
NEW YORK STATE SBIR/STTR GUIDEBOOK 2010

~ Strategies for Winning Awards ~

**SMALL BUSINESS INNOVATION RESEARCH (SBIR) and
SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM (STTR)**

Program Description and Application Strategy
Supported by the New York State Office of Science, Technology and Innovation
(NYSTAR)

Prepared by the Central New York Technology Development Organization, Inc.
CNYTDO
Syracuse, New York

NEW YORK STATE SBIR/STTR GUIDEBOOK **~ Strategies for Winning Awards ~**

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SMALL BUSINESS INNOVATION RESEARCH (SBIR) and
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Program Description and Application Strategy

2010

Forward

Since 1984 when the SBIR program started, New York State has been among the top ten states for SBIR award winners. We recognize the federal Small Business Innovation Research program as a significant contributor to the strong business base that is growing in technology throughout the state.

The Central New York Technology Development Organization (CNYTDO) is part of the NYSTAR technology development system. We have more than a seventeen year history of support for basic research leading to new products and services. Our programs are your resources:

- to refine your technical concepts
- to test your methods and processes
- to expand your network of strategic partners
- to find a new enabling technology to facilitate your entry into the market
- to commercialize your ideas

About NYSTAR

The Office of Science, Technology and Innovation (NYSTAR) was established in 1999. NYSTAR is charged with growing New York State's investment in high technology research and economic development and turning that investment into new jobs. A central element of its mission is the recognition that New York's world-class public and private research universities and academic centers are powerful economic development engines that can create high-tech jobs and opportunity in New York.

NYSTAR's responsibilities include: administering a Research Development Program to recommend policies that encourage research and economic development involving colleges

and universities; organizing informational resources to assist prospective researchers and universities in the preparation of successful grants; and developing policies so the State may more effectively share in royalty and licensing fees generated from the development of new technologies used in future high-tech initiatives. The agency is also responsible for development and oversight of the state's existing 15 Centers for Advanced Technology (CATs), ten Regional Technology Development Centers (RTDCs) and other innovative programs designed to foster research and economic development including Centers of Excellence, Strategically Targeted Academic Research (STAR) Centers, Advanced Research Centers (ARC), and College Applied Research & Technology Centers (CARTs).

Centers for Advanced Technology (CATs)

NYSTAR supports fifteen technical centers across the state, each with a specific concentration on an advanced technology with potential for economic growth. Each CAT serves technological needs of companies across the state within its specialization, with access to local business and economic development resources through the Regional Technology Development Center (RTDC) network. Individual CATs also have their own industry relationships, offering a national or global reach through industry partners to assist small businesses with technology transfer and commercialization issues.

Center for Advanced Ceramic Technology
Alfred University, Alfred, NY

Center for Ultrafast Photonic Materials and Applications
City University of New York, New York City

Center for Advanced Materials Processing
Clarkson University, Potsdam, NY

Center for Advanced Technology in Information Management & Medical Informatics
Columbia University, New York City

Center for Biotechnology
Cornell University, Ithaca, NY

Center for Advanced Technology in Digital Multimedia
New York University, New York City

Center for Advanced Technology in Telecommunications
Polytechnic University, Brooklyn

Center for Automation Technologies
Rensselaer Polytechnic Institute, Troy, NY

Integrated Electronics Engineering Center
SUNY at Binghamton, Binghamton, NY

Center for Biotechnology
SUNY at Stony Brook, Stony Brook, NY

CAT in Sensor Systems
SUNY at Stony Brook, Stony Brook, NY

Center for Computer Applications and Software Engineering
Syracuse University, Syracuse, NY

Center for Advanced Thin Film Technology
University at Albany, Albany, NY

Center for Advanced Biomedical and Bioengineering Technologies
University at Buffalo, Buffalo, NY

CAT in Electronic Imaging Systems
University of Rochester/Rochester Institute of Technology, Rochester, NY

Refer to the NYSTAR web page at <http://www.nystar.state.ny.us/> for a complete list of New York's science and technology resource centers.

Regional Technology Development Centers (RTDCs)

Ten regional organizations provide the business development, management, and production expertise for emerging and existing technology-based and manufacturing businesses. Each RTDC serves businesses within its geographical region, with access to a statewide network of resources through the New York State Office of Science, Technology and Academic Research. We are also part of the national network of resources available through the Manufacturing Extension Partnership (MEP) program supported by the National Institute of Standards and Technology, Department of Commerce. Together CATs and RTDCs work with you to make your ideas and a reality for the 21st century.

Introduction

Note: The SBIR program is currently in the process of reauthorization. Specific features and requirements of the new program have yet to be finalized. This is the current state of the program.

The objective of this Guidebook is to provide the SBIR/STTR applicant with basic information about how to work with the federal SBIR program. It also provides some wisdom and insights into using SBIR to become a successful business, and getting started with government R&D funding. It is important to keep the direction and objectives of the business itself in clear focus, and not become enchanted with the lure of grant money. Think about the SBIR and STTR programs as your R&D budget to develop the products that fit with your strategic mission.

This guide begins with an overview of the SBIR and the STTR programs, and the proposal process. It also explains how to get started, where to obtain information, suggestions for maximizing success, and explains how local, regional and state organizations can assist you with the federal SBIR/STTR Programs.

SBIR Program Overview

The Federal SBIR program was established over twenty-seven years ago by an act of Congress, in 1982, to allocate a portion of federal agency extramural R&D funds exclusively for awards to small businesses. The objectives of the program are to increase federal R&D funding opportunities for small businesses while meeting the R&D needs of federal agencies. Commercialization of resulting government funded research and development is a primary goal of both the federal SBIR program, and of the New York State programs that support SBIR outreach activities. The federal program was created by Congress in recognition that small businesses employ about half of the country's workforce and, on a per employee basis, generate two and a half times as many innovations as larger businesses.

In October 1992, the act was reauthorized until 2000, increasing the percentage allocated to the SBIR program from 1.25% to 2.5% of each participating federal agency's extramural R&D budget. (Each agency with an extramural R&D budget of more than \$100 million is required to participate in the SBIR Program.) This means that from FY 00, 2.5 percent of the amount allocated for R&D contracts outside each agency's direct R&D activities, must be awarded through the SBIR program from each agency that spends more than \$100 million on external research projects and programs. There are currently ten agencies eligible to participate.

Also effective in 1992, the maximum for a Phase I increased from \$50,000 to \$100,000. However, each agency sets its own maximum within the guidelines established by Congress and administered by the Small Business Administration.

On March 30, 2010 the SBA announced that the maximum size of SBIR awards in Phase 1 was being increased, where an idea's technical merit or feasibility is tested, from \$100,000 to \$150,000. The SBA raised the limit on Phase 2 awards, which support additional R&D and evaluation of the idea's commercial potential, from \$750,000 to \$1 million. Those limits had not been raised since 1992. Legislation updating the SBIR program has stalled in Congress, mainly over the issue of whether small companies that are majority-owned by venture capital firms should be eligible for the awards.

On December 21, 2000, Congress signed Public Law 106-554 reauthorizing the SBIR program until September 30, 2008. This deadline has been extended to March 20, 2009 and both the House and Senate are attempting to craft a sweeping modernized SBIR reauthorization bill.

Since 2000, there is a requirement that all Phase II proposals must include a commercialization plan. A requirement for the gathering of output and outcome data was also added, with 1) a searchable, public database created with basic award information, and 2) a secure government database created with program evaluation information for use by government officials. Information is to be posted by all Phase II awardees reporting on their commercialization success, including post-Phase II product revenues and other investment funding sources generated as a result of Phase III activities.

In 2001, Congress renewed the STTR authorization until September 30, 2009. This increased the set-aside for STTR from 0.15% to 0.3% of external R&D contracts awarded by each of the STTR awarding agencies.

Maximum SBIR awards for FY 2009 were as follows*
(to be updated for 2010 upon notice of reauthorization):

| | Phase I (Maximum) | Phase II (Maximum-2 yrs) (up to) |
|-------------------|-------------------------------|--|
| USDA | \$ 80,000, 8 mos. | \$350,000 |
| Dept. of Commerce | | |
| NIST | \$ 90,000 | \$300,000 |
| NOAA | \$ 95,000 | \$400,000 |
| Dept. of Defense | | |
| Air Force | \$100,000, 6 -9 mos. | \$750,000 |
| Army SBIR | \$ 70,000/\$50,000 opt 4 mos. | \$730,000 |
| Army STTR | \$100,000 | \$750,000 |
| CBD | \$ 70,000/\$30,000 opt 4 mos. | \$750,000 |
| DARPA | \$ 99,000, 8 mos. | \$750,000 |
| MDA | \$ 100,000 | \$750,000 |
| Navy | \$ 70,000/\$30,000 for 3 mos. | \$600,000/\$750,000 |
| SOCOM | \$100,000, 6 mos. max | \$750,000 |
| Dept. Education | \$100,000 | \$750,000 |
| Dept. of Energy | \$100,000 9 mos. | \$750,000 |
| DHHS/NIH | \$100,000 | \$750,000 |
| DHS/HSARPA | \$100,000 6 mos. | \$750,000 |
| DOT | \$100,000 | \$750,000 |
| EPA | \$ 70,000 | \$225,000/ \$120,000 for additional 1 year |
| NASA | \$100,000 | \$600,000 |
| NSF | \$100,000 | \$500,000+ |

All solicitations are available electronically through www.SBIR.gov

In December of 2000, the SBIR program was reauthorized, and included a few changes regarding commercialization issues. The Small Business Innovation Research Program Reauthorization Act of 2000 was enacted by Congress and extended the SBIR program for eight years through September 30, 2008. The text of the bill that was approved included further definition of commercialization requirements. The approved text required the SBA to modify its policy directives to require that a small business provide a "succinct commercialization plan for each second phase award moving towards commercialization." The SBA Policy Directive is available at www.sba.gov/SBIR. Congress is currently working on reauthorization of the SBIR program to continue it past 2008.

The statutory definition of SBIR, which is not amended by H.R. 2392, includes "a second phase, to further develop proposals which meet particular program needs, in which awards shall be made based on the scientific and technical merit and feasibility of the proposals, as evidenced by the first phase, considering among other things the proposal's commercial potential." The statute listed evidence of commercial potential as the small business's commercialization record, private sector funding commitments, SBIR Phase III commitments, and the presence of other indicators of the commercial potential.

In addition, this Act (1) requires SBA to clarify that the rights to data generated during the performance of an SBIR award apply to all SBIR awards, including Phase I, II, and III;

(2) requires the establishment of SBIR program Government-accessible and public accessible databases;

(3) requires that each application for a Phase II award contain a succinct (approximately 10 pages) commercialization plan;

(4) requires agencies to report to SBA all instances in which the agency pursues research, development, or production of a technology developed by an SBIR Phase I or II awardee and determined that it was not practicable to enter into a follow-on Phase III award with that awardee;

(5) clarifies when a Phase III award can be issued;

(6) requires agencies with SBIR budgets over \$50,000,000 to enter into an agreement with the National Academy of Sciences for the National Research Council to conduct a review of their SBIR Program;

(7) requires agencies to report to SBA annually on the calculations of the agency's extramural budget within 4 months of enactment of the agency's annual Appropriations Act; and

(8) establishes the Federal and State Technology (FAST) Partnership Program to strengthen the technological competitiveness of SBCs in the United States.

New York State SBIR Outreach Services

Direct service delivery and outreach is performed through three regional specialists, each resident within one of NYSTAR's RTDCs. Each RTDC, a not-for-profit affiliated with the Federal Manufacturing Extension Partnership, helps New York's small innovative technology companies and smaller manufacturers become more competitive and successful. New York Regional SBIR Specialists can provide your business with:

- ▶ Questions and Answers on SBIR/STTR components and what makes the most sense for your company
- ▶ Strategies on how to approach SBIR/STTR
- ▶ Coaching on licensing issues
- ▶ Coaching throughout the proposal writing process
- ▶ Proposal review before submission to the funding agency
- ▶ Transition assistance from Phase I to Phase II
- ▶ Post-mortem diagnosis (understanding what improvements are needed to improve a rejected proposal)

The three New York Regional SBIR Specialists are:

Central New York, Capital Region, North Country, Southern Tier, and Mohawk Valley regions

Marcie Sonneborn

Central New York Technology Development Organization

www.cnytdo.org

445 Electronics Parkway, Suite 206

Liverpool, New York 13088

Phone (315) 425-5144 Fax (315) 233-1259

msonneborn@cnytdo.org

Western New York and Finger Lakes regions

Jack McGowan

Insyte Consulting (formerly Western New York Technology Development Center)

www.insyte-consulting.com

1576 Sweet Home Road

Amherst, New York 14228

Phone (716) 636-3626 Fax (716) 636-3630

jmcgowan@insyte-consulting.com

New York City, Long Island, and Mid-Hudson Regions

Franklin Madison, Jr.

Industrial and Technology Assistance Corporation

www.itac.org

253 Broadway, Room 302

New York, New York 10007

Phone (212) 442-2990 Fax (212) 442-4567

fmadison@itac.org

NEW YORK STATE'S COMMITMENT TO TECHNOLOGY

To achieve its vision and make New York a national leader in high-technology academic research and economic development, NYSTAR's mission is comprised of five key goals — benchmarks that reflect the overall charge given to NYSTAR through legislation.

These key goals are:

- Spur economic development in New York State through academic research;
- Substantially increase the amount of Federal research dollars New York and its researchers obtain;
- Coordinate and organize New York's wide array of science and technology informational resources and provide our academic, business, and research communities access to these resources;
- Develop and recommend policies to the Governor and Legislature that will allow the State to take greater advantage of the tremendous economic power of its inherent science, technology, and academic research assets; and
- Formulate recommendations to reform and improve New York's policies regarding royalties and licensing fees, enabling the State to realize a greater return from its high-tech investments and reinvest that revenue in new technology development programs.

New York State has advanced several significant initiatives to expand high technology and biotechnology business and job-creation opportunities in New York, including the Governor's innovative Centers of Excellence, Strategically Targeted Academic Research (STAR) Centers, Advanced Research Centers (ARC), and College Applied Research & Technology Centers (CARTs). Since 1995, the State has fostered the growth of New York's high-tech and biotech industries by supporting the investment of more than \$1 billion in New York's technology business sector and its world-class research laboratories and academic centers.

New York is committed to working with you to help your company expand and flourish. Contact your regional SBIR specialist or NYSTAR to learn how to make us your partner in success.

New York State Office of Science, Technology & Innovation
30 South Pearl Street
Albany, New York 12207
Phone (518) 292-5700 Fax (518) 292-5799
www.nystar.state.ny.us

WORKING WITH THE FEDERAL SBIR PROGRAM

Currently, the eleven federal agencies which participate in the SBIR program include the following:

Federal SBIR-Participating Agencies

Department of Agriculture (DOA)
Department of Commerce (DOC)
Department of Defense (DOD)
Department of Education (DOED)
Department of Energy (DOE)
Department of Homeland Security (DHS)
Department of Transportation (DOT)
Environmental Protection Agency (EPA)
Health and Human Services (HHS)
National Aeronautics and Space Administration (NASA)
National Science Foundation (NSF)

Three SBIR Program Phases

SBIR is a three-phase program, with Phases I and II supported through the funds allocated through the SBIR program. In Phase I, federal agencies periodically publish electronic solicitations containing topics for which companies are invited to submit proposals. Phase I proposals are funded up to a maximum of \$150,000 (depending on the agency) for six months. One exception is for the Navy, for which Phase I is for a period of six months at a maximum of \$70,000 with a Phase I Option for an additional three months for \$30,000). The Department of Energy's Phase I is for a term of nine months. Phase I typically funds research and development intended to establish the feasibility of the proposed new technology. Note that each agency sets its own maximum, depending on the number of Phase I and Phase II awards it wishes to fund, given its budget allocated to SBIR. Maximum length for Phase I proposals is 25 pages. However, what is counted in the number of pages may differ with each agency, and may change over time. For example, HHS does not count letters of support in the page limit, but the Department of Education does count them. As of 2010, the NIH

narrative which includes the technical description of the project is limited to six pages, cut down from the approximate 12-15 pages.

The Small Business Administration sets some overall guidelines for the entire SBIR program, such as the 25-page limit. However, each federal agency establishes its own priorities, sets the funding limits for its awards, establishes the schedule for its solicitation, sets up its own review process, and makes its own awards, based on a competitive review process. On average, across all agencies, between 10% and 25% of Phase I proposals receive an award.

Companies which successfully complete Phase I are eligible for Phase II funding. Phase II awards are a maximum of \$1,000,000 (again, depending on the agency) for a two-year project which is expected to result in a prototype and testing of a new product or service. However, the larger agencies such as Department of Defense and the Department of Health and Human Services/NIH are exceeding that Phase II maximum for some projects, including critical technologies such as nanotechnology, bio-defense and vaccine development. On average, about one out of every two or three Phase II proposals are funded.

Phase III is the commercialization phase for products and processes developed during Phases I and II. Phase III is not funded with monies allocated to the SBIR program, but commercialization can include government procurement contracts. Other sources of commercialization are corporate contracts or strategic alliances, manufacturing contracts, or obtaining venture funding for establishment of a production facility, marketing channels and a distribution network, among others. Some of the federal agencies offer Phase III assistance to companies which have completed Phase II under their program. Companies need to show evidence of a contingent Phase III private funding commitment in the Phase II proposal, and are encouraged to do so in the Phase I application. Such information, if available at the Phase I level, strengthens a Phase I application, even if there is only an outline of a plan for this aspect of the program.

All companies submitting a proposal must prepare a Company Commercialization Report with quantitative commercialization results of the firm's Prior Phase II projects (if prior Phase IIs have been received). Additional explanatory material relating to the firm's record of commercializing its prior SBIR or STTR projects can be provided, including commercialization successes in government and/or private sector markets; factors that could account for low commercialization; and recent changes in the firm's organization or personnel designed to increase the firm's commercialization success. The commercialization report and explanatory material are not counted toward the 25-page limit for Phase I proposals.

STTR Program Overview

The Federal STTR program was established as a three year trial program under the Small Business Research and Development Enhancement Act of 1992, for cooperative research and development, conducted jointly by a small business and a research institution. At the end of the three years, it was extended for one additional year for Congress to study its effectiveness. At the end of the study, it was extended to parallel the SBIR program with reauthorization by Congress required in 2000. In 2001, the STTR program was reauthorized and advanced from a pilot to a full program, funded until 2009. In FY 2004, the federal agency allocation (for all federal agencies with extramural research budgets over \$1 billion) was doubled for STTR, an increase from .15% to .3% of the external R&D budget.

All research or research and development in the STTR Program is to be conducted jointly by the small business concern and a non-profit research institution. A research institution includes a non-profit institution such as a university, a contractor-operated federal laboratory, or a federally funded research and development center (FFRDC). Not less than 40 percent of the work conducted under an STTR Program award is to be performed by the small business concern and not less than 30 percent of the work is to be performed by the non-profit research institution.

The objective of the program is to use the small business as a vehicle for commercialization of research and development being conducted through universities and research institutions. The program was created in recognition of the fact that small businesses have been an effective means to generate and commercialize innovations, based on ten years of experience in the SBIR program. Many aspects and requirements of the STTR program are similar to the SBIR program, as SBIR was used as the backbone when the STTR program was being configured.

Currently, STTR participating agencies are authorized to expend not less than 0.15 percent on Phase I and Phase II STTR awards.

The STTR participating federal agencies are:

- U.S. Department of Defense
- U.S. Department of Energy
- U.S. Department of Health and Human Services
- National Aeronautics and Space Administration
- National Science Foundation

The maximum for a Phase I for a period of up to one year generally should not exceed \$100,000. The normal period of performance for Phase II should be approximately two years and generally, awards should not exceed \$750,000 for a two-year period. Similar to the SBIR program, Phase III of STTR may involve commercial applications funded by non-federal sources of capital, or government contracts from federal sources that are non-STTR funds.

STTR Agreement for Allocation of Rights

Before receiving an STTR award, a small business concern must negotiate a written agreement between the small business concern and the research institution, allocating intellectual property rights, if any, to carry out follow-on research, development, or commercialization. The small business, which is the applicant for this program, must submit this agreement to the awarding federal agency upon request, either with the proposal or at any time thereafter.

Important Differences Between STTR and SBIR

- Only the largest five SBIR funding agencies (those with external R&R awards of over \$1 B) participate in the STTR program: DOD, NIH, NASA, DOE (Energy), and NSF.
- For STTR, the Phase I award period is usually one year instead of six months.
- For DOD, NIH, and NASA, the Principal Investigator may be primarily employed by the partnering research institution and does not have to be primarily employed by the small firm during the period of performance. (This is not true for NSF and DOE.)
- The small firm has to do 40% of the work in-house for Phase I and Phase II (vs. two-thirds on a Phase I SBIR and one-half on a Phase II SBIR). The non-profit research partner must do at least 30%. The remaining 30% may be done by either party, or by others.
- A contractual agreement stating the allocation of rights between the small firm and the non-profit research partner must be signed for an STTR (no such formal agreement is required for collaborations on SBIRs). *That agreement includes provisions for how the resulting intellectual property rights will be shared.*

Commercialization Reporting and Planning for SBIR and STTR

The commercialization plan, though not extensive, should show that the business has thought through the steps it must take to prepare for the commercial benefits of the SBIR award to enter the commercial marketplace or government procurement and the steps to build business expertise as needed during the SBIR Phase II time period. Agencies must consider the stage of development of the company's product or process when deciding whether an appropriate commercialization plan has been submitted. The Regional SBIR Specialists can assist companies within their respective regions to prepare commercialization plans.

Is SBIR/STTR For Me? **Potential Benefits**

SBIR/STTR offer many potential benefits for the small business that qualifies for the program:

- These are grant or contract funds which means they do not have to be repaid.
- The funds received do not add to the debt of the company nor claim any of the equity.
- The project can be used to develop new products and technologies.
- The project can be used to begin a small business (through the initial R&D), but should not be the only source of start-up funds.
- The funds allow a company to conduct R&D that has greater risk (and greater reward potential) than would be funded by a bank or other traditional source of business financing.
- Participation in the SBIR/STTR process gets a company involved in the federal procurement process. Once a company has received a Phase I SBIR or STTR contract, that company is able to enter into a sole source contract and is not required to bid competitively for contracts with that federal agency with that technology.
- Participation also provides external verification that the company's technology is innovative and is likely to have a potential commercial value, thereby providing a greater comfort-level for customers, investors, and others that may be concerned about doing business with a start-up company.

Who Can Apply?

To be eligible for grant awards through the SBIR and STTR programs, the company must be a business concern at the time Phase I and Phase II funding agreements are signed. The company must meet the following criteria:

- (1) Is independently owned and operated, is not dominant in the field of operation in which it is proposing, has its principal place of business located in the United States, and is organized for profit;
- (2) Is at least 51 percent owned, or for a publicly owned business, at least 51 percent of its voting stock is owned by United States citizens, or lawfully admitted permanent resident aliens;
- (3) For the STTR program, the small business is the applicant. The not-for-profit organization is not able to be the lead agency for submission of the proposal;
- (4) The company has, including its affiliates, a number of employees not exceeding 500, and meets the other regulatory requirements found in 13 CFR Part 121. Business concerns, other than investment companies licensed, or state development companies qualifying under the Small Business Investment Act of 1938, 15 U.S.C.661, et. seq., are affiliates of one another when either directly or indirectly, (a) one concern controls or has the power to control the other; or (b) third parties (or party) control(s) or has the power to control both. Control can be exercised through common ownership, common management, and contractual relationships. Business concerns include, but are not limited to, any individual, partnership, corporation, joint venture, association or cooperative.

Proposals from joint ventures and partnerships are permitted, provided the entity created qualifies as a small business in accordance with the above criteria. To be eligible, a minimum of two-thirds of the research and/or analytical effort as determined by budget expenditures must be performed by the proposing firm during Phase I, and a minimum of one-half of the research and/or the analytical effort must be performed by the proposing firm during Phase II.

For both Phases I and II, that portion of the research conducted by the proposing firm must be performed in the United States.

Note that the company does not need to be established at the time of submission of the proposal, only when the award is made. This gives the Principal Investigator (the entrepreneur) the opportunity to continue working for another company or as a professor at a university until an award is made. The company would be established only if the proposal is funded. This is the same

situation if two companies want to establish a research & development partnership. They do not have to have the organization formed until the award agreement is signed.

The Principal Investigator (the person designated as chiefly responsible for conducting the research) for the proposed research must have primary employment with the small business firm. Primary employment means that more than one-half of the Principal Investigator's time is spent in the employ of the small business. This means, not only at the time of the award, but also throughout the period when the research is conducted. Note that for STTR applications, the requirement for the PI may be different. For example, HHS - National Institutes of Health does not require the PI to be employed by the company at all.

Though larger companies have an advantage (such as by having sufficient personnel available to prepare the proposal), over 60 percent of the companies that are awarded Phase Is have fewer than 25 employees. On average, 44 percent of firms receiving awards have annual sales under \$500,000.

If you are not given an award after your first attempt, do not give up. While some companies receive an award on their first attempt, 90 percent of those who apply are turned down. You need to be persistent and find out from the federal agency why your proposal was not selected. Some agencies will give you a written critique six to eight weeks after your notification, and others require a call from you to request a critique. Some agencies will provide this in writing, and others will only give it to you over the phone. If the latter is the case, take notes on your conversation so that you can refer to them when revising your proposal for resubmission.

Be aware that some topics may be of interest to several agencies, and some agencies permit applications to be submitted for more than one topic in each solicitation period. If you submit the same proposal to more than one agency, however, it is necessary to let the agencies know that is the case, and name the other agency to which the proposal was sent.

It is generally expected that a company submitting a Phase I proposal will continue on to pursue a Phase II, and commercialization if the Phase I is awarded. The more information you can provide in your Phase I application about how you will proceed into these other two phases, the better the reviewers will be able to understand the goals and direction of your research and be able to evaluate it in competition with other proposals.

How to Apply

In this section, you will find guidelines for ways to approach the agencies, and how to obtain information from the agency or agencies that best provide a match between your company's goals and those of the agency. One important piece of advice: *Get to know the federal agency where you are applying, and its priorities.* You not only need to describe an innovative idea or technology, but also to meet the needs of the agency as well as the needs of your own business. For some federal agencies such as the Department of Health and Human Services, a statement of the potential impact of the research on national health goals or health care costs may be beneficial. If the research will generate a product or service that will increase the long term competitiveness of an entire industry or group of industries, a statement with an indication of level of impact and supporting detail may increase interest in your project among review team members.

Following is a description of the information available from the Small Business Administration and from the agencies describing the SBIR priorities for the agencies.

Solicitation Announcements

The SBA, as required by law, prepares and electronically publishes Phase I SBIR and STTR Solicitation Announcements covering all participating federal agencies. The best means for obtaining agency solicitation information from the federal government is through the Small Business Administration web page (www.sba.gov/SBIR), at www.sbir.gov or through www.zyn.com/SBIR.

Regional SBIR/STTR Specialists at the regional RTDCs may be able to provide printed copies of this document, though a fee may be charged for printing and assembly.

Program Solicitations

Program solicitations provide you with the official list of priority topics for the issuing agency. It is not until this list is released directly from the agency that the topics are official. Prior to the release date of the solicitation, agencies are able to discuss technical topics with potential SBIR applicants. This provides you with the opportunity to get the reaction of the technical staff to your proposal idea. From a conversation, you may learn of some biases against particular ideas, or methodologies, and about reasons the agency has selected a particular topic as one of its priorities. After the release date, some program managers are only able to discuss administrative issues with you. After the release date, technical questions can only be answered by submission of an email request that gets posted with the response on the agency's website for all applicants to read.

The schedule for release of solicitation information is listed with information about the solicitation announcement, listing each agency's next or most recent solicitation date. When a closing date is listed for an agency, and the date has passed, one assumption that can be made is that the agency will issue its next solicitation at the same approximate date in the following fiscal year.

SBIR programs of participating agencies generally use a similar process to minimize the regulatory burden for the ten participating agencies in the SBIR Program. The general format for solicitation includes the following sections:

- I. Program Description
- II. Definitions
- III. Proposal Preparation Instructions and Requirements
- IV. Method of Selection and Evaluation Criteria
- V. Considerations
- VI. Submission of Proposals
- VII. Scientific and Technical Information Sources
- VIII. Research Topics
- IX. Submission Forms and Certifications

Solicitation information also includes notices of national SBIR conferences and seminars, sponsored by SBIR federal participating agencies or co-sponsored by the Small Business Administration. These conferences are held two or three times each year around the country for two and a half days. The SBIR Program managers from each of the federal agencies speak to the participants from small businesses about each agency's new initiatives and directions, and then are available at networking sessions/receptions for individual discussion about R&D interests. They may also be willing to provide you with a referral within their agencies to other individuals who may be interested in your company's technology. Attendance at one of these sessions is recommended for companies that are committed to SBIR and want to submit multiple proposals to multiple agencies. This is one of the best ways to get to know your federal agency, if the small company can afford the travel expenses. Conference fees are approximately \$350 (includes meal-type snacks at the networking receptions), in addition to your travel expenses and hotel.

General Requirements for SBIR and STTR Proposals

SBIR and STTR proposals shall not exceed a total of 25 pages, including cover page, budget, and all enclosures or attachments. However, some agencies count support letters and others do not. Refer to the solicitation book from each agency for the specific requirements. Additional attachments, appendices or references beyond the 25-page limitation are not considered in proposal evaluation, and proposals exceeding 25 pages are not considered for review or award.

Each agency has its own set of forms which are included in the page-count. These forms are found among the solicitation information published electronically by each of the participating federal agencies. Forms are generally provided for the cover page, the project abstract, the budget and the budget justification.

Pages should be of standard size (8 1/2" x 11") and should conform to the standard formatting instructions; in particular, 2.5 cm margins and type no smaller than 10 point font size.

Proposal Cover Sheet

At a minimum, the proposal cover sheet includes:

1. Agency and solicitation number
2. Topic and subtopic number, Topic area
3. Project Title
4. Name and complete address of firm
5. Small business certification that the firm submitting the proposal meets the eligibility requirements for a small business as defined by the SBA.
6. Certification of status as a socially and economically disadvantaged small business concern, or as a women-owned small business concern for statistical purposes.
7. Disclosure permission statement such as the following included at the discretion of the funding agency:
"Will you permit the government to disclose the title and technical abstract page of your proposed project, plus the name, address, and telephone number of the corporate official of your concern, if your proposal does not result in an award, to concerns that may be interested in contacting you for further information?" (Yes/No)
8. Signature of a company official of the proposing small business and the individual's typed name, title, address, telephone number, and date of signature.
9. Signature of Principal Investigator or Project Manager, and that individual's typed name, title, address, telephone number, and date of signature.

Most agencies now have electronic submission of documents, though each agency has variations in how and where the document is transmitted. The Department of Defense (DOD) takes electronic submissions at www.dodsbir.net. National Science Foundation (NSF) uses the FastLane program. National Institutes of Health (NIH) uses grants.gov, which other granting agencies are adopting for electronic submission. Prepare for submission far in advance because these sites require that the account be set up in advance. Also, there may be administrative approvals and signatures required from others within your company or in the research organization, so knowing the requirements in advance is critical.

Electronic submission of forms is used by most of the agencies for all or part of the SBIR application. Allow at least two to three weeks for processing all of the registration information in the specific solicitation site for the agency to which you are applying. To be safe, begin this process at least 3-4 weeks before the due date of the proposal.

When preparing the package for mailing, with the required number of original proposals and copies, place the original(s) on top so the agency can easily identify it (them).

Abstract

The abstract is the most important page of your proposal. It is the first introduction of your project to the reviewers, and you should consider it your "marketing piece." The abstract is usually limited to 200 words, or the space provided on the form. All forms are available electronically through each agency website.

It is important that you keep to the limited number of words because SBA places the abstracts from all of the proposals submitted in a database, provided you have given them permission to do so on the cover sheet. If you allow your abstract to be released, potential strategic partners, venture capitalists, large corporations, or other investors interested in your topic may be able to find you, as many refer to these abstracts when looking for R&D to license or acquire. Also remember that a competitor may be able to read about your research as well.

An abstract should be clear, concise and provide information about your project. Following is a formula for the abstract, including one sentence on each of the following:

1. The problem
2. Why the problem is important
3. Your proposed solution
4. Your methodology (may require two sentences)
5. Your expected results
6. The qualifications of your researchers
7. Commercial viability

You may wish to draft your abstract at the beginning of the writing process, but it should always be reviewed, and if necessary, revised for the final draft. You may also wish to wait to write it at the end. But make sure you put sufficient time into it so that it is the most concise statement of your project.

Technical Content

Technical content is generally eight to fifteen pages, depending on the number of required forms and the pages needed for resumes (or curriculum vitae). SBIR/STTR Program solicitations generally require the following, as a minimum, to be included in proposals:

1. Identification and significance of the Problem or Opportunity
2. Phase I technical objectives, including a statement of specific objectives for Phase I, and the technical questions the company will try to answer to determine the feasibility of the proposed approach.
3. Phase I Work Plan - Detailed description of what will be done, where it will be done, and how the research or R&D will be carried out. Address the objectives and questions cited above, and the methods planned to achieve each objective or task.
4. Related Research or R&D - Description of significant research that is directly related to the proposal, including and conducted by the Principal Investigator or by the small business. Describe how it relates to the proposed effort, and any planned coordination with outside sources. The proposer must persuade reviewers of his or her awareness of key recent research, or R&D conducted by others in the specific topic area.
5. Key Personnel and Bibliography of Directly Related Work - Identify key personnel involved in Phase I, including their directly related education, experience, and bibliographic information. If

vitae are extensive, summaries with the most relevant experience and publications are recommended to meet proposal size limitation.

6. Relationship With Future Research or Research & Development - State the anticipated results of the proposed approach if the project is successful (Phase I and II). Also, discuss the significance of the Phase I effort in providing a foundation for the Phase II research & development effort.

7. Facilities - A detailed description, availability and location of instrumentation and physical facilities proposed for Phase I should be provided.

8. Consultants - Involvement of consultants in Phase I and Phase II research and development is permitted, but the participating federal agency has a restriction to one-third on the amount of the award (as a percentage of the budget) which is budgeted for consultants. This requirement was put in place by the agencies because one of the objectives of the SBIR program is to help businesses grow and develop and become successful commercial entities. If the company does not have sufficient internal expertise and requires the services of consultants beyond the restricted amount, the company should examine the scope of work, and try to focus on a topic where the company has greater internal expertise.

It is important for a proposing company to establish credibility with the reviewers. If the reputation of the Principal Investigator and other members of the project team is not in the area which is the subject of the proposal, it is helpful to bring in individuals with credibility in the topic. Bringing experts on as consultants is one alternative to hiring individuals with expertise as employees in the company. Another alternative is to ask them to participate as advisors (unpaid) for Phase I, with the promise of a paid consulting position for Phase II. You may also want to invite someone to act as an advisor who attends one or more meetings over the course of the project and provides advice limited to discussions during those meetings.

When consultants are included in the proposed work, their involvement should be described in detail in the budget justification and/or the description of the technical work that will be done by that person.

The SBIR or STTR Program will not fund the same technology development or research proposal from two federal SBIR agencies (you cannot get paid twice for doing the work one time), or under different topics within the same agency. If you submit more than one proposal for the same research project, to two different agencies covering the same budget items, it is necessary to indicate the name and address of the agencies to which duplicate or similar proposals were made, and to identify by subject, the projects for which the proposal was submitted and the dates submitted. Information about awards for Phase I and Phase II projects are shared among the agencies, and such duplication, when discovered, would result in the loss of both awards.

When describing your technology, be aware of the reader and limit your use of jargon. Some reviewers may be knowledgeable about your field, but others may not. It may be beneficial to ask someone outside your discipline to read your technical description and comment on the clarity of concepts and description of what you are trying to accomplish.

Intellectual Property

Companies that develop a technology or an invention through the SBIR program retain the intellectual property rights to that technology or invention, including patent rights and copyrights. However, the federal government has a royalty-free right to the use of that technology, with no time limitation.

Proprietary information in a proposal should always be identified with a typed notice at the top of each page on which proprietary information occurs, and on the cover page of the proposal. Some of the federal agencies provide a space for this information on the cover page, or ask if there is proprietary information in the proposal.

The 200 word abstract which appears within the first two or three pages of each proposal should **never** contain proprietary information. Some agencies publish the abstracts of the successful projects that are awarded, and there is no limitation to the distribution of this information. This has been one way used by foreign competitors to learn about the leading edge technological developments of small U.S. companies.

Review of SBIR/STTR Proposals - Evaluation Process

Proposals are first evaluated for strict adherence to the solicitation guidelines, including page length, format, margins, etc. Proposals are then evaluated for relevance of the topic and responsiveness to the priorities of the federal agency, as well as technical merit. The technical review may be conducted by the agency.

Each federal agency has its own review process for proposal evaluation, and may use different types of reviewers, e.g. some agencies use external academic reviewers, others use internal researchers, researchers from federal or state labs, individuals from private businesses, or others. These are people who have an interest and expertise in your area of research. This enables the federal government to select the most innovative ideas. The SBA asks participating federal agencies to formulate review procedures to minimize any possible conflict of interest as it pertains to proposers' proprietary information and data.

Heed the warning that proprietary information should be protected and provided on a "need to know" basis. Some agencies ask the proposer to limit proprietary information to only what is necessary for proper evaluation of the proposal. Agencies may elect to require proposers to clearly mark proprietary information, and may even ask the proposer to submit the information on a separate page keyed to the text. The reviewers are asked not to disclose the information learned through the review process, but that does not mean that they will not incorporate your concept or design, either intentionally or inadvertently, into their own work. Be aware of the risk you take when you submit your intellectual property to peer review. If you intend to patent your idea, it should be done before submitting your SBIR proposal describing your invention.

A more limited review process may be used for Phase I due to the larger number of proposals anticipated.

Improving Your Chances for Award

Generally, across the ten participating agencies, 10 to 25 percent of proposals are funded for Phase I, and 35 - 50 percent are funded for Phase II. Some firms are rejected for being unresponsive to agency priorities; and for not reading, not following, or for misreading the proposal preparation guidelines. These proposals may be eliminated without being read.

If administrative guidelines are followed, the next level of scrutiny is technical. The company must demonstrate its technical excellence by addressing agency priorities with a truly innovative project, undertaken by a competent team of technical investigators with recognized experience. There must be no question about the firm's being able to accomplish the objectives for the proposed project.

If the proposal just misses the top level of technical excellence, it may fall into the discretionary funding level for agency reviewers. This is when a persuasive, clear and concise writing style pays off.

Each company needs to assess its capabilities and interests in line with its long term goals and strategies. If the Principal Investigator has relevant qualifications or has had accomplishments similar to the objectives of the project being proposed, there is an increased chance for award. If other personnel have demonstrated accomplishments and there are adequate resources available, this is another factor raising the probability of success.

The company needs to have done a literature search so that it is aware of the state-of-the-art in the project area of research, and that its project would be considered innovative among those most knowledgeable of the field or industry.

Selection of Awardees

Participating agencies are required to establish a proposal review process such that all proposers can be notified of final award decisions within six months of the solicitation closing date.

The reviewers, or agency representatives can request additional information from you about your submitted proposal to provide evidence that you as the awardee are able to complete the project.

Phase II proposal submissions, reviews and selections are managed by arrangements between the agency and the Phase I awardee being considered for a Phase II.

The SBIR and STTR legislation provides for retention of rights in data generated in the performance of the contract by the small business for Phase I, II and III. The intent is to provide protection for technical data generated under the funding agreement, and to refrain from disclosing such data to competitors, or from using the information to produce future technical procurement specifications that could harm the small business that discovered and developed the innovation until the business has a reasonable chance to seek patent protection, if appropriate.

Except for program evaluation, the federal agencies are required to protect such technical data for a period not less than four years from the completion of the project from which the data were generated unless the agencies obtain permission to disclose such data from the grantee. The government retains a royalty-free license for government use of any technical data delivered under an SBIR or STTR funding agreement whether patented or not.

Follow Up on Unfunded Proposals

If your proposal has not been funded, contact the agency's program manager or contract officer to obtain a debriefing, either by phone, or in writing. Some agencies will provide a written evaluation. Some agencies require that requests for debriefings be in writing before an evaluation will be provided. Make this contact as soon as possible after being informed about the decision of the reviewers because some agencies have time limitations for debriefing requests.

A debriefing may include a summary of the strengths and weaknesses of the proposal, and comments from the reviewers. The agency representative may also provide comments relating to resubmission. If the proposal was considered fundable but an award was not made due to the large number of fundable proposals, ask the agency for suggestions about how to proceed. If rejection was not due to an inadequacy in the proposal or the project team, the recommendation may be given to resubmit for the next round, or to a different agency, or as an "unsolicited proposal".

Other Issues

Continued Use of Government Equipment

Under SBIR legislation, title to equipment purchased in relation to project performance with funds provided under SBIR funding agreements may be transferred to the awardee where such transfer would be more cost effective than recovery of the property by the government.

A small business participating in the third phase of the SBIR Program is given continued use of any property transferred by a federal agency to the small business in the second phase of an SBIR Program for a period not less than two years, beginning on the initial date of the company's participation in the third phase of the Program.

If use of government equipment is an issue of concern, it is advised that you contact the federal agency to discuss current policy. This is an issue that may vary from agency to agency, and over time within the same agency.

Payment Procedure

SBIR and STTR awardees may be paid under an authorized progress payment procedure or in accordance with a negotiated, defined price and payment schedule. Advance payments are optional and may be requested. In all cases, agencies must make payment to recipients under SBIR or STTR agreements in full, subject to audit, on or before the last day of the 12-month period beginning on the date of completion of such requirements.

The choice of type of funding agreement (contract, grant or cooperative agreement) rests with the awarding agency, but must be consistent with guidelines established by Congress and in SBA Policy Directives. Awarding agencies are able to provide for a reasonable fee or profit on SBIR or STTR funding agreements, including grants, consistent with normal profit margins provided to profit-making firms for R/R&D work. This became a requirement on March 9, 1992 by the Comptroller General of the United States, to provide provision for payment of a profit or fee to SBIR/STTR awardees. This fee is only about 6% or 7% for each agency, but is generally taken on both direct and indirect expenses.

Periods of Performance and Extensions

Modifications of funding agreements to extend periods of performance, increase the scope of work, or to increase the dollar amount should be minimized. For SBIR Phase I, the period of performance should normally not exceed six months except where agency needs or research plans require otherwise. For Phase I of STTRs, the period of performance is up to one year. In Phase II for both SBIR and STTR, period of performance is the subject of negotiations between the Phase I recipient and the awarding agency. The duration of Phase II should normally not exceed two years. However, for larger projects such as pharmaceutical development funded by NIH, longer Phase II periods are not uncommon.

SBIR/STTR Assistance From Regional TDCs

Many RTDCs have someone who serves the organization as a mentor for SBIR or an SBIR/STTR Specialist. (Refer to page 11 for a list of SBIR Specialists in New York State). This individual is there to answer questions about the SBIR/STTR process, communications with federal agencies, and other matters regarding your proposal submission. If we have the answers, we will assist you. You may be referred to the federal agency if your question is specific to their interests, or for policies that vary based on circumstance, that are subject to change, or are a matter of current agency opinion.

Link to the SBIR/STTR resources through the TDO Web page: <http://www.cnytdo.org>