



U.S. Department of Energy

Categorical Exclusion Determination Form

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Proposed Action Title: Johns Hopkins University- Hydrocracking Plastic Mixtures into Xylene

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): Baltimore, Maryland

Proposed Action Description:

AMENDED NEPA DETERMINATION: (See attached original Determination, dated December 4, 2020). This Amended Determination follows the approval of additional funds to support the project's small-scale, research and development activities of laboratory catalytic studies for plastics upcycling. Specifically, the project team will (1) expand the feedstock to mixed plastics, and (2) continue refining the reactor design. If successful, the process will divert municipal solid waste plastic from landfills and instead take advantage of embedded energy and/or value-add products and convert them to a high-energy content liquid product that will provide new feedstocks for the fuels and chemical industry.

Project activities will be conducted at an existing facility at Johns Hopkins University (Baltimore, MD). Project tasks continue to fit within the class of actions identified under the DOE Categorical Exclusion identified below and do not involve any extraordinary circumstances that may affect the significance of the environmental effects of the project. This assessment was based on a review of the proposed scope of work and the potential environmental impact of the project. Project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and local regulatory requirements.

Categorical Exclusion(s) Applied:

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

A9 - Information gathering, analysis, and dissemination

B3.15 - Small-scale indoor research and development projects using nanoscale materials

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: **GEOFFREY GOODE** Digitally signed by GEOFFREY GOODE
Date: 2022.09.21 15:01:01 -04'00'

Date Determined:



U.S. Department of Energy

Categorical Exclusion Determination Form

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Proposed Action Title: Solicitation on Topics Informing New Program Areas Funding Opportunity Announcement (FOA), Topic K "REcycle Underutilized Solids to Energy" (REUSE/REUSE SBIR/STTR) (FOA Nos. DE-FOA-0001953 & DE-FOA-0001954) Programs

Program or Field Office: Advanced Research Projects Agency - Energy (ARPA-E)

Location(s) (City/County/State): CA; IA; IL; MD; WY

Proposed Action Description:

The REUSE Program seeks to develop technologies to convert high-energy materials—certain plastics (#1-7 polymers, rubber, and composites) and paper—currently going to landfills, into a high-energy content liquid product. In particular, successful REUSE technologies will lead to economically viable "liquefaction processes" that create high-energy content liquid that can be easily shipped to, and stored at, central locations. If successful, REUSE technologies will divert municipal solid waste (MSW) plastic from landfills and instead take advantage of embedded energy and/or value-add products and convert them to a high-energy content liquid product. The liquid product could be used as a fuel blend stock or an intermediate for further conversion to fuels or chemicals.

The REUSE Program is composed of 4 small-scale research and development projects that will be conducted by universities, non-profit entities, for-profit entities, and federal laboratories. This Determination covers all 4 projects (listed in Attachment A). All 4 projects fit within the class of actions identified under the DOE Categorical Exclusion identified below and do not involve any extraordinary circumstances that may affect the significance of the environmental effects of the projects. This assessment was based on a review of the proposed scope of work and the potential environmental impacts of each project. All project tasks will be conducted in accordance with established safety and materials/waste management protocols and pursuant to applicable Federal, State, and Local regulatory requirements.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

B3.6 - Small-scale research and development, laboratory operations, and pilot projects

B3.15 - Small-scale indoor research and development projects using nanoscale materials

For the complete DOE National Environmental Policy Act regulations regarding categorical exclusions, including the full text of each categorical exclusion, see Subpart D of [10 CFR Part 1021](#).

Regulatory Requirements in 10 CFR 1021.410(b): (See full text in regulation)

The proposal 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 proposal that may affect the significance of the environmental effects of the proposal.

The proposal 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.

Based on my review of the proposed action, as NEPA Compliance Officer (as authorized under DOE Order 451.1B), I have determined that the proposed action fits within the specified class(es) of action, the other regulatory requirements set forth above are met, and the proposed action is hereby categorically excluded from further NEPA review.

NEPA Compliance Officer: **Geoffrey Goode** Digitally signed by Geoffrey Goode
Date: 2020.12.04 09:50:23 -05'00'

Date Determined:

Attachment A: Projects in the Solicitation on Topics Informing New Program Areas Funding Opportunity Announcement (FOA), Topic K "Recycle Underutilized Solids to Energy" (REUSE/REUSE SBIR/STTR) (FOA Nos. DE-FOA-0001953 & DE-FOA-0001954) Programs

Control Number	Lead Organization	Project Title	Categorical Exclusion
1953-1729	UNIVERSITY OF WYOMING RESEARCH CORPORATION D/B/A/ WESTERN RESEARCH INSTITUTE	Polymer/Oil Co-processing to Yield Liquid Products	A9; B3.6
1953-1736	ARGONNE NATIONAL LABORATORY*	Selective Hydrogenolysis of Pre-Consumer Polyolefins to Premium Synthetic Lubricants	A9; B3.6; B3.15
1953-1738	JOHNS HOPKINS UNIVERSITY	Hydrocracking Plastic Mixtures into Xylene	A9; B3.6; B3.15
1954-1626	ALTEX TECHNOLOGIES CORPORATION	Low Cost Feed Flexible Plastics Reuse (LCFFPR)	B3.6