

U.S. Small Business Administration



*Championing America's Entrepreneurs*

Office of Technology  
U.S. Small Business Administration

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**SMALL BUSINESS  
TECHNOLOGY  
TRANSFER PROGRAM  
(STTR)**

**ANNUAL REPORT - FY 1996**



U.S. SMALL BUSINESS ADMINISTRATION  
WASHINGTON, D.C. 20416

OFFICE OF THE ADMINISTRATOR

AUG 25 1997

Honorable Christopher S. Bond  
Chairman  
Committee on Small Business  
United States Senate  
Washington, DC 20510

Honorable James M. Talent  
Chairman  
Committee on Small Business  
House of Representatives  
Washington, DC 20515

Dear Mr. Chairmen:

This report, prepared pursuant to Public Law 102-564, provides the third year results of the Small Business Technology Transfer (STTR) program.

The accomplishments and progress of the participating Federal agencies under the STTR program are presented in this report. During fiscal year 1996 the Federal participating agencies awarded 326 STTR funding agreements totaling nearly \$38 million. These figures are an increase over last year's totals.

Copies of this report have been provided to the Office of Federal Procurement Policy and the General Accounting Office. The review and analysis were made by the Office of Technology of this Agency.

Sincerely,

  
Aida Alvarez  
Administrator

Enclosure

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## ntroduction

This report is the third in a series of annual reports presented by the Small Business Administration pursuant to Public Law 102-564. This report covers the operation and administration of the Small Business Technology Transfer Program (STTR) for fiscal year 1996. The report also provides data on the results of the first three years of the STTR program, including the number of solicitations released, the number of proposals received and the number of awards resulting from those solicitations.



### **Background on the Program**

#### *Public Law 102-564*

Public Law 102-564, the Small Business Research and Development Enhancement Act of 1992, authorized STTR.

Title I of that legislation amended the Small Business Act by reauthorizing the Small Business Innovation Research (SBIR) Program. At the time it was reauthorized, SBIR had been in effect for a decade,

during which it achieved remarkable successes in its program goals of helping small business develop important technology and helping keep the nation at the forefront of technological innovation. Seeking to further expand small business opportunities in the technical arena, Title II of the act, the Small Business Technology Transfer Act of 1992, established STTR.

The STTR program shares the underlying philosophy of its SBIR predecessor in that it targets federally funded research and development as a base for technological innovation that will contribute to the growth and strength of the nation's economy. It differs from its SBIR sister program in its implementation, however, in that STTR reserves its awards for small businesses that pursue technological innovation through cooperative research and development with certain federal laboratories and non-profit scientific and educational institutions.

#### *Duration of the Program*

In October 1992, Congress, in P. L. 102-564, authorized the STTR program for fiscal years 1994, 1995, and 1996. In September 1996, P. L. 104-208 reauthorized the STTR program through FY 1997.

### **Findings of the Small Business Research and Development Enhancement Act of 1992**

After extensive hearings by several committees and the review of extensive testimony from numerous experts, government officials, participating small businesses, beneficiaries, and overview groups including the General Accounting Office, Congress passed the Small Business Research and Development Enhancement Act of 1992 on October 28, 1992. The extraordinary success of the SBIR program over the previous decade provided the impetus for STTR, a similar program designed to further involve small businesses in technology development enterprises. The outcome of the hearings' extremely favorable findings on SBIR led not only to the reauthorization of the ongoing SBIR program, but also to the establishment of a logical complementary effort in STTR. The findings on SBIR concluded that the program is:

- A successful method of involving small-businesses in federal research and development.
- An effective catalyst for the development of technological innovations by small businesses.
- Providing high-quality research and development in a cost-effective manner.
- Developing innovative products and services that are important to the national defense, as well as to the missions of the other participating federal agencies.

- Effectively stimulating the commercialization of technology produced through federal research and development, benefiting both the public and private sectors of the nation.
- Creating jobs, expanding business opportunities for small firms, stimulating the development of new products and services, and improving the competitiveness of the nation's high-technology industries.
- Helping to increase exports from small businesses.

Findings on the SBIR program concluded that:

- Despite its general success, the proportion of federal scientific research and development funds received by small business concerns is less than 4%.
- Although successfully implemented by the participating federal agencies, additional outreach efforts are necessary to stimulate increased participation of socially and economically disadvantaged small businesses.



# he Small Business

## Technology Transfer Pilot Program



### Funding

Federal agencies that participate in the STTR program must have an extramural budget for research or research and development in excess of \$1 billion in fiscal year 1994, 1995, or 1996. Under program guidelines, the percentage of funds an agency may expend with small businesses specifically in connection with STTR programs is:

- Not less than 0.05 percent of such budget in fiscal year 1994.
- Not less than 0.1 percent of such budget in fiscal year 1995.
- Not less than 0.15 percent of such budget in fiscal year 1996 and 1997.



### The Federal Agency Participants

The five federal agencies that meet this threshold amount and are participating in the program are:

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



### The Three-Stage STTR Process

Public Law 102-564 structured the STTR Pilot Program as a three-stage process designed to identify and nurture promising R&D interests within the small business community. STTR's three phases are:

*Phase I:* STTR determines to the extent possible the scientific, technical, and commercial merit and the feasibility of ideas submitted. The Phase I award

generally will not exceed \$100,00 and is for a one-year effort.

**Phase II:** Phase I projects with the most potential will be funded to further develop proposed ideas to meet particular program needs. The Phase II award will generally not exceed \$500,000 for a two-year effort, however, the specific amounts awarded are at the discretion of the awarding agency.

**Phase III:** No STTR funds are expended during this phase, in which the program participants pursue commercial applications of the innovations developed in Phases I and II. However, projects may receive additional non-STTR federal funds during Phase III to develop products and services intended for use by the federal government or awards from non-STTR federal funding sources for the continuation of competitively selected research and research and development.



### **Eligibility for Participation in STTR**

The STTR program involves cooperative research and development performed jointly by a small business and a research institution. Thus, each STTR project comprises at least two partners, each of which must meet eligibility criteria in order for the project to be funded.

To be eligible for an STTR award, a **Small Business** must have no more than 500 employees, be independently owned and operated, not be dominant in the field of operation in which it is proposing, have its principal place of business in the United States, be organized for profit, and be primarily owned by U.S. citizens.

To be eligible for participation in an STTR award, a **Research Institution** must be a non-profit institution as defined by the Stevenson-Wydler Technology Innovation Act of 1980 or a federally funded research and development center (FFRDC) as identified by the National Science Foundation in accordance with section 35(c)(1) of the Office of Federal Procurement Policy Act. Thus, most universities and colleges, non-profit research centers, and government-owned, company-operated laboratories are eligible.

Small businesses interested in participating in the STTR program are required to find a research institution meeting this definition and to develop a working agreement before proposing to compete for an STTR award.



### **Distribution of Work**

An STTR award to a small business is designed as a true partnership venture for both the small business and the research institution. To ensure that relationship, the program establishes minimum

performance levels for each participant. The Public Law stipulates that in an STTR award, the small business must perform at least 40 percent of the work; the research institution must perform at least 30 percent of the work.



#### **Management of STTR Projects**

While the conduct of the project is a cooperative research and development venture, the small business exercises overall management, control, and responsibility for the project.

Participating agencies are required to ensure that the small business manages and controls the funding agreement pursuant to a business plan that provides for the commercialization of the technology being funded.



#### **Protection of Rights**

STTR policy directs federal agencies to protect the rights for data generated during the performance of an STTR project for not less than four years from the inception of Phase III. This time period affords the small business the opportunity to protect an STTR-developed innovation through patents, copyrights, or corporate secrets, thereby helping to ensure security in the commercialization of the innovation.



#### **Continued Use of Government Property**

STTR guidelines also direct federal agencies to allow small businesses that use government equipment during the conduct of an STTR award to continue to do so for not less than two years after the beginning of Phase III.



#### **Model Agreements**

Participating agencies require that awardees negotiate a written agreement between the small business and the research institution covering the allocation between them of intellectual property rights and, if any, rights to carry out follow-on research, development, and commercialization. To facilitate this process, participating federal agencies and SBA make sample model agreements available to awardees. These agreements may be used in whole or in part to assist the awardees in producing their own agreements.



#### **Follow-On Funding Protection**

To protect the small business, the STTR specifies policies directing participating federal agencies to ensure, to the extent practicable, that if they intend to pursue research, development or production of a

technology developed by a small business under an STTR program, the agency must enter into follow-on, non-STTR-funded agreements with the small business for such research, development, or production.

# **A**uthorities and **Responsibilities of the Participants**



## **Participating Agencies**

As delineated under the Public Law, the authorities and responsibilities of STTR participating federal agencies are to:

1. Unilaterally determine categories of projects to be included in its STTR program.
2. Issue STTR solicitations according to a schedule determined cooperatively with the Small Business Administration.
3. Unilaterally determine research topics within the agency's STTR solicitations, giving special consideration to broad research areas that further one or more critical technologies as identified by either the National Critical Technologies Panel or the Secretary of Defense.
4. Unilaterally receive and evaluate proposals resulting from STTR solicitations.
5. Unilaterally select awardees for its STTR funding agreements and inform each awardee, to the extent possible, of the allowable expenses under the funding agreement.
6. Administer its own STTR funding agreements.
7. Pay recipients on the basis of progress toward or completion of the STTR funding agreement requirements.
8. Submit an annual report on the STTR program to the Small Business Administration and the Office of Science and Technology Policy.
9. Develop a model agreement for approval by the Small Business Administration that allocates between small businesses and research institutions intellectual property rights and any rights to carry out follow-on research, development, or commercialization.
10. Develop procedures in consultation with the Office of Federal Procurement Policy and the Office of Government Ethics to ensure that federally funded research and development centers that participate in STTR agreements:

- A) Are free from organizational conflicts of interests relative to the STTR program.
  - B) Do not use privileged information gained through work performed for an STTR agency or private access to STTR agency personnel in the development of an STTR proposal.
  - C) Use outside peer review, as appropriate.
11. Develop procedures for assessing the commercial merit and feasibility of STTR proposals.



#### **Small Business Administration**

Public Law 102-564 designates the SBA as the lead agency to implement the program, govern its policy, and monitor and analyze its performance. As lead agency, the SBA's authorities and responsibilities are to:

1. Develop, coordinate, and issue a Policy Directive for the general conduct of the STTR programs.
2. Assist small businesses in obtaining government contracts for research and development.
3. Assist small businesses in obtaining benefits of research and development performed under government contracts or at government expense.

4. Develop and maintain a source file and an information program to help ensure each qualified and interested small business the opportunity to participate in technology transfer pilot programs involving federal agencies.
5. Coordinate with participating agencies a schedule for release of STTR solicitations and prepare a master release schedule that maximizes small businesses' opportunities to respond to solicitations.
6. Independently survey and monitor the operation of STTR programs within participating federal agencies.
7. Report not less than annually to the Congress on the STTR programs of the federal agencies.
8. Consult and cooperate, perform studies, and make recommendations to government agencies.
9. Consult with representatives of small business with a view to assisting and encouraging such firms to undertake joint programs for research and development.



### **The STTR Program Policy Directive**

Public Law 102-564 authorized the Small Business Administration to issue a Policy Directive to conduct the STTR Pilot Program within the federal government. Before issuing this Policy Directive, the SBA consulted with the heads of the two federal agencies participating in the formulation of the program: the Commissioner of Patents and Trademarks and the Director of the Office of Federal Procurement Policy.

The SBA met with the representatives of each of these organizations, and after significant discussion and modifications, finalized the Policy Directive effective October 1, 1993. During the drafting process, the five federal agencies authorized to participate in the program were consulted about the elements of the directive and were given primary drafts for comment and revision before the draft was published.

The law further stated that the proposed directive be published for public comment not later than April 30, 1993, with at least a 30-day opportunity for public response. This responsibility was met by SBA with publication of the draft in the Federal Register on April 28, 1993, allowing until May 28, 1993, for the receipt of public comment. Four organizations provided comments and suggestions for change.

This Policy Directive guides participating agencies in the operation of the STTR programs. The directive mandates simplified, standardized, and timely solicitations and funding processes. It also directs the participating agencies to reduce regulatory burdens associated with participation in STTR programs. In addition, the Policy Directive also provides guidelines for a model agreement to be used by all agencies for allocating intellectual property and other rights between small businesses and research institutions. It also provides procedures to ensure that recipients of STTR awards meet eligibility requirements as small businesses and that they manage and control the performance of the STTR funding agreement.

Finally, the Policy Directive instructs the participating agencies to develop procedures to ensure follow-on, non-STTR funding agreements with the small business when appropriate.



### **Surveying, Monitoring, and Reporting**

Pursuant to the legislation, the Small Business Administration is to independently survey and monitor the operation of STTR programs within participating federal agencies. The law directs the Small Business Administration to report not less than annually to the Committee on Small Business of the Senate and Committee on Small Business of the House of Representatives on the STTR programs of the federal agencies.

# **Implementation Actions**



## **SBA Responsibilities**

The Small Business Technology Transfer Act of 1992 established specific activities and deadlines for the implementation of the STTR program. The SBA has primary responsibility for implementation, with several specific functions assigned to participating agencies. The Public Law passed on October 28, 1992, mandated that program operation begin on October 1, 1993. SBA uses a Policy Directive to manage the STTR program activities of the participating agencies. This controlling mechanism specifically instructs all participating federal agencies to ensure that essential program operations at each of these agencies is standardized.



## **Model Agreements**

Public Law 102-564 directs SBA to establish guidelines for a model agreement to be used by all STTR

participating agencies in allocating intellectual property rights and follow-on rights.

Representatives of each of the five participating agencies issued two model agreements: One published by the Departments of Energy and Health and Human Services and the other published by the Department of Defense, the National Science Foundation, and the National Aeronautics and Space Administration. The SBA approved these model agreements.

Small businesses are required to negotiate agreements between themselves and the research institutions, but they are not required to use the model agreements. Rather, they are free to formulate and execute their own agreements or to use the models in whole or in part.



## **Research Institutions**

The STTR program is designed to foster cooperative research and development efforts between small businesses and research institutions. To ensure a reasonable balance of effort between the parties, the law stipulates that the small business conduct at least 40 percent of an STTR project and the research institution perform at least 30 percent of the work. While this approach encourages the best from each of the parties, it is further mandated that the small business manage and control the project in all STTR funding agreements.

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### Follow-On Funding Agreements

Following the completion of federal R&D contracts, it is not unusual for the agency involved to have further requirements that result in a continuation of work. It is anticipated that there will be numerous instances where, following the completion of Phase II of STTR, agencies will have remaining requirements to continue development of an innovation or, perhaps, need to produce a product or service developed under STTR. To ensure smooth continuation of this work, to protect the commercial rights to the innovation, and to continue to employ the expertise of the originating STTR small business, the agencies are directed, to the degree practicable, to award any non-STTR, follow-on contracts or grants to the originating small business. To make this process more efficient, the participating agencies have been notified that the competition for an STTR award serves as meeting the requirements of the Competition in Contracting Act. This allows the agencies to award non-STTR, follow-on work to the small business without further competition.

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### Rights to Data

A major concern of small, innovative firms is that data generated while performing research and development for the federal government will be made public. STTR

legislation therefore stipulates that the program provide for the small business to retain the rights to data it generates while performing in the STTR Program. These retention rights remain effective for at least four years. The intent of this statute is to provide authority for the participating agency to protect technical data generated under the STTR funding agreement and to refrain from disclosing such data to competitors of the small business. The statute also stipulates that the agency cannot use the information to produce future technical procurement specifications, thus protecting the participating small business until it has a reasonable chance to seek patent protection, if appropriate.

Thus, the Policy Directive mandates that, except for program evaluation, participating agencies must protect technical data for at least four years from the completion of the project that generated the data. The government, however, retains a royalty-free license for government use of any technical data delivered under an STTR funding agreement, whether patented or not.

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### Critical Technologies

STTR legislation calls for agencies to give special consideration to broad research topics and to topics that further one or more critical technologies. These technologies are identified in the National Critical Technologies Panel reports required under section 603 of the National Science and Technology Policy

Organization and Priorities Act of 1976 or by the Secretary of Defense in accordance with section 2522 of Title 10, United States code. To assist the agencies with this requirement, SBA requested a complete listing of critical technologies from the National Critical Technologies Panel and the Office of the Secretary of Defense. These listings were sent to each participating agency.

# TTR – The Program's

## Third Year - FY 1996

Public Law 102-564 provides both general guidance and specific instructions concerning the implementation of the STTR program. To ensure a successful implementation, the law specifically directed several important actions and established completion dates. All mandated actions were implemented in a timely manner.

### Small-Business Participation

Small business responded to the STTR solicitations by submitting 1,080 Phase I proposals and 132 Phase II proposals to the five participating federal agencies. In this third year of STTR program activity, 249 firms won 238 Phase I awards and 88 Phase II awards. Their share of the \$57,020,121 award funding was \$37,688,787, representing 58.5 percent of the total funding. \$25,841,971 went to participating research institutions to fund their involvement in the program.

### Minority and Disadvantaged Firms

Of the 249 firms that successfully competed for STTR awards, 38 or 15.3 percent, were firms owned by minority or disadvantaged persons. They received \$7,543,148 or 13.2 percent of the \$57,020,121 total awarded.

### Research Institutions

Small businesses interested in participating in the STTR program must find a research institution that meets the program's definition and develop a working agreement before proposing to compete for an STTR award.

The statistics available at the end of the fiscal year indicate that 249 firms collaborated with 154 research institutions. Of contracts and grants awarded during the year, 250 went to universities and colleges, 49 to Federally Funded Research and Development Centers, and 37 to other non-profit research institutions. The research institutions were located in 39 states and the District of Columbia. Of funds obligated for the fiscal year, small business received 58.5 percent while 40.1 percent went to research institutions.



### **Solicitation Schedule**

STTR policy directs each federal agency participating in the program to issue STTR solicitations in accordance with a schedule determined cooperatively with the SBA. After approval of SBA's master schedule, these agencies issued solicitations early in fiscal year 1996 to invite small business to propose to STTR projects.

After approval of its solicitation schedule, each participating agency provided SBA with information necessary to publish a Pre-Solicitation Announcement. The announcements provided interested small businesses with information on forthcoming opportunities in the STTR program, as well as basic information on program requirements, opening and closing dates of solicitations, and agency contact points for further information.

In fiscal year 1996, the participating agencies had the following solicitation periods:

- Department of Defense - December 1, 1995 through April 5, 1996
- Department of Energy - October 2, 1995 through December 22, 1995

- Department of Health and Human Services - May 1996 with closings August 1, 1996 and December 1, 1996
- National Aeronautics and Space Administration - November 9, 1995 through January 25, 1996
- National Science Foundation - October 1, 1995 through January 15, 1996



### **Award Shortfalls**

Program policy required participating agencies to expend on STTR awards not less than 0.15 percent of their fiscal year 1996 extramural budget for research and development. In fiscal year 1996, \$61,515,526 should have been obligated program wide; actual obligations were \$57,020,121. The \$4,495,005 shortfall was the result of the Department of Defense obligating amounts less than required.

# *H*ighlights of

## **Cumulative Data**

The following are highlights of accomplishments for the first three years of the program, FY 1994, 1995, and 1996

- Small businesses have been awarded \$87,211,496
- The participating agencies received 4,184 Phase I proposals and 224 Phase II proposals in response to 15 solicitations. There has been a total of 674 Phase I and 110 Phase II awards.
- Minority/disadvantaged-owned firms have received 98 awards, representing 11 percent of all STTR awards; the value of these awards has totaled \$15,378,023.
- Universities have been awarded \$36,373,602; the FFRDCs have received \$5,856,797; and \$4,549,077 has been awarded to other non-profits.
- Awards have been made in 41 states and the District of Columbia.

**STTR Research Institutions  
Phase I**

<b>Alabama</b>	Other	Southern Research Institute	<b>Florida</b>	Other	Harbor Branch Oceanographic, Inc	
	University	Alabama A & M University (3)		University	Florida Atlantic University	
	University	University of Alabama (3)		University	University of Central Florida	
<b>Arizona</b>	University	University of Arizona (4)	<b>Georgia</b>	University	Emory University	
				University	Georgia Institute of Techology	
<b>California</b>	FFRDC	Jet Propulsion Laboratory (3)	<b>Hawaii</b>	University	University of Hawaii	
	FFRDC	Lawrence Berkeley National Lab (3)		<b>Illinois</b>	FFRDC	Argonne National Laboratory
	FFRDC	Stanford Research Institute	University		Parks College of St Louis University	
	Other	Cancer Res Fdn of Contra Costa	University		Rush Presb. St Lukes Med Center	
	Other	Childrens Hospital Research Center	University		University of Illinois (5)	
	Other	Laboratory for Manufacturing Auto.	<b>Iowa</b>		University	Iowa State University
	Other	Medical Biology Institute			University	State University of Iowa
	University	California Institute Of Technology		<b>Kansas</b>	University	Wichita State University
	University	California State University	<b>Maryland</b>		University	Johns Hopkins University (2)
	University	Loma Linda University Medical Center (2)			University	University of Maryland (5)
	University	The Board Of Trustees Of The Leland		<b>Massachusetts</b>	FFRDC	Argonne National Laboratory
	University	University of California (8)	FFRDC		MIT Lincoln Laboratory (3)	
University	University of Southern California (3)	Other	Dana Farber Cancer Institute (2)			
<b>Colorado</b>	FFRDC	National Center for Atmospheric Res (3)	Other		The Charles Stark Draper Laboratory	
	University	Colorado State University	University		Boston University (4)	
	University	University of Colorado (2)	University		Harvard Medical School (2)	
<b>Connecticut</b>	University	Yale University (2)	University	Harvard University (2)		
			University	Massachusetts Institute of Technology (7)		
<b>District of Columbia</b>	University	George Washington University	University	Northeastern University		
	University	Georgetown University (2)	University	University of Massachusetts (6)		
	University	Howard University Medical College	University	Worcester Polytech Institute		

# STTR Research Institutions

## Phase I

<b>Michigan</b>	University	Eastern Michigan University	<b>New York</b>	Other	Lions Eye Institute Of Albany Medic
	University	Michigan State University (2)		University	Columbia University
	University	University of Michigan (4)		University	Cornell University (2)
	University	University of Michigan Med Center		University	Nys Research Found & Colorado Univ
	University	Wayne State University		University	NYU - Courant Institute
<b>Minnesota</b>	Other	Mayo Foundation	University	Rensselaer Polytechnic Institute (2)	
	University	University of Minnesota	University	State University of New York (2)	
<b>Mississippi</b>	University	Mississippi State University	<b>North Carolina</b>	University	University Of Buffalo
	University	University of Missouri (2)		Other	Lankanau Medical Research Institute
<b>Missouri</b>	University	Washington University		Other	Medical Center of North Carolina
	University	University of Missouri (2)		Other	Research Triangle Institute
<b>Montana</b>	University	Montana State University (2)		University	Duke University
	University	University of Nebraska		University	North Carolina State University
<b>Nebraska</b>	University	University of Nevada	University	University of North Carolina (2)	
	University	University of Nebraska	<b>Ohio</b>	Other	Cleveland Clinic Foundation (3)
<b>Nevada</b>	University	Dartmouth College		University	Case Western Reserve University (3)
	University	NJ Institute of Technology		University	Medical College of Ohio
<b>New Hampshire</b>	University	Princeton University (2)		University	Ohio State University (4)
	University	Rutgers University (2)		University	University of Akron
	University	University of Cincinnati (2)		University	University of Cincinnati (2)
<b>New Jersey</b>	University	University of Dayton Research Institute (3)		University	University Of Dayton Research Institute (3)
	University	University of Akron		University	Wright State University
	University	University of Cincinnati (2)	<b>Oklahoma</b>	University	Oklahoma State University
	University	University of Dayton Research Institute (3)		<b>Oregon</b>	University
<b>New Mexico</b>	University	Wright State University	University		Oregon Health Sciences University
	FFRDC	Los Alamos National Laboratory (2)			
	FFRDC	Sandia National Laboratories (4)			
	University	New Mexico State University			
	University	University of New Mexico (6)			

**STTR Research Institutions  
Phase I**

<b>Pennsylvania</b>	Other	Institute for Cancer Research	<b>Utah</b>	University	University of Utah (2)	
	Other	Milton's Hershey Med Center		University	Weber State University	
	Other	Wistar Institute		<b>Virginia</b>	University	George Mason University (2)
	University	Pennsylvania State University (3)			University	Northern Virginia Community College
	University	Pittsburg State University			University	University of Virginia (2)
	University	University of Pennsylvania			University	Virginia Commonwealth University (2)
	University	University of Pittsburgh			University	Virginia Polytechnic Inst & State Univ (4)
<b>Rhode Island</b>	University	Brown University	<b>Washington</b>	FFRDC	Pacific Northwest National Lab (2)	
	University	University Of Rhode Island		University	University of Washington (2)	
<b>Tennessee</b>	FFRDC	Oak Ridge National Laboratory (7)		University	Washington State University	
	University	University of Tennessee, Knoxville	<b>Wyoming</b>	University	University of Wyoming	
	University	Vanderbilt University (2)				
	University	University of Memphis				
<b>Texas</b>	Other	Southwest Research Institute (3)				
	Other	Texas A&M Research Foundation				
	Other	Texas Engr. Experiment Station				
	University	Texas A&M University (2)				
	University	Texas Tech University (2)				
University	William Marsh Rice University					

**STTR Research Institutions  
Phase II**

<b>Alabama</b>	University	University of Alabama(2)	<b>Massachusetts</b>	FFRDC	MIT - Lincoln Laboratory
				Other	Marine Biological Laboratory
<b>California</b>	FFRDC	Jet Propulsion Laboratory (2)		University	Massachusetts Institute of Technology (5)
	FFRDC	Lawrence Berkeley National Lab		University	Boston University (2)
	Other	The Salk Institute		University	Tufts University
	University	California Institute Of Technology	<b>Michigan</b>	University	University of Michigan (3)
	University	Lawrence Livermore National Lab.		University	Wayne State University
	University	Stanford University (3)			
	University	University of California (3)	<b>Minnesota</b>	University	University Of Minnesota
	University	University of Southern California			
<b>Colorado</b>	FFRDC	National Renewable Energy Lab	<b>New Jersey</b>	Other	Center for Ceramic Research
	University	University Of Colorado At Boulder		University	Rutgers University
				University	Monmouth University
<b>Connecticut</b>	University	University Of Connecticut	<b>New Mexico</b>	FFRDC	Sandia National Laboratories
<b>Delaware</b>	University	University Of Delaware			
<b>District of Columbia</b>	University	George Washington University	<b>New York</b>	Other	Nat. Devel. & Research Institute
				University	Cornell University
<b>Florida</b>	University	University of Florida		University	Rensselaer Polytechnic Institute
<b>Georgia</b>	Other	Georgia Tech Research Corp (2).		University	State University of New York (2)
			<b>North Carolina</b>	Other	Research Triangle Institute
<b>Illinois</b>	University	Southern Illinois University		University	Bowman Grey School of Medicine
				University	Duke University
<b>Indiana</b>	Other	Purdue Research Foundation		University	Duke University Medical Center
	University	Indiana University Medical Center		University	University of North Carolina
	University	Purdue University		University	Wake Forest University
<b>Maryland</b>	University	Johns Hopkins Univeristy			
	University	University of Maryland			

## STTR Research Institutions

### Phase II

<b>Ohio</b>	University	Case Western Reserve University	<b>Washington</b>	University	University of Washington	
	University	Medical College of Ohio		University	Western Washington University	
	University	Ohio State University		<b>Wisconsin</b>	University	University of Wisconsin
	University	University of Cincinnati				
	University	University Of Dayton				
University	Wright State University					
<b>Oklahoma</b>	University	University of Oklahoma				
<b>Oregon</b>	University	Oregon State University				
<b>Pennsylvania</b>	University	Pennsylvania State University (3)				
<b>Tennessee</b>	FFRDC	Oak Ridge National Laboratory (2)				
	University	University of Tennessee-Space Inst.				
<b>Texas</b>	University	Texas A & M University (2)				
	University	University of Houston				
	University	University of Texas				
<b>Utah</b>	University	University of Utah (2)				
<b>Virginia</b>	University	Medical College of Virginia				
	University	Old Dominion University				
	University	University Of Virginia				
	University	Virginia Polytechnic Institute (2)				

## STTR Phase I Awardees - FY 1996

### Alabama

Huntsville	CFD Research Corp
Huntsville	Dean Applied Technology Co Inc
Huntsville	Fastmetrix, Inc.
Huntsville	Research Genetics, Inc
Huntsville	Seca Inc
Huntsville	Sy Technology, Inc.

### Arizona

Tempe	Pasadero
Tucson	Advanced Ceramics Research

### California

Alameda	Sangamo Biosciences, Inc (3)
Azusa	Fluorochem, Inc.
Burbank	Isotope Products Laboratories
Camarillo	Polyfet Rf Devices, Inc.
Carlsbad	Radiation Oncology Computers Sys
Chatsworth	American GNC Corp
Culver City	Research and Development Laboratories
Davis	Net Squared, Inc.
El Segundo	Geospace Research, Inc.
Hayward	Lynx Therapeutics, Inc
Hayward	Soane Biosciences, Inc
Los Gatos	Epilogics, Inc
Menlo Park	Neurex Corporation
Mountain View	Genpharm International Inc
Mountain View	Los Gatos Research
Northridge	MMC Engineering, Inc.
Novato	Sutter Instrument Company
Orangevale	Expertech (Joint Venture
Palo Alto	Optivision

Pasadena	Epicenter Software
Redwood City	Charles Evans and Associates
Richmond	Tinsley Laboratories (2)
San Jose	Uniphase Corporation
Sacramento	Make! Engineering Inc
San Diego	Biopraxis, Inc
San Diego	Hi-Z Technology Inc
San Diego	Molecular Biosystems, Inc
San Diego	New Interconnection And Packaging Tech.
San Diego	Newport Instruments
San Diego	Orincon Corp. (2)
San Diego	Prizm Pharmaceuticals, Inc
San Francisco	Chrysallis Research Laboratories
San Jose	Immersion Corp.
San Jose	SDL, Inc.
San Mateo	Biomimesys, Inc
Santa Ana	Applied Material Technologies, Inc.
Santa Barbara	Mission Research Corp.
Santa Monica	Technology Service Corp.
Sunnyvale	Adeza Biomedical Corporation (3)
Sunnyvale	Aracor
Torrance	Dyna-Cam Aero Engine Corp
Torrance	Physical Optics Corporation (2)
Walnut Creek	Senomed, Inc

### Colorado

Boulder	Boulder Nonlinear Systems, Inc.
Boulder	Macro-Vision Technology Inc
Boulder	Picolight Inc.
Boulder	Spec Inc (2)
Denver	Allos Therapeutics, Inc
Denver	Mycotox, Inc
Fort Collins	Aurogen, Inc

## STTR Phase I Awardees - FY 1996

### Connecticut

East Harford    Advanced Fuel Research, Inc (2)  
Woodbridge    Biomedisyn Corporation (2)

### Florida

Alachua        Geltech, Inc (2)  
Gainesville    Advanced Photonics Technology Inc  
Gainesville    Nanooptics  
Orlando        I-math Associates Inc  
Orlando        Isys Corporation  
Orlando        Schwartz Electro-optics, Inc.  
Punta Gorda    Mod Works Inc

### Georgia

Atlanta        Micron Optics Incorporated  
Norcross       Novoste Corporation  
Norcross       Proceutics  
Piscataway     Structured Materials Industries, Inc.

### Hawaii

Kailua        Makai Ocean Engineering, Inc.

### Illinois

Champaign    Demaco, Inc.  
Mundelein     Bio-Logic Systems Corp  
New Lenox     Inventek Corporation  
Savoy          Magnetic Resonance Microsensors

### Indiana

Greenville     Visual Computing Systems Corp

### Iowa

Iowa Falls     Metal Tech. Industries

### Kansas

Lawrence      Kinedyne Corporation  
Wichita        Impact Dynamics Inc

### Kentucky

Bowling Green Microsensor Systems Inc

### Maryland

Annapolis     Technology Assessment & Transfer  
Baltimore      Hughes Assoc., Inc.  
Bethesda      Proed, Inc (2)  
Columbia      Conducting Materials Corp.  
Gaithersburg   Bioprobes (3)  
Gaithersburg   Igen, Inc  
Rockville      United Research Corp. (2)  
Silver Spring   Dovetail Technologies Inc  
Beltsville     Swales & Associates Inc  
Millersville    Ceramic Composites

### Massachusetts

Acton          Micracor, Inc.  
Amherst        Acision Labs Inc.

## STTR Phase I Awardees - FY 1996

### Massachusetts (Cont)

Amherst	Quadrant Engineering Inc
Andover	Physical Sciences Inc
Bedford	Coretek, Inc.
Bedford	Cynosure, Inc
Bedford	Ion Optics, Inc (2)
Bedford	Spire Corporation
Belmont	Cambridge Scientific, Inc
Belmont	Radiation Science, Inc
Burlington	Alphatech, Inc
Burlington	CoreTek Inc
Burlington	Visidyne, Inc. (2)
Cambridge	Charles River Analytics
Cambridge	Charles River Optics
Cambridge	SatCon Technology Corporation (2)
Charlestown	Biotransplant, Inc
Chelmsford	Menzie-cura & Assoc., Inc.
East Sandwich	Northeast Science & Technology
Lexington	Pharm-Eco Laboratories
Lowell	Biotronics
Medford	Scriptgen Pharmaceuticals Inc
Northampton	Millimetrix Corporation
Norwood	Middlesex Sciences
Shrewsvury	Supercon, Inc
Somerville	Inner Vision Diagnostics Inc
Somerville	Is Robotics
Sudbury	A and D Assay
Sudbury	Cutanogen, Inc
Waltham	Foster-miller, Inc.
Watertown	Biolink Partners
Wilmington	Advanced NMR Systems Inc
Woburn	Cardiotech International Inc
Woburn	Covalent Associates Inc
Worcester	Antigen Express, Inc

### Michigan

Ann Arbor	Graphis Engineering Systems
Ann Arbor	Koester Performance Research
Ann Arbor	T/j Technologies, Inc.
Ann Arbor	Thero Two-X, Inc
Dexter	Bio Logic Engineering
Lansing	DPD, Inc
Lansing	EFX Systems, Inc
Okemos	IC Tech Incorporated

### Minnesota

Minneapolis	MITI Corporation
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### Missouri

Fayette	Fayette Environmental Serv, Inc.
St Louis	Megan Animal Health

### Montana

Bozeman	Scientific Materials Corp
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### New Hampshire

Hudson	Ferrite Components, Inc
Nashua	Solid State Scientific Corp.

### New Jersey

Annandale	Medarex, Inc
Cherry Hill	Universal Technical Resource Srvc, Inc
Lincoln Park	Kay Elemetrics Corporation

## STTR Phase I Awardees - FY 1996

### New Jersey (Cont)

Monmouth Jun Phytotech, Inc  
Princeton PD-LD, Inc

### New Mexico

Albuquerque Artificial Muscles R&D, Inc.  
Albuquerque Kestral Corporation  
Albuquerque Pulse Power Physics

### New York

Buffalo Amherst Systems Inc.  
Elmsford Hypres, Inc  
Lancaster The Electrosynthesis Company, Inc.  
New Hartford Phoenix Systems & Technologies, Inc.  
New York Medalex Technology  
Niskayuna Mohawk Innovative Technology Inc  
Watervoleit Molecular OptoElectronics Corp  
Williamsville Apple Aid, Inc.

### North Carolina

Durham Magnic International, Inc  
Durham Nekton Technologies, Inc.  
Greensboro Stovall Life Science, Inc  
Raleigh Lambda Technologies, Inc  
Research Trian Triangle Res. & Dev. Corp.

### Ohio

Beachwood MidAmericia Consulting Group Inc  
Bublin Precomp, Inc  
Cleveland Cam-lem, Inc.

Cleveland  
Columbus  
Dayton  
Dublin  
Powell  
Toledo  
Worthington

Cleveland Medical Devices Inc  
Spectrotech, Inc  
Engineering Design Systems, Inc.  
LSP Technologies Inc  
SRICO Incorporated  
Receptorpro, Inc  
NexTech Materials, Ltd

### Oklahoma

Stillwater Nomadics Incorporated

### Oregon

Beaverton Castex  
Beaverton Planar America, Inc  
Eugene Northwest Media Inc  
Lake Oswego Luvernois and Associates

### Pennsylvania

Export Emec Consultants  
Landisville Electron Energy Corp.  
Philadelphia Exzyme, Inc

### Rhode Island

East Providence Evans Company

### South Carolina

Hilton Head Kigre, Inc.

## STTR Phase I Awardees - FY 1996

### Tennessee

Knoxville      Microbial Insights, Inc.  
 Memphis        Molecular Design International  
 Tullahoma      ERC, Inc

### Texas

Austin            Genetworks, Inc  
 Austin            Radiant Research, Inc (2).  
 Dallas            Rf Monolithics, Inc.  
 San Antonio     Metrica Inc  
 San Antonio     Biomedical Development Corp  
 San Antonio     Metrica, Inc.  
 San Antonio     Operational Technologies Corp.  
 San Antonio     Satya Tech 1 Services

### Utah

Centerville      One Stop Satellite Service  
 Salt Lake City   Process Instruments Inc  
 Salt Lake City   SRC

### Virginia

Alexandria      Infinite Computer Technologies  
 Alexandria      Sema Inc  
 Alexandria      Senior Housing Research Group  
 Blacksburg      Aeroprobe Corp.  
 Blacksburg      Fiber & Sensor Technologies Inc (3)  
 Burke            Microwave Technologies, Inc.  
 Herdon           Research Development Corp.  
 Hemdon          Astron Corporation  
 Manassas        Utron, Inc  
 Radford          American Research Corp of VA

Richmond  
 Richmond

Commonwealth Biotechnologies  
 Discovery Therapeutics Inc

### Washington

Pullman  
 Puyallup  
 Seattle  
 Seattle  
 Seattle  
 Seattle  
 Seattle

Sentel-Tech LLC  
 Amav Systems Inc  
 Cell Therapeutics Inc  
 Corixa Corporation  
 Neorx Corporation  
 NSE Composites Stress Services  
 Targeted Genetics Corporation

### Wisconsin

Milwaukee

Medical Advances Inc

### Wyoming

Laramie

Detection Limit, Inc

## STTR Phase II Awardees - FY 1996

### Alabama

Huntsville	Advanced Optical Systems, Inc.
Huntsville	CFD Research Corporation
Huntsville	Plasma Processes, Inc

### Arizona

Mesa	Zona Technology, Inc.
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### Arkansas

Fayetteville	Bioengineering Resources
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### California

Berkeley	Franz Inc.
Fremont	CVC Products, Inc.
Goleta	Illgen Simulation Technologies
Irvine	Dubbs And Severino
Irvine	Metrolaser (2)
Los Angeles	Quality Information Systems
Menlo Park	Pharmchem Laboratories, Inc
Pasadena	Epicenter Software
San Carlos	Mountain View Pharmaceuticals
San Diego	Signal Pharmaceuticals, Inc
San Jose	SDL, Inc.
San Leandro	Alameda Applied Sciences Corp.
Santa Clara	Quantrad Sensor
Simi Valley	Fermionics Corp.
Stanford	Integrinautics Corp
Sunnyvale	Seagull Technology Inc
Torrance	Physical Optics Corp.

### Colorado

Denver	Innovative Research Inc.
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### Connecticut

Danbury	Advanced Technology Materials, Inc.
East Hartford	Advanced Fuel Research, Inc. (2)
Glastonberry	Thoughtventions Unlimited

### District of Columbia

Washington	Matsys, Inc.
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### Florida

Alachua	Geltech, Inc.
Gainesville	J and D Scientific Inc

### Georgia

Atlanta	Cernet, Inc.
Norcross	Search Technology

### Idaho

Idaho Falls	Idaho Technology
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### Illinois

Chicago	Biochemanalysis Corporation
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### Indiana

W. Lafayette	Advanced Process Combinatorics, Inc.
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## STTR Phase II Awardees - FY 1996

### Maryland

Columbia Silver Spring	DHR Technologies, Inc Grfikon Ltd.
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### Massachusetts

Billerica	Aerodyne Research, Inc.
Boston	Prism Corporation
Braintree	Warren E Collins Inc
Cambridge	Altus Biologics Inc.
Cambridge	Cambridge Res. & Instrumentation
Somerville	Science Research Laboratory, Inc.
Waltham	Foster-Miller, Inc. (2)
Waltham	Metal Matrix Composites, Inc.
Weston	Airborne Research Associates
Woburn	Gentest Corporation
Woburn	Nz Applied Technologies

### Michigan

Ann Arbor Chelsea Dexter	T/j Technologies, Inc. Public Data Queries, Inc Aeromover Systems Corp
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### Nebraska

Lincoln	Zoex Corporation
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### New Hampshire

Nashua	Advanced Device Technology, Inc.
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### New Jersey

Lamertville Piscataway Princeton Waldwick Warren	Advanced Cerametrics, Inc. Nanopowder Enterprises, Inc. Sensors Unlimited, Inc. Crystal Assoc., Inc. Endorobotics Corp
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### New Mexico

Albuquerque	Nanochem Research, Inc.
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### New York

Buffalo	Amherst Systems Inc
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### North Carolina

Research Tria Winston-Sale	Natural Pharmacia International Salem Products LLC
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### Ohio

Cleveland Dublin Toledo	Cam-lem, Inc. Precomp, Inc Receptorpro, Inc
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### Oregon

Myrtle Creek Portland	Umqua Research Company PI Medical Corporation
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## STTR Phase II Awardees - FY 1996

### Pennsylvania

Phoenixville Electro-Optical Systems, Inc.  
State College Trs Ceramics, Inc.

### Texas

Austin Owl Displays (old: Off World Labs)  
College Station Knowledge Based Systems Inc  
Houston Proportional Technologies Inc  
San Antonio Dignet Research Inc

### Utah

Salt Lake City Optosonics, Inc  
Salt Lake City Protein Solutions, Inc

### Virginia

Annandale Health Technomics Inc  
Charlottesville Abtech Corp.  
Fairfax Digital System Resources, Inc.  
Fairfax Materials Modification Inc.  
Poquoson Innovative Aerodynamic Technologies  
Richmond Commonwealth Biotechnologies

### Washington

Issaquah Jx Crystals Inc.  
Puyallup Arnay Systems Inc

### Wisconsin

Madison Sterling Scientific, Inc

## STTR Program Data - Fiscal Year 1996

	DOD	NSF	DOE	NASA	HHS	TOTAL
<b>AGENCY OBLIGATIONS</b>						
AGENCY EXTRAMURAL BUDGET	20,803,684,000	1,978,300,000	3,110,000,000	6,000,000,000	9,196,000,000	41,087,984,000
AGENCY STTR BUDGET	31,205,526	2,960,000	4,556,000	9,000,000	13,794,000	61,515,526
DOLLARS OBLIGATED	26,136,410	2,954,391	4,556,000	9,496,572	13,876,748	57,020,121
% OF STTR EXTRAMURAL BUDGET	0.13%	0.15%	0.15%	0.16%	0.15%	0.14%
DEFICIT/SURPLUS	-5,069,116	-5,609	0	496,572	82,748	-4,495,405
<b>STTR AWARD PROFILE - COMMITMENTS</b>						
TOTAL PHASE I AWARDS	82	16	15	35	90	238
MINORITY DISAD. PH I AWARDS	15	1	2	6	3	27
TOTAL PHASE II AWARDS	46	4	7	12	19	88
MINORITY/DISAD. PH II AWARDS	10	0	0	1	0	11
TOTAL PHASE I DOLLARS AWARDED	7,298,521	1,598,168	1,498,985	3,496,572	8,780,409	22,672,655
MIN/DISAD PH I DOLLARS AWARDED	1,362,520	9,982	188,993	599,634	299,228	2,460,357
TOTAL PH II DOLLARS AWARDED	21,733,550	1,398,763	3,496,705	6,000,000	9,175,541	41,804,559
MIN/DISAD PH II DOLLARS AWARDED	4,582,791	0	0	500,000	0	5,082,791
TOTAL PH I & II AWARDED	29,032,071	2,996,931	4,995,690	9,496,572	17,955,950	64,477,214
AVERAGE AMOUNT PH I AWARDS (\$)	89,006	99,886	99,932	99,902	97,560	95,263
<b>STTR SOLICITATION PROFILE</b>						
NO OF SOLICITATIONS RELEASED	1	1	1	1	1	5
NO OF RESEARCH TOPICS	31	1	10	4	99	145
NO PH I PROPOSALS RECEIVED	479	42	232	101	226	1,080
NO PH II PROPOSALS RECEIVED	60	8	18	19	27	132
<b>RESEARCH INSTITUTION PROFILE</b>						
NUMBER OF FFRDCS	21	0	17	9	2	49
NUMBER OF UNIVERSITIES	99	20	9	31	91	250
NUMBER OF OTHER NON-PROFIT	14	0	0	7	16	37

## STTR Program Data - Fiscal Year 1996

	DOD	NSF	DOE	NASA	HHS	TOTAL
<b>COOPERATIVE RESEARCH PROFILE</b>						
TOTAL DOLLARS OF AWARDS	29,032,071	2,996,931	4,995,690	9,496,572	17,955,950	64,477,214
DOLLARS TO SMALL BUSINESS	17,418,283	1,794,170	2,905,852	5,889,243	9,681,239	37,688,787
% TO SMALL BUSINESS	60.00%	59.87%	58.17%	62.01%	53.92%	58.45%
DOLLARS TO RESEARCH INSTITUTION	10,777,914	1,258,711	2,012,546	3,607,329	8,185,478	25,841,978
% TO RESEARCH INSTITUTION	37.12%	42.00%	40.29%	37.99%	45.59%	40.08%
NO. AWARDS TO UNIVERSITIES	99	20	9	31	91	250
DOLLARS TO UNIVERSITIES	8,019,796	1,258,711	890,864	2,647,877	6,734,274	19,551,522
NO OF AWARDS TO FFRDCS	15	0	13	9	2	39
DOLLARS TO FFRDCS	1,555,618	0	1,121,682	363,644	120,000	3,160,944
NO AWARDS TO OTHER NON-PROFITS	14	0	0	7	16	37
DOLLARS TO OTHER NON-PROFITS	1,202,500	0	0	595,808	1,331,204	3,129,512
<b>PHASE I</b>						
NUMBER OF FFRDC AWARDS	9	0	9	9	2	29
NUMBER OF UNIVERSITY AWARDS	64	16	6	21	75	182
NO OF OTHER NON-PROFIT AWARDS	9	0	0	5	13	27
TOTAL DOLLARS OF AWARDS	7,298,521	1,598,168	1,498,985	3,496,572	8,780,409	22,672,655
DOLLARS TO SMALL BUSINESS	3,874,891	926,937	919,934	2,097,943	4,405,303	12,225,008
% TO SMALL BUSINESS	53.09%	58.00%	61.37%	60.00%	50.17%	53.92%
DOLLARS TO RESEARCH INSTITUTIONS	2,934,025	671,231	579,051	1,398,629	4,331,751	9,914,687
% TO RESEARCH INSTITUTIONS	40.20%	42.00%	38.63%	40.00%	49.33%	43.73%
NO AWARDS TO UNIVERSITIES	64	16	6	21	75	182
DOLLARS TO UNIVERSITIES	2,220,235	671,231	241,152	839,177	3,578,072	7,549,867
NO AWARDS TO FFRDCS	9	0	9	9	2	29
DOLLARS TO FFRDCS	370,212	0	337,899	363,644	120,000	1,191,755

### STTR Program Data - Fiscal Year 1996

	DOD	NSF	DOE	NASA	HHS	TOTAL
NO AWARDS TO OTHER NON-PROFITS	9	0	0	5	13	27
DOLLARS TO OTHER NON-PROFITS	343,578	0	0	195,808	633,679	1,173,065
<b>PHASE II</b>						
NUMBER OF FFRDCS	6	0	4	0	0	10
NUMBER OF UNIVERSITIES	35	4	3	10	16	68
NUMBER OF OTHER NON-PROFIT	5	0	0	2	3	10
TOTAL DOLLARS OF AWARDS	21,733,550	1,398,763	3,496,705	6,000,000	9,175,541	41,804,559
DOLLARS TO SMALL BUSINESS	13,543,392	867,233	1,985,918	3,791,300	5,275,936	25,463,779
% TO SMALL BUSINESS	62.32%	62.00%	56.79%	63.19%	57.50%	3
DOLLARS TO RESEARCH INSTITUTIONS	7,843,889	587,480	1,433,495	2,208,700	3,853,727	15,927,291
% TO RESEARCH INSTITUTIONS	36.09%	42.00%	41.00%	36.81%	42.00%	2
NO. AWARDS TO UNIVERSITIES	35	4	3	10	16	68
DOLLARS TO UNIVERSITIES	5,799,561	587,480	649,712	1,808,700	3,156,202	12,001,655
NO. AWARDS TO FFRDCS	6	0	4	0	0	10
DOLLARS TO FFRDCS	1,185,406	0	783,783	0	0	1,969,189
NO AWARDS TO OTHER NON-PROFITS	5	0	0	2	3	10
DOLLARS TO OTHER NON-PROFITS	858,922	0	0	400,000	697,525	1,956,447