

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



RECIPIENT: Production of Sustainable Aviation Fuels from Corn Stover via NREL's Deacetylation and Mechanical Refining Technology **STATE:** FL

PROJECT TITLE: Production of Sustainable Aviation Fuels from Corn Stover via NREL's Deacetylation and Mechanical Refining Technology (SAFFiRE)

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002396	DE-EE0009760	GFO-0009760-002	G09760

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.

B5.15 Small-scale renewable energy research and development and pilot projects

Small-scale renewable energy research and development projects and small-scale pilot projects, provided that the projects are located within a previously disturbed or developed area. Covered actions would be in accordance with applicable requirements (such as local land use and zoning requirements) in the proposed project area and would incorporate appropriate control technologies and best management practices.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide funding to D3MAX, LLC (D3MAX; Breadenton, FL) to design, fabricate, install, and operate a 10-ton-per-day pilot plant for converting corn stover to ethanol. The award aims to utilize LanzaJet's, Inc. commercial Alcohol to Jet facility (Soperton, GA) to upgrade the produced ethanol to sustainable aviation fuel (SAF) for use in commercial aviation.

Award efforts would be a joint venture of D3MAX and Southwest Airlines Co. (SWA). For the purpose of the award, D3MAX and SWA have established an entity named SAFFiRE Renewables, LLC (SAFFiRE; Dallas, TX). DOE is in the process of novating the award to SAFFiRE. Until the novation process is complete, the prime recipient on this award remains D3MAX.

DOE previously completed a NEPA Determination (ND) (GFO-0009760-001; A9 and B3.6; 6/7/2022) which only applied to Phase 1, i.e., Budget Period (BP) 1 and BP2 activities. Phase 1 activities were necessary to inform Phase 2 activities. Therefore, a full NEPA review could not occur until sufficient information was obtained via Phase 1 activities. This ND applies to Phase 2 activities, i.e., BP3 through BP5.

Phase 2 award activities involve engineering/design, fabrication of the pilot plant modules, modifications to existing facilities, ground disturbance, operation of the pilot plant, and SAF production. Arkalon Ethanol (Liberal, KS) would be the site of construction and operation of the pilot plant. Merrick & Company (Greenwood Village, CO) would be responsible for the engineering and design of the pilot plant. AdvanceBio LLC (Milford, OH) would provide their engineering services by performing inspections of the pilot plant modules and assisting in the startup of the plant. The location where the pilot plant modules would be fabricated will not be selected until engineering and design has been completed. However, the selected facility would be a preexisting purpose-built facility for the type of work to be conducted for this award and facility modifications would not be required. The National Renewable Energy Laboratory (NREL; Golden, CO) and Idaho National Laboratory (INL; Idaho Falls, ID) would produce pretreated corn stover and

test corn stover bale milling, respectively, while using existing NREL/INL pilot and laboratory equipment.

The pilot plant would be constructed in a previously disturbed area at the Arkalon Ethanol facility. It would measure approximately one acre in size and require the installation of a 100-foot by 160-foot concrete foundation for a building that would house the pilot plant, ancillary equipment, motor control center, and laboratory. Process water, cooling water, process steam, condensate return, wastewater treatment/handling, and electricity would be supplied or received by Arkalon Ethanol via overhead pipe racks. The pilot plant would also include the installation of a septic tank and leach field for sewer discharge. The corn stover being used at the pilot plant would be stored outdoors on-site in a previously developed area. The corn stover storage area would measure approximately two acres in size and require excavation, soil amendments for stabilization, and grading. No permanent structures, equipment, or utilities would be necessary for the storage area. The total acreage of disturbance at Arkalon Ethanol for the award would be approximately three acres.

Before construction activities can begin, D3MAX would be required to develop a Stormwater Pollution Prevention Plan as well as obtain an Air Construction Permit from the Kansas Department of Health and Environment (KDHE), building permits and septic system approval from the Seward County Department of Planning and Zoning, and a Construction Stormwater Permit under the National Pollutant Discharge Elimination System permit from KDHE. Before operating the pilot plant, D3MAX is required to obtain a Distilled Spirits Plant Permit from the U.S. Department of the Treasury, Alcohol and Tobacco Tax and Trade Bureau.

Award activities would involve typical hazards associated with the use and handling of hazardous materials, including sodium hydroxide, ethanol, and steam, which would be mitigated through the use of skilled and experienced operators and established safe operating procedures. The award would also involve the use of genetically modified organisms (GMOs) including *Bacillus thuringiensis* corn and GMO yeast named C5 FUELTM. These are not considered hazardous under the U.S. Occupational Safety and Health Administration's Hazard Communication Standard. However, these materials would be handled with care to minimize dust and disposed of by a licensed waste disposal company. Existing health, safety, and environmental policies and procedures would be followed to mitigate hazards to acceptable levels. Mitigated hazards would pose negligible risks to the public and environment. All activities would comply with existing federal, state, and local laws and regulations.

DOE completed Section 106 of the National Historic Preservation Act (NHPA) consultation with the Kansas State Historic Preservation Office (SHPO). A letter of concurrence (LOC) was received from the Kansas SHPO on 12/26/2023 stating a finding of "the proposed project will not affect any property listed or determined eligible for listing in the National Register." Per the LOC, Section 106 of the NHPA requirements for the award have been satisfied.

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 aside from consultation that has already been mentioned.

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 conditional NEPA determination.

The NEPA Determination applies to the following Topic Areas, Budget Periods, and/or tasks:

Phase 2, i.e., Budget Periods 3, 4, and 5

The NEPA Determination does not apply to the following Topic Area, Budget Periods, and/or tasks:

Other award phases and budget periods not mentioned above.

Include the following condition in the financial assistance agreement:

The location selected for the pilot plant fabrication activities must be an existing facility and must NOT involve outdoor work, ground disturbance, facility modifications, or any change in the use, mission, or operation of the existing facility. If any of the above must occur at the selected fabrication facility, an additional NEPA review would be required and the recipient must notify the DOE program office.

All appropriate permits and approvals must be obtained before construction work may occur. Operation of the pilot plant may not occur until a Distilled Spirits Plant Permit from the U.S. Department of the Treasury, Alcohol and Tobacco Tax and Trade Bureau has been received.

Notes:

Bioenergy Technologies Office

This NEPA determination requires legal review of the tailored NEPA provision.

NEPA review completed by Corrin MacLuckie, 1/29/2024.

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.

A portion of the proposed action is categorically excluded from further NEPA review. The NEPA Provision identifies Topic Areas, Budget Periods, tasks, and/or subtasks that are subject to additional NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____

 Electronically Signed By: Andrew Montano
NEPA Compliance Officer

Date: 1/29/2024

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: _____