COVID-19 Update: EPA is providing flexibilities to applicants experiencing challenges related to COVID-19. Please see the **Flexibilities Available to Organizations Impacted by COVID-19** clause in Section IV of EPA's Solicitation Clauses.

OVERVIEW INFORMATION

U.S. Environmental Protection Agency
Office of Science Advisor, Policy and Engagement
Office of Research and Development
People, Prosperity, and the Planet (P3) Program

20TH ANNUAL P3 AWARDS: A NATIONAL STUDENT DESIGN COMPETITION FOCUSING ON PEOPLE, PROSPERITY AND THE PLANET

This is the initial announcement of this funding opportunity.

Funding Opportunity Numbers:
EPA-G2023-P3-Q1 - Clean and Healthy Air
EPA-G2023-P3-Q2 - Clean and Safe Water
EPA-G2023-P3-Q3 - Safeguard and Revitalize Communities
EPA-G2023-P3-Q4 - Ensure Safety of Chemicals

Assistance Listing Number: 66.516

Solicitation Opening Date: *October 4, 2022*
Solicitation Closing Date: *February 1, 2023*: 11:59:59 pm Eastern Time

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I. FUNDING OPPORTUNITY DESCRIPTION

For Updates and Additional Information see https://www.epa.gov/research-grants/research-funding-opportunities.
View research awarded under previous solicitations at https://www.epa.gov/research-grants/research-grant-areas.

A. Introduction

The U.S. Environmental Protection Agency (EPA) seeks applications proposing to take a holistic approach, grounded in research and innovation, to develop and demonstrate solutions to real world challenges. The People, Prosperity, and the Planet (P3) Program highlights the use of scientific principles in creating innovative technology-based projects that achieve the mutual goals of improved quality of life, economic prosperity and environmental protection. P3 encourages interdisciplinary collaborations across STEM (science, technology, engineering, and mathematics) disciplines to devise innovative solutions to environmental and public health challenges in the U.S., including those in small, rural, tribal and/or underserved communities.

P3 supports STEM education through hands-on experience and training that brings their classroom learning to life, while also allowing student teams to create tangible changes in their communities. To the extent practicable, applicants should describe the STEM education ecosystem in their project. A STEM education ecosystem consists of partners united by a collective vision of supporting participation in STEM through the creation of accessible, inclusive STEM learning opportunities spanning all education stages and career pathways. A STEM education ecosystem continuously evaluates its activities and adapts as needed, plans for the long-term, and communicates its work to build broad support and advance best-practices.

One of the EPA's strategic priorities to further Executive Order 14008- Tackling Climate Change at Home and Abroad, and Executive Order 13895- Advancing Racial Equity and Support for Underserved Communities is to address communities adversely and disproportionately affected by environmental, climate and human health harms and risks, including affected underserved communities. As defined by Executive Order, the term "underserved communities" refers to "populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life." In the context of this grant opportunity, the EPA is sharing its policy priorities, in part, to reaffirm its interest in expanding the environmental conversation, including expanding who participates in such research and what the subjects of such research may be.

This Request for Applications (RFA) represents the 20th anniversary of the National P3 Awards competition. Previously awarded projects funded through this program can be viewed at the People, Prosperity and the Planet (P3) Student Design Competition website. For the 20th annual P3 competition, P3 has transitioned to a single phased competitive program that will fund individual grant awards of up to $75,000 for a two-year project period. Student teams are asked to propose innovative and sustainable ideas and concepts and carry them through the research, design and demonstration stage. During the second year of the award (2025), student teams will showcase their project designs at the P3 National Student Design Expo.

The P3 program is emphasizing the use of innovation in projects submitted to this announcement. The program challenges and empowers interdisciplinary student teams to transform their classroom learning into hands-on experience by designing and demonstrating tangible solutions to real-world environmental issues in their communities.

Proposed projects should support P3's four strategic principles:

Principle 1: Engage, educate, and empower the next generation of scientists, engineers, and the greater academic and external communities to improve the quality of people's lives, provide economic benefits, and protect the environment – the P3 approach.

Principle 2: Support the development of innovative technologies that will contribute to improved social, environmental, and economic well-being, especially in communities with the greatest needs.

Principle 3: Support the demonstration of proposed P3-developed technologies to prove their effectiveness and value.

Principle 4: Foster the development of strategies to disseminate technologies in target communities and elsewhere.

The P3 Program is intended to address domestic U.S. environmental needs. For this reason, P3 projects should primarily focus on research in the U.S. and the benefits of the research should primarily accrue to the U.S. Applications that do not meet these requirements may not be

evaluated as highly during the relevancy review, and therefore may not be recommended for an award.

EPA recognizes the impact of the COVID-19 pandemic and resulting adaptions to in-person learning and laboratory access experienced by colleges and universities. EPA is monitoring the COVID-19 pandemic and if it is still impacting in-person meetings, a virtual Expo will be planned. Principal Investigators (PIs) will be notified in advance if the National Student Design Expo moves from in-person to virtual.

EPA recognizes that it is important to engage all available minds to address the environmental challenges the Nation faces. At the same time, EPA seeks to expand the environmental conversation by including members of communities which may have not previously participated in such dialogues to participate in EPA programs. For this reason, EPA strongly encourages all eligible applicants identified in Section III, including minority serving institutions (MSIs), to apply under this opportunity.

For purposes of this solicitation, the following are considered MSIs:

1. Historically Black Colleges and Universities, as defined by the Higher Education Act (20 U.S.C. § 1061(2)). A list of these schools can be found at Historically Black Colleges and Universities;

2. Tribal Colleges and Universities (TCUs), as defined by the Higher Education Act (20 U.S.C. § 1059c(b)(3) and (d)(1)). A list of these schools can be found at American Indian Tribally Controlled Colleges and Universities;

3. Hispanic-Serving Institutions (HSIs), as defined by the Higher Education Act (20 U.S.C. § 1101a(a)(5)). A list of these schools can be found at Hispanic-Serving Institutions;

4. Asian American and Native American Pacific Islander-Serving Institutions; (AANAPISIs), as defined by the Higher Education Act (20 U.S.C. § 1059g(b)(2)). A list of these schools can be found at Asian American and Native American Pacific Islander-Serving Institutions; and

5. Predominately Black Institutions (PBIs), as defined by the Higher Education Act of 2008, 20 U.S.C. 1059e(b)(6). A list of these schools can be found at Predominately Black Institutions.

B. Background

Since 2004, the P3 Program has funded colleges and universities across the country to develop innovative research projects. Cumulatively, these projects promote a shift towards more environmentally benign products, processes, and systems with the aim of improving quality of life, promoting economic prosperity, and protecting the planet. P3 strives to continue this charge. Examples of previously funded P3 projects can be found here: https://www.epa.gov/P3.

For the 20th annual P3 competition, P3's structure has been modified to emphasize and strengthen its focus on innovation and increase the number of teams that can advance their design concepts to the demonstration stage. By combining the former two-phase competition into a single phase, the program will fund student teams to develop projects and carry them through the research design and demonstration stage with a $75,000 two-year award. During the second year of the award (2025), student teams will showcase their winning designs at the P3 National Student Design Expo. Innovation and sustainability remain cornerstones of the P3 Program.

The P3 Program believes solutions to environmental challenges are best accomplished when students from differing departments collaborate. P3 encourages diverse, interdisciplinary teams representing a broad set of perspectives and ideas. Each student team must include a faculty advisor, that will serve as the Principal Investigator throughout the P3 competition and grant award process. The faculty advisor must be a professor at the participating academic institution. Current graduate students are not eligible to act as faculty advisor.

Teams may be composed of undergraduates, graduate students, or both. An acceptable P3 team should not be composed of only one student and a faculty advisor.

It is expected that in the spring of 2025, teams will present their projects at the P3 National Student Design Expo that will be held in an East Coast City. EPA will provide teams with information about the Expo once awards have been made.

C. Authority and Regulations

The authorities for this RFA and resulting awards are contained in the Safe Drinking Water Act, 42 U.S.C. 300j-1, Section 1442; the Clean Water Act, 33 U.S.C. 1254, Section 104(b)(3); the Toxic Substances Control Act, 15 U.S.C. 2609, Section 10, as amended by P.L. 106-74; the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. 136r, Section 20, as amended by P.L. 106-74; the Clean Air Act, 42 U.S.C. 7403, Section 103(b)(3); and the Solid Waste Disposal Act, 42 U.S.C. 6981, Section 8001.

For research with an international aspect, the above statutes are supplemented, as appropriate, by the National Environmental Policy Act, Section 102(2)(F).

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 above. 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 listed above. Further note applications dealing with any aspect of or related to hydraulic fracking will not be funded by EPA through the P3 program.

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

D. Specific Research Areas of Interest/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 activities to be funded under this solicitation support EPA's FY 2022-2026 Strategic Plan (https://www.epa.gov/planandbudget/strategicplan). Awards made under this solicitation will support the Strategic Plan's goals and objectives listed below.

EPA-G2023-P3-Q1 - Clean and Healthy Air
Goal 4: Ensure Clean and Healthy Air for All Communities,

- Objective 4.1: Improve Air Quality and Reduce Localized Pollution and Health Impacts
- Objective 4.2: Reduce Exposure to Radiation and Improve Indoor Air

EPA-G2023-P3-Q2 - Clean and Safe Water
Goal 5: Ensure Clean and Safe Water for All Communities,

- Objective 5.1: Ensure Safe Drinking Water and Reliable Water Infrastructure
- Objective 5.2: Protect and Restore Waterbodies and Watersheds

EPA-G2023-P3-Q3 - Safeguard and Revitalize Communities
Goal 6: Safeguard and Revitalize Communities,

- Objective 6.1: Clean Up and Restore Land for Productive Uses and Healthy Communities
- Objective 6.2: Reduce Waste and Prevent Environmental Contamination

EPA-G2023-P3-Q4 - Ensure Safety of Chemicals
Goal 7: Ensure Safety of Chemicals for People and the Environment,

- Objective 7.1: Ensure Chemical and Pesticide Safety
- Objective 7.2: Promote Pollution Prevention

All applications must be for projects that support the goal(s) and objective(s) identified above. The P3 Program supports these priorities and goal(s)/objectives(s) by funding interdisciplinary, faculty-led student teams that use the best available scientific knowledge and research to design and demonstrate innovative solutions that address environmental problems important to the public, including small, rural, tribal and underserved communities.

The P3 Program is committed to using science and innovation to protect public health and the environment. This is accomplished in part by supporting the development and demonstration of emerging technologies. The proposed awards will develop innovative methods and technologies that should contribute to improved social, environmental, and economic well-being; demonstrate P3 developed technologies to prove their effectiveness and value; and foster the development of

strategies that can assist with the dissemination of the technologies in target communities and elsewhere. P3 projects are expected to contribute to improved, social, environmental, and economic well-being, especially in communities with the greatest needs. P3 projects should engage and educate the next generation of scientists, engineers, and the greater academic and external communities in understanding and using the P3 principles to tackle real world environmental issues. These award outcomes should align and address the program's tenets to improve quality of life, promote economic prosperity, and protect the planet.

EPA also requires that grant applicants adequately describe environmental outputs and outcomes to be achieved under assistance agreements (see EPA Order 5700.7A1, Environmental Results under Assistance Agreements, https://www.epa.gov/grants/epa-order-57007a1-epas-policy-environmental-results-under-epa-assistance-agreements). Applicants must include specific statements describing the environmental results of the proposed project in terms of well-defined outputs and, to the maximum extent practicable, well-defined outcomes that will demonstrate how the project will contribute to the goal(s) and objective(s) described above.

Specific Research Areas of Interest

Applicants must address one of the research areas listed below in their applications. *Note that each application must be submitted using a single Funding Opportunity Number (FON).* **To fulfill Agency requirements for a research grant, all applications 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. Applications should also consider the lifecycle environmental impacts of the project, including (if applicable) materials management, minimizing pollution, minimizing toxicity of materials, efficient use of water and energy and minimizing the impacts of disposal.

Funding Opportunity Numbers and Research Areas (NOTE: *EPA encourages applicants to address Climate Change and Environmental Justice*[1] *as applicable under each of the following research areas.)*

Clean and Healthy Air (Funding Opportunity Number: EPA-G2023-P3-Q1)
EPA supports research that advances the science and provides the information critical

[1] Environmental justice (EJ) is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means no group of people should bear a disproportionate share of the adverse environmental consequences resulting from industrial, governmental and commercial operations or policies. Meaningful involvement means people have an opportunity to participate in decisions about activities that may affect their environment and/or health; the public's contribution can influence the regulatory agency's decision; community concerns will be considered in the decision-making process; and decision makers will seek out and facilitate the involvement of those potentially affected.

to improving the Nation's air quality. EPA seeks projects that support research and demonstration of innovative and cost-effective solutions for improving air quality. Examples of relevant topic areas include, but are not limited to, assessment of human and ecosystem exposures and effects associated with air pollutants on individual, community, regional, and national scales; development and evaluation of approaches to prevent and reduce air pollution, particularly sustainable, cost-effective, and innovative multipollutant and sector-based approaches; or human exposure and environmental modeling, monitoring, metrics, and information needed to inform air quality decision making at the state, tribal and local level.

Clean and Safe Water (Funding Opportunity Number: EPA-G2023-P3-Q2)
EPA supports research that advances the science and innovative tools and information needed to protect and restore the Nation's watersheds, aquatic ecosystems, and water infrastructure to provide clean, adequate, and equitable supplies of water for optimum human health and ecosystem functions. Examples of relevant topic areas include, but are not limited to, research on assessing the distribution, composition, remediation and health impacts of known and emerging chemical and biological contaminants in drinking water; and innovative approaches or tools for managing ambient water quality to protect human health and aquatic life.

Safeguard and Revitalize Communities (Funding Opportunity Number: EPA-G2023-P3-Q3)
EPA supports research that advances the science and innovative technologies needed to remediate and restore the Nation's most challenging and complex contaminated sites; to reduce the burden of contamination from the storage and management of waste while advancing the Agency's vision for a future paradigm that fundamentally disrupts the creation and flow of waste; and to revitalize communities from increased exposure to contaminants resulting from natural disasters and extreme events. Examples of relevant topic areas include, but are not limited to, innovative methods and technologies to characterize and to remove contaminants from environmental media (e.g., soil, water, air); research to build community resilience to potential pollution resulting from natural disasters and extreme events; and development of innovative solutions to waste management, as well as techniques and technologies that allow for the beneficial reuse of products and materials.

Ensure Safety of Chemicals (Funding Opportunity Number: EPA-G2023-P3-Q4)
EPA supports research for evaluating and predicting impacts from chemical use and disposal and providing states and industries with information, tools, and methods to make better informed and more timely decisions about the thousands of chemicals in the U.S. EPA seeks projects that support research and demonstration of innovative and cost-effective solutions to chemical safety challenges. Examples of relevant topic areas include, but are not limited to, development of technologies and approaches to help reduce or replace animal testing and tools to assess their feasibility; and development of information technology and software tools to mine ever-expanding data sources for information on chemical exposures and toxicities.

It is recognized that some applications may be appropriate for more than one FON/research area, but the applicant must identify a single FON/research area for application submission purposes. The FON/research area is used to determine the

appropriate peer review panel to evaluate the technical merit of the project. For examples of appropriate research, applicants should review the research area descriptions under the "Specific Research Areas of Interest" section above.

Expected Outputs and Outcomes

Research outputs expected from the research funded under this RFA may include innovative, inherently benign, integrated and interdisciplinary designs that will advance the scientific, technical and policy knowledge necessary to enhance the human condition in communities – including those in small, rural, tribal and/or underserved communities. Examples of these research outputs include innovative technologies and new methods that address knowledge, software and data gaps. These outputs can be presented in publications, at the P3 Expo, and conferences.

The desired outcomes of the research conducted under this program address P3's four strategic principles listed in Section I.A. P3-supported technologies should also embody the P3 approach which aims 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 toxic substances. The outputs and outcomes of the research efforts conducted via the individual P3 grants contribute directly to accomplishing the P3 Strategic Principles presented in Section I.A of this solicitation.

Innovation and Sustainability

To the maximum extent practicable, research applications must embody innovation and sustainability. Innovation occurs at the intersection of invention and insight (Lemelson/MIT) and is the complex process of introducing novel ideas into use or practice (Council on Competitiveness). Innovation for the purposes of this RFA is defined as the process of developing new or novel technology-based projects (methods, devices, creative solutions or concepts) that contribute to improved social, environmental, and economic well-being. Innovative research can take the form of wholly new applications or applications that build on existing knowledge and approaches for new uses. Research applications must include a discussion on how the proposed research is innovative (see Section IV.C.5.iii.a). The goal of sustainability, derived from the U.S. National Environmental Policy Act of 1969 (NEPA), 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." By incorporating these concepts, P3 supports science-based projects developed by interdisciplinary student teams at U.S. colleges and universities. Research applications 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.iii.a). Reviewers will draw from all of the above-mentioned innovation and sustainability definitions in the review/evaluation process of research applications (see Section V.A).

Application Considerations

Please note the following Agency considerations for P3 research applications:

- All applications should clearly articulate how the proposed project/design and its demonstration 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. above. (NEPA is a secondary supporting statute for projects with an international component and cannot be the sole supporting statute for a proposed project).
- The P3 Program is intended to address domestic U.S. needs. For this reason, P3 projects should primarily perform their research in the U.S. and the benefits of the research should primarily accrue to the U.S. Applications that do not meet these requirements may not be evaluated as highly during the relevancy review, and therefore may not be recommended for an award.
- Generally, an application 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. Applications should not focus on fixing an environmental problem via a well-established method, but instead highlight their innovative research aspects.
- A "demonstration" can encompass the first instance of the application of control, prevention, and innovative techniques, but must involve new or experimental technologies, methodologies, and approaches with the results widely disseminated for others benefit.

E. References

Reports

1. Lemelson-MIT Program and the National Science Foundation. *Invention: Enhancing Inventiveness of Quality of Life, Competitiveness and Sustainability.* (Report of the Committee for the Study of Invention [PDF]), 2004.

2. Proceedings. IEEE International Conference e-Commerce Technology, 2004 (Extending the Innovation Ecosystem), CEC 2004.

3. United Nations. *Rio +20 United Nationals Conference on Sustainable Development Outcome Document.* United Nations (The Future We Want), 2012.

4. United States Environmental Protection Agency. *Sustainability Research Strategy,* EPA 600/S 07/001. (Sustainability Research Strategy [PDF]) (72 pp, 1.14 MB), 2007.

Books

5. Benyus, J. *Biomimicry: Innovation Inspired by Nature.* William Morrow Paperbacks, 2002. ISBN 978-0060533229.

6. Braungart, M. & McDonough, W. *Cradle to Cradle.* North Point Press, 2002. ISBN 978-0865475878.

7. Lakhtakia, A. & Martín-Palma, R.J. (Eds.) *Engineered Biomimicry.* Elsevier, 2013. ISBN: 978-0-12-415995-2. https://www.sciencedirect.com/book/9780124159952/engineered-biomimicry (E-book)

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

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

F. Special Requirements

It is EPA Policy to ensure that the results of EPA-funded extramural scientific research are accessible to the public to the greatest extent feasible consistent with applicable law; policies and Orders; the Agency's mission; resource constraints; and U.S. national, homeland and economic security. This entails maximizing, at no charge, access by the public to peer-reviewed, scientific research journal publications or associated author manuscripts, and their underlying digital research data, created in whole or in part with EPA funds, while protecting personal privacy; recognizing proprietary interests, confidential business information, and intellectual property rights; and avoiding significant negative impact on intellectual property rights, innovation, and U.S. competitiveness.

Applications submitted under this announcement shall include a Scientific Data Management Plan (SDMP) that addresses public access to EPA-funded scientific research data. See the SDMP clause in Section IV for details on the content of an SDMP. Applicants will also be asked to provide past performance information on whether journal publications or associated author manuscripts, and the associated underlying scientific research data and metadata, under prior assistance agreements were made publicly accessible. These items will be evaluated prior to award.

Reasonable, necessary and allocable costs for data management and public access may be included in extramural research applications and detailed in the budget justification described in Section IV.

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.

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. All applications must include a Human Subjects Research Statement (HSRS; described in Section IV.C.5.iii.b of this solicitation). 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.D and V.F of this solicitation.

P3 Award projects will not accommodate a multiple PI application. P3 Award projects should be submitted as a single lead PI application.

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.

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.

G. Additional Provisions for Applicants Incorporated into the Solicitation

Additional provisions that apply to sections III, IV, V, and VI of this solicitation and/or awards made under this solicitation, can be found at EPA Solicitation Clauses. These provisions are important for applying to this solicitation 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 contact the EPA point of contact listed in this solicitation (usually in Section VII) to obtain the provisions.

II. AWARD INFORMATION

It is anticipated that a total of approximately $1.2 million will be awarded under this announcement, depending on the availability of funds, quality of applications received, and other applicable considerations. The EPA anticipates funding approximately 16 awards under this RFA. Requests for amounts in excess of a total of $75,000 per award, including direct and indirect costs, will not be considered. The total project period requested in an application submitted for this RFA may not exceed 2 years.

To increase the number of grants awarded to institutions who have not traditionally received awards, EPA intends to use approximately 50% of the total amount of funding available under this announcement for grants to "new awardees." See definition of "new awardees" in Section V.F. This percentage is only an estimate and is subject to change based on funding levels, the quality of applications received, and other applicable considerations. See Section V.F Funding Decisions for additional information.

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 applications by funding discrete portions or phases of proposed projects. If EPA decides to partially fund an application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process. Awards may be fully or incrementally funded, as appropriate, based on funding availability, satisfactory performance, and other applicable considerations.

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 rather than substantial to achieving the goals of the research under a grant. Interaction that is "incidental" does not involve resource commitments by EPA.

III. ELIGIBILITY INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

A. Eligible Applicants

Public and private institutions of higher education (limited to degree-granting 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, graduate students, or both. Profit-making firms and individuals 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 application 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.

Consistent with the definition of Nonprofit organization at 2 CFR § 200.1, the term nonprofit organization means any corporation, trust, association, cooperative, or other organization that is operated mainly for scientific, educational, service, charitable, or similar purpose in the public interest and is not organized primarily for profit; and uses net proceeds to maintain, improve, or expand the operation of the organization. The term includes tax-exempt nonprofit neighborhood and labor organizations. Note that 2 CFR § 200.1 specifically excludes Institutions of Higher Education from the definition of non-profit organization because they are separately defined in the regulation. While not considered to be a nonprofit organization(s) as defined by 2 CFR §

200.1, public or nonprofit Institutions of Higher Education are, nevertheless, eligible to submit applications under this RFA. Hospitals operated by state, tribal, or local governments or that meet the definition of nonprofit at 2 CFR § 200.1 are not eligible to apply. State, local and federally recognized Indian tribal governments are not eligible to submit applications under this program. Under this competition, eligible nonprofit organizations are limited to research institutes and foundations that are part of or affiliated with a U.S. institution of higher education. For-profit colleges, universities, trade schools, and hospitals are ineligible.

Nonprofit organizations that are not exempt from taxation under section 501 of the Internal Revenue Code must submit other forms of documentation of nonprofit status; such as certificates of incorporation as nonprofit under state or tribal law. Nonprofit organizations exempt from taxation under section 501(c)(4) of the Internal Revenue Code that lobby are not eligible for EPA funding as provided in the Lobbying Disclosure Act, 2 U.S.C. 1611.

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. An award recipient may provide funds through its assistance agreement from the EPA to an FFRDC for research personnel, 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. Federal employees may not receive salaries or augment their Agency's appropriations through awards made under this program unless authorized by law to receive such funding.

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 to the extent authorized by law. 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 in ORD, phone: 202-564-7823, email: josephson.ron@epa.gov.

B. Cost sharing

Cost sharing is not required.

C. Other

All applications will be reviewed for eligibility and must meet the eligibility requirements described in Sections III.A., B., and C. to be considered eligible. Applicants deemed ineligible for funding consideration as a result of the threshold eligibility review will be notified within 15 calendar days of the ineligibility determination.

a. Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this solicitation or else they will be rejected. However, where a page limit is expressed in Section IV with respect to the application, or parts thereof, pages in excess of the page limitation will not be reviewed. Applicants are advised that readability is of paramount importance and should take precedence in application format, including selecting a legible font type and size for use in the application.

b. In addition, initial applications must be submitted through Grants.gov as stated in Section IV of this solicitation (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 solicitation. Applicants are responsible for following the submission instructions in Section IV of this solicitation to ensure that their application is timely submitted. Please note that applicants experiencing technical issues with submitting through Grants.gov should follow the instructions provided in Section IV, which include both the requirement to contact Grants.gov and email a full application to EPA prior to the deadline.

c. Applications submitted outside of Grants.gov will be deemed ineligible without further consideration unless the applicant can clearly demonstrate that it was due to EPA mishandling or technical problems associated with Grants.gov or SAM.gov. 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 submission outside of Grants.gov.

If an applicant submits more than one application under this announcement, each application must be submitted separately, and the scope of work proposed in each application must be significantly different from the other application(s) in order for them to all be deemed eligible. If applications are submitted with scopes of work that do not significantly differ, then EPA will only accept the most recently submitted application and all other applications will be deemed ineligible.

Also, applications exceeding the funding limits or project period described herein will be rejected without review. See Section II. 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.

IV. APPLICATION AND SUBMISSION INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

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

A. Grants.gov Submittal Requirements and Limited Exception Procedures

Applicants must apply electronically through Grants.gov under this funding opportunity based on the grants.gov instructions in this announcement. If your organization has no access to the internet or access is very limited, you may request an exception for the remainder of this calendar year by following the procedures outlined here. Please note that your request must be received at least 15 calendar days before the application due date to allow enough time to negotiate alternative submission methods. Issues with submissions with respect to this opportunity only are addressed in section *F. Submission Instructions and Other Submission Requirements* below.

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 https://www.epa.gov/research-grants/research-funding-opportunities-how-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 ORD 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 contact the EPA at electronic-grant-submissions@epa.gov. 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.**

1. Standard Form 424

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

2. Key Contacts, EPA Form 5700-54

The applicant must complete the "Key Contacts" form found in the Grants.gov application package. An "Additional Key Contacts" form is also available at https://www.epa.gov/research-grants/research-funding-opportunities-how-apply-and-required-forms. The Key Contacts form should also be completed for major subawards (i.e., principal investigators). Do not include information for consultants or other contractors. Please make certain that all contact information is accurate.

3. EPA Form 4700-4, Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance
(For tips on completing the form see:
https://www.epa.gov/grants/tips-completing-epa-form-4700-4.)

4. SF-424A Budget Information - Non-Construction Programs

Prepare a master budget table using Standard Form 424A, Budget Information for Non-Construction Programs, available in the Grants.gov electronic application package. 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. For example, Column (1) reflects budget year 1. The total budget will be automatically tabulated in column (5).

Applicants may not use subawards to transfer or delegate their responsibility for successful completion of their EPA assistance agreement. Note: Prior to naming a contractor (including consultants) or subrecipient in your application as a "partner", please carefully review Section IV.d, "Contracts and Subawards", of EPA's Announcement Clauses that are incorporated by reference in this announcement (See Section I.G). EPA expects recipients of funding to comply with competitive procurement contracting requirements as well as EPA's rule on Participation by Disadvantaged Business Enterprises in EPA Programs in 40 CFR Part 33. The Agency does not accept justifications for sole source contracts for services or products available in the commercial marketplace based on a contractor's role in preparing an application.

Please note that cost sharing is not required.

5. Project Narrative, submitted using Project Narrative Attachment Form and prepared as described below:

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

ii) Abstract (2 pages)

The abstract is a very important document in the review process. Therefore, it is critical that the abstract accurately describes the research being proposed and conveys all the essential elements of the research. Also, the abstracts of applications that receive funding will be posted on EPA's P3 website.

The abstract must include the information described below (a-k). Examples of abstracts for current grants may be found on EPA's P3 website.

a. Funding Opportunity Title and Number for this application. The funding opportunity number and its associated research area are listed at the beginning of this announcement, in Section I.D. above, and in Section IV.C.5.vii.b below.

   Please note: Include the Funding Opportunity Number to which the application is being submitted in the upper right side of the "header" of the Abstract page. Applicants should select one research area to be the focus of their project (see Section I.D). **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 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 (PI): 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. Consider including people from departments and disciplines that will help make a successful project (e.g., from business, social science, and educational schools and departments).

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

e. Student Team: If student investigators are known at the time of application submittal, 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. Include in the team students from schools and disciplines that will help make a successful project (e.g., from business, social science, and educational schools or departments).

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 and the performance site(s)/geographical location(s) where the work will be conducted.

h. Project Cost: Show the total funding requested from the EPA (include direct and indirect costs for all years – This cannot exceed $75,000).

i. Project Summary:
Objective: Identify the goal/objective in Section I.D. being addressed. Within the selected research area, define the technical challenge being addressed, describe how the proposed design will address the challenge, and identify the innovative scientific or technical aspects of the application. Explain how the project will benefit people—for example, those in small, rural, tribal and/or underserved communities.

Description: Describe the project/design and how it relates to the four P3 strategic principles. Also identify how the P3 Project will provide education on the project's purpose, approach, results, impacts and outcomes of the research 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 at: https://www.epa.gov/research-grants/research-funding-opportunities-how-apply-and-required-forms.

iii) Research Plan, Human Subjects Research Statement, Scientific Data Management Plan, and References

a. Research Plan (12 pages)
Applications should focus on a limited number of research objectives that adequately and clearly demonstrate that they meet the RFA requirements. Explicitly state the main hypotheses that you will investigate, the data you will create or use, the analytical tools you will use to investigate these hypotheses or analyze these data and the results you expect to achieve. Research methods must be clearly stated so that reviewers can evaluate the appropriateness of your approach and the tools you intend to use. A statement such as: "we will evaluate the data using the usual statistical methods" is not specific enough for peer reviewers.

This description 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 on page size, point type and margins 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 application.

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

Section 1: Proposed Research

a. Challenge Definition
   - Identify the EPA Strategic Plan goal and objective and appropriate research area (see Section I.D) the project will support.
   - Identify the technical challenge the team will research.
   - Identify the research project's innovative aspects and describe how it challenges and 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, place 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.
   - Describe the scientific/technical soundness and feasibility of the proposed design and its demonstration.
   - Explain the plan for engaging intended end users—which may include those in small, rural, tribal and/or underserved communities.
   - 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 the project has partners, describe their roles, responsibilities, and contributions to helping the project succeed[2].

c. Results (outputs/outcomes) and Evaluation
   - Describe the expected outputs and the potential outcomes to society, the economy, and the environment (See Section I.D).
   - Describe how the project supports the Agency's priorities and applicable goal/objective associated with your FON described in Section I.D.
   - Describe how progress toward achieving the expected outputs and social, economic and environmental outcomes will be tracked and measured.
   - Explain how the research will be primarily performed in the U.S. and how the benefits of the research will primarily accrue to the U.S.

[2] Partnerships are strongly encouraged and will be particularly important for the demonstration strategies. While formal partnerships need not be established prior to submitting the application, indicate anticipated partnerships including the type of partner (educational institution, industry and/or NGOs). Formal letters of understanding or commitment from 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.5.vii.a below. If the applicant does not intend to partner with other groups in the performance of the project, the applicant must demonstrate how it will be able to effectively perform and complete the project without such partnership.

Section 2: Relationship of the Proposal to the P3 (People, Prosperity and the Planet) Approach

- Describe how the project supports P3's four strategic principles and seeks sustainable solutions that protect the environment, strengthen our communities, and create economic benefits. The Sustainability Primer 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 in the affected communities and elsewhere.

Section 3: Educational and Interdisciplinary Aspects of Research

- Identify the educational benefits of the research.
- Provide a plan for teaching the P3 principles that includes a description of the STEM education ecosystem that would be supported or developed as a result of the P3-funded project.
- Identify the university, community, and/or other audiences who will be taught.
- Describe the teaching methods and materials.
- Clearly identify the planned mix of disciplines to be represented on the team, including both the undergraduate and/or graduate student members and the PI and co-investigators/advisors.
- Identify any stakeholders, including members, in the STEM education ecosystem and the role of the applicant in the ecosystem.

Section 4: Project Management

- Provide schedules for key milestones and project tasks.
- Provide the areas of expertise/experience to be represented on the project 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.
- Describe how the project will be managed, including the roles and responsibilities of all faculty and team members.

Appendices may be included but must remain within the 12-page limit.

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 Part 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. 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: https://www.epa.gov/osa/basic-information-about-human-subjects-research-0.

Procedures for the review and oversight of human research subject to 40 CFR Part 26 are also provided in EPA Order 1000.17A (https://www.epa.gov/osa/epa-order-100017-policy-and-procedures-protection-human-research-subjects-epa-conducted-or). These include review of projects for EPA-supported human research by the EPA Human Subjects Research Review Official (HSRRO). Additional requirements must be met and final approval must be received from the HSRRO before the human subjects' portion of the research can begin. When reviewing human observational exposure studies, EPA Order 1000.17A requires the HSRRO to apply the principles described in the SEAOES document (https://nepis.epa.gov/Exe/ZyPDF.cgi/P10012LY.PDF?Dockey=P10012LY.PDF) and grant approval only to studies that adhere to those principles.

All applications submitted under this solicitation must include a HSRS as described below. For more information about what constitutes human subjects research, please see: https://www.epa.gov/osa/basic-information-about-human-subjects-research-0. For information on the prohibition on the inclusion of vulnerable subjects in intentional exposure research, please see: https://www.epa.gov/osa/basic-information-about-human-subjects-research-0.

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 note that even research that has been determined to be exempt from the human subjects regulations by an IRB must be reviewed by the EPA HSRRO. Therefore, consider exempt research to include human subjects work for this EPA solicitation. Do not exceed **four** consecutively numbered, 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. 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 human subjects oversight review may begin.

NOTE: Researchers must provide evidence of an assurance on file with the U.S. Department of Health and Human Services (HHS) or other Federal Agency that it will comply with regulatory provisions in the Common Rule. In special circumstances where there is no such assurance, EPA will work with investigators to obtain an assurance from HHS or another source.

Complete all items below for studies involving human subjects.
Protection of Human Subjects (Adapted from National Institutes of Health Supplemental Instructions for PHS 398 and SF424 (R&R) II-10)

1. Risks to Human Subjects
    a. Human Subjects Involvement, Characteristics and Design
        - Describe and justify the proposed involvement of human subjects in the work outlined in the Research Strategy section.
        - Describe the characteristics of the subject population, including their anticipated number, age range, and health status, if relevant.
        - Describe and justify the sampling plan, including retention strategies and the criteria for inclusion or exclusion of any subpopulation.
        - Explain the rationale for the involvement of special vulnerable populations, such as pregnant women, children, or others who may be considered vulnerable populations.
        - If relevant to the proposed research, describe procedures for assignment to a study group. As related to human subject's protection, describe and justify the selection of an intervention's dose, frequency, and administration.
        - List any collaborating sites where human subjects research will be performed and describe the role of those sites and collaborating investigators in performing the proposed research. Explain how data from the site(s) will be obtained, managed, and protected.
    b. Sources of Materials
        - Describe the research material obtained from living individuals in the form of specimens, records, or data.
        - Describe any data that will be collected from human subjects for the project(s) described in the application.
        - Indicate who will have access to individually identifiable private information about human subjects.
        - Provide information about how the specimens, records, and/or data are collected, managed and protected as well as whether material or data that include individually identifiable private information will be collected specifically for the proposed research project.
    c. Potential Risks

- Describe all the potential risks to subjects posed by participation in the research (physical, psychological, financial, legal, or other), and assess their likelihood and seriousness to the human subjects.
- Where appropriate, describe alternative treatments and procedures, including the risks and potential benefits of the alternative treatments and procedures, to participants in the proposed research.

2. Adequacy of Protection Against Risks
   a. Recruitment and Informed Consent
      - Describe plans for the recruitment of subjects (where appropriate) and the process for obtaining informed consent. If the proposed studies will include children, describe the process for meeting requirements for parental permission and child assent.
      - 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. If a waiver of some or all of the elements of informed consent will be sought, provide justification for the waiver.
   b. Protections Against Risk
      - Describe planned procedures for protecting against or minimizing potential risks, including risks to privacy of individuals or confidentiality of data and assess their likely effectiveness.
      - Research involving vulnerable populations, as described in the EPA regulations, Subparts B-D, must include additional protections. Refer to EPA guidance:

        Prohibition of Research Conducted or Supported by EPA Involving Intentional Exposure of Human Subjects who are Children or Pregnant or Nursing Women
        https://www.epa.gov/osa/basic-information-about-human-subjects-research-0

        Additional Protections for Pregnant Women and Fetuses Involved as Subjects in Observational Research Conducted or Supported by EPA
        https://www.epa.gov/osa/basic-information-about-human-subjects-research-0

        Additional Protections for Children Involved as Subjects in Observational Research Conducted or Supported by EPA
        https://www.epa.gov/osa/basic-information-about-human-subjects-research-0

      - Where appropriate, discuss plans for ensuring necessary medical or professional intervention in the event of adverse effects to the subjects. Studies that involve clinical trials must include a general description of the plan for data and safety monitoring of the clinical trials and adverse event reporting to the IRB, the Data and Safety Monitoring Board (DSMB) (if one has been established for the trial), the EPA and others, as appropriate, to ensure the safety of subjects.

3. Potential Benefits of the Proposed Research to Human Subjects and Others
   - Discuss the potential benefits of the research to research participants and others.

- Discuss why the risks to subjects are reasonable in relation to the anticipated benefits to research participants and others.
- Please note that financial compensation of subjects is not considered to be a benefit of participation in research.

4. Importance of the Knowledge to be Gained
   - Discuss the importance of the knowledge to be gained as a result of the proposed research.
   - Discuss why the risks to subjects are reasonable in relation to the importance of the knowledge that reasonably may be expected to result.

Note that an Interventional Study (or Clinical Trial) is a clinical study in which participants are assigned to receive one or more interventions (or no intervention) so that researchers can evaluate the effects of the interventions on biomedical or health-related outcomes; the assignments are determined by the study protocol.

c. Scientific Data Management Plan (2 pages)

Applications submitted in response to this solicitation must include a Scientific Data Management Plan (SDMP) that addresses public access to EPA-funded scientific research data by including the information below:

(1) If the proposed research described in the application is expected to result in the generation of scientific research data, the application must include a Scientific Data Management Plan (SDMP) of up to two single-spaced pages (this is in addition to any application page limits described in Section IV of this solicitation that apply to other parts of the application package) describing plans for providing long-term preservation of, and public access to, the scientific research data and accompanying metadata created and/or collected under the award (including data generated under subawards and contracts) funded in whole or in part by EPA. The SDMP should indicate that recipients will make accessible, at a minimum, scientific research data and associated metadata underlying their scientific research journal publications funded in whole or in part by EPA. SDMPs should reflect relevant standards and community best practices for data and metadata and make use of community-accepted repositories whenever practicable. The contents of the SDMP (or absence thereof) will be considered as part of the application review process for selected applicants as described in Section V and must be deemed acceptable for the applicant to receive an award. The SDMP should include the following elements (Note: If any of the items listed below do not apply, please explain why):

(i) Types of scientific research data and metadata expected to be generated and/or collected under the award.
(ii) The location where the data will be publicly accessible.
(iii) The standards to be used for data/metadata format and content.
(iv) Policies for accessing and sharing data including provisions for appropriate protection of privacy, security, intellectual property, and other rights or requirements consistent with applicable laws, regulations, rules, and policies.

(v) Plans for digital data storage, archiving, and long-term preservation that address the relative value of long-term preservation and access along with the associated costs and administrative burden.
(vi) Description of how data accessibility and preservation will enable validation of published results or how such results could be validated if data are not shared or preserved.
(vii) Roles and responsibilities for ensuring SDMP implementation and management (including contingency plans in case key personnel leave the project).
(viii) Resources and capabilities (equipment, connections, systems, software, expertise, etc.) requested in the research application that are needed to meet the stated goals for accessibility and preservation (reference can be made to the relevant section of the research application's budget justification).
(ix) If appropriate, an explanation as to why data accessibility and/or preservation are not possible.

(2) If the proposed research is not expected to result in the generation of scientific research data, provide the following statement (not subject to any application page limits described in Section IV of this solicitation) in your application as the SDMP: "The proposed research is not expected to result in the generation of scientific research data." If scientific research data are generated after award, the recipient agrees to update the statement by providing EPA with a revised SDMP (see content of SDMP described above) describing how scientific research data and accompanying metadata created and/or collected under the award (including data generated under subawards and contracts) will be preserved and, as appropriate, made publicly accessible.

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

iv) Budget Justification *[3 pages in addition to the Section IV.C.5.iii page limitations]*

Identify the amount requested for each budget category and describe the basis for calculating the personnel, fringe benefits, travel, equipment, supplies, contractual support, and other costs identified in the SF-424A. The budget justification should not exceed three consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. EPA provides detailed guidance on preparing budgets and budget justifications in the Agency's Interim General Budget Development Guidance for Applicants and Recipients of EPA Financial Assistance.

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

a. Personnel: List all staff positions by title. Give annual salary, percentage of time assigned to the project, total cost for the budget period, project role, and specify any annual cost of living adjustments. Compensation paid for employees engaged in grant activities must be consistent with payments for similar work within the applicant organization. Note that for salaries to be allowable as a direct charge to the award, a justification of how that person will be directly

involved in the project must be provided. General administrative duties such as answering telephones, filing, typing, or accounting duties are not considered acceptable.

Below is a sample computation for Personnel:

Position/Title	Annual Salary	% of Time Assigned to Project	Year 1	Year 2*	Cost
Project Manager	$50,000	2%	$1,000	$1,030	$2,030
Total Personnel					**$2,030**

***There is a 3% increase after Year 1 for all personnel for cost-of-living adjustments**

Note this budget category is limited to persons employed by the applicant organization ONLY. Please specify if students are considered employees of the university. Those employed elsewhere are classified as subawardees, program participants, contractors, or consultants. Contractors and consultants should be listed under the "Contractual" budget heading. Subawards made to eligible subrecipients are listed under the "Other" budget heading. Participant support costs such as stipends or travel assistance for trainees (e.g., interns or fellows) are listed under the "Other" budget heading.

b. Fringe Benefits: Identify the percentage used and the basis for its computation. Fringe benefits are for the personnel listed in budget category (1) above and only for the percentage of time devoted to the project. Fringe benefits include but are not limited to the cost of leave, employee insurance, pensions and unemployment benefit plans. The applicant should not combine the fringe benefit costs with direct salaries and wages in the personnel category.

Below is a sample computation for Fringe Benefits:

Position/Title	Base Fringe % Rate	*Year 1*	*Year 2**	Total
Project Manager	47.22%	$472	$486	$958

***An annual inflation rate of 3% has been factored into year 2 of the fringe benefits.**

c. Travel: In a table format, specify the estimated number of trips, purpose of each trip, number of travelers per trip, destinations, and other costs for each type of travel for applicant employees. Travel costs for program participants should be specified in the "Other" budget category. Explain the need for any travel, paying particular attention to travel outside the United States. Foreign travel includes trips to Mexico and Canada but does not include trips to Puerto Rico, the U.S. territories or possessions. **If EPA funds will not be used for foreign travel, the budget justification must expressly state that the applicant will not use EPA funds for foreign travel without approval by EPA.**

Please designate if students are considered employees of the university. If they are not, then costs should be moved to Participant Support Costs, which is a subcategory under Other. If they are considered employees, please state so and leave the costs under Travel. Please provide an amount for conference registration. It is understood that the amount is an estimation.

Below is a sample computation for Travel:

Purpose of Travel	Location	Item	Computation	Cost
EPA P3 Travel	East Coast City	Lodging	1 rooms x $200 x 2 nights	$400
		Airfare	1 round trip at $528	$528
		Per Diem	3 days at $74	$222
Total Travel:				**$1,150**

d. Equipment: Identify all tangible, non-expendable personal property to be purchased that has an acquisition cost of $5,000 or more per unit and a useful life of more than one year. Equipment also includes accessories and services included with the purchase price necessary for the equipment to be operational. It does not include: (1) equipment planned to be leased/rented; or (2) separate equipment service or maintenance contracts. 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. Particular brands of equipment should not be identified. 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).

e. Supplies: "Supplies" are tangible property other than "equipment" with a per item acquisition cost of less than $5,000. Include a brief description of the supplies required to perform the work. Costs should be categorized by major supply categories (e.g., office supplies, computing devices, monitoring equipment) and include the estimated costs by category.

Sample description for Supplies:
An estimated $xxxx is needed for materials and tools to construct a prototype as well as purchasing testing materials for a bench-scale model. Supplies (e.g., reagents, buffers) will be needed to determine optimum operating conditions (e.g., temperature, airflow).

Materials and supplies cost (List each item and unit cost)

Supply Category	Supplies	Unit Cost	Unit Quantity	Cost
Bench supplies	Glassware	$50	10	$500
	Reagent	$200	3	$600

Total Supplies: $1,100

f. Contractual: List the proposed contractual activities along with a brief description of the scope of work or services to be provided, the proposed duration of the contract/procurement, the estimated cost, and the proposed procurement method (competitive or non-competitive). **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 200.317-200.327. Please see https://www.epa.gov/grants/epa-solicitation-clauses for more details.** EPA provides

detailed guidance on procurement requirements in the Agency's Best Practice Guide for Procuring Services, Supplies, and Equipment Under EPA Assistance Agreements.

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. Speaker/Trainer Fees – Information on speakers should include the fee and a description of the services they are providing.

g. 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 equipment rental, telephone service and utilities and photocopying costs. Note that subawards, such as those with other universities or nonprofit research institutions for members of the research team, are included in this category. **Provide the total costs proposed for subawards as a separate line item in the budget justification and brief description of the activities to be supported for each subaward or types of subawards if the subrecipients have not been identified.** Subawards may not be used to acquire services from consultants or commercial firms. Please see https://www.epa.gov/grants/epa-solicitation-clauses for more details. The "Other" budget category also includes participant support costs such as stipends or travel assistance for trainees (e.g., interns or fellows). **Provide the total costs proposed for participant support costs as a separate line item in the budget justification and brief description of the costs. If EPA funds will not be used for foreign travel by program participants, the budget justification must expressly state that the applicant will not use EPA funds for foreign travel without approval by EPA.**

Sample Description for Participant Support Costs (PSC):
Estimated travel cost for six students to attend the 2025 EPA P3 National Student Design Expo in a major East Coast city is $5700, as shown below.

Non-Employee Travel Expenses

Purpose of Travel	Location	Item	Computation	Cost
EPA P3 Travel	East Coast City	Lodging	**3 rooms x $200 x 2 nights**	$1,200
		Airfare	6 people x $528	$3,168
		Per Diem	6 people x $74 x 3 days	$1,332
Total PSC Travel				$5,700

No international travel will occur without prior approval from the EPA.

Total Participant Support Costs: $5,700

A. **Facilities rental** (if any): This project will be based at (facility). (Explain rental cost)

B. **Shipping**, (if any): (Note: This includes shipping a prototype to the Expo.)

C. **Analysis,** (if any): For work such as sample analysis or fabrication done by the recipient institution.

h. Indirect Costs: For additional information pertaining to indirect costs, please see the IDC Competition Clause at EPA Solicitation Clauses.

v) 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 https://grants.nih.gov/grants/forms/biosketch.htm for information on the BioSketch; also see https://www.nlm.nih.gov/pubs/techbull/so13/so13_sciencv.html for information on SciENcv). These materials should generally conform to the requirements for a resume (e.g., content and page number).

vi) Current and Pending Support

Complete a current and pending support form (provided at https://www.epa.gov/research-grants/research-funding-opportunities-how-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 an 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.

vii) 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 application. 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 https://www.epa.gov/grants/epa-solicitation-clauses.

b. Funding Opportunity Number(s) (FON)
At various places in the application, applicants are asked to identify the FON.

The Funding Opportunity Number(s) for this RFA are:

20th Annual P3 Awards: A National Student Design Competition Focusing on People, Prosperity and the Planet

EPA-G2023-P3-Q1 - Clean and Healthy Air
EPA-G2023-P3-Q2 - Clean and Safe Water
EPA-G2023-P3-Q3 - Safeguard and Revitalize Communities
EPA-G2023-P3-Q4 - Ensure Safety of Chemicals

Applicants must select the FON corresponding to their proposed research 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.**

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 solicitation closing date and time will be deemed ineligible without further consideration. EPA will not accept any changes to applications after the solicitation 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 EPA's Research Grants website (https://www.epa.gov/research-grants) and a modification posted on Grants.gov.

Solicitation Closing Date: **February 1, 2023,** 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 Office of Research and Development solicitations 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 (as needed), 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.

Coalitions

Groups of two or more eligible applicants may choose to form a coalition and submit a single application under this RFA; however, one entity must be responsible for the grant. Coalitions must identify which eligible organization will be the recipient of the grant and which eligible organization(s) will be subrecipients of the recipient (the "pass-through entity"). *Subawards* must be consistent with the definition of that term in 2 CFR 200.1 and comply with EPA's Subaward Policy. The pass-through entity that administers the grant and subawards will be accountable to EPA for proper expenditure of the funds and reporting and will be the point of contact for the coalition. As provided in 2 CFR 200.332, subrecipients are accountable to the pass-through entity for proper use of EPA funding.

For-profit organizations are not eligible for subawards under this grant program but may receive procurement contracts. Any contracts for services or products funded with EPA financial assistance must be awarded under the competitive procurement procedures of 2 CFR Part 200 and/or 2 CFR Part 1500, as applicable. The regulations at 2 CFR 1500.10 contain limitations on the extent to which EPA funds may be used to compensate individual consultants. Refer to the Best Practice Guide for Procuring Services, Supplies, and Equipment Under EPA Assistance Agreements for guidance on competitive procurement requirements and consultant compensation. Do not name a procurement contractor (including a consultant) as a "partner" or otherwise in your application unless the contractor has been selected in compliance with competitive procurement requirements.

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 appropriate internet access 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. SAM.gov (System for Award Management) Registration Instructions: Organizations applying to this funding opportunity must have an active SAM.gov registration. If you have never done business with the Federal Government, you will need to register your organization in SAM.gov. If you do not have a SAM.gov account, then you will create an account using login.gov[3] to complete your SAM.gov registration. SAM.gov registration is FREE. The process for entity registrations includes obtaining Unique Entity ID (UEI), a 12-character alphanumeric ID assigned an entity by SAM.gov, and requires assertions, representations and certifications, and other information about your organization. Please review the Entity Registration Checklist for details on this process.

If you have done business with the Federal Government previously, you can check your entity status using your government issued UEI to determine if your registration is active. SAM.gov requires you renew your registration every 365 days to keep it active.

Please note that SAM.gov registration is different than obtaining a UEI only. Obtaining an UEI only validates your organization's legal business name and address. Please review the Frequently Asked Question on the difference for additional details.

Organizations should ensure that their SAM.gov registration includes a current e-Business (EBiz) point of contact name and email address. The EBiz point of contact is critical for Grants.gov Registration and system functionality.

Contact the Federal Service Desk for help with your SAM.gov account, to resolve technical issues or chat with a help desk agent: (866) 606-8220. The Federal Service desk hours of operation are Monday – Friday 8am – 8pm ET.

2. Grants.gov Registration Instructions: Once your SAM.gov account is active, you must register in Grants.gov. Grants.gov will electronically receive your organization information, such as e-Business (EBiz) point of contact email address and UEI. Organizations applying to this funding opportunity must have an active Grants.gov registration. Grants.gov registration is FREE. If you have never applied for a federal grant before, please review the Grants.gov Applicant Registration instructions. As part of the Grants.gov registration process, the EBiz point of contact is the only person that can affiliate and assign applicant roles to members of an organization. In addition, at least one person must be assigned as an Authorized Organization Representative (AOR). Only person(s) with the AOR role can submit applications in Grants.gov. Please review the Intro to Grants.gov-Understanding User Roles and Learning Workspace – User Roles and Workspace Actions for details on this important process.

Please note that this process can take a month or more for new registrants. Applicants must

[3] Login.gov a secure sign in service used by the public to sign into Federal Agency systems including SAM.gov and Grants.gov. For help with login.gov accounts you should visit http://login.gov/help.

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 application submission deadline.

Contact Grants.gov for assistance at 1-800-518-4726 or support@grants.gov to resolve technical issues with Grants.gov. 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. The Grants.gov Support Center is available 24 hours a day 7 days a week, excluding federal holidays.

3. Application Submission Process: To begin the application process under this grant announcement, go to Grants.gov and click the red "Apply" button at the top of the view grant opportunity page associated with this opportunity.

The electronic submission of your application to this funding opportunity must be made by an official representative of your organization who is registered with Grants.gov and is authorized to sign applications for Federal financial assistance. If the submit button is grayed out, it may be because you do not have the appropriate role to submit in your organization. Contact your organization's EBiz point of contact or contact Grants.gov for assistance at 1-800-518-4726 or support@grants.gov.

Applicants need to ensure that the Authorized Organization Representative (AOR) who submits the application through Grants.gov and whose UEI is listed on the application is an AOR for the applicant listed on the application. Additionally, the UEI listed on the application must be registered to the applicant organization's SAM.gov account. If not, the application may be deemed ineligible.

Please submit all of the application materials described below using the Grants.gov application package accessed using the instructions above.

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 (e) below.

(c) EPA Form 4700-4, Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance: Complete the form.

(d) 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.

(e) Project Narrative Attachment Form: Attach a single electronic PDF file labeled "Application" that contains the items described in Section IV.C.5.i through IV.C.5.vii.a (Table of Contents, Abstract, Research Plan, Human Subjects Research Statement, Scientific Data Management Plan, 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 https://www.epa.gov/research-grants/research-funding-opportunities-how-apply-and-required-forms) are needed, attach them using the Project Narrative Form.

4. Application Submission Deadline: Your organization's AOR must submit your complete application package electronically to EPA through Grants.gov no later than **February 1, 2023**, 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.

Applications submitted through Grants.gov will be time and date stamped electronically. Please note that successful submission of your application through Grants.gov does not necessarily mean your application is eligible for award. Any application submitted after the application deadline time and date deadline will be deemed ineligible and not be considered.

5. Technical Issues with Submission: If applicants experience technical issues during the submission of an application that they are unable to resolve, follow these procedures **before** the application deadline date:

a. Contact Grants.gov Support Center **before** the application deadline date.

b. Document the Grants.gov ticket/case number.

c. Send an email with the FON (EPA-G2023-P3-Q1, EPA-G2023-P3-Q2, EPA-G2023-P3-Q3, or EPA-G2023-P3-Q4) in the subject line to electronic-grant-submissions@epa.gov **before** the application deadline time and date and **must** include the following:
i. Grants.gov ticket/case number(s)
ii. Description of the issue
iii. The entire application package in PDF format.

Without this information, EPA may not be able to consider applications submitted outside of Grants.gov. Any application submitted after the application deadline time and date deadline will be deemed ineligible and **not** be considered.

Please note that successful submission through Grants.gov or email does not necessarily mean your application is eligible for award.

EPA will make decisions concerning acceptance of each application submitted outside of Grants.gov on a case-by-case basis. EPA will only consider accepting applications that were unable to submit through Grants.gov due to Grants.gov or relevant SAM.gov system issues or for unforeseen exigent circumstances, such as extreme weather interfering with internet access. Failure of an applicant to submit prior to the application submission deadline date because they did not properly or timely register in SAM.gov or Grants.gov is not an acceptable reason to justify acceptance of an application outside of Grants.gov.

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 ORD is the email acknowledgement sent by ORD 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 contact EPA at electronic-grant-submissions@epa.gov. Failure to do so may result in your application not being reviewed.***

V. APPLICATION REVIEW INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

A. 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 its scientific merit. 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 access to electronic copies of all 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 read the entire application package for each application they are assigned. The primary reviewers 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*. To promote a better panel discussion, all reviewers must, at a minimum, read the abstracts of all applications.

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 entire 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 relevancy and past performance 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.

All eligible grant applications 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. **Application Quality** (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the application includes a design and demonstration that is scientifically/technically sound and feasible; clearly expresses its innovative aspects (supported by a literature review where appropriate) and challenges and 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 (see Section I.D for definition of innovation for purposes of this RFA); lists clear, achievable goals, and objectives; identifies and suitably engages end users; and if partners are identified, describes their roles, responsibilities, and contributions to helping the project succeed. Applicants that do not plan on partnering with other groups in the performance of the project will be evaluated based on the extent to which they demonstrate how they will be able to effectively perform and complete the project without such partnership.
b. Alignment of the Proposal to the P3 Strategic Principles (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the proposed research aligns with the Program's four principles and offers sustainable solutions that protect the environment, strengthen communities, and create economic benefits; 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 in the affected communities and elsewhere. (See Section I.D for definition of sustainability for purposes of this RFA. The sustainability primer, https://www.epa.gov/sites/default/files/2015-05/documents/sustainability_primer_v9.pdf, describes sustainability concepts in more detail).
c. **Educational and Interdisciplinary Aspects of Research** (the subcriteria identified within this criteria are essentially equally weighted) – The degree to which the project clearly identifies the educational benefits of the research; provides a plan for teaching the P3 principles that includes a description of the STEM education ecosystem that would be supported or developed as a result of the P3-funded project; identifies the university, community, and/or other audiences who will be taught; adequately describes the teaching

methods and materials; clearly identifies the planned mix of disciplines to be represented on the team, including undergraduate and/or graduate student members and the PI and co-investigators/advisors; and identifies stakeholders, including members, in the STEM education ecosystem and the role of the applicant in the ecosystem.

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; includes adequate approaches, procedures and controls for ensuring timely and efficient expenditure of awarded grant funds; adequately describes expertise/experience to be represented on the project team; describes facilities and other resources to be used on the project; provides a schedule with milestones and demonstrates the project will be adequately managed to ensure timely and successful achievement of project objectives; describes how progress toward achieving outputs and social, economic, and environmental outcomes will be tracked and measured; and describes how the project will be managed, including the roles and responsibilities of all faculty and team members.

B. Relevancy Review

Applications receiving final peer review scores of Excellent or Very Good will then undergo an internal relevancy review, as described below, conducted by experts from the EPA. All other applications are automatically declined. The purpose of the relevancy review is to ensure an integrated research portfolio for the Agency and help determine which applications to recommend for award.

Each application will be assigned to one relevancy reviewer. The reviewer will prepare a written evaluation for each assigned application that addresses the relevancy review criteria described below and rate the application with a score of **A**, High Relevance to EPA mission; **B**, Relevant to EPA mission; **C**, Moderately Relevant to EPA mission; **D**, Possibly Relevant to EPA mission; or **E**, Not Relevant to EPA mission.

The final relevancy review score (A, B, C, D, or E) and final peer review score (Excellent or Very Good) will be used to place each application in one of 6 ranking tiers: Tier 1 = A/ Excellent; Tier 2 = A/Very Good or B/Excellent; Tier 3 = B/Very Good or C/Excellent; Tier 4 = C/Very Good or D/Excellent; Tier 5 = D/Very Good; Tier 6 = E/Excellent or E/Very Good.

The internal relevancy reviewer will assess the relevancy of the proposed research to the EPA's mission and priorities based on the following criteria that are equally weighted.

1. The degree to which the proposed science/research is relevant to EPA's priorities as described in this solicitation and the applicable Goal/Objective listed below from the U.S. EPA's FY2022-2026 Strategic Plan):

   Goal 4: Ensure Clean and Healthy Air for All Communities,
   - Objective 4.1: Improve Air Quality and Reduce Localized Pollution and Health Impacts

- Objective 4.2: Reduce Exposure to Radiation and Improve Indoor Air;

Goal 5: Ensure Clean and Safe Water for All Communities,
- Objective 5.1: Ensure Safe Drinking Water and Reliable Water Infrastructure
- Objective 5.2: Protect and Restore Waterbodies and Watersheds;

Goal 6: Safeguard and Revitalize Communities,
- Objective 6.1: Clean Up and Restore Land for Productive Uses and Healthy Communities
- Objective 6.2: Reduce Waste and Prevent Environmental Contamination; or

Goal 7: Ensure Safety of Chemicals for People and the Environment,
- Objective 7.1: Ensure Chemical and Pesticide Safety
- Objective 7.2: Promote Pollution Prevention

2. The degree to which the research is primarily performed in the U.S. and the benefits of the research primarily accrue to the U.S.

C. Past Performance History Review

Those applicants who received final scores of Excellent or Very Good as a result of the peer review process will also be asked to provide additional information for the past performance history review pertaining to the proposed PI's "Past Performance and Reporting History." The applicant must provide the EPA 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, (ii) history of meeting the reporting requirements and documenting progress towards achieving the expected results (outputs/outcomes) under each agreement, and (iii) whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from those agreements were made publicly accessible.

This information is required only for the proposed PI's performance under Federal assistance agreements performed within the last five years.

Past performance history review scores are satisfactory (S), nothing to report (NTR) or unsatisfactory (U). For purposes of consideration of an award, scores of S will be considered favorable, NTR will be considered neither favorable nor unfavorable and scores of U will be considered unfavorable and unlikely to result in an award recommendation. Scores of S and U must be justified by the reviewer, with scores of U clearly documented to explain why past performance history cannot be considered satisfactory.

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 Awarding Agency
2. Grant/Cooperative agreement number
3. Grant/Cooperative agreement title
4. Grantee Institution
5. Brief description of the grant/cooperative agreement
6. A discussion on whether the agreement was successfully managed and completed; if not successfully managed and completed, provide an explanation
7. Information relating to the proposed PI's past performance in reporting on progress towards achieving the expected results (outputs/outcomes) under the agreement and meeting reporting requirements under the agreement. Include the history of submitting acceptable and 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
8. Information relating to whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from those agreements were made publicly accessible (and if not, explain why not; or explain why this requirement does not apply) to the extent permissible under applicable laws and regulations
9. Total (all years) grant/cooperative agreement dollar value
10. Project period
11. Technical contact (project officer), telephone number and Email address (if available)

In evaluating applicants under the past performance history factor, EPA will consider the information provided by the applicant and may also consider relevant information from other sources, including information from EPA files and from current/prior grantors (e.g., to verify and/or supplement the information provided by the applicant). **If you do not have any relevant or available past performance or past reporting information, please indicate this in your response and you will receive a nothing to report (NTR) score for these factors assuming EPA does not have any information in its files or from other sources that can be considered. If you do not provide any response for these items, you may receive an unsatisfactory (U) score for these factors.**

The past performance history review will be conducted by the EPA and will assess the following criteria which are of equal weight:

1. History of successfully managing and completing these prior Federal assistance agreements, including whether there is a satisfactory explanation for any lack of success.

2. History in meeting reporting requirements under the prior agreements and reporting progress toward achieving results (outputs/outcomes) under these agreements, including the proposed PI's history of submitting acceptable and 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.

3. History of whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from these prior assistance agreements were made publicly accessible, and if not whether the PI adequately explained why not, or the PI explained why the requirement does not apply.

D. Human Subjects Research Statement (HSRS) Review

Applications being considered for funding after the Relevancy and Past Performance Review that involve human subjects research studies will have their HSRS reviewed prior to award. The local EPA Human Subjects Officer (HSO) 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 the project to move forward. The HSO may consult with the EPA Human Subjects Research Review Official (HSRRO) as appropriate. The HSRRO may determine that an application cannot be funded if it is inconsistent with EPA's regulations at 40 CFR Part 26.

E. Evaluation of the Scientific Data Management Plan

EPA will evaluate the merits of the SDMPs for those applications recommended for award. The SDMPs for those applications not recommended for award will not be reviewed. The SDMPs of all applications recommended for award will be evaluated to ensure they are appropriate and adequate (e.g., describe the types of scientific research data and metadata to be collected and/or generated under the proposed research award and include plans for providing long-term preservation of, and public access to, the scientific research data and metadata). SDMPs that indicate the proposed research will not result in the generation and/or collection of scientific research data will also be evaluated to ensure the proposed research will not result in the generation and/or collection of scientific research data and therefore not require a more comprehensive SDMP. Applicants may be contacted regarding their SDMP if additional information is needed or if revisions are required prior to award. If upon review of the SDMP, EPA identifies any issues with the plan, EPA will raise these issues to the applicant, so they may be addressed. Applicants with an unsatisfactory SDMP will not receive an award.

F. Funding Decisions

EPA expects to select approximately 16 of the highest ranked applications for award. To increase the number of grants awarded to institutions who have not traditionally received awards, EPA intends to use approximately 50% of the total amount of funding available under this announcement for grants to "new awardees." This percentage is only an estimate and is subject to change based on funding levels, the quality of applications received, and other applicable considerations.

For selection purposes, EPA's Office of Research and Development will prepare two ranked

lists of applications.

One list will be comprised of "existing and recent recipients" defined as:

- Applicants who have an open EPA P3 grant, or
- Applicants who were awarded an EPA P3 grant with a project period start date in calendar year 2018 or later.

A second list will be comprised of "new awardees" defined as:

- Applicants who have never received an EPA P3 grant, or
- Applicants who were awarded an EPA P3 grant with a project period start date in calendar year 2017 or earlier.

Final funding decisions are made by the ORD selection official based on the ranking tier, the past-performance history review, the evaluation of the SDMP, and, where applicable, the assessment of the applicant's human subjects research (see Section IV.C.5.iii.b). In addition, in making the final funding decisions, the ORD selection official 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.

VI. AWARD ADMINISTRATION INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

A. Award Notices

Customarily, applicants are notified about evaluation decisions within six months of the solicitation closing date. 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.

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 ORD selection official 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. Administrative and National Policy Requirements

Expectations and responsibilities of ORD grantees and cooperative agreement recipients are summarized in this section, although the terms grants and cooperative agreements are used interchangeably.

1. **Meetings:** Principal Investigators will be expected to budget for and present their research at a location to be determined in the eastern U.S. in the spring of 2025. EPA will provide teams with information about the Expo during the award year. EPA is monitoring the COVID-19 pandemic and if it is still impacting in-person meetings, a virtual Expo will be planned. PIs will be notified in advance if the National Student Design Expo moves from in-person to virtual.

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 comply with all applicable provisions of EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). In addition, grant applicants must agree to comply with EPA's procedures for oversight of the recipient's compliance with 40 CFR Part 26, as given in EPA Order 1000.17A (Policy and Procedures on Protection of Human Research Subjects in EPA Conducted or Supported Research). As per this Order, no human subject may be involved in any research conducted under this assistance agreement, including recruitment, until the research has been approved or determined to be exempt by the EPA Human Subjects Research Review Official (HSRRO) after review of the approval or exemption determination of the Institutional Review Board(s) (IRB(s)) with jurisdiction over the research under 40 CFR Part 26. Following the initial approvals indicated above, the recipient must, as part of the annual report(s), provide evidence of continuing review and approval of the research by the IRB(s) with jurisdiction, as required by 40 CFR 26.109(e).

   Guidance for investigators conducting EPA-funded research involving human subjects may be obtained here:
   https://www.epa.gov/osa/basic-information-about-human-subjects-research-0
   https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr26_main_02.tpl

4. **Data Access and Information Release:** EPA's requirements associated with data access and information release as well as copyrights, may be accessed here: https://www.epa.gov/grants/epa-solicitation-clauses.

   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 https://www.epa.gov/quality/guidelines-ensuring-and-maximizing-quality-objectivity-utility-and-integrity-information. These procedures may apply to data generated by grant recipients if those data are disseminated as described in the Guidelines.

5. **Reporting:** A grant recipient must agree to provide annual performance progress reports, with associated summaries, and a final report with an executive summary. The summaries will be posted on EPA's Research Grants website. The reports and summaries should be submitted electronically to the Technical Contact named in Section VII of this announcement.

   A grant recipient must agree to provide copies of, or acceptable alternate access to (e.g., web link), any peer reviewed journal article(s) resulting from the research during the project period. In addition, the recipient should notify the ORD Project Officer of any papers published after completion of the grant that were based on research supported by the grant. ORD posts references to all publications resulting from a grant on EPA's Research Grants website.

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. The acknowledgement to be included in any documents developed under this agreement that are intended for distribution to the public or inclusion in a scientific, technical or other journal will be provided in the award's terms and conditions.

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.

Technical Contact: Angela Page; phone: 202-564-7957; email: page.angelad@epa.gov
Eligibility Contact: Ron Josephson; phone: 202-564-7823; email: josephson.ron@epa.gov
Electronic Submissions Contact: electronic-grant-submissions@epa.gov