

ENVIRONMENTAL PROTECTION AGENCY

SMALL BUSINESS INNOVATION RESEARCH (SBIR) PROGRAM

BROAD AGENCY ANNOUNCEMENT

(PHASE I SOLICITATION)

68HERC20R0111

ISSUE DATE: June 23, 2020

CLOSING DATE: September 4, 2020

(Amendment 0001 was issued, extending the close date to 9/4/2020)

*CAUTION - See Section VI., Paragraph VI.J. (1)(c)(3), Instructions to Offerors, Concerning Late Proposals and Modifications. And Section VI., Paragraph VI.J. (1)(d), offeror expiration date. Proposals submitted in response to this solicitation will be valid for 300 days.

Your proposal (including all appendices) **shall be submitted in Portable Document Format (PDF) and shall be received via FedConnect by 12:00 p.m. (noon) Eastern Daylight Time (EDT) on September 4, 2020.** Your **entire proposal (including appendices)** shall be submitted through FedConnect as **ONE document in PDF.** Only proposals received via FedConnect as ONE PDF by the deadline identified above will be considered for award.

Please read this entire solicitation carefully prior to submitting your proposal.

Proposals shall be submitted via the FedConnect web portal (www.fedconnect.net). In order to submit proposals, offerors must register in FedConnect at www.fedconnect.net, see main page of FedConnect website for registration instructions. For assistance in registering or for other FedConnect technical questions please call the FedConnect Help Desk at (800) 899-6665 or email at support@fedconnect.net.

IMPORTANT:

Please note Section VI., Paragraph J. j, Federal Acquisition Regulation Clause 52.215-1(c)(3), “Instructions to Offerors – Competitive Acquisitions” concerning Late Proposals, Modification of Proposals and Withdrawal of Proposals.

It is the responsibility of Offerors to submit proposals in FedConnect with sufficient time to ensure they are received by the date and time specified. Offerors not already registered in SAM or FedConnect are encouraged to do so early in the process, so registration delays do not prevent timely submission. Only proposals received by the date and time specified via FedConnect will be considered for award.

TABLE OF CONTENTS

I. SBIR Program Description	5
A. Purpose of EPA’s SBIR Program	5
1. Importance of Commercialization	5
2. Importance of Considering Life Cycle Impacts	5
B. Phase I	5
C. Performance Benchmark Requirements for Phase I Eligibility	5
D. 2020-21 SBIR Phase I Research Topics	6
1. SAFE AND SUSTAINABLE WATER RESOURCES	6
2. AIR QUALITY	7
3. LAND REVITALIZATION	8
4. HOMELAND SECURITY	8
5. SUSTAINABLE MATERIALS MANAGEMENT	9
6. SAFER CHEMICALS	11
E. Phase II	12
Process	12
Evaluation	13
F. Phase III	13
G. Guidelines	13
H. Inquiries	14
I. Fraud, Waste, and Abuse	14
II. Definitions	14
A. Research or Research and Development (R/R&D)	14
B. Funding Agreement	14
C. Subcontract	14
D. Small Business Concern	14
E. Socially and Economically Disadvantaged Small Business Concern	15
F. Socially and Economically Disadvantaged Individual	15
G. Woman-Owned Small Business Concern	15
H. Historically Underutilized Business Zone (HUBZone)	15
I. Primary Employment	15
J. United States	15
K. Commercialization	15
L. SBIR Technical Data	16
M. SBIR Technical Data Rights	16
III. Certifications	16
IV. Proposal Preparation Instructions and Requirements	16
A. Proposal Page Limit and Cover Sheet	16

B.	Project Summary	16
C.	Technical and Commercial Content: Phase I Proposal	17
	Other Requirements	18
D.	Attachment 1: Phase I Quality Assurance Statement (QAS)	19
E.	Attachment 2: Phase I Cost Breakdown/Proposed Budget.....	20
F.	Attachment 3: Representations and Certifications	20
V.	Method of Selection and Evaluation Criteria	20
A.	Evaluation Process.....	21
B.	Company Registry Requirements	21
VI.	Considerations.....	22
A.	Awards.....	22
B.	Phase I Contract Reporting Requirements	22
C.	Payment Schedule	22
D.	Innovations, Inventions, and Patents	22
E.	Cost Sharing.....	24
F.	Profit or Fee.....	24
G.	Joint Ventures or Limited Partnerships	24
H.	Research and Analytical Work.....	24
I.	Contractor Commitments.....	24
J.	Additional Information	25
VII.	Submission of Proposals	38
VIII.	Scientific and Technical Information Sources.....	38
IX.	Submission Forms and Certifications	40
	Appendix 1 – Proposal Cover Sheet.....	41
	Appendix 2 – Project Summary.....	43
	Appendix 3 – SBIR Proposal Summary Budget	49
	Appendix 4	46
	4.1 52.204-8 — ANNUAL REPRESENTATIONS AND CERTIFICATIONS. (JAN 2018).....	46
	4.2 REPRESENTATION BY CORPORATIONS REGARDING DELINQUENT TAX LIABILITY OR A FELONY CONVICTION UNDER ANY FEDERAL LAW. (FAR 52.209-11) (FEB 2016)	48
	4.3 ORGANIZATIONAL CONFLICT OF INTEREST CERTIFICATION (EPAAR 1552.209-72) (APR 1984).....	48
	4.4 SOCIAL SECURITY NUMBERS OF CONSULTANTS AND CERTAIN SOLE PROPRIETORS AND PRIVACY ACT STATEMENT (EPAAR 1552.224-70) (APR 1984).....	49
	4.5 SIGNATURE BLOCK.....	49
	4.6 CONGRESSIONAL DISTRICT/DUN AND BRADSTREET NUMBER.....	49
	4.7 SBIR FUNDING AGREEMENT LIFECYCLE CERTIFICATION.....	50

PHASE I SOLICITATION FOR SMALL BUSINESS INNOVATION RESEARCH

I. SBIR PROGRAM DESCRIPTION

A. Purpose of EPA's SBIR Program

Every Federal agency with an extramural research and development (R&D) budget over \$100 million is required by law to have a Small Business Innovation Research (SBIR) program. For the Environmental Protection Agency (EPA), the SBIR program provides one way it can directly award R&D funding to small businesses. The goal of EPA's SBIR Program is to support commercialization of innovative technologies that help support EPA's mission of protecting human health and the environment. Each agency implements the program in a phased manner that follows the technology development continuum: research, development, demonstration, commercialization, and utilization. The number of phases an agency supports depends on its program needs and budget. Generally, there are two phases: the first is for proof of concept, and the second is intended to move the technology as far as possible toward full-scale commercialization. The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The SBIR program does not fund Phase III.

1. Importance of Commercialization

For EPA, success of its SBIR program means that the technologies it supports will in fact be used to solve the problems for which they are being developed; therefore, from the outset of the selection process, EPA will consider commercialization potential to be as important as technical potential, and it will evaluate proposals accordingly (see evaluation criteria in section V). An offeror is encouraged to conduct some market research before submitting their proposal to this solicitation to demonstrate that there is a viable market opportunity.

2. Importance of Considering Life Cycle Impacts

In order to support the Agency's mission of protecting human health and the environment, the lifecycle environmental impacts of the technology, including (if applicable) minimizing resource use, minimizing toxicity of materials, efficient use of water and energy, minimizing pollution, and minimizing the impacts of disposal should be considered. A formal Life Cycle Analysis (LCA) is not required.

B. Phase I

The EPA anticipates making approximately twenty (20) Phase I awards, each in the amount up to \$100,000 and not to exceed a six (6) month term of performance. It is anticipated that these contracts will be awarded with a contract start date of February 1, 2021. The Phase I effort is for "proof of concept" of the proposed technology. All companies that successfully complete Phase I are eligible to compete for Phase II which is to further develop and commercialize the technology.

C. Performance Benchmark Requirements for Phase I Eligibility

Companies with multiple SBIR/STTR (Small Business Technology Transfer) awards must meet minimum performance requirements to be eligible to apply for a new Phase I or Direct-to-Phase II award. The purpose of these requirements is to ensure that Phase I applicants that have won multiple prior SBIR/STTR awards are making progress towards commercializing the work done under those awards. The Phase I to Phase II Transition Rate addresses the extent to which an awardee progresses a project from Phase I to Phase II. The Commercialization Benchmark addresses the extent to which an awardee has moved past Phase II work towards commercialization. All offerors for an SBIR or STTR award must be registered on www.SBIR.gov. Offerors should be sure to update their information on the Company Registry at least once per year. To open or update an SBIR/STTR Company Registry account, go to www.sbir.gov/user and register as a Small Business User. After the registration is complete, the SBA will issue your company a unique SBC Control ID and .pdf file to be attached to this application.

Descriptions of these rates, and consequences of failure to meet these rates can be found on SBA's website at: <https://www.sbir.gov/performance-benchmarks>.

D. 2020-21 SBIR Phase I Research Topics

Given EPA's broad mission of protecting human health and the environment, it faces a broad range of problems that need solution and for which innovative technologies could help provide solutions. Each year EPA's SBIR program selects from this broad range of problems several specific topics to include in its Phase I solicitation. The highest priority needs are identified and then the topics are written to address those needs. This solicitation is based upon the Federal Acquisition Regulation (FAR) established, Broad Agency Announcement (BAA) authority. BAAs allow for the solicitation and establishment of appropriate contracts to advance and further the development and application of innovative and emerging technologies to meet specific federal government needs, which are defined within broad problem areas.

For this solicitation, the EPA's needs are being expressed through a variety of very specific topics. Offerors must directly address and select just one of the specific topics described below.

The topics for this solicitation are:

1. SAFE AND SUSTAINABLE WATER RESOURCES

Increasing pressures on water resources has led to greater water scarcity and a growing demand for sufficient quantities of high-quality water for a variety of potable and non-potable purposes. EPA's overall goal is improving the quantity of high-quality water without creating other significant environmental impacts. Water reuse (also commonly known as water recycling or water reclamation) reclaims water from a variety of sources such as municipal wastewater, industrial and commercial process water, agricultural runoff, stormwater, and oil and gas produced water. This water is treated and reused for beneficial purposes such as agriculture and landscape irrigation, potable water supply augmentation, saltwater intrusion barriers, industrial processes, and environmental restoration. Water reuse can provide alternatives to existing water supplies and be used to enhance water security, sustainability, and resilience. <https://www.epa.gov/waterreuse>

In support of these goals, EPA recently launched the National Water Reuse Action Plan (WRAP), a coordinated and collaborative effort across the water user community to advance consideration of water reuse to ensure the security, sustainability, and resilience of our nation's water resources. <https://www.epa.gov/waterreuse/water-reuse-action-plan>

To further these goals, EPA is looking for novel water reuse monitoring and treatment technologies that can be implemented across multiple scales (including decentralized/modular systems https://wateruse.org/wp-content/uploads/2019/11/Risk-Based-Framework-for-DNWS-Report_FINAL.pdf). All technologies should consider their lifecycle impacts including energy efficiency, use of chemicals, waste generation, etc.

Topic 1A: Monitoring Technologies for Water Reuse. Novel real-time or near real-time monitoring technologies and methods that can be utilized to monitor the performance of water reuse treatment systems (for both potable and non-potable water) and allow for rapid detection of upsets to a system and related water quality issues. The ability to detect such issues in a time frame measured in minutes rather than hours or days can allow for rapid responses from facility operators to ensure the protection of public health. Ideally technologies would have potential for robust data management capabilities to support the collection and utilization of the large amount of data collected while providing operators with sufficient information to utilize such data in a meaningful way. Monitoring technologies could target quantification of specific chemical or microbial contaminants that provide an accurate indication of system performance or utilize surrogate parameters to evaluate treatment system performance in way that can be correlated with the removal or inactivation of specific contaminants. Chemicals of interest can include regulated chemicals or other emerging compounds of concern including disinfection byproducts. Microbial contaminants of concern include pathogenic bacteria, viruses, and protozoa.

Topic 1B: Treatment Technologies for Water Reuse. Novel treatment technologies that ideally are cost effective, energy efficient, do not require intensive maintenance or operational capacity, and could be implemented at small systems including at the decentralized/modular scale. There is specific interest in technologies that 1) do not generate a brine concentrate stream, 2) minimize the generation of a concentrate stream while resulting in a product water that properly removes or inactivates, salts, chemicals, and pathogens or 3) support beneficial reuse of brine concentrate. For concentrate forming technologies such as high-pressure membranes, they should produce less concentrate, manage

concentrate better than or improve de-watering of concentrate over currently used technologies. Additional areas of interest include, but are not limited to, membranes that are more resistant to fouling.

2. AIR QUALITY

Innovation in Ambient Air Monitoring

Innovation in air monitoring technologies can significantly reduce monitoring costs, provide more detailed and timely information on ambient air quality, and provide opportunities for industry to address leaks and emissions before they become serious problems. Additionally, higher time resolution and more portable measurements can be useful for screening applications. The development and evaluation of advanced next-generation air monitoring technologies is an important priority for EPA and is emphasized in the Air and Energy Strategic Research Action Plan <https://www.epa.gov/research/air-and-energy-strategic-research-action-plan-2019-2022>.

For these reasons, EPA is interested in the following topics:

Ethylene Oxide (EtO)

EtO is a flammable, colorless gas used to make other chemicals that are used in making a range of products, including antifreeze, textiles, plastics, detergents and adhesives. It is also used to sterilize equipment and plastic devices that cannot be sterilized by steam, such as medical equipment. It is one of 187 pollutants known as “air toxics” that EPA regulates under the Clean Air Act.

The National Air Toxics Assessment (NATA), issued August 2018, identified several areas as potentially having elevated cancer risks from long-term exposure (70 years) to EtO based on data from the 2014 National Emissions Inventory and the latest scientific information on air toxics and health. This is due to the revision of an EPA value known as a “unit risk estimate” that was updated in late 2016.

Topic 2A: Air monitoring technology for Ethylene Oxide (EtO). New measurement technology that can identify and quantify EtO emissions over a broad range, inclusive of levels at or below concentrations indicative of long-term risk at the 10^{-4} risk (0.02 ug/m³, or nominally 12ppt), allow for needed ambient, near source and source testing. Additionally, new technology must be able to distinguish EtO from potential interfering compounds, including but not limited to trans-2-butene or acetaldehyde, that can be confounding across a variety of analyses. Ideally, new technology would provide continuous, real-time online measurements, with a seconds to minutes sampling rate.

Odors and Volatile Organic Compounds (VOCs)

Fugitive odor emissions are bothersome and uniquely challenging to identify, measure, and track. They typically include many different volatile organic compounds (VOCs). VOCs contribute to the formation of ground-level ozone (smog). Exposure to ozone is linked to a wide range of health effects, including aggravated asthma, increased emergency room visits and hospital admissions, and premature deaths. Such emissions cause health and wellbeing concerns, especially for communities living near industry. https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=23. Emerging VOC monitoring technologies can alert facilities to potential problems and mitigate product losses, leading to cost savings, healthier conditions for workers and communities, and improved air quality. For these reasons, EPA is interested in the following topics:

Topic 2B: Innovative technologies for low-cost, portable systems that can sense intensity and type of odors or volatile organic compounds. Of particular interest are odors and VOCs from industrial and waste management processes and agricultural and animal feeding operations. Important parameters include: affordability and ease of use for private citizen users, capability to sense multiple contaminants, and capability to quantify magnitude or intensity of odors.

Radon

Radon is a naturally occurring radioactive gas that comes from the natural decay of uranium that is found in nearly all soils <https://www.epa.gov/radon>. It travels through the ground and infiltrates homes through cracks in the foundation and gaps and joints in building materials. The average indoor radon level is about 1.3 picocuries per liter (pCi/L) in air in the

United States while the average outdoor level is about 0.4 pCi/L. <https://www.epa.gov/indoor-air-quality-iaq/what-average-level-radon-found-homes-us-0>. Radon can have detrimental health effects and is estimated to cause thousands of lung cancer deaths in the US each year. While there is no known safe level of radon, health effects can be reduced by lowering indoor radon levels. Radon reduction systems, typically venting technologies, can reduce radon levels by up to 99 percent. However, there remains a need for radon mitigation technology for applications in a variety of buildings.

Topic 2C: Innovations in technologies and strategies that reduce exposure to radon in buildings. Radon mitigation technologies using sub-slab depressurization has been demonstrated for many years but may not be practical for some applications due to cost or building characteristics. Of particular interest are: alternatives to sub-slab depressurization radon mitigation strategies and technologies for low income housing or for high-rise buildings, lower cost alternative materials for soil gas collection plenums in new construction, and effective methods for mitigating radon in well water. Important parameters include: low cost of installation and operation, ease of maintenance and operation, and feasibility of retrofitting the proposed technology.

3. LAND REVITALIZATION

Remediation of PFAS-Contaminated Soil, Sediment, Water and Groundwater

Per- and polyfluoroalkyl substances (together, PFAS) are a class of man-made chemicals not found naturally in the environment. Perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body. To provide Americans, including the most sensitive populations, with a margin of protection from a lifetime of exposure to PFOA and PFOS from drinking water, EPA has established the health advisory levels at 70 parts per trillion. (<https://www.epa.gov/pfas/basic-information-about-and-polyfluoroalkyl-substances-pfass#tab-1>)

PFAS have been used to provide water, oil and stain repellency to textiles, carpets and leather; to create greaseproof and water-proof coatings for paper plates and food packaging; and to aid processing in fluoropolymer manufacturing among many other commercial and consumer applications. They also have been used in chrome plating, firefighting foams, liquid carpet and textile care treatments, and floor waxes and sealants.

The immediate focus has been to protect public health from PFAS contamination entering public water systems or underground sources of drinking water. However, the long-term source of groundwater contamination is thought to be from PFAS contaminated soils and possibly sediments. To date, high resolution mass spectrometry methods have been used to analyze samples. Drinking water and contaminated groundwater have been treated principally using granular activated carbon and ion exchange resin, and soil contamination has been removed via excavation and sometimes treated thermally to extract and treat PFAS. EPA would like to improve and advance processes, technologies, and treatment systems for the cleanup of PFAS in soil, sediment and groundwater.

Topic 3A: Innovative technologies that can destroy PFAS in and from soil, sediment, water and groundwater. The technologies should be widely applicable—i.e., able to address various combinations of PFAS present; various soil types and other matrices to be remediated; and other types of contaminants present. The technology should be effective, easy to use and maintain, and affordable. Applications can be either ex situ (treating excavated or extracted media or waste above ground) or in situ (treating in place). For cleanup, the technologies should be able to destroy (rather than just remove) PFASs and co-occurring contaminants from the target media. Procedures to measure remediation performance are also a critical element. The overall life cycle should be addressed for any proposed treatment technology to ensure removal of contamination from one location or media does not merely transfer the contamination to a different location or media where it may still present a risk to human health or the environment.

4. HOMELAND SECURITY

The Bioterrorism Act of 2002 and associated Presidential Directives and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and other EPA authorizing legislation give EPA responsibility for remediating indoor and outdoor areas that are chemically, biologically, or radiologically contaminated due to disasters and terrorist acts. EPA is interested in developing and commercializing innovative technologies that can help reduce the risk of and

remediate such contamination once it has occurred. Such technologies should perform far more effectively and affordably than currently available technologies.

Disinfectant Coatings

Surfaces that are frequently touched by multiple people can present challenges for cleaning and disinfection, particularly in high traffic areas. In areas such as mass transit, e.g., subways and local buses, cleaning and disinfection cannot likely occur at a rate that can address the frequency at which multiple users access the high-touch surfaces. The use of coatings with proven capability to remain viricidal over extended periods (e.g., days to weeks to months) post-application can aid in reducing the potential exposure of the public to viruses such as the COVID-19 virus.

For these reasons, and to support EPA's Homeland Security Research (<https://www.epa.gov/homeland-security-research/contaminant-fate-transport-and-exposure>), EPA is interested in the following topic:

Topic 4A: Long-term disinfectant coatings. Development of EPA-registered disinfectant coatings with long-term (weeks/month) residual viricidal effect, for use on frequently touched surfaces, including personal protective equipment (PPE). These coatings must remain viricidal (rendering the virus non-infective in under 2 hours), durable (e.g., withstand normal use and cleaning), and be harmless when dried on surfaces.

5. SUSTAINABLE MATERIALS MANAGEMENT

Preventing Food Waste

Over one-third of the food produced in the U.S. is never eaten, wasting the energy and water used to produce it, filling landfills, and leading to methane emissions from landfills and water impacts from pesticide and fertilizer use. The EPA, USDA, and FDA are working together through the "[Winning on Reducing Food Waste](#)" initiative to help the US meet its goal of reducing food loss and waste by 50 percent by 2030. Guided by EPA's [Food Recovery Hierarchy](#), EPA is seeking innovative technologies to prevent post-harvest food waste (i.e., waste that occurs after food leaves the farm). Prevention of waste creates more benefits for the environment, society, and the economy than waste management methods.

Topic 5A: Innovative technologies that prevent food waste in a wide variety of ways, including but not limited to extending the shelf life of perishables (e.g., through improved design of food packaging, food storage, or refrigerators), aiding in inventory management, or quantifying and characterizing waste streams (e.g., through photo recognition) to identify prevention opportunities. Technologies may be intended for use by any part of the post-harvest supply chain – including distributors, processors, food service providers, retailers, or households.

Recycling

Recycling is an important driver of the United States' economy and a way to conserve our resources and protect the environment. The U.S. Environmental Protection Agency's Recycling Economic Information Report found that, in a single year, recycling and reuse activities in the United States accounted for 757,000 jobs, \$36.6 billion in wages and \$6.7 billion in tax revenues. This equates to 1.57 jobs, \$76,000 in wages and \$14,101 in tax revenues for every 1,000 tons of material recycled. In addition, recyclable materials with a commodity value of approximately \$8.9 billion are sent to landfills annually. <https://www.epa.gov/smm/recycling-economic-information-rei-report>. Recycling also reduces the amount of waste sent to landfills and incinerators; conserves natural resources such as timber, water and minerals; and reduces pollution sources by reducing the need to extract new raw materials.

While the benefits of recycling are clear, growing and strengthening the U.S. recycling system to support domestic industries and enhance environmental and community benefits will require multi-stakeholder collaboration to address the challenges currently facing the system. Current challenges facing the recycling system in the U.S. include:

- Confusion about what materials can be recycled, which often leads to placing recyclables in the trash or throwing trash in the recycling bin or cart;
- Outdated recycling infrastructure that is ill-equipped to keep pace with today's diverse and changing waste stream;

- Reduced export markets for recycled materials, requiring domestic markets to be strengthened; and
- Varying methodologies to measure recycling system performance used across the country make it difficult to create effective goals and track progress.

For these reasons, EPA is looking for technologies as described here:

Topic 5B: Innovative technologies that will improve the U.S. recycling system. Technologies should support more effective collection, sortation and processing of recycled materials and/or could lead to the increased recyclability of products or increased recycled content within products.

Materials Market Development for Industrial Non-Hazardous Secondary Materials and Food Processing Byproducts

Sustainable materials management (SMM) is a systemic approach to using and reusing materials more productively over their entire life cycles (<https://www.epa.gov/smm>). It represents a change in how our society thinks about the use of natural resources and environmental protection. By looking at a product's entire life cycle, new opportunities exist to reduce environmental impacts, conserve resources and reduce costs.

The EPA SMM Program Strategic Plan <https://www.epa.gov/smm/epa-sustainable-materials-management-program-strategic-plan-fiscal-years-2017-2022> identifies built environment as a strategic priority for SMM efforts over the next few years. This Built Environment strategic area emphasizes advancing SMM in the construction, maintenance, and end-of-life management of our nation's roads, buildings, and other structures to conserve materials and resources. The maintenance and growth of our built environment will result in both the discarding and consumption of billions of tons of materials in the coming decades, potentially resulting in significant environmental impacts and unnecessary costs. Increasing the recovery of industrial non-hazardous secondary materials, can help reduce overall consumption of virgin and raw materials, reduce landfilling rates and meet the construction material needs of the future. EPA is interested in identifying new appropriate next-use applications and developing new markets for incorporation of certain industrial non-hazardous secondary materials types, such as construction and demolition (C&D) materials.

Moreover, the EPA SMM Program Strategic Plan emphasizes the need to develop an infrastructure to support alternatives to landfill disposal of wasted food. Food processing byproducts, e.g., rice husk ash, can find appropriate next uses and end markets in the built environment as well as other sectors. EPA is interested in identifying new appropriate next-use applications and developing new markets for incorporation of food processing byproducts.

Topic 5C: New Applications for Industrial Non-Hazardous Secondary Materials and Food Processing Byproducts. New materials/technologies that safely incorporate industrial non-hazardous secondary materials and food processing byproducts as functional replacement for virgin materials. Non-hazardous secondary materials of interest include, but are not limited to, recycled concrete aggregate (RCA); construction and demolition (C&D) asphalt shingles, brick, drywall and window glass; C&D fines; and, rubber tires. The new materials should have properties (e.g., strength and durability) and costs comparable to currently used analogous materials but lower lifecycle impacts than the analogous materials. Food processing byproducts of interest include, but are not limited to, rice husk ash. New products using food processing byproducts should have the costs comparable to the product they are replacing and properties relevant for the sector in which they will be used.

Safe Building Deconstruction Tools or Safety Equipment

Safe building material deconstruction (taking apart of a building) and reuse is at the top of the Sustainable Materials Management Hierarchy. <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>. The de-nailing gun and specialized crowbars are examples of existing deconstruction tools.

Topic 5D: Safe Building Deconstruction Tools or Safety Equipment. New tools and/or safety equipment to advance the safe, cost-effective deconstruction of buildings. Concrete, asphalt, and scrap metal are already being diverted at high levels from construction and demolition waste streams. Thus, the deconstruction tools or safety equipment should focus on the recovery of wood or other commonly disposed building materials or the safe removal of materials that are barriers

to deconstruction, such as painted drywall. The innovative tool or safety equipment should support the safe reuse of building materials while minimizing damage to the materials and contributing to safer or more efficient deconstruction.

Building Materials Technology to Improve Energy Efficiency of Residential Structures and Have Reduced Embodied Impacts.

In 2009, EPA released *Sustainable Materials Management: The Road Ahead* (<https://www.epa.gov/smm/sustainable-materials-management-road-ahead>), which provides an analysis of the major materials, products, and services in the U.S. economy and their associated environmental impacts. In the report, EPA identified the construction of new single-family homes as one of the most significant sources of life cycle environmental and resource use impacts in the U.S. To better understand this finding and identify strategic opportunities for reducing or avoiding the life cycle impacts associated with single-family homes, EPA conducted a further detailed analysis of the sources, types, and relative magnitudes of these impacts. The purpose of that study, *Analysis of the Life Cycle Impacts and Potential for Avoided Impacts Associated with Single-Family Homes* (<https://www.epa.gov/smm/analysis-lifecycle-impacts-and-potential-avoided-impacts-associated-single-family-homes>), was to identify strategic opportunities for reducing or avoiding life cycle impacts associated with single-family homes. Similar to prior studies, this analysis showed that the dominant contributor to most environmental impacts of single-family homes across a life cycle is energy use. Distinctively, however, the study demonstrated that impacts embodied in materials also matter.

Energy efficiency has long been a topic of research and an area of focus when identifying opportunities for reducing the impacts of single-family homes. Indeed, when thinking of environmental impacts from new home construction, the residential building industry tends to focus on the impacts related to a home's energy use. This area of work has made great strides to improve energy efficiency in new homes. However, additional improvements can be made based on the embodied impacts, including embodied energy, of building materials that are being installed. For example, of the US GHG emissions in 2018, 22% came from the industry sector which produces the goods and raw materials we use every day including in our building materials. Industry is the 3rd contributor to US GHG emissions after the transportation and electricity sectors, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

Impacts that are made by an industry during its operation are transferred to the materials that the industry produces. If not considered, these embodied impacts can significantly offset the benefits of other measures taken to improve the performance of homes. Therefore, EPA is interested in the following topic:

Topic 5E: Materials that improve the energy efficiency of buildings. Materials should directly improve energy efficiency of buildings (especially single-family homes), as well as have reduced embodied impacts from manufacturing, production, construction, building repair and maintenance processes.

6. SAFER CHEMICALS

Chemicals can be found in many of the products we use in our everyday lives. Some chemicals pose risks to humans and the environment. Under the Toxic Substances Control Act (TSCA) and the Pollution Prevention Act, EPA evaluates potential risks from new and existing chemicals and finds ways to prevent or reduce pollution before it gets into the environment <https://www.epa.gov/environmental-topics/chemicals-and-toxics-topics>.

New Approach Methodologies

EPA defines New Approach Methodologies or NAMs as methods and approaches that serve to reduce, refine and/or replace ("the 3Rs") vertebrate animal testing of chemical substances or mixtures for human and ecological health risks; <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/alternative-test-methods-and-strategies-reduce>. Advances that contribute to NAMs are needed to allow them to be suitable for use in decision making on a broader scale. EPA has provided Science to Achieve Results (STAR) grants in the same area, through the "[advancing actionable alternatives to vertebrate animal testing for chemical safety assessment](#)" RFA. One, non-exclusive, example of a 'non-animal method' could be a computerized (*in silico*) interpretation of testing data (new or existing). Another is an *in*

in vitro toxicity screen where a substance is tested with laboratory-raised cell cultures. Because EPA is looking to expedite novel assessment strategies, it is looking for the following:

Topic 6A: New Approach Methodologies (NAMs) that reduce, refine or replace vertebrate animal testing. These technologies and approaches should serve to reduce, refine and/or replace vertebrate animal testing of chemical substances or mixtures for human and ecological health risks.

Cleaner Manufacturing of Coloration Technologies

Polychlorinated biphenyls (PCBs) are extremely persistent in the environment, bioaccumulate and biomagnify in the food chain and humans, and have adverse human health effects. <https://www.epa.gov/pcbs>. In 1979 the US banned their production under the Toxic Substances Control Act (TSCA). However, PCBs continue to be generated and released into the environment as the unintended by-products of the manufacturing of certain pigments used in dyes, paints, and inks. <http://ehp.niehs.nih.gov/121-a86/>. Studies have detected these PCBs in wastewater, sediments, air and surface waterways across the U.S. Inadvertently generated PCBs have also been positively identified in new products colored with pigments <https://fortress.wa.gov/ecy/publications/publications/1404035.pdf> and their presence in the environment can be attributed to the unintended production of PCBs as a byproduct in pigment manufacturing.

This pollution source is contributing to water impairment and resulting in challenges to states and other entities in meeting water quality standards. Due to bioaccumulation and biomagnification, PCBs in waterways may affect sensitive populations including Tribes and other subsistence fishing communities. For these reasons, the EPA is looking for the development and use of pigment, dye, paint, and ink manufacturing processes, as well as the development of new coloration technologies such as biomimicry and structural color, that do not produce PCBs, as follows:

Topic 6B: Cleaner manufacturing processes for pigments, dyes, paints, and inks. Cleaner manufacturing processes for dyes, paints, and inks that do not create unintentional undesirable byproducts including PCBs. These proposed processes could include innovative technologies for coloration such as biomimicry and structural color, that do not require traditional pigments, dyes, paints, and inks or unintentional undesirable byproducts including PCBs.

E. Phase II

(THIS SOLICITATION IS FOR PHASE I PROPOSALS ONLY)

Process

Upon completion of their Phase I project, Phase I awardees are eligible to submit for follow-on Phase II funding. Phase II offerors should have made significant progress in their commercialization planning and implementation during their Phase I project.

Phase II is the principal R&D effort. It should be completed in 24 months and has two objectives. The first is to continue the R&D initiated under Phase I and take it at least through full-scale testing of the technology. The second is to work with partners, investors, and customers to fully commercialize the technology and obtain widespread utilization.

The EPA recognizes that a full demonstration of a technology's capability and full-scale commercialization may require, in effect, a Phase III that utilizes non-EPA Federal and/or private sector funds; therefore, Phase II projects should work to establish strategic partners necessary to commercialize their technology.

The EPA anticipates making approximately six (6) Phase II awards, each in the amount of \$400,000 with a 24-month term of performance. In Phase II, the EPA is also offering a commercialization option of \$100,000 to companies that can secure third-party investment of \$100,000 or more for the commercialization of their technology. To implement this, the Agency requires a "Commercialization Option" under which Phase II offerors shall submit a proposal for up to \$100,000 of additional EPA funding.

The small business shall document the receipt of these latter funds from one or more third-party investors, such as a venture capital firm, an individual "angel" investor, a state or local funding source, another company under a partnership, licensing, or joint venture arrangement, or any combination of third parties. The EPA funds must be designated solely for

support of the R&D-related elements of the project. The entire Phase II proposal, including the commercialization option, will be evaluated together.

The EPA anticipates issuing the follow-on Phase II Solicitation about June 2021, with proposals due about August 2021.

Evaluation

For Phase II, EPA will use similar criteria to that used for Phase I that include the technical, commercial and programmatic criteria shown below. In addition, EPA may use programmatic balance, and available funding in making final funding decisions.

- (1) **Technical Approach** – Degree to which proposal presents an innovative and sound approach to proving the technical feasibility of the proposed concept, assessing success and addressing potential technical challenges.
- (2) **Company/Team (technical)** – Degree to which proposing company/team (including Principal Investigator (PI) have the essential elements, including expertise, experience and collaborations to carry out the proposed technical activities.
- (3) **Impact** - Potential of the technology to meet Agency program priorities as addressed in the solicitation topic and to do so using a lifecycle approach to solving the problem.
- (4) **Phase I results:** As a result of Phase I, did the firm succeed in providing a solid foundation for the proposed Phase II activity.
- (5) **Innovation/IP** – Degree to which the proposed technology is innovative. Degree to which the company has demonstrated a plan to achieve sufficient IP protection.
- (6) **Market Opportunity** – Degree to which proposed technology addresses a significant market opportunity and company has a competitive advantage to address this opportunity.
- (7) **Company/Team (Commercial)** – Degree to which proposing company/team (including Principal Investigator (PI) have the essential elements, including expertise, experience and collaborations that would lead to successful commercialization.
- (8) **Commercialization Approach** – Degree to which proposal presents a convincing commercialization approach/business model that can successfully take the technology to market.

F. Phase III

(THIS SOLICITATION IS FOR PHASE I PROPOSALS ONLY)

The EPA strongly encourages Phase II awardees who do not think they will be able to achieve full-scale commercialization by the end of Phase II to diligently plan for and pursue during Phase II non-EPA SBIR sources of funding to achieve full-scale commercialization and utilization of their technology. That third phase could be funded by:

- (1) Non-Federal sources of capital—including investors, commercial partners, licensing, etc.
- (2) Federal non-SBIR sources that support any necessary continued R&D and product development.
- (3) Federal non-SBIR funds for purchasing and/or domestic and international marketing of the technology.

The objective of Phase III, where appropriate, is for the small business to pursue commercialization objectives resulting from the Phase I/II R/R&D activities. The SBIR program does not fund Phase III.

G. Guidelines

Each offeror submitting a Phase I proposal must qualify as a small business for research or R&D purposes at the time of award of the Phase I and Phase II funding agreements. In addition, the primary employment of the principal investigator must be with the small business firm, both at the time of contract award and during the conduct of the proposed research. Principal investigators who appear to be employed by a university must submit a letter from the university stating that the principal investigator, if awarded a SBIR contract, will become a less-than-half-time employee of the university.

Also, a principal investigator who appears to be a staff member of both the offeror and a second employer must submit a letter from the second employer stating that, if awarded a SBIR contract, s/he will become a less than half-time employee of the second employer. Letters demonstrating that these requirements have been fulfilled shall be included in the offeror's proposal. Failure to do so may jeopardize award. Also, for Phase I, the research or R&D work must be performed in the United States. (For the definition of the "United States", see Section II. II.J.)

H. Inquiries

All inquiries concerning this solicitation shall be submitted to the EPA Contracting Officers Matthew Growney and Lisa Mitchell-Flinn at the following e-mail addresses growney.matthew@epa.gov and mitchell-flinn.lisa@epa.gov.

I. Fraud, Waste, and Abuse

To report fraud, waste, or abuse in EPA programs, contact the OIG Hotline by:

E-mail: OIG_Hotline@epa.gov

Postal Mail:
EPA Inspector General Hotline
1200 Pennsylvania Avenue NW Mail code 2431T

Phone: 1-888-546-8740
Fax: 1-202-566-2599

II. DEFINITIONS

For purposes of this solicitation, the following definitions apply:

A. Research or Research and Development (R/R&D)

Any Activity that is:

- (1) A systematic, intensive study directed toward greater knowledge or understanding of the subject studied;
- (2) A systematic study directed specifically toward applying new knowledge to meet a recognized need; or
- (3) A systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

B. Funding Agreement

Any contract, grant, or cooperative agreement entered into between any Federal Agency and any small business concern for the performance of experimental, developmental, or research work, including products or services, funded in whole or in part by the Federal Government.

C. Subcontract

Any agreement, other than one involving an employer-employee relationship, entered into by an awardee of a funding agreement for purpose of obtaining supplies or services for the performance of the original funding agreement.

D. Small Business Concern

A small business concern is one that, at the time of award of Phase I and Phase II contracts, meets all of the following criteria:

- (1) Is registered in System for Award (SAM) under North American Industry Classification System (NAICS) code 541715.
- (2) Is organized for profit, with a place of business located in the United States;
- (3) Is more than 50 percent owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States, or by another for-profit business concern that is more than 50% owned and controlled by one or more individuals who are citizens of, or permanent resident aliens in, the United States; and
- (4) Has no more than 500 employees, including affiliates;
- (5) Is in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture,

association, trust, or cooperative, except that, where the form is a joint venture, there can be no more than 49 percent participation by business entities in the joint venture.

E. Socially and Economically Disadvantaged Small Business Concern

A socially and economically disadvantaged small business concern is one that is at least 51% owned and controlled by one or more socially and economically disadvantaged individuals, or an Indian tribe, including Alaska Native Corporations (ANCs), a Native Hawaiian Organization (NHO), or a Community Development Corporation (CDC). Control includes both the strategic planning (as that exercised by boards of directors) and the day-to-day management and administration of business operations. See 13 CFR 124.109, 124.110, and 124.111 for special rules pertaining to concerns owned by Indian tribes (including ANCs), NHOs, or CDCs, respectively.

F. Socially and Economically Disadvantaged Individual

A member of any of the following groups:

- (1) Black Americans;
- (2) Hispanic Americans;
- (3) Native Americans (American Indians, Eskimos, Aleuts, or Native Hawaiians);
- (4) Asian-Pacific Americans (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China (including Hong Kong), Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory of the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Fiji, Tonga, Kiribati, Tuvalu, or Nauru);
- (5) Subcontinent Asian Americans (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands, or Nepal); and
- (6) Other groups designated from time to time by SBA pursuant to Section 124.103(d) of the 13 CFR Ch.1 (1-1-02 Edition).

G. Woman-Owned Small Business Concern

A small business concern that is at least 51 percent owned by and controlled by a woman or women. Control includes both the strategic planning (as that exercised by boards of directors) and the day-to-day management and administration of business operations.

H. Historically Underutilized Business Zone (HUBZone)

A small business concern meeting the following requirements:

- (1) It must be a small business by SBA standards;
- (2) It must be owned and controlled at least 51% by U.S. citizens, or a Community Development Corporation, an agricultural cooperative, or an Indian tribe;
- (3) Its principal office must be located within a "Historically Underutilized Business Zone," which includes lands considered "Indian Country" and military facilities closed by the Base Realignment and Closure Act;
- (4) At least 35% of its employees must reside in a HUBZone.

I. Primary Employment

More than one-half of the principal investigator's time is spent in the employ of the small business concern.

J. United States

The 50 States, the Territories and possessions of the Federal Government, the Commonwealth of Puerto Rico, the District of Columbia, the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.

K. Commercialization

The process of developing marketable products or services and producing and delivering products or services for sale (whether by the originating party or by others) to Government or commercial markets.

L. SBIR Technical Data

All data generated during the performance of a SBIR award.

M. SBIR Technical Data Rights

The rights a small business concern obtains in data generated during the performance of any SBIR Phase I, Phase II, or Phase III award that an awardee delivers to the Government during or upon completion of a Federally-funded project, and to which the Government receives a license.

III. CERTIFICATIONS

The Section K Representations and Certifications are located in Appendix 4. Refer to IV., Proposal Preparation Instructions and Requirements, Section IV.F. Attachment 3: Representations and Certifications for instructions on proposal preparation.

Please Note: Majority Ownership in Part by Multiple Venture Capital, Hedge Fund, and Private Equity Firms. The EPA's SBIR Program does not accept proposals from or make awards to small business concerns that are owned in majority part by multiple venture capital operating companies, hedge funds, or private equity firms. **Small business concerns with such ownership will not be considered for award under this solicitation.**

IV. PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

A. Proposal Page Limit and Cover Sheet

Proposals shall be submitted in Portable Document Form (PDF) in response to this Phase I solicitation. Proposals shall not exceed a total of **25 pages**, one side only. The **25 pages** shall include the cover page, budget, and all enclosures or attachments. Pages (including enclosures or attachments such as letters of recommendation) should be of standard size (8 ½ in x 11 in; 21.6 cm x 27.9 cm) with 2.5 cm margins and type no smaller than 10-point font size. All pages shall be consecutively numbered. Any additional attachments, appendices, or references beyond the 25-page limitation (unless specifically requested in this solicitation) shall result in the proposal not being considered for review or award.

Proposals in excess of the 25-page limitation shall not be considered for review or award. Your entire proposal (including appendices) shall be submitted through FedConnect as ONE document in PDF. Only proposals received via FedConnect as ONE PDF by the deadline identified above will be considered for award.

The offeror shall complete the Proposal Cover Sheet (Appendix 1) of this solicitation which has the relevant solicitation number and applicable research topic code and corresponding topic title and use it as page 1 of the proposal. The offeror shall select one (and only one) research topic code and the corresponding topic title on the cover sheet. It is the complete responsibility of offerors to select and identify the best research topic code and the corresponding topic title for their proposal. **No other cover sheet shall be permitted.** Do not use cover sheets from previous years' solicitations; they include obsolete research topics and corresponding topic codes. When downloading the solicitation from the Internet, Appendix 1 may print on no more than two pages, but Appendix 1 will only count as one page. If Appendix 1 exceeds two pages, any additional pages will count toward the 25-page limitation. Offerors may reformat the forms to correct spacing and pagination errors; however, identical information shall be provided.

The cover sheet shall contain the signatures of the principal investigator and the corporate/business official authorized to sign the proposal. Electronic signatures are acceptable. The total costs requested on Appendix 1 (Proposal Cover Sheet) must match the total costs proposed on Appendix 3 (SBIR Proposal Summary Budget). The amount must not exceed \$100,000 on Appendix 1 and 3. If your firm intends to incur any additional costs beyond the budget limit of \$100,000, please provide a statement indicating that your firm will be responsible for any additional cost beyond the budget limits.

B. Project Summary

Each proposal must include a Project Summary which will be an important document for all stages of the review process. The offeror shall complete the Project Summary form (Appendix 2) and use it as page 2 of their proposal. Offerors shall

properly enter their Phase I Research Topic Code and Topic Title on both their Proposal Cover Sheet (Appendix 1) and Project Summary (Appendix 2).

The Project Summary **shall** be limited to one page and shall not exceed 400 words. The Project Summary **shall** include the following information (must be publishable, i.e., not proprietary): The specific need for the technology, what the technology would do to meet that need, technical feasibility, commercial application(s), end users, size of the potential market, performance compared to current technologies and potential for environmental benefits.

THE PROJECT SUMMARY IS USED EXTENSIVELY DURING THE PROPOSAL EVALUATION PROCESS. The project summary and proposal title from Appendix 2 of the successful proposals will be published by EPA and, therefore, shall not contain proprietary information.

When downloading the solicitation from the Internet, Appendix 2 may print on no more than two pages, but Appendix 2 will only count as one page. Offerors may reformat the forms to correct spacing and pagination errors; however, identical information shall be provided. If Appendix 2 exceeds two pages, any additional pages will count toward the 25-page limitation.

C. Technical and Commercial Content: Phase I Proposal

The Phase I proposal requirements are described in this section. Begin the main body of the Phase I technical and commercial proposal on page 3, after the proposal cover sheet and project summary. Note that there are THREE attachments required as part of the complete Phase I proposal as follows:

- Attachment 1: Phase I Quality Assurance Statement (See Section D);
- Attachment 2: Cost Breakdown/Proposed Budget (See Section E);
- Attachment 3: Representations and Certifications (See Section F).

Technical and Commercial Content

The main body of the technical and commercial proposal shall contain sections that, respond to each of the following requirements:

- **Technical Approach**

- What questions must be answered to determine the technical feasibility of the proposed concept?
- What are the key objectives you plan to accomplish during Phase I to answer those questions?
- Describe the key performance characteristics, including costs, necessary to meet customer needs.
- Describe the technical milestones you plan to meet to achieve each objective and provide a visual timeline of these objectives and milestones during the project.
- Describe the key technical challenges for bringing the technology to market and how you will overcome them.

- **Company/Team (technical)**

- Describe the expertise and experience of the team (key participants (including Principal Investigator (PI), consultants, subcontractors, etc) in this proposed project to carry out the proposed technical activities.

- **Impact**

- Describe the environmental benefits and costs associated with the lifecycle (inputs, manufacture, use, and reuse/recycle/treatment/disposal) of your technology.
- How well does the proposed technology address the solicitation topic (and EPA priorities)?

- **Innovation/IP**

- Describe the innovation in sufficient technical depth for a knowledgeable reviewer to understand why it is innovative and how it could benefit the target customers.

- Describe the technology’s current stage of development—bench/pilot/field—and what must be done to reach the next stage.
 - Describe the demonstrations you will carry out to help move the technology to the next stage—including scale, facilities, partners, other resource needs and availability, etc.
 - Describe the current and planned intellectual property associated with this project and how you plan to protect it.
- **Market Opportunity**
 - Describe the target market for the innovation—including nature, size, business and economic dynamics, etc.
 - Describe how you validated the market opportunity—e.g., the number of interviews with customers and others, published studies (cite), industry journal articles, consultants, etc.
 - Describe the drivers for and barriers to selling to your target market, including regulatory.
 - Describe your potential end users/customers.
 - Describe the competition and how your technology will compare. How do you expect the competitive landscape to change by the time your product enters the market?
- **Company/Team (Commercial)**
 - Describe the expertise and experience of the team (key participants (including PI), consultants, advisors, etc) in this proposed project that would lead to successful commercialization, e.g., have they previously taken similar technologies to market?
- **Commercialization Approach**
 - Describe your commercialization approach for taking the technology from its current stage of development to commercialization.
 - Provide estimates of the revenue potential, detailing your underlying assumptions.
 - What resources will you need to implement your commercialization approach and how will you secure them?
 - Describe the commercialization objectives you plan to accomplish during the Phase I project and provide milestones and a visual timeline for achieving them.
 - What are the prospects for the technology to have commercial applications in addition to the proposed application and what would they be?

Other Requirements

- (1) **Similar or Closely Related SBIR Awards.** If the small business concern has received ANY prior Phase I or Phase II award(s) from EPA or any Federal agency for similar or closely related research in the prior 5 fiscal years, submit the name of the awarding agency, date of award, funding agreement number, amount, topic or subtopic title, follow-on agreement amount, source and date of commitment and current commercialization status. Describe the technical differences and reasons why the proposed Phase I research is different from research conducted under prior SBIR awards. (This required proposal information **shall** be counted toward the 25-page proposal limitation.)
- (2) **Duplicate or Equivalent SBIR Proposals.** A firm may elect to submit essentially equivalent work under other federal program solicitations. In these cases, a statement shall be included in each such proposal indicating: the name and address of the agencies to which proposals were submitted or from which awards were received; date of proposal submission or date of award; title, number, and date of solicitations under which proposals were submitted or awards received; specific applicable research topics for each proposal submitted or award received; titles of research projects; name and title of project manager or principal investigator for each proposal submitted or award received. (This required proposal information **shall** be counted toward the 25-page proposal limitation.)

D. Attachment 1: Phase I Quality Assurance Statement (QAS)

Offerors must state whether or not their proposal involves data collection or processing, environmental measurements, modeling, or the development of environmental technology (whether hardware-based or via new techniques). The QAS describes the processes that will be used to assure that results of the research satisfy the intended project objectives. The EPA is particularly interested in the quality controls for data generation and acquisition, and how data validation and usability will be verified. This QAS **shall not** exceed one page, and it **shall** be counted toward the 25-page proposal limitation. The QAS shall briefly address each of the sections below. If a section does not apply, provide a brief justification of why.

- (1) Identify the individual who will be responsible for the quality assurance (QA) and quality control (QC) aspects of the research along with a brief description of this person's functions, experience and authority within the firm. Describe the firm's general approach for conducting quality research. (QA is a system of management activities to ensure that a process or product is of the type and quality needed for the project. QC is a system of activities that measure the attributes and performance of a process or product against the standards defined in the project to verify that they will meet those stated requirements.)
- (2) Discuss project objectives, including quality objectives, any hypotheses to be tested, and the quantitative and/or qualitative procedures that will be used to evaluate the success of the project. Include any plans for peer or other reviews of the study design or analytical methods.
- (3) Address the collection of new primary data, if applicable: (Note: In this case the word "sample" is intended to mean any finite part of a statistical population whose properties are studied to gain information about the whole. If certain attributes listed below do not apply to the type of samples to be used in the research, simply explain why those attributes are not applicable.)

Discuss the plan for sample collection and analysis. As applicable, include sample type(s), frequency, locations, sample sizes, sampling procedures, and the criteria for determining acceptable data quality (e.g., precision, accuracy, representativeness, and completeness, comparability, or data quality objectives). Describe the procedures for the handling and custody of samples including sample collection, identification, preservation, transportation, storage and how the accuracy of test measurements will be verified. Describe or reference each analytical method to be used, any QA or QC checks or procedures with the associated acceptance criteria, and any procedure that will be used in the calibration and performance evaluation of the analytical instrumentation. Discuss the procedures for overall data reduction, analysis and reporting. Include a description of all statistical methods to make inferences and conclusions, acceptable error rates and any statistical software to be used.

- (4) Address the use of existing/secondary data (i.e., data previously collected for other purposes or from other sources), if applicable: Describe or reference each analytical method to be used, any QA or QC checks or procedures with the associated acceptance criteria, and any procedures that will be used in the calibration and performance evaluation of the analytical instrumentation. Discuss the procedures for overall data reduction, analysis and reporting. Include a description of all statistical methods to make inferences and conclusions, acceptable error rates and any statistical software to be used.
- (5) Address method development, if applicable: (Note: The data collected for use in method development or evaluation should be described in the QAP as per the guidance in Sections 3 and/or 4 above.) Describe the scope and application of the method, any tests (and measurements) to be conducted to support the method development, the type of instrumentation that will be used and any required instrument conditions (e.g., calibration frequency), planned QC checks and associated criteria (e.g., spikes, replicates, blanks), and tests to verify the method's performance.
- (6) Address development or refinement of models, if applicable: (Note: The data collected for use in the development or refinement of models should be described in the QAP as per the guidance in sections 3 and/or 4 above.)

Discuss the scope and purpose of the model, key assumptions to be made during development/refinement, requirements for code development and how the model will be documented. Discuss verification techniques to

ensure the source code implements the model correctly. Discuss validation techniques to determine that the model (assumption and algorithms) captures the essential phenomena with adequate fidelity. Discuss plans for long-term maintenance of the model and associated data.

- (7) Address development or operation of environmental technology, if applicable: (Note: The data collected for use in the development or evaluation of the technology should be described in the QAP as per the guidance in sections 3 and/or 4 above.)

Describe the overall purpose and anticipated impact of the technology. Describe the technical and quality specifications of each technology component or process that is to be designed, fabricated, constructed and/or operated. Discuss the procedure to be used for documenting and controlling design changes. Discuss the procedure to be used for documenting the acceptability of processes and components, and discuss how the technology will be benchmarked and its effectiveness determined. Discuss the documentation requirements for operating instructions/guides for maintenance and use of the system(s) and/or process(s).

- (8) Discuss data management activities (e.g., record-keeping procedures, data-handling procedures, and the approach used for data storage and retrieval on electronic media). Include any required computer hardware and software and address any specific performance requirements for the hardware/software configuration used.

A more detailed Proposal Quality Assurance Plan shall be required in Phase II. The plan shall be required as part of the first monthly report under the Phase II contract.

E. Attachment 2: Phase I Cost Breakdown/Proposed Budget

Complete the budget form in Appendix 3 and incorporate the budget form bearing the signature immediately after Attachment 1: Phase I Quality Assurance Statement. The completed budget form will count as one page in the 25-page limit. If budget explanation pages are included, they will count toward the 25-page limit. Offerors are encouraged to include travel expenses on the budget form to attend a one-day SBIR Phase I Kick-Off Meeting in Washington, DC, soon after the Phase I awards are made.

Technical and Business Assistance (TABAs): In accordance with the 2019 SBIR/STTR Policy Directive, the EPA is able to provide discretionary commercialization assistance (also known as TABAs) to SBIR Phase I awardees. The Agency may provide up to \$6,500 of SBIR funds for technical assistance per Phase I award. The EPA intends to provide Phase I awardees with technical assistance through an EPA vendor. For Phase I, this assistance will be in addition to the award amount. If you wish to receive commercialization assistance from the EPA vendor, you do not need to include this in your budget. If you are awarded a Phase I contract, you will receive notification from EPA and follow-up contact from an EPA-funded vendor on what services are available to you and how to obtain these services at no cost to your small business.

F. Attachment 3: Representations and Certifications

Attachment 3 (see Appendix 4) is a Representations and Certifications Package. Please fill out completely, sign, and return with the proposal. Failure to complete fully and sign this package and return with the proposal could delay award. (This required proposal information **shall not** be counted toward the 25-page proposal limitation.)

V. METHOD OF SELECTION AND EVALUATION CRITERIA

All Phase I proposals will be initially screened to determine responsiveness. As noted, proposals exceeding the 25-page limitation (unless specifically requested in this solicitation) will not be considered for review or award.

Proposals passing this initial screening will be reviewed by internal and external reviewers using the evaluation criteria described below. Programmatic balance, Agency priorities, and available funding may also be used in the selection process. EPA is under no obligation to fund any proposal or any specific number of proposals in a given topic. It also may elect to fund several or none of the proposed approaches to the same topic or subtopic.

A. Evaluation Process

All Phase I proposals determined responsive to the solicitation will be evaluated on a competitive basis by reviewers from inside and outside of the EPA for technical quality, relevance to the topic and commercial potential. All reviewers will be required to sign an agreement to protect the confidentiality of all proposal material and certify that no conflict of interest exists between them and the offeror. The reviewers will rate each proposal on its own merits. Because there is no common statement of work, each proposal will be evaluated on its own merits rather than against other proposals responding to this BAA. EPA plans to make selections for award those proposals that deliver technological innovation, contribute to EPA's mission and demonstrate potential for commercialization.

Phase I Evaluation Criteria

The following criteria will be used to evaluate Phase I proposals. These criteria directly align with the requirements in the solicitation.

- **Technical Approach** – Degree to which proposal presents an innovative and sound approach to proving the technical feasibility of the proposed concept, assessing success; and addressing potential technical challenges.
- **Company/Team (technical)** – Degree to which proposing company/team (including Principal Investigator (PI) have the essential elements, including expertise, experience and collaborations to carry out the proposed technical activities.
- **Impact** - Potential of the technology to meet Agency program priorities as addressed in the solicitation topic and to do so using a lifecycle approach to solving the problem.
- **Innovation/IP** – Degree to which the proposed technology is innovative. Degree to which the company has demonstrated a plan to achieve sufficient intellectual property (IP) protection.
- **Market Opportunity** – Degree to which proposed technology addresses a significant market opportunity and company has a competitive advantage to address this opportunity.
- **Company/Team (Commercial)** – Degree to which proposing company/team (including Principal Investigator (PI) have the essential elements, including expertise, experience and collaborations that would lead to successful commercialization.
- **Commercialization Approach** – Degree to which proposal presents a convincing commercialization approach/business model that can successfully take the technology to market.

B. Company Registry Requirements

- (1) The Small Business Administration (SBA) maintains and manages a Company Registry at www.sbir.gov to track ownership and affiliation requirements for all companies applying to the SBIR Program. The SBIR Policy Directive requires each small business concern (SBC) applying for a Phase I or Phase II award to register in the Company Registry prior to submitting a proposal.
- (2) Offerors must provide a .pdf copy of their SBA SBC registration and shall append this document to the last page of your technical proposal. This page will NOT count towards the 25-page limit.
- (3) All SBCs shall report and/or update ownership information to SBA prior to each SBIR proposal submission or if any information changes prior to award. For example, if a concern that registers on the Company Registry becomes majority-owned by multiple venture capital operating companies, hedge funds, or private equity firms after the time it submitted its initial proposal (or other formal response) to a Phase I or Phase II SBIR announcement or solicitation, the SBC must update the Company Registry.

VI. CONSIDERATIONS

A. Awards

The EPA anticipates for SBIR Phase I the award of approximately twenty (20) firm-fixed-price contracts of up to \$100,000 each, including profit. It is expected that these contracts will be awarded with a contract start date of February 1, 2021. The period of performance for the contracts should not exceed six (6) months. The primary consideration in selecting proposals for award will be the technical and commercial merit of the proposal. Proposals shall be evaluated in accordance with the Technical Evaluation Criteria stated in V.A., above. Source selection will not be based on a comparison of cost or price. However, cost or price will be evaluated to determine whether the price, including any proposed profit, is fair and reasonable, and whether the offeror understands the work and is capable of performing the contract.

This current solicitation is for Phase I only, and the EPA is not obligated to fund any specific Phase I proposal. Funds are not presently available for this contract.

The EPA anticipates for SBIR Phase II the award of approximately six (6) Phase II awards, each in the amount of \$400,000 with a 24-month period of performance.

The EPA's obligation under this contract is contingent upon the availability of appropriated funds from which payment for contract purposes can be made. No legal liability on the part of the EPA for any payment may arise until funds are made available to the Contracting Officer for this contract, and until the Contractor receives notice of such availability, to be confirmed in writing by the Contracting Officer.

B. Phase I Contract Reporting Requirements

Phase I Reporting Requirements (including monthly and final reports) will be provided in the contract.

C. Payment Schedule

Monthly Phase I progress payments will be made at 85% of actual monthly expenses upon receipt and acceptance of a proper invoice with each of the first five monthly reports. The remainder shall be paid upon receipt and acceptance of the final report. Pursuant to the provisions of FAR 52.232-25, PROMPT PAYMENT (JAN 2017), payment will be rendered within thirty (30) days after receipt of a proper invoice for each reporting period. Appropriate provisions will be included in the contract.

All vendors shall submit invoices via the IPP System and in accordance with EPAAR Clause 1552.232-70 (May 2019) SUBMISSION OF INVOICES.

1552.232-70 Submission of invoices.

As prescribed in [1532.908](#), insert the following clause:

Submission of Invoices (MAY 2019)

(a) *Electronic invoicing and the Invoice Processing Platform (IPP) - (1) Definitions.* As used in this clause -

Contract financing payment and invoice payment are defined in Federal Acquisition Regulation (FAR) 32.001.

Electronic form means an automated system that transmits information electronically from the initiating system to all affected systems. Facsimile, email, and scanned documents are not acceptable electronic forms for submission of payment requests. However, scanned documents are acceptable when they are part of a submission of a payment request made using Invoice Processing Platform or another electronic form authorized by the Contracting Officer.

Payment request means any request for contract financing payment or invoice payment submitted by the Contractor under this contract.

(2)(i) Except as provided in paragraph (c) of this clause, the Contractor shall submit invoices using the electronic invoicing program Invoice Processing Platform (IPP), which is a secure web-based service provided by the U.S. Treasury that more efficiently manages government invoicing.

(ii) Under this contract, the following documents are required to be submitted as an attachment to the IPP invoice: (This is a fill-in for acceptable types of required documentation, such as an SF 1034 and 1035, or an invoice/self-designed form on company letterhead that contains the required information.)

(iii) The Contractor's Government Business Point of Contact (as listed in System for Award Management (SAM)) will receive enrollment instructions via email from the IPP. The Contractor must register within 3 to 5 days of receipt of such email from IPP.

(iv) Contractor assistance with enrollment can be obtained by contacting the IPP Production Helpdesk via email at IPPCustomerSupport@fiscal.treasury.gov or by telephone at (866) 973-3131.

(3) If the Contractor is unable to comply with the requirement to use IPP for submitting invoices for payment, the Contractor shall submit a waiver request in writing to the Contracting Officer. The Contractor may submit an invoice using other than IPP only when -

(i) The Contracting Officer administering the contract for payment has determined, in writing, that electronic submission would be unduly burdensome to the Contractor; and in such cases, the Contracting Officer shall modify the contract to include a copy of the Determination; or

(ii) When the Governmentwide commercial purchase card is used as the method of payment.

(4) The Contractor shall submit any non-electronic payment requests using the method or methods specified in Section G of the contract.

(5) In addition to the requirements of this clause, the Contractor shall meet the requirements of the appropriate payment clauses in this contract when submitting payment requests.

(6) Invoices submitted through IPP will be either rejected, or accepted and paid, in their entirety, and will not be paid on a partial basis.

(b) *Invoice preparation.* The Contractor shall prepare its invoice or request for contract financing payment in accordance with FAR 32.905 on the prescribed Government forms, or the Contractor may submit self-designed forms which contain the required information. Standard Form 1034, *Public Voucher for Purchases and Services other than Personal*, is prescribed for used by contractors to show the amount claimed for reimbursement. Standard Form 1035, *Public Voucher for Purchases and Services other than Personal - Continuation Sheet*, is prescribed for use to furnish the necessary supporting detail or additional information required by the Contracting Officer.

(c) *Invoice content.* (1) The Contractor shall prepare a contract level invoice or request for contract financing payment in accordance with the invoice preparation instructions. If contract work is authorized by an individual task order or delivery order (TO/DO), the invoice or request for contract financing payment shall also include a summary of the current and cumulative amounts claimed by cost element for each TO/DO and for the contract total, as well as any supporting data for each TO/DO as identified in the instructions.

(2) The invoice or request for contract financing payment shall include current and cumulative charges by major cost element such as direct labor, overhead, travel, equipment, and other direct costs. For current costs, each major cost element shall include the appropriate supporting schedule identified in the invoice preparation instructions. Cumulative charges represent the net sum of current charges by cost element for the contract period.

(d) *Subcontractor charges.* (1) The charges for subcontracts shall be further detailed in a supporting schedule showing the major cost elements for each subcontract.

(2) On a case-by-case basis, when needed to verify the reasonableness of subcontractor costs, the Contracting Officer may require that the contractor obtain from the subcontractor cost information in the detail set forth in paragraph (c)(2) of this section. This information should be obtained through a means which maintains subcontractor confidentiality (for example, via sealed envelopes), if the subcontractor expresses Confidential Business Information (CBI) concerns.

(e) *Period of performance indication.* Invoices or requests for contract financing payment must clearly indicate the period of performance for which payment is requested. Separate invoices or requests for contract financing payment are required for charges applicable to the base contract and each option period.

(f) *Invoice submittal.* (1) Notwithstanding the provisions of the clause of this contract at FAR 52.216-7, *Allowable Cost and Payment*, invoices or requests for contract financing payment shall be submitted once per month unless there has been a demonstrated need and Contracting Officer approval for more frequent billings. When submitted on a monthly basis, the period covered by invoices or requests for contractor financing payments shall be the same as the period for monthly progress reports required under this contract.

(2) If the Contracting Officer allows submissions more frequently than monthly, one submittal each month shall have the same ending period of performance as the monthly progress report.

(3) Where cumulative amounts on the monthly progress report differ from the aggregate amounts claimed in the invoice(s) or request(s) for contract financing payments covering the same period, the contractor shall provide a reconciliation of the difference as part of the payment request.

(g) *EPA Invoice Preparation Instructions - SF 1034.* The information which a contractor is required to submit in its Standard Form 1034 is set forth as follows:

(1) U.S. Department, Bureau, or establishment and location - Insert the names and address of the servicing finance office, unless the contract specifically provides otherwise.

(2) Date Voucher Prepared - Insert date on which the public voucher is prepared and submitted.

(3) Contract/Delivery Order Number and Date - Insert the number and date of the contract and task order or delivery order, if applicable, under which reimbursement is claimed.

(4) Requisition Number and Date - Leave blank.

(5) Voucher Number - Insert the appropriate serial number of the voucher. A separate series of consecutive numbers, beginning with Number 1, shall be used by the contractor for each new contract. For an adjustment invoice, write [*invoice number*] #Adj at the voucher number. For a final invoice, put invoice number F. For a completion invoice, put invoice number #C.

(6) Schedule Number; Paid By; Date Invoice Received - Leave blank.

(7) Discount Terms - Enter terms of discount, if applicable.

(8) Payee's Account Number - This space may be used by the contractor to record the account or job number(s) assigned to the contract or may be left blank.

(9) Payee's Name and Address - Show the name of the contractor exactly as it appears in the contract and its correct address, except when an assignment has been made by the contractor, or the right to receive payment has been restricted, as in the case of an advance account. When the right to receive payment is restricted, the type of information to be shown in this space shall be furnished by the Contracting Officer.

(10) Shipped From; To; Weight Government B/L Number - Insert for supply contracts.

(11) Date of Delivery or Service - Show the month, day and year, beginning and ending dates of incurrence of costs claimed for reimbursement. Adjustments to costs for prior periods should identify the period applicable to their incurrence, *e.g.*, revised provisional or final indirect cost rates, award fee, etc.

(12) Articles or Services - Insert the following: For detail, see Standard Form 1035 total amount claimed transferred from Page _of Standard Form 1035. Insert COST REIMBURSABLE - PROVISIONAL PAYMENT or INDEFINITE QUANTITY/INDEFINITE DELIVERY - PROVISIONAL PAYMENT on the Interim public vouchers. Insert COST REIMBURSABLE - COMPLETION VOUCHER or INDEFINITE QUANTITY/INDEFINITE DELIVERY - COMPLETION VOUCHER on the Completion public voucher. Insert COST REIMBURSABLE - FINAL VOUCHER or INDEFINITE QUANTITY/INDEFINITE DELIVERY - FINAL VOUCHER on the final public voucher. Insert the following certification, signed by an authorized official, on the face of the Standard Form 1034:

I certify that all payments requested are for appropriate purposes and in accordance with the agreements set forth in the contract.

(Name of Official)

(Title)

(13) Quantity; Unit Price - Insert for supply contracts.

(14) Amount - Insert the amount claimed for the period indicated in paragraph (g)(11) of this clause.

(h) *EPA Invoice Preparation Instructions - SF 1035*. The information which a contractor is required to submit in its Standard Form 1035 is set forth as follows:

(1) U.S. Department, Bureau, or Establishment - Insert the name and address of the servicing finance office.

(2) Voucher Number - Insert the voucher number as shown on the Standard Form 1034.

(3) Schedule Number - Leave blank.

(4) Sheet Number - Insert the sheet number if more than one sheet is used in numerical sequence. Use as many sheets as necessary to show the information required.

(5) Number and Date of Order - Insert payee's name and address as in the Standard Form 1034.

(6) Articles or Services - Insert the contract number as in the Standard Form 1034.

(7) Amount - Insert the latest estimated cost, fee (fixed, base, or award, as applicable), total contract value, and amount and type of fee payable (as applicable).

(8) A summary of claimed current and cumulative costs and fee by major cost element - Include the rate(s) at which indirect costs are claimed and indicate the base of each by identifying the line of costs to which each is applied. The rates invoiced should be as specified in the contract or by a rate agreement negotiated by EPA's Cost and Rate Negotiation Team.

(9) Fee - The fee shall be determined in accordance with instructions appearing in the contract.

Note to paragraph (h) - Amounts claimed on vouchers must be based on records maintained by the contractor to show by major cost element the amounts claimed for reimbursement for each applicable contract. The records must be maintained based on the contractor's fiscal year and should include reconciliations of any differences between the costs incurred and amounts claimed for reimbursement. A memorandum record reconciling the total indirect cost(s) claimed should also be maintained.

(i) *Supporting Schedules for Cost Reimbursement Contracts.* The following backup information is required as an attachment to the invoice as shown by category of cost:

(1) Direct Labor - Identify the number of hours (by contractor labor category and total) and the total loaded direct labor hours billed for the period in the invoice.

(2) Indirect Cost Rates - Identify by cost center, the indirect cost rate, the period, and the cost base to which it is applied.

(3) Subcontracts - Identify the major cost elements for each subcontract.

(4) Other Direct Costs - When the cost for an individual cost (*e.g.*, photocopying, material and supplies, telephone usage) exceeds \$1,000 per the invoice period, provide a detailed explanation for that cost category.

(5) Contractor Acquired Equipment (if authorized by the contract) - Identify by item the quantities, unit prices, and total dollars billed.

(6) Contractor Acquired Software (if authorized by the contract) - Identify by item the quantities, unit prices, and total dollars billed.

(7) Travel - When travel costs exceed \$2,000 per invoice period, identify by trip, the number of travelers, the duration of travel, the point of origin, destination, purpose of trip, transportation by unit price, per diem rates on daily basis and total dollars billed. Detailed reporting is not required for local travel. The manner of breakdown, *e.g.*, task order/delivery order basis with/without separate program management, contract period will be specified in the contract instructions.

Note to paragraph (i) - Any costs requiring advance consent by the Contracting Officer will be considered improper and will be disallowed, if claimed prior to receipt of Contracting Officer consent. Include the total cost claimed for the current and cumulative-to-date periods. After the total amount claimed, provide summary dollar amounts disallowed on the contract as of the date of the invoice. Also include an explanation of the changes in cumulative costs disallowed by addressing each adjustment in terms of: Voucher number, date, dollar amount, source, and reason for the adjustment. Disallowed costs should be identified in unallowable accounts in the contractor's accounting system.

(j) *Supporting Schedules for Time and Materials Contracts.* The following backup information is required as an attachment to the invoice as shown by category of cost:

(1) Direct Labor - Identify the number of hours (by contractor labor category and total) and the total direct labor hours billed for the period of the invoice.

(2) Subcontracts - Identify the major cost elements for each subcontract.

(3) Other Direct Costs - When the cost for an individual cost (*e.g.*, photocopying, material and supplies, telephone usage) exceeds \$1,000 per the invoice period, provide a detailed explanation for that cost category.

(4) Indirect Cost Rates - Identify by cost center, the indirect cost rate, the period, and the cost base to which it is applied.

(5) Contractor Acquired Equipment - Identify by item the quantities, unit prices, and total dollars billed.

(6) Contractor Acquired Software - Identify by item the quantities, unit prices, and total dollars billed.

(7) Travel - When travel costs exceed \$2,000 per invoice period, identify by trip, the number of travelers, the duration of travel, the point of origin, destination, purpose of trip, transportation by unit price, per diem rates on daily basis and total dollars billed. Detailed reporting is not required for local travel. The manner of breakdown, *e.g.*, task

order/delivery order basis with/without separate program management, contract period will be specified in the contract instructions.

Note to paragraph (j) - Any costs requiring advance consent by the Contracting Officer will be considered improper and will be disallowed, if claimed prior to receipt of Contracting Officer consent. Include the total cost claimed for the current and cumulative-to-date periods. After the total amount claimed, provide summary dollar amounts disallowed on the contract as of the date of the invoice. Also include an explanation of the changes in cumulative costs disallowed by addressing each adjustment in terms of: Voucher number, date, dollar amount, source, and reason for the adjustment. Disallowed costs should be identified in unallowable accounts in the contractor's accounting system.

(k) *Adjustment vouchers.* Adjustment vouchers should be submitted if finalized indirect rates were received but the rates are not for the entire period of performance. For example, the base period of performance is for a calendar year but your indirect rates are by fiscal year. Hence, only part of the base period can be adjusted for the applicable final indirect rates. These invoices should be annotated with adj after the invoice number.

(l) *Final vouchers.* Final Vouchers shall be submitted if finalized rates have been received for the entire period of performance. For example, the base period of performance is for a calendar year but your indirect rates are by fiscal year. You have received finalized rates for the entire base period that encompass both fiscal years that cover the base period. In accordance with FAR 52.216-7, these invoices shall be submitted within 60 days after settlement of final indirect cost rates. They should be annotated with the word Final or F after the invoice number. Due to system limitations, the invoice number cannot be more than 11 characters to include spaces.

(m) *Completion vouchers.* In accordance with FAR 52.216-7(d)(5), a completion voucher shall be submitted within 120 days (or longer if approved in writing by the Contracting Officer) after settlement of the final annual indirect cost rates for all years of a physically complete contract. The voucher shall reflect the settled amounts and rates. It shall include settled subcontract amounts and rates. The prime contractor is responsible for settling subcontractor amounts and rates included in the completion invoice. Since EPA's invoices must be on a period of performance basis, the contractor shall have a completion invoice for each year of the period of performance. This voucher must be submitted to the Contracting Officer for review and approval before final payment can be made on the contract. The Contracting Officer may request an audit of the completion vouchers before final payment is made. In addition, once approved, the Contracting Officer will request the appropriate closeout paperwork for the contract. For contracts separately invoiced by delivery or task order, provide a schedule showing final total costs claimed by delivery or task order and in total for the contract. In addition to the completion voucher, the contractor must submit the *Contractor's Release; Assignee's Release*, if applicable; the *Contractor's Assignment of Refunds, Rebates, Credits and other Amounts*; the *Assignee's Assignment of Refunds, Rebates, Credits and other Amounts*, if applicable; and the *Contractor's Affidavit of Waiver of Lien*, when required by the contract.

(End of clause)

D. Innovations, Inventions, and Patents

LIMITED RIGHTS INFORMATION AND DATA

(a) PROPRIETARY INFORMATION.

Information contained in unsuccessful proposals will remain the property of the offeror. The EPA may, however, retain copies of all proposals. Public release of information in any proposal submitted will be subject to existing statutory and regulatory requirements.

If proprietary information is provided by an offeror in a proposal, which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or data affecting the national security, it will be treated in confidence, to the extent permitted by law. This information must be clearly marked by the offeror with the term "confidential proprietary information" and the following legend must appear on the cover page of the proposal:

“This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of—or in connection with—the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government’s right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained on pages___; of this proposal.”

Any other legend may be unacceptable to the EPA and may constitute grounds for removing the proposal from further consideration, without assuming any liability for inadvertent disclosure. The EPA will limit dissemination of such information to within official channels.

(b) ALTERNATIVE TO MINIMIZE PROPRIETARY INFORMATION. **Offerors shall limit proprietary information to only that absolutely essential to their proposal.**

(c) RIGHTS IN DATA DEVELOPED UNDER SBIR FUNDING AGREEMENTS.

(1) The Contractor is authorized to affix the following “SBIR Rights Notice” to SBIR data delivered under this contract and the Government will thereafter treat the data within the provisions of FAR 52.227-20, RIGHTS IN DATA--SBIR PROGRAM (MAY 2014). If the Contractor does not affix the Notice to data delivered to the Government in performance of the contract, the Government will have unlimited rights to all data delivered, except for copyright data approved by the Contracting Officer and registered under Title 17 U.S.C. 401 or 402. If the claim to copyright data is made, the Contractor shall affix the applicable copyright notice. The SBIR RIGHTS NOTICE (DEC 2007) is as follows:

“These SBIR data are furnished with SBIR rights under Contract No._____ (and Subcontract if appropriate). For a period of four (4) years, unless extended in accordance with FAR 27.409(h), after acceptance of all items to be delivered under this contract, the Government agrees to use these data for Government purposes only, and they shall not be disclosed outside the Government (including disclosure for procurement purposes) during such period without permission of the Contractor, except that, subject to the foregoing use and disclosure prohibitions, these data may be disclosed for use by support Contractors. After the protection period, the Government has a paid-up license to use, and to authorize others to use on its behalf, these data for Government purposes, but is relieved of all disclosure prohibitions and assumes no liability for unauthorized use of these data by third parties. This Notice shall be affixed to any reproductions of these data, in whole or in part.”

(2) SBIR technical data rights apply to all SBIR awards, including subcontracts to such awards, that fall within the statutory definition of Phase I, II, or III of the SBIR Program, as described in §4 of this Policy Directive. The scope and extent of the SBIR technical data rights applicable to Federally-funded Phase III awards is identical to the SBIR data rights applicable to Phases I and II SBIR awards. The data rights protection period lapses only:

- (i) upon expiration of the protection period applicable to the SBIR award; or
- (ii) by agreement between the awardee and the agency.

(d) COPYRIGHTS. With prior written permission of the Contracting Officer, the Awardee normally may copyright and publish (consistent with appropriate national security considerations, if any) material developed with EPA support. The EPA receives a paid-up license for the Federal Government and requires that each publication contain an appropriate acknowledgment and disclaimer statement.

(e) PATENTS. Small business concerns normally may retain the principal worldwide patent rights to any invention developed with Government support. The EPA receives a paid-up license for Federal Government use, reserves the right to require the patent holder to license others in certain circumstances, and requires that anyone exclusively licensed to sell the invention in the United States must normally manufacture it domestically. To the extent authorized by 35 U.S.C. 205, the Government will not make public any information disclosing a Government-

supported invention for a four-year period to allow the Awardee a reasonable time to pursue a patent.

- (f) Invention reporting. Include requirements for reporting inventions. Include appropriate information concerning the reporting of inventions, for example:

“SBIR awardees must report inventions to the awarding agency within 2 months of the inventor’s report to the awardee. The reporting of inventions may be accomplished by submitting paper documentation, including fax.”

Note: Some agencies provide electronic reporting of inventions through the NIH iEdison Invention Reporting System (iEdison System). Use of the iEdison System satisfies all invention reporting requirements mandated by 37 CFR part 401, with particular emphasis on the Standard Patent Rights Clauses, 37 CFR 401.14. Access to the system is through a secure interactive Internet site, <http://www.iedison.gov>, to ensure that all information submitted is protected. All agencies are encouraged to use the Edison System. In addition to fulfilling reporting requirements, the Edison System notifies the user of future time sensitive deadlines with enough lead-time to avoid the possibility of loss of patent rights due to administrative oversight.

E. Cost Sharing

Cost sharing is permitted for proposals under this Program Solicitation; however, cost sharing is neither required nor will it be an evaluation factor when considering your proposals.

F. Profit or Fee

Reasonable fee (estimated profit) will be considered under this solicitation. For guidance purposes, the amount of profit shall not exceed 10 percent (10%) of total project costs.

G. Joint Ventures or Limited Partnerships

Joint ventures and limited partnerships are eligible provided the entity created qualifies as a small business concern as defined in this Program Solicitation.

H. Research and Analytical Work

- (1) For a SBIR Phase I proposal, a minimum of two-thirds of the research and/or analytical effort, as measured by the budget, must be performed by the proposing small business concern, and the balance of one third may be outsourced to a consultant or subcontract or a combination of the two.
- (2) For a Phase II proposal, a minimum of one-half of the research and/or analytical effort, as measured by the budget, must be performed by the proposing small business concern and the balance of one-half may be outsourced to a consultant or subcontract or a combination of the two.

I. Contractor Commitments

Upon award of a contract, the Awardee will be required to make certain legal commitments through acceptance of numerous clauses in the Phase I funding agreements. The outline that follows is illustrative of the types of clauses to which the Contractor would be committed. This list should not be understood to represent a complete list of clauses to be included in Phase I contracts, or to represent the specific wording of such clauses. Copies of the complete terms and conditions are available upon request.

- (1) **STANDARDS OF WORK.** Work performed under the funding agreement must conform to high professional standards.
- (2) **INSPECTION.** Work performed under the contract is subject to Government inspection and evaluation at all times.
- (3) **EXAMINATION OF RECORDS.** The Comptroller General (or a duly authorized representative) shall have the right to examine any directly pertinent records of the awardee involving transactions related to this contract.
- (4) **DEFAULT.** The Government may terminate the contract if the Contractor fails to perform the work contracted.
- (5) **TERMINATION FOR CONVENIENCE.** The contract may be terminated at any time by the Government if it deems termination to be in its best interest of the Government, in which case the Contractor will be compensated for work

performed and for reasonable termination costs.

- (6) **DISPUTES.** Any dispute concerning the contract that cannot be resolved by agreement shall be decided by the Contracting Officer with the right of appeal.
- (7) **CONTRACT WORK HOURS.** The awardee may not require an employee to work more than 8 hours a day or 40 hours a week unless the employee is compensated accordingly (for example, overtime pay).
- (8) **EQUAL OPPORTUNITY.** The awardee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
- (9) **AFFIRMATIVE ACTION FOR VETERANS.** The awardee will not discriminate against any employee or applicant for employment because s/he is a disabled veteran or veteran of the Vietnam era.
- (10) **AFFIRMATIVE ACTION FOR HANDICAPPED.** The awardee will not discriminate against any employee or applicant for employment because s/he is physically or mentally handicapped.
- (11) **OFFICIALS NOT TO BENEFIT.** No Government official shall benefit personally from the SBIR contract.
- (12) **COVENANT AGAINST CONTINGENT FEES.** No person or agency has been employed to solicit or secure the contract upon an understanding for compensation except bonafide employees or commercial agencies maintained by the Contractor for the purpose of securing business.
- (13) **GRATUITIES.** The contract may be terminated by the Government if any gratuities have been offered to any representative of the Government to secure the contract.
- (14) **PATENT INFRINGEMENT.** The Contractor shall report each notice or claim of patent infringement based on the performance of the contract.
- (15) **AMERICAN MADE EQUIPMENT AND PRODUCTS.** When purchasing equipment or a product under the SBIR contract, the contractor shall purchase only American-made items whenever possible.

J. Additional Information

- (a) The Program Solicitation is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR contract, the terms of the contract shall be controlling.
- (b) Before making an award of an SBIR funding agreement, the EPA may request the offeror to submit certain organizational, management, personnel, and financial information to assure the responsibility of the offeror.
- (c) The EPA is not responsible for any monies expended by the offeror before award of any contract.
- (d) This Program Solicitation is not an offer by the EPA and does not obligate the EPA to make any specific number of awards. Also, awards under the SBIR program are contingent upon the availability of funds.
- (e) The EPA SBIR program is not a substitute for existing unsolicited proposal mechanisms. Unsolicited proposals shall not be accepted under the EPA SBIR program in either Phase I or Phase II.
- (f) If an award is made pursuant to a proposal submitted under this Program Solicitation, the Contractor will be required to certify that s/he has not previously been, and is not currently being, paid for essentially equivalent work by any agency of the Federal Government.
- (g) Notwithstanding the relatively broad definition of R/R&D in Section II, Definitions, hereof, awards under this solicitation are limited to APPLIED forms of research. Proposals that are surveys, including market, state-of-the-art, and/or literature surveys, which should have been performed by the offeror prior to the preparation of the proposal, or the preparation of allied questionnaires and instruction manuals, shall not be accepted. If such proposals are submitted, they shall not be considered in compliance with the solicitation intent and, therefore, they shall be

considered technically unacceptable.

(h) The requirement that the offeror designate a topic, and only one topic, (see Section IV.A above) is also mandatory. The EPA receives hundreds of proposals each year, and it has special panels of reviewers for review of each research topic. In order to assure that proposals are evaluated by the correct panel, it is the complete responsibility of the offeror to select and identify the best topic.

(i) The following clauses are incorporated by reference:

FAR 52.232-25, PROMPT PAYMENT (JAN 2017)

(j) **Instructions to Offerors – Competitive Acquisition, FAR 52.215-1 (JAN 2017)**

(a) *Definitions.* As used in this provision- Discussions are negotiations that occur after establishment of the competitive range that may, at the Contracting Officer's discretion, result in the offeror being allowed to revise its proposal.

In writing, writing, or written means any worded or numbered expression that can be read, reproduced, and later communicated, and includes electronically transmitted and stored information.

Proposal modification is a change made to a proposal before the solicitation's closing date and time, or made in response to an amendment, or made to correct a mistake at any time before award.

Proposal revision is a change to a proposal made after the solicitation closing date, at the request of or as allowed by a Contracting Officer as the result of negotiations.

Time, if stated as a number of days, is calculated using calendar days, unless otherwise specified, and will include Saturdays, Sundays, and legal holidays. However, if the last day falls on a Saturday, Sunday, or legal holiday, then the period shall include the next working day.

(b) *Amendments to solicitations.* If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Offerors shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

(c) *Submission, modification, revision, and withdrawal of proposals.*

(1) Unless other methods (e.g., electronic commerce or facsimile) are permitted in the solicitation, proposals and modifications to proposals shall be submitted in paper media in sealed envelopes or packages (i) addressed to the office specified in the solicitation, and (ii) showing the time and date specified for receipt, the solicitation number, and the name and address of the offeror. Offerors using commercial carriers should ensure that the proposal is marked on the outermost wrapper with the information in paragraphs (c)(1)(i) and (c)(1)(ii) of this provision.

(2) The first page of the proposal must show:

(i) The solicitation number;

(ii) The name, address, and telephone and facsimile numbers of the offeror (and electronic address if available);

(iii) A statement specifying the extent of agreement with all terms, conditions, and provisions included in the solicitation and agreement to furnish any or all items upon which prices are offered at the price set opposite each item;

(iv) Names, titles, and telephone and facsimile numbers (and electronic addresses if available) of persons authorized to negotiate on the offeror's behalf with the Government in connection with this solicitation; and

- (v) Name, title, and signature of person authorized to sign the proposal. Proposals signed by an agent shall be accompanied by evidence of that agent's authority, unless that evidence has been previously furnished to the issuing office.
- (3) *Submission, modification, revision, and withdrawal of proposals.*
- (i) Offerors are responsible for submitting proposals and any modifications or revisions so as to reach the Government office designated in the solicitation by the time specified in the solicitation. If no time is specified in the solicitation, the time for receipt is 4:30 p.m., local time, for the designated Government office on the date that proposal or revision is due.
 - (ii) (A) Any proposal, modification or revision received at the Government office designated in the solicitation after the exact time specified for receipt of offers is "late" and will not be considered unless it is received before award is made, the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition; and—
 - (1) If it was transmitted through an electronic commerce method authorized by the solicitation, it was received at the initial point of entry to the Government infrastructure not later than 5:00 p.m. one working day prior to the date specified for receipt of proposals; or
 - (2) There is acceptable evidence to establish that it was received at the Government installation designated for receipt of offers and was under the Government's control prior to the time set for receipt of offers; or
 - (3) It is the only proposal received.
 - (B) However, a late modification of an otherwise successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.
 - (iii) Acceptable evidence to establish the time of receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.
 - (iv) If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the office designated for receipt of proposals by the exact time specified in the solicitation, and urgent Government requirements preclude amendment of the solicitation, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which normal Government processes resume.
 - (v) Proposals may be withdrawn by written notice received at any time before award. Oral proposals in response to oral solicitations may be withdrawn orally. If the solicitation authorizes facsimile proposals, proposals may be withdrawn via facsimile received at any time before award, subject to the conditions specified in the provision at 52.215-5, Facsimile Proposals. Proposals may be withdrawn in person by an offeror or an authorized representative, if the identity of the person requesting withdrawal is established and the person signs a receipt for the proposal before award.
- (4) Unless otherwise specified in the solicitation, the offeror may propose to provide any item or combination of items.
- (5) Offerors shall submit proposals in response to this solicitation in English, unless otherwise permitted by the solicitation, and in U.S. dollars, unless the provision at FAR 52.225-17, Evaluation of Foreign Currency Offers, is included in the solicitation.
- (6) Offerors may submit modifications to their proposals at any time before the solicitation closing date and time, and may submit modifications in response to an amendment, or to correct a mistake at any time

before award.

- (7) Offerors may submit revised proposals only if requested or allowed by the Contracting Officer.
 - (8) Proposals may be withdrawn at any time before award. Withdrawals are effective upon receipt of notice by the Contracting Officer.
- (d) *Offer expiration date.* Proposals in response to this solicitation will be valid for the number of days specified on the solicitation cover sheet (unless a different period is proposed by the offeror).
- (e) *Restriction on disclosure and use of data.* Offerors that include in their proposals data that they do not want disclosed to the public for any purpose, or used by the Government except for evaluation purposes, shall-
- (1) Mark the title page with the following legend: This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed-in whole or in part-for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of-or in connection with-the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets [insert numbers or other identification of sheets]; and
 - (2) Mark each sheet of data it wishes to restrict with the following legend: Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.
- (f) *Contract award.*
- (1) The Government intends to award a contract or contracts resulting from this solicitation to the responsible offeror(s) whose proposal(s) represents the best value after evaluation in accordance with the factors and subfactors in the solicitation.
 - (2) The Government may reject any or all proposals if such action is in the Government's interest.
 - (3) The Government may waive informalities and minor irregularities in proposals received.
 - (4) The Government intends to evaluate proposals and award a contract without discussions with offerors (except clarifications as described in FAR 15.306(a)). Therefore, the offeror's initial proposal should contain the offeror's best terms from a cost or price and technical standpoint. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary. If the Contracting Officer determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, the Contracting Officer may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.
 - (5) The Government reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the offeror specifies otherwise in the proposal.
 - (6) The Government reserves the right to make multiple awards if, after considering the additional administrative costs, it is in the Government's best interest to do so.
 - (7) Exchanges with offerors after receipt of a proposal do not constitute a rejection or counteroffer by the Government.
 - (8) The Government may determine that a proposal is unacceptable if the prices proposed are materially unbalanced between line items or subline items. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly overstated or

understated as indicated by the application of cost or price analysis techniques. A proposal may be rejected if the Contracting Officer determines that the lack of balance poses an unacceptable risk to the Government.

- (9) If a cost realism analysis is performed, cost realism may be considered by the source selection authority in evaluating performance or schedule risk.
- (10) A written award or acceptance of proposal mailed or otherwise furnished to the successful offeror within the time specified in the proposal shall result in a binding contract without further action by either party.
- (11) If a post-award debriefing is given to requesting offerors, the Government shall disclose the following information, if applicable:
 - (i) The agency's evaluation of the significant weak or deficient factors in the debriefed offeror's offer.
 - (ii) The overall evaluated cost or price and technical rating of the successful and the debriefed offeror and past performance information on the debriefed offeror.
 - (iii) The overall ranking of all offerors, when any ranking was developed by the agency during source selection.
 - (iv) A summary of the rationale for award.
 - (v) For acquisitions of commercial items, the make and model of the item to be delivered by the successful offeror.
 - (vi) Reasonable responses to relevant questions posed by the debriefed offeror as to whether source-selection procedures set forth in the solicitation, applicable regulations, and other applicable authorities were followed by the agency.

(k) ORGANIZATIONAL CONFLICTS OF INTEREST (EPAAR 1552.209-71) ALTERNATE I (MAY 1994)

- (a) The Contractor warrants that, to the best of the Contractor's knowledge and belief, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest, as defined in FAR Subpart 9.5, or that the Contractor has disclosed all such relevant information.
- (b) Prior to commencement of any work, the Contractor agrees to notify the Contracting Officer immediately that, to the best of its knowledge and belief, no actual or potential conflict of interest exists or to identify to the Contracting Officer any actual or potential conflict of interest the firm may have. In emergency situations, however, work may begin but notification shall be made within five (5) working days.
- (c) The Contractor agrees that if an actual or potential organizational conflict of interest is identified during performance, the Contractor will immediately make a full disclosure in writing to the Contracting Officer. This disclosure shall include a description of actions which the Contractor has taken or proposes to take, after consultation with the Contracting Officer, to avoid, mitigate, or neutralize the actual or potential conflict of interest. The Contractor shall continue performance until notified by the Contracting Officer of any contrary action to be taken.
- (d) Remedies - EPA may terminate this contract for convenience, in whole or in part, if it deems such termination necessary to avoid an organizational conflict of interest. If the Contractor was aware of a potential organizational conflict of interest prior to award or discovered an actual or potential conflict after award and did not disclose it or misrepresented relevant information to the Contracting Officer, the Government may terminate the contract for default, debar the Contractor from Government contracting, or pursue such other remedies as may be permitted by law or this contract.
- (e) The Contractor agrees to insert in each subcontract or consultant agreement placed hereunder provisions

which shall conform substantially to the language of this clause, including this paragraph, unless otherwise authorized by the Contracting Officer.

(l) UNIQUE ENTITY IDENTIFIER (FAR 52.204-6) (OCT 2016)

(a) *Definitions.* As used in this provision—

“*Electronic Funds Transfer (EFT) indicator*” means a four-character suffix to the unique entity identifier. The suffix is assigned at the discretion of the commercial, nonprofit, or Government entity to establish additional System for Award Management records for identifying alternative EFT accounts (see subpart 32.11) for the same entity.

“*Unique entity identifier*” means a number or other identifier used to identify a specific commercial, nonprofit, or Government entity. See www.sam.gov for the designated entity for establishing unique entity identifiers.

(b) The Offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “Unique Entity Identifier” followed by the unique entity identifier that identifies the Offeror’s name and address exactly as stated in the offer. The Offeror also shall enter its EFT indicator, if applicable.

(c) If the Offeror does not have a unique entity identifier, it should contact the entity designated at www.sam.gov for establishment of the unique entity identifier directly to obtain one. The Offeror should be prepared to provide the following information:

- (1) Company legal business name.
- (2) Tradestyle, doing business, or other name by which your entity is commonly recognized.
- (3) Company physical street address, city, state and Zip Code.
- (4) Company mailing address, city, state and Zip Code (if separate from physical).
- (5) Company telephone number.
- (6) Date the company was started.
- (7) Number of employees at your location.
- (8) Chief executive officer/key manager.
- (9) Line of business (industry).
- (10) Company headquarters name and address (reporting relationship within your **entity**).

(m) SYSTEM FOR AWARD MANAGEMENT (FAR 52.204-7) (MAR 2020)

(a) *Definitions.* As used in this provision—

“*Electronic Funds Transfer (EFT) indicator*” means a four-character suffix to the unique entity identifier. The suffix is assigned at the discretion of the commercial, nonprofit, or Government entity to establish additional System for Award Management records for identifying alternative EFT accounts (see subpart 32.11) for the same entity.

Registered in the System for Award Management (SAM) means that—

(1) The Offeror has entered all mandatory information, including the unique entity identifier and the EFT indicator, if applicable, the Commercial and Government Entity (CAGE) code, as well as data required by the Federal Funding Accountability and Transparency Act of 2006 (see subpart 4.14) into SAM

(2) The offeror has completed the Core, Assertions, and Representations and Certifications, and Points of Contact sections of the registration in SAM;

(3)The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN) with the Internal Revenue Service (IRS). The offeror will be required to provide consent for TIN validation to the Government as a part of the SAM registration process; and

(4)The Government has marked the record “Active”.

Unique entity identifier means a number or other identifier used to identify a specific commercial, nonprofit, or Government entity. See www.sam.gov for the designated entity for establishing unique entity identifiers.

(b)

(1)An Offeror is required to be registered in SAM when submitting an offer or quotation, and shall continue to be registered until time of award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2)The Offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation “Unique Entity Identifier” followed by the unique entity identifier that identifies the Offeror's name and address exactly as stated in the offer. The Offeror also shall enter its EFT indicator, if applicable. The unique entity identifier will be used by the Contracting Officer to verify that the Offeror is registered in the SAM.

(c)If the Offeror does not have a unique entity identifier, it should contact the entity designated at www.sam.gov for establishment of the unique entity identifier directly to obtain one. The Offeror should be prepared to provide the following information:

(1)Company legal business name.

(2)Tradestyle, doing business, or other name by which your entity is commonly recognized.

(3)Company physical street address, city, state, and Zip Code.t

(4)Company mailing address, city, state and Zip Code (if separate from physical).

(5)Company telephone number.

(6)Date the company was started.

(7)Number of employees at your location.

(8)Chief executive officer/key manager.

(9)Line of business (industry).

(10)Company headquarters name and address (reporting relationship within your entity).

(d)Processing time should be taken into consideration when registering. Offerors who are not registered in SAM should consider applying for registration immediately upon receipt of this solicitation. See <https://www.sam.gov> for information on registration.

(n) SMALL BUSINESS PROGRAM REPRESENTATIONS (FAR 52.219-1) (MAR 2020)

(a) Definitions. As used in this provision-

“Economically disadvantaged women-owned small business (EDWOSB) concern” means a small business concern that is at least 51 percent directly and unconditionally owned by, and the management and daily business operations of which are controlled by, one or more women who are citizens of the United States and who are economically disadvantaged in

accordance with 13 CFR part 127. It automatically qualifies as a women-owned small business concern eligible under the WOSB Program.

Service-disabled veteran-owned small business concern-

(1) Means a small business concern-

(i) Not less than 51 percent of which is owned by one or more service-disabled veterans or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more service-disabled veterans; and

(ii) The management and daily business operations of which are controlled by one or more service-disabled veterans or, in the case of a service-disabled veteran with permanent and severe disability, the spouse or permanent caregiver of such veteran.

(2) "Service-disabled veteran" means a veteran, as defined in [38 U.S.C.101\(2\)](#), with a disability that is service-connected, as defined in [38 U.S.C.101\(16\)](#).

Small business concern means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (b) of this provision.

Small disadvantaged business concern, consistent with 13 CFR 124.1002, means a small business concern under the size standard applicable to the acquisition, that-

(1) Is at least 51 percent unconditionally and directly owned (as defined at 13 CFR 124.105) by-

(i) One or more socially disadvantaged (as defined at 13 CFR 124.103) and economically disadvantaged (as defined at 13 CFR 124.104) individuals who are citizens of the United States, and

(ii) Each individual claiming economic disadvantage has a net worth not exceeding \$750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(2) The management and daily business operations of which are controlled (as defined at 13 CFR 124.106) by individuals who meet the criteria in paragraphs (1)(i) and (ii) of this definition.

"Veteran-owned small business concern" means a small business concern-

(1) Not less than 51 percent of which is owned by one or more veterans (as defined at [38 U.S.C.101\(2\)](#)) or, in the case of any publicly owned business, not less than 51 percent of the stock of which is owned by one or more veterans; and

(2) The management and daily business operations of which are controlled by one or more veterans.

"Women-owned small business concern" means a small business concern-

(1) That is at least 51 percent owned by one or more women; or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

"Women-owned small business (WOSB) concern eligible under the WOSB Program" (in accordance with 13 CFR part 127), means a small business concern that is at least 51 percent directly and unconditionally owned by, and the management and daily business operations of which are controlled by, one or more women who are citizens of the United States.

(b)

(1) The North American Industry Classification System (NAICS) code for this acquisition is— _____ [insert NAICS code].

(2) The small business size standard is _____ [insert size standard].

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture (i.e., nonmanufacturer), is 500 employees.

(c) Representations.

(1) The offeror represents as part of its offer that it is, is not a small business concern.

(2) [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents that it is, is not, a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents as part of its offer that it is, is not a women-owned small business concern.

(4) Women-owned small business (WOSB) concern eligible under the WOSB Program. [Complete only if the offeror represented itself as a women-owned small business concern in paragraph (c)(3) of this provision.] The offeror represents as part of its offer that-

(i) It is, is not a WOSB concern eligible under the WOSB Program, has provided all the required documents to the WOSB Repository, and no change in circumstances or adverse decisions have been issued that affects its eligibility; and

(ii) It is, is not a joint venture that complies with the requirements of 13 CFR part 127, and the representation in paragraph (c)(4)(i) of this provision is accurate for each WOSB concern eligible under the WOSB Program participating in the joint venture. [The offeror shall enter the name or names of the WOSB concern eligible under the WOSB Program and other small businesses that are participating in the joint venture: _____.] Each WOSB concern eligible under the WOSB Program participating in the joint venture shall submit a separate signed copy of the WOSB representation.

(5) Economically disadvantaged women-owned small business (EDWOSB) concern. [Complete only if the offeror represented itself as a women-owned small business concern eligible under the WOSB Program in (c)(4) of this provision.] The offeror represents as part of its offer that-

(i) It is, is not an EDWOSB concern eligible under the WOSB Program, has provided all the required documents to the WOSB Repository, and no change in circumstances or adverse decisions have been issued that affects its eligibility; and

(ii) It is, is not a joint venture that complies with the requirements of 13 CFR part 127, and the representation in paragraph (c)(5)(i) of this provision is accurate for each EDWOSB concern participating in the joint venture. [The offeror shall enter the name or names of the EDWOSB concern and other small businesses that are participating in the joint venture: _____.] Each EDWOSB concern participating in the joint venture shall submit a separate signed copy of the EDWOSB representation.

(6) [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents as part of its offer that it is, is not a veteran-owned small business concern.

(7) [Complete only if the offeror represented itself as a veteran-owned small business concern in paragraph (c)(6) of this provision.] The offeror represents as part of its offer that it is, is not a service-disabled veteran-owned small business concern.

(8) [Complete only if the offeror represented itself as a small business concern in paragraph (c)(1) of this provision.] The offeror represents, as part of its offer, that-

(i) It is, is not a HUBZone small business concern listed, on the date of this representation, on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration, and no material changes in ownership and control, principal office, or HUBZone employee percentage have occurred since it was certified in accordance with 13 CFR Part 126; and

(ii) It is, is not a HUBZone joint venture that complies with the requirements of 13 CFR Part 126, and the representation in paragraph (c)(8)(i) of this provision is accurate for each HUBZone small business concern participating in the HUBZone joint venture. [The offeror shall enter the names of each of the HUBZone small business concerns participating in the HUBZone joint venture: _____.] Each HUBZone small business concern participating in the HUBZone joint venture shall submit a separate signed copy of the HUBZone representation.

(d) Under [15 U.S.C. 645\(d\)](#), any person who misrepresents a firm's status as a business concern that is small, HUBZone small, small disadvantaged, service-disabled veteran-owned small, economically disadvantaged women-owned small, or women-owned small eligible under the WOSB Program in order to obtain a contract to be awarded under the preference programs established pursuant to section 8, 9, 15, 31, and 36 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall-

- (1) Be punished by imposition of fine, imprisonment, or both;
- (2) Be subject to administrative remedies, including suspension and debarment; and
- (3) Be ineligible for participation in programs conducted under the authority of the Act.

(o) PAYMENT BY ELECTRONIC FUNDS TRANSFER- SYSTEM FOR AWARD MANAGEMENT (FAR 52.232-33) (OCT 2018)

Method of payment.

(a) Method of payment.

(1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either-

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).

(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the System for Award Management (SAM). In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to SAM.

(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR Part 210.

(d) Suspension of payment. If the Contractor's EFT information in the SAM is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the SAM; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.

(e) Liability for uncompleted or erroneous transfers.

(1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for-

- (i) Making a correct payment;
- (ii) Paying any prompt payment penalty due; and
- (iii) Recovering any erroneously directed funds.

(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and-

(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or

(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.

(f) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.

(g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register separately in SAM and shall be paid by EFT in accordance with the terms of this clause. Notwithstanding any other requirement of this contract, payment to an ultimate recipient other than the Contractor, or a financial institution properly recognized under an assignment of claims pursuant to [subpart 32.8](#), is not permitted. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.

(h) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.

(i) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in SAM.

(p) PROTEST AFTER AWARD FAR 52.233-3 (AUG 1996)

- (a) Upon receipt of a notice of protest (as defined in 33.101 of the FAR) the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Upon receipt of the final decision in the protest, the Contracting Officer shall either—

- (1) Cancel the stop-work order; or
 - (2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.
- (b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if—
- (1) The stop-work order results in an increase in the time required for, or in the Contractor’s cost properly allocable to, the performance of any part of this contract; and
 - (2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal submitted at any time before final payment under this contract.
- (c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.
- (d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.
- (e) The Government’s rights to terminate this contract at any time are not affected by action taken under this clause.
- (f) If, as the result of the Contractor’s intentional or negligent misstatement, misrepresentation, or miscertification, a protest related to this contract is sustained, and the Government pays costs, as provided in FAR 33.102(b)(2) or 33.104(h)(1), the Government may require the Contractor to reimburse the Government the amount of such costs. In addition to any other remedy available, and pursuant to the requirements of Subpart 32.6, the Government may collect this debt by offsetting the amount against any payment due the Contractor under any contract between the Contractor and the Government.

(q) PRINCIPAL INVESTIGATOR (PI) SUBSTITUTION DUE TO DEATH, RESIGNATION OR ILLNESS (AUG 2013) (Custom Clause)

The SBIR solicitation, evaluation, and award process is an elaborate chain of events involving hundreds of proposals and multiple offices within EPA. It entails the coordination of external peer review panels, the evaluation of proposals, and the ultimate determination of eligibility for award. Consequently, this process can be quite time consuming and delays may be encountered. Accordingly, every effort should be made by an offeror to retain the Principal Investigator (PI) initially identified in its proposal. When circumstances occur beyond an offeror’s control, such as death, illness, or resignation of a PI, the offeror shall provide acceptable documentation that could include a letter of resignation, copy of an obituary, or a signed statement by the PI that s/he is unable to perform based on medical reasons, etc. An offeror, upon notification that its proposal is being considered for award, will be required to agree to the alternate evaluation of the substitute PI, and will have an opportunity to submit a timely resume for a qualified substitute PI. Note, however, that the evaluation of a substitute PI will not improve an offeror’s rating and could actually result in an offeror’s failure to receive an award based on inadequate substitute PI qualifications.

(r) UTILIZATION OF FEDCONNECT FOR CONTRACT ADMINISTRATION (MAR 2013) (EPA-H-42-102) (Local Clause)

EPA will utilize the FedConnect® web portal in administering this contract. The contractor must be registered in FedConnect® and have access to the FedConnect website located at <https://www.fedconnect.net/Fedconnect/>. For

assistance in registering or for other FedConnect® technical questions please call the FedConnect® Help Desk at (800) 899-6665 or email at support@fedconnect.net

(s) TECHNICAL QUESTIONS (EPA-L-15-102) (Local Clause)

Offerors must submit all technical questions concerning this solicitation electronically through FedConnect. In order to submit questions, offerors must register in FedConnect at www.fedconnect.net, see main page for registration instructions. For assistance in registering or for other FedConnect technical questions please call the FedConnect Help Desk at (800) 899-6665 or email at support@fedconnect.net. Only those technical questions posted through FedConnect will be accepted. EPA must receive technical questions no later than 12:00 p.m. (noon) Eastern Daylight Time (EDT) on **July 1, 2020**. EPA will utilize FedConnect to issue amendments to the solicitation (e.g., to answer technical questions which may affect proposal submittal). EPA will not reference the source of the questions.

(t) DEBRIEFING REQUEST

An offeror, upon its written request received by the agency within 7 days after the date on which that offeror has received notification of contract award via EPA Public Notice, FedConnect announcement, or email from the Contracting Officer – whichever occurs first - shall be furnished with basis for the selection decision and contract award. To the maximum extent practicable, EPA debriefing should occur within 14 days after receipt of the written request. Untimely debriefing requests shall not be accommodated. Debriefings shall consist of one or more of the following:

- 1) Reason(s) for ineligibility for review/award;
- 2) Peer Review evaluation; or
- 3) Notice of Non-Recommendation

VII. SUBMISSION OF PROPOSALS

Your proposal (including all appendices) shall be submitted in Portable Document Format (PDF) and shall be received via FedConnect by 12:00 p.m. (noon) Eastern Daylight Time (EDT) on September 4, 2020. Your entire proposal (including appendices) shall be submitted through FedConnect as ONE document in PDF. Only proposals received via FedConnect as ONE PDF by the deadline identified above will be considered for award.

Proposals shall be submitted via the FedConnect web portal (www.fedconnect.net). In order to submit proposals, offerors must register in FedConnect at www.fedconnect.net, see main page of FedConnect website for registration instructions. For assistance in registering or for other FedConnect technical questions please call the FedConnect Help Desk at (800) 899-6665 or email at support@fedconnect.net.

IMPORTANT: Please note Section VI., Paragraph J.j, Federal Acquisition Regulation Clause 52.215(c)(3), “Instructions to Offerors – Competitive Acquisitions” concerning Late Proposals, Modification of Proposals and Withdrawal of Proposals.

It is the responsibility of Offerors to submit proposals in FedConnect with sufficient time to ensure they are received by the date and time specified. Only proposals received by the date and time specified via FedConnect will be considered for award.

VIII. SCIENTIFIC AND TECHNICAL INFORMATION SOURCES

The following documents are referenced in Section I.D. 2020-21 SBIR Phase I Research Topics. The purpose of the documents is to provide more information on some of the specific topics.

All references are listed below by topic.

Safe and Sustainable Water Resources

Water Reuse

- <https://www.epa.gov/waterreuse>
- <https://www.epa.gov/waterreuse/water-reuse-action-plan>
- https://watereuse.org/wp-content/uploads/2019/11/Risk-Based-Framework-for-DNWS-Report_FINAL.pdf

Air Quality

- <https://www.epa.gov/research/air-climate-and-energy-strategic-research-action-plan-2016-2019>

Odors and Volatile Organic Compounds (VOCs)

- https://cfpub.epa.gov/roe/indicator_pdf.cfm?i=23

Radon

- <https://www.epa.gov/radon>
- <https://www.epa.gov/indoor-air-quality-iaq/what-average-level-radon-found-homes-us-0>

Land Revitalization

PFAS

- <https://www.epa.gov/pfas/basic-information-about-and-polyfluoroalkyl-substances-pfass#tab-1>

Homeland Security

- <https://www.epa.gov/homeland-security-research/contaminant-fate-transport-and-exposure>

Sustainable Materials Management

Preventing Food Waste

- <https://www.epa.gov/sustainable-management-food/winning-reducing-food-waste-federal-interagency-strategy>
- <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy>

Recycling

- <https://www.epa.gov/smm/recycling-economic-information-rei-report>

Materials Market Development for Industrial Non-Hazardous Secondary Materials and Food Processing Byproducts

- <https://www.epa.gov/smm>
- <https://www.epa.gov/smm/epa-sustainable-materials-management-program-strategic-plan-fiscal-years-2017-2022>

Safe Building Deconstruction Tools or Safety Equipment

- <https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy>

Building Materials Technology to Improve Energy Efficiency of Residential Structures and Have Reduced Embodied Impacts

- <https://www.epa.gov/smm/sustainable-materials-management-road-ahead>
- <https://www.epa.gov/smm/analysis-lifecycle-impacts-and-potential-avoided-impacts-associated-single-family-homes>
- <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

Safer Chemicals

- <https://www.epa.gov/environmental-topics/chemicals-and-toxics-topics>

New Approach Methodologies

- <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/alternative-test-methods-and-strategies-reduce>
- https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/display.rfatext/rfa_id/642#Background

Cleaner Manufacturing of Coloration Technologies

- <https://www.epa.gov/pCBS>
- <http://ehp.niehs.nih.gov/121-a86/>
- <https://fortress.wa.gov/ecy/publications/publications/1404035.pdf>

IX. SUBMISSION FORMS AND CERTIFICATIONS

The attached forms (listed below) should be completed as indicated under Section IV, Proposal Preparation Instructions and Requirements. Include Appendix 1 as the first page of your proposal and Appendix 2 as the second page of your proposal.

- Appendix 1: Proposal Cover Sheet (Number as Page 1)
- Appendix 2: Project Summary (Number as Page 2)
- Appendix 3: SBIR Proposal Summary Budget
- Appendix 4: Representations and Certifications

APPENDIX 1

U.S. ENVIRONMENTAL PROTECTION AGENCY
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SBIR BROAD AGENCY ANNOUNCEMENT (PHASE I SOLICITATION) NO. 68HERC20R0111
PROPOSAL COVER SHEET

Proposal Title

Company Name

Street Address

City	State	ZIP+4	
\$	6 Months		
Amount Requested (Not to exceed \$100,000)	Website	Proposed Duration (Phase I)	No. of Employees

*****Proposals submitted in response to this solicitation will be valid for 300 days*****

Research Topic Code and Topic Title (select only one)

- 1A: Monitoring technologies for water reuse
- 1B: Treatment technologies for water reuse
- 2A: Air monitoring technology for Ethylene Oxide
- 2B: Air quality sensors for volatile organic compounds (VOCs) and odors
- 2C: Innovative technologies for radon mitigation in buildings
- 3A: PFAS remediation technologies for soil, sediment, water and groundwater
- 4A: Long-term disinfectant coatings
- 5A: Innovative technologies to prevent food waste
- 5B: Technologies that will improve the US recycling system
- 5C: New applications for industrial non-hazardous secondary materials and food processing byproducts
- 5D: Safe building deconstruction tools or safety equipment
- 5E: Materials that improve energy efficiency in buildings and have reduced embodied impacts
- 6A: New Approach Methodologies (NAMs) to reduce, refine or replace animal testing
- 6B: Cleaner manufacturing of coloration techniques

Certification and Authorizations (Check Y [Yes] or N [No])

- Y N The above concern certifies that it is a small business concern and meets the definition as stated in the program solicitation.
- Y N The above concern certifies that a minimum of 2/3 of the research and/or analytical effort will be performed by the proposing firm.
- Y N The above concern certifies that it is a woman owned small business concern and meets the definition as stated in the solicitation.*
- Y N The above concern certifies that it is a socially and economically disadvantaged small business concern and meets the definition as stated in the solicitation.*
- Y N The above concern certifies that the principal investigator is a woman and meets the definition as stated in the solicitation.*
- Y N The above concern certifies that is a socially and economically disadvantaged individual and meets the definition as stated in the solicitation.*
- Y N The above concern certifies it is a HUBZone small business concern and meets the definition as stated in the solicitation.*

*For Statistical Purposes only.

If the proposal does not result in an award, is the Government permitted to disclose the title and technical project summary of your proposed project, and the name, address, and telephone number of the official of the proposing firm to any inquiring parties?

Yes No

Do you plan to send, or have you sent this proposal or a similar one to any other federal agency? Yes No

If yes, which? Use acronym(s) for each agency, (e.g., DOD, NIH, DOE, NASA, etc.)

Choose one of the following to describe your organization type:

Individual Partnership Corporation LLC

Please provide the following information:

Tax Identification Number

Dun & Bradstreet Number

Small Business Concern
(SBC) Control ID

The Offeror is in full agreement with the terms, conditions and provisions included in this solicitation, as evidenced by signatures below.

Contact Information

Principal Investigator

Business Representative

First Name MI Last Name

First Name MI Last Name

Title

Title

Telephone

Telephone

Email Address

Email Address

Signature Date

Signature Date

Proprietary Notice

This proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of—or in connection with—the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government’s right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained on pages_____; of this proposal.

APPENDIX 2

U.S. ENVIRONMENTAL PROTECTION AGENCY
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SBIR BROAD AGENCY ANNOUNCEMENT (PHASE I SOLICITATION) NO. 68HERC20R0111
PROJECT SUMMARY

Company Name

Street Address

City

State

ZIP+4

Proposal Title

Research Topic Code and Topic Title

Principal Investigator

Telephone

Email Address

Project Summary

The project summary (shall be limited to one page and not to exceed 400 words; must be publishable, i.e., not proprietary) should address the following: The specific need for the technology, what the technology would do to meet that need, technical feasibility, commercial application(s), end users, size of the potential market, performance compared to current technologies and potential for environmental benefits.

APPENDIX 3
SBIR PROPOSAL SUMMARY BUDGET

INSTRUCTIONS FOR APPENDIX 3

The purpose of this form is to provide a vehicle whereby the offeror submits to the Government a pricing proposal of estimated costs with detailed information for each cost element, consistent with the offeror's cost accounting system.

If the completed summary is not self-explanatory and/or does not fully document and justify the amounts requested in each category, such documentation should be contained, as appropriate, on a budget explanation page immediately following the budget in the proposal.

- A. Direct Labor – List individually all personnel included, the estimated hours to be expended and the rates of pay (salary, wages, and fringe benefits).
- B. Overhead - Specify current rate(s) and base(s). Use current rate(s) negotiated with the cognizant federal negotiating agency, if available. If no rate(s) has (have) been negotiated, a reasonable rate(s) may be requested for Phase I which will be subject to approval by EPA. Offerors may use whatever number and types of overhead rates that are in accordance with their accounting systems and approved by the cognizant federal negotiating agency, if available.
- C. Other Direct Costs - List all other direct costs which are not otherwise included in the categories described above, i.e., computer services, publication costs, subcontracts, etc. List each item of permanent equipment to be purchased, its price, and explain its relation to the project.
- D. Travel - Address the type and extent of travel and its relation to the project. Include travel expenses for a one-day SBIR Phase I Kick-Off Meeting in Washington, DC.
- E. Consultants - Indicate name, daily compensation, and estimated days of service.
- F. General and Administrative (G&A) - Same as B. Above.
- G. Profit - Reasonable fee (estimated profit) will be considered under this solicitation. For guidance purposes, the amount of profit should not exceed 10% of total project costs.

Total Project Price (Total Costs + Profit) – The total costs proposed on Appendix 3 **must** match the total costs requested on Appendix 1.

*If the proposed budget exceeds the maximum amount, or the amount requested in Appendix 3, a detailed explanation of funding source(s) for the additional proposed costs must be provided. Additionally, a proposal that submits a budget that exceeds the maximum amount, or the amount requested must affirmatively state they the offeror understands that no award will exceed the maximum amount or the amount requested. Offerors are further advised that if the proposed budget is less than the maximum award or the amount requested, an award would provide only the budgeted amount. The failure to explain additional cost proposed and/or acknowledgment that the offeror understands no award will exceed the maximum will result in the **REJECTION OF THE OFFER**.*

APPENDIX 3
SBIR PROPOSAL SUMMARY BUDGET
(See Instructions on Page 48)

A. DIRECT LABOR (PI and other staff, list separately) Hours times Est. Rate:	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
B. OVERHEAD	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
C. OTHER DIRECT COSTS: (list separately)	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
D. TRAVEL: List purpose and individuals and or title	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
E. CONSULTANTS: (List daily compensation and est. days of service)	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
F. GENERAL AND ADMINISTRATIVE:	\$
<hr style="border-top: 1px dashed black;"/>	
<hr style="border-top: 1px solid black;"/>	
TOTAL COSTS (Total of A thru F above)	
\$	
G. PROFIT (_____%) Not to exceed 10% of total project costs	\$
<hr style="border-top: 1px solid black;"/>	
<hr style="border-top: 1px solid black;"/>	
TOTAL PROJECT PRICE (Total costs + Profit)	
\$	

(Total costs proposed must match the total costs requested on Appendix 1)

PRINT NAME

TITLE

SIGNATURE

DATE SUBMITTED

This proposal is submitted in response to EPA SBIR Program Solicitation No. 68HERC20R0111 reflects our best estimate as of this date.

Appendix 4
REPRESENTATIONS AND CERTIFICATIONS

4.1 52.204-8 — ANNUAL REPRESENTATIONS AND CERTIFICATIONS. (MAR 2020)

(a)

(1) The North American Industry Classification System (NAICS) code for this acquisition is 541715 Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)

(2) The small business size standard is 1,000 *employees*.

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b)

(1) If the provision at 52.204-7, System for Award Management, is included in this solicitation, paragraph (d) of this provision applies.

(2) If the provision at 52.204-7, System for Award Management, is not included in this solicitation, and the Offeror has an active registration in the System for Award Management (SAM), the Offeror may choose to use paragraph (d) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The Offeror shall indicate which option applies by checking one of the following boxes:

(i) Paragraph (d) applies.

(ii) Paragraph (d) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(c)

(1) The following representations or certifications in SAM are applicable to this solicitation as indicated:

(i) 52.203-2, Certificate of Independent Price Determination. This provision applies to solicitations when a firm-fixed-price contract or fixed-price contract with economic price adjustment is contemplated, unless—

(A) The acquisition is to be made under the simplified acquisition procedures in part 13;

(B) The solicitation is a request for technical proposals under two-step sealed bidding procedures; or

(C) The solicitation is for utility services for which rates are set by law or regulation.

(ii) 52.203-11, Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions. This provision applies to solicitations expected to exceed \$150,000.

(iii) 52.203-18, Prohibition on Contracting with Entities that Require Certain Internal Confidentiality Agreements or Statements-Representation. This provision applies to all solicitations.

(iv) 52.204-3, Taxpayer Identification. This provision applies to solicitations that do not include the provision at 52.204-7, System for Award Management.

(v) 52.204-5, Women-Owned Business (Other Than Small Business). This provision applies to solicitations that-

(A) Are not set aside for small business concerns;

(B) Exceed the simplified acquisition threshold; and

(C) Are for contracts that will be performed in the United States or its outlying areas.

(vi) 52.204-26, Covered Telecommunications Equipment or Services-Representation. This provision applies to all solicitations.

(vii) 52.209-2, Prohibition on Contracting with Inverted Domestic Corporations-Representation.

(viii) 52.209-5, Certification Regarding Responsibility Matters. This provision applies to solicitations where the contract value is expected to exceed the simplified acquisition threshold.

(ix) 52.209-11, Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law. This provision applies to all solicitations.

(x) 52.214-14, Place of Performance-Sealed Bidding. This provision applies to invitations for bids except those in which the place of performance is specified by the Government.

(xi) 52.215-6, Place of Performance. This provision applies to solicitations unless the place of performance is specified by the Government.

(xii) 52.219-1, Small Business Program Representations (Basic, Alternates I, and II). This provision applies to solicitations when the contract will be performed in the United States or its outlying areas.

(A) The basic provision applies when the solicitations are issued by other than DoD, NASA, and the Coast Guard.

(B) The provision with its Alternate I applies to solicitations issued by DoD, NASA, or the Coast Guard.

(C) The provision with its Alternate II applies to solicitations that will result in a multiple-award contract with more than one NAICS code assigned.

(xiii) 52.219-2, Equal Low Bids. This provision applies to solicitations when contracting by sealed bidding and the contract will be performed in the United States or its outlying areas.

(xiv) 52.222-22, Previous Contracts and Compliance Reports. This provision applies to solicitations that include the clause at 52.222-26, Equal Opportunity.

(xv) 52.222-25, Affirmative Action Compliance. This provision applies to solicitations, other than those for construction, when the solicitation includes the clause at 52.222-26, Equal Opportunity.

(xvi) 52.222-38, Compliance with Veterans' Employment Reporting Requirements. This provision applies to solicitations when it is anticipated the contract award will exceed the simplified acquisition threshold and the contract is not for acquisition of commercial items.

(xvii) 52.223-1, Biobased Product Certification. This provision applies to solicitations that require the delivery or specify the use of USDA–designated items; or include the clause at 52.223-2, Affirmative Procurement of Biobased Products Under Service and Construction Contracts.

(xviii) 52.223-4, Recovered Material Certification. This provision applies to solicitations that are for, or specify the use of, EPA–designated items.

(xix) 52.223-22, Public Disclosure of Greenhouse Gas Emissions and Reduction Goals-Representation. This provision applies to solicitations that include the clause at 52.204-7.)

(xx) 52.225-2, Buy American Certificate. This provision applies to solicitations containing the clause at 52.225-1.

(xxi) 52.225-4, Buy American-Free Trade Agreements-Israeli Trade Act Certificate. (Basic, Alternates I, II, and III.) This provision applies to solicitations containing the clause at 52.225-3.

(A) If the acquisition value is less than \$25,000, the basic provision applies.

(B) If the acquisition value is \$25,000 or more but is less than \$50,000, the provision with its Alternate I applies.

(C) If the acquisition value is \$50,000 or more but is less than \$83,099, the provision with its Alternate II applies.

(D) If the acquisition value is \$83,099 or more but is less than \$100,000, the provision with its Alternate III applies.

(xxii) 52.225-6, Trade Agreements Certificate. This provision applies to solicitations containing the clause at 52.225-5.

(xxiii) 52.225-20, Prohibition on Conducting Restricted Business Operations in Sudan-Certification. This provision applies to all solicitations.

(xxiv) 52.225-25, Prohibition on Contracting with Entities Engaging in Certain Activities or Transactions Relating to Iran-Representation and Certifications. This provision applies to all solicitations.

(xxv) 52.226-2, Historically Black College or University and Minority Institution Representation. This provision applies to solicitations for research, studies, supplies, or services of the type normally acquired from higher educational institutions.

(2) The following representations or certifications are applicable as indicated by the Contracting Officer:

[Contracting Officer check as appropriate.]

(i) 52.204-17, Ownership or Control of Offeror.

(ii) 52.204-20, Predecessor of Offeror.

(iii) 52.222-18, Certification Regarding Knowledge of Child Labor for Listed End Products.

(iv) 52.222-48, Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration, or Repair of Certain Equipment- Certification.

___ (v) 52.222-52, Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services-Certification.

___ (vi) 52.223-9, with its Alternate I, Estimate of Percentage of Recovered Material Content for EPA-Designated Products (Alternate I only).

___ (vii) 52.227-6, Royalty Information.

___ (A)Basic.

___ (B)Alternate I.

___ (viii) 52.227-15, Representation of Limited Rights Data and Restricted Computer Software.

(d) The offeror has completed the annual representations and certifications electronically in SAM website accessed through <https://www.sam.gov>. After reviewing the SAM information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically that apply to this solicitation as indicated in paragraph (c) of this provision have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause # Title Date Change

Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on SAM.

4.2 REPRESENTATION BY CORPORATIONS REGARDING DELINQUENT TAX LIABILITY OR A FELONY CONVICTION UNDER ANY FEDERAL LAW. (FAR 52.209-11) (FEB 2016)

(a) As required by sections 744 and 745 of Division E of the Consolidated and Further Continuing Appropriations Act, 2015 (Pub. L. 113-235), and similar provisions, if contained in subsequent appropriations acts, the Government will not enter into a contract with any corporation that—

- (1) Has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, where the awarding agency is aware of the unpaid tax liability, unless an agency has considered suspension or debarment of the corporation and made a determination that suspension or debarment is not necessary to protect the interests of the Government; or
- (2) Was convicted of a felony criminal violation under any Federal law within the preceding 24 months, where the awarding agency is aware of the conviction, unless an agency has considered suspension or debarment of the corporation and made a determination that this action is not necessary to protect the

interests of the Government.

(b) The Offeror represents that—

- (1) It is is not a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and
- (2) It is is not a corporation that was convicted of a felony criminal violation under a Federal law within the preceding 24 months.

4.3 ORGANIZATIONAL CONFLICT OF INTEREST CERTIFICATION (EPAAR 1552.209-72) (APR 1984)

The offeror [] is [] is not aware of any information bearing on the existence of any potential organizational conflict of interest. If the offeror is aware of information bearing on whether a potential conflict may exist, the offeror shall provide a disclosure statement describing this information.

4.4 SOCIAL SECURITY NUMBERS OF CONSULTANTS AND CERTAIN SOLE PROPRIETORS AND PRIVACY ACT STATEMENT (EPAAR 1552.224-70) (APR 1984)

- (a) Section 6041 of Title 26 of the U.S. Code requires EPA to file Internal Revenue Service (IRS) Form 1099 with respect to individuals who receive payments from EPA under purchase orders or contracts. Section 6109 of Title 26 of the U.S. Code authorizes collection by EPA of the social security numbers of such individuals for the purpose of filing IRS Form 1099. Social security numbers obtained for this purpose will be used by EPA for the sole purpose of filing IRS Form 1099 in compliance with Section 6041 of Title 26 of the U.S. Code.
- (b) If the offeror or quoter is an individual, consultant, or sole proprietor and has no Employer Identification Number, insert the offeror’s or quoter’s social security number on the following line.

4.5 SIGNATURE BLOCK

I hereby certify that the responses to the above Representations, Certifications and other statements are accurate and complete.

Signature: _____

Title: _____

Date: _____

4.6 CONGRESSIONAL DISTRICT/DUN AND BRADSTREET NUMBER

A. Congressional district for offeror’s place of business: _____

Congressional district for offeror’s place(s) of performance: _____

B. Dun and Bradstreet Number: _____

C. Tax Identification Number: _____

4.7 SBIR FUNDING AGREEMENT LIFECYCLE CERTIFICATION

SBIR Phase I and Phase II awardees must complete this certification at all times set forth in the funding agreement (see §8(h) of the SBIR Policy Directive). This includes checking all of the boxes and having an authorized officer of the awardee sign and date the certification each time it is requested.

Please read carefully the following certification statements. The Federal government relies on the information to ensure compliance with specific program requirements during the life of the funding agreement. The definitions for the terms used in this certification are set forth in the Small Business Act, the SBIR Policy Directive, and also any statutory and regulatory provisions referenced in those authorities.

If the funding agreement officer believes that the business is not meeting certain funding agreement requirements, the agency may request further clarification and supporting documentation in order to assist in the verification of any of the information provided.

Even if correct information has been included in other materials submitted to the Federal government, any action taken with respect to this certification does not affect the Government's right to pursue criminal, civil or administrative remedies for incorrect or incomplete information given in the certification. Each person signing this certification may be prosecuted if they have provided false information.

The undersigned has reviewed, verified and certifies that (all boxes must be checked):

(1) The principal investigator spent more than one half of his/her time as an employee of the awardee or the awardee has requested and received a written deviation from this requirement from the funding agreement officer.

Yes No Deviation approved in writing by funding agreement officer: ___%

(2) All, essentially equivalent work, or a portion of the work performed under this project (check the applicable line):

Has not been submitted for funding by another Federal agency.

Has been submitted for funding by another Federal agency but has not been funded under any other Federal grant, contract, subcontract or other transaction.

A portion has been funded by another grant, contract, or subcontract as described in detail in the proposal and approved in writing by the funding agreement officer.

(3) Upon completion of the award it will have performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed):

SBIR Phase I: at least two-thirds (66 2/3%) of the research.

SBIR Phase II: at least half (50%) of the research.

Deviation approved in writing by the funding agreement officer: ___%

(4) The work is completed and it has performed the applicable percentage of work, unless a deviation from this requirement is approved in writing by the funding agreement officer (check the applicable line and fill in if needed):

SBIR Phase I: at least two-thirds (66 2/3%) of the research.

SBIR Phase II: at least half (50%) of the research.

Deviation approved in writing by the funding agreement officer: ___%

N/A because work is not completed

(5) The research/research and development is performed in the United States unless a deviation is approved in writing by the funding agreement officer.

Yes No Waiver has been granted

(6) The research/research and development is performed at my facilities with my employees, except as otherwise indicated in the SBIR application and approved in the funding agreement.

Yes No

It will notify the Federal agency immediately if all or a portion of the work proposed is subsequently funded by another Federal agency.

I understand that the information submitted may be given to Federal, State and local agencies for determining violations of law and other purposes.

I am an officer of the business concern authorized to represent it and sign this certification on its behalf. By signing this certification, I am representing on my own behalf, and on behalf of the business concern, that the information provided in this certification, the application, and all other information submitted in connection with the award, is true and correct as of the date of submission. I acknowledge that any intentional or negligent misrepresentation of the information contained in this certification may result in criminal, civil or administrative sanctions, including but not limited to: (1) fines, restitution and/or imprisonment under 18 U.S.C. §1001; (2) treble damages and civil penalties under the False Claims Act (31 U.S.C. §3729 et seq.); (3) double damages and civil penalties under the Program Fraud Civil Remedies Act (31 U.S.C. §3801 et seq.); (4) civil recovery of award funds, (5) suspension and/or debarment from all Federal procurement and nonprocurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (6) other administrative penalties including termination of SBIR/STTR awards.

Date: _____

Signature: _____

Print Name (First, Middle, Last): _____

Title: _____

Business Name: _____