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

RECIPIENT: Frontier Energy Inc. **STATE:** TX

PROJECT TITLE: Demonstration and Framework for H2@Scale in Texas and Beyond

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002022	DE-EE0008850	GFO-0008850-001	GO8850

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.
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.
B5.22 Alternative fuel vehicle fueling stations	The installation, modification, operation, and removal of alternative fuel vehicle fueling stations (such as for compressed natural gas, hydrogen, ethanol and other commercially available biofuels) on the site of a current or former fueling station, or within a previously disturbed or developed area within the boundaries of a facility managed by the owners of a vehicle fleet. 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 federal funding to Frontier Energy Inc. (Frontier) for research, development, and demonstration to understand the potential of integrating hydrogen with multiple platforms throughout the economy. The project includes both a demonstration of renewable hydrogen generation co-

located with a data center using fuel cell power and fuel cell vehicle fueling at the University of Texas at Austin (UT Austin) and a study of H2@Scale concepts for resources and infrastructure within southeast Texas and the Gulf Coast region. Project work would occur over three Budget Periods (BPs) with a Go/No Go decision between each BP.

In BP1, the recipient and their partners would identify equipment for the demonstration, develop engineering plans for construction and installation, procure long lead items, and begin initial construction activities. Modeling and design activities would be used to verify the objectives of the project. Additionally, background research on Texas H2@Scale opportunities and the building of technoeconomic models would be performed. In BP2, the demonstration installation would be completed and initial demonstration activities would begin. In addition, a framework for Texas H2@Scale pilots leveraging the State's wind power, natural gas resources, and hydrogen infrastructure and industry in the Port of Houston and Gulf Coast region would be completed. BP3 would conclude the project with a full year demonstration of the co-located hydrogen generation and supply, fuel cell powered data center, and fuel cell vehicle fueling. Data from the demonstration would be compiled for comparison with project goals.

Modeling, design, and research activities would occur at Frontier and IdeaSmith offices in California and Texas. Design, development, and build efforts for the hydrogen production system that would be installed at UT Austin would occur at GTI in Des Plaines, IL and OneH2 in Longview, NC.

Design, development, and build efforts for the hydrogen production system would occur within existing facilities designed for this type of work that would utilize standard equipment; therefore no modifications, changes in the operation of existing facilities, new permits, additional licenses and/or authorizations would be necessary. At both GTI and OneH2, the risks would include typical hazards associated with development of research systems and building hydrogen production equipment including the use and handling of hydrogen gas. Project activities and handling of hydrogen would occur in controlled facilities using appropriate equipment where there are dedicated proper health, safety and environmental practices to ensure project activities would pose no risk to employees or the public. Safety would be managed in accordance with Federal, state, and local environmental regulations. Existing health and safety policies and procedures would be followed at each facility. The disposal of all waste would be through typical municipal waste collection.

The demonstration at UT Austin would occur on the J. J. Pickle Research Campus at the Center for Electromechanics (CEM) and the Texas Advanced Computing Center (TACC). The proposed hydrogen facilities would be installed outdoors in a location currently being used for an existing smaller hydrogen fueling station at CEM. The current station would be repurposed and additional concrete pads and utilities would be installed alongside the existing site (within existing disturbance) for the new hydrogen production, storage, and dispensing facilities. The fueling station would support the demonstration of seven light-duty fuel cell vehicles provided by Toyota Motor of North America, Inc. and a fuel cell power system that would be purchased from a vendor and connected to the University's microgrid facility and the TACC. This fuel cell power system would either be installed at the TACC with hydrogen lines running from the hydrogen production station or it would be installed at CEM across from the hydrogen production station or at the microgrid facility with electrical lines running to the TACC. These lines may be run within existing routes or new trenching between CEM and the TACC. Upgrading the existing hydrogen station would require ground disturbing activities for the increased footprint to accommodate the larger system. Additional concrete foundations would be installed to ensure sufficient stability of the system during operation. Trenches would be required to run underground utilities. Utilities would be run within existing right-of-ways or under existing parking lots and roads. All work would be completed on State-owned lands at UT Austin adjacent to the existing laboratory/research facilities. Site plans would be reviewed and approved by the UT Austin Facilities Services Department and Fire Marshal and would comply with National Fire Protection Association (NFPA) codes. Any permits or approvals required for installation and excavation would be received prior to installation.

This project includes hydrogen production by steam methane reformation and electrolysis which emits carbon dioxide. To offset this, the project would use renewable landfill natural gas as the feedstock for the reformer through renewable credits that are being provided from landfill gas generated at an existing Waste Management facility. Emulated renewable power would be provided by the existing microgrid to the electrolysis equipment. Powerlines would run from the microgrid facility to the electrolyzer located at the hydrogen station site. Much of this would be run within existing trenching already in place within CEM facility.

The hydrogen facilities would produce and use approximately 100 kg/day of hydrogen gas, requiring 300 gallons of water and 15,000 SCF of natural gas per day for the hydrogen production. Risks associated with the production, storage, and use of hydrogen gas would be mitigated by following appropriate safety standards and obtaining

approval from University officials and fire marshal for the design and installation of equipment. Safety training sessions would be provided for operators of the system and vehicles, as well as the Austin fire department. Small quantities of general shop supplies and chemicals may be used during construction and installation, including extra electrical or plumbing materials, along with packaging and shipping containers. The demonstration activities are not expected to generate wastes from the operation of the equipment or vehicles.

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:

Fuel Cell Technologies 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: Electronically Signed By: Casey Strickland Date: 4/24/2020

NEPA Compliance Officer

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: _____ Date: _____

Field Office Manager