



U. S. Department
of Transportation

DTRT57-13-R-SBIR1

FY13.1

PROGRAM SOLICITATION

Small Business Innovation Research (SBIR) Program

Issue Date: December 10, 2012

Closing Date: March 4, 2013

**Small Business Innovation Research (SBIR) Program Office, RVT-91
John A. Volpe National Transportation Systems Center (Volpe Center)
U.S. Department of Transportation (DOT)
Research and Innovative Technology Administration (RITA)
55 Broadway
Cambridge, MA 02142-1093**

TECHNICAL QUESTIONS

Technical questions pertaining to the FY13.1 DOT SBIR solicitation research topics must be submitted to the DOT SBIR Program Office Point of Contact, Linda Duck, Linda.Duck@dot.gov. All questions must be submitted by email.

Please note technical questions submitted after February 22, 2013 may not be answered prior to the solicitation close on March 4, 2013.

The DOT SBIR Program Office will submit all technical questions to the research topic authors for response. Answers will be posted in the Current Solicitation section of the DOT SBIR Program website: <http://www.volpe.dot.gov/sbir/current.html>.

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PROGRAM SOLICITATION
for
SMALL BUSINESS INNOVATION RESEARCH PROGRAM

I. PROGRAM DESCRIPTION

A. Introduction

This solicitation for research proposals is issued by the U.S. Department of Transportation (DOT) pursuant to the Small Business Innovation Development Act of 1982, P.L. 97-219 (codified at 15 U.S.C. 638) as amended by the Small Business Innovation Research (SBIR) Program, Extension, P.L. 99-443 which extended the program through September 30, 1993. On October 28, 1992, through the Small Business Innovation Research and Development Act of 1992 (P.L. 102-564), Congress reauthorized and extended the SBIR program for another seven years (2000). Subsequently, on December 21, 2000, through the Small Business Reauthorization Act of 2000 (P.L. 106-554) Congress again reauthorized the SBIR program. With the approval of H.R. 2608, Continuing Appropriations Act 2012, the SBIR Program was authorized through December 31, 2011. On December 31, 2011, the President signed into law the National Defense Reauthorization Act of 2012 (Defense Reauthorization Act), P. L. 112-81. Section 5001, Division E of the Defense Reauthorization Act contains the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Reauthorization Act of 2011 (SBIR/STTR Reauthorization Act), which extends both the SBIR and Small Business Technology Transfer (STTR) programs through September 30, 2017.

The SBIR/STTR Reauthorization Act of 2011 required the U.S. Small Business Administration (SBA) issue amendments to the SBIR Program Policy Directive and the Size Regulations. The SBIR Program Policy Directive was published as an interim directive in the Federal Register on August 6, 2012 (<https://www.federalregister.gov/articles/2012/08/06/2012-18119/small-business-innovation-research-program-policy-directive#h-8>). The 60-day public comment period closed on October 6, 2012. The Size Regulation was published on May 15, 2012 (<http://www.gpo.gov/fdsys/pkg/FR-2012-05-15/html/2012-11586.htm>). The 60-day public comment period closed on July 16, 2012. The amended regulation is expected to become effective on January 1, 2013.

The new statute has resulted in fundamental changes to the SBIR Program in several key areas including but not limited to:

- Eligibility requirements;
- Company commercialization data collection;
- Contract and grant award times; and
- Fraud, waste and abuse prevention and detection activities.

A summary of the key changes can be viewed on the SBA website, <http://www.sba.gov/about-sba-info/174308>.

The SBIR Program encourages small businesses to engage in research or research and development (R/R&D) that has the potential for commercialization and meets Federal research or research and development objectives.

The goals and objectives of the SBIR Program are:

- (1) Stimulate technological innovation;
- (2) Meet Federal research and development needs;
- (3) Foster and encourage participation in innovation and entrepreneurship by socially and economically disadvantaged persons; and
- (4) Increase private sector commercialization of innovations derived from Federal research and development funding.

The purpose of this solicitation is to invite small businesses with their valuable resources and creative capabilities to submit innovative research proposals that address high priority requirements of the DOT.

B. Three Phase Program

The DOT SBIR Program is generally a three phase process.

THIS SOLICITATION IS FOR PHASE I PROPOSALS ONLY.

Phase I. Phase I provides support for the conduct of feasibility-related experimental or theoretical research or R/R&D efforts on research topics as described herein. The dollar value of the proposal may be up to \$150,000 unless otherwise noted and is subject to the availability of funding. The

period of performance is six months. The award will be a firm fixed price type contract. The basis for award is the scientific and technical merit of the proposal and its relevance to DOT requirements and current research priorities. **Only DOT SBIR Phase I awardees will be eligible to submit a Phase II proposal.**

Elimination of Phase II invitations:

Effective October 1, 2012, all federal SBIR agencies may no longer use an invitation, pre-screening, or pre-selection process for determining eligibility for a Phase II award. **All DOT SBIR Phase I awardees are eligible to submit a Phase II proposal.**

Submission of Phase II proposals: A DOT SBIR Phase I awardee may submit a Phase II technical proposal to the DOT SBIR Program Office no later than **30 days after completion and acceptance of its Phase I final report**. Proposal requirements, submission instructions and forms will be available on the Program website, <http://www.volpe.dot.gov/sbir>, and from the DOT SBIR Program Office, 617.494.2051.

Phase II. The objective of Phase II is to continue the R/R&D effort from the completed Phase I. Funding of a Phase II is based upon the results of Phase I and the scientific and technical merit and commercial potential of the Phase II proposal. Commercial potential includes the potential to transition the technology to private sector applications, Government applications, or Government contractor applications.

Phase II proposals may be funded up to \$1,000,000 (except where a lower ceiling is specifically identified) and have a period of performance of up to 24 months. Special consideration may be given to proposals that have obtained commitments for follow-on funding from non-Federal sources for Phase III.

The Government is not obligated to fund any specific Phase II proposal.

Sequential Phase II Awards. A Phase II awardee may receive one additional, sequential Phase II award to continue the work of an initial Phase II award. These awards will be referred to as Phase II B awards and can be funded up to \$1,000,000. The intent of the Phase II B award is to advance and/or accelerate Phase II SBIR funded technologies towards commercialization.

Phase III. SBIR Phase III refers to work that derives from, extends, or logically concludes effort(s) performed under a DOT or another Department's Phase I and/or Phase II funding agreement. Phase III is funded by sources other than the set-aside funds dedicated to the SBIR Program. Phase III work is typically oriented towards commercialization of SBIR research or technology and may be

for products, production, services, R/R&D or a combination thereof. Each of the following types of activities constitutes SBIR Phase III work:

- (i) Commercial application of SBIR-funded R/R&D financed by non-Federal sources of capital. (Note: this pertains to any non-SBIR Federally-funded work described in (ii) and (iii) below.)
- (ii) SBIR-derived products or services intended for use by the Federal Government, funded by non-SBIR sources of Federal funding.
- (iii) Continuation of R/R&D that has been competitively selected using peer review or scientific review criteria, supported by non-SBIR funding.

A Phase III award is by its nature an SBIR award and is accorded SBIR data rights. The requirements of the Federal Property and Administrative Services Act of 1949, [as amended through P.L. 106–580, Dec. 29, 2000] and the Competition in Contracting Act are satisfied by the competition of the Phase I award. There is no limit on the number, duration, type, or dollar value of Phase III awards made to a small business concern. The small business size limits for Phase I, Phase II and Phase II B awards do not apply to Phase III awards.

C. Executive Order (EO) 13329, Encouraging Innovation in Manufacturing, February 26, 2004

“Encouraging Innovation in Manufacturing” requires SBIR agencies, to the extent permitted by law and in a manner consistent with the mission of that department or agency, to give high priority within the SBIR Programs to manufacturing-related research and development (R&D).

“Manufacturing-related” is defined as “relating to manufacturing processes, equipment and systems; or manufacturing workforce skills and protection.”

The DOT SBIR Program solicits manufacturing-related projects through the call for topics distributed to each of the Department’s SBIR participating agencies.

Additionally, the U.S. Small Business Administration (SBA) requires each agency with an SBIR program to develop a written policy on the implementation of E.O. 13329 and publish an annual report. The DOT SBIR Program Office Implementation Plan and Annual Report are posted on the Program website, <http://www.volpe.dot.gov/sbir/about.html>.

D. Energy Independence and Security Act of 2007, December 19, 2007

The Energy Independence and Security Act of 2007 (P.L. 110-140) amends the Small Business Act to instruct the SBA Administrator to ensure that certain federal departments and agencies give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system research and development projects.

The DOT SBIR Program Office solicits energy efficiency or renewable energy system R/R&D projects through the call for SBIR research topics distributed twice annually to each of the Department's SBIR participating agencies. DOT SBIR projects that focus on conducting R/R&D in energy efficiency and/or renewable energy are reported annually to SBA.

E. Eligibility

Each small business concern submitting a proposal must qualify as a small business at the time of award of Phase I, Phase II and II B contracts. In addition, **the primary employment of the principal investigator must be with the small business firm at the time of contract award and during the conduct of the proposed research.** Primary employment means that more than one-half of the principal investigator's time is spent with the small business. Additionally, for Phase I, Phase II and II B, the R/R&D work must be performed in the United States. "United States" means the 50 states, the Territories and possessions of the United States, the Commonwealth of Puerto Rico, and the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and the District of Columbia.

All types of small business organizations may submit proposals, including high technology, R&D, manufacturing, and service firms. Companies with outstanding scientific or engineering competence in highly specialized product, process or service areas may wish to apply their expertise to the research topics in this solicitation through a laboratory prototype. Ideally, the research should make a significant contribution to the solution of an important transportation problem and provide the small business concern with the basis for new products, processes, or services.

Phase I to Phase II Transition Benchmark

The new SBIR Program Policy Directive requires that all federal SBIR agencies establish benchmarks to measure the success of Phase I awardees in receiving Phase II awards. Effective October 1, 2012 each federal SBIR agency must establish a benchmark to measure the success of Phase I awardees in receiving Phase II awards. On October 16, 2012 the DOT Phase I to Phase II Transition Benchmark was published in the Federal Register for a 60-day public comment period. The Federal Register notice may be viewed on the following webpage:

<http://www.gpo.gov/fdsys/pkg/FR-2012-10-16/html/2012-25328.htm>. Upon completion of the 60-day public comment period, the agency benchmarks will become effective on January 1, 2013. Any subsequent changes in the agency benchmarks must be approved by the U.S. Small Business Administration (SBA).

The benchmarks will apply to those Phase I applicants that have received 20 or more Phase I awards Program-wide. The DOT SBIR Phase I to II Transition Benchmark as published in the Federal Register is:

For all DOT SBIR Program Phase I applicants that have received 20 or more Phase I awards over the 5-year period beginning September 30, 2005 and ending September 30, 2010, the ratio of Phase II awards received to Phase I awards received must be at least 0.45.

F. Report SBIR Fraud, Waste and Abuse

The Office of Inspector General Hotline accepts tips from all sources about potential fraud, waste, abuse and mismanagement in Department of Transportation programs. The reporting individual should indicate that the fraud, waste and/or abuse pertain to an SBIR contract. The DOT SBIR Program website contains information and links to report potential fraud, waste, and abuse <http://www.volpe.dot.gov/sbir/fraud.html>.

G. General Information

This is a solicitation for Phase I R/R&D proposals on advanced, innovative concepts from small business firms having strong capabilities in applied science or engineering.

The Phase I R/R&D proposals shall demonstrate a sound approach to the investigation of an important transportation related scientific or engineering problem categorized under one of the research topics listed in Section VI.

A proposal may respond to any of the research topics listed in Section VI, but must be limited to one topic. The same proposal may not be accepted under more than one topic. A small business may, however, submit separate proposals on different topics, or different proposals on the same topic, under this solicitation. Where similar research is discussed under more than one topic, the offeror shall choose that topic which appears to be most relevant to the offeror's technical concept.

The proposed research must have relevance to the improvement of some aspect of the national transportation system or to the enhancement of the ability of an operating element of the DOT to perform its mission.

Proposals shall be confined principally to scientific or engineering research, which may be carried out through construction and evaluation. **Proposals must be for R/R&D, particularly on advanced or innovative concepts. Proposals shall not be for incremental or scaled up versions of existing equipment or the development of technically proven ideas.** Proposals for the development of already proven concepts toward commercialization, or which offer approaches already developed to an advanced prototype stage or for market research will not be considered.

The proposal shall be self-contained and checked carefully by the offeror to ensure that all preparation instructions were followed (see Proposal Checklist, Appendix D).

For general SBIR Program inquiries not pertaining to this solicitation please contact Linda Duck at linda.duck@dot.gov.

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II. DEFINITIONS

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

R/R&D means any activity which 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. Small Business Concern

SBA has amended the definition for the term “small business concern” by simply referencing its size regulations at 13 C.F.R. §§ 121.701-705. To view the definition of small business concern, click on the following link,

<http://www.gpo.gov/fdsys/search/pagedetails.action?browsePath=Title+13%2FChapter+I%2FPart+121%2FSubpart+A%2FSubjgrp%2FSection+121.702&granuleId=CFR-2011-title13-vol1-sec121-702&packageId=CFR-2011-title13-vol1>

The size regulations define the ownership and size requirements for the SBIR and STTR Programs. SBA has recently issued a rule proposing to amend those regulations and the definition of “small business concern” for purposes of the SBIR and STTR Programs as a result of certain provisions of the Reauthorization Act (see 77 Fed. Reg. 30227 (May 22, 2012)). Any changes made to the definition of “small business concern,” will become effective in the regulation on January 1, 2013.

C. 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 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.

D. Women-Owned Small Business Concern

A Woman-Owned Small Business Concern 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 whose management and daily business operations are controlled by one or more women; or a small business concern eligible under the Women-Owned Small Business Program in accordance with 13 C.F.R. Part 127 (see FAR subpart 19.15)

E. Veteran-Owned Small Business

A Veteran-Owned Small Business Concern is one that is at least 51% 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% of the stock of which is owned by one or more veterans, and the management and daily business operations of which are controlled by one or more veterans.

F. Subcontract

Subcontract means any agreement, except a grant or cooperative agreement, entered into by a Federal Government funding agreement awardee calling for supplies or services required solely for the performance of the original funding agreement.

G. Historically Underutilized Business Zone (HUB Zone)

A HUB Zone Small Business Concern is one that meets the following criteria:

(1) At least 51% owned and controlled by 1 or more persons, each of whom is a United States citizen;

(2) An ANC owned and controlled by Natives (as determined pursuant to section 29(e) (1) of the ANCSA, 43 U.S.C. 1626(e) (1));

(3) A direct or indirect subsidiary corporation, joint venture, or partnership of an ANC qualifying pursuant to section 29(e)(1) of the ANCSA, 43 U.S.C. 1626(e)(1)), if that subsidiary, joint venture,

or partnership is owned and controlled by Natives (as determined pursuant to section 29(e)(2) of the ANCSA, 43 U.S.C. 1626(e)(2));

(4) Wholly owned by one or more Indian Tribal Governments or by a corporation that is wholly owned by one or more Indian Tribal Governments;

(5) An SBC that is owned in part by one or more Indian Tribal Governments or in part by a corporation that is wholly owned by one or more Indian Tribal Governments, if all other owners are either United States citizens or SBCs;

(6) An SBC that is wholly owned by a CDC or owned in part by one or more CDCs, if all other owners are either United States citizens or SBCs; or

(7) An SBC that is a small agricultural cooperative organized or incorporated in the United States, wholly owned by one or more small agricultural cooperatives organized or incorporated in the United States or owned in part by one or more small agricultural cooperatives organized or incorporated in the United States, provided that all other owners are small business concerns or United States citizens.

Indian reservation (1) Has the same meaning as the term “Indian country” in 18 U.S.C. 1151, except that such term does not include:

(i) Any lands that are located within a State in which a tribe did not exercise governmental jurisdiction as of December 21, 2000, unless that tribe is recognized after that date by either an Act of Congress or pursuant to regulations of the Secretary of the Interior for the administrative recognition that an Indian group exists as an Indian tribe (25 CFR part 83); and

(ii) Lands taken into trust or acquired by an Indian tribe after December 21, 2000 if such lands are not located within the external boundaries of an Indian reservation or former reservation or are not contiguous to the lands held in trust or restricted status as of December 21, 2000; and

(8) In the State of Oklahoma, means lands that:

(i) Are within the jurisdictional areas of an Oklahoma Indian tribe (as determined by the Secretary of the Interior); and

(ii) Are recognized by the Secretary of the Interior as of December 21, 2000, as eligible for trust land status under 25 CFR part 151.

Indian Tribal Government means the governing body of any Indian tribe, band, nation, pueblo, or other organized group or community which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Interested party means any concern that submits an offer for a specific HUBZone sole source or set-aside contract, any concern that submitted an offer in full and open competition and its opportunity for award will be affected by a price evaluation preference given a qualified HUBZone SBC, the contracting activity's contracting officer, or SBA.

Lands within the external boundaries of an Indian reservation include all lands within the perimeter of an Indian reservation, whether tribally owned and governed or not. For example, land that is individually owned and located within the perimeter of an Indian reservation is “lands within the external boundaries of an Indian reservation.” By contrast, an Indian-owned parcel of land that is located outside the perimeter of an Indian reservation is not “lands within the external boundaries of an Indian reservation.”

H. Service Disabled Veteran-Owned Concern

A Service Disabled Veteran-Owned Small Business Concern is not less than 51 percent 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 the management and daily business operations are controlled by one or more service-disabled veterans with permanent and severe disability, the spouse or permanent caregiver of such veteran.

I. Economically Disadvantaged Women-Owned Small Business (EDWOSB)

A Economically Disadvantaged Women-Owned Small Business Concern is at least 51 percent directly and unconditionally owned and controlled by one or more women who are citizens (born or naturalized) of the United States and who are economically disadvantaged. The EDWOSB automatically qualifies as a women-owned small business eligible for the Women-Owned Small Business (WOSB) Program.

III. PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

A. Proposal Submission Requirements

Each proposal shall not exceed 25 single-sided pages (font type should be no smaller than 10 point font size – single or double spaced, standard 8 ½” by 11” pages with 1” margins) including proposal cover sheet, contract pricing proposal, and all enclosures or attachments.

Proposals must be in a PDF file.

No duplicate proposals shall be sent by any other means.

Proposals in excess of the 25 page limit shall not be considered for review or award.

Proposals may only be submitted online, a link to the web page can found here:

<http://www.volpe.dot.gov/sbir/current.html>. Instructions are provided on the “Submission” page.

Proposals must be received no later than 11:59P.M. EST on March 4, 2013. Proposals received after that time will be automatically rejected, no exception will be permitted.

The proposal file name shall contain eight (8) characters; the first three shall be the topic number you are proposing to (i.e., FH3), and the remaining five characters shall be a unique abbreviation of your company’s name that you create.

Proposals will be available only to the DOT team of engineers and/or scientists responsible for evaluating your proposal, the DOT SBIR Program Office, and Volpe Center staff pertinent to the SBIR program, such as the Volpe Center’s Acquisition Office.

B. Proposal Cover Sheet

Complete the Proposal Cover Sheet in Appendix A as Pages 1 and 2 of, the maximum of, 25 of your proposal. All pages shall be numbered consecutively beginning with the Proposal Cover Sheet and follow the guidelines outlined in Section A. above.

C. Project Summary

Complete the Project Summary Sheet in Appendix B as Page 3 of your proposal. The Project Summary shall include a technical abstract with a brief statement of the problem or opportunity, project objectives, and description of the effort. Anticipated results and potential applications of the proposed research shall also be summarized in the space provided. The Project Summary of successful proposals may be published by the DOT and, therefore, shall not contain classified or proprietary information. The technical abstract must be limited to 200 words in the space provided on the Project Summary sheet. Any statements beyond the 200 word limit will not be considered for award purposes.

D. Technical Content

Submitted proposals must include the following:

- (1) **Identification and Significance of the Problem or Opportunity.** The specific technical problem or innovative research opportunity addressed and its potential benefit to the national transportation system shall be clearly stated.
- (2) **Phase I Technical Objectives.** State the specific objectives of the Phase I R/R&D effort; including the technical questions it will try to answer to determine the feasibility of the proposed approach.
- (3) **Phase I Work Plan.** Describe the Phase I R/R&D plan. The plan shall indicate what will be done, where it will be done, and how the R/R&D will be managed or directed and carried out. Phase I R/R&D shall address the objectives and the questions cited in (2) above. The methods planned to achieve each objective or task shall be discussed in detail, including the level of effort associated with each task.
- (4) **Related Research or R&D.** Describe significant R/R&D that is directly related to the proposal including any conducted by the Project Manager/Principal Investigator or by the proposing firm. Describe how it relates to the proposed effort, and any planned coordination with outside sources. The offeror must persuade reviewers of their awareness of key recent R/R&D conducted by others in the specific topic area.
- (5) **Key Personnel and Bibliography of Directly Related Work.** Identify key personnel involved in Phase I including their directly related education, experience, and bibliographic information. Where vitae are extensive, summaries that focus on the most relevant experience or publications are desired and may be necessary to meet proposal page limitations.

- (6) **Relationship with Future Research and Development.**
- (a) State the anticipated results of the proposed approach if the project is successful (Phase I and Phase II).
 - (b) Discuss the significance of the Phase I effort in providing a foundation for Phase II R/R&D effort.
- (7) **Facilities.** Provide a detailed description of the availability and location of instrumentation and physical facilities proposed for Phase I.
- (8) **Consultants.** Involvement of consultants in the planning and research stages of the project is permitted. If such involvement is intended, it shall be described in detail within the proposal. **Consultants are permitted to conduct no more than 1/3 of the work.**
- (9) **NIST/Hollings Manufacturing Extension Partnership.** SBCs may wish to contact their local National Institute of Standards and Technology (NIST) Hollings Manufacturing Extension Partnership (MEP) for manufacturing and other business-related support services. The MEP works with small and mid-sized companies to help them create and retain jobs, increase profits, and save time and money. The nationwide network provides a variety of services, from business development assistance to innovation strategies to process improvements and the identification of commercialization opportunities. MEP is a nationwide network of locally managed extension centers with over 1,400 technical experts, located in every state. To contact an MEP center, call 1-800-MEP-4-MFG (1-800-637-4634) or visit MEP's website, at <http://www.nist.gov/mep/>
- (10) **Potential Applications.** Briefly describe:
- (a) Whether and by what means the proposed project appears to have potential commercial application.
 - (b) Whether and by what means the proposed project appears to have potential use by the Federal Government.
- (11) **Similar Proposals or Awards.** While it is permissible, with proposal notification, to submit identical proposals or proposals containing a significant amount of essentially equivalent work for consideration under numerous Federal program solicitations, it is unlawful to enter into

contracts or grants requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.

If a firm elects to submit similar or identical proposals or proposals containing equivalent work under other Federal program solicitations, a statement must be included in each such proposal indicating:

- (a) The name and address of the agencies to which proposals were submitted or from which awards were received;
- (b) Date of proposal submission or date of award;
- (c) Title, number, and date of SBIR Program solicitations under which proposals were submitted or awards received;
- (d) The applicable research topics for each SBIR proposal submitted or award received;
- (e) Titles of research projects; and
- (f) Name and title of Project Manager or Principal Investigator for each proposal submitted or award received.

(12) Fraudulent Information

Submitting plagiarized information and/or false proposal information pertaining to the company, the Principal Investigator and/or work to be performed may result in:

- the cancellation of the topic within a solicitation,
- a proposal being deemed non-responsive,
- a recommendation for Phase I award being rescinded, or
- the termination of an award.

(13) Discretionary Technical Assistance

The new SBIR Program Policy Directive permits an agency to provide technical assistance to an SBIR awardee in an amount not more than \$5,000 per year. This amount is in addition to the award amount.

The SBC can acquire the technical assistance services itself. The SBC must demonstrate that the individual or entity selected can provide the specific technical services needed and provide the details

in the proposal. If the SBC demonstrates this requirement sufficiently, the DOT must allow the SBC to acquire the needed technical assistance itself, as an allowable cost.

E. Contract Pricing Proposal

A firm fixed price Phase I Contract Pricing Proposal (Schedule 1) must be submitted in detail as shown in Appendix C. Note: Firm fixed price is the type of contract to be used for Phase I SBIR awards. Some cost breakdown items of Appendix C **may not apply** to the proposed project. If such is the case, there is no need to provide information for each and every item. It is important, however, to provide enough information to allow the DOT to understand how the offeror plans to use the requested funds if the contract is awarded. Phase I contract awards may include profit.

F. System for Award Management (SAM) and Data Universal Numbering System (DUNS) Identification Number

It is federally mandated that any business wishing to do business with the Federal Government under a Federal Acquisition Regulation (FAR)-based contract **must be registered in SAM before being awarded a contract**. You can find more information on SAM and the registration process on the website, <https://www.sam.gov>. You can register online at <https://www.sam.gov> by following the prompts if you already have a DUNS number. If you need a DUNS number, you can find instructions at <http://fedgov.dnb.com/webform/displayHomePage.do>

A firm must note its Tax Identification number and DUNS identification number on Appendix C, Contract Pricing Proposal, and Schedule 1. The DUNS number is assigned by Dun & Bradstreet, Inc.

G. Prior SBIR Phase II Awards

If the SBC has received more than a total of 15 Phase II and/or Phase II B awards in the prior five fiscal years, submit name of 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 for each Phase II. **(This required proposal information shall not be counted towards the page limitation, see Section A., Proposal Submission Requirements.)**

IV. METHOD OF SELECTION AND EVALUATION CRITERIA

A. General

All Phase I proposals will be evaluated and judged on a competitive basis. Initially, all proposals will be screened to determine responsiveness to the solicitation. Proposals that meet the solicitation requirements will be evaluated to determine the most promising technical and scientific approaches. Each proposal will be judged on its own merit. A Phase I award will be made to the responsive and responsible Offerors whose proposal provides the best value to the Government, based on the Technical and Scientific Merit of the proposal. **The DOT is under no obligation to fund any proposal or any specific number of proposals on a given topic. For any given topic, DOT may elect to award more or less than the anticipated quantity of awards stated in Section VI., Research Topics.**

A Phase II award will be made to the responsive and responsible Offerors whose offers provide the best value to the Government, based on the Technical Proposal and Cost Proposal. Phase II awards will be made to those offerors with the greatest commercialization potential and will be subject to the availability of funding.

B. Evaluation Criteria

The evaluation process involves the following factors:

- (1) Scientific and technical merit and the feasibility of the proposal's commercial potential, as evidenced by:
 - a) Past record of successful commercialization of SBIR or other research;
 - b) Existence of Phase III funding commitments from private sector or non-SBIR funding sources; and
 - c) Presence of other indicators of the commercial potential of the idea.
- (2) The work plan and approach to achieving specified work tasks and stated objectives of the proposed effort are well defined and within budgetary constraints and on a timely schedule.
- (3) Qualifications of the proposed principal/key investigator(s) including demonstrated expertise in a disciplinary field related to the particular R/R&D topic that is proposed for investigation.

(4) The supporting staff, facilities and equipment will provide the necessary support to conduct the proposed R/R&D.

C. Prescreening

Each proposal submission will be examined to determine if it is complete and contains adequate technical and pricing data. **Proposals that do not meet the basic requirements of the solicitation will be excluded from evaluation and offerors will receive an email notifying them of the rejection.**

D. Schedule

All DOT evaluations shall be completed and recommendations for award will be submitted to the DOT SBIR Program Office within five weeks of the closing date for Phase I proposals.

E. DOT Technical Evaluation Process

Each of the Department's Operating Administrations will establish technical evaluation teams comprised of Federal staff, including engineers and/or scientists and provide written evaluations and recommendations for award to the DOT SBIR Program Director.

F. Selection of Awardees

Effective October 1, 2012, the DOT SBIR Program Office will issue a notice to each applicant as to whether it has been selected for an award no later than 90 calendar days from the closing date of the solicitation.

G. Time to Award Requirements

Effective October 1, 2012, the new SBIR Program Policy Directive requires all SBIR agencies to make award decisions within a certain amount of time after the close of the solicitation. The purpose of this requirement is to reduce the gap in time between submission of application and time of award, which is an important issue for many small businesses.

DOT will be required to issue a Phase I contract award in accordance with the timeframes set forth in the Defense Reauthorization Act and SBIR Program Policy Directive.

The DOT SBIR Program Office will also post a listing of Phase I proposals recommended for contract award on the Program webpage: <http://www.volpe.dot.gov/sbir>.

H. Contact with DOT

In order to ensure full and open competition, contact with DOT relative to this solicitation during the Phase I proposal preparation and evaluation period is restricted to the officials stated in this solicitation.

Technical questions pertaining to the FY13.1 DOT SBIR solicitation research topics must be submitted to the DOT SBIR Program Office Point of Contact, Linda Duck, Linda.Duck@dot.gov. Technical questions submitted after February 22, 2013 may not be answered by the solicitation close date of March 4, 2013.

The DOT SBIR Program Office will submit all questions to the research topic authors for response. Answers will be posted on the DOT SBIR Program website, <http://www.volpe.dot.gov/sbir/current.html>, under Technical Questions and Answers for 13.1 Solicitation.

Contact with DOT officials, other than those identified above, relative to this solicitation during any of the restricted times may result in the rejection of the proposal.

INQUIRIES INTO PROPOSAL STATUS WILL NOT BE ANSWERED NOR WILL INFORMATION PERTAINING TO PROPOSAL STATUS BE PROVIDED.

I. Debriefing Requests

Debriefing requests should be submitted to the SBIR Program Contracting Officer by e-mail to: Jeanne.Rossetsky@dot.gov, and must include the offeror's name, address, research topic number, and the proposal identification number assigned and provided through an automated email notification sent to you upon receipt of your proposal. The identity of the evaluators will not be disclosed. Debriefings may be conducted through the issuance of a letter by the SBIR Program Contracting Officer and will summarize the comments received by the technical evaluation team.

V. CONSIDERATIONS

A. Awards

The Government anticipates awarding approximately 5 Phase I contracts with the possibility for additional or fewer awards. The actual number of contract awards is subject to the availability of funding and the responses from small business firms to the solicited research topics described in Section VI.

Dollar Value of Awards:

The new SBIR Program Policy Directive sets the maximum thresholds for Phase I and Phase II awards at \$150,000 and \$1,000,000, respectively. SBA will adjust these amounts every year for inflation and will post the adjusted numbers on www.sbir.gov.

Additionally, the Policy Directive states that agencies may exceed these thresholds by no more than 50%, unless the agency requests and is granted a waiver from SBA.

Phase I contract awards: All Phase I awards will be firm fixed price contracts and may be funded up to \$150,000. The period of performance for a Phase I contract is 6 months. Funding levels for each topic are determined by the agency sponsoring the research and are provided in Section VI., Research Topics.

Phase II contract awards: Phase II contracts can be funded up to \$1,000,000. Funding estimates are determined by the agency sponsoring the research. The period of performance for a Phase II contract is 2 years. Phase II funding estimates are provided in Section VI., Research Topics. Phase II awards may be Firm-Fixed Price, Firm-Fixed Price Level of Effort, or Cost-Plus-Fixed-Fee contracts.

Sequential Phase II awards:

The new SBIR Program Policy Directive permits agencies to issue one additional, sequential Phase II award to continue the work of an initial Phase II award. These awards will be referred to as Phase II B awards and can be funded up to \$1,000,000 for a period not to exceed 24 months. Therefore, a small business may receive no more than two SBIR Phase II awards for the same R&D project, and the awards must be made sequentially.

The number of awards and the amount of each award is subject to the availability of government funding.

Accounting System Audits: Phase II awardees will be required to have an **acceptable accounting system** in place to receive a Cost—Plus—Fixed—Fee contract. **If a small business has not had an audit of its accounting system, Defense Contract Audit Agency (DCAA) or another appropriate agency will conduct an on-site pre-award audit prior to contract award.** This process can take several months in addition to the time for processing an award. For information pertaining to DCAA accounting system requirements and audits, please go to the DCAA webpage, <http://www.dcaa.mil>

DOT SBIR Program Set-aside Budget:

Beginning in FY 2013, DOT's Operating Administrations will contribute 2.7% of their agency's Extramural Research Budget for SBIR Program funding. Each DOT Operating Administration's SBIR contribution may only be used to support research of concern to that Operating Administration. For example, funds furnished by the Federal Highway Administration (FHWA) may not support research solely of concern to the National Highway Traffic Safety Administration (NHTSA). Based on anticipated funding levels, there may not be adequate funding within the DOT SBIR Program to support Phase I and/or Phase II awards for research which is solely of concern to the following Operating Administrations: Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), Federal Railroad Administration (FRA), Federal Transit Administration (FTA), National Highway Traffic Safety Administration (NHTSA), Research and Innovative Technology Administration (RITA), and Pipeline Hazardous Materials Safety Administration (PHMSA). The Phase I and Phase II awards for such research will be subject to the availability of funding.

B. Reports

1. Under Phase I SBIR contracts, 3 reports will be required, consisting of 2 interim narrative reports, and a comprehensive final report.
2. Under Phase II, II B and Phase III SBIR contracts, monthly progress reports, monthly cost reports (if required), commercialization reports (due every 6 months), and a summary of results will be required.

C. Terms of Agreement

Effective October 1, 2012, the new SBIR Program Policy Directive requires each applicant that applies for and each small business that receives SBIR funding to certify that it is in compliance with the laws relating to the program. Additionally, the DOT SBIR Program will require SBCs submit certifications over the life cycle of the contract with each deliverable submission. A template of the certification will be provided in the contract agreement.

D. Payment Schedule

Payments for Phase I contracts will be made in 3 equal installments upon submission of invoices by the contractor in conjunction with the submission of acceptable reports as described in Paragraph B above.

Payments for Phase II, II B and Phase III contracts will be made upon submission of acceptable reports as described in Paragraph B above. The amount and schedule of payments will be established at time of award.

E. Innovations, Inventions, and Patents

- 1. Proprietary Information.** Information contained in the proposals will remain the property of the offeror. The Government 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 a offeror in a proposal which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or information effecting national security, it will be treated in confidence, to the extent permitted by law, provided this information is clearly marked by the offeror with the terms "confidential proprietary information" and provided the following legend appears on the title page of the proposal:

"For any purpose other than to evaluate the proposal, this proprietary information shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part, provided that if a contract is awarded to this offeror as a result of or in connection with the submission of this information, the Government shall have the right to duplicate, use, or disclose the information to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in the document if obtained from another

source without restriction. The information subject to this restriction is contained in page(s) _____ of this proposal."

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

DOT prefers that offerors avoid inclusion of proprietary data in their proposals. If the inclusion of proprietary data is considered essential for meaningful evaluation of a proposal submission, then such data should be provided on a separate page with a numbering system to key it to the appropriate place in the proposal.

2. **Rights in Data Developed under SBIR Contracts.** Rights in technical data, including software developed under any contract resulting from this solicitation, shall remain with the contractor except that the Government shall have the limited right to use such data for Government purposes and shall not release such data outside the Government without permission of the contractor for a period of four years from completion of the project from which the data were generated. However, effective at the conclusion of the four-year period, the Government shall retain a royalty free license for Federal Government use of any technical data delivered under an SBIR contract whether patented or not.
3. **Copyrights.** With prior written permission of the Contracting Officer, the contractor normally may copyright and publish (consistent with appropriate national security considerations, if any) material developed with DOT support. The DOT receives a royalty free license for the Federal Government and requires that each publication contain an appropriate acknowledgement and disclaimer statement.
4. **Patents/Invention Reporting.** Small business firms normally may retain the principal worldwide patent rights to any invention developed with Government support. The Government receives a royalty free 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 two-year period to allow the contractor a reasonable time to pursue a patent.

Invention Reporting Process:

Awardees shall report SBIR inventions to the DOT through the iEdison Invention Reporting System, <http://www.iedison.gov>. Use of the iEdison System satisfies all invention reporting requirements mandated by any award.

F. Cost Sharing

Cost sharing is permitted for Phase II, II B proposals under the topic areas identified in this solicitation; however, cost sharing is not required nor will it be a factor in proposal evaluations.

G. Profit or Fee

A profit is allowed on firm fixed price awards to small business concerns under the DOT SBIR Program.

A fee is allowed on cost plus fixed fee (Phase II and Phase II B only) awards to small business concerns under the DOT SBIR Program.

H. Joint Ventures or Limited Partnerships

Joint ventures and limited partnerships are permitted provided the entity created qualifies as a small business concern in accordance with the Small Business Act, 15 U.S.C. 631, and the definition included in this solicitation.

I. Research and Analytical Work

1. **For Phase I, a minimum of two thirds of the research and/or analytical effort must be performed by the proposing firm** unless otherwise approved in writing by the Contracting Officer.
2. **For Phase II and II B, a minimum of one-half of the research and/or analytical effort must be performed by the proposing firm** unless otherwise approved in writing by the Contracting Officer.

J. Contractual Commitments

Upon award of a contract, the awardee will be required to make certain legal commitments through acceptance of numerous Federal Acquisition Regulation (FAR) and Transportation Acquisition Regulation (TAR) contract clauses. The outline that follows is illustrative of the types of clauses to which the contractor would be committed. This list shall not be understood to represent a complete list of clauses to be included in Phase I contracts, nor to be the specific wording of such clauses. A complete copy of the terms and conditions will be provided upon issuance of the model contract for signature prior to award.

1. **Standards of Work.** Work performed under the contract 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 contractor involving transactions related to this contract.
4. **Default.** The Government may terminate the contract if the contractor fails to adhere to the terms of the contract.
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, in which case the contractor will be compensated for work performed and for reasonable termination costs.
6. **Disputes.** Any dispute concerning the contract which cannot be resolved by agreement shall be decided by the Contracting Officer with right of appeal.
7. **Contract Work Hours.** The contractor may not require an employee to work more than eight hours a day or 40 hours a week unless the employee is compensated accordingly (i.e., overtime pay).
8. **Equal Opportunity.** The contractor 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 contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam era.
10. **Affirmative Action for Handicapped.** The contractor will not discriminate against any employee or applicant for employment because he or she is physically or mentally handicapped.
11. **Officials Not to Benefit.** No member of or delegate to Congress shall benefit from the 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 to the SBIR Program Contracting Officer.
15. **Procurement Integrity.** Submission of a proposal under this solicitation subjects the offeror to the procurement integrity provision (§27) of the Office of Federal Procurement Policy Act (41 U.S.C. 423). This statute, as implemented by Federal Acquisition Regulation (FAR, 48 CFR) §3.104, prohibits the following conduct by competing vendors during an agency procurement: offering or discussing future employment or business opportunities with an agency procurement official; promising or offering a gratuity to an agency procurement official; and/or soliciting or obtaining proprietary or source selection information regarding the procurement. Violations of the statute may result in criminal and/or civil penalties, suspension and debarment, cancellation of the procurement, or other appropriate remedy.
16. **Section 508 Access Board Standards.**
All electronic and information technology deliverables rendered must comply with Section 508 of the Rehabilitation Act and the Access Board Standards available for viewing at <http://www.section508.gov>. Unless otherwise indicated, the contractor represents by signature on a contract that all deliverables will comply with the Access Board Standards.

17. **Government Property.** Equipment either furnished or acquired under this contract is subject to Federal Acquisition Regulation (FAR) Clause 52.245-1 Government Property (August 2010) (and SBIR Program Policy Directive, Section 8 (c)).

FAR: <https://www.acquisition.gov/far/index.html>

Transportation Acquisition Regulation (TAR):

<http://www.dot.gov/administrations/assistant-secretary-administration/transportation-acquisition-regulation-tar>

SBIR Policy Directive: <http://www.sbir.gov/about/about-sbir>

K. SBIR Program Contractor Requirements

Upon contract award and for the duration of the contract the awardee will be required to adhere to SBIR Program Requirements. The following list is illustrative of the requirements to which the contractor will be committed. A complete copy of the terms and conditions will be provided upon issuance of the Phase I contract for signature prior to award.

1. The company must meet the Small Business Administration's (SBA) requirements for a small business, including being majority American owned and have 500 employees or fewer (see Section II, Definitions, and Items B-H).
2. The Principal Investigators primary employment must be with the company during the contract period. The Principal Investigator may not be employed full time elsewhere (see Section I, Program Description, Item D. Eligibility).
3. For Phase I, a minimum of two thirds of the research effort must be performed by the contract awardee. For Phase II a minimum of one-half of the research must be performed by the contract awardee.

Work performed by a subcontractor or university research lab is NOT work completed by the contract awardee (see Section V, Considerations, Item H. Research and Analytical Work).

4. Disclosures

Duplicate or overlapping work previously submitted to other agencies may not be submitted without full disclosure to all agencies. See Section III, Proposal Preparation, Item 10, Similar Proposals or Awards.

University employees participating on a SBIR award shall disclose their involvement and the use of university facilities to the Government. Disclosure should be provided to the university as well as their use of university facilities.

5. Commercialization Databases

A Commercialization Database is being established by SBA that will store commercialization information for SBCs that have received SBIR awards. This includes information relating to revenue from the sale of new products or services resulting from the R&D conducted under a Phase II award and any business or subsidiary established for the commercial application of a product or services for which an SBIR award is made, among other things. The information contained in this database will be used by SBCs and agencies to determine whether the SBC meets the agency's commercialization benchmarks, discussed above, and for program evaluation purposes. The effective date for implementation of this database is October 1, 2014.

DOT will require that the SBCs provide the information to the SBA's database directly. DOT will use the information to determine if the SBC meets the established commercialization benchmark.

L. Corrective Actions

Fraudulent reports or other deliverables knowingly submitted under an awarded contract may result in termination of an active award. If the contract is terminated for fraud or any other illegal or improper activity the Government is entitled to recover, in addition to any penalty prescribed by law, the amount expended under the contract.

M. Additional Information

1. This solicitation is intended for informational purposes and reflects current planning. Although not expected there may be inconsistencies between the information contained in the 13.1 solicitation and the terms and conditions of any resulting SBIR contract. The terms of the contract once executed are controlling.

2. Before award of an SBIR contract, the offeror shall complete Online Representations and Certifications Application: <https://www.sam.gov>.
3. The Government may request the offeror to submit additional management, personnel, and financial information to assure responsibility of the offeror.
4. The Government is not responsible for any monies expended by the offeror before award of any contract.
5. This solicitation is not an offer by the Government and does not obligate the Government to make any specific number of awards. Also, awards under this program are contingent upon the availability of funds.
6. The DOT SBIR Program is not a substitute for existing unsolicited proposal mechanisms. Unsolicited proposals shall not be accepted under the DOT SBIR Program in either Phase I or Phase II. For information pertaining to submission requirements for unsolicited proposals please go to the following web page: <http://www.volpe.dot.gov/procure/unsolguide.html>.
7. If an award is made pursuant to a proposal submitted under this solicitation, the contractor will be required to certify that they have not previously been, nor are currently being paid for essentially equivalent work by any agency of the Federal Government.
8. When purchasing equipment or a product with funds provided under the DOT SBIR Program, purchase only American made equipment and products, to the extent possible in keeping with the overall purposes of the program.
9. In accordance with FAR 52.233-2, Service of Protest:
 - (a) Protests, as defined in section [33.101](#) of the Federal Acquisition Regulation, that is filed directly with an agency, and copies of any protests that are filed with the Government Accountability Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgement of receipt from:

Jeanne Rossetsky, Contracting Officer
Volpe Center, RVP-32

55 Broadway
Cambridge, MA 02142-1001
(617) 494-3853

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

VI. RESEARCH TOPICS

Phase I research topics for DOT Operating Administrations are listed below. These topics indicate the specific areas for which proposals are to be considered for acceptance by DOT. The topics are not listed in any order of priority. Each proposal submitted must respond to one (and only one) topic and/or focus area as described in this section. A proposal may, however, indicate and describe its relevance to other topics.

Topic number & Title	Maximum Number of Anticipated Awards	Estimated Award Amount Phase I	Estimated Award Amount Phase II*
<u>Federal Railroad Administration</u>			
13.1-FR1 Low Ground Clearance Vehicle Detection and Warning System	2	\$150,000	\$1,000,000
<u>Federal Transit Administration</u>			
13.1-FT1 Transit Safety	2	\$150,000	\$750,000.
13.1-FT2 Improved Decision Support Tools for State of Good Repair	1	\$150,000	\$750,000

*The Phase II funding level noted above is an estimate only, is subject to the availability of funds and/or the technical requirements to accelerate the development of a commercial product and/or innovation. Any changes to the Phase II estimated funding level listed above will be communicated to the small business after the completion of the Phase I project.

Federal Railroad Administration (FRA)

13.1-FR1 Low Ground Clearance Vehicle Detection and Warning System

High profile highway-rail grade crossings present a severe risk to low ground clearance vehicles such as low-boys, car-carriers, low-floor urban transit buses, and farm equipment trailers in the United States. When such a vehicle traverses a high-profile roadway section, such as a high-profile grade crossing, the vehicle may become stuck on the hump of the crossing and then be struck by a train. One such incident involved a tractor trailer that became stuck at a grade crossing in Glendale, CA on January 28, 2000 and was subsequently struck by a Metrolink commuter train. This problem could be more complicated considering that fact that the underbody of a commercial vehicle is not always a flat surface. There could be electric cables, air lines, tanks, storage cabinets, etc. suspended from the flat surface of the underbody of a commercial vehicle. It is aimed to have a detecting approach that will be able to take these suspended or protruded accessories into account and sense whether these suspended or protruded vehicle parts or accessories are rigid, semi-rigid, or flexible. Would they be rigid enough to get the commercial vehicle stuck on the high-profile grade crossing?

One of the ways to reduce the risk to low ground clearance vehicles is to provide advance warning regarding the existence of high-profile crossings ahead. Passive signage already exists for this application (w10-5). However, research is needed into the development of a reliable active system, such as the ones used to detect over-height vehicles before tunnels, that would detect a low ground clearance vehicle on approach to a high-profile crossing and trigger a wayside active warning message that would be visible to the motorist. The system envisioned would be capable of generating its own power, be durable enough for long-term operation with minimal maintenance, and able to operate in adverse conditions including heavy snow. Ultimately it would achieve at least the same level of reliability and quality assurance as existing over-height vehicle detection systems. A recommendation should also be made as how far the developed detection system should be placed away from the grade crossing to allow low-ground clearance vehicle sufficient space to stop ahead of the crossing. The allowable stopping distance, of course, depends on the speed limit for the roadway plus some safety factors. The ideal placement should allow a low-ground clearance vehicle to take an alternative route or detour before reaching the high-profile grade crossing.

Some engineering research and analysis is also necessary to recommend an accurate and scientific-based approach for calculating the actual clearance threshold that should consider the specific nature of each individual high-profile grade crossing and the dynamic behavior of the vehicle at the crossing.

Expected Phase I Outcomes:

Phase I outcomes should include a detailed concept that demonstrates the viability of creating a prototype that satisfies the attributes described above and an estimate of the cost of the proposed technology (with and without installation) per grade crossing. The offeror should provide information as to their firm's degree of successfully commercializing products of past projects.

Expected Phase II Outcomes:

Phase II efforts include manufacturing and demonstrating a working prototype low ground clearance vehicle detection system that demonstrates potential for achieving reliability and quality assurance metrics equivalent to or greater than existing over-height vehicle detection systems.

Federal Transit Administration

13.1-FT1 Transit Safety

The new authorization, Moving Ahead for Progress in the 21st Century (MAP-21) gives FTA significant new authority to strengthen the safety of public transportation systems throughout the United States. The FTA is seeking exploratory proposals that will demonstrate innovative, economical and durable technologies and devices or solutions that will improve and revolutionize the safety of public transportation and the riding public. The innovations in public transportation or transit must pertain to and be adaptable to existing heavy rail, commuter rail, light rail, buses, ferries, and streetcars. Project proposals must include a methodology on how it will use data to quantitatively demonstrate that their recommended technology innovations can truly improve or provide confidence for commuters and operators to trust and use a safe transit system.

The subtopics could range from improved passenger safety, vehicle safety, road/track safety to service reliability.

Sub-topic example:

Impaired Operator Detector - The goal of this research is to develop a prototype impaired-operator detector that bridges the gap between current (first-generation, impairment-specific) devices and the ideal impaired-operator detector described below.

An ideal impaired-operator detector would have the following attributes:

1. Instantly detects any type of impaired operation across all conditions and operators;
2. Correctly detects 100% of impaired operations (sensitivity) and correctly rejects 100% of unimpaired operations (specificity);
3. Unobtrusive, automatic functioning (e.g., nothing for the operator to wear or do differently);

Expected Phase I Outcomes:

- a. A viable concept that demonstrates the technology or solution in a vehicle, facility or operation in a transit environment to improve transit safety to achieve the following: (1) reduce the number of transit-related fatalities and the severity of transit-related injuries, (2) increase the knowledge about human/machine interface and reduce potential safety-related incidents
- b. Efficient and low cost technology
- c. Modular, interoperable, plug and play and open source (if applicable) device
- d. Technology assessment with respect to industry best practices
- e. Feasibility analysis (data proven) for success in developing a working prototype

Expected Phase II Outcomes:

Phase II efforts include manufacturing and demonstrating a working prototype of the technology and device or solution with all of the above listed Phase I outcomes.

13.1-FT2 Improved Decision Support Tools for State of Good Repair

The new authorization, Moving Ahead for Progress in the 21st Century (MAP-21) gives FTA authority to establish a State of Good Repair grant program to strengthen the state of public transportation infrastructure throughout the United States. The new authorization also requires transit asset management plans from recipients and sub-recipients of Federal financial assistance. The FTA is seeking exploratory proposals that will demonstrate innovative, economical and durable technologies and devices or solutions that will improve the transit infrastructure. Improved decision support tools give transit agencies the ability to prioritize capital budgets for the benefit of public transportation and the riding public. The innovations in public transportation or transit must pertain to and be adaptable to existing heavy rail, commuter rail, light rail, buses, ferries, and streetcars. Project proposals must include a methodology on how they will use data to quantitatively demonstrate that their recommended technology innovations can truly improve a transit agency's ability to properly maintain its transit infrastructure.

The subtopics could range from asset management plans, capital asset inventories, condition assessments, and investment prioritization.

Sub-topic example:

Asset Management Information System - The goal of this research is to develop a prototype decision support tool to assist with asset management and related activities. While some Commercial-Off-the-Shelf asset management-related software exist, no single commercially available system appears to address all aspects of the asset management framework outlined in forthcoming FTA guidelines.

Any decision support tool should contain the following fundamental asset management system components:

- Asset Inventory
- Asset Condition [condition monitoring, detection and tracking]
- Maintenance Management, Fleet Management, Parts Management, Facilities Management
- Scenario Analysis and Decision Making, Capital Programming
- Financial, Accounting Management, Engineering and other systems

Expected Phase I Outcomes:

By utilizing the decision support tools implemented through this Asset Management Information system, a transit agency will be able to improve its stewardship over its physical assets, reduce maintenance costs, make better-informed capital investment decisions, and enhance the level of service it provides to its customers. The Phase 1 initiative has two primary outcomes:

- a. Enhance an agencies' existing State of Good Repair database, including the incorporation of decay curves and condition ratings, and integration with existing enterprise asset management

systems in order to better understand the relationship between asset age, condition and maintenance costs.

- b. Improve an agencies current project prioritization process, including the acquisition and implementation of a new consensus-based decision support tool that utilizes a set of capital project evaluation criteria based on agency objectives and customer expectations.

Expected Phase II Outcomes:

Phase II efforts include manufacturing and demonstrating a working prototype of the decision support tool or solution with all of the above listed Phase I outcomes.

VII. SUBMISSION FORMS AND CERTIFICATIONS

- | | | |
|----|---|------------|
| 1. | PROPOSAL COVER SHEET | Appendix A |
| 2. | PROJECT SUMMARY | Appendix B |
| 3. | CONTRACT PRICING PROPOSAL | Appendix C |
| 4. | PROPOSAL CHECKLIST
(Do not include with your proposal – for your use only) | Appendix D |

**U.S. DEPARTMENT OF TRANSPORTATION
 SMALL BUSINESS INNOVATION RESEARCH PROGRAM
 SOLICITATION NO. DTRT57-13-R-SBIR1
 FY13.1
 PROPOSAL COVER SHEET**

Project Title:

Research Topic

No.:

Research Topic

Title :

Submitted by: Company Name

Address

City, State, Zip

Representations System for Award Management Valid Until _____(Date)

& Certifications <https://www.sam.gov>

Online Representations and Certifications Valid Until _____(Date)

<https://www.sam.gov>

Amount Requested \$ (May be up to \$150, 000 unless otherwise indicated)

Proposed Duration (in months) (Not to exceed 6 months)

Congressional District No.*: _____

*To locate your congressional district number, proceed to the link: <http://www.govtrack.us/congress/members>

By signing and submitting this coversheet under Solicitation No. DTRT57-13-R-SBIR1, Topic No. _____, certifies that:

1. The above firm, together with its affiliate's _____ is _____ is not a small business firm and meets the definition stated in Section II.B; and that it meets the eligibility requirement in Section I.E.
2. The SBIR Applicant is (check one):
 - a. at least 51% owned and controlled by one or more individuals who are citizens of the United States, or permanent resident aliens in the United States; or
 - b. at least 51% owned and controlled by another business concern that is itself at least 51% owned and controlled by individuals who are citizens of, or permanent resident aliens in the United States; or
 - c. a joint venture in which each entity to the venture meets the requirements set forth in 2.a or 2.b above.
3. The above firm, _____ will _____ will not primarily employ the Principal Investigator at the time of award and during the conduct of research.

4. The above firm _____does_____does not qualify as a socially or economically disadvantaged small business as defined in Section II.C. (The information is for statistical purposes only.)
5. The above firm_____does_____does not qualify as a women-owned small business as defined in Section II.D. (The information is for statistical purposes only.)
- 6 The above firm_____does_____does not qualify as a HUB Zone-owned small business and meet the definition as stated in this Section II. G
7. The above firm and/or Principal Investigator _____has, _____ has not submitted proposals containing the same, or a significant portion of equivalent or overlapping work to other Federal agencies. (If yes, identify proposals in the Section III. D.10., Similar Proposals.)
8. The above firm and/or Principal Investigator _____has, _____has not been funded under any other Federal grant, contract or subcontract program solicitations, or has received other Federal awards to conduct essentially equivalent work or overlapping work. (If yes, identify proposals in the Section III. D.10., Awards.)
- 9 The Principal Investigator’s primary employment _____is, _____is not with the above firm.
10. The above firm ____will, _____will not permit the Government to disclose the title and technical abstract of your proposed project, plus the name, address, and telephone number of the Corporate/Business Official and Principal Investigator of your firm, if your proposal is recommended for award, to any party that may be interested in contacting you for further information?
11. By signing and submitting this proposal, you are authorizing the DOT SBIR Program permission to disclose the title and abstract of the proposed project, as well as the name and other information of the corporate official to appropriate local and state economic development organizations, if the proposal does not result in an SBIR award.

By signing and submitting this proposal in response to Solicitation No. DTRT57-13-R-SBIR1, Topic No. _____, I am representing on my own behalf, and on behalf of the SBIR applicant, that the information provided in this certification, the application, and all other information submitted in connection with this application, is true and correct as the date of the 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 non-procurement transactions (FAR Subpart 9.4 or 2 C.F.R. part 180); and (5) other administrative penalties including termination of SBIR awards.

Principal Investigator

Name _____

Title _____

Signature _____ Date _____

Telephone No. _____

E-mail _____

Corporate/Business Official

Name _____

Title _____

Signature _____ Date _____

Telephone No. _____

E-mail _____

PROPRIETARY NOTICE (IF APPLICABLE, SEE SECTION V.D.1)

**U.S. DEPARTMENT OF TRANSPORTATION
 SMALL BUSINESS INNOVATION RESEARCH PROGRAM
 SOLICITATION NO. DTRT57-13-R-SBIR1
 FY13.1
 PROJECT SUMMARY**

Name and Address of Offeror	
	Proposal No.

Name and Title of Principal Investigator

Project Title

Research Topic No.	Research Topic Title
--------------------	----------------------

Technical Abstract (Limited to two hundred words in this space only with no classified or proprietary information/data).

Anticipated Results/Potential Commercial Applications of Results.

Provide key word (eight maximum) description of the project useful in identifying the technology, research thrust, and/or potential commercial application.

**U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
CONTRACT PRICING PROPOSAL
FY13.1**

Topic No:				
Offerors Project Title:				
Name of Offeror:				
Address:				
City, State, Zip:				
Offerors Point of Contact:				
Title of Offerors Point of Contact:				
Telephone:				
E-mail:				
DUNS No. :				
Tax Identification No.:				
To best of my knowledge and belief, cost and pricing data are true and complete, and current as of the date of signature below. I understand that the willful provision of false information or concealing a material fact in this report or any other communication submitted to DOT is a criminal offense (U.S. Code, Title 18, Section 1001).				
THE COST PROPOSAL MUST BE SIGNED BY A RESPONSIBLE OFFICIAL OF THE FIRM.				
Authorized Company Officer:				
Printed				
Name _____				
Title _____				
Signature _____ Date: _____				
1	Total Firm Fixed Price Proposal Amount			\$ _____
2.	Direct Material Costs			
	a. Purchased Parts & Subcontracted Items			\$ _____
	Description	Unit Price	Qty	Total

Topic No:					
Offerors Project Title:					
Name of Offeror:					
	b. Raw Materials				\$ _____
	Description	Unit Price	Qty	Total	
	c. Standard Commercial Items				\$ _____
	Description	Unit Price	Qty	Total	
Total Direct Materials (TDM)				\$ _____	
3	Materials Overhead				
			Rate	Amount	
	Total Material Overhead (TMO)		_____ %	\$ _____	
4	Total Materials (TDM + TMO)			\$ _____	
5	Direct Labor				
	Type / Personnel		Hours	Rate (\$ / Hr)	Cost
					\$ _____
					\$ _____
					\$ _____
Total Direct Labor (TDL)				\$ _____	
6	Labor Overhead (TDL x Overhead Rate)				
			Rate	Amount	
	Total Labor Overhead (TLO)		_____ %	\$ _____	
7	Labor: Fringe Benefits (TDL x Benefit Rate)				
			Rate (% or \$ / Hr)	Amount	
	Fringe Benefits		_____ %	\$ _____	
8	Total Labor (TDL + TLO + Fringe)			Amount	

Topic No:					
Offerors Project Title:					
Name of Offeror:					
				\$ _____	
9	Direct Costs: Special Testing (Include field work at Government installations)				
	Item and Anticipated Use			Unit Cost	Estimated Cost
					\$ _____
					\$ _____
					\$ _____
					\$ _____
	Estimated Total Special Testing				\$ _____
10	Direct Costs: Special Equipment				
	Item and Anticipated Use			Unit Cost	Amount
					\$ _____
					\$ _____
					\$ _____
Estimated Total Special Equipment				\$ _____	
11	Direct Costs: Travel				
	Travel Location	Mode of Travel	Number of Trips	Per Diem	Amount
					\$ _____
					\$ _____
	Travel				\$ _____
12	Direct Costs: Consultant Services				
	Description of Service				Amount
					\$ _____
					\$ _____
Total Consultant Services				\$ _____	
13	Direct Costs: Other Direct Costs (ODC)				
	Item & Anticipated Use			Unit Cost if applicable	Amount
					\$ _____
					\$ _____
					\$ _____
Total ODCs				\$ _____	
14	Total Direct Costs (TDC) (Sums of Line No. 9 – 13)				Amount
					\$ _____

15	General & Administrative Expense (Total Materials + Total Labor + Total ODC) x Rate)		
		Rate %	Amount
			\$
16	Royalties		
	Description	Amount	
	Total	\$	
17	Total Cost (Sums of lines 4, 8, 14, 15 & 16)		Amount
			\$
18	Profit (Total Cost x Profit Rate)		
		Rate %	Calculated Amount
			\$
19	Total Firm Fixed Price Amount (Total Cost + Profit)	\$	
20	<p>An executive agency of the United States Government ___ has ___ has not performed any review of your accounts or records in connection with any other Government prime contract or subcontract within the past twelve months? If one has, then provide a copy of the audit report and the name and address of the reviewing office, name of the individual and telephone/extension below</p> <p>_____</p> <p>_____</p> <p>_____</p>		
21	<p>Government property ___ is ___ is not required in the performance of this proposal? If yes, identify.</p> <p>_____</p> <p>_____</p> <p>_____</p>		
22	<p>Government contract financing ___ is, ___ is not required to perform this proposed contract? If yes, specify type as advanced payments or progress payments.</p>		

APPENDIX D

**U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-13-R-SBIR1
FY13.1
PROPOSAL CHECKLIST**

This is a CHECKLIST OF REQUIREMENTS for your proposal. Please review the checklist carefully to assure that your proposal meets the DOT SBIR requirements. Failure to meet these requirements may result in your proposal being returned without consideration. (See Sections III of this Solicitation). **Do not include this checklist with your proposal.**

- _____ 1. The proposal reflects the fact that for Phase I a minimum of two-thirds (and for Phase II a minimum of one-half) of the research and/or analytical effort will be performed by the proposing firm as required (see Sections V.H.1 and V.H.2) and the primary employment of the principal investigator (for both Phase I and Phase II) must be with the small business firm at the time of award and during the conduct of the proposed research as required (see Section I.E).
- _____ 2. The proposal is submitted according to the requirements described in Section III.
- _____ 3. The proposal is limited to only ONE of the research topics in Section VI.
- _____ 4. The proposal budget **may be up to \$150,000 unless otherwise indicated in the solicitation** and duration does not exceed six months.
- _____ 5. The technical abstract contains no proprietary information, does not exceed 200 words, and is limited to the space provided on the Project Summary sheet (Appendix B).
- _____ 6. The proposal contains no type smaller than ten point font size.
- _____ 7. The COVER SHEET (Appendix A) has been completed and is PAGE one and two of the proposal.
- _____ 8. The PROJECT SUMMARY (Appendix B) has been completed and is PAGE three of the proposal.
- _____ 9. The TECHNICAL CONTENT of the proposal begins on PAGE four and includes the items identified in SECTION III.D of the Solicitation.

- _____ 10. The Contract Pricing Proposal (Appendix C) has been signed and is included as the last section of the proposal.

- _____ 11. The additional information on prior Phase II awards, if required, in accordance with Section III.G is included.

- _____ 12. The proposal must be a PDF file and submitted online by 11:59 p.m., March 4, 2013. **Proposals may only be submitted online, a link to the web form can be found here: <http://www.volpe.dot.gov/sbir/current.html>. Proposals received via email will not be accepted. Do not send duplicate proposals via email or by any other means.** Instructions for online submission are included on the submission page.