

U.S. Small Business Administration



*Championing America's Entrepreneurs*

Office of Technology  
U.S. Small Business Administration

---

**SMALL BUSINESS  
INNOVATION  
RESEARCH PROGRAM  
(SBIR)**

**ANNUAL REPORT - FY 1995**



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

OFFICE OF THE ADMINISTRATOR

SEP 15 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:

I am pleased to provide you with the 13<sup>th</sup> year results of the Small Business Innovation Development Act of 1982. (Public Laws 102-564, 99-443, and 97-219)

Along with facts and figures on the progress of the Small Business Innovation Research (SBIR) program, this report contains information on the achievement of small business goals in Federal research, research and development awards and the commercialization of SBIR efforts.

During fiscal year 1995, small business concerns received over \$864 million in obligated funding and successfully competed for 4,348 SBIR awards from the participating Federal agencies.

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





# Overview

This is the 13th in a series of annual reports on the Small Business Innovation Research (SBIR) Program. The Small Business Administration prepared the report pursuant to the requirements of the Small Business Innovation Development Act of 1982. The SBA is directed by the Act to set SBIR Program policy and to monitor, evaluate and report on the program's progress. This report reflects and summarizes, along with other information, SBIR Program results and activities for FY 1995.

The Small Business Innovation Development Act of 1982 was signed into law on July 22, 1982. Congress reauthorized it to continue in FY 1986 and again in FY 1993, extending the SBIR Program until October 1, 2000. The latter mandate also increased the percentage of research and development funds that the federal-agency participants must direct to small business.

When considering the legislation to extend the program to October 1, 2000, Congress concluded that technological innovation creates jobs, increases productivity and economic growth, and serves as a valuable counterforce to inflation and the nation's balance-of-payments deficit. Congress also noted that while small business is the nation's principal source of significant innovations, large businesses, universities and government laboratories historically have conducted the vast majority of federally funded research and development.

The SBIR Program has proven again in FY 1995 that with focused program support from the federal government, the nation's small high-tech enterprises can convert basic ideas and research into commercial products that enhance the

nation's productivity and help maintain its competitive leadership in the international marketplace. By any measure, this partnership of government and the private sector has been a resounding success.

In its 13 years, the SBIR Program has directed over 37,000 awards worth over \$5 billion to thousands of small high-tech companies. These enterprising concerns have transformed their ingenuity and inventiveness into profitable commercial successes in a wide range of industries and technologies from the familiar to the exotic.

Highlights and accomplishments of the SBIR Program since it began operations in FY 1983 include the following:

- In response to 175 solicitations by the 11 participating federal agencies, 240,365 proposals have been received from small high-tech firms. These proposals have resulted in 37,319 awards worth more than \$5 billion.
- The increasing number of successes in commercial sales associated with the program have come from a wide range of technologies and industries, from laser manufacture to medical research to robotics to military decision-making, to name a few.
- The new products and techniques emerging from the SBIR awards are assisting America's competitive stance worldwide and improving the lives of people here and abroad.

Despite the talent, determination and entrepreneurial spirit that exist among small high-tech businesses many enterprises could not have turned their ideas into profitable commercial products without the assistance of the SBIR Program. As the company profiles and statistics in this report illustrate, an ever-increasing number of program participants are succeeding in commercializing their new products, processes and services. Surveys by the SBA and the General Accounting Office report that a minimum of one in four SBIR participants has recorded the commercial success of its SBIR-supported product(s) within four years of receiving its Phase II award.

Another encouraging statistic involves small firms headed by minorities. Businesses in this classification are winning an increasing number of SBIR awards, testifying to their technical innovation and business talents. In FY 1994, minority/disadvantaged-owned firms received 621 awards; in FY 1995, the number increased to 672.

In administering and supervising the SBIR Program, the SBA and its Office of Technology continue to encourage more small high-tech enterprises to respond to solicitations from the agencies participating in the program. A number of participating small businesses are winning multiple awards, an understandable development that reflects their continuing spirit of innovation.

# Introduction

## The Rationale

The rationale for creation of the Small Business Innovation Act was to give small, innovative enterprises a greater role in federally-funded research and development. The goal was to help develop the nation's base for creative technical achievement, as well as enlarge the markets for ideas generated in the laboratories and research facilities, and on the factory floors of America's small high-tech businesses.

The designers of the original statute, Public Law 97-219, realized that small businesses -- especially technically oriented small businesses -- were responsible for most of our new products, processes and technologies, and were particularly adept at turning research and development activity into viable commercial products. In many cases, the only ingredient these firms needed for success was financial assistance to conduct the research and development of their ideas. SBIR Program history is full of such successes, and many more are anticipated. These accomplishments have created many new jobs, expanded the nation's tax base, and bolstered America's economic viability and productivity.

## Findings and Purposes of the Act

Beginning in FY 1983, each agency that has established an SBIR Program has set aside a specific percentage of its extramural research or research and development budget for award to small businesses. Through a four-year phase-in process, civilian agencies were required to increase the percentage of their R&D set-asides, from 0.2 percent in FY

1983 to 1.25 percent in FY 1986. The Department of Defense was allowed five years to phase in their increase from 0.01 percent in FY 1983 to 1.25 percent in FY 1987.

In 1992 Congress extended the life of the SBIR Program to October 1, 2000, as part of the Small Business Research and Development Enhancement Act (Public Law 102-564). This legislation also increased by increments the percentage of annual extramural R&D funds that the participating federal agencies must direct to small high-tech firms from 1.25 percent to 2.5 percent. Additionally, the Act raised the ceiling of Phase I awards from \$50,000 to \$100,000 and Phase II awards from \$500,000 to \$750,000.

The purposes of Public Law 102-564:

- Expand and improve the SBIR Program
- Emphasize increased private-sector commercialization of technology developed through federal SBIR research and development
- Increase small business participating in federal research and development.
- Improve the federal government's dissemination of information concerning the SBIR Program with regard to participation by women-owned and socially and economically disadvantaged small businesses.

## Federal Agency SBIR Participants

Under the terms of the 1982 Small Business Innovation Development Act, any federal agency with an extramural budget for research or research and development in excess of \$100 million for FY 1982 or any subsequent fiscal year must

establish an SBIR program. The agency then sets aside a prescribed percentage of its extramural research or research-and-development contracting dollars for program use during each fiscal year.

Public Law 102-564 has set the funding percentage at not less than 1.5 of the agency's R&R&D for FY 1993 and 1994; not less than 2 percent for FY 1995 and 1996; and not less than 2.5 percent for fiscal years thereafter.

The federal agencies participating in the SBIR Program:

- Department of Agriculture (DOA)
- Department of Commerce (DOC)
- Department of Defense (DOD)
- Department of Education (ED)
- Department of Health and Human Service (HHS)
- Department of Transportation (DOT)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)
- Department of Energy (DOE)
- National Science Foundation (NSF)
- Nuclear Regulatory Commission (NRC)

### **The Three-Phase SBIR Structure**

- **Phase I:** Awards for up to \$100,000 are made for research projects designed to evaluate the feasibility, as well as the scientific and technical merit of an idea.
- **Phase II:** Phase I projects with the most potential are funded for further development of the proposed idea. Phase II funding is for one or two years, at a maximum of \$750,000.
- **Phase III:** No SBIR funds may be used. Private-sector

investment and support bring an innovation to market. If appropriate, Phase III funds may involve follow-up production contracts with a federal agency for future use by the federal government.

### **The R&R&D Goaling Program**

In addition to the SBIR Program, the Small Business Innovation Development Act also requires certain federal agencies to participate in the Research and Research and Development Goaling Program.

The legislation stipulates that any agency with a fiscal year budget for research or research and development in excess of \$20 million must establish goals for awarding R&R&D funding agreements to small business. An agency's annual goals cannot be lower than those achieved during the previous fiscal year. In addition to the 11 SBIR participant agencies, seven other agencies participate in the R&R&D Goaling Program:

- Department of the Interior (DOI)
- Department of Justice (DOJ)
- Department of the Treasury (TR)
- Department of Veteran Affairs (DVA)
- Agency for International Development (AID)
- Smithsonian Institution (SI)
- Tennessee Valley Authority (TVA)

### **SBA Authorities and Responsibilities**

- Develop, coordinate, issue and update a policy directive for the federal-governmentwide conduct of the SBIR and R&R&D goaling programs.
- Develop and administer an information and outreach program.

- Develop and maintain a source and information file of interested small businesses.
- Develop, coordinate, publish and disseminate each SBIR Pre-Solicitation Announcement.
- Survey, monitor and report on all SBIR programs.
- Report at least annually to Congress on all SBIR and R&R&D goaling programs and on the SBA's monitoring activities.
- Coordinate private-sector commercialization of SBIR innovations.
- Obtain information on the current national critical technologies.

### **SBIR Program Authorities and Responsibilities for Each Participating Agency**

- Determine the categories of projects to include in the agency's SBIR Program.
- Issue SBIR solicitations in accordance with a schedule determined cooperatively with the SBA.
- Unilaterally determine research topics within each SBIR solicitation, giving special consideration to broad research topics and to topics that further one or more National Critical Technologies.
- Receive and evaluate proposals resulting from SBIR solicitations.
- Select awardees for SBIR funding agreements.

- Ensure those funding agreements under the SBIR Program include provisions setting forth the respective rights of the United States and small businesses with regard to intellectual property rights and follow-on research.
- Administer SBIR funding agreements (or delegate such administration to another agency).
- Make payments to SBIR award recipients based on progress toward or completion of the funding agreement requirements.
- Submit annual reports on the SBIR and R&R&D Goaling programs to the SBA.



# P rogram Services

In setting SBIR Program policy and in monitoring and evaluating the program, the SBA acts to keep contract award procedures simple and standardized, to keep paperwork to a minimum, and to encourage small companies owned by minorities and the disadvantaged to participate in the program. The SBA also conducts an ongoing national information-and-outreach campaign, and ensures that participating agencies conform with SBIR policy directives.

As required by law, the solicitation process minimizes regulatory burdens and mandates timely receipt and review of proposals, peer review, proprietary-information guidelines, selection of awardees, data-rights retention, title to government property, cost-sharing and cost principles.

## **Pre-Solicitation Announcements**

The SBA's SBIR Pre-Solicitation Announcement to small businesses presents basic program solicitation information in a succinct and understandable manner. Each quarterly announcement provides complete information on all SBIR activity for that quarter, eliminating the need for small businesses to track the activities of each participating agency. In addition to mailings, the announcements are available from the SBA's electronic bulletin board SBA OnLine, and on the Internet. (Other SBIR information available from the bulletin board includes SBIR award winners from the latest available fiscal year, as well as the SBIR Proposal Preparation Handbook. Bulletin-board information is updated on the first day of each quarter.) The announcements provide small businesses with --

- a brief statement of each research topic, listed by participating agency
- the opening and closing dates of each solicitation
- an estimate of the number of awards to be made under each solicitation
- the party to contact for a copy of the agency's solicitation, and
- a master schedule of solicitation opening and closing dates for all participating agencies.

## **SBIR Outreach**

During FY 1995, the SBA cooperated with numerous organizations that conducted SBIR seminars and conferences by providing information, materials and speakers. SBA field representatives, and public and private organizations play a significant role in part of the information-dissemination process.

The SBA continues to publish a special SBIR Program pamphlet, which provides program information and serves as a mechanism for developing the SBIR mailing list. SBA field offices have been furnished a supply of the pamphlets for speakers throughout the country.

Another form of outreach involves briefing officials of foreign governments. During FY 1995, foreign interest in the SBIR Program continued to grow. SBIR-type programs are in place in the United Kingdom and other European countries.

## **Commercialization Matching System**

A major goal of the SBIR Program is to bring the results of research and development to the marketplace. The program encourages more research and development, as well as commercialization by offering the possibility of economic reward for innovations successfully marketed by SBIR firms. At each stage of a small firm's progress through the program, there are policies and incentives to promote research work with commercial potential and to encourage the availability of the completed research in the marketplace.

Recognizing that most small firms with innovative products have difficulty finding the financing required for the final development, manufacture and marketing of their product, the SBA has developed the Commercialization Matching System. The system maintains information on all SBIR awards, including the recipient company's name and address, the name of the principal investigator, and the innovation to be commercialized. The system also includes information on the financing sources that have requested inclusion and the types of investments they are seeking.

From this data base, the Commercialization Matching System provides possible investors with technical abstracts of SBIR projects, and SBIR firms with information on sources of investment capital for their innovations. Matching selections from the data base are made on the basis of technology and industry preferences, geographic preferences and dollar thresholds.

## SBIR Program Data

### Fiscal Year 1995 SBIR Agency Obligations Summary (dollars in thousands)

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NRC	NSF	TOTAL
Agency Extramural Budget	464,455	385,990	21,766,468	3,449,676	439,889	173,707	342,453	8,966,984	5,900,000	75,931	2,040,462	44,006,015
Agency SBIR Budget	9,289	7,720	445,252	68,993	8,968	3,474	7,178	179,340	118,000	1,519	40,809	890,542
Dollars Obligated	9,289	7,628	413,900	70,081	10,317	3,401	7,178	180,914	118,221	1,838	41,782	864,549
Percent of SBIR to Extramural Budget	2.00%	1.98%	1.90%	2.03%	2.35%	1.96%	2.10%	2.02%	2.00%	2.42%	2.05%	1.96%
Deficit/Surplus	0	-92	-31,352	1,088	1,349	-73	0	1,574	221	319	973	-25,993

### Fiscal Year 1995 Award Profile (dollars in thousands)

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NRC	NSF	TOTAL
Total Phase I Awards	72	73	1,263	199	20	27	47	667	413	9	295	3,085
Minority/Disadvantaged Phase I Awards	10	13	256	26	6	1	7	32	58	0	64	473
Total Phase II Awards	27	20	575	81	21	9	19	239	194	5	73	1,263
Minority/Disadvantaged Phase II Awards	1	3	122	10	3	3	0	13	31	0	13	199
Total Phase I Dollars Awarded (\$)	3,897	3,635	95,137	14,841	1,792	1,032	3,027	62,353	25,434	448	20,596	232,192
Minority/Disadvantaged Phase I Dollars (\$)	532	648	19,211	1,948	524	39	39	2,897	4,014	0	4,277	34,129
Total Phase II Dollars Awarded	5,392	3,993	289,209	55,240	8,525	2,369	4,151	117,821	92,787	1,244	21,207	601,938
Minority/Disadvantaged Phase II Dollars (\$)	198	598	72,883	7,277	1,112	749	0	8,449	18,662	0	3,515	113,443
Average Amount for Phase I Awards (\$)	54	50	75	75	90	38	64	93	62	50	70	75

### Fiscal Year 1995 Agency Solicitation Profile

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NRC	NSF	TOTAL
Number of Solicitations Released	1	1	4	1	1	1	1	3	1	1	1	16
Number of Research Topics in Solicitations	9	17	677	44	32	9	10	172	15	9	26	1,020
Number of Copies distributed	16,000	6,000	165,000	15,000	16,000	1,500	5,000	34,830	3,000	600	62,000	324,930
Number of Phase I Proposals Received	448	524	8,919	1,569	473	145	476	3,652	1,947	54	1,978	20,185
Number of Phase II Proposals Received	41	38	1,142	192	27	18	27	661	388	13	309	2,856
Number of Phase I Awards	72	73	1,263	199	20	27	47	667	413	9	295	3,085
Number of Phase II Awards	27	20	575	81	21	9	19	239	194	5	73	1,263

Dollars obligated can include modifications to previous year's awards: DOD \$29,553K, HHS \$738K, NASA 150K, NSF 21K.

# P rogram Data

## Reporting Requirements for SBIR and R&R&D Goaling

Each agency required by Sections 4(f) and 4(h) of Public Law 97-219 to establish an SBIR program for research and research and development is also required to report annually to the SBA on the number of grants, contracts, and cooperative agreements awarded that exceed \$10,000, and on the dollar value of all such awards. The agencies are also required to compare the number and amount of SBIR awards with awards to other than small business.

To properly monitor and report on the participating agencies' SBIR programs, the SBA has established a reporting base to compare against each agency's budget data. To determine extramural R&R&D obligations as a base for the size of each agency's SBIR Program, the Small Business Innovation Development Act provides a definition of research and development identical to that in the Office of Management and Budget Circular A-11, "Preparation and Submission of Budget Estimates."

Each year federal agencies submit to the National Science Foundation their total R&R&D obligations broken down in to intramural and extramural R&R&D obligations, which are then published in "Federal Funds for Research and Development." The SBA reviews the NSF data on agencies with SBIR programs, then uses the amount determined by the agency to be its extramural budget as the extramural base for the SBIR Program. A distinction between intramural and

extramural is not made for agencies participating in the R&R&D Goaling Program, since each agency's goal is based upon total R&R&D budget obligations.

A three-year budget cycle is used for establishing extramural R&R&D obligations. Within any given year, a participating agency's initial estimate can change due to congressional action on that agency's R&R&D budget. To ensure proper implementation of the program, each agency establishes an estimated budget and proceeds during the year on that budget. The SBA uses a system of deficits and credits to make the necessary adjustments during the course of the budget cycle. In this way, SBIR agencies ultimately achieve the percentages specified by law.

## FY 1995 SBIR Summary

The 11 agencies participating in the SBIR Program in FY 1995 released a total of 16 Phase I solicitations. The Department of Defense released 4 solicitations; the Department of Health and Human Services released three solicitations; the other nine agencies released one each. (See Table 1)

In response, the participating agencies received 20,185 Phase I proposals from small high-tech enterprises. The agencies subsequently distributed a total of 3,085 Phase I awards, which represented 15 percent of the proposals received. A total of 2,856 Phase II proposals were received, resulting in 1,263 new awards. These awards represented 44 percent of all Phase II proposals received. The combined number of Phase I and Phase II proposals received in FY 1995 was 23,041. There were 4,348 awards, representing 19 percent of the total.

The number of SBIR proposals received has increased steadily over the years -- a trend that illustrates past award successes and the ever-growing awareness and acceptance of the SBIR Program within the small business community. (Table 2 immediately following)

**(Table 2: Number of SBIR Awards—  
FY 1983 through FY 1995**

<i>Fiscal Year</i>	<i>Phase I</i>	<i>Phase II</i>	<i>Totals</i>
83	686	--	686
84	999	338	1,337
85	1,397	407	1,804
86	1,945	564	2,509
87	2,189	768	2,957
88	2,013	711	2,724
89	2,137	749	2,886
90	2,346	837	3,183
91	2,553	788	3,341
92	2,559	916	3,475
93	2,898	1,141	4,039
94	3,102	928	4,030
95	3,085	1,263	4,348
<i>Total</i>	<i>27,909</i>	<i>9,410</i>	<i>37,319</i>

There also have been year-to-year increases in the dollar value of awards. During FY 1995, the 11 participating SBIR agencies awarded \$864.6 million through the SBIR Program, which represented a 2.0 percent increase over the approximately \$717.6 million obligated in FY 1994. FY 1995 Phase I awards were worth \$223 million; Phase II awards, \$602 million. The overall total included \$30 million in modifications to non-FY 1995 awards. (See Table 3)

In FY 1995, minority/disadvantaged-owned firms received 473 Phase I awards worth \$34.1 million and 199 Phase II awards worth \$113.4 million.

In awarding two-year funding agreements under Phase II, agencies utilize various acquisition methods of obligation and funding. For purposes of consistency, the acquisition data in this report reflect only actual obligations during FY 1995.

**Table 3: Value of SBIR Awards—  
FY 1983 through FY 1995**  
(in millions of dollars)

<i>Fiscal Year</i>	<i>Phase I</i>	<i>Phase II</i>	<i>Totals</i>
83	\$ 44.5	\$--	\$ 44.5
84	48.0	60.4	108.4
85	69.1	130.0	199.1
86	98.5	199.4	297.9
87	109.6	240.9	350.5
88	101.9	248.9	389.1*
89	107.7	321.7	431.9*
90	118.1	341.8	460.7*
91	127.9	335.9	483.1*
92	127.9	371.2	508.4*
93	154.0	490.7	698.0*
94	220.4	473.6	717.6*
95	232.2	601.9	834.1*
<i>Total</i>	<i>\$1,559.8</i>	<i>\$3,852.4</i>	<i>\$5,412.2*</i>

FY 1996 EST: - \$900+

\*includes award modifications

As in prior years, the SBA continued in FY 1995 to use a system of deficits and credits to evaluate agency SBIR budgets against actual amounts obligated.

Through its SBIR Policy Directive, the SBA requires each participating agency to list the number of Phase I awards made both within six months and beyond six months of the closing date of its solicitation announcement. Table 4 (immediately following) provides this information for FY 1995.

**Table 4: FY 1995 Phase I Time Frame**

<i>Agency</i>	<i>Total FY95 Phase I Awards</i>	<i>No. within Six Months of Solicitation Close</i>	<i>Number More Than Six Months After Solicitation Close</i>
DOA	72	0	72
DOC	73	73	0
DOD	1,263	634	629
DOE	199	199	0
DOT	20	19	1
ED	27	19	8
EPA	47	47	0
HHS	667	417	250
NASA	413	413	0
NRC	9	9	0
NSF	295	0	295
<b>Total</b>	<b>3,103</b>	<b>1,830</b>	<b>1,255</b>

### **R&R&D Goaling Agencies**

The SBA requires all annual reports for the R&R&D Goaling Program to include the following information:

- total R&R&D obligations for the previous fiscal year
- total of the previous fiscal year's R&R&D dollars obligated to small businesses, minority and disadvantaged small businesses, and women-owned small businesses under funding agreements; and the percentage of each to the agency's total R&R&D obligations (data for women-owned small businesses are not required by law to be collected by the agencies, making the data incomplete)
- total R&R&D budget for the current fiscal year
- total R&R&D small business goal for the current fiscal year based on the percentage of obligations made to small businesses the previous fiscal year

- current fiscal-year achievement of the singular small business R&R&D goal and the dollars obligated through prime funding agreements in the following categories: small business, minority and disadvantaged small business, and women-owned small business; and
- total number and dollar value of R&R&D awards to small business for contracts, grants and cooperative agreements over \$10,000, and a comparison of such awards to awards made to non-small businesses for the same categories. (See Table 14 and Table 15.)

To evaluate each agency's R&R&D Goaling Program, the SBA uses a final budget report from OMB entitled *Conduct of R&D by Agency*. This report details each agency's total R&R&D obligations for the reported fiscal year and provides R&D budget estimates for future years. The SBA then computes each agency's total R&R&D obligations to small business, as reported to SBA, to determine the actual percentage of the R&R&D obligations awarded to small business.

In FY 1995 as in prior years, there was some difference between each agency's total R&R&D obligations as reported to the SBA and to OMB. Since the SBA uses the OMB data as the base, the percentage of an agency's awards that was given to small business may be higher or lower in this report than the percentage reported by the agency to the SBA.

In FY 1995, over \$655 million was awarded to small business under the R&R&D Goaling Program. This represented 2.8 percent of the total R&D obligations for the 18 reporting agencies.

R&R&D awards to minority/disadvantaged-owned firms totaled \$145,400 million in fiscal 1995, representing 22 percent of all agency R&R&D obligations to small businesses.

## Highlights of Cumulative Data

The SBIR Program continues to receive national acceptance and international recognition for quality performance. Following are highlights of accomplishments since the SBIR Program began:

- Over \$5 billion has been awarded to small businesses.
- Minority/disadvantaged-owned firms have received 4,564 awards, representing 12 percent of all SBIR awards; the value of these awards has totaled \$653.5 million, which is 12 percent of all dollars awarded under the program.
- The participating agencies received 218,141 Phase I proposals and 22,197 Phase II proposals in response to 175 SBIR solicitations. There has been a total of 27,927 Phase I and 9,410 Phase II awards.
- Awards have been made to firms in all 50 states, Puerto Rico and the District of Columbia.
- Several participating agencies have allocated more for this program than required by law. In accordance with the law, each participating agency will continue to award not less than 2 percent of its R&R&D extramural budget in fiscal years 1995 and 1996, and not less than 2.5 percent thereafter.

# Table 5: R&R&D Goaling Data - FY 1995

(dollars in thousands)

<i>Agency</i>	<i>Agency % Goal FY 95</i>	<i>Total R &amp; D Budget</i>	<i>\$ Goal</i>	<i>Agency Reported \$ To Small Business</i>	<i>% Awarded To Small Business</i>	<i>\$ Awarded To Minority/ Disadvantaged</i>	<i>% Awarded To Minority Disadvantaged</i>
DOA	4.4	1,349,050	59,987	38,600	2.8	NR	NR
DOC	3	717,706	21,531	168,808	23.50	5,238	0.7
DOD	NR	NR	NR	NR	NR	NR	NR
DOE	1.4	6,110,072	87,985	91,380	1.5	14,454	0.2
DOI	0.2	662,000	1,324	1,827	0.3	236	0.4
DOT	12	685,106	82,212	51,507	7.5	69,580	10.1
ED	NR	NR	NR	NR	NR	NR	NR
EPA	7.3	556,300	40,600	35,300	6.3	15,000	2.7
HHS	1.9	10,305,432	196,834	212,643	2	32,111	0.3
NASA	NR	NR	NR	NR	NR	NR	NR
NSF	1.9	2,072,600	24,460	24,660	1.2	6,200	0.3
NRC	0.3	75,931	212	441	0.6	0	0
AID	0.5	94,150	53	8,824	9.3	350	0.3
DOJ	22.5	58,233	13,102	16,581	28.5	2,192	3.8
DVA	0.5	223,883	1,120	1,269	0.6	39	0.2
SI	0	387,045	30	30	0	0	0
TR	3.9	17,968	700	327	1.8	0	0
TVA	6.7	9,788	656	3,252	33.2	0	0
TOTAL		23,325,764	530,806	655,449	2.8	145,400	0.6

NR = Not Reported



Table 6: R&R&D Goaling Data - FY 1995 (continued)

(dollars in thousands)

Agency	Small Business						Non-Small Business					
	Number of Contracts Awarded	Dollar Amount of Contracts	Number of Grants Awarded	Dollar Amount of Grants	Number of Co-op Agreements	Dollar Amount of Co-op	Number of Contracts Awarded	Dollar Amount of Contracts	Number of Grants Awarded	Dollar Amount of Grants	Number of Co-op Agreements	Dollar Amount of Co-op
DOA	0	0	100	9,404	2	39	2	3,985	1,539	409,353	1,501	65,180
DOC	202	18,310	7	1,026	236	157,099	139	17,846	591	140,910	805	382,513
DOD	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DOE	99	91,380	NR	NR	NR	NR	NR	6,018,692	NR	NR	NR	NR
DOI	32	1,827	NR	NR	NR	NR	51	2,184	NR	NR	NR	NR
DOT	1,189	107,846	2	210	1	50	331	258,082	99	93,814	33	31,002
ED	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
EPA	109	14,000	NR	NR	NR	NR	38	12,200	NR	NR	NR	NR
HHS	1,023	164,842	1,066	150,311	34	15,937	2,926	860,914	30,639	6,986,430	3,087	1,083,844
NASA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
NSF	95	12,590	676	53,010	NR	NR	165	167,010	19,146	2,812,100	NR	NR
NRC	14	1,676	13	626	0	0	9	8,444	0	0	0	0
AID	22	9,170	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DOJ	53	4,831	26	6,331	12	3,417	64	10,960	111	20,139	12	5,522
DVA	7	1,269	NR	NR	NR	NR	5	1,230	NR	NR	NR	NR
SI	9	30	0	0	0	0	NR	357	0	0	0	0
TR	19	327	NR	NR	NR	NR	12	17,641	NR	NR	NR	NR
TVA	45	3,089	0	0	3	162	135	2,402	0	0	143	4,134

NR = Not Reported

# S uccess Stories

## Schwartz Electro-Optics, Inc.

Schwartz Electro-Optics, Inc. (SEO), Orlando, Florida, has benefited substantially from the SBIR Program by developing commercial products from SBIR-sponsored research. This has been accomplished over an eight-year period beginning in 1987 by utilizing company funds to carry product development and marketing through Phase II, and has resulted in significant product sales beginning in 1989 that have now totaled approximately \$22 million.

SEO has received 89 Phase I and II awards totaling \$15.5 million. Of these 89 awards, 63 have been Phase I and 26 Phase II. These awards have involved contracts from a variety of federal agencies and departments, including DOD, NASA, HHS, DOT, DOC, NSF, and DOE, with the majority, 53, being from DOD, followed by 19 from NASA and 11 from HHS.

A commercialization summary of all Phase II awards indicates that 18 of 26 contracts have been completed. Of those 18 completed contracts (totaling \$8.2 million), 13 involved research that had significant commercial product potential. As a result of this research, SEO has completed the development of 13 new products and currently has under development an additional seven products. Furthermore, out of the eight remaining incomplete Phase II SBIR awards (totaling \$38 million), SEO considers five to have good commercial potential.

In order to develop these products, SEO has spent \$3.3 million of company funds and has realized \$21.7 million in sales and orders as of September 1995. It is significant to note that all

but two of these new products have been introduced since 1990 and, therefore, significant sales and orders have occurred in the past five years. This is due to the time it takes to complete Phases II and III and to obtain product market acceptance. Also, 90 percent of the sales have come from five of the 13 products that have been introduced, which is not unusual as not all new products can be winners. This emphasized the importance of introducing a number of new products, and since 1990, SEO has introduced new products resulting from SBIR research at an average rate of two per year.

The products developed to date have a broad market range that includes scientific, medical, aviation, agricultural, transportation, mapping and atmospheric monitoring applications. SEO produces five different laser devices that are used in scientific research; lasers for medical applications including tattoo removal, angioplasty and orthopedic surgery; laser altimeters and rangefinders for airplanes and helicopters; lasers that help control agricultural spraying of herbicides and fertilizers; lasers used for traffic management and data collection; rangefinding lasers useful in a variety of situations including robotics guidance, obstacle warning and aerial surveying; and lasers used to detect atmospheric aerosols and turbulence.

Also, eight patents have been awarded to SEO covering products and technology resulting from SBIR-sponsored research.

## SAVI TECHNOLOGY

Savi Technology, Inc., Mountain View, California, was founded in 1988 and is now the leader in wide area asset tracking and transportation logistics. In 1989 the U.S. Navy awarded Savi a Phase I SBIR contract of \$49,833 to enter into the development of a radio frequency identification tag system with potential application to the control of DOD worldwide material. By the

conclusion of its 1991 Phase II SBIR award valued at \$2,376,700, Savi had created a tagging system using radar and interferometric techniques to provide range and direction with resolutions less than 1 foot and less than 10 degrees respectively!

This is the only system capable of identifying and monitoring thousands of items in transit and stored over a wide area automatically and simultaneously in minutes.

A GAO report subsequent to Desert Storm high-lighted the need for more sophisticated inventory and in transit control of military spare parts. It estimated spare parts excesses of \$3.4 billion in that offensive. The SaviTags (trademark) are small business innovation research's answer to this finding! In 1994 (only 5 years after the company was founded and four years after its initial developmental contract) Savi was awarded a \$70 million DOD contract for the tags -- the largest ever in the radio frequency identification industry.

The DOD estimates that had the system been available, the use of SaviTags in the material control aspect of the Gulf War would have saved a minimum of \$300 million and potentially as much as \$1.5 billion. This sophisticated technology is a major contribution to the efficiency of our military logistical support in Bosnia.

The company was acquired by Texas Instruments, Inc., Dallas, Texas on November 3, 1995. Savi operates as TI's wholly-owned subsidiary and remains in its Mountain View, California location. Commercialization options are apparent, e.g., UPS, USPS, Fedex as well as international shipping, containerization and warehousing operations.

## Aurora Flight Sciences Corporation

Another example of early SBIR conversion of research into products is Aurora Flight Sciences Corporation, Manassas, Virginia, which was founded in early 1989 and received an NSF award in 1990. It was for research to design an innovative unmanned aircraft "Theseus: A New Platform for High Altitude Atmospheric Science." Another related project was also funded to develop a "Lightweight Dropwindsonde System for Unmanned Aircraft." Both projects were technical successes and attracted \$4.5 million additional venture capital following an initial startup investment of \$200,000.

Product sales to date already total \$30 million. The company is expecting additional sales of \$50 to \$100 million in a year or two from outstanding proposals for aircraft use in such areas as communications, defense, atmospheric sciences and remote sensing, the latter based on proposal requests from foreign countries.

The success of Theseus led to DOD funding a larger plane called Perseus and purchases by NASA and DOE and others for a total of \$21 million.

Aurora employment has increased from 3 at the time of the NSF proposals to 94. Aurora says that NSF credibility, in addition to the critical value of the early SBIR funding, has been important to their success everywhere they have gone, particularly in marketing their technology in the United States and internationally.

# Distribution of Awards

The geographic distribution listing shows the distribution of FY 1995 SBIR awards (Phase I and Phase II combined) by state. The listing contains state-by-state breakdown of all Phase I and Phase II awards.

Exhibit One provides a more detailed look at the geographical distribution of SBIR awards, since it shows the amount of funding by metropolitan area (as defined by the Census Bureau). The metropolitan areas are listed in descending order by population (column 1). The next two columns, respectively, show the total FY 1995 SBIR funding and number of awards made to each metropolitan area. The last two columns contain the cumulative funding and SBIR awards for each metropolitan area.

Most SBIR awards (historically and in FY 1995) have gone to large metropolitan areas. However, small towns in rural settings are major participants in the SBIR program. Totals of \$395 million (Phase I) and \$661 million (Phase II) have been awarded to communities with populations under 125,000. Taken as a group, these communities would rank first in the top five of all metropolitan areas in terms of cumulative dollars awarded.

The metropolitan areas have also been ranked by their combined Phase I and Phase II funding levels and number of awards for FY 1995, as well as cumulatively from FY 1983-95. Exhibit Two contains the top 50 metropolitan areas. Large metropolitan areas dominate the ranking 16 of the first 25 have populations greater than 1 million. The ranking is similar to that in FY 1994. The biggest gains were achieved by

Detroit-Ann Arbor, MI (from 16<sup>th</sup> to 13<sup>th</sup> place); Albany-Schenectady, NY (from 34<sup>th</sup> to 31<sup>st</sup> place); Madison, WI (from 46<sup>th</sup> to 41<sup>st</sup> place); and Portland, OR, Poughkeepsie, NY, and Sacramento, CA, which did not make the top 50 last year.

In Exhibit Three the metropolitan areas have been ranked in descending order by the cumulative number of their awards. If localities not part of a standard metropolitan statistical area (that is, localities generally with populations under 500,000) were listed, they would rank sixth in total SBIR awards received. Many of the communities with large numbers of SBIR awards are located near major universities or government laboratories.

The technology-investment policies of SBIR participating agencies are reflected in the level of funding they provide for awards in the various technology areas. These areas are listed in Exhibit Four.

Exhibit Five summarizes the FY 1995 funding each participating agency provided in each technology area. The accompanying graph in Exhibit Six illustrates the distribution of FY 1995 funds by technology for all agencies combined. Exhibit Seven and Exhibit Eight show corresponding distributions for the entire program from FY 1983 through FY 1995.

Advanced materials received the most funds and showed the most significant increase in funding in FY 1995. With regard to cumulative funding, advanced materials surpassed optical devices as the highest-funded technology area in the SBIR Program.

# A Administrative Issues

## Publications Update

During FY 1995, all publicly distributed SBIR documents were updated and are available on the SBA's electronic bulletin board, SBA OnLine. The bulletin board can be accessed 24 hours a day via modem or the Internet, eliminating the printing, mailing and storage costs previously incurred for SBIR publications. Information is published on the bulletin board at the same time it is available in hard copy.

## National Conferences

The Department of Defense and the National Science Foundation sponsored SBIR conferences in FY 1995 in Washington, DC; San Jose, CA and Chicago, IL.

## General Information

The SBA has offices located throughout the United States. For the one nearest you, look under "U.S. Government" in your telephone directory, or call the **SBA Answer Desk at (800) 8-ASK-SBA**. To send a fax to the SBA, dial **(202) 205-7064**. For the hearing impaired, the **TTD number is (704) 344-6640**.

To access the agency's electronic public information services, you may call the following:

- **SBA Online:** electronic bulletin board - modem and computer required:

**(800) 697-4636** (limited access)

**(900) 463-4636** (full access)  
**(202) 401-9600** (D.C. metro area)

- **Internet:** using uniform resource locators (URLs)
  - **SBA Home Page:** <http://www.sba.gov>
  - **SBA gopher:** <gopher://gopher.sba.gov>
  - **File transfer protocol:** <ftp://ftp.sba.gov>
  - **Telnet:** <telnet://sbaonline.sba.gov>
  - **U.S. Business Advisor:** <http://www.business.gov>

You also may request a free copy of *The Resource Directory for Small Business Management*, a listing of for-sale publications and videotapes, from your local SBA office or the SBA Answer Desk.

**Small Business Administration  
Office of Technology**

**Total SBIR Awards for Fiscal Year 95**

<b>State</b>	<b>Phase 1 Awards</b>	<b>Phase 1 Dollars \$</b>	<b>Phase 2 Awards</b>	<b>Phase 2 Dollars \$</b>	<b>Total Awards</b>	<b>Total Dollars \$</b>
Alabama	60	4,328	23	13,766	83	18,094
Alaska	5	303	0	0	5	3 03
Arizona	64	4,632	11	4,810	75	9,442
Arkansas	1	70	0	0	1	70
California	665	51,361	280	154,449	940	205,810
Colorado	113	8,195	51	27,841	164	36,036
Connecticut	94	6,915	45	26,934	139	33,849
Delaware	13	886	4	1,685	17	2,571
District of Columbia	9	1,242	2	900	11	2,142
Florida	70	5,367	25	12,786	95	18,153
Georgia	16	1,228	12	6,576	28	7804
Hawaii	8	624	4	1,782	12	2,406
Idaho	3	175	5	1,447	8	1,622
Illinois	49	3,977	13	6,945	62	10,922
Indiana	13	1,080	7	3,909	20	4,989
Iowa	4	218	0	0	4	218
Kansas	4	264	7	5,064	11	5328
Kentucky	6	451	2	1,033	8	1,484
Louisiana	12	801	0	0	12	801
Maine	12	967	3	1,844	15	2,811
Maryland	148	12,675	56	28,761	204	41,436
Massachusetts	453	34,563	181	108,059	634	142,622
Michigan	70	5,364	28	13,830	98	19,194
Minnesota	60	4,811	18	10,619	78	15,430
Mississippi	3	240	1	570	4	810
Missouri	14	1,069	3	1,266	17	2,335
Montana	2	135	4	1,794	6	1,929
Nebraska	1	98	2	1,204	3	1,302
Nevada	7	496	1	745	8	1,241
New Hampshire	37	2,759	16	8,973	53	11,732
New Jersey	90	6,729	46	25,549	136	32,278
New Mexico	61	4,308	23	14,306	84	18,614
New York	137	10,564	70	40,640	207	51,204
North Carolina	35	2,711	14	7,774	49	10,485
North Dakota	3	188	2	538	5	726

All \$ amounts in thousands

**Sequence: State Name**

**Small Business Administration  
Office of Technology**

**Total SBIR Awards for Fiscal Year 95**

<b>State</b>	<b>Phase 1 Awards</b>	<b>Phase 1 Dollars \$</b>	<b>Phase 2 Awards</b>	<b>Phase 2 Dollars \$</b>	<b>Total Awards</b>	<b>Total Dollars \$</b>
<i>Ohio</i>	114	8,412	50	29,308	164	37,720
<i>Oklahoma</i>	6	464	4	1,743	10	2,207
<i>Oregon</i>	53	4,180	15	8,544	68	12,724
<i>Pennsylvania</i>	91	6,860	50	29,040	141	35,900
<i>Rhode Island</i>	10	823	2	899	12	1,722
<i>South Carolina</i>	6	396	0	0	6	396
<i>South Dakota</i>	5	338	0	0	5	338
<i>Tennessee</i>	31	2,285	11	5,251	42	7,536
<i>Texas</i>	123	9,275	38	23,161	161	32,436
<i>Utah</i>	33	2,612	12	7,274	45	9,886
<i>Vermont</i>	7	589	5	2,333	12	2,922
<i>Virginia</i>	150	11,405	75	44,730	225	56,135
<i>Washington</i>	84	6,310	32	18,995	116	25,305
<i>Wisconsin</i>	29	2,190	10	6,438	39	8,628
<i>Wyoming</i>	1	60	0	0	1	60

All \$ amounts in thousands

Sequence: State Name

**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
NEW YORK AREA	15,529,300	\$44,902	186	\$197,764	1,377
LOS ANGELES AREA	13,074,800	76,867	351	482,306	3,351
CHICAGO-LAKE COUNTY	7,381,400	10,022	53	71,037	517
PHILADELPHIA AREA	5,697,200	42,015	156	197,711	1,357
BAY AREA (SF)	5,534,200	79,325	329	486,319	3,345
DETROIT-ANN ARBOR,MI	4,600,700	15,917	77	74,292	531
BOSTON,LAWRENCE,SALEM,LOWEL,MA	4,055,700	132,226	579	801,471	5,482
DALLAS-FT.WORTH AREA	3,655,300	6,536	29	39,078	275
HOUSTON,GALVESTON,TX	3,634,300	12,224	51	55,425	421
WASHINGTON,DC-MD-VA	3,565,000	71,771	304	443,110	3,182
MIAMI-FT.LAUDERDALE,FL	2,912,000	420	5	6,333	61
CLEVELAND-AKRON AREA	2,765,600	10,362	45	32,968	234
ATLANTA,GA	2,560,500	6,840	24	32,825	242
ST LOUIS,MO-IL	2,438,000	2,010	12	9,897	84
PITTSBURGH-BEAVER VALLEY,PA	2,316,100	5,412	26	33,826	255
MINNEAPOLIS-ST PAUL,MN-WI	2,295,200	14,041	73	70,540	538
SEATTLE-TAKOMA AREA	2,284,400	20,994	94	111,952	778
BALTIMORE,MD	2,280,000	10,981	57	70,810	546
SAN DIEGO,CA	2,201,300	34,181	171	238,504	1,685
TAMPA-ST PETE-CLEARWATER,FL	1,914,300	842	4	4,688	47
PHOENIX,AZ	1,900,200	2,437	17	23,152	198
DENVER-BOULDER-LONGMONT,CO	1,847,400	30,189	144	163,544	1,161
CINCINNATI-HAMILTON,OH,KY	1,690,100	1,225	12	8,517	78
MILWAUKEE-RACINE,WI	1,552,000	1,213	10	8,963	74
KANSAS CITY,MO-KS	1,517,800	2,151	7	8,343	58
NEW ORLEANS ,LA	1,334,400	480	8	7,900	93
NORFOLK-VA BEACH-NEWPORT NEWS	1,309,500	6,550	21	21,323	146
COLUMBUS,OH	1,299,400	2,960	17	21,558	167
SACRAMENTO,CA	1,291,400	3,033	21	17,423	142



**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
SAN ANTONIO, TX	1,276,400	3,096	20	18,169	140
INDIANAPOLIS, IN	1,212,600	1,577	3	5,782	47
BUFFALO-NIAGRA AREA	1,181,600	6,549	21	45,325	294
JACKSONVILLE+DAYTONA BEACH, FL	1,173,600	0	0	991	10
PORTLAND ,OR	1,152,800	6,356	25	18,893	126
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,075	13	23,556	163
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	150	2	1,255	12
SALT LAKE CITY-OGDEN, UT	1,041,400	9,636	42	72,390	549
OKLAHOMA CITY, OK	982,900	496	3	4,015	34
ROCHESTER, NY	980,300	3,631	14	21,809	136
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	6,713	30	56,224	395
LOUISVILLE, KY-IN	962,800	0	0	3,413	26
MEMPHIS, TN-AR-MS	959,500	178	2	2,248	23
MIDDLESEX-SOMMERSET, NJ	950,100	2,989	23	32,304	254
MONMOUTH-OCEAN, NJ	935,200	979	7	8,485	63
DAYTON-SPRINGFIELD, OH	933,500	18,569	74	82,339	540
NASHVILLE, TN	930,700	490	6	4,334	46
BIRMINGHAM, AL	911,000	667	3	6,480	48
GREENSBORO-WINSTON SALEM, NC	899,500	1,599	5	6,038	41
ORLANDO, FL	898,400	4,325	22	32,414	219
ALBANY-SCHENECTADY, NY	843,600	10,267	41	33,645	227
HONOLULU, HI	816,700	2,406	12	16,622	116
RICHMOND-PETERSBERG, VA	810,200	200	2	3,313	26
WEST PALM BEACH-BOCA RATON, FL	755,600	1,766	8	9,301	55
STOCKTON+MODESTO, CA	749,300	0	0	1,458	11
TULSA, OK	733,500	153	2	5,763	59
AUSTIN, TX	726,400	7,142	28	40,261	273
SCRANTON, PA	725,900	0	0	660	4
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	3,169	10	9,797	68

**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
RALEIGH-DURHAM,NC	650,600	7,639	35	51,979	384
SYRACUSE,NY	649,300	1,255	6	9,862	83
GRAND RAPIDS,MI	648,800	59	1	342	4
OMAHA,NE-IA	614,300	0	0	693	11
TOLEDO,OH	611,200	2,191	10	9,671	67
GREENVILLE-SPARTANBURG,SC	606,400	134	2	956	13
TUCSON,AZ	602,400	6,705	57	41,715	319
NEW HAVEN-MERIDEN+MIDDLETON	596,700	11,629	48	55,621	367
KNOXVILLE,TN	591,100	3,262	19	41,089	280
HARRISBURG-LEBANON-CARLISLE,PA	577,300	99	1	1,614	12
LAS VEGAS,NV	569,500	192	3	5,103	34
EL PASO,TX	561,500	0	0	100	2
BATON ROUGE,LA	545,700	0	0	2,332	13
SPRINGFIELD,MA	517,800	1,746	10	9,689	77
YOUNGSTOWN,OH	510,000	0	0	100	2
LITTLE ROCK-N LITTLE ROCK,AR	505,600	208	1	1,963	13
CHARLESTON,SC	485,700	65	1	640	7
ALBUQUERQUE,NM	474,400	13,327	61	86,342	610
WICHITA,KS	470,000	628	2	1,027	7
COLUMBIA,SC	444,700	69	1	646	7
FLINT,MI	434,900	0	0	1,162	7
CHATTANOOGA,TN-GA	425,500	3,406	15	14,873	81
LANSING-E LANSING,MI	424,800	1,849	13	7,587	60
WORCESTER,MA	407,800	2,888	17	22,392	158
SAGINAW-BAY CITY-MIDLAND,MI	403,600	92	1	1,487	13
CANTON,OH	400,400	804	2	1,402	11
YORK,PA	397,700	748	1	1,023	5
LANCASTER,PA	393,500	1,404	6	19,714	104
JACKSON,MS	392,000	0	0	375	5

**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
AUGUSTA,GA-SC	390,000	0	0	50	1
DES MOINES,IA	381,300	163	3	3,105	32
COLORADO SPRINGS,CO	380,400	5,847	20	27,232	164
SHREVEPORT,LA	364,600	0	0	37	1
CORPUS CHRISTI,TX	363,300	0	0	49	1
MELBOURNE-TITUSVILLE-PALM BEACH	361,200	5,989	27	35,700	232
SPOKANE,WA	356,900	560	9	5,293	44
FORT WAYNE,IN	356,100	0	0	416	4
MADISON,WI	344,900	7,323	28	22,248	143
SALINAS-SEASIDE-MONTEREY,CA	339,700	140	2	4,672	27
SANTA BARBARA-SANTA MARIA,CA	339,400	9,259	46	52,113	350
PENSACOLA,FL	337,100	941	5	4,794	34
LEXINGTON,KY	332,000	1,163	4	3,338	28
READING,PA	321,000	80	1	618	3
UTICA-ROME,NY	315,400	1,676	8	8,549	55
APPLETON-OSHKOSH-NEENAH,WI	307,500	0	0	930	7
MONTGOMERY,AL	299,000	0	0	141	3
ATLANTIC CITY,NJ	297,400	0	0	1,822	10
ROCKFORD,IL	280,300	0	0	50	1
EUGENE-SPRINGFIELD,OR	263,200	3,534	22	16,447	94
SALEM,OR	262,100	1,774	6	6,539	49
BINGHAMTON,NY	261,800	100	1	3,883	21
NEW LONDON-NORWICH,CT-RI	259,500	1,058	6	6,848	55
POUGHKEEPSIE,NY	256,800	3,050	13	18,187	160
JOHNSTOWN,PA	254,100	0	0	30	1
DULUTH,MN-WI	243,500	49	1	219	5
SOUTH BEND-MISHAWAKA,IN	241,400	0	0	1,744	19
PROVO-OREM,UT	240,500	250	3	3,826	32
SAVANNAH,GA	239,700	0	0	75	1

**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
ANCHORAGE,AK	235,000	250	4	934	8
HUNTSVILLE,AL	233,700	16,528	77	78,925	537
ROANOKE,VA	224,900	8,608	42	39,178	278
LUBBOCK,TX	224,800	0	0	50	1
RENO,NV	224,600	1,049	5	8,171	45
TALLAHASSEE,FL	218,000	60	1	455	7
KALAMAZOO,MI	217,700	0	0	1,434	12
PORTSMOUTH,DOVER,ROCHESTER	215,000	848	2	5,124	39
WATERBURY,CT	211,900	2,315	4	24,444	126
LINCOLN,NE	206,100	0	0	50	1
PORTLAND,ME	205,700	2,616	13	13,209	98
GAINESVILLE,FL	199,800	2,256	16	15,592	126
WACO,TX	187,600	0	0	198	4
YAKIMA,WA	183,200	65	1	430	6
CHAMPAIGN-URBANA-RANTOUL,IL	171,100	803	8	11,609	89
ASHEVILLE,NC	170,000	635	4	1,335	14
CEDAR RAPIDS,IA	168,800	0	0	2,574	20
NASHUA,NH	163,300	3,182	20	9,314	78
TOPEKA,KS	160,800	1,987	1	3,430	13
WATERLOO-CEDAR FALLS,IA	151,500	0	0	605	4
OLYMPIA, WA	146,600	1,997	5	4,655	26
FARGO-MOOREHEAD,ND-MN	145,300	398	2	448	3
MANCHESTER,NH	145,100	748	1	3,426	14
JACKSON,MI	144,400	1,092	3	1,342	6
ATHENS,GA	141,500	178	2	2,826	23
MEDFORD,OR	140,000	0	0	150	3
REDDING,CA	133,100	0	0	98	2
PASCAGOULA,MS	128,200	570	1	1,069	8
WICHITA FALLS,TX	127,100	0	0	49	1

**EXHIBIT ONE****DISTRIBUTION of SBIR FUNDING by METROPOLITAN AREAS (ordered by population)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY 83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
ABILENE, TX	125,900	0	0	100	2
BURLINGTON, VT	124,600	1,763	6	10,001	66
LAFAYETTE-W LAFAYETTE, IN	124,400	1,119	12	6,212	57
LAS CRUCES, NM	123,000	1,543	7	10,278	67
BLOOMINGTON-NORMAL, IL	122,700	0	0	196	2
CHARLOTTESVILLE, VA	121,400	1,829	12	10,404	80
MUNCIE, IN	120,900	0	0	95	2
BRYAN-COLLEGE STATION, TX	120,800	3,151	31	16,486	135
LAWTON, OK	120,700	750	2	4,562	23
STATE COLLEGE, PA	114,600	674	4	4,438	40
BELLINGHAM, WA	113,700	1,465	4	3,706	18
GLENS FALLS, NY	112,400	0	0	52	1
MIDLAND, TX	111,300	237	1	883	5
FAYETTEVILLE-SPRINGDALE, AR	107,400	70	1	2,879	18
SANTA FE, NM	106,200	3,674	15	17,323	106
BLOOMINGTON, IN	101,700	1,616	3	6,949	38
KOKOMO, IN	101,400	0	0	100	2
ROCHESTER, MN	98,000	0	0	295	3
FITCHBURG-LEOMINSTER, MA	96,300	1,578	6	5,443	42
LA CROSSE, WI	94,100	0	0	39	1
ELMIRA, NY	90,500	3,866	16	22,224	142
BISMARCK, ND	86,000	0	0	151	3
BANGOR, ME	83,400	99	1	471	8
PITTSFIELD, MA	80,900	0	0	655	6
RAPID CITY, SD	76,900	94	1	349	6
VICTORIA, TX	76,000	0	0	407	5
CASPER, WY	71,000	60	1	176	4
GRAND FORKS, ND	69,400	328	3	1,662	14

**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
BOSTON,LAWRENCE,SALEM,LOWEL, MA	4,055,700	\$132,226	579	\$801,471	5,482
BAY AREA (SF)	5,534,200	79,325	329	486,319	3,345
LOS ANGELES AREA	13,074,800	76,867	351	482,306	3,351
WASHINGTON,DC-MD-VA	3,565,000	71,771	304	443,110	3,182
SAN DIEGO,CA	2,201,300	34,181	171	238,504	1,685
NEW YORK AREA	15,529,300	44,902	186	197,764	1,377
PHILADELPHIA AREA	5,697,200	42,015	156	197,711	1,357
DENVER-BOULDER-LONGMONT,CO	1,847,400	30,189	144	163,544	1,161
SEATTLE-TAKOMA AREA	2,284,400	20,994	94	111,952	778
ALBUQUERQUE,NM	474,400	13,327	61	86,342	610
DAYTON-SPRINGFIELD,OH	933,500	18,569	74	82,339	540
HUNTSVILLE,AL	233,700	16,528	77	78,925	537
DETROIT-ANN ARBOR,MI	4,600,700	15,917	77	74,292	531
SALT LAKE CITY-OGDEN,UT	1,041,400	9,636	42	72,390	549
CHICAGO-LAKE COUNTY	7,381,400	10,022	53	71,037	517
BALTIMORE,MD	2,280,000	10,981	57	70,810	546
MINNEAPOLIS-ST PAUL,MN-WI	2,295,200	14,041	73	70,540	538
HARTFORD-NEW BRITAIN-BRISTO	967,100	6,713	30	56,224	395
NEW HAVEN-MERIDEN+MIDDLETON	596,700	11,629	48	55,621	367
HOUSTON,GALVESTON,TX	3,634,300	12,224	51	55,425	421
SANTA BARBARA-SANTA MARIA,CA	339,400	9,259	46	52,113	350
RALEIGH-DURHAM,NC	650,600	7,639	35	51,979	384
BUFFALO-NIAGRA AREA	1,181,600	6,549	21	45,325	294
TUCSON,AZ	602,400	6,705	57	41,715	319
KNOXVILLE,TN	591,100	3,262	19	41,089	280
AUSTIN,TX	726,400	7,142	28	40,261	273
ROANOKE,VA	224,900	8,608	42	39,178	278
DALLAS-FT.WORTH AREA	3,655,300	6,536	29	39,078	275
MELBOURNE-TITUSVILLE-PALM BEACH	361,200	5,989	27	35,700	232
PITTSBURGH-BEAVAR VALLEY,PA	2,316,100	5,412	26	33,826	255

**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
ALBANY-SCHENECTADY,NY	843,600	10,267	41	33,645	227
CLEVELAND-AKRON AREA	2,765,600	10,362	45	32,968	234
ATLANTA,GA	2,560,500	6,840	24	32,825	242
ORLANDO,FL	898,400	4,325	22	32,414	219
MIDDLESEX-SOMMERSET, NJ	950,100	2,989	23	32,304	254
COLORADO SPRINGS,CO	380,400	5,847	20	27,232	164
WATERBURY,CT	211,900	2,315	4	24,444	126
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,075	13	23,556	163
PHOENIX,AZ	1,900,200	2,437	17	23,152	198
WORCESTER,MA	407,800	2,888	17	22,392	158
MADISON,WI	344,900	7,323	28	22,248	143
ELMIRA,NY	90,500	3,866	16	22,224	142
ROCHESTER,NY	980,300	3,631	14	21,809	136
COLUMBUS,OH	1,299,400	2,960	17	21,558	167
NORFOLK-VA BEACH-NEWPORT NEWS	1,309,500	6,550	21	21,323	146
LANCASTER,PA	393,500	1,404	6	19,714	104
PORTLAND ,OR	1,152,800	6,356	25	18,893	126
POUGHKEEPSIE,NY	256,800	3,050	13	18,187	160
SAN ANTONIO,TX	1,276,400	3,096	20	18,169	140
SACRAMENTO,CA	1,291,400	3,033	21	17,423	142
SANTA FE,NM	106,200	3,674	15	17,323	106
HONOLULU,HI	816,700	2,406	12	16,622	116
BRYAN-COLLEGE STATION,TX	120,800	3,151	31	16,486	135
EUGENE-SPRINGFIELD,OR	263,200	3,534	22	16,447	94
GAINESVILLE,FL	199,800	2,256	16	15,592	126
CHATTANOOGA,TN-GA	425,500	3,406	15	14,873	81
PORTLAND,ME	205,700	2,616	13	13,209	98
CHAMPAIGN-URBANA-RANTOUL,IL	171,100	803	8	11,609	89
CHARLOTTESVILLE,VA	121,400	1,829	12	10,404	80

**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
LAS CRUCES,NM	123,000	1,543	7	10,278	67
BURLINGTON,VT	124,600	1,763	6	10,001	66
ST LOUIS,MO-IL	2,438,000	2,010	12	9,897	84
SYRACUSE,NY	649,300	1,255	6	9,862	83
ALLENTOWN-BETHLEHEM,PA-NJ	656,800	3,169	10	9,797	68
SPRINGFIELD,MA	517,800	1,746	10	9,689	77
TOLEDO,OH	611,200	2,191	10	9,671	67
NASHUA,NH	163,300	3,182	20	9,314	78
WEST PALM BEACH-BOCA RATON, FL	755,600	1,766	8	9,301	55
MILWAUKEE-RACINE,WI	1,552,000	1,213	10	8,963	74
UTICA-ROME,NY	315,400	1,676	8	8,549	55
CINCINNATI-HAMILTON,OH,KY	1,690,100	1,225	12	8,517	78
MONMOUTH-OCEAN,NJ	935,200	979	7	8,485	63
KANSAS CITY,MO-KS	1,517,800	2,151	7	8,343	58
RENO,NV	224,600	1,049	5	8,171	45
NEW ORLEANS ,LA	1,334,400	480	8	7,900	93
LANSING-E LANSING,MI	424,800	1,849	13	7,587	60
BLOOMINGTON,IN	101,700	1,616	3	6,949	38
NEW LONDON-NORWICH,CT-RI	259,500	1,058	6	6,848	55
SALEM,OR	262,100	1,774	6	6,539	49
BIRMINGHAM,AL	911,000	667	3	6,480	48
MIAMI-FT.LAUDERDALE,FL	2,912,000	420	5	6,333	61
LAFAYETTE-W LAFAYETTE,IN	124,400	1,119	12	6,212	57
GREENSBORO-WINSTON SALEM,NC	899,500	1,599	5	6,038	41
INDIANAPOLIS,IN	1,212,600	1,577	3	5,782	47
TULSA,OK	733,500	153	2	5,763	59
FITCHBURG-LEOMINSTER,MA	96,300	1,578	6	5,443	42
SPOKANE,WA	356,900	560	9	5,293	44
PORTSMOUTH,DOVER,ROCHESTER,	215,000	848	2	5,124	39



**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
LAS VEGAS,NV	569,500	192	3	5,103	34
PENSACOLA,FL	337,100	941	5	4,794	34
TAMPA-ST PETE-CLEARWATER,FL	1,914,300	842	4	4,688	47
SALINAS-SEASIDE-MONTEREY,CA	339,700	140	2	4,672	27
OLYMPIA, WA	146,600	1,997	5	4,655	26
LAWTON,OK	120,700	750	2	4,562	23
STATE COLLEGE,PA	114,600	674	4	4,438	40
NASHVILLE,TN	930,700	490	6	4,334	46
OKLAHOMA CITY,OK	982,900	496	3	4,015	34
BINGHAMTON,NY	261,800	100	1	3,883	21
PROVO-OREM,UT	240,500	250	3	3,826	32
BELLINGHAM,WA	113,700	1,465	4	3,706	18
TOPEKA,KS	160,800	1,987	1	3,430	13
MANCHESTER,NH	145,100	748	1	3,426	14
LOUISVILLE,KY-IN	962,800	0	0	3,413	26
LEXINGTON,KY	332,000	1,163	4	3,338	28
RICHMOND-PETERSBERG,VA	810,200	200	2	3,313	26
DES MOINES,IA	381,300	163	3	3,105	32
FAYETTEVILLE-SPRINGDALE,AR	107,400	70	1	2,879	18
ATHENS,GA	141,500	178	2	2,826	23
CEDAR RAPIDS,IA	168,800	0	0	2,574	20
BATON ROUGE,LA	545,700	0	0	2,332	13
MEMPHIS,TN-AR-MS	959,500	178	2	2,248	23
LITTLE ROCK-N LITTLE ROCK,AR	505,600	208	1	1,963	13
ATLANTIC CITY,NJ	297,400	0	0	1,822	10
SOUTH BEND-MISHAWAKA,IN	241,400	0	0	1,744	19
GRAND FORKS,ND	69,400	328	3	1,662	14
HARRISBURG-LEBANON-CARLISLE	577,300	99	1	1,614	12
SAGINAW-BAY CITY-MIDLAND,MI	403,600	92	1	1,487	13

**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
STOCKTON+MODESTO,CA	749,300	0	0	1,458	11
KALAMAZOO,MI	217,700	0	0	1,434	12
CANTON,OH	400,400	804	2	1,402	11
JACKSON,MI	144,400	1,092	3	1,342	6
ASHEVILLE,NC	170,000	635	4	1,335	14
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	150	2	1,255	12
FLINT,MI	434,900	0	0	1,162	7
PASCAGOULA,MS	128,200	570	1	1,069	8
WICHITA,KS	470,000	628	2	1,027	7
YORK,PA	397,700	748	1	1,023	5
JACKSONVILLE+DAYTONA BEACH, FL	1,173,600	0	0	991	10
GREENVILLE-SPARTANBURG,SC	606,400	134	2	956	13
ANCHORAGE,AK	235,000	250	4	934	8
APPLETON-OSHKOSH-NEENAH,WI	307,500	0	0	930	7
MIDLAND,TX	111,300	237	1	883	5
OMAHA,NE-IA	614,300	0	0	693	11
SCRANTON, PA	725,900	0	0	660	4
PITTSFIELD,MA	80,900	0	0	655	6
COLUMBIA,SC	444,700	69	1	646	7
CHARLESTON,SC	485,700	65	1	640	7
READING,PA	321,000	80	1	618	3
WATERLOO-CEDAR FALLS,IA	151,500	0	0	605	4
BANGOR,ME	83,400	99	1	471	8
TALLAHASSEE,FL	218,000	60	1	455	7
FARGO-MOOREHEAD,ND-MN	145,300	398	2	448	3
YAKIMA,WA	183,200	65	1	430	6
FORT WAYNE,IN	356,100	0	0	416	4
VICTORIA,TX	76,000	0	0	407	5
JACKSON,MS	392,000	0	0	375	5

**EXHIBIT TWO****SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars, FY 83-95)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY83-95 No. of Awards</u>
RAPID CITY,SD	76,900	94	1	349	6
GRAND RAPIDS,MI	648,800	59	1	342	4
ROCHESTER,MN	98,000	0	0	295	3
DULUTH,MN-WI	243,500	49	1	219	5
WACO,TX	187,600	0	0	198	4
BLOOMINGTON-NORMAL,IL	122,700	0	0	196	2
CASPER,WY	71,000	60	1	176	4
BISMARK,ND	86,000	0	0	151	3
MEDFORD,OR	140,000	0	0	150	3
MONTGOMERY,AL	299,000	0	0	141	3
KOKOMO,IN	101,400	0	0	100	2
ABILENE,TX	125,900	0	0	100	2
YOUNGSTOWN,OH	510,000	0	0	100	2
EL PASO,TX	561,500	0	0	100	2
REDDING,CA	133,100	0	0	98	2
MUNCIE,IN	120,900	0	0	95	2
SAVANNAH,GA	239,700	0	0	75	1
GLENS FALLS,NY	112,400	0	0	52	1
LINCOLN,NE	206,100	0	0	50	1
LUBBOCK,TX	224,800	0	0	50	1
ROCKFORD,IL	280,300	0	0	50	1
AUGUSTA,GA-SC	390,000	0	0	50	1
WICHITA FALLS,TX	127,100	0	0	49	1
CORPUS CHRISTI,TX	363,300	0	0	49	1
LA CROSSE,WI	94,100	0	0	39	1
SHREVEPORT,LA	364,600	0	0	37	1
JOHNSTOWN,PA	254,100	0	0	30	1

**EXHIBIT THREE****SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
BOSTON,LAWRENCE,SALEM,LOWEL, MA	4,055,700	\$132,226	579	\$801,471	5,482
LOS ANGELES AREA	13,074,800	76,867	351	482,306	3,351
BAY AREA (SF)	5,534,200	79,325	329	486,319	3,345
WASHINGTON,DC-MD-VA	3,565,000	71,771	304	443,110	3,182
SAN DIEGO,CA	2,201,300	34,181	171	238,504	1,685
NEW YORK AREA	15,529,300	44,902	186	197,764	1,377
PHILADELPHIA AREA	5,697,200	42,015	156	197,711	1,357
DENVER-BOULDER-LONGMONT,CO	1,847,400	30,189	144	163,544	1,161
SEATTLE-TAKOMA AREA	2,284,400	20,994	94	111,952	778
ALBUQUERQUE,NM	474,400	13,327	61	86,342	610
SALT LAKE CITY-OGDEN,UT	1,041,400	9,636	42	72,390	549
BALTIMORE,MD	2,280,000	10,981	57	70,810	546
DAYTON-SPRINGFIELD,OH	933,500	18,569	74	82,339	540
MINNEAPOLIS-ST PAUL,MN-WI	2,295,200	14,041	73	70,540	538
HUNTSVILLE,AL	233,700	16,528	77	78,925	537
DETROIT-ANN ARBOR,MI	4,600,700	15,917	77	74,292	531
CHICAGO-LAKE COUNTY	7,381,400	10,022	53	71,037	517
HOUSTON,GALVESTON,TX	3,634,300	12,224	51	55,425	421
HARTFORD-NEW BRITAIN-BRISTOL,CT	967,100	6,713	30	56,224	395
RALEIGH-DURHAM,NC	650,600	7,639	35	51,979	384
NEW HAVEN-MERIDEN+MIDDLETON	596,700	11,629	48	55,621	367
SANTA BARBARA-SANTA MARIA,CA	339,400	9,259	46	52,113	350
TUCSON,AZ	602,400	6,705	57	41,715	319
BUFFALO-NIAGRA AREA	1,181,600	6,549	21	45,325	294
KNOXVILLE,TN	591,100	3,262	19	41,089	280
ROANOKE,VA	224,900	8,608	42	39,178	278
DALLAS-FT.WORTH AREA	3,655,300	6,536	29	39,078	275
AUSTIN,TX	726,400	7,142	28	40,261	273
PITTSBURGH-BEAVER VALLEY,PA	2,316,100	5,412	26	33,826	255
MIDDLESEX-SOMMERSET, NJ	950,100	2,989	23	32,304	254

### EXHIBIT THREE

#### SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
ATLANTA,GA	2,560,500	6,840	24	32,825	242
CLEVELAND-AKRON AREA	2,765,600	10,362	45	32,968	234
MELBOURNE-TITUSVILLE-PALM BEACH	361,200	5,989	27	35,700	232
ALBANY-SCHENECTADY,NY	843,600	10,267	41	33,645	227
ORLANDO,FL	898,400	4,325	22	32,414	219
PHOENIX,AZ	1,900,200	2,437	17	23,152	198
COLUMBUS,OH	1,299,400	2,960	17	21,558	167
COLORADO SPRINGS,CO	380,400	5,847	20	27,232	164
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,075	13	23,556	163
POUGHKEEPSIE,NY	256,800	3,050	13	18,187	160
WORCESTER,MA	407,800	2,888	17	22,392	158
NORFOLK-VA BEACH-NEWPORT NEWS	1,309,500	6,550	21	21,323	146
MADISON,WI	344,900	7,323	28	22,248	143
ELMIRA,NY	90,500	3,866	16	22,224	142
SACRAMENTO,CA	1,291,400	3,033	21	17,423	142
SAN ANTONIO,TX	1,276,400	3,096	20	18,169	140
ROCHESTER,NY	980,300	3,631	14	21,809	136
BRYAN-COLLEGE STATION,TX	120,800	3,151	31	16,486	135
GAINESVILLE,FL	199,800	2,256	16	15,592	126
WATERBURY,CT	211,900	2,315	4	24,444	126
PORTLAND ,OR	1,152,800	6,356	25	18,893	126
HONOLULU,HI	816,700	2,406	12	16,622	116
SANTA FE,NM	106,200	3,674	15	17,323	106
LANCASTER,PA	393,500	1,404	6	19,714	104
PORTLAND,ME	205,700	2,616	13	13,209	98
EUGENE-SPRINGFIELD,OR	263,200	3,534	22	16,447	94
NEW ORLEANS ,LA	1,334,400	480	8	7,900	93
CHAMPAIGN-URBANA-RANTOUL,IL	171,100	803	8	11,609	89
ST LOUIS,MO-IL	2,438,000	2,010	12	9,897	84

**EXHIBIT THREE****SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
SYRACUSE,NY	649,300	1,255	6	9,862	83
CHATTANOOGA,TN-GA	425,500	3,406	15	14,873	81
CHARLOTTESVILLE,VA	121,400	1,829	12	10,404	80
NASHUA,NH	163,300	3,182	20	9,314	78
CINCINNATI-HAMILTON,OH,KY	1,690,100	1,225	12	8,517	78
SPRINGFIELD,MA	517,800	1,746	10	9,689	77
MILWAUKEE-RACINE,WI	1,552,000	1,213	10	8,963	74
ALLENTOWN-BETHLEHEM,PA-NJ	656,800	3,169	10	9,797	68
LAS CRUCES,NM	123,000	1,543	7	10,278	67
TOLEDO,OH	611,200	2,191	10	9,671	67
BURLINGTON,VT	124,600	1,763	6	10,001	66
MONMOUTH-OCEAN,NJ	935,200	979	7	8,485	63
MIAMI-FT.LAUDERDALE,FL	2,912,000	420	5	6,333	61
LANSING-E LANSING,MI	424,800	1,849	13	7,587	60
TULSA,OK	733,500	153	2	5,763	59
KANSAS CITY,MO-KS	1,517,800	2,151	7	8,343	58
LAFAYETTE-W LAFAYETTE,IN	124,400	1,119	12	6,212	57
NEW LONDON-NORWICH,CT-RI	259,500	1,058	6	6,848	55
UTICA-ROME,NY	315,400	1,676	8	8,549	55
WEST PALM BEACH-BOCA RATON,FL	755,600	1,766	8	9,301	55
SALEM,OR	262,100	1,774	6	6,539	49
BIRMINGHAM,AL	911,000	667	3	6,480	48
INDIANAPOLIS,IN	1,212,600	1,577	3	5,782	47
TAMPA-ST PETE-CLEARWATER,FL	1,914,300	842	4	4,688	47
NASHVILLE,TN	930,700	490	6	4,334	46
RENO,NV	224,600	1,049	5	8,171	45
SPOKANE,WA	356,900	560	9	5,293	44
FITCHBURG-LEOMINSTER,MA	96,300	1,578	6	5,443	42
GREENSBORO-WINSTON SALEM, NC	899,500	1,599	5	6,038	41

### EXHIBIT THREE

#### SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
STATE COLLEGE,PA	114,600	674	4	4,438	40
PORTSMOUTH,DOVER,ROCHESTER,	215,000	848	2	5,124	39
BLOOMINGTON,IN	101,700	1,616	3	6,949	38
PENSACOLA,FL	337,100	941	5	4,794	34
LAS VEGAS,NV	569,500	192	3	5,103	34
OKLAHOMA CITY,OK	982,900	496	3	4,015	34
PROVO-OREM,UT	240,500	250	3	3,826	32
DES MOINES,IA	381,300	163	3	3,105	32
LEXINGTON,KY	332,000	1,163	4	3,338	28
SALINAS-SEASIDE-MONTEREY,CA	339,700	140	2	4,672	27
OLYMPIA, WA	146,600	1,997	5	4,655	26
RICHMOND-PETERSBERG,VA	810,200	200	2	3,313	26
LOUISVILLE,KY-IN	962,800	0	0	3,413	26
LAWTON,OK	120,700	750	2	4,562	23
ATHENS,GA	141,500	178	2	2,826	23
MEMPHIS,TN-AR-MS	959,500	178	2	2,248	23
BINGHAMTON,NY	261,800	100	1	3,883	21
CEDAR RAPIDS,IA	168,800	0	0	2,574	20
SOUTH BEND-MISHAWAKA,IN	241,400	0	0	1,744	19
FAYETTEVILLE-SPRINGDALE,AR	107,400	70	1	2,879	18
BELLINGHAM,WA	113,700	1,465	4	3,706	18
GRAND FORKS,ND	69,400	328	3	1,662	14
MANCHESTER,NH	145,100	748	1	3,426	14
ASHEVILLE,NC	170,000	635	4	1,335	14
TOPEKA,KS	160,800	1,987	1	3,430	13
SAGINAW-BAY CITY-MIDLAND,MI	403,600	92	1	1,487	13
LITTLE ROCK-N LITTLE ROCK,AR	505,600	208	1	1,963	13
BATON ROUGE,LA	545,700	0	0	2,332	13
GREENVILLE-SPARTANBURG,SC	606,400	134	2	956	13

**EXHIBIT THREE****SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
KALAMAZOO,MI	217,700	0	0	1,434	12
HARRISBURG-LEBANON-CARLISLE,PA	577,300	99	1	1,614	12
CHARLOTTE-GASTONIA-ROCK HILL,NC	1,065,400	150	2	1,255	12
CANTON,OH	400,400	804	2	1,402	11
OMAHA,NE-IA	614,300	0	0	693	11
STOCKTON+MODESTO,CA	749,300	0	0	1,458	11
ATLANTIC CITY,NJ	297,400	0	0	1,822	10
JACKSONVILLE+DAYTONA BEACH,FL	1,173,600	0	0	991	10
BANGOR,ME	83,400	99	1	471	8
PASCAGOULA,MS	128,200	570	1	1,069	8
ANCHORAGE,AK	235,000	250	4	934	8
TALLAHASSEE,FL	218,000	60	1	455	7
APPLETON-OSHKOSH-NEENAH,WI	307,500	0	0	930	7
FLINT,MI	434,900	0	0	1,162	7
COLUMBIA,SC	444,700	69	1	646	7
WICHITA,KS	470,000	628	2	1,027	7
CHARLESTON,SC	485,700	65	1	640	7
RAPID CITY,SD	76,900	94	1	349	6
PITTSFIELD,MA	80,900	0	0	655	6
JACKSON,MI	144,400	1,092	3	1,342	6
YAKIMA,WA	183,200	65	1	430	6
VICTORIA,TX	76,000	0	0	407	5
MIDLAND,TX	111,300	237	1	883	5
DULUTH,MN-WI	243,500	49	1	219	5
JACKSON,MS	392,000	0	0	375	5
YORK,PA	397,700	748	1	1,023	5
CASPER,WY	71,000	60	1	176	4
WATERLOO-CEDAR FALLS,IA	151,500	0	0	605	4
WACO,TX	187,600	0	0	198	4



**EXHIBIT THREE**

**SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-95 decreasing # of awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY95 (\$k)</u>	<u>FY95 No. of Awards</u>	<u>FY83-95 (\$k)</u>	<u>FY 83-95 No. of Awards</u>
FORT WAYNE,IN	356,100	0	0	416	4
GRAND RAPIDS,MI	648,800	59	1	342	4
SCRANTON-	725,900	0	0	660	4
BISMARCK,ND	86,000	0	0	151	3
ROCHESTER,MN	98,000	0	0	295	3
MEDFORD,OR	140,000	0	0	150	3
FARGO-MOOREHEAD,ND-MN	145,300	398	2	448	3
MONTGOMERY,AL	299,000	0	0	141	3
READING,PA	321,000	80	1	618	3
KOKOMO,IN	101,400	0	0	100	2
MUNCIE,IN	120,900	0	0	95	2
BLOOMINGTON-NORMAL,IL	122,700	0	0	196	2
ABILENE,TX	125,900	0	0	100	2
REDDING,CA	133,100	0	0	98	2
YOUNGSTOWN,OH	510,000	0	0	100	2
EL PASO,TX	561,500	0	0	100	2
LA CROSSE,WI	94,100	0	0	39	1
GLENS FALLS,NY	112,400	0	0	52	1
WICHITA FALLS,TX	127,100	0	0	49	1
LINCOLN,NE	206,100	0	0	50	1
LUBBOCK,TX	224,800	0	0	50	1
SAVANNAH,GA	239,700	0	0	75	1
JOHNSTOWN,PA	254,100	0	0	30	1
ROCKFORD,IL	280,300	0	0	50	1
CORPUS CHRISTI,TX	363,300	0	0	49	1
SHREVEPORT,LA	364,600	0	0	37	1
AUGUSTA,GA-SC	390,000	0	0	50	1

## EXHIBIT FOUR -- Technology Areas

### 1000 COMPUTER, INFORMATION PROCESSING ANALYSIS

#### 1100 Computer and communication systems

- 1110 Computer systems technology
- 1120 Communications and control systems
- 1130 Networks and architectures
- 1140 Computer security

#### 1200 Information processing and management

- 1210 Data and information processing
- 1220 Artificial intelligence
- 1230 Computer software
- 1240 Robotics and automation
- 1250 Man-machine interface

#### 1300 Signal and image processing

- 1310 Signal processing
- 1320 Image processing
- 1330 Navigation, guidance, positioning

#### 1400 Systems studies

- 1410 General studies
- 1420 Operations and systems analysis
- 1430 Safety systems, health and risk analysis

#### 1500 Mathematical sciences

- 1510 Math fundamentals
- 1520 Numerical modeling
- 1530 Math modeling

### 2000 ELECTRONICS

#### 2100 Microelectronics

- 2110 Microelectronics: materials, concepts, processing
- 2120 Compound semiconductors
- 2130 Photovoltaics
- 2140 Optoelectronics

#### 2200 Electronics device performance

- 2210 Electronic device performance, packaging, reliability
- 2220 Radiation damage and hardening
- 2230 Testability

#### 2300 Electronic equipment and instrumentation

- 2310 Electronic equipment and systems
- 2320 Data-and information-processing equipment
- 2330 Sensors, transducers, instrumentation

#### 2400 Electromagnetic radiation/propagation

- 2410 RF technology
- 2420 Electronic warfare
- 2430 Target detection
- 2440 Metal and mine detection

#### 2500 Microwave and millimeter wave electronics

- 2510 Microwave electronics
- 2520 Millimeter wave electronics

## EXHIBIT FOUR - Technology Areas

### 2600 Optical devices and lasers

- 2610 Optical-and IR sensors, components
- 2620 Optical-fiber technology
- 2630 Laser technology
- 2640 Higher-frequency EM radiation

## 3000 MATERIALS

### 3100 Advanced Materials

- 3110 Metallic, magnetic, high T, conducting & superconducting materials
- 3120 Polymers
- 3130 Ceramics
- 3140 Composites and lightweight materials
- 3150 Construction materials
- 3160 Fire, fabric, and insulation materials
- 3170 EM transparent materials
- 3180 Biomaterials

### 3200 Materials processing and manufacturing

- 3210 Materials processing
- 3220 Manufacturing methods
- 3230 Joining and welding technology
- 3240 Separation/characterization of multiphases

### 3300 Coatings, corrosion and surface phenomena

- 3310 Corrosion
- 3320 Coatings
- 3330 Thin films and surfaces

### 3400 Materials performance

- 3410 Failure, fracture, fatigue
- 3420 Lubrication, wear and seals

3430 Repair

3440 Nondestructive evaluation

### 3500 Fundamentals and instrumentation

- 3510 Materials fundamentals/general
- 3520 Instrumentation

## 4000 MECHANICAL PERFORMANCE OF VEHICLES, WEAPONS, FACILITIES

### 4100 Hydrodynamics

- 4110 Hydrodynamics
- 4120 Watercraft

### 4200 Aerodynamics

- 4210 Fundamental aerodynamics
- 4220 Aerodynamic performance
- 4230 Aerodynamic facilities, instrumentation

### 4300 Acoustics

- 4310 Underwater acoustic detection and communication
- 4320 Vibration-related acoustics

### 4400 Mechanical performance of structures & equipment

- 4410 Shock vibration and structural performance of vehicles, facilities, equipment
- 4420 New structural concepts
- 4430 Performance of engine, equipment, mechanical components
- 4440 Weapons performance and effects

## EXHIBIT FOUR - Technology Areas

### 4500 Control

- 4510 Control concepts
- 4520 Vehicle/weapon motion control
- 4530 Structural controls

### 4600 Mechanical measurements

- 4610 Mechanical measurements (pressure, velocity, etc.)

## 5000 ENERGY CONVERSION AND USE

### 5100 Transport sciences

- 5110 Fluid mechanics
- 5120 Flow/fluid measurement and enhancement
- 5130 Heat transfer
- 5140 Refrigeration/cryogenics

### 5200 Propulsion/combustion technology

- 5210 Propulsion systems
- 5220 Propellants, fuels, explosives
- 5230 Combustion
- 5240 Fire detection
- 5250 Exhaust gases and gas analysis

### 5300 Large scale energy usage

- 5310 Industrial energy processes and utilization
- 5320 Physics, nuclear physics, fusion and plasma
- 5330 Energy use in buildings

### 5400 Energy conversion/electric power

- 5410 Batteries, fuel cells, electrochemistry, energy storage
- 5420 Alternative energy conversion
- 5430 Electric power technology

## 6000 ENVIRONMENT AND NATURAL RESOURCES

### 6100 Ocean science

- 6110 Ocean science and instrumentation

### 6200 Atmospheric science

- 6210 Atmospheric science and monitoring
- 6220 Remote sensing
- 6230 Chemical and biological measurement
- 6240 Particulates and aerosols
- 6250 Pollution abatement and environment control

### 6300 Water management

- 6310 Water monitoring and characterization
- 6320 Water treatment
- 6330 Water management and utilization
- 6340 Ice, snow, frost detection

### 6400 Earth sciences

- 6410 Earth sciences
- 6420 Soil measurement and manipulation

### 6500 Environment protection

- 6510 Nuclear, chemical, biological waste management
- 6520 CBR defense

## 7000 LIFE SCIENCES

### 7100 Medical instrumentation

- 7110 Medical measurements
- 7120 Measurements/techniques for radiation/imagery
- 7130 Medical devices
- 7140 Devices/systems for physically impaired

## **EXHIBIT FOUR - Technology Areas**

### **7200 Biotechnology and microbiology**

- 7210 Biotechnology and genetic engineering
- 7220 Cellular biology
- 7230 Drugs, vaccines, toxicity, immunology, therapeutic agents
- 7240 Disease detection and screening

### **7300 Behavioral sciences**

- 7310 Behavior, human factors, cognition
- 7320 Training, testing, simulation
- 7330 Social studies

### **7400 Physiology and miscellaneous**

- 7410 Physiological mechanisms, injury, miscellaneous
- 7420 Dental
- 7430 Food, nutrition, agriculture
- 7440 Biotic resources
- 7450 Animal models and veterinary medicine
- 7460 Plant physiology

**EXHIBIT FIVE**

FY 95 PHASE I and II AWARDS by TECHNOLOGY AREA AND AGENCY  
(dollars in thousands)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	TOTAL
<b>1000 Computer, Information Processing, Analysis</b>												
1100 Computer And Communication Systems	125768	9958	20998	40469	7318	3053	130	375	2007	593	1794	212464
1200 Information Processing And Management	58316	6021	9134	25886	2304	2946	0	237	1693	662	1146	108346
1300 Signal And Image Processing	52932	3253	4893	15152	2271	1505	0	0	489	2259	1095	83849
1400 Systems Studies	7125	750	600	1076	0	300	0	149	0	0	0	10000
1500 Mathematical Sciences	2719	0	2549	92	250	0	62	0	0	0	0	5672
<b>2000 Electronics</b>												
2100 Microelectronics	56057	6991	15957	2967	2886	630	65	0	0	0	749	86302
2200 Electronics Device Performance	116302	70596	40422	33422	27015	2092	3247	0	2024	4062	3337	302518
2300 Electronic Equipment And Instrumentation	43218	2857	11354	7408	2448	0	193	375	0	2042	500	70396
2400 Electromagnetic Radiation/propagation	84178	48125	30847	7714	18916	1792	2338	50	1774	4162	3288	203184
2500 Microwave And Millimeter Wave Electronics	3745	2225	140	299	194	0	0	0	0	0	0	6603
2600 Optical Devices And Lasers	106559	17115	24371	18403	3648	500	260	0	0	164	1599	172617
<b>3000 Materials</b>												
3100 Advanced Materials	137384	70596	38280	31292	26382	3176	3182	50	2024	4280	3538	320185
3200 Materials Processing And Manufacturing	33300	3900	2889	3558	3145	0	0	0	0	0	299	47091
3300 Coatings, Corrosion And Surface Phenomena	27771	4388	7957	4386	3152	644	260	0	0	178	700	49436
3400 Materials Performance	16499	2052	2008	3349	300	768	0	0	27	0	0	25002
3500 Fundamentals And Instrumentation	5353	0	3531	3121	900	0	0	375	0	0	250	13529
<b>4000 Mechanical Performance Of Vehicles, W</b>												
4100 Hydrodynamics	169	0	0	0	65	0	0	0	0	0	0	234
4200 Aerodynamics	61148	670	18222	962	691	0	65	0	0	55	50	81862
4300 Acoustics	5180	150	668	699	0	0	0	0	0	0	0	6696
4400 Mechanical Performance Of Structures And Equipmen	46611	4257	8818	3731	918	50	0	50	0	54	550	65039
4500 Control	16482	4126	1751	10747	1225	352	0	50	0	0	450	35182
4600 Mechanical Measurements	30516	5157	9163	5607	365	702	195	188	0	2042	400	54334

multiple technology areas assigned to awards

**EXHIBIT FIVE**

**FY 95 PHASE I and II AWARDS by TECHNOLOGY AREA AND AGENCY**  
(dollars in thousands)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	TOTAL
<b>5000 Energy And Conversion Use</b>												
5100 Transport Sciences	55291	17526	8914	5139	2226	0	325	0	0	2257	600	92278
5200 Propulsion/combustion Technology	50694	25657	13954	6732	3151	1806	1325	0	0	448	700	104367
5300 Large Scale Energy Usage	17071	9712	4910	6385	834	0	0	0	0	54	50	39016
5400 Energy Conversion/electric Power	20060	2159	5894	2732	1099	0	0	0	0	0	99	32043
<b>6000 Environment &amp; Natural Resources</b>												
6200 Atmospheric Sciences	42174	8693	14289	7466	2098	600	3221	188	0	812	550	80089
6300 Water Management	21079	6653	5950	4405	2549	0	2902	0	0	1241	399	44179
6400 Earth Sciences	17795	2978	1550	1676	1888	500	256	375	281	2734	0	30034
6500 Environmental Protection	3119	148	70	1136	65	0	387	0	0	0	0	4925
<b>7000 Life Sciences</b>												
7100 Medical Instrumentation	25785	4709	6330	41457	2136	745	0	0	1060	553	598	83372
7200 Biotechnology And Microbiology	19022	3159	3804	90787	915	500	65	0	0	1548	50	119850
7300 Behavioral Sciences	43387	11218	7902	22786	2174	563	585	60	1413	579	499	91166
7400 Physiology And Miscellaneous	2142	0	2010	15975	531	0	0	0	76	1414	200	22348

**EXHIBIT SIX****DISTRIBUTION of FY 1995 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

<b>Computer, Information Processing, Analysis</b>	<b>Phase I</b>	<b>Phase II</b>
Computer And Communication Systems	50215	162249
Information Processing And Management	28649	79697
Signal And Image Processing	22945	60904
Systems Studies	1534	8466
Mathematical Sciences	1211	4462
<b>Electronics</b>		
Microelectronics	16044	70258
Electronics Device Performance	176073	126446
Electronic Equipment And Instrumentation	18757	51638
Electromagnetic Radiation/propagation	132818	70366
Microwave And Millimeter Wave Electronics	2563	4040
Optical Devices And Lasers	41847	130770
<b>Materials</b>		
Advanced Materials	176372	143813
Materials Processing And Manufacturing	10753	36338
Coatings, Corrosion And Surface Phenomena	10625	38812
Materials Performance	3721	21281
Fundamentals And Instrumentation	2737	10792
<b>Mechanical Performance Of Vehicles, Weapons, Facilities</b>		
Hydrodynamics	234	0
Aerodynamics	13899	67962
Acoustics	2677	4019
Mechanical Performance Of Structures And Equipment	14469	50570
Control	8918	26264
Mechanical Measurements	9665	44669
<b>Energy And Conversion Use</b>		
Transport Sciences	22133	70144
Propulsion/combustion Technology	24228	80139
Large Scale Energy Usage	6045	32970
Energy Conversion/electric Power	5955	26088

In millions of dollars

(multiple technology areas assigned to awards)



**EXHIBIT SIX****DISTRIBUTION of FY 1995 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

<b>Environment &amp; Natural Resources</b>	<b>Phase I</b>	<b>Phase II</b>
Ocean Science	0	0
Atmospheric Sciences	14116	65973
Water Management	11519	32660
Earth Sciences	7571	22463
Environmental Protection	2480	2445
<b>Life Sciences</b>		
Medical Instrumentation	23430	59942
Biotechnology And Microbiology	40788	79062
Behaviorial Sciences	21529	69626
Physiology And Miscellaneous	6507	15840

In millions of dollars

(multiple technology areas assigned to awards)

**EXHIBIT SEVEN**

**FY 1983-95 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY**  
(dollars in thousand)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	TOTAL
<b>1000 Computer, Information Processing, Analysis</b>												
1100 Computer And Communication Systems	337897	30161	58634	88840	25478	9172	180	1285	7289	1415	3343	563695
1200 Information Processing And Management	320782	29732	97283	102615	24165	7691	415	1479	10284	2959	3076	600481
1300 Signal And Image Processing	258616	16128	51631	45923	15047	9264	0	481	1183	3089	3667	405028
1400 Systems Studies	91788	7107	8681	18866	2826	3498	250	3750	1094	2262	0	140121
1500 Mathematical Sciences	79863	3905	51782	12917	9877	643	262	2493	188	379	330	162639
<b>2000 Electronics</b>												
2100 Microelectronics	255918	28155	50098	6921	23394	1171	65	243	0	345	1263	367572
2200 Electronics Device Performance	186818	92746	93044	61168	48164	3382	3817	646	3341	5442	3790	502360
2300 Electronic Equipment And Instrumentation	217288	44405	61167	36942	15369	6001	2364	2132	2060	5758	2264	395749
2400 Electromagnetic Radiation/propagation	300056	60609	37327	9937	21843	3669	2845	100	2121	4261	4267	447034
2500 Microwave And Millimeter Wave Electronics	63097	8683	13403	1464	1231	49	49	0	30	0	227	88232
2600 Optical Devices And Lasers	404424	68571	108057	64654	28119	4671	1460	1901	87	1722	3788	687455
<b>3000 Materials</b>												
3100 Advanced Materials	385456	149954	102610	70571	66807	10606	6046	390	2579	8837	4492	808348
3200 Materials Processing And Manufacturing	115006	46008	32237	16620	23258	1058	5012	350	30	2737	1211	243527
3300 Coatings, Corrosion And Surface Phenomena	173128	38592	42073	20520	23150	1431	3890	100	0	1077	1118	305079
3400 Materials Performance	102568	21443	22188	5431	12464	6941	275	1371	27	1638	320	174666
3500 Fundamentals And Instrumentation	27297	9158	16983	26069	10411	422	1289	851	0	303	1065	93847
<b>4000 Mechanical Performance Of Vehicles, Weapons, Facilities</b>												
4100 Hydrodynamics	8059	1099	720	0	394	97	0	0	0	0	259	10628
4200 Aerodynamics	141734	1479	69904	1093	2920	2088	65	0	0	155	418	219855
4300 Acoustics	50284	2392	5238	1362	645	399	0	50	529	50	867	61816
4400 Mechanical Performance Of Structures And Equipment	185923	8817	28766	8437	7288	2788	0	250	110	505	723	243606
4500 Control	55421	14429	24529	16160	3810	1747	0	395	40	290	599	117420
4600 Mechanical Measurements	72727	16875	21624	11666	3707	3062	625	609	118	2457	725	134196

multiple technology areas assigned to awards

**EXHIBIT SEVEN**

**FY 1983-95 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY**  
(dollars in thousand)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	TOTAL
<b>5000 Energy And Conversion Use</b>												
5100 Transport Sciences	170065	56187	87277	28962	12422	796	1384	1606	0	4630	1018	364347
5200 Propulsion/combustion Technology	172046	76553	56933	11421	11912	7034	4960	100	0	1417	1199	343575
5300 Large Scale Energy Usage	46453	116519	11887	13133	7073	396	626	475	40	975	774	198351
5400 Energy Conversion/electric Power	97512	35390	31645	9501	9684	100	837	0	0	1117	99	185885
<b>6000 Environment &amp; Natural Resources</b>												
6100 Ocean Science	9138	2395	2305	0	2098	50	0	0	0	0	2359	18344
6200 Atmospheric Sciences	138079	53605	61789	42153	19457	6125	17639	437	0	4594	4345	348222
6300 Water Management	50888	10366	21101	8632	10460	1096	8872	338	0	5070	820	117644
6400 Earth Sciences	41377	20466	3533	3236	11486	1144	778	1063	321	5588	275	89268
6500 Environmental Protection	29502	12084	3396	1819	4242	889	12973	1078	0	596	0	66579
<b>7000 Life Sciences</b>												
7100 Medical Instrumentation	57724	15737	19606	340938	10338	2725	429	200	12362	2063	876	462997
7200 Biotechnology And Microbiology	52662	22364	10109	460092	19620	1187	1353	50	342	11691	240	579710
7300 Behavioral Sciences	136949	20202	18691	118136	10407	4783	1115	1113	11863	4527	913	328699
7400 Physiology And Miscellaneous	12259	3547	14431	70711	12459	792	324	0	246	29921	1821	146510

multiple technology areas assigned to awards

**EXHIBIT EIGHT****DISTRIBUTION of FY 1983-95 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

<b>Computer, Information Processing, Analysis</b>	<b>Phase I</b>	<b>Phase II</b>
Computer And Communication Systems	184652	379043
Information Processing And Management	173129	427352
Signal And Image Processing	118849	286179
Systems Studies	38755	101366
Mathematical Sciences	40470	122170
<b>Electronics</b>		
Microelectronics	107795	259777
Electronics Device Performance	276846	225514
Electronic Equipment And Instrumentation	111797	283952
Electromagnetic Radiation/propagation	212119	234916
Microwave And Millimeter Wave Electronics	20896	67335
Optical Devices And Lasers	205899	481556
<b>Materials</b>		
Advanced Materials	369781	438567
Materials Processing And Manufacturing	76950	166577
Coatings, Corrosion And Surface Phenomena	97699	207381
Materials Performance	48494	126171
Fundamentals And Instrumentation	27100	66746
<b>Mechanical Performance Of Vehicles, Weapons, Facilities</b>		
Hydrodynamics	3953	6675
Aerodynamics	61544	158311
Acoustics	17591	44225
Mechanical Performance Of Structures And Equipment	80123	163482
Control	34967	82453
Mechanical Measurements	44784	89412

In millions of dollars

(multiple technology areas assigned to awards)

## EXHIBIT EIGHT

### DISTRIBUTION of FY 1983-95 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS

<b>Energy And Conversion Use</b>	<b>Phase I</b>	<b>Phase II</b>
Transport Sciences	109235	255112
Propulsion/combustion Technology	110056	233519
Large Scale Energy Usage	49752	148599
Energy Conversion/electric Power	54886	130999
<b>Environment &amp; Natural Resources</b>		
Ocean Science	3861	14484
Atmospheric Sciences	97914	250308
Water Management	45422	72222
Earth Sciences	32309	56959
Environmental Protection	22968	43611
<b>Life Sciences</b>		
Medical Instrumentation	137530	325468
Biotechnology And Microbiology	194289	385421
Behaviorial Sciences	105424	223275
Physiology And Miscellaneous	50031	96480

In millions of dollars