U.S. Department of Energy
Categorical Exclusion Determination Form

Proposed Action Title: Disruptive DC Converters for Grid Resilient Infrastructure to Deliver Secure energy -- DC-GRIDS and DC-GRIDS SBIR/STTR (NOFO Nos. DE-FOA-0003499 and DE-FOA-0003500)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): AZ, CA, CO, CT, FL, GA, IL, MI, MO, MS, NC, NE, NY, OH, PA, TX, VA, WA, WI

Proposed Action Description:

SECOND AMENDED PROGRAMMATIC NEPA DETERMINATION (See attached original and First Amended Determinations, dated May 29, 2026 and June 11, 2026, respectively). The Disruptive DC Converters for Grid Resilient Infrastructure to Deliver Secure energy (DC-GRIDS) program supports the small-scale research and development of more compact and cost effective power electronics converters for direct current (DC) transmission to transport electricity over longer distances with less electricity lost during conveyance from generator to user. Specifically, DC-GRIDS projects will focus on the development of high-performance modular valves used in multi-terminal high voltage direct current (HVDC) converters and updating converter substation technologies. If successful, DC-GRIDS projects would develop converter technologies that reduce the initial investment cost of multi-terminal HVDC stations to levels comparable to AC substations, improving the grid's reliability, capacity, and performance, ultimately reducing dependence on foreign energy, thereby increasing U.S. energy security.

The DC-GRIDS Program is composed of 12 small-scale research and development projects that will be conducted by universities, large and small businesses, and national laboratories. This Second Amended Determination adds 2 projects to the First Amended Determination (see Attachment A for all 11). All 11 projects fit within the class of actions identified under the DOE Categorical Exclusions identified below. These 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:

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

For the DOE procedures regarding categorical exclusions, including the full text of each categorical exclusion, see 10 CFR 1021.102 and Appendix B to 10 CFR Part 1021, and also Section 5.4 (Applying one or more categorical exclusions to a proposal) and Appendices B and C of DOE's National Environmental Policy Act Implementing Procedures (June 30, 2025).

Requirements and guidance in 10 CFR 1021.102 and DOE's NEPA Implementing Procedures: (See full text in regulation and in Implementing Procedures)

☑ The proposal fits within a class of actions that is listed in Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures (June 30, 2025).

To fit within the classes of actions listed in Appendix B to 10 CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

☑ There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal. DOE or an applicant may modify the proposal to avoid reasonably foreseeable adverse significant effects such that the categorical exclusion would apply.

☑ The proposal has not been segmented to meet the definition of a categorical exclusion.

[Note: For proposals that fit within the categorical exclusions listed in Appendix C of DOE's NEPA Implementing Procedures, see DOE's notice of adoption for the subject Appendix C categorical exclusion for additional considerations. DOE notices of adoption for other agency categorical exclusions may be found on DOE's Section 109 webpage.]

Based on my review of the proposed action, as NEPA Compliance Officer, I have determined that the proposed action fits within the specified class(es) of action, the other requirements and guidance 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: 2026.06.25 15:25:43 -04'00'

Date Determined:

This form will be locked for editing upon signature.

Attachment A: Projects in the DC-GRIDS (NOFO Nos. DE-FOA-0003499 and DE-FOA-0003500) Program

Prime Recipient (Control No.)	Project Title	Categorical Exclusion
Ohio State University: Columbus Campus (3499-1525)	**COSMACT-HVDC: Cost-Optimized, Space-Minimized Advanced Converter Topologies for Multi-terminal HVDC**	**B3.6**
Virginia Polytechnic Institute and State University (3499-1534)	**DC GRIDS Energy Router with Field Programmable Power Array (FPPA)b**	**B3.6**
Virginia Polytechnic Institute and State University (3499-1536)	Dual-use Converter-in-Fluid Integrated Vertical-stack kilo-ampere SiC Submodule Valve for Next-generation High-Density HVDC Converter Station	B3.6
Georgia Institute of Technology (3499-1514)	Compact and Resilient Multiport Modular Converter for Next-Generation HVDC Stations	B3.6
North Carolina State University (3499-1541)	BiDFET Enabled Scalable Modular Submodules for MT-HVDC Converter Station	B3.6
University of Wisconsin-Madison (3499-1546)	Multi-port iso-MMC: A Converter Station Architecture for Multi-directional Power Routing Electric Grid Superhighway	B3.6
GE Vernova Advanced Research (3499-1542)	HVDC Submodule with Ultra Power-density, Efficiency and Resiliency (SUPER) Valve	B3.6
Omni Power, Inc. (3500-1505)	OMNI-TERMINAL: Power Electronics and AI Enabled Open Source MT-HVDC	B3.6
University of Texas at Austin (3499-1526)	MTMP-HVDCSST: Multiterminal Multiport High Voltage Direct Current Solid State Transformer Enabled by An Oil-Immersed 30kV/1MW SiC Converter Submodule (CSM) with >150kV Insulation Capability	B3.6
Michigan State University (3499-1507)	High-Voltage SiC-Based Neutral Point Clamped Power Electronics Building Blocks (NPC-PEBBs) as Vendor-Agnostic Plug-and-Play Submodules in MT-HVDC Valves	B3.6
Florida State University (3499-1510)	Cascaded Resonance-InsensiTIve QuAsi-two-Level SiC Valve Modules (CRITIQAL)	B3.6

Bold text indicates the 2 projects included in the Second Amended CX.

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Proposed Action Title: Disruptive DC Converters for Grid Resilient Infrastructure to Deliver Secure energy -- DC-GRIDS and DC-GRIDS SBIR/STTR (NOFO Nos. DE-FOA-0003499 and DE-FOA-0003500)

Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): AZ, CA, CO, CT, FL, GA, IL, MI, MO, MS, NC, NE, NY, PA, TX, VA, WA, WI

Proposed Action Description:

FIRST AMENDED PROGRAMMATIC NEPA DETERMINATION (See attached original Determination, dated May 29, 2026). The Disruptive DC Converters for Grid Resilient Infrastructure to Deliver Secure energy (DC-GRIDS) program supports the small-scale research and development of more compact and cost effective power electronics converters for direct current (DC) transmission to transport electricity over longer distances with less electricity lost during conveyance from generator to user. Specifically, DC-GRIDS projects will focus on the development of high-performance modular valves used in multi-terminal high voltage direct current (HVDC) converters and updating converter substation technologies. If successful, DC-GRIDS projects would develop converter technologies that reduce the initial investment cost of multi-terminal HVDC stations to levels comparable to AC substations, improving the grid's reliability, capacity, and performance, ultimately reducing dependence on foreign energy, thereby increasing U.S. energy security.

The DC-GRIDS Program is composed of 12 small-scale research and development projects that will be conducted by universities, large and small businesses, and national laboratories. This First Amended Determination adds 5 projects to the original Determination (see Attachment A for all 9). All 9 projects fit within the class of actions identified under the DOE Categorical Exclusions identified below. These 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:

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

For the DOE procedures regarding categorical exclusions, including the full text of each categorical exclusion, see 10 CFR 1021.102 and Appendix B to 10 CFR Part 1021, and also Section 5.4 (Applying one or more categorical exclusions to a proposal) and Appendices B and C of DOE's National Environmental Policy Act Implementing Procedures (June 30, 2025).

Requirements and guidance in 10 CFR 1021.102 and DOE's NEPA Implementing Procedures: (See full text in regulation and in Implementing Procedures)

☑ The proposal fits within a class of actions that is listed in Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures (June 30, 2025).

To fit within the classes of actions listed in Appendix B to 10 CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

☑ There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal. DOE or an applicant may modify the proposal to avoid reasonably foreseeable adverse significant effects such that the categorical exclusion would apply.

☑ The proposal has not been segmented to meet the definition of a categorical exclusion.

[Note: For proposals that fit within the categorical exclusions listed in Appendix C of DOE's NEPA Implementing Procedures, see DOE's notice of adoption for the subject Appendix C categorical exclusion for additional considerations. DOE notices of adoption for other agency categorical exclusions may be found on DOE's Section 109 webpage.]

Based on my review of the proposed action, as NEPA Compliance Officer, I have determined that the proposed action fits within the specified class(es) of action, the other requirements and guidance 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: 2026.06.11 13:39:27 -04'00'

Date Determined:

This form will be locked for editing upon signature.

Attachment A: Projects in the DC-GRIDS (NOFO Nos. DE-FOA-0003499 and DE-FOA-0003500) Program

Prime Recipient (Control No.)	Project Title	Categorical Exclusion
Virginia Polytechnic Institute and State University (3499-1536)	**Dual-use Converter-in-Fluid Integrated Vertical-stack kilo-ampere SiC Submodule Valve for Next-generation High-Density HVDC Converter Station**	**B3.6**
Georgia Institute of Technology (3499-1514)	**Compact and Resilient Multiport Modular Converter for Next-Generation HVDC Stations**	**B3.6**
North Carolina State University (3499-1541)	**BiDFET Enabled Scalable Modular Submodules for MT-HVDC Converter Station**	**B3.6**
University of Wisconsin-Madison (3499-1546)	**Multi-port iso-MMC: A Converter Station Architecture for Multi-directional Power Routing Electric Grid Superhighway**	**B3.6**
GE Vernova Advanced Research (3499-1542)	**HVDC Submodule with Ultra Power-density, Efficiency and Resiliency (SUPER) Valve**	**B3.6**
Omni Power, Inc. (3500-1505)	OMNI-TERMINAL: Power Electronics and AI Enabled Open Source MT-HVDC	B3.6
University of Texas at Austin (3499-1526)	MTMP-HVDCSST: Multiterminal Multiport High Voltage Direct Current Solid State Transformer Enabled by An Oil-Immersed 30kV/1MW SiC Converter Submodule (CSM) with >150kV Insulation Capability	B3.6
Michigan State University (3499-1507)	High-Voltage SiC-Based Neutral Point Clamped Power Electronics Building Blocks (NPC-PEBBs) as Vendor-Agnostic Plug-and-Play Submodules in MT-HVDC Valves	B3.6
Florida State University (3499-1510)	Cascaded Resonance-InsensiTIve QuAsi-two-Level SiC Valve Modules (CRITIQAL)	B3.6

Bold text indicates the 5 projects included in the First Amended CX.

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Program or Field Office: Advanced Research Projects Agency - Energy

Location(s) (City/County/State): AZ, CA, CO, FL, GA, IL, MI, MO, NE, NY, TX, VA, WA, WI

Proposed Action Description:

The Disruptive DC Converters for Grid Resilient Infrastructure to Deliver Secure energy (DC-GRIDS) program supports the small-scale research and development of more compact and cost effective power electronics converters for direct current (DC) transmission to transport electricity over longer distances with less electricity lost during conveyance from generator to user. Specifically, DC-GRIDS projects will focus on the development of high-performance modular valves used in multi-terminal high voltage direct current (HVDC) converters and updating converter substation technologies. If successful, DC-GRIDS projects would develop converter technologies that reduce the initial investment cost of multi-terminal HVDC stations to levels comparable to AC substations, improving the grid's reliability, capacity, and performance, ultimately reducing dependence on foreign energy, thereby increasing U.S. energy security.

The DC-GRIDS Program is composed of 12 small-scale research and development projects that will be conducted by universities, large and small businesses, and national laboratories. This Determination covers 4 of the 12 projects (listed in Attachment A). These 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:

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

For the DOE procedures regarding categorical exclusions, including the full text of each categorical exclusion, see 10 CFR 1021.102 and Appendix B to 10 CFR Part 1021, and also Section 5.4 (Applying one or more categorical exclusions to a proposal) and Appendices B and C of DOE's National Environmental Policy Act Implementing Procedures (June 30, 2025).

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☑ The proposal fits within a class of actions that is listed in Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures (June 30, 2025).

To fit within the classes of actions listed in Appendix B to 10 CFR Part 1021, or Appendix B of DOE's NEPA Implementing Procedures, a proposal must satisfy the conditions that are integral elements of the classes of actions in Appendix B of both 10 CFR Part 1021 and DOE's NEPA Implementing Procedures.

☑ There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal. DOE or an applicant may modify the proposal to avoid reasonably foreseeable adverse significant effects such that the categorical exclusion would apply.

☑ The proposal has not been segmented to meet the definition of a categorical exclusion.

[Note: For proposals that fit within the categorical exclusions listed in Appendix C of DOE's NEPA Implementing Procedures, see DOE's notice of adoption for the subject Appendix C categorical exclusion for additional considerations. DOE notices of adoption for other agency categorical exclusions may be found on DOE's Section 109 webpage.]

Based on my review of the proposed action, as NEPA Compliance Officer, I have determined that the proposed action fits within the specified class(es) of action, the other requirements and guidance 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: 2026.05.29 13:15:47 -04'00'

Date Determined:

This form will be locked for editing upon signature.

Attachment A: Projects in the DC-GRIDS (NOFO Nos. DE-FOA-0003499 and DE-FOA-0003500) Program

Prime Recipient (Control No.)	Project Title	Categorical Exclusion
Omni Power, Inc. (3500-1505)	OMNI-TERMINAL: Power Electronics and AI Enabled Open Source MT-HVDC	B3.6
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