

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



RECIPIENT: Lignolix, Inc

STATE: DE

PROJECT TITLE : Enabling Lignin Valorization with Liquid Liquid Chromatography

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002396	DE-EE0009767	GFO-0009767-001	GO9767

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 Lignolix, Inc to design, develop, and test separation methods for lignin-derived chemicals and materials.

After a baseline verification (Budget Period 1) the project would be comprised of two additional Budget Periods (BPs) (BP 2 and 3).

In BP2 Lignolix would obtain up to 10 kg of lignin (a readily available feedstock product derived from wood pulp) from Domtar Corporation or other source. Lignolix would then process a small amount of that lignin in Lignolix's pre-existing laboratory facility using pre-existing lab scale equipment to produce a small amount (up to 250 grams) of oils and bio product.

These products would then be shipped to subrecipient Dynamic Extractions in the United Kingdom for further processing. At Dynamic Extractions a solvent screening system would be developed and tested. The testing would produce up approximately 25 grams of a purified product. This work would be small laboratory scale and would take place in Dynamic Extractions existing laboratory facility.

In BP 3 the BP2 tasks would be repeated but at a larger scale. Utilizing the remaining lignin obtained in BP2, Lignolix would produce up to 2.5 kilogram of product for shipment to Dynamic Extractions. At Dynamic Extractions a larger bench scale system will be developed with a goal of running for 100 continuous hours to produce up to 1 kilogram of purified product.

Work would also include completion of a technoeconomic and life cycle analysis.

The National Renewable Energy Laboratory in Golden, Colorado would provide assistance for all phases of this project and could conduct laboratory tests of the production and separation processes.

All work would be conducted in pre-existing laboratory facilities. No facility modifications would be required. Work would involve the use and handling of chemicals and solvents. All handling of materials would be completed in accordance with Federal, state and local regulations and would comply with existing corporate and government safety practices. This would include use of proper protective equipment. Disposal of used chemicals and solvent would

comply with all existing regulations.

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:

Bio-Energy Technologies Office
This NEPA determination does not require a tailored NEPA provision.
Review completed by Roak Parker, 01/05/2022

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: **Roak Parker**
NEPA Compliance Officer

Date: 1/5/2022

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: _____