

U.S. Department of Energy Categorical Exclusion Determination Form

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Proposed Action Title: Solicitation on Topics Informing New Program Areas (FOA No. DE-FOA-0001953) & (SBIR FOA No. DE-FOA-0001954)
"Extremely Durable Concretes and Cementitious Materials"

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

Location(s) (City/County/State): CA, CO, FL, GA, IN, KY, MA, ME, MI, MN, MO, NC, NJ, NM, OR, PA, SC, TN, TX, UT, WA, WI

Proposed Action Description:

The Solicitation on Topics Informing New Program Areas Extremely Durable Concretes and Cementitious Materials Program ("Program") seeks to fund the advancement of concretes, precursors (e.g. cementitious & pozzolanic materials, aggregates, admixtures) and concrete structures. If successful, these developments (1) may lead to lower infrastructure investment costs through advanced mixtures and manufacturing practices that improve durability while reducing material and/or time requirements for construction and (2) produce high value, differentiated products and processes that would better position the U.S. concrete and construction industry to lead in a growing international market.

The Program is composed of 12 small-scale research and development projects that will be conducted by universities, non-profit entities, for-profit entities, and federal laboratories. All 12 projects (listed in Attachment A) are covered by this Determination and fit within the class of actions identified under the DOE Categorical Exclusions 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. 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)

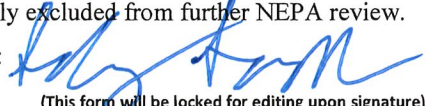
The proposal fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D.

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: 
(This form will be locked for editing upon signature)

Date Determined: 9/10/19

Attachment A: Special Program Announcement for Solicitation on Topics Informing New Program Areas “Extremely Durable Concretes and Cementitious Materials” Program (DE-FOA-0001953) & SBIR (DE-FOA-0001954)

Prime Recipient (Control No.)	Project Title	Categorical Exclusion
Georgia Institute of Technology (1953-1553)	Development of an advanced ultrasonic phased array for the characterization of thick, reinforced concrete components	A9; B3.6
Carnegie Mellon University (1953-1577)	Integrated Design of Chemical Admixture Systems for Ultradurable, Low CO2 Alternative Binder Chemistries Via Machine Learning	A9; B3.6
University of Utah (1953-1600)	Self-Sustaining Cementitious Systems in Roman Reactive Glass Concretes	A9; B3.6
Washington State University (1953-1580)	Biopolymer modified cementitious systems with radically superior strength and durability	A9; B3.6; B3.15
The Regents of the University of Michigan (1953-1540)	Development of an Extremely Durable Concrete (EDC) - A Novel approach coupling Chemistry and Autogenous Crack Width Control	A9; B3.6
University of Florida (1953-1566)	Boron Concrete for Active Formation of Lithium as Mitigation of Neutron-Induced Expansion and Passive Neutron Absorption	A9; B3.6
Oregon State University (1953-1586)	Development of Thermodynamic and Kinetic Simulation Tools and Testing Procedures for Enhanced Durability of Concrete Containing Industrial By-products	A9; B3.6; B3.15
University of California, San Diego (1953-1549)	Extremely Durable and Low-Cost Concrete: Ultralow Binder Content and Ultrahigh Tensile Ductility	A9; B3.6
University of Colorado Boulder (1953-1567)	Geopolymer Cements: Resistance-Engineered Sewer Infrastructure for Longevity using Innovative, Energy-efficient, Synthesis Techniques (RESILIENT)	A9; B3.6; B3.15
University of Kentucky (1953-1562)	Belite Cement, and Concretes; Novel Low-Energy Approaches to Making Concrete Extremely Durable	A9; B3.6; B3.15
The Regents of the University of California (1953-1521)	Low-Temperature Architected Cementation Agents (LAMINAE)	A9; B3.6
C-Crete Technologies, Inc. (1954-1514)	Irradiation, Heat, and Corrosion Resistant Hexagonal Boron Nitride-Cement Coating for Mitigating Aging and Irradiation Effects in Nuclear Power Plants	A9; B3.6; B3.15