

Small Business Innovation Research and Small Business Technology Transfer Programs Phase I Solicitation FY-2007 (SBIR/STTR)

Program Solicitation

NSF 06-598

Replaces Document(s):

NSF 06-553



National Science Foundation

Directorate for Engineering
Office of Industrial Innovation

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

December 04, 2006

Topics: Biotechnology (BT), Electronics (EL), Emerging Opportunities (EO), Information Technology (IT). Do not submit proposals prior to November 4, 2006.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Small Business Innovation Research and Small Business Technology Transfer Programs Phase I Solicitation FY-2007 (SBIR/STTR)

Synopsis of Program:

The SBIR/STTR Programs stimulate technological innovation in the private sector by strengthening the role of small business concerns in meeting Federal research and development needs, increasing the commercial application of federally supported research results, and fostering and encouraging participation by socially and economically disadvantaged and women-owned small businesses.

The significant difference between the SBIR and STTR programs is that STTR requires researchers at universities and other research institutions to play a significant intellectual role in the conduct of each STTR project. These university-based researchers, by joining forces with a small company, can spin-off their commercially promising ideas while they remain primarily employed at the research institution.

Cognizant Program Officer(s):

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Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.041 --- Engineering

Award Information

Anticipated Type of Award: Other Grant Fixed Amount Awards

Estimated Number of Awards: 150 awards of which approximately 125 will be SBIR Phase I awards and approximately 25 will be STTR Phase I awards (pending availability of funds).

Anticipated Funding Amount: \$16,250,000 with approximately \$12,500,000 for SBIR Phase I and approximately \$3,750,000 for STTR Phase I (pending the availability of funds).

Eligibility Information

Organization Limit:

Proposals may only be submitted by the following:

- Only firms qualifying as a [small business concern](#) are eligible to participate in the SBIR/STTR programs. Socially and economically disadvantaged small business concerns and women-owned small business concerns are particularly encouraged to participate. For an SBIR Phase I Proposal, a minimum of two-thirds of the research, as measured by the budget, must be performed by the small business concern and the balance may be outsourced to a consultant or subcontractor or a combination of the two. For an STTR Phase I Proposal, a minimum of 40% of the research, as measured by the budget, must be performed by the small business concern and a minimum of 30% of the research, as measured by the budget, must be performed by the collaborating research institution.

Proposals from joint ventures and partnerships are permitted, provided the entity created qualifies as a small business in accordance with this solicitation. Proposing firms are also encouraged to take advantage of research expertise and facilities that may be available to them at colleges, universities, national laboratories, and from other research providers. Such collaborations may include research subcontracts, consulting agreements or the employment of faculty as senior personnel and of graduate or undergraduate students as assistants by the small business.

PI Limit:

The primary employment of the Principal Investigator (PI) must be with the small business concern at the time of the award. A PI must spend a minimum of one calendar month of an SBIR Phase I project and a minimum of two calendar months on an STTR Phase I project. Employment releases and certifications of intent shall be required prior to award.

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Limit on Number of Proposals per Organization: 4

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required by NSF.
- **Indirect Cost (F&A) Limitations:**

Indirect costs are limited to an effective rate of 150% of salaries and wages. (See Section V.A.9.6)
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

December 04, 2006

Topics: Biotechnology (BT), Electronics (EL), Emerging Opportunities (EO), Information Technology (IT). Do not submit proposals prior to November 4, 2006.

Proposal Review Information Criteria

Merit Review Criteria: National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

Award Conditions: Additional award conditions apply. Please see the full text of this solicitation for further information.

Reporting Requirements: Additional reporting requirements apply. Please see the full text of this solicitation for further information.

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I. INTRODUCTION

The National Science Foundation (NSF), an independent agency of the Federal Government, invites eligible small business concerns to submit Phase I proposals for its FY 2007 Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. NSF will support high quality projects on important scientific, engineering, or science and engineering education problems and opportunities that could lead to significant commercial and public benefit if the research is successful.

The significant difference between the SBIR and STTR programs is that STTR requires researchers at universities and other research institutions to play a significant intellectual role in the conduct of each STTR project. These university-based researchers, by joining forces with a small company, can spin-off their commercially promising ideas while they remain primarily employed at the research institution.

The SBIR/STTR solicitation is issued pursuant to the authority contained in Public Law 106-554. SBIR policy is provided by the Small Business Administration (SBA) through the SBA Policy Directive.

II. PROGRAM DESCRIPTION

The primary objective of the NSF SBIR/STTR Program is to increase the incentive and opportunity for small firms to undertake cutting-edge, high risk, high quality scientific, engineering, or science and engineering education research that would have a high potential economic payoff if the research is successful. The STTR program further expands the public and private partnership to include collaborative opportunities for small businesses and non-profit research institutions. A team approach is required in an STTR project where at least one research investigator is employed by the small business concern and at least one investigator is employed by a collaborating research institution.

The fundamental mission of NSF is to promote discoveries and to advance education across the frontiers of knowledge in science and engineering. Consistent with that mission, NSF encourages and supports a wide range of proposals from the research and education community and also from the private small business sector. These proposals are reviewed under NSF's merit review criteria, which cover both the quality of research (intellectual or technical merit) and its potential impact on society (broader impacts).

The SBIR/STTR program solicits proposals from the small business sector consistent with NSF's mission. The program is governed by Public Law 106-554. A main purpose of the legislation is to stimulate technological innovation and increase

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private sector commercialization. The NSF SBIR/STTR program is therefore in a unique position to meet both the goals of NSF and the purpose of the SBIR legislation by transforming scientific discovery into both social and economic benefit, and by emphasizing private sector commercialization. Accordingly, NSF has formulated broad solicitation topics for SBIR/STTR that conform to the high-technology investment sector's interests.

- [Biotechnology \(BT\)](#)
- [Electronics \(EL\)](#)
- [Emerging Opportunities \(EO\)](#)
- [Information Technology \(IT\)](#)

Successful proposers will conduct Research and Development (R&D) on projects that:

1. Provide evidence of a commercially viable product, process, device, or system, and,
2. Meet an important social or economic need.

Projects should have the following:

- High potential commercial payback, and,
- High-risk efforts.

Projects may also address:

- Research tools which meet significant commercial market needs, or,
- Applications that result in multipurpose commercially viable functions.

For more in-depth program information please reference the following web site: <http://www.nsf.gov/eng/iip/sbir/sbirspecc.jsp>.

III. AWARD INFORMATION

Under this solicitation, SBIR Phase I proposals may be submitted for funding up to \$100,000; STTR Phase I proposals may be submitted for funding up to \$150,000. SBIR Phase I projects run for 6 months and STTR Phase I projects for 12 months. The program expects to make approximately 150 fixed amount awards (approximately 125 SBIR Phase I awards plus an additional 25 STTR Phase I awards). Anticipated funding amount is \$16,250,000 with approximately \$12,500,000 for SBIR Phase I and approximately \$3,750,000 for STTR Phase I (pending the availability of funds and quality of proposals). Award notification is typically four to six months from the proposal submission deadline date. All awards will have an effective date of July 1, 2007.

IV. ELIGIBILITY INFORMATION

Organization Limit:

Proposals may only be submitted by the following:

- Only firms qualifying as a [small business concern](#) are eligible to participate in the SBIR/STTR programs. Socially and economically disadvantaged small business concerns and women-owned small business concerns are particularly encouraged to participate. For an SBIR Phase I Proposal, a minimum of two-thirds of the research, as measured by the budget, must be performed by the small business concern and the balance may be outsourced to a consultant or subcontractor or a combination of the two. For an STTR Phase I Proposal, a minimum of 40% of the research, as measured by the budget, must be performed by the small business concern and a minimum of 30% of the research, as measured by the budget, must be performed by the collaborating research institution.

Proposals from joint ventures and partnerships are permitted, provided the entity created qualifies as a small business in accordance with this solicitation. Proposing firms are also encouraged to take

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advantage of research expertise and facilities that may be available to them at colleges, universities, national laboratories, and from other research providers. Such collaborations may include research subcontracts, consulting agreements or the employment of faculty as senior personnel and of graduate or undergraduate students as assistants by the small business.

PI Limit:

The primary employment of the Principal Investigator (PI) must be with the small business concern at the time of the award. A PI must spend a minimum of one calendar month of an SBIR Phase I project and a minimum of two calendar months on an STTR Phase I project. Employment releases and certifications of intent shall be required prior to award.

Limit on Number of Proposals per Organization: 4

Limit on Number of Proposals per PI:

None Specified

Additional Eligibility Info:

DUNS Number: A DUNS number is a nine-digit number assigned by Dun and Bradstreet Information Services. If the proposer does not have a DUNS number, he or she must contact Dun and Bradstreet by telephone at (800) 333-0505 or online at <http://www.dnb.com/us/> . A DUNS number is issued at no charge and is a required data element for submission of a proposal.

Unacceptable objectives: Proposed efforts directed toward systems studies; market research; commercial development of existing products or proven concepts; straightforward engineering design for packaging; laboratory evaluations; incremental product or process improvements; evolutionary optimization of existing products; and evolutionary modifications to broaden the scope of an existing product or application are examples of projects that are not acceptable for SBIR/STTR. Projects determined unacceptable will be returned without review to the proposer.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Instructions: Proposals submitted in response to this program solicitation should be prepared and submitted in accordance with the guidelines specified in the NSF Grant Proposal Guide (GPG). The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-PUBS (7827) or by e-mail from pubs@nsf.gov.

The following instructions supplement the GPG guidelines.

A.1. Responsiveness to NSF Topics. Designate one, and only one, of the topics. The topic name and the appropriate subtopic MUST be identified on the cover sheet. A firm may submit separate proposals on different topics or different proposals on the same topic under this solicitation.

A.2. Phase I Proposal Objectives. An SBIR/STTR Phase I proposal must describe the research effort needed to investigate the feasibility of the proposed scientific or technical innovation. The primary objective of the Phase I effort is to determine whether the innovation has sufficient technical merit for proceeding into a Phase II project. A secondary objective is to assess potential commercial feasibility of the proposed work.

A.3. Phase I Project Requirements. The deliverable at the end of an SBIR/STTR Phase I grant is a technical report that summarizes the experimental and theoretical accomplishments of the research proposed. This report serves as the basis for a Phase II proposal.

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A.4. Administrative and Technical Screening. All proposals that fail to address the following items will be considered non-responsive and will be returned without review.

Administrative Items:

- A Project Summary without all required information (reference section A.9.2),
- A Project Description that does not have all 7 parts (reference section A.9.3),
- An SBIR Phase I proposal submitted with a budget exceeding \$100,000 or an STTR Phase I proposal submitted with a budget exceeding \$150,000 (reference section A.9.6),
- Provide a company commercialization history if the company certifies, in answer to the certification question on the cover sheet, that the company has received previous SBIR/STTR Phase II awards. If a company commercialization history is required, all items in Section A.9.9.2 must be addressed, and
- A proposal that has documents in the Additional Single Copy Documents module in FastLane vs. the Single Copy Documents module.

Technical Issues:

- A proposal must have sufficient technical substance to justify review,
- A proposal must fall within the scope of the topic or subtopic as delineated in the topic or subtopic description, and
- A proposal must have research proposed in science, engineering, or education.

A.5. Marking Proprietary Information. To the extent permitted by law, the Government will not release properly identified and marked technical data. If the proposal contains proprietary information, check the box at the bottom of the proposal cover page and identify proprietary technical data in the proposal by clearly marking the information and also providing a legend. Typically, proprietary information is marked in the text either with an asterisk at the beginning and end of the proprietary paragraph, underlining the proprietary sections, or choosing a different font type. An entire proposal should not be marked proprietary.

A.6. Human Subjects and Animal Use. Please refer to Chapter II, Sections D.5 and D.6 of the GPG (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg). Note that in some cases, product testing involves human subjects. In addition to the information in the GPG, please refer to <http://www.hhs.gov/ohrp>. Look for federal-wide assurances under the Office of Human Research Protection website.

If human subjects Institutional Review Board (IRB) approval is indicated, and it is not in hand at the time of submission, there must be a plan for such approval; a supporting letter regarding IRB approval should be provided under supplementary documents. The approval must be readily attainable within six weeks of informal notification of recommendation for award to ensure continued processing for funding. The small business has three basic options with regard to human subjects review: 1) establish your own IRB (see Office of Human Rights Protection (OHRP) at Health and Human Services (HHS) <http://www.hhs.gov/ohrp/assurances/index.html#registernew>; 2) use the review board of a (usually local) university or research institution, either via consultants to the project, a project subcontract, or directly through its own contacts; and 3) use a commercial company (for a listing, see <http://www.advamed.org/solutions/reviewboards.shtml>).

Animal use in funded projects requires approval of the company or collaborating institutions' Institutional Animal Care and Use Committee (IACUC). Please refer to <http://www.aphis.usda.gov/ac/researchguide.html> for additional information.

A.7. Debriefing on Unsuccessful Proposals. When a proposal is declined, verbatim copies of reviews, excluding the names of the reviewers, summaries of review panel deliberations, if any, and a description of the process by which the proposal was reviewed will be available electronically.

Phase I proposals that have been declined or returned by NSF are NOT eligible for reconsideration under the same program solicitation; however, proposals may be resubmitted under a subsequent solicitation, after suitable revision, conditional upon their falling within the scope of the subsequent topic or subtopic offerings.

A.8. General Requirements

A.8.1 Sample Limitations. Samples, videotapes, slides, appendices, or other ancillary items will not be accepted. Websites containing demonstrations, etc., may be cited in the proposal, but reviewers are not required to access them.

A.8.2 Page Format. Multiple column formats are not accepted.

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A.9. Required Format.

The required format of a Phase I proposal is described in the following paragraphs. Each proposal submitted to the NSF SBIR/STTR program will use the following FastLane Forms:

Cover Sheet

Project Summary

Table of Contents (automatically generated)

Project Description

References Cited

Biographical Sketches

Budgets and Budget Justification (also required for each subaward)

Current and Pending Support

Facilities, Equipment and Other Resources

Supplementary Docs: (placeholder for the following documents -- if applicable)

1. Letter(s) of support for the technology,
2. Company commercialization history (if applicable),
3. Cooperative Research Agreement (for STTR proposals only), and
4. Letter regarding human subjects Institutional Review Board.

Single Copy Documents - List of Suggested Reviewers

A.9.1. Cover Sheet and Certification. Complete topic and subtopic fields must be included on the cover sheet. All proposals must be electronically signed. For information regarding electronic signature, reference the [FastLane webpage](#) .

A.9.2. Project Summary. An edited version of the Project Summary will be available to the public if a proposal is awarded. The Project Summary should be written in the third person and shall begin as follows: "This Small Business Innovation Research Phase I project...." or "This Small Business Technology Transfer Phase I project...". The summary must have the following components:

1. A summary limited to 200 words addressing the intellectual merits of the proposed activity. No proprietary information should be included in the summary. Include a brief identification of the problem or opportunity, the research objectives, a description of the research, and the anticipated results.
2. A summary limited to 200 words addressing the broader impacts of the proposed activity. Include information on the potential commercial value, societal impact, and enhanced scientific and technological understanding.
3. A listing of key words. The key words or phrases should identify the areas of technical expertise in science, engineering, or education which are to be invoked in reviewing the proposal; and the areas of application that are the initial target of the technology.
4. The topic name and subtopic name(s).

A.9.3 Project Description. The project description shall contain the following parts in the following order.

Part 1: Identification and Significance of the Innovation. The first paragraph shall contain a clear and succinct statement specifying the research innovation proposed, and a brief explanation of how the innovation is relevant to meeting a need described in the subtopic narrative.

Part 2: Background and Phase I Technical Objectives. List and explain the key objectives to be accomplished during the Phase I research, including the questions that must be answered to determine the technical and commercial feasibility of the proposed concept. It is important to show how potential customer needs will be met if the research is successful. Therefore, Phase I proposers are strongly encouraged to consider commercial potential as well as the technical challenges of their research.

Part 3: Phase I Research Plan. This section must provide a detailed description of the Phase I research approach. The description must include the following:

- A technical discussion of the proposed concept,
- What is planned and how the research will be carried out,
- The plan to achieve each objective, and
- The sequence of experiments, tests, and computations involved in the measurement of those objectives.

Part 4. Company Information. This section must briefly describe the following:

- The origin of the company and background of the project team,
- The company's mission and objectives,
- The company's vision and plan to both grow and maintain a sustainable business,
- The present size of the company, which includes annual revenues; number and types of employees (administrative, management, technical, manufacturing and/or marketing personnel); and the anticipated impact of the proposed innovation on the company.

Part 5. Commercial Potential. Proposals must demonstrate adequate knowledge of the business opportunity potentially addressed by the proposed innovation. It is therefore critical to identify the potential end users of the proposed technology, as well as describe the commercialization path. This section must address the following:

- The market opportunity - describe the anticipated target market or market segments and provide a brief profile of the potential customer. What customer needs will be addressed with the innovation?
- Product or technology and competition - How does your product or service sit within the competitive landscape? What is the main competition? What is the value proposition for the product or service enabled by the innovation? How do you plan to protect the IP?
- Financing and revenue model - based upon revenue assumptions, describe how you plan to finance your innovation.

Part 6. Consultants and Subawards/Subcontracts. Keep in mind that an SBIR Phase I project requires a minimum of two-thirds of the research, as measured by the budget, to be performed by the small business concern. The STTR Phase I project requires a minimum of 40% of the research, as measured by the budget, to be performed by the small business concern, and a minimum of 30% of the research, as measured by the budget, by the collaborating research institution. The remaining percentage, one-third for SBIR Phase I and 30% for STTR Phase I awards may be allocated as appropriate to achieve the objectives of the proposed SBIR or STTR Phase I project.

Consultant: The services of each consultant must be justified within the context of the proposal. Information must be provided on each consultant's expertise, organizational affiliation, and contribution to the project. In addition, each consultant, whether paid or unpaid, must provide a signed statement that confirms availability, time commitment, role in the project, and the agreed consulting rate (not to exceed the daily equivalent of the rate paid to an Executive Level IV Federal employee. As of January 6, 2006 that amount is \$548 per day). The maximum consulting rate under this solicitation is \$548 per day. This rate is exclusive of any indirect costs, travel, per diem, clerical services, fringe benefits, and supplies.

The signed consultant statements must be a part of the proposal and count toward the 15 page project description limit! The consultant statements must be scanned into an image and uploaded to the proposal and placed under Part 6. Consultant letters may be reduced; however, they must remain legible.

Subaward (also known as the subcontract): If subawards (including contracts, subcontracts and other arrangements) are used for research, describe the tasks to be performed and how these are related to the overall project.

Each subaward must use a proposal budget, and provide details of subaward costs by cost category. Each subawardee budget must be prepared in FastLane.

Purchases of analytical or other routine services from commercial sources and the acquisition of fabricated components from commercial sources are not regarded as reportable subaward activity. Such items -- routine analytical or other routine services -- should be reported in the Budget under Other Direct Costs/Other.

All research, including subawards and consultancies, must be carried out in the U.S. (See definition of [Place of Performance](#).)

Note: In SBIR proposals only, the use of Federally Funded Research and Development Centers (FFRDCs) can only be used as subawardees with a waiver from the Small Business Administration. Additional information relative to FFRDCs may be found at <http://www.nsf.gov/statistics/nsf05306/>. Contact the cognizant SBIR Program Officer for further information on obtaining a waiver.

Part 7. Equivalent or Overlapping Proposals to Other Federal Agencies. A firm may elect to submit proposals for equivalent or overlapping work under other Federal solicitations or may have received or expect to receive other Federal awards for equivalent or overlapping work. The firm must certify on the proposal cover page whether another Federal Agency has received this proposal (or an equivalent or overlapping proposal). In addition, the proposer must inform NSF of overlapping or equivalent proposals and awards as follows: (a) related federal awards (ongoing or completed); (b) proposals that have been submitted under other government solicitations; and (c) anticipated submissions (within the upcoming calendar year) to other agencies of related proposals. For all such cases, the following information is required:

- The name, address and telephone contact of the sponsoring agency to which the proposal was or will be submitted,
- Date(s) of proposal submission(s),
- Title, number, and date of solicitation under which the proposal was submitted or will be submitted,
- Title and performance period of the proposal, and
- Name and title of principal investigator, annual person-months (calendar-months) devoted by any personnel on the equivalent or overlapping project who are participating as PI or senior personnel on this proposal.

If no equivalent or overlapping proposals are under consideration, explicitly state: NONE. NSF will not make awards that duplicate research funded or expected to be funded by other agencies, although in some cases NSF may fund portions of work described in an overlapping proposal provided that the budgets appropriately reduce costs and allocate costs among the various sponsors. **If a proposer fails to disclose equivalent or overlapping proposals as provided in this section, the proposer could be liable for administrative, civil or criminal sanctions.**

A.9.4. References Cited. Provide a comprehensive listing of relevant references, including patent numbers and other relevant intellectual property citations.

A.9.5. Biographical Sketches. Provide relevant biographical information for the Principal Investigator (PI) and key personnel (including consultants and key members of the subaward team). Summarize other contributions to the technical literature not directly pertinent to this proposal.

A.9.6. Budget. The total budget shall not exceed \$100,000 for the SBIR Phase I proposal. The total budget of an STTR Phase I proposal shall not exceed \$150,000. Budget estimates must be shown in detail in the budget justification. The budget should reflect the cost for work to be done only after the effective date of the award. Note that an awardee may not expend funds for any costs associated with the project before the effective date of the award document signed by the NSF grants officer.

List the principal investigator and senior personnel by name with their time commitments budgeted in person-months and the dollar amount for the performance period.

The reimbursement rates for consultants are a direct cost that cannot exceed the daily equivalent of the rate paid to an Executive Level IV Federal employee. As of January 6, 2006 that amount is \$548 per day. **The maximum consulting rate under this solicitation is \$548 per day.** Indicate the number of days proposed per consultant. Consultant travel should be shown under the domestic travel category, E-1, but counts as an outsourcing expense.

The budget justification should indicate the type of expendable materials and supplies required with their estimated costs.

Permanent equipment, patent expenses, and foreign travel are not allowable expenditures. Tuition costs are not considered research or research and development. Accordingly, they are not acceptable costs and should not be included in the budget.

One trip for up to two persons, normally the PI and an individual associated with business operations, to the National Science Foundation to attend a two-day grantee workshop and to discuss the research program with a SBIR/STTR program officer must be included in the Phase I budget. An explicit statement acknowledging attendance at the grantee workshop is required on the budget justification page.

Indirect costs are limited to an effective rate of 150% of salaries and wages.

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Reasonable fees (estimated profit) will be considered under Phase I. The amount of the fee approved by NSF cannot exceed seven percent (7%) of the total indirect and direct project costs. The proposal bottom line cannot exceed \$100,000 for SBIR Phase I proposals or \$150,000 for STTR Phase I proposals.

Detailed documentation of budget line items is required on ALL budget items and must be documented on the budget justification page.

A.9.7. Current and Pending Support of Principal Investigator and Senior Personnel. This section should provide information about all research to which the principal investigator and other senior personnel either have committed time or have planned to commit time (in the event that other pending projects are supported during the SBIR/STTR Phase I period of performance), whether salary for the person involved is included in the budgets of the various projects. If none, state NONE.

For all ongoing or proposed projects or proposals that will be submitted in the near future -- but excluding any proposals already cited above in the Equivalent or Overlapping Proposals to other Federal Agencies section -- that involve the Principal Investigator or senior personnel, provide the following information:

- Name of sponsoring organization,
- Title and performance period of the proposal, and
- Annual person-months (calendar months) devoted to the project by the principal investigator and each of the senior personnel.

A.9.8. Equipment, Instrumentation, Computers, and Facilities. Provide a description that specifies the availability and location of significant equipment, instrumentation, computers, and physical facilities necessary to complete the portion of the research that is to be carried out by the proposing firm in Phase I. Purchase of permanent equipment is not permitted in a Phase I project (reference definition of [Permanent Equipment](#)). DO NOT use budget line item D for Phase I proposals.

If the equipment, instrumentation, computers, and facilities for this research are not the property (owned or leased) of the proposing firm, include a statement signed by the owner or lessor which affirms the availability of these facilities for use in the proposed research, reasonable lease or rental costs for their use, and any other associated costs. *Upload images of the scanned statements into this section.*

A.9.9. Supplementary Docs. This section will only contain the following components (if applicable):

A.9.9.1. Letters of Support for Technology (no more than three letters). Proposed innovations must demonstrate market pull. Letters of support from potential customers, strategic partners or investors act as validation, add significant credibility and are highly encouraged. Please refer to specific topic description for further guidance.

A.9.9.2. Company Commercialization History. Required for all proposers certifying receipt of Phase II awards on the proposal cover page. All items must be addressed in the format outlined below. Only firms that have received one or more SBIR/STTR Phase II awards from NSF or any other federal agency must submit a company commercialization history. The following are necessary components for this section:

1. Firm Name,
2. Identify any name change your firm has gone through within the past five years,
3. List the parent company if you are a subsidiary or a spin-off. List subsidiaries and spin-offs if you are the parent company,
4. Percentage of the firm's revenues for each of the past three fiscal years from federal SBIR and/or STTR funding (including Phase I and Phase II awards),
5. Number of SBIR/STTR Phase II awards the firm received from the federal government,
6. Identify each of the Phase II SBIR/STTR awards the firm has received by agency, award amount, award number, title and performance period, and
7. Total revenues to date from the commercialization results of these awards.

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A.9.9.3. Cooperative Research Agreement (for STTR proposals only). See the [Cooperative Research Agreement \(CRA\)](#) model.

The proposing small business concern must provide a signed written CRA between the small business and the research institution at the time of award. For proposal submission, place a draft of the CRA or a letter stating that a CRA will be provided upon notification of award recommendation.

A.10. Research Topics

The fundamental mission of NSF is to promote discoveries and to advance education across the frontiers of knowledge in science and engineering. Consistent with that mission, NSF encourages and supports a wide range of proposals from the research and education community and also from the private small business sector. These proposals are reviewed under NSF's merit review criteria, which cover both the quality of research (intellectual or technical merit) and its potential impact on society (broader impacts).

The SBIR/STTR program solicits proposals from the small business sector consistent with NSF's mission. The program is governed by Public Law 106-554. A main purpose of the legislation is to stimulate technological innovation and increase private sector commercialization. The NSF SBIR/STTR program is therefore in a unique position to meet both the goals of NSF and the purpose of the SBIR legislation by transforming scientific discovery into both social and economic benefit, and by emphasizing private sector commercialization. Accordingly, NSF has formulated broad solicitation topics for SBIR/STTR that conform to the high-technology investment sector's interests.

- [Biotechnology \(BT\)](#)
- [Electronics \(EL\)](#)
- [Emerging Opportunities \(EO\)](#)
- [Information Technology \(IT\)](#)

Please note that NSF has made revisions to subtopics under these four technology areas. NSF has established a cascading decision making procedure in selecting the best fit of each subtopic under the three broad solicitation topics, BT, EL and IT. Emerging Opportunities (EO) is a more focused topic and not included in the cascading decision making procedure. The hierarchy for the fit of subtopic starts at the top with BT, followed by EL, and finally IT. The following are presented as illustrative examples:

- Research is biology-based, the proposal should be submitted to BT,
- Electronics or information for applications in biotechnology research, such as medical or bioinformatics devices or biocompatible materials proposals, should be submitted to the BT topic,
- Electronics, photonics or magnetism-based proposals should be submitted to EL. Most instrumentation outside the BT application area fits into EL,
- Information or materials-based proposals, such as embedded software or carbon nanotubes for use as semiconductors for electronic applications, should be submitted to the EL topic,
- Computer science or cognitive science-based SBIR/STTR proposals should be submitted to IT, and finally
- Modeling and simulation of engineering applications with software as the resultant commercial product should be submitted to the IT Topic.

These examples are not meant as a comprehensive list of research opportunities but to also assist in determining the proper fit for research ideas under the NSF solicitation topics.

Proposers are reminded to identify the program solicitation number (06-598) in the program solicitation block on the NSF Cover Sheet For Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing: Cost sharing is not required by NSF in proposals submitted to the National Science Foundation.

Indirect Cost (F&A) Limitations:

Indirect costs are limited to an effective rate of 150% of salaries and wages. (See Section V.A.9.6)

C. Due Dates

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- **Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time):

December 04, 2006

Topics: Biotechnology (BT), Electronics (EL), Emerging Opportunities (EO), Information Technology (IT). Do not submit proposals prior to November 4, 2006.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this program solicitation through use of the NSF FastLane system. Detailed instructions regarding the technical aspects of proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the [Grant Proposal Guide](#) for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Website at: <https://www.fastlane.nsf.gov/fastlane.jsp>.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program and, if they meet NSF proposal preparation requirements, for review. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts with the proposer.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which the reviewer is qualified to make judgements.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research

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and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

The SBIR/STTR program has **additional** criteria which reflect the legislative emphasis of the program and complement the standard NSF review criteria listed above.

"What is the intellectual merit of the proposed activity?"

1. Is the proposed plan a sound approach for establishing technical and commercial feasibility?
2. To what extent does the proposal suggest and develop unique or ingenious concepts or applications?
3. How well qualified is the team (Principal Investigator, key staff, consultants, and subawardees) to conduct the proposed activity?
4. Is there sufficient access to resources (materials and supplies, analytical services, equipment, facilities, etc.)?
5. Does the proposal reflect state-of-the-art in the major research activities proposed? (Are advancements in state-of-the-art likely?)

"What are the broader impacts of the proposed activity?"

1. What may be the commercial and societal benefits of the proposed activity?
2. Does the proposal lead to enabling technologies (instrumentation, software, etc.) for further discoveries?
3. Does the outcome of the proposed activity lead to a marketable product or process?
4. Evaluate the competitive advantage of this technology vs. alternate technologies that can meet the same market needs.
5. How well is the proposed activity positioned to attract further funding from non-SBIR/STTR sources once the project ends?
6. Can the product or process developed in the project advance NSF's goals in research and education?
7. Has the proposing firm successfully commercialized SBIR/STTR-supported technology where prior awards have been made? (Or, has the firm been successful at commercializing technology that has not received SBIR/STTR support?)

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Adhoc Review or Panel Review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six

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months. The time interval begins on the date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See Section VI.B. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/general_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpm.

Special Award Conditions:

SBIR/STTR Phase I and Phase II awards are subject to availability of funds. NSF has no obligation to make any specific number of SBIR/STTR Phase I or Phase II awards based on a solicitation and may elect to make several or no awards under any specific technical topic or subtopic. SBIR Phase I awards are six month, fixed-price grants and shall not exceed \$100,000. STTR Phase I awards are 12 month, fixed-price grants and shall not exceed \$150,000. The SBIR/STTR Phase II fixed-priced grants typically will not exceed \$500,000 per award. A Phase II award is based on a Phase I award. SBIR/STTR Phase II awards normally will be made for a 24-month period of performance. (For information on Phase II, reference Phase II proposal preparation found on the SBIR/STTR web site ([Phase II Award Information](#))). Reasonable fees for profit (not to exceed seven percent of the total direct and indirect costs) will be considered under both phases.

C. Reporting Requirements

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For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report.

Failure to provide the required annual or final project reports will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project-reporting system, available through FastLane, for preparation and submission of annual and final project reports. Such reports provide information on activities and findings, project participants (individual and organizational) publications; and, other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete.

Within 15 days after the expiration of the Phase I SBIR/STTR award, the PI is required to submit a final project report.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Rosemarie Wesson, SBIR/STTR Program Director and Solicitation Coordinator, telephone: (703) 292-7070, email: rwesson@nsf.gov
- Thomas Allnutt, SBIR/STTR Biotechnology Program Director, telephone: (703) 292-5332, email: tallnutt@nsf.gov
- Ali Andalibi, SBIR/STTR Biotechnology Program Director, telephone: (703) 292-7795, email: aandalib@nsf.gov
- Errol Arkilic, SBIR/STTR Emerging Opportunities/Information Technology Program Director, 590 N, telephone: (703) 292-8095, email: earkilic@nsf.gov
- Ian Bennett, SBIR/STTR Information Technology Program Director, telephone: (703) 292-8655, email: ibennett@nsf.gov
- Juan Figueroa, SBIR/STTR Electronics Program Director, telephone: (703) 292-7054, email: jfiguero@nsf.gov
- Muralidharan Nair, SBIR/STTR Electronics Program Director, telephone: (703) 292-7059, email: mnair@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, MyNSF (formerly the Custom News Service) is an information-delivery system designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail or the user's Web browser each time new publications are issued that match their identified interests. MyNSF also is available on NSF's Website at <http://www.nsf.gov/mynsf/>.

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Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at <http://www.grants.gov>.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) is an independent Federal agency created by the National Science Foundation Act of 1950, as amended (42 USC 1861-75). The Act states the purpose of the NSF is "to promote the progress of science; [and] to advance the national health, prosperity, and welfare by supporting research and education in all fields of science and engineering."

NSF funds research and education in most fields of science and engineering. It does this through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the US. The Foundation accounts for about one-fourth of Federal support to academic institutions for basic research.

NSF receives approximately 40,000 proposals each year for research, education and training projects, of which approximately 11,000 are funded. In addition, the Foundation receives several thousand applications for graduate and postdoctoral fellowships. The agency operates no laboratories itself but does support National Research Centers, user facilities, certain oceanographic vessels and Antarctic research stations. The Foundation also supports cooperative research between universities and industry, US participation in international scientific and engineering efforts, and educational activities at every academic level.

Facilitation Awards for Scientists and Engineers with Disabilities provide funding for special assistance or equipment to enable persons with disabilities to work on NSF-supported projects. See Grant Proposal Guide Chapter II, Section D.2 for instructions regarding preparation of these types of proposals.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090 and (800) 281-8749, FIRS at (800) 877-8339.

The National Science Foundation Information Center may be reached at (703) 292-5111.

The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Website at <http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230

- **For General Information** (NSF Information Center): (703) 292-5111

- **TDD (for the hearing-impaired):** (703) 292-5090

- **To Order Publications or Forms:**
 - Send an e-mail to: pubs@nsf.gov
 - or telephone: (703) 292-7827

- **To Locate NSF Employees:** (703) 292-5111

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a valid Office of Management and Budget (OMB) control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding the burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to:

Suzanne H. Plimpton
Reports Clearance Officer
Division of Administrative Services
National Science Foundation
Arlington, VA 22230

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