



# U.S. Department of Energy

## Categorical Exclusion Determination Form

Submit by E-mail

Proposed Action Title: INcreasing Transportation Efficiency and Resiliency through MODeling Assets and Logistics (INTERMODAL)  
(DE-FOA-0002784)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): CA, CO, DC, IL, MI, MN, TN, TX, WA, WV, WI

Proposed Action Description:

SECOND AMENDED PROGRAMMATIC NEPA DETERMINATION: (See attached original Programmatic Determination, dated September 26, 2023 and First Amended Programmatic Determination, dated November 9, 2023) The INTERMODAL Program seeks to develop the low-carbon intermodal freight transportation system of the future and support the deployment of energy infrastructure and logistics for moving goods across maritime, rail, and road transportation in the U.S. Specifically, project teams would (1) develop models that enable prioritization of low-carbon energy infrastructure deployment and develop accompanying data required for the effective deployment of this optimized distribution system; and (2) develop logistics models that enable predictive and responsive optimization of modal choice, inter- or intra- modal transfer, and routing consistent with future energy systems. If successful, INTERMODAL would produce innovations, predictive models, and low-carbon energy infrastructure strategies and models to minimize greenhouse gas emissions and maximize freight resiliency.

The INTERMODAL Program is composed of 6 small-scale research and development projects that will be conducted by universities, national labs, and for-profit entities. This Second Amended Determination adds 1 project (Northwestern University). All 6 projects fit within the class of actions identified under the DOE Categorical Exclusions identified below. 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

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: 2024.03.07 10:05:47 -05'00'

Date Determined:

**Attachment A: Projects in the INTERMODAL (FOA No. DE-FOA-0002784) Program**

<b>Prime Recipient (Control No.)</b>	<b>Project Title</b>	<b>Categorical Exclusion</b>
<b>Northwestern University (2784-1685)</b>	<b>IMAGINED: Inter Modal Analytics for Green Infrastructure Network Energy Decarbonization</b>	<b>A9</b>
University of Illinois at Urbana-Champaign (2784-1689)	Integrated Intermodal Freight Models and Tools for Efficiency and Resiliency	A9, B3.6
Michigan Technological University (2784-1653)	A Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) Modeling Platform for Intermodal Logistical Decisions Under Uncertainty	A9
National Renewable Energy Laboratory (2784-1540)	Intermodal Freight Optimization for a Resilient Mobility Energy System (INFORMES)	A9
Pacific Northwest National Laboratory (2784-1682)	Optimal Global Platform for Transportation (Opt-GPT): Optimal Net-Zero Technology Deployment and Route Planning Co-Design in Intermodal Freight Transportation for Multi-Objective System-level Efficiency and Climate Change Mitigation	A9
University of Tennessee, Knoxville (2784-1571)	A Cognitive Freight Transportation Digital Twin for Resiliency and Emission Control Through Optimizing Intermodal Logistics (RECOIL)	A9

**Bold text indicates the one project included in the Second Amended CX.**



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(DE-FOA-0002784)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): CA, CO, DC, IL, MI, MN, TN, TX, WA, WV, WI

Proposed Action Description:

FIRST AMENDED PROGRAMMATIC NEPA DETERMINATION (See attached original Programmatic Determination, dated September 26, 2023)  
The INTERMODAL Program seeks to develop the low-carbon intermodal freight transportation system of the future, and support the deployment of energy infrastructure and logistics for moving goods across maritime, rail, and road transportation in the U.S. Specifically, project teams would (1) develop models that enable prioritization of low-carbon energy infrastructure deployment and develop accompanying data required for the effective deployment of this optimized distribution system; and (2) develop logistics models that enable predictive and responsive optimization of modal choice, inter- or intra- modal transfer, and routing consistent with future energy systems. If successful, INTERMODAL would produce innovations, predictive models, and low-carbon energy infrastructure strategies and models to minimize greenhouse gas emissions and maximize freight resiliency. The INTERMODAL Program is composed of 6 small-scale research and development projects that will be conducted by universities, national labs, and for-profit entities. This First Amended Determination adds 1 project (University of Illinois, Urbana-Champaign [UIUC] listed in Attachment A). All 5 projects fit within the class of actions identified under the DOE Categorical Exclusion identified below. 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. UIUC may require permits and approvals for their proposed actions, and is prohibited from commencing applicable project work until those permits are obtained. UIUC has certified that they will update ARPA-E on any permit requirements, at which time ARPA-E will determine whether an amended NEPA Determination, is required prior to the conduct of applicable project work.

Categorical Exclusion(s) Applied:

A9 - Information gathering, analysis, and dissemination

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

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: 2023.11.09 10:23:12 -05'00'

Date Determined:

**Attachment A: Projects in the INTERMODAL (FOA No. DE-FOA-0002784) Program**

<b>Prime Recipient (Control No.)</b>	<b>Project Title</b>	<b>Categorical Exclusion</b>
<b>University of Illinois at Urbana-Champaign (2784-1689)</b>	<b>Integrated Intermodal Freight Models and Tools for Efficiency and Resiliency</b>	<b>A9, B3.6</b>
Michigan Technological University (2784-1653)	A Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) Modeling Platform for Intermodal Logistical Decisions Under Uncertainty	A9
National Renewable Energy Laboratory (2784-1540)	Intermodal Freight Optimization for a Resilient Mobility Energy System (INFORMES)	A9
Pacific Northwest National Laboratory (2784-1682)	Optimal Global Platform for Transportation (Opt-GPT): Optimal Net-Zero Technology Deployment and Route Planning Co-Design in Intermodal Freight Transportation for Multi-Objective System-level Efficiency and Climate Change Mitigation	A9
University of Tennessee, Knoxville (2784-1571)	A Cognitive Freight Transportation Digital Twin for Resiliency and Emission Control Through Optimizing Intermodal Logistics (RECOIL)	A9

**Bold text indicates the project included in the First Amended CX.**



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Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): CA, CO, DC, IL, MI, MN, TN, TX, WA, WV, WI

Proposed Action Description:

The INTERMODAL Program seeks to develop the low-carbon intermodal freight transportation system of the future, and support the deployment of energy infrastructure and logistics for moving goods across maritime, rail, and road transportation in the United States. Specifically, project teams would (1) develop models that enable prioritization of low-carbon energy infrastructure deployment and develop accompanying data required for the effective deployment of this optimized distribution system; and (2) develop logistics models that enable predictive and responsive optimization of modal choice, inter- or intra- modal transfer, and routing consistent with future energy systems. If successful, INTERMODAL would produce innovations, predictive models, and low-carbon energy infrastructure strategies and models to minimize greenhouse gas emissions and maximize freight resiliency.

The INTERMODAL Program is composed of 6 small-scale research and development projects that will be conducted by universities, national labs, and for-profit entities. This Determination covers 4 of the 6 projects (listed in Attachment A). All 4 projects fit within the class of actions identified under the DOE Categorical Exclusion identified below. 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

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: 2023.09.26 15:07:09 -04'00'

Date Determined:

**Attachment A: Projects in the INTERMODAL (FOA No. DE-FOA-0002784) Program**

Prime Recipient (Control No.)	Project Title	Categorical Exclusion
Michigan Technological University (2784-1653)	A Decarbonized and Resilient Intermodal Freight Transportation (DRIFT) Modeling Platform for Intermodal Logistical Decisions Under Uncertainty	A9
National Renewable Energy Laboratory (2784-1540)	Intermodal Freight Optimization for a Resilient Mobility Energy System (INFORMES)	A9
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