09.13)

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

RECIPIENT: Seerstone Development **STATE:** UT

PROJECT TITLE : Decarbonizing EAF Steelmaking by Using CO2-Sourced Graphite Electrodes in EAF Steelmaking

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA0002997	DE-EE0011214	GFO-0011214-001	GO11214

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.)
B1.31 Installation or relocation of machinery and equipment	Installation or relocation and operation of machinery and equipment (including, but not limited to, laboratory equipment, electronic hardware, manufacturing machinery, maintenance equipment, and health and safety equipment), provided that uses of the installed or relocated items are consistent with the general missions of the receiving structure. Covered actions include modifications to an existing building, within or contiguous to a previously disturbed or developed area, that are necessary for equipment installation and relocation. Such modifications would not appreciably increase the footprint or height of the existing building or have the potential to cause significant changes to the type and magnitude of environmental impacts.
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 Seerstone Development (Seerstone) for the production of solid carbon, which would be made from carbon dioxide using Seerstone's patented process.

Carbon production would occur at Seerstone's industrial facility in Provo, Utah. Laboratory analysis of carbon and graphite production would occur at the Utah San Rafael State Energy Laboratory (USRSEL) in Orangeville, Utah. The testing of full-scale graphite electrodes in an existing ladle metallurgical furnace would occur at Nucor Steel Berkeley in Huger, South Carolina. Activities at Tokai Carbon's Fuji Laboratory, in Omika, Japan would include conducting a graphite electrode blending analysis, which would replace petroleum needle coke with Noyes Carbon. Project efforts at Tokai Carbon's Hofu Plant, in Hofu, Japan would include producing full-scale electrodes for subsequent testing in a ladle metallurgical furnace. Synthesis, analysis, and evaluation of catalytic processes engineering, including reactor design, operation improvement and catalyst performance testing would occur at Sekisui's Corporate Research and Development Center in Tsukuba, Japan.

Project award activities would include the use of hazardous materials. At Seerstone, carbon dioxide and hydrogen would be utilized to produce solid carbon. Activities at the two Tokai facilities would include the blending of carbon materials. Activities at USRSEL would include laboratory analytics and operations and would therefore not include any hazardous materials work or other threats to health and safety. Sekisui Chemical would be doing bench scale synthesis and evaluation of catalysts for their new chemical looping process, which would generate carbon dioxide, carbon monoxide, hydrogen gas and water. All product catalyst would be disposed of in accordance with national and local government regulations. The associated wastewater would be contained onsite for safe disposal.

All hazardous materials associated with the project award within the United States would be managed in accordance

with federal, state, and local environmental regulations and existing company health and safety policies and procedures would be followed, including the implantation of employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. Additional policies and procedures would be implemented as necessary as new health and safety risks are identified. At the Tokai and Sekisui sites in Japan, all hazardous materials would be managed in accordance with the applicable environmental laws. All such handling would occur in a laboratory setting, and proper hazardous material handling and safety protocols would be followed. There are no hazardous expected at the Nucor Steel Berkeley facility as part of the project award.

Project efforts at the Seerstone, USRSEL, Sekisui and both Tokai facilities would emit carbon dioxide, carbon monoxide and hydrogen gas in negligible amounts and within the current baseline levels.

No outdoor equipment installations or ground disturbances and no change in mission to existing facilities would occur as part of this award. The project would necessitate a buildout of the current pilot production Noyes Process unit at the Seerstone facility. This scaled unit would be built inside of the existing facility. If for some reason, the scaled Noyes Process unit doesn't fit and/or operate at the Seerstone location, the unit would be installed indoors at the USRSEL facility. There would be no modifications to any of the other facilities at the other project locations and there would be no change in the use, mission or operation of existing facilities.

Seerstone has filed its premanufacture notice [P-11-482] for the Noyes Process with the US Environmental Protection Aency. They have also negotiated its consent order and the resulting Significant New Use Rule (SNUR) has been published in the Federal Register for the Noyes Process of carbon dioxide thermocatalytic conversion. https://www.federalregister.gov/documents/2017/10/03/2017-21237/significant-new-use-rule-on-certain-chemical-substances.

If, for some reason, the scaled Noyes Process unit doesn't fit and/or operate at the current Seerstone location, Seerstone would work with USRSEL to secure their agreement to house the scaled Noyes Process unit. If this option is realized, Seerstone and USRSEL would secure the appropriate permitting for its indoor use. Barring the scaled Noyes Process unit possibly being located at the USRSEL facility, no new permitting is anticipated for the work that would be done at any of Utah San Rafael State Energy Lab, Tokai Carbon, Sekisui/Japan and Nucor. Any and all permits required for the execution of the project at the above-referenced locations would be the responsibility of the recipient.

DOE has considered the scale, duration, and nature of proposed activities to determine potential impacts on resources, including those of an ecological, historical, cultural, and socioeconomic nature. DOE does not anticipate impacts on these resources which would be considered significant or require DOE to consult with other agencies or stakeholders.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Industrial Efficiency & Decarbonization Office
NEPA review completed by Chris Akios, 09/27/2024

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.

DOE has determined that work to be carried out outside of the United States, its territories and possessions is exempt from further review pursuant to Section 5.1.1 of the DOE Final Guidelines for Implementation of Executive Order 12114; "Environmental Effects Abroad of Major Federal Actions."

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: Andrew Montano Date: 10/1/2024

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