United States
Department of
Agriculture

Cooperative State
Research, Education,
and Extension Service

Competitive Programs

SBIR-08-1

Program Solicitation

Small Business Innovation Research Program

Fiscal Year 2008

Phase I Closing Date: September 12, 2007

Telephone: 202-401-4002
Email: sbir@csrees.usda.gov
Internet: www.csrees.usda.gov/fo/sbir

Catalog of Federal Domestic Assistance Number (CFDA)
10.212 Small Business Innovation Research

CSREES Funding Opportunity Number
USDA-CSREES-SBIR-000891

CONTENTS

Acronym List

ADO – Authorized Departmental Officer
AOR – Authorized Organizational Representative
APHIS – Animal and Plant Health Inspection Service
AR – Authorized Representative

CCR – Central Contractor Registry
CFDA – Catalog of Federal Domestic Assistance
CFR – Code of Federal Regulations
COI – Conflict of Interest
CRADA – Cooperative Research and Development Agreement
CRIS – Current Research Information System
CSREES – Cooperative State Research, Education, and Extension Service

DHHS – Department of Health and Human Services
DUNS – Data Universal Number System

E-Business POC - E-Business Point of Contact

F&A – Facilities and Administration
FR – Federal Regulation
FY – Fiscal Year

HUBZONE – Historically Underutilized Business Zone

M-PIN – Marketing Partner Identification Number

NPL – National Program Leader
NRI – National Research Initiative

PD – Project Director
PDF – Portable Document Format
PI – Principle Investigator
PMS – Payment Management System
POC – Point of Contact
PRS – Peer Review System

R/R&D – Research or Research and Development
R&D – Research and Development
R&R – Research and Related
RFA – Request for Applications

SBA – Small Business Administration
SBC – Small Business Concern
SBIR – Small Business Innovation Research
STTR – Small Business Technology Transfer Program

U.S. – United States
USDA – United States Department of Agriculture

The Program Solicitation may be downloaded from the USDA SBIR Web Page:

www.csrees.usda.gov/fo/sbir

********** PLEASE READ **********

IMPORTANT CHANGES IN THE USDA SBIR Fiscal Year (FY) 2008 PROGRAM SOLICITATION

Proposed research must be responsive to one of the USDA program interests as stated in the research topic area descriptions of this solicitation, see section 8.0. The USDA does not prioritize between research topic areas. Applicants are encouraged to submit applications that focus on the research topic areas identified in this RFA. Applicants should pay attention to specific instructions located within each of the topic areas, section 8.0, when developing their applications.

The USDA SBIR Program requires all FY 2008 applications be submitted electronically through Grants.gov. This SBIR program funding opportunity is for Phase I applications and has a closing date of September 12, 2007.

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF). APPLICATIONS THAT DO NOT FOLLOW THE GUIDELINES FOR ATTACHMENTS ARE NOT ELIGIBILE TO BE CONSIDERED FOR A PHASE I SBIR AWARD AND WILL BE RETURNED WITHOUT REVIEW;**
- Applicants must allow additional time for electronic submission and plan ahead;
- **Please note, individual proprietorships, i.e. farmers, ranchers, etc., must register with Grants.gov as organizations, not as individuals.**
- **Please note, within the Grants.gov forms, applicants will be asked to submit information relevant to specific "programs you are applying for." This refers to the "topic area," see section 8.0, to which you are submitting your USDA SBIR application.**
- Information about the forms and submission requirements for Grants.gov can be found in section 3.0 and in the Grants.gov guide that accompanies the forms on Grants.gov;
- Applications must be submitted via Grants.gov by 5:00 p.m. Eastern Time, on the Phase I deadline as indicated under section 6.1 of this program solicitation; and
- Applicants who have problems with their submissions to Grants.gov are encouraged to call the Grants.gov help desk to help resolve the problems and keep a record of any correspondence with Grants.gov regarding the submission problem.

Helpful Information for Submission	Website Address
Information pertaining to the transition to electronic submission can be found at the CSREES website.	www.csrees.usda.gov/funding/electronic This page will be updated frequently and should be checked for program-specific help.
Applications should be submitted through the Grants.gov website.	Grants.gov
The **CSREES GRANTS.GOV Application Guide** provides guidance for completing the forms required by Grants.gov and CSREES. Used in conjunction with the RFA, this guide will assist applicants with most field-specific questions.	Contained within the application package is the "CSREES Grants.gov Application Guide: A Guide for Preparation and Submission of CSREES Applications via Grants.gov." This Guide contains an introduction and general Grants.gov instructions, information about how to use a Grant Application Package in Grants.gov, and instructions on how to complete the application forms. **Applicants should reference the RFA for additional guidance not found in the application guide.**

If you have any questions related to preparing application content, contact:
Email: electronic@csrees.usda.gov
Phone: 202-401-5048, Business hours are M-F, 7:00 am – 5 pm ET, excluding Federal holidays.

If you have any questions related to Grants.gov content, contact:
Email: support@grants.gov
Toll Free: 1-800-518-4726, Business hours are M-F, 7:00 am – 9 pm ET, excluding Federal holidays.

If you do not own PDF-generating software, Grants.gov provides online tools to assist applicants. On the Grants.gov Customer Support webpage (http://grants.gov/CustomerSupport) users will find a link to "Convert Documents to PDF" (http://grants.gov/assets/PDFConversion.pdf). PDF documents submitted as a part of the application must also adhere to the following guidelines:

- margins not less than 1"or 2.5 cm on all sides;
- type at least 12 point font size regardless of whether it is single or double spaced; and
- Font type should be "Times New Roman, Geneva, Helvetica, Arial or equivalent."

APPLICATIONS RECEIVED AFTER THE SPECIFIED CLOSING DATE OR NOT RESPONDING TO RESEARCH TOPIC AREAS OUTLINED IN SECTION 8.0 OR NOT IN COMPLIANCE WITH APPLICATION GUIDELINES OF THIS PROGRAM SOLICITATION ARE NOT ELIGIBLE TO BE CONSIDERED FOR A PHASE I SBIR AWARD AND WILL BE RETURNED TO THE APPLICANT WITHOUT REVIEW.

********** PLEASE READ **********

USDA recognizes **Agriculturally-related Manufacturing Technology** and **Alternative and Renewable Energy** as two cross-cutting priorities with relevance to all topic areas described in Section 8.0 of this RFA. USDA encourages applicants—as appropriate—to address these priorities within their proposals for submission to one of the topic areas described in Section 8.0. Special consideration of applications that address one of these priorities may be provided, so long as the proposal is responsive to one of the topic areas described in this RFA.

Agriculturally-related Manufacturing Technology

On February 26, 2004 The President issued Executive Order 13329 (69 FR 9181) entitled "Encouraging Innovation in Manufacturing." In response to this Executive Order, USDA encourages the submission of applications that deal with some aspect of agriculturally-related manufacturing technology (Section 2.17). Since manufacturing impacts all aspects of agriculture and rural development, applications dealing with manufacturing could be submitted to any of the topic areas. If an application has a connection to manufacturing this should be indicated in section (2) of the project narrative (the project narrative is included as an attachment in Field 7 of the R&R Other Project Information from) and a brief explanation of how it is related to manufacturing should be provided.

Alternative and Renewable Energy

In an effort to reduce the Nation's dependence on fossil fuels, the USDA has established research on alternative and renewable energy as a high priority. The research may include development of new energy crops, improved methods for producing biofuels, such as ethanol and biodiesel, producing hydrogen and other fuel gases from agricultural waste and more efficiently using energy in agricultural production and in rural communities. Energy issues impact all aspects of agriculture and rural development, and thus applications dealing with alternative and renewable energy could be submitted to a variety of topic areas. If a proposal has a connection to alternative and renewable energy, this should be indicated in section (2) of the project narrative (the project narrative is included as an attachment in Field 7 of the R&R Other Project Information form) and a brief explanation should be included indicating how the proposed research is related to alternative and renewable energy.

USDA'S PROGRAM SOLICITATION
SMALL BUSINESS INNOVATION RESEARCH
FISCAL YEAR 2008

1.0 GENERAL PROGRAM DESCRIPTION

1.1 Introduction

The U.S. Department of Agriculture (USDA) invites science-based small business firms to submit research applications under this program solicitation entitled "Small Business Innovation Research Program (SBIR), Fiscal Year 2008." Firms with strong scientific research capabilities in any of the topic areas described in section 8.0 are encouraged to participate. USDA will support high-quality research or research and development (R/R&D) applications containing advanced concepts related to important scientific problems and opportunities that could lead to significant public benefit.

Objectives of the SBIR program include stimulating technological innovation in the private sector, strengthening the role of small businesses in meeting Federal research and development needs, increasing private sector commercialization of innovations derived from USDA-supported research and development efforts and fostering and encouraging participation by women-owned and socially and economically disadvantaged small business firms in technological innovation.

1.2 Three-phase Program

The USDA SBIR program is carried out in three separate phases. Phase I is to determine the scientific or technical feasibility of ideas submitted by applicants on research topic areas described in section 8.0 of this solicitation. **This program solicitation is only for the preparation and submission of Phase I applications.** Phase I awards may not exceed $80,000 for a period normally not to exceed 8 months. However, longer grant periods, up to 20 months, may be considered (See section 4.2(E)). The Phase I application should concentrate on research that will significantly contribute to **proving the scientific or technical feasibility** of the approach or concept and will be a prerequisite to further USDA support in Phase II.

Phase II applications promote principal R/R&D and will require a more comprehensive application, outlining the proposed effort in detail. At the appropriate time, the SBIR Program will send a letter to Phase I awardees eligible to submit Phase II applications with instructions for preparing these applications and a deadline date (normally early February of each year) for submitting applications. USDA recognizes that Phase II awards may not be sufficient in either dollars or time for the firm to complete the total R/R&D required to bring the project results to commercialization in the market place. Therefore, completion of the research under these circumstances may have to be carried into Phase III.

The purpose of Phase III is to stimulate technological innovation and the national return on investment from research through the pursuit of commercialization objectives resulting from the USDA-supported work carried out in Phases I and II. No Federal SBIR funds may be used to support Phase III projects. However, firms are strongly encouraged to secure Phase III funding from their own resources or from other public and private sources. Additionally, Phase III is to be conducted by the small business firm, including joint ventures and limited partnerships.

This program solicitation is issued pursuant to the Small Business Innovation Development Act of 1982, Pub. L. No. 97-219, as amended (15 U.S.C. 638) and Section 630 of the Act making appropriations for Agriculture, Rural Development and Related Agencies' programs for fiscal year ending September 30, 1987 and for other purposes, as made applicable by Section 101(a) of Pub. L. No. 99-591, 100 Stat. 3341.

This program is administered by the Cooperative State Research, Education, and Extension Service (CSREES) of the USDA.

This program is subject to the provisions found at 7 CFR Part 3403. These provisions set forth procedures to be followed when submitting grant applications, rules governing the evaluation of applications and the awarding of grants and regulations relating to the post-award administration of grant projects. Changes have been made to the provisions and incorporated into this solicitation. These changes were subject to the comments provided in response to the Small Business Innovation Research Grants Program – Final Rule (7 CFR Part 3403, April 26, 2007).

This SBIR program funding opportunity for FY 2008 Phase I applications has a closing date of September 12, 2007.

1.3 Potential Commercial Outcome

In addition to supporting scientific research and development, the programs primary goal is to provide incentive and opportunity for small business firms to convert USDA-sponsored research to technological innovation in the private sector. All proposed research should have some potential commercial outcome. Phase I applications should contain a brief description of any potential commercial application(s) and whether or not the small business firm will attempt to secure follow-on, non-SBIR funding to pursue the commercial development of the expected products from the proposed research (See Section 3.3.2 R&R Other Project Information (10) – Potential Post Application).

1.4 Eligibility

Each applicant submitting an application must qualify as a small business concern for R/R&D purposes at the time of award, see definitions in section 2.0. A potential grantee that is a subsidiary must show that the parent company is also a small business entity and the parent company must provide documentation supporting their small business status (the documentation should be included in Field 11, Other Attachments, of the Research and Related (R&R) Other Project Information form). If the parent company is not a small business entity, then the subsidiary is not eligible to submit an SBIR application. In addition, the primary employment of the project director must be with the small business concern at the time of award and during the conduct of the proposed research, unless otherwise approved in writing by the USDA funding agreement officer after consultation with the appropriate National Program Leader (NPL). Primary employment means that more than one-half of the project director's time is spent in the employ of the small business. Primary employment with the small business precludes the applicant as a full-time employee with another organization. This requirement applies to Phase I awards. Any deviations from this requirement must be approved in writing by the funding agreement officer after consultation with the appropriate NPL. While the PD must work more than one-half of his/her time for the small business during the entire grant period, there is no minimal time requirement for what percentage of the PD's time is spent working on the proposed research.

To be eligible to receive awards from the USDA's SBIR program, a business concern must meet the requirements of paragraphs (A) and (B) below:

(A) Ownership and control.

1. An SBIR awardee must;

    a. Be a concern which is 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. Be a concern which is 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. Be a joint venture in which each entity to the venture must meet the requirements set forth in either paragraphs (A)(1)(a) or (A)(1)(bi) of this section.

2. If an Employee Stock Option Plan owns all or part of the concern, USDA considers each stock trustee and plan member to be an owner.

3. If a trust owns all or part of the concern, USDA considers each trustee and trust beneficiary to be an owner.

(B) Size.

An SBIR awardee, together with its affiliates, must not have more than 500 employees. The small business concern must be the primary performer of the proposed research effort. In Phase I, a minimum of **two-thirds** of the research or analytical work, as determined by budget expenditures, must be performed by the proposing organization.

Also, for Phase I, the R/R&D work must be performed in the United States. On rare and unique circumstance, for example, a supply, material or project requirement not available in the United States, agencies may allow that particular portion of the R/R&D work be performed or obtained in a country outside of the United States. Approval, in writing, is necessary by both the responsible NPL and the funding agreement officer for such specific conditions.

1.5 Agency Contacts

Applicants and other interested parties are encouraged to contact the SBIR NPL indicated for more information about each topic area listed below.

Dr. Peter Burfening (pburfening@csrees.usda.gov)
Telephone: (202) 401-5823
Fax: (202) 401-6070
8.3 Animal Production and Protection

Dr. Charles Cleland (ccleland@csrees.usda.gov)
Telephone: (202) 401-6852
Fax: (202) 401-6070
8.1 Forests and Related Resources
8.4 Soil and Water Resources
8.7 Aquaculture
8.12 Small and Mid-Size Farms

Dr. William Goldner (wgoldner@csrees.usda.gov)
Telephone: (202) 401-1719
Fax: (202) 401-6070
8.2 Plant Production and Protection - Biology
8.8 Biofuels and Biobased Products
8.13 Plant Production and Protection - Engineering

Dr. Richard Hegg (rhegg@csrees.usda.gov)
Telephone: (202) 401-6550
Fax: (202) 401-6070
8.11 Animal Manure Management

Dr. Siva Sureshwaran (ssureshwaran@csrees.usda.gov)
Telephone: (202) 720-7536
Fax: (202) 401-6070
8.6 Rural Development
8.9 Marketing and Trade

Dr. Dionne Toombs (dtoombs@csrees.usda.gov)
Telephone: (202) 401-2138
Fax: (202) 401-6070
8.5 Food Science and Nutrition

Questions of a general nature about this SBIR solicitation should be sent to sbir@csrees.usda.gov or can be directed to:

Mr. Scott Dockum (sbir@csrees.usda.gov)
Telephone: (202) 401-4002 or (202) 401-4995
Fax: (202) 401-6488
Program Specialist – Small Business Innovation Research (SBIR)

2.0 DEFINITIONS

The following definitions apply for purposes of this solicitation:

2.1 Ad hoc Reviewers

Experts or consultants, qualified by training and experience in particular scientific or technical fields, solicited to render advice on the scientific technical merit of grant applications on an individual basis. Written evaluations of reviewed applications will be submitted for review.

2.2 Applicant

The organizational entity that, at the time of award, will qualify as a small business concern and that submits a grant application for a funding agreement under the SBIR Program.

2.3 Authorized Departmental Officer

The authorized departmental officer (ADO) is the Secretary or any employee of the Department who has the authority to issue or modify grant instruments on behalf of the Secretary. The ADO is also referred to as the Funding Agreement Officer.

2.4 Authorized Organizational Representative

The authorized organizational representative (AOR) is the president, director, chief executive officer or other designated official of the applicant small business concern who has the authority to commit the resources of the organization. **Note: AOR is referred to as Authorized Representative (AR) on the grants.gov SF-424 (R&R forms).**

2.5 Budget Period

Each project is divided into different intervals of time for budgetary and reporting purposes.

2.6 Commercialization

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

2.7 CSREES

The Cooperative State Research, Education, and Extension Service.

2.8 Department

The U. S. Department of Agriculture.

2.9 Essentially Equivalent Work

Occurs when (1) substantially the same research is proposed for funding in more than one grant application submitted to the same Federal agency; (2) substantially the same research is submitted to two or more different Federal agencies for review and funding consideration; or (3) a specific research

objective and the research design for accomplishing an objective are the same or closely related in two or more applications or awards, regardless of the funding source.

2.10 Funding Agreement

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

2.11 Grant

A financial assistance mechanism providing money, property or both to an eligible entity to carry out the approved project or activity. Substantial programmatic involvement by Government is not anticipated.

2.12 Grantee

The small business concern designated in the grant award document as the responsible legal entity to whom the grant is awarded under this part. Also referred to as an "awardee."

2.13 Historically Underutilized Business Zone (HUBZone)

A small business concern meeting the following criteria:

(A) Located in a "historically underutilized business zone" or HUBZone area located in one or more of the following:

(1) A qualified census tract (as defined in section 42(d)(5)(C)(i)(l) of the Internal Revenue Code of 1986); or
(2) A qualified "non-metropolitan county" (as defined in section 143(k)(2)(B) of the Internal Revenue Code of 1986); or
(3) On an Indian Reservation- Land within the boundaries of a Federally recognized Indian Reservation.

(B) Owned and controlled by one or more U.S. Citizens; and

(C) At least 35% of its employees must reside in a HUBZone.

2.14 Innovation

A new or improved item having marketable potential including (1) development of new technologies, (2) refinement of existing technologies or (3) development of new applications for existing technologies.

2.15 Intellectual Property

The separate and distinct types of intangible property that are referred to collectively as "intellectual property," including but not limited to: patents, trademarks, copyrights, trade secrets, SBIR technical data (as defined in this section), ideas, designs, know-how, business, technical and research methods, other types of intangible business assets and all types of intangible assets either proposed or generated by a small business concern as a result of its participation in the SBIR Program.

2.16 Joint Venture

An association of concerns with interests in any degree or proportion by way of contract, express or implied, consorting to engage in and carry out a single specific business venture for joint profit, for which purpose they combine their efforts, property, money, skill or knowledge, but not on a continuing or permanent basis for conducting business generally. A joint venture is viewed as a business entity in determining power to control its management.

2.17 Manufacturing Related

Encompasses improvements in existing methods or processes or as well as wholly new processes, machines or systems. Four main areas include:

(A) Unit process level technologies that create or improve manufacturing processes, including:

1. Fundamental improvements in existing manufacturing processes that deliver substantial productivity, quality or environmental benefits; or
2. Development of new manufacturing processes, including new materials, coatings, methods and associated practices.

(B) Machine level technologies that create or improve manufacturing equipment, including:

1. Improvements in capital equipment that create increased capability, such as accuracy or repeatability, increased capacity through productivity improvements or cost reduction or increased environmental efficiency, such as safety, energy efficiency, environmental impact; or
2. New apparatus and equipment for manufacturing, including additive and subtractive manufacturing, deformation and molding, assembly and test, semiconductor fabrication and nanotechnology.

(C) Systems level technologies for innovation in the manufacturing enterprise, including:

1. Advances in controls, sensors, networks and other information technologies that improve the quality and productivity of manufacturing cells, lines, systems and facilities;
2. Innovation in extended enterprise functions critical to manufacturing, such as quality systems, resource management, supply change integration and distribution, scheduling and tracking; or
3. Technologies that enable integrated and collaborative product and process development, including computer-aided and expert systems for design, tolerancing, process and materials selection, life-cycle cost estimation, rapid prototyping and tooling.

(D) Environment or societal level technologies that improve workforce abilities, productivity and manufacturing competitiveness, including:

1. Technologies for improved workforce health and safety, such as human factors and ergonomics; or
2. Technologies that aid and improve workforce manufacturing skill and technical excellence, such as educational systems incorporating improved manufacturing knowledge and instructional methods.

2.18 Outcomes

The measure of long-term, eventual program impact.

2.19 Outputs

The measures of near-term program impact.

2.20 Peer Review Group

Experts or consultants, qualified by training and experience in particular scientific or technical fields, that provide advice on the scientific and technical merit of grant applications. The group assembles to discuss and evaluate all of the eligible applications submitted to this program in their area of expertise.

2.21 Principal Investigator/Project Director (PI/PD)

The one individual designated by the applicant to provide the scientific and technical direction to a project supported by the funding agreement.

2.22 Professional Employer Organization

An organization that provides an integrated approach to the management and administration of the human resources and employer risk of its clients, by contractually assuming substantial employer rights, responsibilities and risk, through the establishment and maintenance of an employer relationship with the workers assigned to its clients.

2.23 Program Solicitation

A formal request for applications whereby a Federal agency notifies the small business community of its research or Research and Development (R&D) needs and interests in broad and selected areas as appropriate to the agency and requests applications from small business concerns in response to these needs and interests.

2.24 Prototype

A model of something to be further developed, which includes designs, protocols, questionnaires, software and devices.

2.25 Project period

The total length of time approved by the Department for conducting the research project as outlined in an approved grant application.

2.26 Research or Research and Development (R/R&D)

R/R&D means any activity which is:

(A) A systematic, intensive study directed toward greater knowledge or understanding of the subject studied;
(B) A systematic study directed at applying new knowledge to meet a recognized need; or
(C) 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.

2.27 Research Project Grant

The award by the Department to a grantee to assist in meeting the costs of conducting an identified project, which is intended and designed to establish, discover, elucidate or confirm information or the underlying mechanisms relating to a research topic area identified in the annual solicitation of applications.

2.28 SBIR Participants

Business concerns that have received SBIR awards or that have submitted SBIR applications/applications.

2.29 SBIR Technical Data

All data generated during the performance of an SBIR award.

2.30 SBIR Technical Data Rights

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

2.31 Small Business Concern (SBC)

SBC means a concern that, on the date of award for Phase I funding agreements:

(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 the 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 foreign business entities in the joint venture;

(3) is at least 51 percent owned and controlled by one or more individuals who are citizens of or permanent resident aliens in, the United States, except in the case of a joint venture, where each entity in the venture must be 51 percent owned and controlled by one or more individuals who are citizens of or permanent resident aliens in the United States; and

(4) has, including its affiliates, not more than 500 employees. The term “affiliates” is defined in greater detail in 13 CFR 121.103. The term “number of employees” is defined in 13 CFR 121.106.

2.32 Small and Mid-Size Farms

Small Farms are defined as farms or ranches with less than $250,000 in annual agricultural sales. Mid-Size Farms are defined as farms or ranches with less than $500,000 in annual agricultural sales.

2.33 Socially and Economically Disadvantaged Small Business Concern

A socially and economically disadvantaged small business concern is one:

(A) Which is at least 51 percent owned by (i) an Indian tribe or a native Hawaiian organization or (ii) one or more socially and economically disadvantaged individuals and

(B) Whose management and daily business operations are controlled by one or more socially and economically disadvantaged individuals.

For purposes of this solicitation, a socially and economically disadvantaged individual is defined as a member of any of the following groups: Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Subcontinent Asian Americans, other groups designated from time to time by the Small Business Administration (SBA) to be socially disadvantaged or any other individual found to be socially and economically disadvantaged by the SBA pursuant to Section 8(a) of the Small Business Act, 15 U.S.C. 637(a).

Note: The certification of socially and economically disadvantaged small business is for statistical purposes only.

2.34 Subcontract

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

2.35 United States

United States means the 50 states, the territories and possessions of the Federal Government; the Commonwealth of Puerto Rico; the District of Columbia; the Republic of the Marshall Islands; the Federated States of Micronesia; and the Republic of Palau.

2.36 Women-owned Small Business Concern

A women-owned small business concern is one:

(A) Which is at least 51 percent owned by one or more women and

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

Note: Certification of women-owned small business is for statistical purposes only.

3.0 APPLICATION PREPARATION INSTRUCTIONS AND REQUIREMENTS

3.1 Application Requirements

Applications must address only scientific research activities. **A small business must not propose technical assistance, demonstration projects, classified research, or patent applications**. Many of the research projects supported by the SBIR program lead to the development of new products based upon the research results obtained during the project. However, projects that seek funding solely for product development where no research is involved i.e. the funds are needed to permit the development of a product based on previously completed research, will not be accepted. Research may be carried out through the construction and evaluation of a laboratory prototype, where necessary.

Literature surveys should be completed prior to the Phase I submission of the application and should not be proposed as part of the R&D effort. Applications that deal principally with developing proven concepts for commercial markets or scaling up previously developed prototypes for commercial production should not be submitted. Such efforts are considered the responsibility of the private sector and therefore are not supported by USDA. An application must be limited to only one research problem.

Applicants may respond to any of the topic areas listed under section 8.0. The same application, however, may not be submitted under more than one topic area. The USDA SBIR program allows organizations to submit separate applications under different topic areas or different applications under the same topic area under this solicitation. Where similar research is discussed under more than one topic area, the applicant should choose the topic area whose description is most relevant to the applicant's research concept. Duplicate applications will be returned to the applicant without review.

The purpose of a research application is to provide a written statement that contains sufficient information to persuade members of the research community who review the application and then advise the USDA SBIR professional staff that the proposed research is a sound approach to an important scientific question and is worthy of support under the stated USDA evaluation criteria, see section 4.0. The application should be self-contained and written with the care and thoroughness accorded papers for publication. Each application should be reviewed carefully by the applicant prior to submission and by others knowledgeable on the subject to ensure inclusion of data essential for comprehensive evaluation.

3.2 USDA SBIR Application Submission Overview

For all FY 2008 applications, the USDA SBIR program will require electronic application submission through Grants.gov (www.grants.gov). Submission through Grants.gov requires the use of forms located at the Grants.gov website. Applications not submitted electronically and/or applications submitted using incorrect or old forms are not eligible to be considered for a Phase I SBIR award and will be returned without review.

Please note the USDA CSREES has developed specific tools to assist applicants in completing the RFA. Each applicant should use the CSREES document titled, "A Guide for Preparation and Submission of CSREES Applications via Grants.gov" also known as the "CSREES Application Guide," that is part of this RFA package located at Grants.gov. This document provides guidance for completing the required forms at Grants.gov.

Secondly, section 3.0 of this RFA provides additional information that is specific to the USDA SBIR program. Applicants are advised to refer to the RFA to determine if specific information is required during the submission of the forms on Grants.gov. If directed by this RFA to provide information that is different from the CSREES Application Guide, the information in the RFA supersedes in all cases.

To access the electronic application via Grants.gov, go to www.grants.gov, under the "Apply for Grants" heading on the left side of page and click on "Download Grant Application Packages." Enter the CFDA number, i.e. 10.212, in the appropriate box to search by Catalog of Federal Domestic Assistance (CFDA) number. **From the search results, select the item with CFDA number 10.212, Small Business Innovation Research.** Applicants can also access the appropriate page on Grants.gov by visiting the USDA SBIR funding opportunity page at http://www.csrees.usda.gov/fo/sbir. Clicking on the Funding Opportunity Number listed near the bottom of the page will link the applicant directly to the information and forms necessary to submit through Grants.gov.

Applicants must download the "PureEdge Viewer" software, which is a small, free program which will allow you to access, complete and submit applications electronically and securely on Grants.gov. For further information see http://www.grants.gov/DownloadViewer.

3.2.1 Resources

Online

There are considerable online resources to help potential applicants with the new forms and submission requirements. The "Get Started" tab on Grants.gov (www.grants.gov/GetStarted) provides information on registering your company with Grants.gov and the steps necessary to apply for a grant. A quick reference guide listing these steps is available as a 4-page PDF document at the following website: http://www.grants.gov/section910/Grants.govRegistrationBrochure.pdf.

In addition, CSREES has developed documentation to help navigate these new processes. The central point for all information related to the transition to electronic submission for the USDA SBIR program is www.csrees.usda.gov/funding/electronic. This site is updated frequently and it should be checked often for program-specific help concerning electronic submission of USDA SBIR grants. As stated above, one of the principal resources available is the CSREES Application Guide which provides guidance for completing the forms required by Grants.gov and CSREES. Used in conjunction with the program solicitation, this guide will assist applicants with most questions related to the fields located within each form.

Personalized

Questions about the registration process through Grants.gov, the PureEdge Viewer software, PDF files, completing and submitting electronically, or technical problems related to the Grants.gov website should be directed to Grants.gov staff. They can be reached by phone at **1-800-518-GRANTS** or via email at support@grants.gov.

Answers to field specific questions about the SF-424 (R&R) forms package should be found in either the program solicitation or the CSREES Application guide.

If you are unable to find the answer that you need, please send an email to electronic@csrees.usda.gov with your question. Make sure to identify the form name, the field number related to your question and state that you will be applying to the USDA SBIR program.

Any program-specific questions concerning the USDA SBIR program, such as the appropriateness of your proposed research or work plan, should be directed to the NPL responsible for the topic area where you wish to submit your application, see section 8.0. For general questions you can also contact the USDA SBIR office at sbir@csrees.usda.gov or 202-401-4002.

3.2.2 Registration Procedures for Companies and Individuals

The registration procedure for companies or individuals intending to submit a grant application through Grants.gov requires several steps and must be finished prior to submitting an application. **This is a one-time registration process. It can take as much as one month to complete so it is critical that companies begin this process as soon as possible.** Listed below are the steps necessary to submit an application through Grants.gov. More information about these steps is available at www.grants.gov/Register. A quick reference guide listing these steps is available as a 4-page PDF document at the following website:
http://www.grants.gov/section910/Grants.govRegistrationBrochure.pdf.

STEP 1 – Register Your Organization

Obtain your organization's Data Universal Number System (DUNS) number

A DUNS number is a unique number that identifies an organization. It has been adopted by the Federal government to help track how Federal grant money is distributed. If your organization does not have a DUNS number, call the special Dun & Bradstreet hotline at 1-866-705-5711 to receive one free of charge. You will receive a DUNS number at the conclusion of the phone call. **Please note, individual proprietorships, i.e. farmers, ranchers etc., can request and receive a DUNS number but must register with Grants.gov as an organization, not as an individual.**

Register your organization with Central Contractor Registry (CCR)

The CCR is the central government repository for organizations working with the Federal government. If your organization is not already registered, identify the primary contact who should register your organization. When your organization registers with CCR, it will be required to designate an E-Business Point of Contact (E-Business POC). The E-Business POC authorizes individuals to submit grant applications on behalf of the organization and creates a special password called a Marketing Partner ID Number (M-PIN) to verify individuals authorized to submit grant applications for the organization. Visit the CCR website at http://www.ccr.gov to begin this process. It may take a couple of days for you to collect the information needed for your organization's registration. The CCR Assistance Center can be reached at 888-227-2423.

STEP 2 – Register an AOR for your Company

Obtain your username and password

In order to safeguard the security of your electronic information, and to submit a Federal grant application via Grants.gov, you must first obtain a username and password from the Grants.gov Credential Provider. Register with Grants.gov's Credential Provider at http://www.grants.gov/Register1. You will need to enter your organization's DUNS number to access the registration form. Once you complete the registration form you will be given your username and you will create your own password.

Register with Grants.gov

After obtaining your username and password, allow 30 minutes for your data to transfer from the Credential Provider. Register with Grants.gov to set up a short AOR profile. Visit http://www.grants.gov/Register2 to register your username and password and set up your profile. You will only be authorized for the DUNS number that you register in your Grants.gov profile.

STEP 3 – Get Yourself Authorized as an AOR

Obtain your E-Business POC authorization

After your AOR profile is completed, your organization's E-Business POC will receive an email regarding your requested AOR registration with links and instructions to authorize you as an AOR. Instruct your E-Business POC to login to Grants.gov at http://www.grants.gov/ForEbiz and enter your organization's DUNS number and M-PIN. The E-Business POC will be authorized as an AOR and will be the individual verified to submit grant applications. You can check your AOR status by logging in to Grants.gov at http://www.grants.gov/ForApplicants.

3.2.3 Special Considerations

Attachment Format – (PDF Format is Required)

USDA SBIR electronic application submissions consist of forms (viewed, completed, and submitted through the Grants.gov PureEdge Viewer) and attachments. **THE USDA SBIR PROGRAM WILL ONLY ACCEPT ATTACHMENTS IN PDF.**

If you do not own PDF-generating software, Grants.gov provides online tools to assist applicants. On the Grants.gov Customer Support webpage (http://grants.gov/CustomerSupport), users will find a link to "Convert Documents to PDF" (http://grants.gov/assets/PDFConversion.pdf). PDF documents submitted as a part of the application must also adhere to the following guidelines:

- **margins not less than 1"; 2.5 cm all sides**
- **type at least 12 point font size regardless of whether it is single or double spaced.**
- **Font type should be Times New Roman, Geneva, Helvetica, Arial or equivalent.**

Applications that do not follow the guidelines for attachments stated above are not eligible to be considered for a Phase I SBIR award and will be returned without review.

Page Limitations

Applications submitted electronically via Grants.gov consist of forms and PDF attachments. Consequently, the page limitations for application sections found in previous USDA SBIR solicitations no longer apply. **Page limitations for attachments need to be followed, see section 3.3. Applications that do not follow the page limits outlined in section 3.3 are not eligible to be considered for a Phase I SBIR award and will be returned without review.**

Changes, Additions or Corrections

Modifications to the application will not be accepted after the closing date of this RFA. Under some circumstances, changes, additions, or corrections may be necessary to an application submitted to the USDA SBIR program via Grants.gov before the specified RFA closing date. Modifications to applications will require a resubmission of the application package and the applicant must notify the NPL, see section 8.0, of the intent to re-submit. **Submitting changes to Grants.gov without contacting the NPL could significantly delay your application submission and may result in the application being returned without review.**

3.3 Application Guidelines

Those who wish to submit an application to the USDA SBIR program should submit the following components and associated attachments via Grants.gov (see Table 1).

Table 1: Components of a CSREES SBIR Application

Document	Required	Optional	Do Not Use	Instructions
R&R SF 424 Cover Sheet	✔			See Application Guide
R&R Other Project Information	✔			See Application Guide
R&R Senior/Key Person (Expanded)	✔			See Application Guide
R&R Personal Data	✔			See Application Guide
R&R Budget	✔			See Application Guide
R&R Subaward Budget Attachment	✔			See Application Guide
Supplemental Information	✔			See Application Guide
SBIR/Small Business Technology Transfer Program (STTR) Information	✔			See RFA

Commercialization Plan (Phase II only)			✔	See RFA
Documentation of Prior SBIR Phase II Awards	✔			See RFA
NRI Proposal Type Form			✔	See Application Guide
Application Modification Form			✔	See Application Guide

If there is a discrepancy between the RFA and the CSREES Application Guide, the information contained in this program solicitation is overriding. Not all fields are referenced in the RFA, only those where information beyond that provided by the CSREES Application Guide is necessary.

Field specific instructions listed below provide additional information for the appropriate form. Page limitations indicated in bold are appropriate for a given section/attachment.

It is not necessary to provide a lengthy discourse on commercial applications in the Phase I application except to discuss them briefly under subsection 3.3.2 (item 5 of Field 7), as appropriate, as well as under subsection 3.3.2 (item 8 of Field 7). The Phase I application must be principally directed at feasibility-related research or R&D on the specific topic chosen.

The following instructions apply for Phase I applications, unless otherwise noted.

3.3.1 SF-424 R&R Cover Sheet

Field 2. Applicant Identifier – This field is provided for the Applicant's use if they have an internal tracking system they would like to use in tracking applications they have submitted. This field is not required.

Field 3. Date received by State and **State Application Identifier** – This is not applicable for USDA SBIR applications and these fields do not need to be completed.

Field 5. Applicant Information – Provide all required information per the CSREES Application Guide. **Please note: the USDA SBIR program's official correspondence will be with either the PD or AOR.**

Field 13. Proposed Project Start Date and End Date – The proposed duration of Phase I projects should normally not exceed 8 months, except in special, justified circumstances. Where a proposed research project requires more than 8 months to complete in Phase I, a longer grant period, not to exceed 20 months, may be considered. An applicant of a Phase I project with an anticipated duration beyond 8 months should specify and justify the length of duration in the application at the time of its submission to USDA in order for it to be considered. In most circumstances, the following dates should be used for these fields:

	Start	**End**
Phase I	5/1/2008	12/31/2008

Field 17. Is this Application Subject to Review by State Executive Order 12372 Process – Check "No." The USDA SBIR program is not covered by State Executive Order 12372.

Field 18. Complete Certification – Please refer to the CSREES Application guide for information on the Certifications that are being agreed to by checking this box. Included in the Certifications is the Statement as to Delinquency on Federal Debts. Statement as to Delinquency on Federal Debts by Applicants for Federal Assistance - Pursuant to OMB Circular A-129, (implemented by USDA in 7 CFR Part 3), "Except where required by law or approved by the head of the agency, no award of Federal funds shall be made to an applicant who is delinquent on a Federal debt until the delinquent account is made current or satisfactory arrangements are made between affected agencies and the debtor." The certification of non-delinquency applies only to the organization requesting financial assistance and not to the individual project director. By checking the Complete Certification box, the applicant is providing the statement of non-delinquency on any Federal debt. For the purposes of this statement, the following definitions of delinquency apply:

(1) Direct loans - a debt more than 31 days past due on a scheduled payment.
(2) Grants - recipients of a "Notice of Grants Cost Disallowance" who have not repaid the disallowed amount or who have not resolved the disallowance.
(3) Guaranteed and insured loans - recipients of a loan guaranteed by the Federal Government that the Federal Government has repurchased from a lender because the borrower breached the loan agreement and is in default.

Examples of debts include delinquent taxes, audit disallowances, guaranteed and direct student loans, housing loans, farm loans, business loans, Department of Education institutional loans, benefit overpayments, and other miscellaneous administrative debts.

NOTE: An applicant that is delinquent on Federal debts must attach in PDF format in Field 11 Other Attachments, explanatory information detailing all relevant particulars concerning the Federal debt.

Field 20. Pre-application – This is not applicable to the USDA SBIR program. No attachments should be added.

3.3.2 R&R Other Project Information

Field 6. Project Summary/Abstract - (PDF Format is Required)

1 page

The technical abstract should be approximately 350 words, include a brief description of the problem or opportunity, project objectives, and a description of the effort. Provide another paragraph discussing the anticipated results and potential commercial applications of the proposed research. **The project summary/abstract of successful applications may be published by USDA and, therefore, should not contain proprietary information.**

Field 7. Project Narrative - (PDF Format is Required)

Phase I: 16 pages

(1) Response to Previous Review – This is only required if you are submitting an application in which the project described was previously submitted to the SBIR program, but not funded. Please provide a clear statement acknowledging comments to the previous review, indicating

revisions, rebuttals, etc. This response is a critical part of the evaluation criteria as noted in subsection 4.3(F). Furthermore, the revised application should clearly indicate the changes that have been made in the project. Make sure to include the application number of the previous submission at the top of this section.

(2) Responsiveness to USDA SBIR Program Priorities – Please indicate if the application has a connection to agriculturally-related manufacturing technology or alternative and renewable energy, see section 8.0. Provide a brief explanation of how the application is related to the area indicated.

(3) Prior USDA Support – USDA is interested in documenting examples of SBIR projects that are developing new technologies based on earlier USDA-supported research and development projects awarded to the proposing small business, university or government scientist collaborators by other USDA research and development programs, such as the National Research Initiative (NRI). If any such support exists, it should be documented in this section by listing the PD, application title, organization that received the award and the USDA program that awarded the project.

(4) Identification and Significance of the Problem or Opportunity – Clearly state the specific technical problem or opportunity addressed and its importance.

(5) Background and Rationale – Indicate the overall background and technical approach to the problem or opportunity and the part that the proposed research plays in providing needed results. As a part of this section, it is critical that applications adequately cite relevant scientific literature. **Moreover, all citations provided must be properly referenced in the Bibliography & References Cited attachment, see 3.3.2 – Field 8 below.**

(6) Relationship with Research or Research and Development

Phase I – Discuss the significance of the Phase I effort in providing a foundation for the follow-on Phase II R&D effort. State the anticipated results of the approach if the project is successful. This should address: (a) the technical, economic, social and other benefits to the Nation and to users of the results, such as the commercial sector, the Federal Government or other researchers; (b) the estimated total cost of the approach relative to benefits; and (c) any specific policy issues or decisions which might be affected by the results.

(7) Technical Objectives – State the specific objectives of the research or research and development effort. Include the technical questions needed to establish the technical feasibility of the proposed approach.

(8) Work Plan – The work plan must provide an explicit, detailed description of the research or research and development approach. The plan should list the tasks to be performed, **provide details of the methodology that would be used to research each task**, including statistical analysis, if applicable, and indicate how and where the work will be carried out. The effort should attempt to determine the technical feasibility of the proposed concept. The work plan should be linked with the technical objectives of the research and the questions the effort is designed to answer. **This section should constitute a substantial portion of the project narrative**.

(9) Related Research or Research and Development – Describe significant research or R&D activities that are directly related to the proposed effort, including any conducted by the project director or by the proposing small business concern, how the proposed effort expands on the

related work and any planned coordination with outside sources. **The applicant must persuade reviewers that he or she is aware of related research in the selected subject**. It is critical that the applicant make a convincing case that the proposed research builds upon previous research and, if successful, will lead to the development of new technology or a substantial improvement of existing technology.

(10) Potential Post Application – Briefly describe the commercialization potential of the proposed research in Phase I. In addition, indicate whether there appears to be a potential use of the proposed research by the Federal Government. Include a brief description of the proposing company, e.g., date founded, number of employees, and its field of interest. What are the major competitive products in this field, and what advantages will the proposed research have over existing technology in application, performance, technique, efficiency or cost?

(11) Satisfying the Public Interest – Specify how the proposed research will satisfy one or more of the following USDA strategic goals: (more information can be found at www.usda.gov/ocfo/usdasp/usdasp.htm)

- **a.** Enhance International Competitiveness of American Agriculture;
- **b.** Enhance the Competitiveness and Sustainability of Rural and Farm Economics;
- **c.** Support Increased Economic Opportunities and Improved Quality of Life in Rural America;
- **d.** Enhance Protection and Safety of the Nation's Agriculture and Food Supply;
- **e.** Improve the Nation's Nutrition and Health; and
- **f.** Protect and Enhance the Nation's Natural Resource Base and Environment.

Field 8 Bibliography & Cited References - (PDF Format is Required)

Provide a complete list of all references cited in the application. **For each reference, provide the complete name for each author, the year of the publication, full title of the article, name of the journal or book published, volume, and the page numbers.** The references should be listed in alphabetical order using the last name of the first author.

Field 9 Facilities & Other Resources - (PDF Format is Required)

Describe the types, location, and availability of instrumentation and physical facilities necessary to carry out the work proposed. **If university facilities, private facilities, or government laboratories are being used, there must be a letter in the application from the authorized organizational representative of the university, private facility, or government laboratory describing the arrangement and testifying that the facilities will be subject to the exclusive use and control of the applicant**. This letter should be included as a part of Other Attachments, see Field 11 below.

Field 10 Equipment Documentation - (PDF Format is Required)

Describe the types, location, and availability of equipment necessary to carry out the work proposed. Items of equipment to be purchased must be fully justified under this section. When purchasing equipment or a product under the SBIR funding agreement, the small business should purchase only American-made items whenever possible. Requests to purchase equipment should normally not exceed 10% of the budget.

Field 11 Other Attachments - (PDF Format is Required)

Additional documentation that may be required for your application should be grouped in this section.

(1) Outside Services - Involvement of university, government or other outside personnel in the planning and research stages of the project as consultants or through subcontracting arrangements is permitted and may be particularly helpful to small business firms that have not previously received Federal research awards. Establishment of a Cooperative Research and Development Agreement (CRADA) with a USDA laboratory or other Federal laboratory may also be beneficial to proposing firms. If the application involves outside consultants, subcontracts or involvement with a CRADA partner, these arrangements should be described in detail. Include a brief resume and listing of relevant publications for each consultant and subcontractor. **Applications must include letters from proposed consultants, subcontractors or CRADA cooperators indicating their willingness to serve in order for such participation to be considered during the application review and evaluation process, see subsection 4.3(C) or 4.5(E), as appropriate**.

(2) Letters of Support – General letters of support from potential end-users of your technology or from individuals/organizations that want to express support for your application.

(3) Use of Facilities or Equipment – A letter from a university or government laboratory describing the arrangement if university facilities or government laboratories are being used, see Field 9 above.

(4) Duration Exceeds Normal Project Period – The proposed duration of Phase I projects should normally not exceed 8 months, except in special, justified circumstances. Where a proposed research project requires more than 8 months to complete in Phase I, a longer project period, not to exceed 20 months, may be considered. An applicant of a Phase I project with an anticipated duration beyond 8 months should specify and justify the length of duration in the application at the time of its submission to USDA in order for it to be considered.

(5) Applicant is a Subsidiary – A potential grantee that is a subsidiary must show that the parent company is also a small business entity and the parent company must provide documentation supporting their small business status.

(6) Statement as to Delinquency on Federal Debts by Applicants for Federal Assistance - An applicant that is delinquent on Federal debts must attach in PDF format, explanatory information detailing all relevant particulars concerning the Federal debt.

3.3.3 R&R Senior Key Person - **(PDF Format is Required)**

(1) Biographical Sketch (Vitae) - Identify key personnel of the small business concern, project consultants and subcontractors and include information on their directly related education and experience or a current copy of their vitae. The vitae should be limited to two (2) pages each in length, excluding publications listings. The vitae should include a presentation of academic and research credentials, as applicable, e.g. earned degrees, teaching experience, employment history, professional activities, honors and awards and grants received. A chronological list of the most important and/or relevant publications in refereed journals during the past four (4) years, including those in press, must be included. Also, list only those non-refereed technical publications that have relevance to the proposed project. All authors should be listed in the same order as they appear on each paper cited, along with the title and complete reference as these usually appear in journals.

(2) Current and Pending Support - A current and pending support list should be included for all PD/PIs. Please note that the project being proposed should be identified as pending in the attached

document. An application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded.

If an identical application or one containing a significant amount of essentially equivalent work as the one submitted in response to this solicitation has been previously funded or is currently funded, pending or about to be submitted to another Federal agency or to USDA in a separate action, the applicant must provide the following information:

a. Name and address of the agency(s) to which an application was submitted, or will be submitted, as well as from which an award is expected or has been received.
b. Date of actual or anticipated application submission or date of award, as appropriate.
c. Title of application or award, identifying number assigned by the agency involved and the date the application was submitted or the award was received.
d. Applicable research topic area for each application submitted or award received.
e. Name and title of PD for each application submitted or award received.

3.3.4 R&R Personal Data

Social Security Number - This is not a required field on this form. To protect the confidentiality of the PD, we request that you do not list the PD's Social Security number on this form or in any other location in the application.

3.3.5 R&R Budget **- (PDF Format is Required)**

A Research and Related Budget form must be completed for each year (or partial year) for which work is proposed under this RFA. **Normally, a Phase I project will require forms for one budget period.**

Fields C1-C11. Equipment Description - Performing organizations are expected to have appropriate facilities, suitably furnished and equipped. However, funding for items of equipment may be requested provided that they are specifically identified with the dollar amount and adequately justified, see Field K of the R&R Budget.

Field D2. Foreign Travel Costs Funds Requested - Requests for foreign travel are discouraged but may be approved, e.g., applications submitted to the Marketing and Trade topic area that are focused on export issues, based on the justification provided in the application. In the budget justification, provide the purpose, the destination, method of travel, number of persons traveling, number of days and estimated cost for each trip. If details of each trip are not known at the time of application submission, provide the basis for determining the amount requested.

Field K. Budget Justification

A budget justification with supporting detail for each budget category as noted in items (1) through (5) of this subsection must be included. **A budget justification is required for each entity for which a Research and Related Budget Form is submitted.**

(1) Salaries and Wages - Indicate the number and kind of personnel for whom salary support is sought, including job tasks. For key personnel, also indicate the number of work months of involvement to be supported with USDA funds, see section labeled "CSREES Funded Work Months," and explain how the level of compensation was established, e.g., the hourly rate of pay the monthly rate of pay, or the yearly rate of pay.

(2) Equipment - Performing organizations are expected to have appropriate facilities, be suitably furnished and equipped. However, funding for items of equipment may be requested provided that they are specifically identified with the dollar amount and adequately justified; see Field K of the R&R Budget, **but such requests should normally not exceed 10% of the budget**. Equipment is defined as an article of nonexpendable, tangible personal property having a useful life of more than 1 year and an acquisition cost of $5000 or more per unit. Awardees are usually allowed to retain title to equipment purchased with funding provided under a SBIR funding agreement. However, in some instances, USDA may direct the awardee to vest title to a third party. **Awardees should plan to lease expensive equipment**. The inclusion of equipment will be carefully reviewed with respect to need and appropriateness for the research proposed.

(3) Materials and Supplies - The types of expendable materials and supplies required should be indicated in general terms with estimated costs.

(4) Travel - The type and extent of travel and its relationship to the project should be specified. Funds may be requested for field work or for travel to professional meetings. Requests for foreign travel are discouraged but may be approved (e.g., applications submitted to the Marketing and Trade topic area that are focused on export issues) based on the justification provided in the application. In the budget justification, provide the purpose, the destination, method of travel, number of persons traveling, number of days, and estimated cost for each trip. If details of each trip are not known at the time of application submission, provide the basis for determining the amount requested.

(5) All Other Direct Costs - Other anticipated direct costs not included above should be itemized. Examples include, but are not limited to, subcontracts and consultants. See Field 11 for required documentation associated with subcontracts and consultants. A budget and budget justification stating subcontractual and consulting costs and the rationale for the amount of the costs is required. Consultants' rate of pay cannot exceed $550/day for an 8 hour day.

(6) Fee - A reasonable fee, not to exceed 7% of total Federal funds awarded (.07527 of total Direct and Facilities and Administrative (F&A)/Indirect Costs) is permitted under this program solicitation but applicants are encouraged to minimize fee requests due to the small amount of funds available. **All fees are subject to negotiation with USDA**. If a fee is requested, the amount should be indicated in Field J "Fee" on the R&R Budget.

(7) Indirect Costs - If available, the current rate negotiated with the cognizant Federal negotiating agency should be used. Indirect costs may not exceed the negotiated rate. If a negotiated rate is used, the percentage and base should be indicated in the space allotted in item H of the budget sheet. If no rate has been negotiated, a reasonable dollar amount in lieu of indirect costs may be requested, which will be subject to approval by USDA. In the latter case, if an application is recommended for funding, an indirect cost rate application must be submitted to support the amount of indirect costs requested. CSREES will request an indirect cost rate application and provide instructions, as necessary. An applicant may elect not to charge indirect costs and, instead, use all grant funds for direct costs. If indirect costs are not charged, the phrase "None requested" should be written in this space.

(8) Cost Sharing - Cost sharing is permitted for applications under this program solicitation; however, cost sharing is not required nor will it be an evaluation factor in considering the competitive merit of applications submitted.

3.3.6 R&R Subaward Budget Attachment **- (PDF Format is Required)**

Applicants should reference the CSREES Application Guide to complete this form.

3.3.7 CSREES Supplemental Information

Field 2. Program to Which You Are Applying and Program Code – This refers to the topic area, see section 8.0, to which you are submitting your USDA SBIR application. For example:

Program Code Name
Animal Manure Management
Program Code
8.11

If you have a question about which topic area is appropriate for your application, please contact the NPL(s) in the area(s) in question. An application can only be submitted to one topic area. It is extremely important the Program Code Name and Program Code are spelled correctly and match exactly one of the topic areas indicated in section 8.0 of the program solicitation. Failure to complete these fields correctly could significantly delay the acceptance of your application into the program and the application may be returned.

Field 8. Conflict of Interest List – A conflict of interest attachment is not necessary for USDA SBIR applications. No attachments should be added.

3.3.8 SBIR/Small Business Technology Transfer Program (STTR) Information

Please note, guidance for completing this form will not be found in the CSREES Application Guidance. Applicants should follow the instructions detailed in this RFA.*

Program Type – Select SBIR only. USDA does not offer a STTR program.
SBIR/STTR Type – Select Phase I. The USDA SBIR program does not offer the Fast-Track Option.

Field 1. Did you certify that at the time of award your organization will meet the eligibility criteria for a small business as defined in the funding opportunity announcement? – Enter yes or no.

Field 2. Does this application include subcontracts with Federal laboratories or any other Federal Government agencies? Enter yes or no. **If yes, insert the names of the Federal laboratories/agencies.**

Field 3. Are you located in a HUBZone? – Enter yes or no.

Field 4. Will all research and development on the project be performed in its entirety in the United States? – Enter yes or no. **If no, provide an explanation in an attached PDF file** (this is required information).

Field 5. Has the applicant and/or Project Director/Principal Investigator submitted applications for essentially equivalent work under other Federal program solicitations or received other Federal awards for essentially equivalent work? – Enter yes or no. **If yes, insert the names of the other Federal agencies** (this is required information).

Field 6. Disclosure Permission Statement: If this application does not result in an award, is the Government permitted to disclose the title of your proposed project, and the name, address,

telephone number and e-mail address of the official signing for the applicant organization to organizations that may be interested in contacting you for further information, e.g., possible collaborations, investment? – Enter yes or no.

Field 7. Commercialization – See subsection 3.3.10.

Field 8. Documentation of Prior SBIR Phase II Awards – See subsection 3.3(F).

Fields 10-11. STTR-Specific Questions – Do not respond to these questions. They are not applicable to the USDA SBIR program

3.3.9 Non Domestic Performance Explanation **- (PDF Format is Required)**

Requests for foreign travel or work are discouraged, but may be approved, e.g., applications submitted to the Marketing and Trade topic area that are focused on export issues, based on the justification provided in the application. In the budget justification, provide the purpose, the destination, method of travel, number of persons traveling, number of days, and estimated cost for each trip. If details of each trip are not known at the time of application submission, provide the basis for determining the amount requested.

3.3.10 Commercialization Plan - DO NOT USE

This form will not be part of the USDA SBIR Phase I package that is downloaded from Grants.gov and is only used for USDA SBIR Phase II submissions. The application guide will reference this form, and applicants should ignore this requirement.

3.3.11 Documentation of Prior SBIR Phase II Awards **- (PDF Format is Required)**

(1) A small business firm that submits an application for a funding agreement for Phase I of an SBIR Program and has received more than 15 Phase II SBIR awards during the preceding 5 fiscal years must document the extent to which it was able to secure Phase III funding to develop concepts resulting from previous Phase II SBIR awards. In addition, the documentation must include the name of the awarding agency, date of award, funding agreement number, amount, topic or subtopic title, follow-on agreement amount, source and date of commitment and current commercialization status for each Phase II award.

(2) USDA shall collect and retain the information submitted under subparagraph 3.3.11 (1) at least until the General Accounting Office submits the report required under section 105 of the Small Business Research and Development Enhancement Act of 1992.

3.3.12 NRI Proposed Type Form - DO NOT USE

This form will not be part of the USDA SBIR package that is downloaded from Grants.gov. The application guide will reference this form and applicants should ignore this requirement.

3.3.13 Application Modification - DO NOT USE

This form will not be part of the USDA SBIR package that is downloaded from Grants.gov. The application guide will reference this form and applicants should ignore this requirement.

3.3.14 CHECKLIST

Only electronic applications may be submitted to the USDA SBIR program via Grants.gov in response to this RFA. All applications submitted under the SBIR program must contain the applicable elements outlined in these guidelines. The following checklist has been prepared to assist in ensuring that the application is complete prior to submission:

- ☐ **Have all attachments been submitted in the portable document format (PDF)?** SBIR program will only accept PDF attachments. See Part III of the CSREES Application Guide.
- ☐ Do all submitted PDF documents have one-inch margins and are typed or word processed using no type smaller than 12 point regardless of line spacing? Are all PDF documents numbered sequentially on each page of the attachment? Are all page limitations for a given attachment followed? Submitted proposals that do not meet these requirements for PDF attachments will be returned without review.
- ☐ Have all seven components of the SF 424 Research and Related (R&R) Application Package been completed? Did you use the "Check Package for Errors" feature of the PureEdge viewer (see section 1.8 of the CSREES Application Guide)?
  - ☐ SF 424 R&R Cover Sheet
  - ☐ R&R Other Project Information
  - ☐ R&R Senior/Key Person Profile
  - ☐ R&R Personal Data
  - ☐ R&R Budget
  - ☐ Supplemental Information Form
  - ☐ SBIR/Small Business Technology Transfer Program (STTR) Information

SF 424 R&R Cover Sheet

- ☐ Have all required fields been completed?

R&R Other Project Information

- ☐ Have the fields describing project potential or actual environmental impact been properly completed?
- ☐ Project Summary/Abstract
  Has the Project Summary PDF been attached to this form in Field 6?
  Are the names and affiliated organizations of all Project Directors listed at the top of the page in addition to the title of the project?
  Has a CSREES goal been identified in the Project Summary?
  Does the Project Summary include research, education, and/or extension objectives, as appropriate?
  Does this section adhere to the format and page limitations?
- ☐ Project Narrative
  Has the Project Narrative PDF been attached to this form in Field 7?
  Is the project fully described?
  Does this section adhere to the format and page limitations?
- ☐ Bibliography & References Cited
  Has the Bibliography & References Cited PDF been attached to this form in Field 8?
  Are all references cited and are all citations referenced?
  Do all citations contain a title, the names of all authors, and are they in accepted journal format?
- ☐ Facilities & Other Resources
  Has the Facilities & Other Resources PDF been attached to this form in Field 9?

Has a description of your facilities with sufficient detail to indicate that you will be able to carry out this project, been provided?

- ☐ Equipment
  Has the Equipment PDF been attached to this form in Field 10?
  Is the description of your equipment sufficient to indicate that you will be able to carry out this project?
- ☐ Response to Previous Review (for resubmitted applications)
  Has the Response to Previous Review PDF been attached to this form in Field 11?
  Has the application been clearly and meaningfully revised and are the revisions briefly described?
  Are comments from the previous review addressed?
- ☐ Outside Services
  Has the Outside Services PDF been attached to this form in Field 11?
- ☐ Appendices to Project Description
  Has the Appendices to Project Description PDF been attached to this form in Field 11?
  Are the reprints/preprints limited to 2 (as described in the instructions)?

R&R Senior/Key Person Profile

- ☐ Biographical Sketch
  Has the biographical sketch (vitae) PDF for the PD, senior associate, and other professional personnel been attached?
- ☐ Current and Pending Support
  Has the current and pending support PDF for all PD(s) been attached?
  Have all current and pending projects been listed and summarized, **including this proposal**?

R&R Personal Data

- ☐ Have all fields been completed?

R&R Budget

- ☐ Have all fields been completed for each PD?
- ☐ Budget Justification
  Has the Budget Justification PDF been attached to this form in Field K?
  Are budget items individually justified?
  For multi-institutional applications, has a budget justification been included for each institution involved?

Supplemental Information Form

- ☐ Does Field 2 indicate the Program Code Name and Program Code to which you are applying?

Documentation of Prior SBIR Phase II Awards (where applicable)

- ☐ Have you reviewed the guidance found in the RFA?
- ☐ Have all fields been completed?

4.0 METHOD OF SELECTION AND EVALUATION CRITERIA

4.1 Introduction

All Phase I applications will be evaluated on a competitive basis. Applications will be initially screened to determine responsiveness to the Request for Application (RFA). Applications passing this initial screening will be evaluated by technical reviewers to select those with the highest scientific and technical merit. Each application will be judged on its own merits. **Applications received after the specified closing date or not responding to research topic areas outlined in section 8.0 or not following application guidelines of this program solicitation are not eligible to be considered for a Phase I SBIR award and will be returned to the proposing small business firm without review**.

External peer reviewers will be used during the technical evaluation stage of this process. Selections will be made from among recognized specialists who are uniquely qualified by training and experience in their respective fields to render expert advice on the merit of applications received. It is anticipated that these experts will be drawn from universities, Government and non-profit research organizations. If possible, USDA intends that peer review groups shall be balanced with minority and female representation and with an equitable age distribution.

Final decisions will be made by USDA based upon the ratings assigned by reviewers and consideration of other factors, **including the potential commercial application**, possible duplication of other research, any critical USDA requirements, program balance and budget limitations. There is no commitment by USDA to fund any particular application, to support any specific number of applications in a given research topic area or to make a specific number of awards. USDA also may elect to fund several or none of the proposed approaches to the same topic. Care will be taken to avoid actual and potential conflicts of interest among reviewers. Evaluations will be confidential to USDA staff members, peer reviewers and the proposed project director, to the extent permitted by law.

4.2 Initial Screening Criteria

To avoid misunderstanding, applicants should be aware that applications not satisfying all of the screening criteria will be returned to the proposing entity without review. Returned applications may not be resubmitted (with or without revision) under this solicitation. The initial screening criteria are the following:

(A) The proposing firm must qualify as a small business concern as defined in subsection 2.11.

(B) The application must meet the Application Content and Format requirements as described in subsection 3.3.

(C) Applications must be limited to one research problem as described in subsection 3.1.

(D) The proposed budget must be within the dollar limit identified in subsection 1.2.

(E) If proposed duration of Phase I project exceeds 8 months, justification must be provided as described in subsection 3.3.2.

(F) Applications must cover scientific research activities only as described in subsection 3.1.

(G) The proposed Phase I research must fall within a solicited topic area. See section 8.0 for the listing of topic area descriptions.

(H) An application must contain adequate scientific/technical information clearly stating the research plan and objectives. USDA reserves the right not to submit for review any application that it finds to have insufficient scientific/technical information.

(I) A resubmitted application must address concerns of the previous review panel. USDA reserves the right not to submit for review any application found not to be responsive to the previous review.

(J) Is it clear that the project director will work a minimum of 51 percent of his/her time for the small business firm during the period of the grant and that the small business firm will conduct a minimum of two-thirds of the research effort?

4.3 Phase I Evaluation Criteria

USDA plans to select for award those applications offering the best value to the Nation. The primary evaluation criteria used by reviewers are listed below. Approximately equal consideration will be given to each criterion, **except for item (A) which will receive twice the value of any of the other items. The same holds for item (F) when applicable:**

(**A) Scientific and Technical Feasibility:**

- The application should contain a thorough background section with an up-to-date literature review.
- The application should clearly state the objectives logically and indicate how they will lead toward proving the technical feasibility of the approach or concept.
- The research plan should offer an original and innovative approach to the problem and sufficient detail to indicate how each research objective will be investigated.
- The research plan should be completed in the requested grant period.

(B) Importance of the Problem:

- The application should provide sufficient justification for the importance of the problem and clearly indicate the anticipated commercial potential of the proposed research.
- The proposed project should be in the public interest and satisfy one or more of the strategic goals and objectives listed in subsection 3.3.2 (item 11 of Field 7).

(**C) Investigator and Resource Qualifications:**

- The bibliographic information should be provided to document that the project director, other key staff and any consultants have the appropriate training and experience to carry out the proposed research plan.
- If consultants, subcontractors or CRADA cooperators are involved in the project, letters from these individuals should be included in the application verifying their willingness to participate in the research study, their rates of pay and any other budgetary information.
- Adequate research facilities that are available should be owned or controlled by the small business for the duration of the grant.
- Instrumentation available should be adequate to complete the proposed research plan.

(D) Budget:

- The budget should be appropriate for the proposed research plan.
- Budget detail should include subcontract, consultant and CRADA data to indicate clearly how the funds would be utilized.

(E) Duplication:

- Duplication of any ongoing or previous research by the small business firm or by other researchers will not be considered.
- The application should clearly indicate how the proposed technology would differ significantly from existing technology.
- If the small business firm or a consultant has received or applied for patent(s) pertaining to the proposed technology, the proposed research should constitute a legitimate feasibility study.

(F) Resubmission:

- If the application is a resubmission, the applicant should provide a "Response to Previous Review." The responses to the previous year's panel summary should be appropriate (Refer to subsection 3.3.2 (item 1 of Field 7).

Additional factors that will be considered in the review process include whether an application involves a CRADA with a USDA laboratory or is a resubmission. In the event that two or more applications are of approximately equal merit, the existence of a CRADA with a USDA laboratory will be an important consideration. If one application is a resubmission, this will also be an important consideration.

4.4 Phase I Review Process

USDA evaluates applications using a confidential peer review. Separate review panels are held that correspond to each of the topic areas listed in Section 8.0. Reviewers are drawn primarily from universities, government and non-profit research organizations. For each topic area, a leading research scientist is appointed as a topic manager. In consultation with the SBIR program staff, this individual appoints a review panel. The review panel meets in Washington, D.C. to evaluate all applications. Applications are reviewed both by members of the review panel and by ad hoc reviewers with specific expertise appropriate for each application. The panel discusses each application carefully and then ranks the applications. The panel rankings are used in determining which applications are funded.

Considerable effort is made to ensure that the review process is confidential. Reviewers are instructed to handle all applications in complete confidence and each reviewer is provided written guidelines to follow. All reviewers are obligated to certify that they will maintain confidentiality at the time they prepare a review and submit it through the Agency's electronic Peer Review System.

Every effort is made to avoid even the appearance of a conflict-of-interest (COI). The USDA has very detailed rules on COI that are followed during the review process. If a panel member has a COI on an application, he/she will not review the application and will be excused from the panel meeting while the particular application is being discussed. USDA is committed to ensuring the review process is fair and is handled with confidentiality.

4.5 Notice to Applicants

Technical reviewers will base their conclusions and recommendations on information contained in the application. It cannot be assumed that reviewers are acquainted with any experiments referred to within an application, with key individuals or with the small business firm itself.

After final decisions have been announced, a panel summary will be assembled that briefly states the main strengths and weaknesses of the application. In addition, the written reviews of the application will be sent to the project director. The reviews will not include the scores nor the identities of the reviewers. Due to funding limitations and USDA's desire to support as many worthwhile projects as possible, it may

be necessary for USDA to reduce the amount of an award below the amount requested by a small business or to fund only certain objectives outlined in the application. Any significant changes will be discussed with the proposing firm, which may then be asked to submit a revised budget reflecting the reduced amount. In the event that this occurs, specific instructions will be provided to the applicant.

5.0 CONSIDERATIONS

5.1 Awards

Depending upon the availability of funds USDA expects to make approximately 90 Phase I awards not to exceed $80,000 each to small businesses in FY 2008. Awards are anticipated to be made on or after May 1, 2008. USDA will announce the names of those concerns receiving awards and successful applicants will then normally have eight months after awards are made to carry out their proposed Phase I effort.

All Phase I awards will be issued as research grants in accordance with the guidelines contained in 31 U.S.C. 6301-6308, the authority contained in Section 630 of the Act making appropriations for Agriculture, Rural Development and Related Agencies' programs for fiscal year ending September 30, 1987 and for other purposes, as made applicable by Section 101(a) of Public Law Number 99-591, 100 Stat. 3341.

A reasonable fee, not to exceed 7 percent of total Federal funds awarded (.07527 of total direct and F&A/indirect costs) is permitted under this program solicitation, but applicants are encouraged to minimize fee requests due to the small amount of funds available. All fees are subject to negotiation with USDA. If a fee is requested, the amount should be indicated in Field J. Research and Related Budget.

5.2 Reports

5.2.1 Technical Reports

For Phase I applications, a brief interim progress report must be submitted at approximately the mid-point in the project, including a 2 page commercialization plan based on guidance to be provided by the USDA SBIR program or its contractor(s). In addition, a comprehensive final technical report must be submitted within 30 days following expiration of the Phase I grant. These reports should be submitted electronically as an attachment (MS Word or PDF) to the following email address: sbir@csrees.usda.gov. **The report should include a single-page executive summary as the first page.** This summary should include the purpose of the research, a brief description of the research carried out, the research findings or results and, in a final paragraph, potential applications (commercial or other) of the research. The balance of the report should include a comparison of actual accomplishments with the goals established for the grant; the reasons for slippage if established goals were not met; estimates of technical feasibility; and additional pertinent information, such as an explanation of cost over-runs or unexpectedly high unit costs. Also, identify all other recipients (public and private) of the research results documented in the report.

Please note: **The interim progress report should only include non proprietary information**. The final technical report is held confidential for a period covering four years after the termination of the project. **As such, proprietary information may be included in the final report when necessary to provide the USDA SBIR Staff adequate information to evaluate the outcome of the project.**

5.2.2 Financial Reports

For Phase I applications, a final **"Financial Status Report" (SF-269)** is due within 90 days after the expiration date of the grant and should be submitted to the Funds Management Branch, Office of Extramural Programs at the address listed below, in accordance with instructions contained in Section 3015.82 of the Uniform Federal Assistance Regulations.

Funds Management Section
Office of Extramural Programs
Cooperative State Research, Education,
and Extension Service
U.S. Department of Agriculture
STOP 2298
1400 Independence Avenue, S.W.
Washington, D.C. 20250-2298
Telephone: (202) 401-4527

Quarterly Reports of Federal Cash Transactions (SF-272) are required by Department of Health and Human Services' (DHHS) (www.dpm.psc.gov) and are submitted online through the DHHS-Payment Management System (PMS) website. If you become delinquent in these reports, you will not be able to access your funds.

5.2.3 Current Research Information System (CRIS) Reports

All awardees are required to submit the AD-416 and AD-417 CRIS report forms before a project can be awarded. In addition, the AD-419 and AD-421 report form has to be submitted at the conclusion of a Phase I project as a termination report. Additional information about CRIS will be provided to all awardees prior to the start of their award. The online portal to all CRIS reports is located at http://cwf.uvm.edu/cris.

Please note: CRIS reports are meant to provide information about USDA SBIR grants to the general public through the online CRIS database. **As such, proprietary information should not be included in these reports.**

5.3 Payment Schedules

Payments will be made by electronic funds transfer through the DHHS-PMS. Requests for payment should be in accordance with DHHS-PMS instructions. All questions relating to payments should be submitted to:

Funds Management Section
Office of Extramural Programs
Cooperative State Research, Education, and Extension Service
U. S. Department of Agriculture
STOP 2298
1400 Independence Avenue, S. W.
Washington, D. C. 20250-2298
Telephone: (202) 401-4527
Facsimile: (202) 401-3481

Drawdown instructions will be sent to the awardee under separate cover. Anticipated payments shall be made according to the following schedule:

(A) Aggregate payment requests of up to 50% of total award dollars will be honored during the first half of the project.

(B) Upon acceptance of the interim progress report, up to an additional 40% of total dollars will become available for support of the project.

(C) The final 10% of total award dollars will be paid upon receipt and acceptance of the comprehensive final technical report required under section 5.2 above.

If the awardee is a sole proprietorship, funds awarded shall be deposited in a separate bank account and CSREES, through the ADO agreement officer, shall be informed of the name and location of the bank. In addition, arrangements must be reached between the awardee and the bank of deposit of the award funds in accordance with the following: The account must be of a nature that permits the bank of deposit to return unused funds remaining in that account to CSREES in the event of the awardee's demise. However, CSREES shall not be named a joint owner of such an account, but rather as beneficiary. These arrangements must also be reported to CSREES through the ADO.

5.4 Proprietary Information

Information contained in unsuccessful applications will remain the property of the applicant. The Government may, however, retain copies of all applications. Public release of information in any application submitted will be subject to existing statutory and regulatory requirements. If proprietary information is provided by an applicant in an application, which constitutes a trade secret, proprietary commercial or financial information, confidential personal information or data affecting the national security, it will be treated in confidence, to the extent permitted by law. This information must be clearly marked by the applicant with the term "confidential proprietary information" and the following legend must appear on each PDF attachment submitted as a part of the application: "These data shall not be disclosed outside the Government and shall not be duplicated, used or disclosed in whole or in part for any purpose other than evaluation of this application. If a funding agreement is awarded to this applicant as a result of or in connection with the submission of these data, the Government shall have the right to duplicate, use or disclose the data to the extent provided in the funding agreement and pursuant to applicable law. This restriction does not limit the Government's right to use information contained in the data if it is obtained from another source without restriction. The data subject to this restriction are contained on pages __ of this application."

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

USDA, by law, is required to make the final decision as to whether the information is required to be kept in confidence. Information contained in unsuccessful applications will remain the property of the applicant. However, USDA will retain for three years one file copy of all applications received; extra copies will be destroyed. Public release of information for any application submitted will be subject to existing statutory and regulatory requirements. The legislation reauthorizing the SBIR Program strengthened the protection of awardee firms relative to maintaining confidentiality of proprietary information for a period of four years after the end of the grant period. However, any application which is funded will be considered an integral part of the award and normally will be made available to the public upon request through the Freedom of Information Act, except for designated proprietary information.

The inclusion of proprietary information is discouraged unless it is necessary for the proper evaluation of the application. If proprietary information is to be included, it should be limited, set apart from other text on a separate page and keyed to the text by numbers. It should be confined to a few critical technical items which, if disclosed, could jeopardize the obtaining of foreign or domestic patents. Trade secrets, salaries or other information which could jeopardize commercial competitiveness should be similarly keyed and presented on a separate page. Applications or reports which attempt to restrict dissemination of large amounts of information may be found unacceptable by USDA.

5.5 Rights in Technical Data

Rights in technical data, including software developed under the terms of any funding agreement resulting from an application submitted in response to this solicitation, shall remain with the grantee. However, the Government shall have the limited right to use such data for Governmental purposes and shall not release such data outside the Government without permission of the grantee for a period of four years from completion of the project under which the data were generated. Effective at the conclusion of the four-year period, the Government shall retain a royalty-free license for Governmental use of any technical data delivered under the agreement, whether patented or not.

5.6 Copyrights

With prior written permission of the Authorized Departmental Officer, the grantee normally may copyright and publish (consistent with appropriate national security considerations, if any) material developed with USDA support. USDA receives a royalty-free license for the Federal Government and requires that each publication contain the following acknowledgment and disclaimer statement:

"The project was supported by the Small Business Innovation Research program of the U.S. Department of Agriculture, grant number #. Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Agriculture."

The last sentence may be omitted from articles published in scientific journals.

5.7 Patents and Inventions

Allocation of rights to inventions shall be in accordance with 35 U.S.C. 202-206 and the Department of Commerce implementing regulations entitled "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms under Government Grants, Contracts and Cooperative Agreements" at 37 CFR Part 401. These regulations provide that small businesses normally may retain the principal worldwide patent rights to any invention developed with USDA support. USDA receives a royalty-free license for Federal Government use, reserves the right to require the patentee 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, USDA will not make public any information disclosing a USDA-supported invention for a four-year period to allow the grantee a reasonable time to file an initial patent application. Additional information may be obtained by contacting:

Director, Planning and Accountability
Cooperative State Research, Education, and Extension Service, USDA
STOP 2213
1400 Independence Avenue, S.W.
Washington, D.C. 20250-2213
Telephone: (202) 720-5623
Facsimile: (202) 720-7714
E-mail: rmacdonald@csrees.usda.gov

SBIR awardees must report inventions to the awarding agency within two months of the inventor's report to the awardee. The reporting of inventions must be made through submission to Interagency Edison (www.iedison.gov). Specific instructions for invention reporting are contained in the agency's terms and conditions, a copy of which can be provided upon request.

5.8 Research Involving Special Considerations

A number of situations frequently encountered in the conduct of scientific research require the submission of special information for a particular project. Since some types of research targeted for SBIR support have high probability of involving human subjects at risk or vertebrate animals, special instructions follow:

If the proposed research will involve human subjects at risk or vertebrate animals, the application must so indicate by checking "Yes" on the R&R "Other Project Information." Further, in the event that the project is funded, the applicant may be required to have the research plan reviewed and approved by the appropriate review board or committee. It is suggested that applicants contact local universities, colleges or nonprofit research organizations which have established such reviewing mechanisms to have this service performed.

Guidelines to be applied and observed when conducting such research are outlined below.

(A) Human Subjects at Risk - Regulations issued by the Department of Agriculture to be used in safeguarding the rights and welfare of human subjects used in research supported with USDA grant funds are contained in 45 CFR Part 46 and USDA regulations set forth in 7 CFR part 1c. All nonexempt research projects involving human subjects must be approved by an Institutional Review Board prior to commencing actual substantive work.

(B) Animal Care - The performing organization must comply with the Animal Welfare Act (7 U.S.C., 2131-2156); Public Law 89-544, 1996 and the regulations issued by the Department of Agriculture in 9 CFR parts 1, 2, 3 and 4. In the case of domesticated farm animals housed under farm conditions, the grantee must adhere to the principles stated in the Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching, Federation of Animal Sciences Societies, 1999. In the event a project involving the use of living vertebrate animals results in a grant award, funds will be released only after a qualified Institutional Animal Care and Use Committee has approved the project.

5.9 Grantee Commitments

Upon issuance of a research grant by USDA, the awardee will be required to make certain legal commitments through acceptance of the award document and the terms and conditions attached thereto, as well as any project-specific terms or conditions outlined. Most of these terms and conditions are contained in USDA's Uniform Federal Assistance Regulations, 7 CFR Part 3015, which will be incorporated into all Phase I awards resulting from this program solicitation. These regulations primarily consolidate internal policies and procedures relating to USDA's assistance programs and implement various Federally issued assistance policies, including applicable Federal cost principles and uniform administrative requirements. Copies are available at:
www.access.gpo.gov/nara/cfr/waisidx_04/7cfr3015_04.html.

5.10 Additional Information

(A) This program solicitation is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR funding agreement, the terms of the funding agreement are controlling.

(B) Before the award of an SBIR funding agreement, USDA requires the submission of certain organizational management, personnel and financial information to assure responsibility of the

applicant, including certification that the proposing organization is in compliance with the Civil Rights Act of 1964. These forms will be provided to the small business concern by the Office of Extramural Programs, CSREES, prior to the forwarding of the funding agreement for acceptance. The information contained in both forms must normally be submitted on a one-time basis only. (If sufficient changes occur within the organization to warrant submission of new or additional information, additional forms should be requested by calling either (202) 401-5050 or (202) 401-4342.) It is anticipated that all Phase I awardees will be required to submit the above information. **Please note that CSREES will not issue an award until all requested organizational management and financial information has been received. Delaying or failing to submit this information could result in the proposal not being funded.**

(C) If an applicant or a grantee is contemplating any type of transaction involving the entity, i.e. merger, spin-off or sale, it is advised that the applicant or the grantee contact one of the SBIR NPLs, see subsection 1.5, for knowledge of how the transaction may affect a potential grant or the grant, as applicable.

(D) USDA is not responsible for any monies expended by the applicant prior to the award of any funding agreement.

(E) This program solicitation is not an offer by USDA and does not obligate USDA to make any specific number of awards. Also, awards under this program are contingent upon the availability of funds.

(F) Unsolicited applications will not be accepted under the SBIR program.

(G) The applicant must provide the total number of employees for the organization and its subsidiaries and/or parent company if applicable.

6.0 SUBMISSION OF APPLICATIONS

6.1 When to Submit

All Phase I Applications must be submitted via Grants.gov by **5:00 p.m. Eastern Time on September 12, 2007.** Applications received after this deadline will not be considered for funding.

For the convenience of all potential applicants, the following schedule is provided for informational purposes:

Phase I
Deadline date for applications……..…September 12, 2007

Normal Period of research performance……...…..May 1, 2008 through December 31, 2008

6.2 What to Submit

USDA SBIR electronic application submissions consist of forms (viewed, completed and submitted through the Grants.gov) and attachments. All of the necessary forms and instructions will be found on the Grants.gov website and in section 3.0 of this RFA. Applicants can access the appropriate page on Grants.gov by visiting the USDA SBIR funding opportunity page at http://www.csrees.usda.gov/fo/sbir. Clicking on the Funding Opportunity Number listed near the bottom of the page will link the applicant directly to the information and forms necessary to submit through Grants.gov.

All attachments submitted with the application must be in PDF.

Applications that do not follow the guidelines in section 3.0 of this RFA are not eligible to be considered for a Phase I SBIR award and will be returned without review.

Please note: Applicants must have successfully completed the entire registration process, see subsection 3.2 prior to being able to submit an application through Grants.gov.

6.3 Where to Submit

All FY 2008 Applications submitted to USDA SBIR must be submitted electronically through Grants.gov.

6.4 Questions Pertaining to the USDA SBIR Program or to this Solicitation

Written or verbal questions of a general nature about the USDA SBIR program, as well as general questions pertaining to this solicitation, but not pertaining to requests for additional copies of the solicitation, should be sent to sbir@csrees.usda.gov or can be directed to one of the USDA SBIR NPLs, see section 8.0.

6.5 Information on Application Status

It is anticipated that the evaluation of Phase I applications will require approximately six months from September 12, 2007 and no information on application status will be available until final selections have been made. Both successful and unsuccessful applicants will be notified of final award decisions within approximately 6 months.

7.0 SCIENTIFIC AND TECHNICAL INFORMATION SOURCES

Listed below are some of the sources that can provide technology search and document services which may be useful in preparing SBIR applications. They can be contacted directly for service and cost information.

National Agricultural Library
Service Desk
U.S. Department of Agriculture
10301 Baltimore Avenue
Beltsville, MD 20705-2351
(301) 504-5755
www.nal.usda.gov

National Technology Transfer Center
Wheeling Jesuit University
316 Washington Avenue
Wheeling, WV 26003
(304) 243-2455 or (800) 678-6882
www.nttc.edu

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
(800) 553-6847
www.ntis.gov

Current Research Information Center (CRIS)
USDA/CSREES/ISTM
1400 Independence Ave., S.W.
Stop 2270
Washington, D.C. 20250
http://cris.csrees.usda.gov

Regional Technology Transfer Centers

Far West
University of Southern California
3716 South Hope Street, Suite 200
Los Angeles, CA 90007-4344
(213) 743-2353
www.usc.edu/dept/engineering/TTC

Mid-Continent Technology Transfer Center
Texas Engineering Extension Service
The Texas A&M University System
301 Tarrow
College Station,TX 77843-8000
(979) 845-8762
Fax (979) 845-3559
www.teex.com

Midwest
Great Lakes Industrial Technology Center
25000 Great Northern Corporate Center
Suite 260
Cleveland, OH 44070
(216) 734-0094
www.glitec.org

Mid-Atlantic
TECC - the Technology Commercialization Center
144 Research Drive
Hampton, VA 23666
(757) 766-9200
Fax (757) 766-2402
www.teccenter.org

Northeast
Center for Technology Commercialization
1400 Computer Drive
Westborough, MA 01581-5043
(508) 870-0042
www.ctc.org

Southeast
Georgia Institute of Technology
151 6th Street
216 O'Keefe Building
Atlanta, GA 30332
(404) 894-6786
www.edi.gatech.edu/nasa

8.0 RESEARCH TOPIC DESCRIPTIONS AND INSTRUCTIONS

Applicants are encouraged to submit proposals that address the research priorities stated for each topic area described in this RFA (see topic areas 8.1 through 8.13 below). Applicants should pay attention to specific instructions located within each of the topic area descriptions when developing their proposal. Each topic area description provides background information, FY 2008 research priorities and other key information. Applicants should apply to the most appropriate topic area. However, USDA reserves the right to shift applications between topic areas when necessary for most effective review. Applicants that have questions regarding topic areas should contact the listed NPL.

In addition to topic areas 8.1 through 8.13 described in this section, USDA recognizes **Agriculturally-related Manufacturing Technology** and **Alternative and Renewable Energy** as two cross-cutting priorities with relevance to all topic areas described in this RFA. USDA encourages applicants—as appropriate—to address these priorities within their proposals for submission to one of the topic areas described later in this section. Special consideration of applications that address one of these priorities may be provided, so long as the proposal falls within the scope of work solicited by one of the topic areas described in this RFA.

Agriculturally-related Manufacturing Technology

On February 26, 2004 The President issued Executive Order 13329 (69 FR 9181) entitled "Encouraging Innovation in Manufacturing." In response to this Executive Order, USDA encourages the submission of applications that deal with some aspect of agriculturally-related manufacturing technology (Section 2.17). Since manufacturing impacts all aspects of agriculture and rural development, applications dealing with manufacturing could be submitted to any of the topic areas. If an application has a connection to manufacturing this should be indicated in R&R Other Project Information (Field 7(2)) and a brief explanation of how it is related to manufacturing should be provided.

Alternative and Renewable Energy

In an effort to find alternatives to fossil fuels, the USDA established research on alternative and renewable energy as a high priority. Such research includes development of new energy crops, improved methods for producing biofuels, such as ethanol and biodiesel, producing hydrogen and other fuel gases from agricultural waste and more efficient use of energy in agricultural production and in rural communities. Energy issues impact all aspects of agriculture and rural development and thus applications dealing with alternative and renewable energy could be submitted to many of the different topic areas. If an application has a connection to alternative and renewable energy this should be indicated in R&R Other Project Information (Field 7(2)) and a brief explanation of how it is related to alternative and renewable energy should be provided.

8.1 Forests and Related Resources

Dr. Charles Cleland, National Program Leader for SBIR Forests and Related Resources may be contacted at ccleland@csrees.usda.gov or (202) 401-6852 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Forests and Related Resources topic area aims to develop environmentally sound techniques to increase productivity of forest lands and to develop improved technologies to produce wood products and value-added materials derived from woody resources. These technologies will also enhance the protection of the Nation's forested lands and forest resources and help to ensure the continued existence of healthy and productive forest ecosystems.

To meet the identified needs in forestry and wood utilization, the program's long-term goals (10 years) are to achieve increased utilization of woody resources for value-added products from wood; healthy and sustainable forest ecosystems with reduced impact from wildfires; healthier forest ecosystems where the impact of pathogens and insects can be managed in a more sustainable manner; sustainable harvesting of woody resources with reduced ecological impact; and improved growth and yield of major forest species that will lead to more efficient use of forested lands.

FY 2008 Research Priorities:

1. Growth and yield – Improving growing stock, tissue culture, genetic manipulation or vegetative reproduction of forest trees and other means of increasing the regenerative abilities of forests; developing systems to increase the survival of newly planted trees through mechanical, physical or chemical means that are environmentally safe; reducing the adverse impact of pathogens and insects by developing better methods to monitor infestations and improved control strategies for combating insects and pathogens that attack important woody species.

2. Increasing the utility of forest-grown material – research to improve lumber yield or other means of increasing the volume and worth of wood from individual trees; utilizing a greater percentage of the tree through improved or new techniques of veneering or comminution, for the production of new or improved reconstituted products; developing better methods for manufacturing wood products and testing wood products for performance and durability; and development of improved methods for the production of paper.

3. Reducing ecological damage by forest operations – research to reduce soil erosion, compaction or other alterations caused by harvesting and/or other forest operations, and that will provide for the economic recovery of resources from forests while raising potential productivity and reducing impacts to the ecological structure of the area of operation.

4. Developing technology that facilitates the control of wildfires on forest lands – research that provides systems for detecting and managing wildfires; systems for reducing fuel loads in forests; tools and equipment for improving the efficacy and safety of fire fighters on the ground and in the air; and communication and navigation systems for improving the coordination of fire management activities.

5. Developing biofuels and other specialty chemicals derived from woody biomass.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications that deal with the development of biofuels derived from non-woody agricultural crops should be submitted under topic area 8.8 Biofuels and Biobased Products

8.2 Plant Production and Protection – Biology

Dr. William Goldner, National Program Leader for SBIR Plant Production and Protection may be contacted at wgoldner@csrees.usda.gov or (202) 401-1719 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

This program aims to enhance crop production through biological approaches to reduce the impact of harmful agents, develop new methods for plant improvement and develop new food and specialty-use crop plants as well as new genotypes of existing crop plants with characteristics that allow their use in new commercial applications. The long-term goals (10 years) of this program are: (1) New crops that will foster new industry, grower, community, consumer, and environmental benefits; (2) Advancements in crop genetics for improvements in yield, quality, abiotic and biotic stress tolerance/resistance; and (3) Improvements in biological crop protection resulting in reduced production costs and increased environmental benefits.

FY 2008 Research Priorities:

1. Improved plant disease diagnostics, e.g. accurate, rapid and cost-effective identification of causal agents in specialty crop plants at the earliest possible time relative to manifestation of disease;

2. Insect, nematode, disease resistant and abiotic stress tolerant specialty crops;

3. Biological approaches to improving commercial floricultural production, e.g. technology to improve the competitiveness of U.S. production of flowering potted plants, bedding plants, seasonal crops, annuals, perennials and cut flowers; and

4. Biological approaches to improving commercial ornamental nursery production, e.g. technology to improve the competitiveness of U.S. woody plant production for flowering shrubs, shade trees, etc.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Additional consideration will be given to applications addressing the development of products, processes and services for U.S. production of specialty crops, i.e. fruits, nuts, vegetables, nursery and greenhouse crops.

- Phase I projects involving the development of transgenic crops would benefit by the inclusion of a brief description of the proposed path to commercialization, including an understanding of what will be needed to clear regulatory consideration.

- Applications that deal with non-biological engineering technologies should be sent to topic area 8.13 Plant Production and Protection – Engineering

8.3 Animal Production and Protection

Dr. Peter Burfening, National Program Leader for SBIR Animal Production and Protection may be contacted at pburfening@csrees.usda.gov or (202) 401-5823 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Animal Production and Protection topic area aims to develop technologies to generate new or improved high-quality products/processes and to promote the efficiency of agricultural production systems. These technologies will also enhance protection and safety of the Nation's agriculture and food supply. Program success will result in marketable technologies that reduce the number and severity of animal disease outbreaks and a decreased dependence on the widespread use of antibiotics. These program priorities will also contribute to the protection and enhancement of the Nation's natural resource base and environment by increasing productivity while minimizing the environmental consequences.

To meet these identified needs of agriculture, the program's long-term goals (10 years) include commercial adoption and sales of technologies aimed at improving animal productivity and improving the quality of animal products; new technologies that provide improved understanding of animal nutrition for improved efficiency, performance, health, and well being of animals and to optimize resource use while delivering environmental benefits; and new technologies that reduce adverse impacts and improve the management of animal diseases that represent a threat to animal production, biosecurity or public health.

FY 2008 Research Priorities:

1. Development of marketable technology that will improve the production efficiency of animals of agricultural importance and/or improve their end products;

2. Developing marketable technologies that enhance the nutrient value of the byproducts of the biofuels industry for the purpose of feeding these byproducts to livestock; and

3. Development of marketable technology that will improve the health and well-being of animals of agricultural importance. Examples of these technologies may be diagnostics, therapeutics, vaccines and other immunization methods, animal biosecurity management tools and traceability.

Other Key Information

- Applications not meeting one of the above research priorities will be returned to the PD without review.

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications dealing with animal manure management should be submitted to topic area 8.11 Animal Manure Management.

- Applications dealing with the development of transgenic technologies for animals are currently not being accepted while this program awaits federal guidance on the use of transgenic animals in the food supply. Studies aimed at the production of transgenic animals for the production of human health products will no longer be accepted by the USDA/SBIR Animal Production and Protection topic area.

- USDA/SBIR Animal Production and Protection Program is interested in receiving applications on carcass decontamination which could make the contaminated carcasses useful for value added processing.

- Applications focused on Animal Protection should focus on those diseases identified as high priority diseases for research by the National Research Initiative. Refer to the NRI Animal Protection Program - http://www.csrees.usda.gov/fo/animalprotectionandbiosecuritynri.cfm.

  - Species Specific High Priority Areas
    - Equine: Laminitis; *Streptococcus equi* (strangles); *Rhodococcus equi*;
    - Poultry: Avian *Clostridium perfringens*; Marek's Disease; Avian pneumovirus
    - Ruminants: Bovine viral diarrhea; Bovine & ovine respiratory disease complex; Infectious causes of dairy cattle mastitis; Johne's Disease; and
    - Swine: Porcine Reproductive and Respiratory Syndrome (PRRS); Post-weaning *E.coli* diarrhea; Swine Influenza;
  - Non-Species Specific High Priority Areas
    - Diseases that may be introduced to livestock through interactions with wildlife, including chronic wasting disease, with a required emphasis on the interface between livestock and the relevant wildlife species (model species are not appropriate); and
    - Foreign Animal Diseases (limited to: Foot and Mouth Disease, Avian Influenza, Exotic Newcastle Disease, Vesicular Stomatitis Virus or Classical Swine Fever)
    - Projects that do not include work with a specific disease are also considered a high priority if the Project Director justifies the potential for broad applicability to multiple diseases.

- Applications dealing with aquacultured species should be submitted under topic area 8.7 Aquaculture.

- Applications that deal with post harvest technologies should be submitted under topic area 8.5 Food Science and Nutrition.

8.4 Soil and Water Resources

Dr. Charles Cleland, National Program Leader for SBIR Soil and Water Resources may be contacted at ccleland@csrees.usda.gov or (202) 401-6852 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Soil and Water Resources topic area aims to develop technologies for conserving and protecting soil and water resources while sustaining optimal farm and forest productivity and the manufacture of resulting agricultural commodities. Applications need to address some aspect of agriculture or make clear how the proposed project would impact agriculture. Agriculture is the largest impact of humankind on the environment and it is imperative that we find ways to minimize the adverse impact of agriculture on the environment and also to mitigate environmental pollutants that adversely impact agriculture.

To meet these identified needs of agriculture, the program's long-term goals (10 years) are to achieve improved utilization of water resources that are better able to sustain production agriculture; better use of limited water resources for agriculture through improved irrigation technologies; a more sustained soil resource through reduced soil erosion and thereby lead to more productive agriculture; and improved soil quality that will permit a more sustainable and productive agriculture.

FY 2008 Research Priorities:

1. Water Quality and Conservation - Develop new and improved technologies to optimize water conservation, monitor the quality of surface water and groundwater resources for biotic and abiotic pollutants, develop improved methods for the reuse of waste water, including the remediation and restoration of water resources that impact agriculture and forestry operations.

2. Irrigation - Develop improved irrigation technologies that will provide more efficient and cost-effective delivery of water and chemicals. Develop new irrigation methods that allow for more efficient use of water including accurate delivery of water to where it is needed.

3. Soil Erosion - Develop better methods for preventing soil erosion by wind and surface water runoff and for monitoring wind erosion and sediment transport.

4. Soil Quality - Develop new technologies for measuring soil properties, soil nutrient content and the physical and chemical nature of soil. Research new technologies that enhance soil properties while restricting adverse environmental impact and develop improved methods to remediate degraded soils.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications that deal with air pollution caused by animal wastes should be submitted under topic area 8.11 Animal Manure Management.

8.5 Food Science and Nutrition

Dr. Dionne Toombs, National Program Leader for SBIR Food Science and Nutrition may be contacted at dtoombs@csrees.usda.gov or (202) 401-2138 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Food Science and Nutrition topic area aims to fund projects that support research focusing on developing new and improved processes, technologies, or services that increases the understanding of food safety issues and the characteristics of foods, including their biologically active components. Additionally, project research has been funded that develops novel rapid tests for the determination of food quality and safety parameters; rapid detection methods of foodborne pathogens and toxic metabolites to reduce food contamination and foodborne illnesses; methods for the processing and packaging of food products; and nutrition-related technologies and processes that will improve health.

The long term goals (10 years) of the program are to commercialize the production of useful new food products, processes, materials, and systems, and apply information that addresses nutrition-related issues to improve and protect the Nation's food Supply.

FY 2008 Research Priorities:

1. Developing novel or rapid assay, bioassay techniques, or field tests to measure nutrients and food interactions;

2. Developing innovative food processing and packaging technologies;

3. Developing sensor technologies for the detection of microorganisms and improved methods for detection of microorganisms during post harvest, processing and distribution;
    a. Examples of common foodborne bacteria:
        i. *E coli* 0157:H7 associated with fruits and vegetables
        ii. Vibrio species associated with seafood
        iii. Salmonella species and Campylobacter species associated with poultry and swine

4. Development of specialty products or processes using non-thermal techniques for food preservation; and

5. Developing and using information technology to address obesity, nutritional issues among children, older adults, and families and developing intervention strategies to increase awareness and improve health.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Projects that promote value-added products and processes are encouraged.

- Projects that address functional foods to promote health are encouraged.

- Projects on novel screening methods for threat agents need strong letters of support from the appropriate Federal agency who will be the end user of the technology.

- Projects that focus on technologies for improving cost benefit and model-based analyses including distribution, warehousing and retailing systems as they relate to the economy are accepted.

- Projects should include appropriate collaborations with experts in the field of investigation.

8.6 Rural Development

Dr. Siva Sureshwaran, National Program Leader for SBIR Rural Development may be contacted at ssureshwaran@csrees.usda.gov or (202) 720-7536 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

During the last 30 years, dramatic social, economic and technological changes have occurred in many rural areas in the United States. Although farming continues to be an important source of income, most of rural America is moving from agrarian to post-agrarian economies. Some communities are facing economic decline and rural exodus, while in other regions, especially coastal and mountainous areas, there has been an increased economic growth and an influx of new residents. However, these changes have not benefited all rural people. Applications may be submitted for the development of new technology or for the utilization of existing technology, to address important issues and/or solving significant problems in rural America. All applications should explicitly discuss the specific rural problem or opportunity that will be examined and how this technology will successfully address the problem or opportunity. The applications need not to be centered on agriculture, but may be focused on any area that has the potential of providing significant benefits to rural Americans. Applications submitted must include an objective to assess the impacts of the proposed project on the environment or the socio-economic development of rural areas.

The long-term goals (10 years) of this program are: (1) Create sustainable rural economies; (2) Develop rural communities that are more resilient to disasters; (3) Enhance economic vitality of rural areas; and (4) Promote job creation and income growth in rural areas.

FY 2008 Research Priorities:

1. Development of technologies and services that protect or enhance the environment while promoting economic development. Topics may include technologies and services that promote rural tourism, protect the ecosystem, conserve energy, etc.

2. Reducing the vulnerabilities of rural communities from all types of hazards, including intentional acts such as terrorism, and especially natural or unintentional hazards such as hurricanes, i.e. preparation, forecast and warning, response and rebuilding phases of hazard mitigation.

3. Development of information and managerial systems that improve the efficiency and effectiveness of local governments in service delivery, especially in critical areas, such as transportation, telecommunications and health care, and in turn, enhance the economic vitality of rural areas.

4. Development of products or services that enhance the availability and capability of entrepreneurs and a diversified workforce.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation, exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications must contain an objective to assess the impacts of the proposed project on the environment or the socio-economic development of rural areas. Applications that do not address this may be returned to the PD without review.

- Applications dealing with on farm production agriculture research should be submitted to topic area 8.12 Small and Mid-Sized Farms.

8.7 Aquaculture

Dr. Charles Cleland, National Program Leader for SBIR Aquaculture may be contacted at ccleland@csrees.usda.gov or (202) 401-6852 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Aquaculture topic area aims to develop new technologies that will enhance the knowledge and technology base necessary for the continued growth of the domestic aquaculture industry as a form of production agriculture. Seafood production from the wild is under increased pressure due to overfishing and pollution and therefore aquaculture is increasingly becoming an important source of seafood. Emphasis is placed on research leading to improved production efficiency and increased competitiveness of private sector aquaculture in the United States. Studies on commercially important, or potentially important, species of fish, shellfish and plants, from both freshwater and marine environments are included. These program priorities will also contribute to the protection and enhancement of the Nation's natural resource base and environment by increasing productivity while minimizing the environmental consequences.

To meet these identified needs in aquaculture, the program's long-term goals (10 years) are to achieve improved aquaculture production resulting from improved reproductive efficiency in fish and shellfish; improved aquaculture production resulting from genetic improvement in fish and shellfish; improved aquaculture production resulting from improved animal health; improved aquaculture production with reduced water usage and improved production efficiencies; and cost-effective production of microalgae for use as aquaculture feed and as a source of valuable human food supplements.

FY 2008 Research Priorities:

1. Reproductive Efficiency - Novel or innovative approaches to improve reproductive efficiency in aquaculture including: greater control of maturation, ovulation and fertilization; improved gamete and embryo storage; improved larval rearing techniques; enhanced reproductive performance of broodstock; improved methods for cryopreservation of sperm and embryos; and methods to control sex determination.

2. Genetic Improvement - Novel or innovative approaches to improve production efficiency through genetic improvement of aquacultural stocks including: genetic mechanisms of sex determination; genetic basis for inheritance of commercially important traits such as growth, cold tolerance and pathogen susceptibility; identification of major genes affecting performance; application of molecular biology and genomics and the integration of this technology into breeding programs; performance evaluation of aquacultural stocks and utilization of crossbreeding and hybridization.

3. Integrated Aquatic Animal Health Management - Novel or innovative approaches to reducing acute and chronic losses related to aquatic animal health in aquaculture production systems through an integrated holistic approach including: physiological stress related to the quality of the aquatic production system; genetic, environmental and nutritional components of aquatic health management; control of predation in aquaculture production systems; development of new vaccines or immunization procedures to enhance resistance to infectious diseases and parasites; development of diagnostic tests for specific diseases that pose a health hazard; and development of improved treatment methods for acute or chronic health problems caused by specific infectious or non-infectious agents, parasites, injuries and chemical and toxic agents.

4. Improved Production Systems and Management Strategies - Novel or innovative approaches to improve existing or alternative production system design and management strategies including: development of biological, engineering and economic design criteria and models; enhancement of water quality in existing production systems through aeration, flow patterns, etc.; characterization, handling and treatment of effluent from aquacultural production systems; improved harvesting methods and strategies; and improved operating efficiencies for recirculation systems.

5. Plant Production Systems - Novel or innovative approaches to improve the efficiency of algal production systems including: identification of new species with improved nutritional profile for use in feeding to other aquacultural species or as a source of valuable human food supplements; development of improved bioreactor technology; and development of better methods for harvesting algal biomass.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications that deal with the development of new food products derived from aquaculture species should be submitted under topic area 8.5 Food Science and Nutrition.

8.8 Biofuels and Biobased Products

Dr. William Goldner, National Program Leader for SBIR Biofuels and Biobased Products may be contacted at wgoldner@csrees.usda.gov or (202) 401-1719 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The objective of this research area is to promote the use of biofuels and non-food biobased products by developing new or improved technologies that will lead to increased production of industrial products from agricultural materials. This research will lead to new opportunities to diversify agriculture and enhance agriculture's role as a reliable supplier of raw materials to industry. Historically, appropriate research areas have included: development of new crops that have the potential of producing raw materials that can be converted into useful industrial products; development of procedures for enhanced recovery of critical raw materials from agricultural commodities; development of improved technology for converting agriculturally derived raw materials into useful industrial products; and development of industrial products derived from agricultural materials to make them more effective and/or more cost competitive with non-agriculturally derived industrial products.

The long-term goals (10 years) of this program are: (1) New industrial crops that will foster industry, grower, community, consumer, and environmental benefits. (2) New or improved technologies for producing biofuels and related co-products with emphasis on economically and environmentally sustainable feedstocks and processes. (3) Replacement of petroleum-based products by biobased product equivalents.

FY 2008 Research Priorities:

1. Biobased Fuels - New and improved technology for the economically and environmentally sustainable production and conversion of agriculturally important biomass material into alcohol and other products to be used as fuel, including but not limited to ethanol, hydrogen and biodiesel; fuel additives; and byproducts from the biofuel production stream that will optimize the economic feasibility of the production of biofuels. This solicitation seeks to support technologies that will minimize environmental consequences during crop biomass production, for example: increased crop water-use efficiency; increased nutrient use-efficiency, and conversion, for example: reduction of energy use and water use during conversion; reduction of harmful byproducts from conversion. Applications not addressing economic and environmental sustainability may be returned to the applicant without review.

2. New Crops for the Production of Non-food Biobased Products – Identification, testing and development of new industrial crops that will provide new local or regional economic opportunities for farmers and growers to produce raw materials for the production of non-food biobased products.

Other Key Information

- Applications submitted to this topic area that do not specifically address the FY 2008 Priority Research Areas will be returned to the PD without review.

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications that deal with developing value-added biofuels and biobased products from forest biomass or residues should be submitted to the 8.1 Forest and Related Resources topic area.

- Applications that deal with developing value-added biobased products from animal manure or carcasses should be submitted to 8.11 Animal Manure Management.

- Applications that deal with developing marketable technologies that enhance the nutrient value of the byproducts of the biofuels industry for the purpose of feeding these byproducts to livestock should be submitted to the 8.3 Animal Production and Protection topic area.

8.9 Marketing and Trade

Dr. Siva Sureshwaran, National Program Leader for SBIR Marketing and Trade may be contacted at ssureshwaran@csrees.usda.gov or (202) 720-7536 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

Success of the U.S. economy in general, including agribusiness and rural communities in particular, is increasingly dependent on maintaining and expanding domestic and international markets. The U.S. economy is also dependent on the development of new products, production practices, business and marketing tools and information that enhance efficiency, equity and the competitiveness of the U.S. agribusiness sector. The scope of research of this topic is to identify an array of innovative marketing strategies to increase sales of the U.S. agribusiness sector, including agricultural, forestry and aquacultural enterprise that derive a significant portion of its revenues from sales of agricultural products or sales to agricultural producers, e.g. raw commodities, plus processed, value-added food, feed, seeds, fertilizer and industrial products derived from these commodities, including biofuels and waste from biofuel production, both domestically and abroad.

The long term goals (10 years) for this program are: (1) Create efficient and equitable agribusiness marketing systems, (2) Assist with commercialization of new agribusiness products and technology, (3) Increase export market opportunities for US agribusinesses, and (4) Enhance environmental benefits based on the market rather than on regulations.

FY 2008 Research Priorities:

1. Development of new marketing strategies, including new technologies and or innovative utilization of existing technologies, to promote efficient assembling, packing, processing and shipping methods to sell agribusiness products in "niche," regional, national and international markets;

2. Development of current and projected economic information on product sales, potential demand, prices, quality standards and specifications, packaging preferences, relevant time periods and other changes relative to consumption patterns at home and abroad to assist agribusiness firms with commercialization of new products and technologies. Also included in this topic would be innovative methods that would facilitate the production of biofuels, including innovative marketing systems for small producers, markets for waste from biofuel production, transportation, etc.

3. Identification of new export market opportunities and resolution of trade impediments for U.S. agribusiness including forestry, agricultural and aquacultural products; and

4. Development of market-based approaches to reduce or mitigate adverse agri-environmental consequences or to promote positive agri-environmental outcomes while simultaneously preserving economic growth.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Where appropriate, foreign travel may be approved provided justification is adequately documented in the application.

8.11 Animal Manure Management

Dr. Richard Hegg, National Program Leader for SBIR Animal Manure Management may be contacted at rhegg@csrees.usda.gov or (202) 401-6550 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The objective of this research area is to develop new or improved technologies based on economically and environmentally sound approaches for improved management of animal manures. This research area may include other materials combined with manure, such as bedding, litter and water. The proposed research is intended to reduce the adverse impact of animal manure on the environment, people, improve the economics of animal production by optimizing manure management technologies and creating value-added products derived from animal manure. This program will focus exclusively on terrestrial animal production, including poultry. Successfully meeting the research priorities will contribute to the protection and enhancement of the Nation's natural resource base and environment.

The long term goals (10 years) of this program are commercial adoption of new manure management technologies, development of technologies to meet or exceed air and water quality standards, and increase the number of commercially viable value-added products to off-set the cost of manure management for livestock and poultry producers.

FY 2008 Research Priorities:

1. Development of methods and technologies to reduce the impact of animal production systems on the environment by establishment of better ways to handle, collect, transport and treat animal manure;

2. Development of methods for the detection and abatement of air emissions resulting from animal manure management systems;

3. Development of innovative, energy-efficient, cost effective products, processes or services to reduce the impact of animal manure on surface and groundwater resources; and

4. Development of innovative ways to process animal manure into value-added products.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Applications that deal with aquacultural waste should be submitted under topic area 8.7 Aquaculture.

8.12 Small and Mid-Size Farms

Dr. Charles Cleland, National Program Leader for SBIR Small and Mid-Size Farms may be contacted at ccleland@csrees.usda.gov or (202) 401-6852 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The Small and Mid-Size Farms topic area aims to promote and improve the sustainability and profitability of small and mid-size farms and ranches (where annual sales of agricultural products are less than $250,000 for small farms and $500,000 for mid-size farms - hereafter referred to as small farms). The vast majority of farms in this country are small and they play an important role in the agricultural sector. The viability and sustainability of small farms is important to the Nation's economy and to the stewardship of our biological and natural resources. Small farms are also critical to sustaining and strengthening the leadership and social fabric of rural communities and applicants are strongly encouraged to emphasize how their project would contribute to the well-being of rural communities and institutions. In particular, applicants should emphasize how the results of their project would be disseminated to other small farmers and provide benefit to the small farm community.

To meet these identified needs in the small and mid-size farm sector, the program's long-term goals (10 years) are to achieve improvements in sustainability and profitability of small farms with increased production of specialty crops and specialty animals; improved farm management skills in small farmers that leads to more sustainable and profitable small farms; better stewardship of natural resources through adoption of more sustainable farming practices; and better educated small farmers who are better able to operate their farms on a sustainable and profitable basis.

FY 2008 Research Priorities:

1. New Agricultural Enterprises - Efforts are needed to develop new agricultural enterprises that are small scale and focused on specialty farm products, both plant and animal and on innovative ways to market these farm products through direct marketing, such as farmers markets or cooperatives where the financial return to the farmer is optimized or through specialty market outlets that offer a higher financial return. Emphasis is encouraged for organic and natural foods, specialty animal products, such as free-range poultry or natural beef, non-food specialty crops, such as medicinal herbs and value-added food, and non-food products.

2. Farm Management - Efforts are needed to develop tools and skills that are appropriate for small farms that will enhance the efficiency and profitability of small farms. New tools are also needed that will enhance farm safety. Development of new risk management tools to facilitate better planning is needed. Innovative ways to promote agro-tourism as a way to enhance farm profitability is encouraged.

3. Natural Resources - Efforts are needed to develop farming methods scaled appropriately for small farms that are directed at more efficient use of natural resources. Particular emphasis is needed to develop sustainable farming practices.

4. Educational Outreach - Efforts are needed to develop new tools to ensure that the next generation of small farmers has access to the information and resources they need to operate their small farms on a sustainable and profitable basis.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topic

8.13 Plant Production and Protection - Engineering

Dr. William Goldner, National Program Leader for SBIR Plant Production and Protection Engineering may be contacted at wgoldner@csrees.usda.gov or (202) 401-1719 regarding questions about the suitability of research topics or to arrange a telephone consultation.

Background

The objective of this topic is to examine means of enhancing crop production by reducing the impact of harmful agents and developing effective crop production systems that are economically and environmentally sustainable. The long-term goals (10 years) of this program are: (1) New or improved technologies for crop production and post-harvest handling and storage that will foster industry, grower, community, consumer, and environmental benefits. (2) Improvements in crop quality and yield from using new or improved technologies for crop protection during crop production and post-harvest handling and storage. (3) Reduction of cost and improved competitiveness from using technologies with reduced energy requirements needed for crop production and protection pre- and post-harvest.

FY 2008 Research Priorities:

1. Post-harvest handling of specialty crops, including transportation and quality preservation;

2. Reduction of manual labor in specialty crop production, harvesting and post-harvest handling through technology to improve the competitiveness of U.S. specialty crop production;

3. Commercial floriculture production technology, i.e. technology to improve the competitiveness of U.S. flowering potted plant, bedding plant and cut flower production, seasonal crops, annuals, perennials; and

4. Identity/pathway preservation technologies for specialty crops, e.g. technology facilitating the rapid and accurate tracing of specialty crops from producer to retail distributor.

Other Key Information

- **ALL ATTACHMENTS MUST BE SUBMITTED IN THE PORTABLE DOCUMENT FORMAT (PDF).**

- All Phase I applications should give the reviewing community a brief vision of where the PD expects the project to be at the end of Phase II (entering Phase III commercialization).

- Applications exceeding the budget limitation or exceeding the page limit or not meeting the formatting requirements will be returned to the PD without review.

- The applicants are strongly encouraged to contact the National Program Leader regarding the suitability of research topics.

- Additional consideration will be given to applications addressing the development of products, process and services for U.S. production of specialty crops, e.g. fruits, nuts, vegetables, nursery and greenhouse crops

- Applications that deal with irrigation and related technology should be sent to the 8.4 Soil and Water Resources.

9.0 SUBMISSION FORMS AND CERTIFICATIONS

All of the necessary forms and instructions will be found on the Grants.gov website. Applicants can access the appropriate page on Grants.gov by visiting the USDA SBIR funding opportunity page at http://www.csrees.usda.gov/fo/sbir. Clicking on the Funding Opportunity Number listed near the bottom of the page will link the applicant directly to the information and forms necessary to submit through Grants.gov. P**lease note: Applicants must have successfully completed the entire registration process, see subsection 3.2 prior to being able to submit an application through Grants.gov. All attachments must be submitted in PDF format, see subsection 3.2 (C).**

10. 0 SAMPLE APPLICATIONS FROM USDA SBIR SOLICITATION

These applications, which resulted in Phase I awards, were submitted under previous USDA SBIR Program Solicitation guidelines. As such, these applications do not accurately reflect the current format nor the forms and attachments that are required for submission through Grants.gov. These sample applications are provided solely for general guidance. In the original application, the cover page was signed by both the project director and authorized organizational representative. Social security numbers, budgets and some material containing biographical information have been deleted to protect confidentiality.

Visit the web to see the sample applications available only in PDF version at:
www.csrees.usda.gov/funding/sbir/sbir_sample.html