DTRT57-11-R-SBIR2
FY11.2

U.S. Department of Transportation

Office of the Secretary of Transportation

Special Announcement

- Amendment to the DOT SBIR Phase I Solicitation – DTRT57-11-R-SBIR2 - FY11.2 Section VI Research Topics, page 20, topic 11.2-PH1; Expected Phase I Outcomes and Expected Phase II Outcomes

- Amendment 2 to DTRT57-11-R-SBIR2 – FY11.2 Section I Program Description, part C. Manufacturing-related Priority and Energy Efficiency and Renewable Energy Priority

PROGRAM SOLICITATION

Small Business Innovation Research Program (SBIR)

Issue Date: April 4, 2011

Closing Date: June 13, 2011

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

TECHNICAL QUESTIONS

Technical questions pertaining to the FY11.2 DOT SBIR solicitation research topics must be submitted to the SBIR Program Office by email to Linda.Duck@dot.gov

Technical questions submitted after May 26, 2011 may not be answered before the solicitation closing date.

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U. S. DOT PROGRAM SOLICITATION
FOR
SMALL BUSINESS INNOVATION RESEARCH

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. The Program is currently operating under a continuing resolution.

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) To stimulate technological innovation;
(2) To use small business to meet Federal R/R&D needs;
(3) To increase private sector commercialization of innovations derived from Federal R/R&D; and
(4) To foster and encourage participation by minority and disadvantaged persons in technological innovation.

In consonance with the statutory obligations of the Act, the DOT has established a Small Business Innovation Research Program (SBIR) which will be referred to as the DOT SBIR Program.

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 a three phase process.

THIS SOLICITATION IS FOR PHASE I PROPOSALS ONLY. The DOT SBIR Program does not accept unsolicited proposals.

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 basis for award will be the scientific and technical merit of the proposal and its relevance to DOT requirements and current research priorities. **Only awardees in Phase I will be eligible to participate in Phase II which is by invitation only and subject to the availability of funding.**

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.

DOT SBIR Phase II invitations are issued to firms which have previously received a DOT Phase I award. Phase II proposals may be up to $1,000,000 and have a period of performance 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 neither obligated to issue a Phase II invitation to a Phase I awardee nor is it obligated to fund any specific Phase II proposal.

Phase II B. In FY 2011, the DOT SBIR Program will pilot a Phase II B Enhancement Program. DOT agencies interested in participating in the pilot will reserve a portion of their SBIR budget to fund Phase II B projects. The intent of the Pilot is to advance and/or accelerate

current active Phase II SBIR-funded technologies towards commercialization. The contracts will be a one-time bridge award to the most promising Phase II project(s) and are subject to the availability of funding. This will be an invitation only process. Candidate project(s) will be identified by DOT agency SBIR COTRs. Selected candidate project(s) will be identified and small businesses will be invited to submit a Phase II B technical proposal. Evaluation criteria will focus on commercialization potential.

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 activity 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, funded by non-SBIR Federal funding sources.

A Phase III award is by its nature an SBIR award and is accorded SBIR data rights. The requirements of Armed Services Procurement Act, the Federal Property and Administrative Services Act, and the Competition in Contracting Act are satisfied by the competition of the Phase I, Phase II and Phase II.B awards. There is no limit on the number, duration, type, or dollar value of Phase III awards made to a small business concern. There is no limit on the time that may elapse between a Phase I, Phase II, Phase II.B award and Phase III award, or between a Phase III award and any subsequent Phase III award. The small business size limits for Phase I, Phase II, and Phase II.B awards do not apply to Phase III awards.

C. Manufacturing-related Priority

"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 twice annually to each of the Department's SBIR participating agencies.

The Energy Independence and Security Act of 2007 (P.L. 110-140) directs SBIR Programs to give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system R&D projects.

The DOT SBIR Program solicits energy efficiency or renewable energy system R&D projects through the call for topics distributed twice annually to each of the Department's SBIR participating agencies.

D. Eligibility

Each concern submitting a proposal must qualify as a small business concern 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, 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, 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.

E. 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 submitted 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 shall not be submitted.**

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

Please address **general inquiries, not pertaining to this solicitation** on the U.S. DOT SBIR Program to:

DOT SBIR Program Office, RVT-91
John A. Volpe National Transportation Systems Center
U.S. Department of Transportation
Research and Innovative Technology Administration
55 Broadway
Cambridge, MA 02142-1093
Telephone: (617) 494-2051
Fax: (617) 494-2370

Volpe Center Website: http://www.volpe.dot.gov/sbir

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

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 organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials or labor;

(2) 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;

(3) Is (i) 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, (ii) 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 (iii) a joint venture in which each entity to the venture must meet the requirements of either (i) or (ii) of this section;

(4) Has, including its affiliates, not more than 500 employees.

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 one that is at least 51% owned 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.

E. Veteran Owned Small Business

A veteran-owned small business concerns is one that is at least 51 % owned and controlled 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, other than one involving an employer employee relationship, 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 (HUBZone)

A HUB Zone small business concern is one that meets the following criteria:

1. Located in "historically underutilized business zone" or HUB Zone area located in one or more of the following:

   a) A qualified census tract (as defined in Section 42(d)(5)(i)(l) of the Internal Revenue Code of 1986);

   b) A qualified "non–metropolitan county" (as defined in Section 143(k)(2)(B) of the Internal Revenue Code of 1986) with a median household income of less than 80% of the state median household income or with an unemployment of not less than 140% of the statewide average based on U.S. Department of Labor recent data; or

   c) Lands within the boundaries of Federally recognized Indian reservations.

2. Owned and controlled by one or more U.S. citizen(s).

3. At least 35% of its employees must reside in a HUB Zone.

H. Service Disabled Veteran Owned Concern

A service disabled veteran-owned small business concerns is one that is at 51% unconditionally and directly owned by one or more service-disabled veterans defined in 13 C.F.R 125.29. In the case of a concern which is a corporation, at least 51% of the aggregate of all stock outstanding and at least 51% of each class of voting stock outstanding must be unconditionally owned by one or more service-disabled veterans.

III. PROPOSAL PREPARATION INSTRUCTIONS AND REQUIREMENTS

A. Proposal Submission Requirements

- Each proposal shall not exceed 30 pages (regular size type – no smaller than 10 point font size – single or double spaced, standard 8 ½" by 11" pages) including proposal cover sheet, contract pricing proposal, and all enclosures or attachments.

- Proposals must be a PDF file and submitted online. **Proposals will not be accepted via email.**

- No duplicate proposals shall be sent by any other means.

- 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 included on the submission page.

- Proposals must be received no later than 11:59 P.M. EST on June 13, 2011.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.

Proposals will be available to only the team of U.S. DOT engineers and/or scientists responsible for evaluating your proposal.

B. Proposal Cover Sheet

Complete the Proposal Cover Sheet in Appendix A as Page one of your proposal. All pages shall be numbered consecutively, beginning with the Proposal Cover Sheet.

C. Project Summary

Complete the form in Appendix B as Page 2 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 form.

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 his or her 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, 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 only permitted to conduct no more than 1/3 of the work.

(9) **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.

(10) **Similar Proposals or Awards. Warning — 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 identical proposals or proposals containing a significant amount of 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.

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. Central Contracting Registration (CCR) and Data Universal Numbering System (DUNS) Identification Number

Since October 1, 2003, 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 CCR before being awarded a contract**. You can find more information on CCR and the registration process in their handbook, http://www.ccr.gov/handbook.asp. You can register online at http://www.ccr.gov by clicking on "Start New Registration" 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 DUNS identification number on Appendix C, Contract Pricing Proposal, Schedule 1. This number is assigned by Dun & Bradstreet, Inc.

G. Prior SBIR Phase II Awards

If the small business concern has received more than 15 Phase II 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 toward the page count limitation.)**

IV. METHOD OF SELECTION AND EVALUATION CRITERIA

A. General

All Phase I 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. **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. While it is the Government's intent to make Phase II awards based upon initial offers, the Government may, nevertheless, determine during the evaluation period that it is necessary to conduct discussions. In that case, the Contracting Officer will proceed to establish a competitive range and conduct negotiations with the firms in that range. Phase II and II B 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 adequacy of the work plan and approach to achieve specified work tasks and stated objectives of the proposed effort 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) Adequacy of supporting staff and facilities, equipment, and data for the successful completion of the proposed R/R&D.

(5) Commercialization potential will be factors for both Phase II and II B.

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 will receive an email notifying them of the rejection. Each offeror will be notified promptly by email of such action.**

D. Schedule

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

E. Program Selection

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. The DOT SBIR Program Office will post a listing of awards on the webpage: http://www.volpe.dot.gov/sbir.

F. 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 only to the FY11.2 DOT SBIR solicitation research topics** must be submitted by May 26, 2011. Questions shall be submitted by e-mail to the DOT SBIR Program Office and the SBIR Program Contracting Officer. The DOT SBIR Program Office point of contact for technical questions is Linda Duck, Linda.Duck@dot.gov. The SBIR Program Contracting Officer is Darren.Shaffer@dot.gov . Technical questions submitted after May 26, 2011 might not be answered before the solicitation closing date.

No information on proposal status will be available until the complete list of FY11.2 Phase I Award Recommendations is posted on the DOT SBIR Program

Webpage: http://www.volpe.dot.gov/sbir. For planning purposes the FY11.2 Phase I Award Recommendations are expected to be posted on the DOT SBIR Program web page by 5 PM Eastern Time, **on/or about Friday, August 12, 2011**. **Phase I proposals which are not included in the list of FY11.2 Phase I Award Recommendations will not receive an award.** Upon the posting of the recommended proposals, contact with DOT remains restricted to the SBIR Program Office and the SBIR Program Contracting Officer.

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.

NO WRITTEN CORRESPONDENCE REGARDING PROPOSAL STATUS WILL BE ANSWERED.

After the FY11.2Phase I Award Recommendations are posted on the DOT SBIR Program webpage, a debriefing comprised of the overall comments on the proposal may be provided to the offeror upon request.

Debriefing Requests:
Debriefing requests should be submitted to the SBIR **Program Contracting Officer by e-mail to: Darren.Shaffer@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.

V. CONSIDERATIONS

A. Awards

The Government anticipates awarding approximately **3** 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.

All Phase I awards will be firm fixed price contracts and may be funded up to $150,000 each unless otherwise noted. Phase II and Phase II B awards will be either cost-plus-fixed-fee or fixed fee contracts or some combination of the two. Phase II contracts can be funded up to $1,000,000 each unless otherwise noted. Phase II B awards of up to $250,000 extend the period of performance to 1 year. Phase II B awards over $250,000 extend the period of performance to 2 years. All Phase II B awards will be subject to availability of 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 their accounting system, DCAA will conduct an on-site pre-award audit prior to contract award**. This process can take up to three to four 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 at http://www.dcaa.mil

Only recipients of Phase I contracts will be eligible to receive a Phase II invitation. **Only recipients' of Phase II contracts will be eligible for a Phase II B invitation.**

DOT's Operating Administrations contribute to 2.5% of their Extramural Research Budget for SBIR funding. Each Operating Administration's contribution may be used only 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 Aviation Administration (FAA), 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). 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 letter reports, and a comprehensive final report.

2. Under Phase II, Phase II B and Phase III SBIR contracts, monthly progress reports, monthly cost reports, a commercialization reports every six months, and a summary of results will be required

C. 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 negotiated prior to award.

D. 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 term "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 pages _____ 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 inventions to the Department of Transportation (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.

E. Cost Sharing

Cost sharing is permitted for Phase II and 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.

F. Profit or Fee

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

G. 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.

H. 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.

I. Contractor Commitments

Upon award of a contract, the awardee will be required to make certain legal commitments through acceptance of numerous 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 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, 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, prescribes the following conduct by competing contractors 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, disqualification of an offeror, 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 52.245-1 Government Property (June 2007) clause (and Small Business Innovation Research (SBIR) Program Policy Directive, Section 8 (c).

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

SBIR Policy Directive: http://www.sba.gov/aboutsba/sbaprograms/sbir/sbirstir/index.html

J. Additional Information

1. This 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 are controlling.

2. Before award of an SBIR contract, the offeror shall complete Online Representations and Certifications Application: https://orca.bpn.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 he or she has not previously been, nor is 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, the following Service of Protest procedures shall be followed. Protests, as defined in Section 33.101 of the FAR that are 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: Darren Shaffer, DOT/RITA/Volpe Center, 55 Broadway, RVP-31, Cambridge, MA 02142-1093

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 as described in this section. A proposal may, however, indicate and describe its relevance to other topics.

Topic number & Title	Anticipated Number of Awards	Estimated Award Amount Phase I	Estimated Award Amount Phase II
Federal Motor Carrier Safety (FMCSA) Administration			
11.2-FM1: Determination of Towed Unit (Trailer) Characteristics from within the Powered Unit (tractor)	1	$150K	$600K
National Highway Traffic Safety (NHTSA) Administration			
11.2-NH1: Simulation Techniques for Studying Night Driving Effects on Driver Behavior	1	$150K	$400K
Pipeline and Hazardous Materials Safety Administration (PHMSA)			
11.2-PH1: Examination of HM Portable Tanks within Transportation System	1	$150K	$1M

Federal Motor Carrier Safety Administration (FMCSA)

11.2-FM1: Determination of Towed unit (Trailer) characteristics from within the Powered unit (Tractor)

The primary mission of Federal Motor Carrier Safety Administration (FMCSA) of Department of Transportation (DOT) is to reduce crashes, injuries and fatalities involving large truck and buses. One of the strategies employed to accomplish this goal is to foster innovative research in new or augmenting safety enhancing technologies and to facilitate faster deployment of proven systems. In collaboration with our industry partners and stakeholders, we continuously identify new opportunities of emphasis that can serve our agency goals and objectives towards improving highway safety. The opportunity outlined in this solicitation refers to a challenge that, if addressed robustly and cost-effectively, has the high potential to further improve the efficacies of existing safety technologies.

Background:

In North America, the powered heavy trucks often haul a variety of towed units during their operation. As a reference, some of the common combination vehicle configurations can be found on page 26 (Figure 7) of the TRB publication "Trucking 101" [1].

In most cases, the combination vehicles are not "married couples", i.e., the tractor and the trailer(s) do not stay coupled through the life span of the vehicles. The common Commercial Motor Vehicle (CMV) operation involves a tractor to haul different trailers as often as in each trip.

Furthermore, the typical lifecycle of a trailer is much longer than that for a tractor. There are operational and economic reasons leading to these market dynamics, but the important ramification of this fact is that tractors often have to haul a wide variety of old and new trailers with substantially differing characteristics. And there is little-to-no information available to the tractor as to what is being towed (that can be automatically detected without driver input).

This solicitation calls for innovative solutions to automatically identify some trailer attributes from within the tractor (powered unit). These attributes of interest will be discussed in further details later on.

Purpose:

On-board safety systems on newer tractors are capable of providing enhanced safety margins for combination CMVs under a wide variety of operating conditions. Such systems include Electronic/Roll Stability Control, Adaptive Cruise Control and Crash Imminent Emergency Brake Assist, among others. They operate with nominal assumptions on the trailer characteristics. The need for these assumptions limits developers' ability to further optimize their safety systems' performances. Hence, there is substantial potential to improve efficacies of such on-board safety systems if there were a mechanism to automatically determine certain trailer characteristics from within the tractor in a robust manner without the reliance on the operator to be in the loop. Automatic detections need to be convertible into electrical signals that can be communicated via the vehicle database to these safety systems.

Furthermore, the ability to know the vehicle combination type and the associated attributes of the trailer(s) at the tractor has the potential to simplify mobility applications such as Truck Parking initiatives (where parking reservation systems can be more optimally carried out if the combination vehicle characteristics are known) and to improve implementation efficacies of connected vehicle applications such as Vehicle-to-Vehicle (V2V) safety functions where one of the V's in the interaction is a combination vehicle with unique characteristics.

Objectives:

This solicitation calls for innovative solutions to identify some trailer attributes from within the tractor. Some trailer attributes of interest are the following and the proposed solution shall address at least a subset of the high priority attributes (as defined within the context of this solicitation) on this list:

High priority attributes:

- The number of trailer units being towed,
    - An accurate determination of whether the combination vehicle is a tractor-semi, tractor –double trailer or tractor-triple trailer (at a minimum, differentiate between semi and multi-trailer cases),
- The existence/nonexistence of (functioning) trailer ABS on (each of) the towed unit(s),
    - An accurate determination of whether a functioning ABS system is existent on each of the hauled trailer units.

Secondary attributes of interest are:

- The length of the trailer unit(s) (or the aggregated trailer train length),
- The number of axles and their potential locations (configurations of) on the trailer(s),
- Trailer height,
- Trailer type, and/or load type.

The proposals can list capabilities of determining other trailer attributes for consideration as well. Such propositions need to explain why those factors would be important to vehicle and traffic safety. Proposers shall research and be aware of existing mechanisms to determine certain characteristics and identify the unique benefits of their propositions while keeping current means in perspective. For instance, using mass estimation algorithms and hard coded bobtail weight specifications of a tractor, it is possible to reliably determine if a trailer is connected to the tractor or not. That same mechanism also can help determine the total weight of the trailer but cannot tell what the weight difference is between the trailer and the load or how many trailers may be connected at any given time.

Requirements for the Research:

The vision for this solicitation is that the concept system will be fully decentralized and be resident on the tractor. It can be assumed that such a system will be installed on new tractors only (i.e. it will not be retrofitted on older tractors in the field). Since one of the primary objectives of this study is to improve efficacies of the listed commercially available technologies, the proposers can assume the existence of them on the tractor.

The summary of the constraints associated with the Phase I work are the following.

- The proposed solution shall be hosted solely on the powered unit (tractor), i.e., the proposed solution shall not depend on the existence or non-existence of non-standard components on the Trailers and shall not require installation of anything new (on the Trailers).
    - While the above requirement is ultimately desired, practical solutions requiring very rudimentary modifications to the trailer units may also be considered, however, they should be very easy to install and very cost effective. Furthermore, if a modification to the trailer is proposed as part of the solution, a section should be dedicated in the technical approach section describing why high volume costs (component, installation and maintenance costs) would be considered cost-effective and feasible keeping the pool of existing Trailers in the field in perspective.

- There should be no additional connections required to the trailers except for the common connections such as the 7-pin electrical connector and the pneumatic connections between the powered and towed units (via the glad hands[1]),

[1] Glad hands are mechanical couplers that couple and seal pneumatic lines between the tractor and trailer without the need for using any tools.

- The solution shall work with all new and legacy trailers without a priori knowledge on the trailer attributes,

- The solution shall not rely on the operator's action or inaction,

- The solution shall not rely on the existence of or communication to a road-side equipment or require for new infrastructural changes,

- The determination accuracy shall be documented and be better than 2-sigma level (95.5%) in correctly identifying each subgroup within a given characteristics,

- The solution could depend on a reasonable learning period where estimation logic may need to take its course. However, the system shall provide a confidence metric and converge to a highly reliable determination within a reasonable amount of time. An example "reasonable time" would be from the vehicle power-up event to the vehicle reaching 20mph speed for the first time. This is not a golden rule but an example that can be used as guidance. Proposals that depend on a "learning period" shall discuss the reasonableness of the convergence requirements.

Research Plan:
The proposers should outline a sound technical approach that can address at least a subset of the trailer attributes classified as "high priority" within the context of this solicitation. Phase I work should result in a proof of concept for the proposed trailer attribute determination system.
During Phase II, the system will be developed to demonstrate the capability at the desired accuracy levels on real vehicles and a risk assessment plan will be carried out to address the potential failure modes and the corresponding ramifications for the intended uses of this solution.

Targeted Technology Readiness Level (TRL) for Phase I is "Basic Technology Research" (TRL 1 & 2) and "Research to Prove Feasibility" (TRL 2 & 3).

Notes:

- Roadside based solutions are NOT part of this solicitation. There is other research being carried out where trailer attributes can be measured via external devices and wirelessly communicated to the vehicle. Such proposals to this solicitation will not be considered.
    - Examples of such work are TDS Model 110 [3] and TDS Model 230 [4], as well as another SBIR 11.1 FH3 (closed). [5]

- The accuracy desired for the determination of the number of connected trailer units is 6-sigma level (99.9997%). However, projected accuracies of 2-sigma (95.5%) or better would be considered for Phase I evaluations [accuracy is implied for each subgroup characterization].

- Camera based solutions are often not well suited for this kind of research. While such technologies are not excluded from consideration, a proposer leveraging camera-based technologies shall address the common shortcomings of such technology such as their impairment by inclement weather, surface reflections, lens contamination, background interference, among others.

- Since existing connectivity between the tractor and the trailer(s) take place over the power line and the pneumatic line, the prospective proposers are encouraged to attempt to further leverage these mechanisms in conjunction with recent advances in electronics, computing, acoustics and nano-technology among others. An example technology that leverages power-line connectivity is power line carrier (PLC) for trucks [2].

- If the proposed technology is susceptible to vibration, the proposal should address how the technical approach will handle cab suspension.

- The proposers are responsible to investigate and disclose all trademarks, licensing needs and intellectual property rights that may be in place in relation to their proposals.

References:

1- Trucking 101, December 2010, http://onlinepubs.trb.org/onlinepubs/circulars/ec146.pdf
2- SAE specification J2497 for Power Line Carrier (PLC) use for Trailer ABS status
3- TDS Model 110, http://www.transportdatasystems.com/pdf/avc_model_110.pdf
4- TDS Model 230, http://www.transportdatasystems.com/pdf/avc_model_230.pdf
5- 11.1-FH3 Oversize Vehicle Detection and Warning System, http://www.volpe.dot.gov/sbir/sol11/topicsfull.html

National Highway Traffic Safety (NHTSA) Administration

11.2-NH1: Simulation Techniques for Studying Night Driving Effects on Driver Behavior

Human factors play a large role in crash causation, and are aggravated due to limited visibility under night driving conditions. Statistics show a large portion of crashes occurring during nighttime conditions, when limited visibility can aggravate the influence of other high risk factors (fatigue, distraction, age, impairment) [1]. Nighttime illumination conditions include head lighting, fixed luminaries, and the reflection properties of all elements in the visual field. Head lighting issues also include beam pattern, brightness and atmospheric scattering. Human factors considerations include the veiling glare produced inside the eye due to glare sources such as opposing headlights. The NHTSA uses simulation extensively to study human factors associated with crash causation, and providing nighttime illumination conditions is important for comprehensive evaluation. This SBIR topic addresses the need for implementing night visibility conditions in simulation graphics rendering systems.

Rendering nighttime visibility conditions involves the location of light sources (head lighting, luminaries), modeling the reflective properties of elements in the roadway environment, and modeling the head lighting beam pattern and atmospheric scattering conditions [2, 3]. Glare effects occur in the eye and the typical brightness conditions of simulation displays are not able to reproduce the high brightness of opposing headlights. Therefore the glare effect must also be simulated [4].

Phase I will address rendering simulated nighttime visibility conditions including:

1. Head lighting including beam pattern, atmospheric scattering and simulated glare of opposing headlights

2. Defining the reflection properties of roadway elements including the road surface, road markings, other vehicles and signs and retro reflective delineation

3. Fixed luminaries

Expected Phase I Outcome: Demonstrate the ability to render static nighttime scenes including all of the above effects.

Expected Phase II Outcome: Implementing the nighttime rendering system in a low cost driving simulation suitable for economical human factors studies.

References

1. Passenger Vehicle Occupant Fatalities by Day and Night – Contrast, DOT HS 810 637 http://www-nrd.nhtsa.dot.gov/Pubs/810637.PDF
2. S. Espié, E. Follin, G. Gallée, D. Ganieux, J-M. Hespert, "Automatic Road Networks Generation Dedicated to Night Time Driving Simulation": Proceedings of the DSC-NA'03 Conference October 8-10, 2003 - DEARBORN, Michigan http://www.nads-sc.uiowa.edu/dscna07/dscna_cd2003/papers/Espie_Automatic%20Road%20Networks%20Generation%20Dedicated....pdf
3. P. Lecocq, J-M. Kelada, A. Kemeny "Interactive Headlight Simulation": Proceedings of the DSC'99 Conference July 7-8, 1999 – PARIS http://www.experts.renault.com/DSC99/papers/P25.PDF

4. Matthew Fullerton1,2,3 and Eli Peli1, "Development of a System to Study the Impact of Headlight Glare in A Driving Simulator," Proceedings of the Fifth International Driving Symposium on Human Factors in Driver Assessment, Training and Vehicle Design http://www.eri.harvard.edu/faculty/peli/papers/DAC%2009%20Glare%20Fullerton.pdf

Pipeline and Hazardous Materials Safety (PHMSA) Administration

11.2- PH1: Examination of HM Portable Tanks within Transportation System

Portable tanks are used in various transportation systems throughout the entire world. They are used interchangeably for the transportation of hazardous materials. These types of hazardous materials packages are placed on cargo ships, trains and trucks to ensure the hazardous materials products are delivered in an efficient manner. The portable tanks are held in a carriage system that are placed in the bottom of cargo vessels and transferred on trains and or truck traveling hundreds to thousands of miles to its destination where it may be stacked on top of each other. This research will examine the forces and stress on these hazardous materials packages throughout the transportation system and assist the modes of transportation to determine what effects may occur during loading and unloading from mode to mode. In addition, what conditions the HM packages will experience while it is in control of that specific mode of responsibility. This research will in turn provide us with a means to improve the modal regulations, evaluate current test and inspections methods and collect shipping experiences of these HM package characteristics in an intermodal freight environment.

Expected Phase I Outcomes:

The outcome expected from Phase I will be the development of the concepts for a prototype of a monitoring system. It will also develop technological methods to determine the forces and environments that a portable tank is exposed to when used to transport hazardous materials. This research will provide a recommendation(s) on what could be accomplished in Phase II of this research effort. This effort is for six (6) months, resulting in a final report of recommendation(s).

Expected Phase II Outcomes:

In Phase II, the developed technological concepts will be used within the transportation system to pilot the technology for a period of one year and determine the efficacy of the monitoring system. The determination of further development will be based upon the analysis and interpretation of the data collected.

Outcomes of Phase II efforts will involve the possibility of this technology being used on other HM packages and determining what additional characteristics affect other types of hazardous materials packages.

This research will support the Office of Hazardous Materials Safety's Engineering and Research Division's goal to ensure package integrity is held to the standards prescribe by the regulations. This research effort will afford the Department of Transportation's modes the ability to examine hazardous materials packages integrity in an "intermodal" environment.

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

APPENDIX A

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-11-R-SBIR2
FY11.2

PROPOSAL COVER SHEET

Project Title	
Research Topic No.	
Research Topic Title	
Submitted by:	Company Name
	Address
	City, State, Zip
Representations & Certifications	Central Contractor Registration Valid Until _____(Date) www.ccr.gov
	Online Representations and Certifications Valid Until _____(Date) https://orca.bpn.gov/login.aspx
Amount Requested $ (May be up to $150, 000 unless otherwise indicated)	
Proposed Duration (in months) (Not to exceed 6 months)	

By signing and submitting this coversheet under Solicitation No. DTRT57-11-R-SBIR.2, 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.C.

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. (For statistical purposes only.)

5. The above firm_____does_____does not / qualify as a women-owned small business as defined in Section II.D. (For statistical purposes only.)

6 The above firm_____does_____does not / qualify as a HUB Zone-owned and meet the definition as stated in this Section II. F (For statistical purposes only)

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?

By signing and submitting this proposal in response to Solicitation No. DTRT57-11-R-SBIR.2, 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 n 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)

APPENDIX B

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-11-R-SBIR2
FY11.2
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 words (eight maximum) description of the project useful in identifying the technology, research thrust, and/or potential commercial application.

APPENDIX C

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
CONTRACT PRICING PROPOSAL
FY11.2

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. If available:	
Tax Identification No. If available:	
To best of my knowledge and belief, cost and pricing data are accurate, complete, and current as of the date of signature below.	
THE COST PROPOSAL MUST BE SIGNED BY A RESPONSIBLE OFFICIAL OF THE FIRM. Printed Nme_____ Title_____ Signature_____ Date_____	

1	**Total Firm Fixed Price Proposal Amount**	$_____
2.	**Direct Material Costs**	
	a. Purchased Parts & Subcontracted Items	$_____

Description	Unit Price	Qty	Total

	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**	

Topic No:				
Offerors Project Title:				
Name of Offeror:				
	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 $_____
9	**Direct Costs: Special Testing** (Include field work at Government installations)			
	Item & Anticipated Use	Unit Cost		Estimated Cost
				$_____
				$_____
				$_____
				$_____
	Estimated Total Special Testing			$_____
10	**Direct Costs: Special Equipment**			
	Item & Anticipated Use	Unit Cost		Amount
				$_____
				$_____
				$_____
	Estimated Total Special Equipment			$_____
11	**Direct Costs: Travel**			
	Travel Location	Mode of Travel	# 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 Other Direct Costs			$_____
14	**Total Direct Costs** (TDC) (Sums of Line No. 9 – 13)			Amount
				$_____
15	**General & Administrative Expense** (Total Materials + Total Labor + Total ODC) x Rate)			

Topic No:			
Offerors Project Title:			
Name of Offeror:			
		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	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 _____ _____		
21	Government property ____is _____is not required in the performance of this proposal? If yes, identify. _____ _____		
22	Government contract financing _____is, _____ is not required to perform this proposed contract? If yes, specify type as advanced payments or progress payments.		

APPENDIX D

U.S. DEPARTMENT OF TRANSPORTATION
SMALL BUSINESS INNOVATION RESEARCH PROGRAM
SOLICITATION NO. DTRT57-11-R-SBIR2
FY11.2
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.C).

____ 2. The proposal is 30 PAGES OR LESS in length. This limitation does not apply to the additional information required by Section III.G

____ 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 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 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.

____ 12. The proposal must be a PDF file and submitted online by 11:59 p.m., June 13, 2011. **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.** Instructions for online submission are included on the submission page.