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Research Grants

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13th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet

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U.S. Environmental Protection Agency

Office of Research and Development
National Center for Environmental Research
P3 Award Program

This is the initial announcement of this funding opportunity.

Funding Opportunity Numbers (FON) and Associated Research Areas:

- EPA-G2016-P3-Q1 – Energy
- EPA-G2016-P3-Q2 – Built Environment
- EPA-G2016-P3-Q3 – Materials and Chemicals
- EPA-G2016-P3-Q4 – Water

Catalog of Federal Domestic Assistance (CFDA) Number: 66.516

Solicitation Opening Date: October 06, 2015

Solicitation Closing Date: December 08, 2015, 11:59:59 pm Eastern Time

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SUMMARY OF PROGRAM REQUIREMENTS

Synopsis of Program

The U.S. Environmental Protection Agency (EPA), as part of the P3-People, Prosperity and the Planet Award Program, is seeking applications proposing to research, develop, and design solutions to real world challenges involving the overall sustainability of human society. The P3 competition highlights the use of scientific principles in creating innovative projects focused on sustainability. The P3 Award program was developed to foster progress toward sustainability by achieving the mutual goals of improved quality of life, economic prosperity and protection of the planet -- people, prosperity, and the planet – the three pillars of sustainability. The EPA offers the P3 competition in order to respond to the technical needs of the world while moving towards the goal of sustainability. Please see the P3 website for more details about this program.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women, and children at subparts B, C, and D. Research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women, and children. Research meeting the regulatory definition of observational research found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). All applications must include a Human Subjects Research Statement (HSRS, as described in Section IV.C.5.b of this solicitation), and if the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.C and V.D of this solicitation. Additional information can be found in Section I.A of the full announcement.

Guidance and training for investigators conducting EPA-funded research involving human subjects may be obtained here:

- Basic Information about Human Subjects Research
- Electronic Code of Federal Regulations

Award Information:
Anticipated Type of Award: Grant
Estimated Number of Awards: Approximately 35 awards for Phase I; Approximately 6 awards for Phase II.
Anticipated Funding Amount: Approximately $975,000 total for all Phase I & II grant awards.
Potential Funding per Award: Up to $15,000 per Phase I grant including direct and indirect costs. Proposals for Phase I grants must be for only one year. Proposals for Phase I grants requesting an award of more than $15,000 will not be considered.

Upon the successful completion of Phase I, grant recipients will have the opportunity to apply for a P3 Phase II grant of up to $75,000 total for two years including direct and indirect costs (see Background section for more information). Proposals for Phase II grants requesting an award of more than $75,000 will not be considered.

Cost-sharing is not required for either Phase I or Phase II grants.

Eligibility Information:
Public nonprofit institutions/organizations (limited to degree-granting public institutions of higher education) and private nonprofit institutions/organizations (limited to degree-granting private institutions of higher education) located in the U.S. (includes eligible institutions of higher education located in U.S. territories and possessions) are eligible to apply to be the recipient of a grant to support teams of undergraduate and/or graduate students. Profit-making firms are not eligible to receive assistance agreements from the EPA under this program. See full announcement for more details.

Application Materials:
To apply under this solicitation, use the application package available at Grants.gov (for further submission information see Section IV.F. “Submission Instructions and Other Submission Requirements”). Note: With the exception of the current and pending support form (available at How to Apply and Required Forms), all necessary forms are included in the electronic application package. Make sure to include the current and pending support form in your Grants.gov submission.

If your organization is not currently registered with Grants.gov, you need to allow approximately one month to complete the registration process. Please note that the registration process also requires that your organization have a unique entity identifier and a current registration with the System for Award Management (SAM) and the process of

obtaining both could take a month or more. Applicants must ensure that all registration requirements are met in order to apply for this opportunity through Grants.gov and should ensure that all such requirements have been met well in advance of the submission deadline. This registration, and electronic submission of your application, must be performed by an authorized representative of your organization.

If you do not have the technical capability to utilize the Grants.gov application submission process for this solicitation, see Section IV.A below for additional guidance and instructions.

Agency Contacts:
Technical Contacts: Cynthia L. Nolt-Helms (nolt-helms.cynthia@epa.gov); phone: 703-347-8102
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Anne Sergeant (sergeant.anne@epa.gov); phone: 703-347-8105
Eligibility Contact: Ron Josephson (josephson.ron@epa.gov); phone: 703-308-0442
Electronic Submissions Contact: Debra M. Jones (jones.debram@epa.gov); phone: 703-347-8081

I. FUNDING OPPORTUNITY DESCRIPTION

A. Introduction

The United States Environmental Protection Agency (EPA), under the auspices of the Office of Research and Development (ORD), National Center for Environmental Research (NCER), invites submissions to the 13th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet. P3 focuses on scientific projects and engineering designs that address the three components of sustainability: people, prosperity and the planet. The P3 Program is intended to support science-based projects and designs developed by interdisciplinary student teams that benefit people by improving their quality of life, promote prosperity by developing local economies, and protect the planet by conserving resources and minimizing pollution. An overview of the meaning of sustainability for application in NCER research proposals is located here: Sustainability Primer (PDF) (2 pp, 195 K).

The concept of sustainable development became widely promoted following the 1987 publication of *Our Common Future* by the World Commission on Environment and Development (World Commission on Environment and Development, 1987). That document defined sustainability as “meeting the needs of the present without compromising the ability of future generations to meet their own needs.” Earlier, the National Environmental Policy Act of 1969 introduced the concept of sustainability and the definition used there was reiterated in Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, stating that the goal of sustainability is to, “create and maintain conditions, under which humans and nature can exist in productive harmony, that permit

fulfilling the social, economic and other requirements of present and future generations."

The concept of sustainable development as encompassing activities that address people, prosperity and the planet continues to have international support as indicated by the United Nations 2012 Conference on Sustainable Development Rio+20 outcome document. This document states "Eradicating poverty is the greatest global challenge facing the world today and
an indispensable requirement for sustainable development;" followed by "We recognize that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development." That report went on to state "We therefore acknowledge the need to further mainstream sustainable development at all levels, integrating economic, social and environmental aspects and recognizing their interlinkages, so as to achieve sustainable development in all its dimensions." (United Nations, 2012)

In an article entitled *Sustainability science and engineering: The emergence of a new metadiscipline,* Mihelcic et al. (2003) provided a useful definition of sustainability for scientists and engineers as the "design of human and industrial systems to ensure that humankind's use of natural resources and cycles do not lead to diminished quality of life due either to losses in future economic opportunities or to adverse impacts on social conditions, human health and the environment." Fundamentally, sustainability requires the balancing of economic prosperity, environmental responsibility, and social fairness. It is imperative to recognize the key role scientific, engineering, and policy innovations can play in addressing the sustainable development challenge. Successful sustainable design recognizes the needs, available resources, and boundaries of the intended user. See for instance: *Cradle to Cradle* (Braungart & McDonough, 2002), *The Upcycle: Beyond Sustainability--Designing for Abundance* (McDonough & Braungart, 2013), *Engineering Biomimicry* (Lakhtakia & Martín-Palma, 2013) and *Biomimicry* (Benyus, 2002).

The P3 Award Program is composed of two phases that award grants on a competitive basis. The purpose of this RFA is to solicit proposals for innovative research projects and designs to compete for the first phase of the P3 Award Program. The first phase is a competition for one-year grants of up to $15,000 to test, research and develop innovative scientific projects or engineering designs that will promote sustainable development. In the spring of 2017, the Phase I grantees awarded from this solicitation will be required to present their projects/designs in the Washington D.C. metropolitan area and submit a *Project Report* that will serve as an application for a Phase II grant award of up to $75,000. The Phase II grant awards are intended to support the further development and demonstration of the sustainability projects/designs created in Phase I. The competitors for 2017 P3 Phase II grants are limited to recipients of Phase I grant awards from this solicitation. Additional instructions for completing the Phase II proposals, which will be due approximately seven months after the Phase I grants are awarded, will be distributed to Phase I recipients. Those projects identified for receipt of a Phase II grant will be

recognized as P3 Award recipients on the P3 website.

This RFA represents the thirteenth National P3 Awards competition. Previously awarded projects funded through this program can be viewed at P3 website.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women, and children at subparts B, C, and D. Research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women, and children. Research meeting the regulatory definition of observational research found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). All applications must include a Human Subjects Research Statement (HSRS, as described in Section IV.C.5.b of this solicitation), and if the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.C and V.D of this solicitation.

Please note that surveys, interviews, and focus groups with individuals may constitute human subjects research.

The additional level of review is conducted by the EPA Human Subjects Research Review Official (HSRRO). In making a determination about conditional and later final approval, the HSRRO will apply both EPA Regulation 40 CFR 26 and EPA Policy Order 1000.17 Change A1, where human exposure research is interpreted as any intervention that manipulates subjects' environment (i.e., modifies subjects' exposure).

For more specific information including guidance and training, see:

- Basic Information about Human Subjects Research
- Electronic Code of Federal Regulations

B. Background

Increased awareness and understanding of sustainability are critical components for promoting a systematic shift towards more environmentally benign and sustainable products, processes, and systems. It is essential that all involved in the design, discovery, demonstration, and implementation of sustainable innovations understand the fundamental techniques and principles that underlie sustainability. Innovative research can take the form of wholly new applications or applications that build on existing knowledge and approaches for new uses.

EPA's P3 Program has identified the following four strategic program goals.

Goal 1: Engage and educate the next generation of scientists, engineers, and the greater academic and external communities in the principles of sustainability.
Goal 2: Spark innovation and sustainable technologies through research and development conducted by the P3 projects.
Goal 3: Support the demonstration of sustainable technologies around the world.
Goal 4: Foster the development of enterprises rooted in sustainability.

Specific outputs and outcomes from the Phase I and II grant awards are described in Section I.D. below.

This announcement addresses the first phase (Phase I) of the P3 competition by requesting proposals for innovative research projects or designs from eligible institutions. The Phase I grants are intended to support an interdisciplinary team of undergraduate and/or graduate students to develop their projects/designs in preparation for competing for a P3 Phase II grant award to demonstrate their proposed projects/designs. The EPA will fund approximately 35 Phase I research proposals from around the country during the 2016-2017 academic year.

The proposal process for the Phase II grant awards will begin in the spring of 2017, when the student teams and their faculty advisor (the Principal Investigator [PI] on the grant) submit a *Project Report* describing the Phase I project activities and the Phase II proposal for further development. A panel of qualified experts will be convened to review the applications and score them based on the evaluation criteria described in Section V.

Partnerships with industry or non-governmental organizations (NGOs) are strongly encouraged, particularly in Phase II. These partners are expected to help further develop the design, demonstrate the project in the field, and/or move the design to the marketplace. Matching contributions are not required in either the Phase I or the Phase II competition; however, anticipated partnerships should be identified.

Although P3 grant funding must be used for research and cannot be used for commercialization and for-profit initiatives (such as business creation), proposals with commercial potential are encouraged to apply to EPA's Small Business Innovation Research (SBIR) program. Since its inception, EPA's SBIR Program has provided incentive funding to small businesses to translate their innovative ideas into commercial products that address environmental problems. The EPA is one of 11 federal agencies that participate in the SBIR Program established by the Small Business Innovation Development Act of 1982. EPA issues annual solicitations for Phase I and Phase II research proposals from science and technology-based firms (not universities). Many institutions have entrepreneurship centers where adjunct faculty are practicing entrepreneurs. SBIR applicants are encouraged to consult with their university's business or management school and entrepreneurship center faculty about how best to design their proposed research. For more information on EPA's SBIR program see Small Business Innovation Research (SBIR) Program. For more information about the federal SBIR program see SBIR/STTR.

The specific Strategic Goal and Objective from the EPA's Strategic Plan that relate to this solicitation are Goal 3: Cleaning Up Communities and Advancing Sustainable Development, Objective 3.1: Promote Sustainable and Livable Communities.

More information can be found in EPA's FY 2014-2018 Strategic Plan

C. Authority and Regulations

1. Statutory Authorities

Note that a project's focus is to consist of activities within the statutory terms of EPA's financial assistance authorities, specifically, the statute(s) listed below. Generally, a project must address the causes, effects, extent, prevention, reduction, and elimination of air pollution, water pollution, solid/hazardous waste pollution, toxic substances control, or pesticide control depending on which statute(s) is identified to support the research proposal. Activities should relate to the gathering or transferring of information or advancing the state of knowledge. Proposals should emphasize this "learning" concept, as opposed to "fixing" an environmental problem via a well-established method. Proposals relating to other topics which are sometimes included within the term "environment" such as recreation, conservation, restoration, protection of wildlife habitats, etc., must describe the relationship of these topics to the statutorily required purpose of pollution prevention and/or control. Note: Applications dealing with any aspect of or related to hydraulic fracking will not be funded by EPA through this program.

The authorities for awarding research grants under this RFA are contained in the Clean Air Act (CAA), Section 103, 42 U.S.C. 7403; Clean Water Act (CWA), Section 104, 33 U.S.C. 1254; the Safe Drinking Water Act (SDWA), Section 1442, 42 U.S.C. 300j-1; the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), Section 20, 7 U.S.C. 136r; the Solid Waste Disposal Act (SWDA), Section 8001, 42 U.S.C. 6981; and the Toxic Substances Control Act (TSCA), Section 10, 15 U.S.C. 2609. For research with an international aspect, the above statutes are supplemented, as appropriate, by the National Environmental Policy Act (NEPA), Section 102(2)(F). Specific descriptions of the areas of research that are authorized by each statute are described below:

CAA: Clean Air Act--Section 103:
Section 103 of the Clean Air Act authorizes the EPA to make grants to institutions for research, investigations, experiments, demonstrations, surveys and studies relating to the causes, effects, extent, prevention and control of air pollution.

CWA: Clean Water Act--Section 104:
Section 104 of the Clean Water Act authorizes the EPA to make grants to institutions for research, investigations, experiments, training, demonstrations, surveys and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water

pollution. Water pollution is defined as man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water, including freshwater aquatic ecosystems.

SDWA: Safe Drinking Water Act--Section 1442:
Section 1442 of the Safe Drinking Water Act authorizes the EPA to make grants for research, training, studies, and demonstrations relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and other impairments of man resulting directly or indirectly from contaminants in water, or to the provision of a dependably safe supply of drinking water, including (A) improved methods: (i) to identify and measure the existence of contaminants in drinking water (including methods which may be used by State and local health and water officials), and (ii) to identify the source of such contaminants; (B) improved methods to identify and measure the health effects of contaminants in drinking water; (C) new methods of treating raw water to prepare it for drinking, so as to improve the efficiency of water treatment and to remove contaminants from water; (D) improved methods for providing a dependably safe supply of drinking water, including improvements in water purification and distribution, and methods of assessing the health related hazards of drinking water; and (E) improved methods of protecting underground water sources of public water systems from contamination.

FIFRA: Federal Insecticide, Fungicide and Rodenticide Act--Section 20:
Section 20 of the Federal Insecticide, Fungicide and Rodenticide Act authorizes the EPA to make grants for pesticide-related research, development, monitoring, public education, training, demonstrations, and studies.

SWDA: Solid Waste Disposal Act--Section 8001:
Section 8001 of the Solid Waste Disposal Act authorizes the EPA to make grants for research, investigations, experiments, training, demonstrations, surveys, public education programs and studies relating to: (1) adverse health and welfare effects from solid waste; (2) solid waste management programs; (3) resource recovery and conservation, and hazardous waste management systems; (4) production of usable forms of recovered resources; (5) waste reduction; (6) improved solid waste collection and disposal methods; (7) identification of solid waste components; (8) small scale and low technology solid waste management systems; (9) methods to improve performance of recovered solid waste; (10) improvements in land disposal practices; (11) methods for sound disposal of resources, including sludge and coal slurry; (12) methods of hazardous waste management; and (13) air quality impacts from the burning of solid waste.

TSCA: Toxic Substance Control Act--Section 10:
Section 10 of the Toxic Substance Control Act authorizes the EPA to make grants for research, development, monitoring, public education, training, demonstrations and studies directed toward the development of the fundamental scientific basis of screening

and monitoring techniques used to detect toxic chemical substances and quantify the effects of toxic chemical substances and mixtures in the environment.

NEPA: National Environmental Policy Act (NEPA)--Section 102(2)(F):
For research with an international aspect, the above statutes are supplemented, as appropriate, by the National Environmental Policy Act (NEPA), Section 102(2)(F) which authorizes support to foreign recipients and international work/travel by domestic recipients. (NEPA cannot be the sole supporting statute for a proposed project.)

2. Applicable regulations
Applicable regulations include: 2 CFR Part 200, 2 CFR Part 1500, and 40 CFR Part 40 (Research and Demonstration Grants).

D. Expected Outputs and Outcomes

Note to applicant: The term "output" means an environmental activity, effort, and/or associated work products related to an environmental goal or objective, that will be produced or provided over a period of time or by a specified date. The term "outcome" means the result, effect or consequence that will occur from carrying out an environmental program or activity that is related to an environmental or programmatic goal or objective.

The P3 program aims to generate research outputs in the form of innovative, inherently benign, integrated, and interdisciplinary designs that will advance the scientific, technical, and policy knowledge necessary to enhance the sustainability of human society on the planet. The desired outcomes of the research conducted via the P3 program address the three aspects of sustainability. Through the use of sustainable technologies they are to simultaneously: (1) maintain or improve human health and well-being; (2) advance economic competitiveness; and (3) protect and preserve the environment by effectively and efficiently using water, materials, and energy and minimizing the generation or emission of pollution or minimizing the use of hazardous substances.

The outputs and outcomes of the research efforts conducted via the individual P3 grants contribute directly to accomplishing the P3 Program goals presented in Section B. of this solicitation.

E. Research Areas

Applicants should address one of the research areas listed below in their Phase I proposals. *Note that each application must be submitted using the appropriate single Funding Opportunity Number (FON) described below.* (Proposals can include, but are not limited to, technical challenges within the examples following each research area below.) Review criteria specific to the P3 Program and against which the Phase I proposals will be evaluated are presented later in Section V.A.2. To fulfill Agency requirements for a research grant, all proposals should clearly articulate how the proposed project/design will result in pollution prevention and/or control. The link to pollution prevention should be direct such as reduction in air emissions from a more efficient engine design.

Energy (Funding Opportunity Number: EPA-G2016-P3-Q1 – Energy)

1. Green Energy
   This includes but is not limited to:

   a. Innovative strategies for conservation and efficiency as well as energy production and distribution,
   b. Inherently benign energy through green chemistry, biomimicry, green engineering and development of alternative energy sources.

Built Environment (Funding Opportunity Number: EPA-G2016-P3-Q2 – Built Environment)

1. Green Buildings
   Green building practices that promote health include reducing exposure to environmental contaminants as well as maximizing resource, energy, water and material efficiency throughout the complete building life cycle—from siting, design, and construction to operation, renovation, and reuse. Areas of interest include but are not limited to research on:

   a. Innovative processes for minimizing waste generation from the construction, renovation and demolition of buildings while boosting safe recycling of materials with low recycling rates (e.g. carpet, asphalt shingles, plastics, tile, and insulation).
   b. Devices, technologies, and materials that reduce energy needs or strengthen disaster resilience resulting from climate change in existing buildings.
   c. Application of biomimicry in building design.

2. Smart Growth
   Smart growth covers a range of development and conservation strategies that help protect our natural environment and make our communities more attractive, economically stronger, resilient and more socially diverse. Areas of interest include but are not limited to research on:

   a. Innovative transportation and mobility strategies.
   b. Information technologies for pollution prevention.
   c. Systems that improve community disaster resilience resulting from climate change.

Materials and Chemicals (Funding Opportunity Number: EPA-G2016-P3-Q3 – Materials and Chemicals)

1. Sustainable Materials
   Sustainable material science develops new materials and products with minimal

environmental and public health impacts over their life cycles. Areas of interest include but are not limited to research on:

a. Biomimicry-inspired materials.
b. Electronics waste reduction, recycling and/or material recovery.
c. Improved production practices that conserve materials.
d. Inherently benign materials to address aquatic bio-fouling.

2. Sustainable Chemistry
Sustainable chemistry principles are used to design chemical products and processes that prevent pollution by reducing or eliminating the use or generation of hazardous substances. Sustainable chemistry applies across the life cycle of a chemical product, including its design, manufacture, and use. Areas of interest include but are not limited to research on:

a. Non-fluorinated wetting agents.
b. Less-persistent, less-toxic preservatives.
c. Safer "solubilizers."
d. Less-toxic flame retardants.
e. Substitutes for rare earth metals.
f. Safer storage to prevent releases in case of storms or flooding (i.e., disaster resilience resulting from climate).

Water (Funding Opportunity Number: EPA-G2016-P3-Q4 – Water)

1. Drinking Water
Considerations include cost, ease of use, and environmental impacts including resource and energy use. Areas of interest include but are not limited to research on:

a. Small drinking water systems.
b. Increasing disaster resilience by preventing pollutant release into drinking water sources during flood events.

2. Water Quality
Research areas of interest for ensuring long-term sustainability include the prevention and/or control of the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water, including freshwater and estuary aquatic ecosystems.

3. Wastewater and Water Reuse
Areas of interest include but are not limited to:

a. Treatment technologies to capture energy/resources.

b. Treatment technologies to enable a closed loop residential system.

The applicant must identify a primary FON/research area for application submission purposes; this will be used to determine the appropriate peer review panel.

Please note the following Agency requirements for P3 research proposals:

- All proposals should clearly articulate how the proposed project/design will result in pollution prevention and/or control or describe how the proposed project/design proposes research within the scope of the statutes described in Section I.C.1. above. (NEPA is a secondary supporting statute for international projects and cannot be the sole supporting statute for a proposed project.)
- Generally, a proposal to this solicitation should address the causes, effects, extent, prevention, reduction, and elimination of air pollution, water pollution, solid/hazardous waste pollution, toxic substances control, or pesticide control. Proposals should not focus on fixing an environmental problem via a well-established method, but instead highlight their innovative research aspects. For example, a proposal to plant some trees in an economically depressed area in order to prevent erosion, or a proposal to start a routine recycling or composting program would not be considered appropriate for the P3 Program. However, the first instance of the application of a pollution-control technique or an innovative application of a previously used method would be considered appropriate for the P3 Program.
- To the extent practicable, research proposals must embody innovation and sustainability. Innovation for the purposes of this RFA is defined as the process of making changes; a new method, custom or device. Innovative research can take the form of wholly new applications or applications that build on existing knowledge and approaches for new uses. Research proposals must include a discussion on how the proposed research is innovative (see Section IV.C.5.a). The concept of sustainability is based on language in the U.S. National Environmental Policy Act of 1969 (NEPA). This definition is reiterated in Executive Order 13514, Federal Leadership in Environment, Energy, and Economic Performance, stating that the goal of sustainability is to, “create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations.” Research proposals must include a discussion on how the proposed research will seek sustainable solutions that protect the environment and strengthen our communities (see Section IV.C.5.a). ORD will draw from all of the above-mentioned innovation and sustainability definitions in the review/evaluation process of recommending research proposals (see Sections V.A and V.B).

Review criteria specific to the P3 Program are presented in Sections V.A. and V.B.

F. References

Journals

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Lakhtakia, A. & Martín-Palma, R.J. (Eds.) 2013. Engineered Biomimicry. Elsevier. ISBN: 978-0-12-415995-2. Engineered Biomimicry (E-book)

McDonough, W. & Braungart, M. 2013. The Upcycle: Beyond Sustainability—Designing for Abundance. North Point Press. ISBN 978-086547748

World Commission on Environment and Development. 1987. *Our Common Future.* Oxford: Oxford University Press.

G. Special Requirements

Agency policy and ethical considerations prevent EPA technical staff and managers from providing applicants with information that may create an unfair competitive advantage. Consequently, EPA employees will not review, comment, advise, and/or provide technical assistance to applicants preparing applications in response to EPA RFAs. EPA employees cannot endorse any particular application.

P3 Award projects (both Phase I & II) will not accommodate a Multiple PI application. P3 Award projects should be submitted as a single Lead PI application.

These awards may involve the collection of “Geospatial Information,” which includes information that identifies the geographic location and characteristics of natural or constructed features or boundaries on the Earth or applications, tools, and hardware

associated with the generation, maintenance, or distribution of such information. This information may be derived from, among other things, a Geographic Positioning System (GPS), remote sensing, mapping, charting, and surveying technologies, or statistical data.

A P3 project may involve intellectual property (IP). If that is the case, P3 teams are encouraged to ensure that their institution's technology transfer office reviews any IP-related materials before making them public. This is to ensure that any concerns related to patent filings or adjustments to IP strategies, if needed, can be addressed prior to any public display.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. There are many scientific and ethical considerations that must be addressed in such studies by the study sponsor and research team, including, but not limited to, those related to recruitment, retention, participant compensation, third-party issues, researcher-participant interactions, researcher-community interactions, communications, interventions, and education. All such research must comply with the requirements of 40 CFR Part 26, and any human observational exposure studies must also adhere to the principles set forth in the Scientific and Ethical Approaches for Observational Exposure Studies (SEAOES) (PDF) (132 pp, 1.79 MB) "document. SEAOES, which was published by researchers in EPA and which discusses the principles for the ethical conduct of human research studies, serves as a resource for applicants interested in applying under this solicitation. References to "SEAOES Principles" in this solicitation refers, in general, to the issues of interest in conducting human subjects research studies that maintain the highest scientific and ethical standards and safety during the conduct of these studies. All applications must include a Human Subjects Research Statement (HSRS; described in Section IV.C.5.b of this solicitation) and if the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.C and V.D of this solicitation.

Groups of two or more eligible applicants may choose to form a consortium and submit a single application for this assistance agreement. The application must identify which organization will be the recipient of the assistance agreement and which organizations(s) will be subawardees of the recipient.

II. AWARD INFORMATION

It is anticipated that a total of approximately $975,000 will be awarded under this announcement for Phase I and Phase II grant awards, depending on the availability of funds, quality of applications received, and other applicable considerations. The EPA anticipates funding approximately 35 grants for Phase I under this RFA. The projected EPA award amount for each Phase I grant is up to $15,000 for its one year duration. Requests for amounts in excess of a total of $15,000, including direct and indirect costs, will not be considered. The total project period for an application submitted for a Phase I grant may not exceed one year.

Based on the completed Phase I project/design, the Phase II proposal to further develop and demonstrate the sustainability project/design created in Phase I, and the reviews from the reviewers, EPA will select approximately six P3 Award winners from among recipients of Phase I funding, depending on the availability of funds and other applicable considerations. These P3 Award winners will be eligible to receive additional Phase II funding of up to $75,000 each. Proposals for Phase II grants with total budget requests exceeding $75,000, including direct and indirect costs, will not be considered. The total project period for a Phase II grant may not exceed two years.

The EPA reserves the right to reject all applications and make no awards, or make fewer awards than anticipated, under this RFA. The EPA reserves the right to make additional awards under this announcement, consistent with Agency policy, if additional funding becomes available after the original selections are made. Any additional selections for awards will be made no later than six months after the original selection decisions.

In appropriate circumstances, EPA reserves the right to partially fund proposals/applications by funding discrete portions or phases of proposed projects. If EPA decides to partially fund a proposal/application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal/application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process.

EPA intends to award only grants under this announcement. Under a *grant,* EPA scientists and engineers are not permitted to be substantially involved in the execution of the research. However, EPA encourages interaction between its own laboratory scientists and grant Principal Investigators after the award of an EPA grant for the sole purpose of exchanging information in research areas of common interest that may add value to their respective research activities. This interaction must be incidental to achieving the goals of the research under a grant. Interaction that is “incidental” does not involve resource commitments.

III. ELIGIBILITY INFORMATION

A. Eligible Applicants

Public nonprofit institutions/organizations (limited to degree-granting public institutions of higher education) and private nonprofit institutions/organizations (limited to degree-granting private institutions of higher education) located in the U.S. (includes eligible institutions of higher education located in U.S. territories and possessions) are eligible to apply to be the recipient of a grant to support teams of undergraduate and/or graduate students. Profit-making firms are not eligible to receive assistance agreements from the EPA under this program.

The students on the teams supported by the institution receiving the grant must be

enrolled in the college, university, or post-secondary educational institution they will be representing at the time the proposal is submitted. Institutions are allowed to submit more than one application where each application represents a unique design concept and student team. For the purposes of grant administration, the team's faculty advisor will be designated the Principal Investigator throughout the P3 grant award and competition process. In addition to the Principal Investigator, each team selected for award will also be asked to provide contact information for a student lead.

Eligible nonprofit organizations include research institutes, corporations, or foundations that are part of a U.S. institution of higher education. However, nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code that lobby are not eligible to apply.

Foreign governments, international organizations, and non-governmental international organizations/institutions are not eligible to apply.

National laboratories funded by Federal Agencies (Federally-Funded Research and Development Centers, "FFRDCs") may not apply. FFRDC employees may cooperate or collaborate with eligible applicants within the limits imposed by applicable legislation and regulations. They may participate in planning, conducting, and analyzing the research directed by the applicant, but may not direct projects on behalf of the applicant organization. The institution, organization, or governance receiving the award may provide funds through its assistance agreement from the EPA to an FFRDC for supplies, equipment, and other expenses directly related to the research. However, salaries for permanent FFRDC employees may not be provided through this mechanism.

Federal Agencies may not apply. Federal employees are not eligible to serve in a principal leadership role on an assistance agreement, and may not receive salaries or augment their Agency's appropriations in other ways through awards made under this program.

The applicant institution may enter into an agreement with a Federal Agency to purchase or utilize unique supplies or services unavailable in the private sector. Examples are purchase of satellite data, chemical reference standards, analyses, or use of instrumentation or other facilities not available elsewhere. A written justification for federal involvement must be included in the application. In addition, an appropriate form of assurance that documents the commitment, such as a letter of intent from the Federal Agency involved, should be included.

Potential applicants who are uncertain of their eligibility should contact Ron Josephson (josephson.ron@epa.gov) in NCER, phone: 703-308-0442.

B. Cost-Sharing

Institutional cost-sharing is not required for Phase I or Phase II.

C. Other

Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this announcement or they will be rejected. In addition, where a page limitation is expressed in Section IV with respect to parts of the application, pages in excess of the page limit will not be reviewed. In addition, applications must be submitted through Grants.gov as stated in Section IV of this announcement (except in the limited circumstances where another mode of submission is specifically allowed for as explained in Section IV) on or before the application submission deadline published in Section IV of this announcement. Applicants are responsible for following the submission instructions in Section IV of this announcement (see Section IV.F. "Submission Instructions and Other Submission Requirements" for further information) to ensure that their application is timely submitted. Applications submitted after the submission deadline will be considered late and deemed ineligible without further consideration unless the applicant can clearly demonstrate that it was late due to EPA mishandling or because of technical problems associated with Grants.gov or relevant SAM.gov system issues. An applicant's failure to timely submit their application through Grants.gov because they did not timely or properly register in SAM.gov or Grants.gov will not be considered an acceptable reason to consider a late submission. Applicants should confirm receipt of their application with the Electronic Submissions Contact shown in this solicitation as soon as possible after the submission deadline—failure to do so may result in your application not being reviewed.

Also, applications exceeding the funding limits or project period term described herein will be rejected without review. Further, applications that fail to demonstrate a public purpose of support or stimulation (e.g., by proposing research which primarily benefits a Federal program or provides a service for a Federal agency) will not be funded.

Applications deemed ineligible for funding consideration will be notified within fifteen calendar days of the ineligibility determination.

As mentioned above, the competitors for the Phase II P3 Awards for further development and demonstration will be limited to those selected to receive support as a result of the competition under this RFA (Phase I).

IV. APPLICATION AND SUBMISSION INFORMATION

Additional provisions that apply to this solicitation and/or awards made under this solicitation, including but not limited to those related to confidential business information, contracts and subawards under grants, and proposal assistance and communications, can be found at EPA Solicitation Clauses

These, and the other provisions that can be found at the website link, are important, and applicants must review them when preparing applications for this solicitation. If you are unable to access these provisions electronically at the

website above, please communicate with the EPA contact listed in this solicitation to obtain the provisions.

Formal instructions for submission through Grants.gov are in Section F.

A. Grants.gov Submittal Requirements and Limited Exception Procedures
Applicants, except as noted below, must apply electronically through Grants.gov under this funding opportunity based on the Grants.gov instructions in this announcement. If an applicant does not have the technical capability to apply electronically through Grants.gov because of limited or no internet access which prevents them from being able to upload the required application materials to Grants.gov, the applicant must contact OGDWaivers@epa.gov or the address listed below in writing (e.g., by hard copy, email) *at least 15 calendar days prior to the submission deadline under this announcement* to request approval to submit their application materials through an alternate method.

Mailing Address:
OGD Waivers
c/o Barbara Perkins
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N. W.
Mail Code: 3903R
Washington, DC 20460

Courier Address:
OGD Waivers
c/o Barbara Perkins
Ronald Reagan Building
1300 Pennsylvania Ave., N.W.
Rm # 51267
Washington, DC 20004

In the request, the applicant must include the following information:
Funding Opportunity Number (FON)
Organization Name and DUNS
Organization's Contact Information (email address and phone number)

Explanation of how they lack the technical capability to apply electronically through Grants.gov because of: 1) limited internet access or 2) no internet access which prevents them from being able to upload the required application materials through Grants.gov.

EPA will only consider alternate submission exception requests based on the two reasons stated above and will timely respond to the request -- all other requests will be denied. If an alternate submission method is approved, the applicant will receive documentation of

this approval and further instructions on how to apply under this announcement. Applicants will be required to submit the documentation of approval with any initial application submitted under the alternative method. In addition, any submittal through an alternative method must comply with all applicable requirements and deadlines in the announcement including the submission deadline and requirements regarding proposal content and page limits (although the documentation of approval of an alternate submission method will not count against any page limits).

If an exception is granted, it is valid for submissions to EPA for the remainder of the entire calendar year in which the exception was approved and can be used to justify alternative submission methods for application submissions made through December 31 of the calendar year in which the exception was approved (e.g., if the exception was approved on March 1, 2015, it is valid for any competitive or non-competitive application submission to EPA through December 31, 2015). Applicants need only request an exception once in a calendar year and all exceptions will expire on December 31 of that calendar year. Applicants must request a new exception from required electronic submission through Grants.gov for submissions for any succeeding calendar year. For example, if there is a competitive opportunity issued on December 1, 2015 with a submission deadline of January 15, 2016, the applicant would need a new exception to submit through alternative methods beginning January 1, 2016.

Please note that the process described in this section is only for requesting alternate submission methods. All other inquiries about this announcement must be directed to the Agency Contact listed in Section VII of the announcement. Queries or requests submitted to the email address identified above for any reason other than to request an alternate submission method will not be acknowledged or answered.

B. Application Package Information

Use the application package available at Grants.gov (see Section IV.F. “Submission Instructions and Other Submission Requirements”). Note: With the exception of the current and pending support form (available at How to Apply and Required Forms), all necessary forms are included in the electronic application package. Make sure to include the current and pending support form in your Grants.gov submission.

An email will be sent by NCER to the PI and the Administrative Contact (see below) to acknowledge receipt of the application and transmit other important information. The email will be sent from receipt.application@epa.gov; emails to this address will not be accepted. *If you do not receive an email acknowledgement within 10 calendar days of the submission closing date, immediately inform the Electronic Submissions Contact shown in this solicitation. Failure to do so may result in your application not being reviewed.* See Section IV.F. “Submission Instructions and Other Submission Requirements” for additional information regarding the application receipt acknowledgment.

C. Content and Form of Application Submission

The application is made by submitting the materials described below.Applications must contain all information requested and be submitted in the formats described.

1. Standard Form 424

   The applicant must complete Standard Form 424. Instructions for completion of the SF424 are included with the form. (However, note that EPA requires that the entire requested dollar amount appear on the SF424, not simply the proposed first year expenses.) The form must contain the signature of an authorized representative of the applying organization.

   Applicants are required to provide a unique entity identifier when applying for federal grants or cooperative agreements. Organizations may receive a unique entity identifier, at no cost, by calling the dedicated toll-free request line at 1-866-705-5711, or visiting the website at: Dun & Bradstreet .

   Executive Order 12372, "Intergovernmental Review of Federal Programs," does not apply to the Office of Research and Development's research and training programs unless EPA has determined that the activities that will be carried out under the applicants' proposal (a) require an Environmental Impact Statement (EIS), or (b) do not require an EIS but will be newly initiated at a particular site and require unusual measures to limit the possibility of adverse exposure or hazard to the general public, or (c) have a unique geographic focus and are directly relevant to the governmental responsibilities of a State or local government within that geographic area.

   If EPA determines that Executive Order 12372 applies to an applicant's proposal, the applicant must follow the procedures in 40 CFR Part 29. The applicant must notify their state's single point of contact (SPOC). To determine whether their state participates in this process, and how to comply, applicants should consult Intergovernmental Review (SPOC List). If an applicant is in a State that does not have a SPOC, or the State has not selected research and development grants for intergovernmental review, the applicant must notify directly affected State, area wide, regional and local entities of its proposal.

   EPA will notify the successful applicant(s) if Executive Order 12372 applies to its proposal prior to award.

2. Key Contacts

   The applicant must complete the "Key Contacts" form found in the Grants.gov application package. An "Additional Key Contacts" form is also available at How to Apply and Required Forms. The Key Contacts form should also be completed for major sub-agreements (i.e., primary investigators). Do not include information for consultants or

other contractors. Please make certain that all contact information is accurate..

3. Table of Contents

Provide a list of the major subdivisions of the application indicating the page number on which each section begins.

4. Abstract (2 pages)

The abstract is a very important document in the review process. Therefore, it is critical that the abstract accurately and understandably describe the research or new design concept being proposed and convey all the essential elements of the proposed project. Abstracts of applications that receive funding will be posted on the NCER web site.

The abstract should include the information described below (a-k). Examples of abstracts for previous P3 grants may be found on the P3 web site.

a. Funding Opportunity Number(s) and Research Area(s): Enter the full name of the solicitation *(13th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet)* and the funding opportunity number and associated research area under which you are submitting your proposal. The funding opportunity numbers and their associated research areas are listed at the beginning of this announcement, in Section I.E. above, and in Section IV.C.9.b below.

   Please note: Include the Funding Opportunity Number to which the proposal is being submitted in the upper right side of the "header" of the Abstract page. Each application must be submitted using a single FON.

b. Project Title: Use the exact title of your project as it appears in the application. The title must be brief (50 characters, including spaces) yet represent the major thrust of the project. Because the title will be used by those not familiar with the project, use more commonly understood terminology. Do not use general phrases such as "research on."

c. Principal Investigator (P.I.): This person will serve as the faculty advisor for the P3 student team. List the name of the PI and then the names and affiliations of any co-investigators/advisors who will significantly contribute to the project. Provide a web site URL or an email contact address for each investigator.

d. Student Team. If student investigators are known at the time of the proposal, list them, indicate whether each student is an undergraduate or graduate student, and indicate the expertise they will contribute to the P3 team. If student investigators are

not yet known, provide a brief explanation of how and when the P3 student team will be formed and the areas of expertise to be recruited for the team.

e. Institution(s): In the same order as the list of investigators, list the name, city and state of each participating university or other applicant institution. The institution applying for assistance must be clearly identified.

f. Student Represented Departments and Institutions: List the departments and institutions that will be represented by the students participating on the team.

g. Project Period and Location: Show the proposed project beginning and ending dates. Projects will generally begin in August/September 2016. Also provide the performance sites/geographical location(s) where the work will be conducted.

h. Proposed EPA Project Cost: Show the total dollars requested from the EPA, including direct and indirect costs. (This cannot exceed $15,000.)

i. Project Summary: Provide the following three subsections:

- Objective: Provide a definition of the technical challenge to sustainability, describe how the proposed design approach will address the challenge, and identify the innovative scientific or technical aspects of the proposal.
- Description: Describe the project/design and how it relates to the three aspects of sustainability: people, prosperity and the planet. Also identify how the P3 Project will provide education about the concepts of sustainability at the university or community level.
- Results: Identify the expected outputs/outcomes of the project and provide a description of the strategy for measuring results, evaluation and demonstration.

j. Contribution to Pollution Prevention or Control: Provide a brief statement describing how the proposed project/design will further the goals of pollution prevention and/or control.

k. Supplemental Keywords: Without duplicating terms already used in the text of the abstract, list keywords to assist database searchers in finding your research. A list of suggested keywords may be found in the P3 Abstract format provided at: How to Apply and Required Forms.

5. Research Plan, Human Subjects Research Statement, and References

a. Research Plan (12 pages)

Note: Please review the Evaluation Criteria presented in Section V.A. to ensure that

your proposal addresses all of the criteria against which it will be evaluated by the external and internal reviewers.

This plan must not exceed twelve (12) consecutively numbered (bottom center) 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. While these guidelines establish the minimum type size requirements, applicants are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the plan.

Divide your research plan into the following sections and label accordingly.

Section 1: Proposed Research

a. Challenge Definition
   - Identify the technical challenge to achieving sustainability the team will research.
   - Identify the research project's innovative aspects by describing how it shifts current research or engineering paradigms by using innovative theoretical concepts, approaches or methodologies, instrumentation or interventions applicable to one or more fields of research. Where appropriate, put the research in the context of current approaches (e.g., provide a literature review).

b. Research Description
   - Describe the research and its goals and objectives.
   - Explain the underlying scientific/technical soundness.
   - Explain the plan for engaging intended end users.
   - State how the research relates to pollution prevention/control or link it to one of EPA's authorizing statutes provided in Section I.C.
   - If appropriate, identify any existing or potential partnerships*.

c. Results (outputs/outcomes), Evaluation and Demonstration
   - Describe the expected outputs and the potential outcomes to society, the economy and the environment (See Section I.D.).
   - Describe how progress toward achieving the expected outputs and outcomes will be tracked and measured.

Section 2: Relationship of Challenge to Sustainability (People, Prosperity and the Planet)

- Describe how your project embodies the principles of sustainability and seeks sustainable solutions that protect the environment and strengthen our communities. The Sustainability Primer (PDF) (2 pp, 195 K) provides examples of

research activities that promote and incorporate sustainability principles.
- Describe how the proposed environmental and economic outcomes could benefit the intended users and/or society more generally.
- Describe the potential for implementation, adoption, concept transferability, and long-term viability of the research.

Section 3: Project Management

- Provide schedules for key milestones and project tasks, including partner activities as appropriate.
- Provide the areas of expertise/experience to be represented on the student team.
- Discuss facilities and other resources available for the project.
- Detail how project objectives will be successfully achieved within the grant period and describe the approach, procedures and controls for ensuring that grant funds will be expended in a timely and efficient manner.

Section 4: Educational and Interdisciplinary Aspects of Research

- Identify the educational benefits of the research. (Will it be used to teach sustainability principles, promote sustainability practices in a community, and teach team members how to apply sustainability principles or all of the above?)
- Clearly identify the planned mix of disciplines to be represented on the team.

* Partnerships are strongly encouraged and will be particularly important for the demonstration strategies. While formal partnerships need not be established prior to submitting the proposal, indicate any and all anticipated partnerships including the type of partner (educational institution, industry and/or NGOs). Formal letters of understanding or commitment from any and all partners should be submitted in support of the application, when available and appropriate and will be considered letters of intent/support as described in Section IV.C.9.a. below.

b. EPA Human Subjects Research Statement (HSRS) (4 pages)

Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women, and children at subparts B, C, and D. While retaining the same notation, subparts B, C, and D are substantively different in 40 CFR 26 than in the more commonly cited 45 CFR 46. Particularly noteworthy is that research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women, and children. EPA Policy Order 1000.17 Change A1 further clarifies this definition to include any intervention that manipulates their environment (i.e. modifies subjects' exposure).

Research meeting the regulatory definition of observational research (any research that is not intentional exposure research) found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). These subparts also differ markedly from the language in 45 CFR 46. For more information, please see: Basic Information about Human Subjects Research.

Procedures for the review and oversight of human research subject to 40 CFR Part 26 are also provided in EPA Order 1000.17 Change A1 (PDF) (41 pp, 301 K). These include review of projects for EPA-supported human research by the EPA Human Subjects Research Review Official (HSRRO). EPA Order 1000.17 Change A1 requires preliminary approval by the HSRRO of all proposed EPA-supported human research before the agreement can be entered into. Additional requirements must be met and final approval received from the HSRRO before the research can begin. When reviewing human observational exposure studies, EPA Order 1000.17 Change A1 requires the HSRRO to apply the principles described in the SEAOES (PDF) (132 pp, 1.79 MB) "document and grant approval only to studies that adhere to those principles.

All applications submitted under this solicitation must include a HSRS as described below. Please use the definitions below to determine whether the proposed research involves human subjects, and then prepare a HSRS as explained below in the “HSRS Requirements” section.

Definitions (from 40 CFR Part 26 Subparts A, B, and C) to determine the involvement of human subjects in proposed research:

- "Human subject" means a living individual about whom an investigator (whether professional or student) conducting research obtains (1) data through intervention or interaction with the individual, or (2) identifiable private information.
- "Intervention" includes both physical procedures by which data are gathered and manipulations of the subject or the subject's environment that are performed for research purposes.
- "Interaction" includes communication or interpersonal contact between investigator and subject.
- "Private information" includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and which the individual can reasonably expect will not be made public (for example, a medical record).
- "Individually identifiable" means the identity of the subject is or may readily be ascertained by the investigator or associated with the information.
- "Research involving the intentional exposure of a human subject" means a study of a substance in which the exposure to the substance experienced by a human

subject participating in the study would not have occurred but for the human subject's participation in the study. In addition, EPA Policy 1000.17 Change A1 requires the HSRRO to conceptualize intentional exposure research quite broadly:

(1)Research that includes the gathering of physiological measurements (e.g. monitoring a subject's cardio respiratory performance) or the collection of body fluids, tissue or expired air from subjects; or (2) Research that requires subjects to perform specific tasks other than their normal activities or manipulates their environment (e.g., modifies their exposure); or (3) Research that gathers or records private information (as defined in 40 CFR 26.102 (f)(2)) in a manner that associates such information with an identifiable subject.

- "Observational research" means any human research that does not meet the definition of research involving intentional exposure of a human subject. Please note that surveys, interviews, and focus groups with individuals may constitute human subjects research. Additional information is available at: Basic Information about Human Subjects Research

Human Subjects Research Statement (HSRS) Requirements

If the proposed research does not involve human subjects as defined above, provide the following statement in your application package as your HSRS: "The proposed research does not involve human subjects." Applicants should provide a clear justification about how the proposed research does not meet the definition (for example, all samples come from deceased individuals OR samples are purchased from a commercial source and provided without identifiers, etc.).

If the proposed research does involve human subjects, then include in your application package a HSRS that addresses each applicable section listed below, referencing the specific location of the information in the Research Plan, providing the information in the HSRS, or explaining why the section does not apply to the proposed research. (Not all will apply.) Please use the definitions provided above to ensure consistency in the interpretation of terminology. Do not exceed four consecutively numbered, 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

NOTE: Before EPA approves any research involving human subjects, the requirements of the regulations at 40 CFR Part 26 must be met. Also, before EPA approves human observational exposure research, EPA will examine it to ensure consistency with the SEAOES Principles. The federal Office for Human Research Protections requires that federally funded human subjects research only be conducted at facilities covered by a Federalwide Assurance (FWA). An FWA is a document that designates the Institutional Review Board that will review and oversee the research, specifies the ethical principles under which the research will be conducted, and names the individuals who will be responsible for the proper conduct

of the research. The factors below are not intended to be exhaustive of all those needed for the HSRRO to provide the final approval necessary for research to be conducted, but provide a basis upon which the HSRRO may grant the conditional approval necessary for the funding process to begin.

Items 1 – 9 must be completed for all studies involving human subjects. For studies involving intentional exposures (i.e. increases, decreases, or otherwise modifies subjects' exposure), also complete Items 10 –14.

1. Human Subjects involvement, characteristics, and design: Describe the proposed involvement of human subjects in the work being proposed.
2. Benefits of research/value to society: Discuss the potential benefits of the research to the research participants and others, including the value of the knowledge to be gained by the research.
3. Potential risks to subjects: Describe the potential risks to human subjects (e.g., physical, psychological, financial, legal, or other) and assess their likelihood and seriousness to the human subjects.
4. Protection against risks: Describe planned procedures for protecting against or minimizing potential risks and assess their likely effectiveness.
5. Protection of privacy and confidentiality: Describe how data, specimens, and/or records will be collected, managed, and protected, including at collaborating sites, if any, as well as at the primary site.
6. Protection of vulnerable groups: Explain the rationale for inclusion of vulnerable populations and describe the additional protections in place, if any, for protecting vulnerable populations in the research.
7. Risk/benefit relationship: Justify how the risks are reasonable in relation to expected benefits.
8. Informed Consent Process: Describe planned procedures for the process of obtaining and maintaining informed consent. Include a description of the circumstances under which consent will be sought and obtained, who will seek it, the nature of the information to be provided to prospective subjects, and the method of documenting consent.
9. Relationship between researcher and community: If the research will take place in a community setting, describe the procedures in place for defining the community, obtaining its involvement in the research, and establishing and maintaining trust.

Items 10–14: Projects involving the intentional exposure (i.e. increases, decreases, or otherwise modifies subjects' exposure) of human subjects require additional justification. Note that intentional exposure of children, pregnant women or nursing women is prohibited, according to 40 CFR Part 26, subpart B. Please refer to the definition of "intentional exposure" described earlier in this section.

Please also note that projects involving intentional exposure of human subjects should only be considered if they have the potential of providing a clear health or environmental benefit or if acquisition of such information is not obtainable by any other means. In no case should the exposure cause lasting harm to study participants.

Provide the following for intentional exposure studies:

10. Justification for exposure: Please provide the scientific background and rationale for the study design, subject selection, and value of the study to public health. Include any information about previous animal studies and (if available) human observational studies that justify the need for exposure research.
11. Participant Selection and Informed Consent: Describe how subjects will be recruited for the study and how both participant selection and the informed consent process described earlier conform to best practices in exposure research.
12. Compensation for Research Participation: Describe the amount of compensation being offered to participants, as well as the distribution plan, and justify these practices with respect to best practices in exposure research.
13. Compensation for Research-Related Injury: Discuss how you plan to ensure that participants receive needed medical care for injuries incurred in the study, without cost to the participants.
14. Appropriate Review and Oversight: Describe the constitution of the IRB that will review this research and defend its ability to consider whether the study(ies) has the potential of providing a clear health or environmental benefit to the community. In addition, describe the procedures for reporting adverse events or unanticipated problems to the IRB, as well as how these events will be analyzed with respect to risk to subjects.

The EPA HSRRO must also consider the following items to determine if the necessary conditions for scientifically and ethically acceptable intentional human dosing studies have been satisfied in order to approve intentional exposure research:

- prior animal studies and, if available, human observational studies;
- a demonstrated need for the knowledge to be obtained from intentional human dosing studies;
- justification and documentation of a research design and statistical analysis that are appropriate to address an important scientific question, including adequate power to detect appropriate effects;
- an acceptable balance of risks and benefits, and minimization of risks to participants;
- equitable selection of participants;
- free and informed consent of participants; and
- review by an appropriately constituted IRB.

c. References

References cited are in addition to other page limits (e.g. research plan, human subjects research statement).

6. Budget and Budget Justification

a. Budget

Prepare a master budget table using "SF-424A Budget Information for Non-Construction Programs" (aka SF-424A), available in the Grants.gov electronic application package and also at How to Apply and Required Forms. Only complete "Section B–Budget Categories". Provide the object class budget category (a. - k.) amounts under the "Grant Program, Function or Activity" heading. Each column reflects a separate budget year. Since P3 Phase I grants are one-year grants you will only need to fill in the Year 1 column which will automatically be copied into the total budget column (Column 5).

If a subaward is included in the application, provide a separate SF-424A and budget justification for the subaward. Include the total amount for the subaward under "Other" in the master SF-424A.

Applicants may not use subagreements to transfer or delegate their responsibility for successful completion of their EPA assistance agreement. Therefore, EPA expects that subawards or subcontracts should not constitute more than 40% of the total direct cost of the total project budget. If a subaward/subcontract constitutes more than 40% of the total direct cost, additional justification may be required before award, discussing the need for the subaward/subcontract to accomplish the objectives of the research project. Please refer to EPA Solicitation Clauses if your organization intends to identify specific contractors, including consultants, and subawardees in your proposal.

Please note that institutional cost-sharing is not required.

The budget must include expenses for the P3 team, or representatives of the P3 team, to travel in the spring of 2017 to the Washington, DC metropolitan area to present their research.

b. Budget Justification *[2 pages in addition to the Section IV.C.5. page limitations, not including additions under No. (7) below to support subawards]*

Describe the basis for calculating the travel, equipment, supplies, contractual

support, and other costs identified in the SF-424A. The budget justification should not exceed two consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

Budget information should be supported at the level of detail described below:

1. Personnel: Personnel costs are not eligible under this solicitation.

2. Fringe Benefits: Fringe benefits are not eligible under this solicitation.

3. Travel: Be certain to include travel costs for an estimated number of P3 team members to travel to the Washington DC metropolitan area to present their research in the spring of 2017. Specify the estimated number of trips, purpose of each trip, number of travelers per trip, destinations, and other costs for each type of travel. Explain the need for any travel, paying particular attention to travel outside the United States.

   Below is a sample computation for Travel:

Purpose of Travel	Location	Item	Computation	Cost
EPA P3 Travel	DC	Lodging	4 people x $100 per night x 2 nights	$800
		Airfare	4 people x $500 round trip	$2,000
		Per Diem	4 people x $50 per day x 2 days	$400
Total Travel				$3,200

4. Equipment: Identify all tangible, non-expendable personal property to be purchased that has an estimated cost of $5,000 or more per unit and a useful life of more than one year. Details such as the type of equipment, cost, and a brief narrative on the intended use of the equipment for project objectives are required. Each item of equipment must be identified with the corresponding cost. General-purpose equipment (office equipment, etc.) must be justified as to how it will be used on the project. (Property items with a unit cost of less than $5,000 are considered supplies.)

5. Supplies: “Supplies” means tangible property other than “equipment.” Identify supplies to be used under the project. This may include: software, office supplies, and laboratory supplies such as reagents, chemicals and glassware. Specifically identify computers to be purchased or upgraded.

6. Contractual: Specify the amount you anticipate expending for services/analyses or consultants and specify the purpose of the contracts and estimated cost. Any procurement of services from individual consultants or commercial firms

(including space for workshops) must comply with the competitive procurement requirements of 2 CFR Part 200.317–200.326. Please see EPA Solicitation Clauses for more details.

Examples of Contractual costs include:

i. Consultants – Consultants are individuals with specialized skills who are paid at a daily or hourly rate. EPA's participation in the salary rate (excluding overhead) paid to individual consultants retained by recipients or by a recipient's contractors or subcontractors is limited to the maximum daily rate for a Level IV of the Executive Schedule (formerly GS-18), to be adjusted annually.
ii. Equipment Rental – When there is a need to rent equipment for use on the project, provide information on the type of equipment to be rented, the purpose or use on the project, the length of time needed and the rental rate. Renting or leasing of equipment will require a lease vs. purchase cost analysis prior to approval.
iii. Facility Rental – When it is necessary to rent office or other facilities spaces for project implementation, and the space(s) are located off-site from the organization's main facility in space not owned by the applicant organization, the cost of the rent may be charged against the award as a contractual expense if the space is used specifically for the project. The budget justifications should provide details on the monthly rental charge and if the rent is pro-rated to the project.
iv. Service or Maintenance Contracts – Costs should be in direct correlation to the use of the equipment for the project (i.e., if a particular machine is used 50% of the time for the project, the project should only be charged 50% of the service/maintenance costs). Provide details of the type of equipment and the amount of the service contract to be paid from EPA funds.
v. Speaker/Trainer Fees – Information on speakers should include the fee and a description of the services they are providing.

7. Other: List each item in sufficient detail for the EPA to determine the reasonableness of its cost relative to the research to be undertaken. "Other" items may include publication costs, long distance telephone charges, and photocopying costs. Note that subawards, such as those with other universities for members of the research team, are included in this category. Subawards must have a separate SF-424A and budget justification, not to exceed one additional page each. Subawards may not be used to acquire services from consultants or commercial firms. Please see EPA Solicitation Clauses for more details.

8. Indirect Costs: Indirect costs are those incurred by the applicant for a common or joint purpose that benefit more than one cost objective or project, and are not

readily assignable to specific cost objectives or projects as a direct cost. In order for indirect costs to be allowable, the applicant must have a negotiated indirect cost rate (e.g., fixed, predetermined, final or provisional), or must have submitted a proposal to their cognizant agency. If indirect costs are included in the budget, identify the cognizant agency and the approved indirect rate. If your organization does not have a cognizant agency, please note that in the budget justification and provide a brief explanation for how you calculated your indirect cost rate.

7. Resumes

Provide resumes for each investigator and important co-worker. You may include resumes from staff of subawardees such as universities. Do not include resumes of consultants or other contractors. The resume is not limited to traditional materials, but should provide materials to clearly and appropriately demonstrate that the investigator has the knowledge needed to perform their component of the proposed research. The resume for each individual must not exceed two consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

Alternative to a standard resume, you may use a profile such as an NIH BioSketch that can be generated in SciENcv (see Federal-Wide Researcher Profile Project for information on SciENcv; also see My NCBI Curriculum Vitae Web Application: SciENcv). These materials should generally conform to the requirements for a resume (e.g., content and page number).

8. Current and Pending Support

Complete a current and pending support form (provided at How to Apply and Required Forms) for each investigator and important co-worker. Do not include current and pending support for consultants or other contractors. Include all current and pending research regardless of source.

Note to all prospective applicants requiring multiple Current and Pending Support Form pages: Due to a limitation in Adobe Acrobat's forms functionality, additional pages cannot be directly inserted into the original PDF form and preserve the form data on the subsequent pages. Multiple page form submissions can be created in Acrobat 8 and later using the "PDF Package" option in the "Create PDF from Multiple Files" function. If you have an earlier version of Adobe Standard or Professional, applicants will need to convert each PDF page of the form to an EPS (Encapsulated Post Script) file before creating the PDF for submission. The following steps will allow applicants with earlier versions of Adobe Standard or Professional to create a PDF package:

1. Populate the first page of the PDF, and save it as a EPS (Encapsulated Post Script) file.
2. Reopen the form, and populate it with the data for page 2. Save this page as a different EPS file. Repeat for as many pages as necessary.
3. Use Acrobat Distiller to convert the EPS files back to PDF.
4. Open Acrobat Professional, and combine the individual pages into a combined PDF file.

9. Guidelines, Limitations, and Additional Requirements

a. Letters of Intent/Letters of Support

Letters of intent to provide resources for the proposed research or to document intended interactions are limited to one brief paragraph committing the availability of a resource (e.g., use of a person's time or equipment) or intended interaction (e.g., sharing of data, as-needed consultation) that is described in the Research Plan. Letters of intent are to be included as an addition to the budget justification documents. EPA employees are not permitted to provide letters of intent for any application.

Letters of support do not commit a resource vital to the success of the proposal. A letter of support is written by businesses, organizations, or community members stating their support of the applicant's proposed project. EPA employees are not permitted to provide letters of support for any application.

Note: Letters of intent or support must be part of the application; letters submitted separately will not be accepted. Any letter of intent or support that exceeds one brief paragraph (excluding letterhead and salutations), is considered part of the Research Plan and is included in the 12-page Research Plan limit. Any transactions between the successful applicant and parties providing letters of intent or support financed with EPA grant funds are subject to the contract and subaward requirements described here EPA Solicitation Clauses.

b. Funding Opportunity Number (FON) and Research Areas

At various places in the application, applicants are asked to identify the FON. Applicants must select the FON corresponding to their proposed research topic area. It is the responsibility of the applicant to identify the proper FON based on the nature of the proposed research. Failure to do so could result in an inappropriate peer review assignment. If your research seems to fit under more than one FON, choose the most appropriate one. Each application must be submitted using a single FON.

The Funding Opportunity Numbers and associated research areas for this RFA are listed below:

13th Annual P3 Awards: A National Student Design Competition for Sustainability Focusing on People, Prosperity and the Planet

- EPA-G2016-P3-Q1 – Energy
- EPA-G2016-P3-Q2 – Built Environment
- EPA-G2016-P3-Q3 – Materials and Chemicals
- EPA-G2016-P3-Q4 – Water

Additional detail for each FON is provided above in Section I.E.

c. Confidentiality

By submitting an application in response to this solicitation, the applicant grants the EPA permission to make limited disclosures of the application to technical reviewers both within and outside the Agency for the express purpose of assisting the Agency with evaluating the application. Information from a pending or unsuccessful application will be kept confidential to the fullest extent allowed under law; information from a successful application may be publicly disclosed to the extent permitted by law.

D. Submission Dates and Times

Applications must be transferred to Grants.gov no later than 11:59:59 pm Eastern Time on the solicitation closing date. Applications transferred after the closing date and time will be returned to the sender without further consideration. EPA will not accept any changes to applications after the closing date.

It should be noted that this schedule may be changed without prior notification because of factors not anticipated at the time of announcement. In the case of a change in the solicitation closing date, a new date will be posted on the NCER web site (Research Funding Opportunities) and a modification posted on Grants.gov.

Solicitation Closing Date: December 08, 2015, 11:59:59 pm Eastern Time (applications *must* be submitted to Grants.gov by this time, see Section IV.F “Submission Instructions and Other Submission Requirements” for further information).

NOTE: Customarily, applicants are notified about evaluation decisions within six months of the solicitation closing date. Awards are generally made 9-12 months after the solicitation closing date.

E. Funding Restrictions

The funding mechanism for all awards issued under the P3 solicitation will consist of assistance agreements from the EPA. All award decisions are subject to the availability of funds. In accordance with the Federal Grant and Cooperative Agreement Act, 31 U.S.C. 6301 et seq., the primary purpose of an assistance agreement is to accomplish a public purpose of support or stimulation authorized by federal statute, rather than acquisition for the direct benefit or use of the Agency. In issuing a grant, the EPA anticipates that there will be no substantial EPA involvement in the design, implementation, or conduct of the research. However, the EPA will monitor research progress through annual reports provided by grantees and other contacts, including site visits, with the Principal Investigator(s).

EPA award recipients may incur allowable project costs 90 calendar days before the Federal awarding agency makes the Federal award. Expenses more than 90 calendar days pre-award require prior approval of EPA. All costs incurred before EPA makes the award are at the recipient's risk. EPA is under no obligation to reimburse such costs if for any reason the recipient does not receive a Federal award or if the Federal award is less than anticipated and inadequate to cover such costs.

If you wish to submit applications for more than one EPA funding opportunity you must ensure that the research proposed in each application is significantly different from any other that has been submitted to the EPA or from any other financial assistance you are currently receiving from the EPA or other federal government agency.

Collaborative applications involving more than one institution must be submitted as a single administrative package from one of the institutions involved.

Each proposed project must be able to be completed within the project period and with the initial award of funds. Applicants should request the entire amount of money needed to complete the project. Recipients should not anticipate additional funding beyond the initial award of funds for a specific project.

F. Submission Instructions and Other Submission Requirements
Please read this entire section before attempting an electronic submission through Grants.gov.

If you do not have the technical capability to utilize the Grants.gov application submission process for this solicitation, see Section IV.A above for additional guidance and instructions.

Note: Grants.gov submission instructions are updated on an as-needed basis. Please provide your Authorized Organizational Representative (AOR) with a copy of the following instructions to avoid submission delays that may occur from the use of outdated instructions.

1. Preparing for Submission. The electronic submission of your application must be made by an official representative of your institution who is registered with Grants.gov and is authorized to sign applications for Federal assistance. For more information on the registration requirements that must be completed in order to submit an application through Grants.gov, go to Grants.gov and click on "Register" at the top right corner of the page. If your organization is not currently registered with Grants.gov, please encourage your office to designate an Authorized Organization Representative (AOR) and ask that individual to begin the registration process as soon as possible. Please note that the registration process also requires that your organization have a unique entity identifier and a current registration with the System for Award Management (SAM) and the process of obtaining both could take a month or more. Applicants must ensure that all registration requirements are met in order to apply for this opportunity through Grants.gov and should ensure that all such requirements have been met well in advance of the submission deadline. Registration on Grants.gov, SAM.gov, and unique entity identifier assignment is FREE.

   To begin the application process under this grant announcement, go to Grants.gov and click on "Applicants" on the top of the page and then "Apply for Grants" from the drop down menu and then follow the instructions accordingly. Please note: To apply through grants.gov, you must use Adobe Reader software and download the compatible Adobe Reader version. For more information about Adobe Reader, to verify compatibility, or to download the free software, please visit Grants.gov Support

   You may also be able to access the application package for this announcement by searching for the opportunity on Grants.gov. Go to Grants.gov and then click on "Search Grants" at the top of the page and enter the Funding Opportunity Number, EPA-G2016-P3-XX, or the CFDA number that applies to the announcement (CFDA 66.516), in the appropriate field and click the Search button. Alternatively, you may be able to access the application package by clicking on the Application Package button at the top right of the synopsis page for the announcement on Grants.gov. To find the synopsis page, go to Grants.gov and click "Browse Agencies" in the middle of the page and then go to "Environmental Protection Agency" to find the EPA funding opportunities.

2. Acknowledgement of Receipt. The complete application must be transferred to Grants.gov no later than 11:59:59 pm Eastern Time on the solicitation closing date (see "Submission Dates and Times"). Applications submitted through Grants.gov will be time and date stamped electronically. Grants.gov provides an on-screen notification of successful initial transfer as well as an email notification of successful transfer from Grants.gov to EPA. While it is advisable to retain copies of these Grants.gov acknowledgements to document submission, *the only official documentation that the application has been received by NCER is the email*

acknowledgement sent by NCER to the PI and the Administrative Contact. This email will be sent from receipt.application@epa.gov; emails to this address will not be accepted. *If an email acknowledgment from* receipt.application@epa.gov *has not been received within 10 calendar days of the solicitation closing date, immediately inform the Electronic Submissions Contact shown in this solicitation. Failure to do so may result in your application not being reviewed.*

3. Application Package Preparation. Your organization's AOR must submit your complete application package electronically to EPA through Grants.gov no later than December 08, 2015, 11:59:59 pm Eastern Time. Please allow for enough time to successfully submit your application and allow for unexpected errors that may require you to resubmit.

   Please submit all of the application materials described below using the grants.gov application package that you downloaded using the instructions above. For additional instructions on completing and submitting the electronic application package, click on the "Show Instructions" tab that is accessible within the application package itself.

   The application package consists of the following mandatory documents.

   a. Application for Federal Assistance (SF 424): Complete the form except for the "competition ID" field.
   b. EPA Key Contacts Form 5700-54: Complete the form. If additional pages are needed, see (d) below.
   c. SF-424A Budget Information for Non-Construction Programs: Only complete "Section B-Budget Categories". Provide the object class budget category (a. - k.) amounts for each budget year under the "Grant Program, Function or Activity" heading. Each column reflects a separate budget year.
   d. Project Narrative Attachment Form (click on "Add Mandatory Project Narrative"): Attach a single electronic PDF file labeled "Application" that contains the items described in Section IV.C.3. through IV.C.9.a (Table of Contents, Abstract, Research Plan, Human Subjects Research Statement, References, Budget Justification, Resumes, Current and Pending Support, and Letters of Intent/Support) of this solicitation. *In order to maintain format integrity, this file must be submitted in Adobe Acrobat PDF.* Please review the PDF file for conversion errors prior to including it in the electronic application package; requests to rectify conversion errors will not be accepted if made after the solicitation closing date and time. If Key Contacts Continuation pages (see How to Apply and Required Forms) are needed, place them before the Table of Contents (Section IV.C.3.).

   Once the application package has been completed, the "Submit" button should be

enabled. If the "Submit" button is not active, please call Grants.gov for assistance at 1-800-518-4726. Applicants who are outside the U.S. at the time of submittal and are not able to access the toll-free number may reach a Grants.gov representative by calling 606-545-5035. Investigators should save the completed application package with two different file names before providing it to the AOR to avoid having to re-create the package should submission problems be experienced or a revised application needs to be submitted. Note: Revised applications must be submitted before the solicitation closing date and time.

4. Submitting the application. The application package must be transferred to Grants.gov by an AOR. The AOR should close all other software before attempting to submit the application package. Click the "submit" button of the application package. Your Internet browser will launch and a sign-in page will appear. *Note: Minor problems are not uncommon with transfers to Grants.gov. It is essential to allow sufficient time to ensure that your application is submitted to Grants.gov BEFORE 11:59:59 pm Eastern Time on the solicitation closing date.* The Grants.gov support desk operates 24 hours a day, seven days a week, except Federal Holidays.

   A successful transfer will end with an on-screen acknowledgement. For documentation purposes, print or screen capture this acknowledgement. If a submission problem occurs, reboot the computer – turning the power off may be necessary – and re-attempt the submission.

   Note: Grants.gov issues a "case number" upon a request for assistance.

5. Transmission Difficulties. If transmission difficulties that result in a late transmission, no transmission, or rejection of the transmitted application are experienced, and following the above instructions do not resolve the problem so that the application is submitted to Grants.Gov by the deadline date and time, follow the guidance below. The Agency will make a decision concerning each late submission on a case-by-case basis as to whether it should be forwarded for peer review. All emails, as described below, are to be sent to Debra M. Jones (jones.debram@epa.gov) with the FON in the subject line.

   Please note that if the application you are submitting is greater than 70 MB in size, please call or send an email message to the Electronic Submissions Contact listed for this RFA. The Agency may experience technical difficulty downloading files of this size from Grants.gov. Therefore, it is important that the Agency verify that the file can be downloaded. The Agency will provide alternate submission instructions if the file cannot be downloaded.

   a. If you are experiencing problems resulting in an inability to upload the application to Grants.gov, it is essential to call Grants.gov for assistance at

1-800-518-4726 before the application deadline. Applicants who are outside the U.S. at the time of submittal and are not able to access the toll-free number may reach a Grants.gov representative by calling 606-545-5035. Be *sure* to obtain a case number from Grants.gov.

b. Unsuccessful transfer of the application package: If a successful transfer of the application cannot be accomplished even with assistance from Grants.gov due to electronic submission issues, send an email message by 11:59:59 pm Eastern Time on the solicitation closing date. The email message must document the problem and include the Grants.gov case number as well as the entire application in PDF format as an attachment.

c. Grants.gov rejection of the application package: If a notification is received from Grants.gov stating that the application has been rejected for reasons other than late submittal, promptly send an email to Debra M. Jones (jones.debram@epa.gov) with the FON in the subject line within one business day of the closing date of this solicitation. The email should include any materials provided by Grants.gov and attach the entire application in PDF format.

G. Submission Instructions for Phase II Applications

Additional submission instructions for the Phase II competition will be provided to the Phase I awardees in the award terms and conditions.

Those receiving funding via a P3 Phase I grant are encouraged to apply for funding for a Phase II grant. Phase II proposals require many of the same documents as submitted for the Phase I grant. Phase II awards are separate grant awards. It is expected that the proposal for a P3 Phase II grant, which is a component of the Phase I *Project Report*, will be due in March 2017.

V. APPLICATION REVIEW INFORMATION

A. Review Process for Phase I Applications

1. External Peer Review

All eligible grant applications are reviewed by appropriate external technical peer reviewers based on the criteria and process described below. This review is designed to evaluate each application according to how well it meets the criteria listed below. The individual external peer reviewers include non-EPA scientists, engineers, social scientists, and/or economists who are accomplished in their respective disciplines and proficient in the technical subjects they are reviewing.

Prior to the external technical peer review panel meeting, all reviewers will receive electronic copies of all applications, as well as a full set of abstracts for the

applications. Each application will be assigned to a minimum of three primary peer reviewers, one of whom will be assigned the role of Rapporteur. Each reviewer will be assigned up to approximately 10 applications on which to serve as a primary reviewer. During the review period leading up to the panel meeting, primary reviewers will read the full set of abstracts and entire application package for each application they are assigned. They will also prepare a written individual evaluation for each assigned application that addresses the peer review criteria described below and rate the application with a score of highly recommend, recommend, or not recommend.

At the beginning of the panel meeting, each primary reviewer will report their ratings for the applications they reviewed. Those applications receiving at least two ratings of *Recommend* or one rating of *Highly Recommend* from among the primary reviewers will then be further discussed by the panel in terms of the peer review criteria below. In addition, if there is one *Recommend* rating among the primary reviewers of an application, the primary reviewer, whose initial rating is the *Recommend*, may request discussion of the application by the peer review panel. All other applications will be declined for further consideration.

After the discussion of an application by the panel, the primary reviewers may revise their initial ratings; and if they do so this will also be documented. The final ratings of the primary reviewers will then be translated by EPA into the final peer review score (highly recommend, recommend, or not recommend) for the application. This is reflected in a peer review results document developed by the Rapporteur, which combines the individual initial and final evaluations of the primary reviewers and captures any substantive comments from the panel discussion. This score will be used to determine which applications undergo the internal programmatic review discussed below. A peer review results document is also developed for applications that are not discussed. However this document is a consolidation of the individual primary reviewer initial evaluations, with an average of the scores assigned by the primary reviewers.

2. Criteria for External Peer Review of Phase I Awards

All eligible grant applications for Phase I awards will be peer reviewed by an external peer review panel based on the criteria below. Each of the four criteria categories are equally weighted.

a. Proposal Quality (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application includes a plan for scientifically sound, feasible and appropriate research; challenges and seeks to shift current research or engineering paradigms by using innovative theoretical concepts, approaches or methodologies, instrumentation or interventions; clearly expresses its innovative aspects (informed by a literature review where

appropriate); lists clear, achievable goals and objectives; identifies and suitably engages end users; and describes any partnerships where appropriate.

b. Overall Sustainability (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application embodies the principles of sustainability and offers sustainable solutions that protect the environment and strengthen communities; demonstrates how its environmental and economic outcomes will benefit the intended users and/or society; and describes its potential for implementation, adoption, transferability and long-term viability. The sustainability primer (Sustainability Primer (PDF) (2 pp, 195 K)) describes sustainability concepts in more detail.
c. Education and Teamwork – The degree to which the application serves as a sustainability teaching tool and includes an interdisciplinary undergraduate and/or graduate student team.
d. Budget and Project Management (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application provides a reasonable and appropriate budget and includes approaches, procedures, and controls for ensuring timely and efficient expenditure of awarded grant funds; adequately describes expertise, facilities and other resources; provides a schedule with milestones for ensuring successful achievement of project objectives; and describes how outputs and social, economic and environmental outcomes will be tracked and measured.

3. Programmatic Review

Applications receiving final peer review scores of highly recommend or recommend will then undergo an internal programmatic review, as described below, conducted by technical experts from the EPA, including individuals from the Office of Research and Development (ORD) and program and regional offices involved with the science or engineering proposed. All other applications are automatically declined.

Those applicants who received final scores of highly recommend or recommend as a result of the peer review process will be asked to provide additional information for the programmatic review pertaining to the proposed PIs "Past Performance and Reporting History." The applicant must provide the EPA Project Officer with information on the proposed PI's past performance and reporting history under prior Federal agency assistance agreements (assistance agreements include grants and cooperative agreements but not contracts) in terms of: (i) the level of success in managing and completing each agreement, and (ii) history of meeting the reporting requirements under each agreement.

This information is required only for the proposed PI's performance under Federal assistance agreements initiated within the last three years that were similar in size and scope to the proposed project.

The specific information required for each agreement is shown below, and must be provided within one week of EPA's request. A maximum of three pages will be permitted for the response; excess pages will not be reviewed. Note: If no prior past performance information and/or reporting history exists, you will be asked to so state.

1. Name of Granting Agency.
2. Grant/Cooperative agreement number.
3. Grant/Cooperative agreement title.
4. Brief description of the grant/cooperative agreement.
5. A description of how the agreement is similar in size and scope to the proposed project and whether or not it was successfully managed and completed; if not successfully managed and completed, provide an explanation.
6. Information relating to the proposed PI's past performance in reporting on progress towards achieving the expected results (outputs/outcomes) under the agreement. Include the history of submitting timely progress/final technical reports, describe how progress towards achieving the expected results was reported/documented, and if such progress was not being made, provide an explanation of whether, and how, this was reported.
7. Total (all years) grant/cooperative agreement dollar value.
8. Project period.
9. Technical contact (project officer), telephone number, and Email address (if available).

The purpose of the programmatic review is to ensure an integrated research portfolio for the Agency and help determine which applications to recommend for award. In conducting the programmatic review, the EPA will consider information provided by the applicant and may consider information from other sources, including prior and current grantors and agency files.

The internal programmatic review panel will assess (relevance is more important than the PI's past performance):

a. Relevance of Proposed Research to EPA Research Priorities
   Research priorities can be reviewed in EPA's FY 2014-2018 Strategic Plan which details how EPA plans to progress towards fulfilling its mission of protecting human health and the environment.
b. Past Performance
   One aspect of the internal programmatic review is an evaluation of the PI's past performance under Federal agency assistance agreements (assistance agreements include grants and cooperative agreements but not contracts) initiated within the last three years that were similar in size and scope to the proposed project in two areas: First, in successfully managing and completing

these prior Federal assistance projects, including whether there is a satisfactory explanation for any lack of success. Second, in reporting progress toward achieving results (outputs/outcomes) under these agreements, including the proposed PI's history of submitting timely progress/final technical reports that adequately describe the progress toward achieving the expected results under the agreements. Any explanation of why progress toward achieving the results was not made will also be considered. Applicants whose proposed PI has no relevant past performance and/or reporting history, or for whom this information is not available, will be evaluated neither favorably nor unfavorably on these elements.

B. Review Process for Phase II Applications

1. External Peer Review

It is expected that Phase II projects/designs will be evaluated in accordance with the process and criteria described below. Phase II applicants will be notified if any changes are made to the review process or criteria. All Phase II projects/designs will be evaluated by external technical peer reviewers made up of non-EPA scientists, engineers, social scientists, economists and/or other professionals who are accomplished in their respective disciplines and proficient in the technical subjects they are evaluating. All Phase I teams will submit a written *Project Report* which will summarize their Phase I activities and include their proposed Phase II activities. All Phase II projects/designs are reviewed by appropriate external technical peer reviewers based on the criteria and process described below.

Prior to the external technical peer review panel meeting, all reviewers will receive electronic copies of all applications, as well as a full set of abstracts for the applications. Each application will be assigned to a minimum of three primary peer reviewers, one of whom will be assigned the role of Rapporteur. Each reviewer will be assigned up to approximately 10 applications on which to serve as a primary reviewer. During the review period leading up to the panel meeting, primary reviewers will read the full set of abstracts and entire application package for each application they are assigned. They will also prepare a written individual evaluation for each assigned application that addresses the peer review criteria described below and rate the application with a score of excellent, very good, good, fair, or poor.

At the beginning of the panel meeting, each primary reviewer will report their ratings for the applications they reviewed. Those applications receiving at least two ratings of *very good* or one rating of *excellent* from among the primary reviewers will then be further discussed by the panel in terms of the peer review criteria below. In addition, if there is one *very good* rating among the primary reviewers of an

application, the primary reviewer, whose initial rating is the *very good*, may request discussion of the application by the peer review panel. All other applications will be declined for further consideration.

After the discussion of an application by the panel, the primary reviewers may revise their initial ratings; and if they do so this will also be documented. The final ratings of the primary reviewers will then be translated by EPA into the final peer review score (excellent, very good, good, fair, or poor) for the application. This is reflected in a peer review results document developed by the Rapporteur, which combines the individual initial and final evaluations of the primary reviewers and captures any substantive comments from the panel discussion. This score will be used to determine which applications undergo the internal programmatic review discussed below. A peer review results document is also developed for applications that are not discussed. However this document is a consolidation of the individual primary reviewer initial evaluations, with an average of the scores assigned by the primary reviewers.

2. Criteria for External Review of Phase II Grant Awards

The external technical peer reviewers will base their evaluations of the written *Project Report* on the criteria below. Each of the four criteria categories are equally weighted.

a. Proposal Quality (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application includes a plan for scientifically sound, feasible and appropriate research; challenges and seeks to shift current research or engineering paradigms by using innovative theoretical concepts, approaches or methodologies, instrumentation or interventions; clearly expresses its innovative aspects (informed by a literature review where appropriate); lists clear, achievable goals and objectives; identifies and suitably engages end users; and describes any partnerships where appropriate.
b. Overall Sustainability (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application embodies the principles of sustainability and offers sustainable solutions that protect the environment and strengthen communities; demonstrates how its environmental and economic outcomes will benefit the intended users and/or society; and describes its potential for implementation, adoption, transferability and long-term viability. The sustainability primer (Sustainability Primer (PDF) (2 pp, 195 K)) describes sustainability concepts in more detail.
c. Education and Teamwork (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application serves as a sustainability teaching tool; includes an interdisciplinary undergraduate and/or graduate student team; and includes a Phase II transition plan.
d. Budget and Project Management (the subcriteria identified within this criteria

are essentially equally weighted) – The degree to which the application provides a reasonable and appropriate budget and includes approaches, procedures, and controls for ensuring timely and efficient expenditure of awarded grant funds; adequately describes expertise, facilities and other resources; provides a schedule with milestones for ensuring successful achievement of project objectives; and describes how outputs and social, economic and environmental outcomes will be tracked and measured.

3. Programmatic Review

Applications receiving final peer review scores of Excellent or Very Good will then undergo an internal programmatic review, as described below, conducted by technical experts from the EPA, including individuals from the Office of Research and Development (ORD) and program and regional offices involved with the science or engineering proposed. All other applications are automatically declined.

The internal programmatic review panel will assess:

- Relevance of Proposed Research to EPA Research Priorities
  Research priorities can be reviewed in EPA's FY 2014-2018 Strategic Plan which details how EPA plans to progress towards fulfilling its mission of protecting human health and the environment.

C. Human Subjects Research Statement (HSRS) Review

Phase I applications being considered for funding after the Programmatic Review that involve human subjects research studies will have their HSRS reviewed by EPA's HSRRO prior to award. The HSRRO will review the information provided in the HSRS and the Research Plan to determine if the ethical treatment of human subjects is described in a manner appropriate for conditional approval to be granted.

Phase II applications being considered for funding after the Programmatic Review that involve human subjects research studies will have their HSRS reviewed by EPA's HSRRO prior to award. The HSRRO will review the information provided in the HSRS and the Research Plan to determine if the ethical treatment of human subjects is described in a manner appropriate for conditional approval to be granted.

D. Funding Decisions

Phase I funding decisions are made by the NCER Director based on the results of the peer review and the internal programmatic review and, where applicable, the EPA HSRRO's assessment of the applicant's human subjects research (see Section IV.C.5.b). In addition, in making the final funding decisions, the NCER Director may also consider program balance and available funds. Applicants selected for funding will be required to provide additional information listed below under "Award Notices." The application will

then be forwarded to EPA's Grants and Interagency Agreement Management Division for award in accordance with the EPA's procedures.

Phase II funding decisions are made by the NCER Director based on the results of the peer review and the internal programmatic review and, where applicable, the EPA HSRRO's assessment of the applicant's human subjects research (see Section IV.C.5.b). In addition, in making the final funding decisions, the NCER Director may also consider program balance and available funds. Where applicable, EPA's HSRRO will review the HSRS prior to award. Applicants selected for funding will be required to provide additional information listed below under "Award Notices." The application will then be forwarded to EPA's Grants and Interagency Agreement Management Division for award in accordance with the EPA's procedures.

VI. AWARD ADMINISTRATION INFORMATION

A. Award Notices

Customarily, applicants are notified about evaluation decisions within six months of the solicitation closing date. A Peer Review Results document summarizing the scientific review will be provided to each applicant with an award or declination letter.

Applicants to be recommended for funding will be required to submit additional certifications and an electronic version of the revised project abstract. They may also be asked to provide responses to comments or suggestions offered by the peer reviewers and/or submit a revised budget. EPA Project Officers will contact the PI to obtain these materials. Before or after an award, applicants may be required to provide additional quality assurance documentation for Phase II grants.

The official notification of an award will be made by the Agency's Grants and Interagency Agreement Management Division. Applicants are cautioned that only a grants officer is authorized to bind the Government to the expenditure of funds; preliminary selection by the NCER Director in the Office of Research and Development does not guarantee an award will be made. For example, statutory authorization, funding, or other issues discovered during the award process may affect the ability of EPA to make an award to an applicant. The award notice, signed by an EPA grants officer, is the authorizing document and will be provided through electronic or postal mail.

B. Disputes

Disputes related to this assistance agreement competition will be resolved in accordance with the dispute resolution procedures set forth in 70 FR 3629, 3630 (January 26, 2005) which can be found at Dispute Resolution Procedures. Questions regarding disputes may be referred to the Eligibility Contact identified below.

C. Administrative and National Policy Requirements

Additional provisions that apply to this solicitation and/or awards made under this solicitation, including but not limited to those related to unique entity identifier, SAM, copyrights, disputes, and administrative capability, can be found at EPA Solicitation Clauses.

These, and the other provisions that can be found at the website link, are important, and applicants must review them when preparing applications for this solicitation. If you are unable to access these provisions electronically at the website above, please communicate with the EPA contact listed in this solicitation to obtain the provisions.

Expectations and responsibilities of NCER grantees are summarized in this section, although the terms grant and grantee are used. See Research Grants Guidance for the full terms and conditions associated with an award, including which activities require prior approval from the EPA.

1. Meetings: Principal Investigators will be expected to budget for team travel to present their research in the Washington D.C. metropolitan area in the Spring of 2017.

2. Approval of Changes after Award: Prior written approval of changes may be required from EPA. Examples of these changes are contained in 2 CFR 200.308. Note: prior written approval is also required from the EPA Award Official for incurring costs more than 90 calendar days prior to award.

3. Human Subjects: A grant applicant must agree to meet all EPA requirements for studies using human subjects prior to implementing any work with these subjects. These requirements are given in 40 CFR Part 26. Studies involving intentional exposure of human subjects who are children or pregnant or nursing women are prohibited by Subpart B of 40 CFR Part 26. For observational studies involving children or pregnant women and fetuses please refer to Subparts C & D of 40 CFR Part 26. U.S. Department of Health and Human Services regulations at 45 CFR Part 46.101(e) have long required "... compliance with pertinent Federal laws or regulations which provide additional protection for human subjects." EPA's regulation 40 CFR Part 26 is such a pertinent Federal regulation. Therefore, the applicant's Institutional Review Board (IRB) approval must state that the applicant's study meets the EPA's regulations at 40 CFR Part 26. No work involving human subjects, including recruiting, may be initiated before the EPA has received a copy of the applicant's IRB approval of the project and the EPA has also provided approval. Where human subjects are involved in the research, the recipient must provide evidence of subsequent IRB reviews, including amendments or minor changes of protocol, as part of annual reports.

Guidance and training for investigators conducting EPA-funded research involving human subjects may be obtained here:

- Basic Information about Human Subjects Research
- Electronic Code of Federal Regulations

4. Data Access and Information Release: After award, all data first produced under the award must be made available to the NCER Project Officer without restriction and be accompanied by comprehensive metadata documentation adequate for specialists and non-specialists alike to be able to understand how and where the data were obtained and to evaluate the quality of the data. If requested, the data products and their metadata must be provided to the NCER Project Officer in a standard exchange format no later than the due date of the grant's final report or the publication of the data product's associated results, whichever comes first.

   Congress, through OMB, has instructed each federal agency to implement Information Quality Guidelines designed to "provide policy and procedural guidance...for ensuring and maximizing the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies." The EPA's implementation may be found at Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by the Environmental Protection Agency. These procedures may apply to data generated by grant recipients if those data are disseminated as described in the Guidelines.

5. Reporting: A P3 Phase I grant recipient must provide a written Project Report with an Executive Summary. A final report is also required if the project is extended beyond one year. A P3 Phase II grant recipient must provide annual progress reports with associated summaries and a final report with an executive summary. The summaries will be posted on NCER's website.

   A grant recipient must provide copies of any peer reviewed journal article(s) resulting from the research during the project period. In addition, the recipient should notify the NCER Project Officer of any papers published after completion of the grant that were based on research supported by the grant. NCER posts references to all publications resulting from a grant on the NCER web site.

6. Acknowledgement of EPA Support: EPA's full or partial support must be acknowledged in journal articles, oral or poster presentations, news releases, interviews with reporters and other communications. Any documents developed under this agreement that are intended for distribution to the public or inclusion in a scientific, technical, or other journal shall include the following statement:

   This publication [article] was developed under Assistance Agreement No._____ awarded by the U.S. Environmental Protection Agency to [*name of recipient*]. It has

not been formally reviewed by EPA. The views expressed in this document are solely those of [*name of recipient or names of authors*] and do not necessarily reflect those of the Agency. EPA does not endorse any products or commercial services mentioned in this publication.

VII. AGENCY CONTACTS

Further information, if needed, may be obtained from the EPA contacts indicated below. Information regarding this RFA obtained from sources other than these Agency Contacts may not be accurate. Email inquiries are preferred.

Eligibility Contact: Ron Josephson (josephson.ron@epa.gov); phone: 703-308-0442
Electronic Submissions Contact: Debra M. Jones (jones.debram@epa.gov); phone: 703-347-8081
Technical Contacts: Cynthia L. Nolt-Helms (nolt-helms.cynthia@epa.gov); phone: 703-347-8102
Gregory Lank (lank.gregory@epa.gov); phone: 703-347-8128
Anne Sergeant (sergeant.anne@epa.gov); phone: 703-347-8105

Contact Us to ask a question, provide feedback, or report a problem.

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