

U.S. Small Business Administration



*Championing America's Entrepreneurs*

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

**ANNUAL REPORT – FY 1997**

**Office of Technology  
U.S. Small Business Administration**

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# VERVIEW

This is the 15th in a series of annual reports on the Small Business Innovation Research (SBIR) program issued by the U.S. Small Business Administration (SBA) pursuant to 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 SBIR program results and activities for FY 1997.

The Small Business Innovation Development Act of 1982 was signed into law on July 22, 1982. Congress reauthorized the program in FY 1986, and again in FY 1993, extending it to October 1, 2000. The latter mandate also increased the percentage of research and development (R&D) funds that the Federal agency participants must direct to small business from 2 percent to 2.5 percent.

When considering the 1993 legislation to extend the program, 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 continued to prove in FY 1997 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 successful.

In its 15 years, the SBIR program has directed over 46,000 awards worth over \$7.5 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 201 solicitations by the participating Federal agencies, 283,426 proposals have been received from small high-tech firms. These proposals have resulted in 46,126 awards worth over \$7.5 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 exists 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 suggest, an ever-increasing number of program participants are succeeding in commercializing new products, processes and services. Surveys by the SBA and the General Accounting Office indicate that at least one in 4 SBIR participants has reported commercial success of SBIR-supported product(s) within 4 years of receiving a Phase II award.

Another encouraging statistic involves participation of minority/disadvantaged-owned businesses in the SBIR program. In FY 1997 minority/disadvantaged-owned firms received 475 awards.

In administering and managing the SBIR program, 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. This is an understandable development that reflects their continuing spirit of innovation.

# I NTRODUCTION

## The Rationale

The rationale for enactment of Public Law 97-219, the Small Business Innovation Development Act, was to give small, innovative enterprises a greater role in federally-funded R&D. The goal was to help develop the Nation's base for creative technical achievement and to enlarge the markets for ideas generated in the laboratories and research facilities and on the factory floors of America's small high-tech businesses.

Public Law 97-219 recognized that small businesses -- especially those technically oriented -- 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. The 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

The Act requires that, beginning in FY 1983, each Federal agency having an extramural research and research and development (R&R&D) budget in excess of \$1 million set aside a portion of such requirements for competitive award under the SBIR program. Through a 4-year phase-in process, civilian agencies were required to increase the percentage of their R&R&D set-asides, from

0.2 percent in FY 1983 to 1.25 percent in FY 1986. The Department of Defense was allowed 5 years to phase its increase in from 0.01 percent in FY 1983, to 1.25 percent in FY 1987.

In 1992 Congress reauthorized the SBIR program extending it 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&R&D funds that participating Federal agencies must direct to small high-tech firms from 1.25 percent to 2.5 percent. Additionally, the Act raised the ceiling for Phase I awards from \$50,000 to \$100,000, and for Phase II awards from \$500,000 to \$750,000.

The purpose of Public Law 102-564 was to:

- 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 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 must then set aside a prescribed percentage of its extramural R&R&D contracting dollars for program use during each fiscal year.

Public Law 102-564 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 following Federal agencies participate 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)

## The SBIR Structure

The SBIR program has three phases:

- Phase I: Awards for up to \$100,000 are made for research projects designed to evaluate the feasibility, and 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 1 or 2 years, with a maximum of \$750,000.

- Phase III: No SBIR funds may be used in this phase. 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 establishing 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 having a fiscal year budget for R&R&D in excess of \$20 million must establish goals for awarding funding agreements to small business. An agency's annual goal cannot be lower than those achieved during the previous fiscal year. In addition to the 10 SBIR participating agencies, eight 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)
- Nuclear Regulatory Commission (NRC)

## SBA Authorities and Responsibilities

Under the law, SBA has the authority and responsibility to:

- 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 for the SBIR program.
- Develop and maintain a source and information file of interested small businesses.
- Develop, coordinate, publish and disseminate SBIR Pre-Solicitation Announcements.
- 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 SBA's monitoring activities.
- Coordinate private-sector commercialization of SBIR innovations.
- Obtain information on the current National Critical Technologies.
- Receive and evaluate proposals resulting from SBIR solicitations.
- Select awardees for SBIR funding agreements.
- Ensure that 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.

### **Authorities and Responsibilities for Participating Agencies**

Each participating agency has the authority and responsibility to:

- Determine the categories of projects to include in its 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.

# PROGRAM SERVICES

In setting SBIR program policy and in monitoring and evaluating the program, the SBA seeks 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 adherence to 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. The announcements are available from the SBA's electronic bulletin board, SBA OnLine, and on the Internet. 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.

Other SBIR information available includes SBIR award winners from the latest available fiscal year, as well as the SBIR Proposal Preparation Handbook.

## **SBIR Outreach**

SBA field representatives, and public and private organizations play a significant role in part of the information-dissemination process. During FY 1997, SBA worked with many organizations in conducting SBIR seminars and conferences by providing information, materials and speakers.

SBA has published a special SBIR program book, which provides program information. SBA field offices have been furnished a supply of the books for speakers throughout the country.

Another form of outreach involves briefing officials of foreign governments. During FY 1997, foreign interest in the SBIR program continued to grow. SBIR-type programs are in place in the United Kingdom and other European countries.



# SBIR Program Data

*Fiscal Year 1997 SBIR Agency Obligations Summary (dollars in thousands)*

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NSF	TOTAL
Agency Extramural Budget	455,814	295,236	21,934,475	2,992,364	236,591	181,312	245,006	10,101,179	4,700,000	2,130,000	43,271,977
Agency SBIR Budget	11,395	7,381	543,016	74,872	5,915	4,532	6,170	252,530	117,000	53,217	1,076,028
Dollars Obligated	10,020	7,330	569,075	74,872	8,370	4,470	5,843	251,940	121,447	53,630	1,106,997
Percent of SBIR to Extramural Budget	2.20%	2.48%	2.59%	2.50%	3.54%	2.47%	2.38%	2.49%	2.58%	2.52%	2.56%
Deficit/Surplus	-1,375	-51	26,059	0	2,455	-62	-327	-590	4,447	413	30,969

*Fiscal Year 1997 Award Profile (dollars in thousands)*

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NSF	TOTAL
Total Phase I Awards	72	63	1,526	200	29	50	35	792	349	255	3,371
Minority/Disadvantaged Phase I Awards	1	9	142	34	7	12	4	33	50	21	313
Total Phase II Awards	29	21	639	85	9	6	14	298	184	119	1,404
Minority/Disadvantaged Phase II Awards	3	2	102	8	2	0	1	7	27	10	162
Total Phase I Dollars Awarded (\$)	3,826	3,134	131,864	14,825	2,730	2,442	2,593	76,509	20,854	18,867	277,644
Minority/Disadvantaged Phase I Dollars (\$)	55	448	13,300	2,545	670	595	278	3,175	3,418	1,558	26,042
Total Phase II Dollars Awarded (Obligations)	6,194	4,196	399,680	60,046	5,640	2,028	3,149	172,844	100,593	34,763	789,133
Minority/Disadvantaged Phase II Dollars (\$)	615	400	68,434	5,601	799	0	225	4,933	8,105	2,943	92,055
Average Amount for Phase I Awards (\$)	53	50	86	74	94	49	74	97	60	74	82

*Fiscal Year 1997 Agency Solicitation Profile*

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NSF	TOTAL
Number of Solicitations Released	1	1	2	1	1	1	1	4	1	1	14
Number of Research Topics in Solicitations	9	13	734	41	29	18	11	228	28	27	1,138
Number of Copies distributed	15,000	4,000	40,000	20,000	7,500	1,500	300	13,300	25,000	20,000	146,600
Number of Phase I Proposals Received	401	319	9,552	1,225	300	260	393	2,980	2,367	1,788	19,585
Number of Phase II Proposals Received	47	32	1,026	150	25	17	24	643	277	179	2,420
Number of Phase I Awards	72	63	1,526	200	29	50	35	792	349	255	3,371
Number of Phase II Awards	29	21	639	85	9	6	14	298	184	119	1,404

*Dollars obligated can include modifications to pre-flow year's awards: DOD \$37,531K  
HHS \$2,587K.*

# PROGRAM

## 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 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".

A 3-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 1997 Summary**

The 10 agencies participating in the SBIR program in FY 1997 released a total of 14 Phase I solicitations. The Department of Health and Human Services released four solicitations; the Department of Defense released two solicitations; the other eight agencies released one each.

In response, the participating agencies received 19,585 Phase I proposals from small high-tech enterprises. The agencies subsequently made a total of 3,371 Phase I awards, which represented 17.2 percent of the proposals received. A total of 2,420 Phase II proposals were received, resulting in 1,404 awards. These awards represented 58 percent of all Phase II proposals received. The combined number of Phase I and Phase II proposals received in FY 1997 was 22,005. There were 4,775 awards, representing 21.7 percent of the total.

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

**Table 2: Number of SBIR Awards --  
FY 1983 through FY 1997**

Fiscal Year	Phase I	Phase II	Totals
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
96	2,841	1,191	4,032
97	<u>3,371</u>	<u>1,404</u>	<u>4,775</u>
Total	34,121	12,005	46,126

There have been year-to-year increases in the dollar value of awards. During FY 1997 the 10 participating SBIR agencies awarded \$1.1 billion through the SBIR program, which represented an increase over the approximately \$916.3 million obligated in FY 1996. FY 1997 Phase I awards were worth \$277.6 million; Phase II awards were worth \$789.1 million. The overall total included \$40 million in modifications to non-FY 1997 awards. (See Table 3)

In FY 1997, minority/disadvantaged-owned firms received 313 Phase I awards worth \$26 million and 162 Phase II awards worth \$92 million.

In awarding 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 1997.

**Table 3: Value of SBIR Awards--  
FY 1983 through FY 1997  
(in millions of dollars)**

Fiscal Year	Phase I	Phase II	Totals
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	834.5*
96	228.9	645.8	916.3*
97	<u>277.6</u>	<u>789.1</u>	<u>1,106.9</u>
Total	2,066.3	5,251.3	7,546.5

FY 1998 EST: - \$1+ billion  
\*includes award modifications

As in prior years, the SBA continued in FY 1997 to use a system of deficits and credits to evaluate agency SBIR budgets against actual amounts obligated.

Through its SBIR Policy Directive, SBA requires each participating agency to list the number of Phase I awards made both within 6 months and beyond 6 months of the closing date of its solicitation announcement. Table 4 (immediately following) provides this information for FY 1997.

**Table 4: FY 1997-- Phase I Time Frame**

Agency	Total FY97 Phase I Awards	No. within 6 Months of Solicitation Close	No. More Than 6 Months After Solicitation Close
DOA	72	0	72
DOC	63	63	0
DOD	1,526	1,485	41
DOE	200	200	0
DOT	29	29	0
ED	50	39	11
EPA	35	30	5
HHS	792	500	292
NASA	349	349	0
NSF	255	255	0
<b>TOTAL</b>	<b>3,371</b>	<b>2,950</b>	<b>421</b>

**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 \$7.5 billion has been awarded to small businesses.
- Minority/disadvantaged-owned firms have received 5,520 awards, representing 12 percent of all SBIR awards; the value of these awards has totaled 850.7 million, which is 11 percent of all dollars awarded under the program.
- The participating agencies received 243,359 Phase I proposals and 26,881 Phase II proposals in response to 201 SBIR solicitations. A total of 34,121 Phase I and 12,005 Phase II awards have been made.
- 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 at least 2.5 percent of its R&R&D extramural budget each fiscal year.

**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 businesses, as reported to SBA, to determine the actual percentage of the R&R&D obligations awarded to small businesses.

In FY 1997, 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.

Table 5: R&R&D Goaling Data - FY 1997

(dollars in thousands)

Agency	Agency %		Total R & D Budget	\$ Goal	Agency Reported \$ To Small Business	% Awarded		% Awarded To Minority/ Disadvantaged
	Goal FY97					To Small Business	\$ Awarded To Minority/ Disadvantaged	
DOA	NR		1,353,161	NR	NR	NR	NR	NR
DOC	NR		NR	NR	NR	NR	NR	NR
DOD	NR		NR	NR	NR	NR	NR	NR
DOE	1.2		5,679,231	68,150	64,499	1.1	3,810	0.7
DOI	0.1		578,907	636	236	0.4	0	0
DOT	18		508,000	91,440	121,153	24	74,972	15
ED	0.5		181,248	996	1,107	0.61	199	0.1
EPA	3.9		150,359	6,000	36,500	24.3	23,700	15.7
HHS	2.1		11,170,176	230,105	525,423	4.7	104,555	0.9
NASA	NR		NR	NR	NR	NR	NR	NR
NSF	1.2		2,206,800	2,260	26,140	1.8	6,170	0.3
NRC	2.8		51,040	1,429	1,889	3.7	118	0.2
AID	0.8		79,500	636	8,600	1.1	301	0.3
DOJ	9.9		59,416	5,882	6,941	11.7	64,966	0.1
DVA	0.4		308,299	1,079	1,367	0.4	1,168	0.3
SI	8		20,400	1,632	18,210	89	1,168	0.3
TR	1.8		23,029	415	44	0.2	0	0
TVA	NR		NR	NR	NR	NR	NR	NR

Table 6: R&R&D Goaling Data - FY 1997 (Continued)

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	NR	NR	105	10,020	NR	NR	5	4,706	1,264	363,116	1,242	62,716
DOC	152	11,119	4	919	93	139,386	141	16,632	668	121,796	665	350,391
DOD	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DOE	88	64,499	NR	NR	NR	NR	NR	5,614,732	NR	NR	NR	NR
DOI	7	236	NR	NR	NR	NR	13	543	NR	NR	NR	NR
DOT	840	141,558	3	5,009	4	5,476	2,109	286,719	168	47,041	28	38,252
ED	66	4,471	6	1,107	NR	NR	19	14,300	NR	NR	NR	NR
EPA	82	9,600	NR	NR	NR	NR	15	14,300	NR	NR	NR	NR
HHS	1,169	525,281	1,233	135,804	23	9,866	655,278	31,496	4,114,460	31,906	911,290	12,897
NASA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
NSF	81	12,480	461	56,650	NR	NR	146	155,670	18,582	3,298,800	NR	NR
NRC	16	1,907	0	0	0	0	27	6,112	6	190	3	900
AID	23	79	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DOJ	98	5,692	7	854	2	359	76	9,614	40	16,139	6	3,450
DVA	2	1,297	NR	NR	NR	NR	2	336	NR	NR	NR	NR
SI	4	18	NR	NR	NR	NR	6	151	NR	NR	NR	NR
TR	1	44	0	0	0	0	9	22,985	0	0	0	0
TVA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

NR = Not Reported

# SUCCESS STORIES

## LIFE MEASUREMENT INSTRUMENTS, INC.

Concord, CA

The SBIR program has made a significant contribution to the success of **Life Measurement Instruments, Inc. (LMI)**. The program has been a catalyst for growth since the company began in 1989. Before LMI received an SBIR award, the company consisted of two individuals with highly innovative ideas and a lot of desire to succeed.

LMI has received a total of five SBIR awards. The initial Phase I SBIR grant was received from the Department of Health and Human Services and resulted in a working prototype of the **BOD POD Body Composition System**, a unique device for the measurement of body fat and lean tissue. The company then received a Phase II SBIR grant that led to significant advancement in the design. Based on the Phase I and Phase II SBIR success, Phase III funding was obtained from a combination of outside investors and internal funding. There is no doubt that by receiving SBIR grants from HHS played a significant role in the company's ability to raise additional capital to commercially launch the product.

Today, the **BOD POD Body Composition System** is sold worldwide to universities, health facilities, weight loss clinics and professional sports teams. The product is so innovative that it has been featured on The Discovery Channel; ABC; CBS; NBC networks; and in a variety of magazines such as Shape, Self, Women's Health and Fitness, Men's Health.

Since receipt of the first SBIR grant in 1990, the company has grown from two to 12 employees. Sales have risen to more than \$1 million annually. The original location was the garage of one of the company's founders. The company now occupies a 6,000 square-foot facility in the San Francisco Bay area. The company also provides a significant amount of business to the local community through the use of subcontractors and other service providers.

LMI has continued to benefit from SBIR-sponsored research and development of new technology. They have focused on innovation related to body composition and metabolism. This is timely in light of overwhelming evidence that the American population in general is rapidly becoming obese (overfat) at the same time sarcopenia (reduction in lean body mass) is epidemic in the elderly population. These problems represent preventable health risks that can be successfully addressed once evaluated. The **BOD POD** significantly advances the state-of-the-art in this area.

In addition to the **BOD POD**, the company is also developing a neonatal unit (tentatively named the **PEA POD Body Composition System**) to assess the body composition of normal and low-birth-weight infants. Also, LMI is developing special metabolic testing technology that will provide information on metabolic rate, a key component that relates to body composition.



**Company quote:** *"The SBIR Program has been chiefly responsible for the growth of our company and the development of new technologies that didn't exist before. We recognize the following benefits: increased employment (500% increase), growth to the point of profitability, media coverage helpful to our company, stimulation of the local economy, and development of a new and useful technology now available world-wide."* - Susan Aitkens - Co-Founder and Vice President, Business Development

## **OCEAN OPTICS, INC.**

Dunedin, FL

**Ocean Optics, Inc. (Ocean Optics)** was founded in 1989 by researchers from two Florida universities whose innovative work in the development of fiber optic pH sensors resulted in the award of an SBIR grant from the Department of Energy. The original SBIR proposal and technology contributed to development of an instrument studying the ocean's role in global warming. In the process of designing its initial instrument, the team developed a breakthrough technology, a miniature fiber optic spectrometer nearly a thousand times smaller, and 10 times less expensive, than conventional systems. By April 1992, just 30 days after completion of its Phase II SBIR grant, the company shipped its first system, the \$1,000 Fiber Optic Spectrometer, **the World's First Miniature Spectrometer**. Since then, over 8,000 systems have been sold to companies around the world.

The firm is beginning development of its next generation product, a highly modular self-contained spectrometer system aimed at the consumer and other high volume applications. This system is expected to sell in the \$250 price range.

Started with two part-time researchers, today, the company has 40 full-time

employees selling, developing and supporting products resulting from technology initially developed through the SBIR program. **Ocean Optics** now has two SBIR awards, and its level of sales has reached \$6 million.

The company created the market for miniature fiber optic spectrometers and is considered the pioneer and leading company in this industry niche. The technology developed by **Ocean Optics**, through its SBIR awards, has led the creation of modular optical technologies that reduced the time and risks associated with developing optical sensing application systems. Many of the company's modular systems have enabled market breakthroughs in such areas as medical technologies, environmental monitoring and precision agriculture. By lowering the cost of optical sensing, the **Ocean Optics'** technology is creating new life enhancing industries.

**Company quote:** *"Forty people owe their jobs to the SBIR program."* - Michael Morris, President

## **PERSONAL IMPROVEMENT COMPUTER SYSTEMS, INC.**

Reston, VA

**Personal Improvement Computer Systems, Inc. (PICS)** is a consumer products company which began in 1984 in Reston, Virginia. The company's mission is to develop and market self-help behavior change programs that are implemented via hand-held computers.

During the past 10 years, PICS has been the recipient of 20 SBIR grants from the Department of Health and Human Services (HHS). With these grants, two families of products have been developed which address important health behaviors that affect millions of people worldwide.

PICS most popular produce is a smoking cessation program called **LifeSign**, which

was developed with Phase I and Phase II funding from HHS. A second product line, DietMate, also developed with SBIR funding from HHS, focuses on changing diet and exercise behaviors.

**LifeSign** is a credit card size computer that uses a scheduled, gradual reduction (SGR) protocol to help smokers quit. The program works in two stages. During a 7-day baseline stage, smokers simply record each cigarette smoked. This information is used to develop a tailored SGR program. During the SGR stage (10 - 28 days) the computer prompts users when to smoke and gradually increases the intervals between cigarettes until cessation is achieved.

The product has also been a commercial success. To date, approximately 1.2 million **LifeSign** units have been sold worldwide through a variety of marketing channels including television, radio, print, and retail.

Development of the **LifeSign** platform has continued and several new products are in various stages of development. With Phase I and Phase II SBIR funding from HHS, PICS has developed, tested, and brought to market a version of **LifeSign** for smokeless tobacco users.

A recent project, funded by an SBIR grant from HHS, involves developing a program called **LifeSign for Nicotine Gum (LS-N)**. **LS-N** uses computerized technology to structure a nicotine gum dosing regimen to assist smokers with quitting. The program addresses the two primary problems with nicotine gum: insufficient initial dosing and long-term use gum. Tests have shown better treatment outcomes using **LS-N** than taking gum on an ad lib basis.

Some of PICS most recent work involves adapting the **LifeSign** program to the problem of teenage smoking. Working with teenagers in local high schools, PIC conducted focus groups and surveys to assist with repackaging the product and rewriting the program guide.

The **DietMate** family of products has also been used successfully by thousands of consumers to control their weight and decrease the risk for heart disease. With SBIR funding from HHS, the company has developed and brought to market several versions of the **DietMate** computer for weight loss, cholesterol reduction, and treatment of high blood pressure. A professional version, which integrates desktop software with the hand-held computer, is also under development.

**Company quote:** *"The SBIR program has played a critical role in our research and development efforts during the past ten years. With funding from SBIR grants, PIC has developed and brought to market products that have helped millions of people lead healthier lives."*  
**Albert Jerome, Director of Research**

## **KENT SEAFARMS CORPORATION**

San Diego, CA

**Kent SeaFarms, Corporation (Kent)** is the producer of over one-third of all farm-raised striped bass sold commercially in the United States. In 1982, SBIR provided initial research and development funding to Aquatic Systems, the Research Division of Kent which was founded in 1972 by two marine scientists from San Diego State University. The SBIR program's goal to commercialize research results stimulated the firm to convert their small consulting firm into a commercial fish-farming company and to focus on a business growth strategy. The initial SBIR research involved the effects of water temperature, quality, and various feeding combinations on fish growth rate, and proved that they could produce 50 times the number of pounds of fish per acre as competitors using conventional fish farming methods. This success attracted investment capital from individual investors to significantly expand the tank farm facilities. Today Kent has 96 large production tanks

containing millions of fish located near Palm Springs, California. It is now a large fish farming company and is exploring other United States and foreign sites for the production of striped bass and other species of fish.

Employment has increased steadily over the years from four to nearly 100 scientists and technicians.

Kent has received 10 SBIR awards from the National Science Foundation, Department of Agriculture, and Department of Commerce. The company is the first and largest commercially successful producer of striped bass in the world, with cumulative fish sales greater than \$40 million over the past 10 years.

Aquaculture production of striped bass provides many benefits to the country, including new sources of high quality seafood, reduction in fishing pressure on threatened wild stocks, increased employment, and a decrease in the large seafood trade deficit.

**Company quote: "SBIR funding was critical to the development of this new aquaculture business, which has expanded rapidly to become the fourth major form of fish culture in the U.S., along with trout, catfish, and tilapia farming. There are currently over 100 producers, growing nearly ten million pounds annually, which is more than the entire wild harvest in the Atlantic Ocean." - Jim Carlberg, President**

# DISTRIBUTION OF SBIR AWARDS

The maps on the following pages show the distributions of FY 1997 SBIR awards (Phase I and Phase II) by state. A more detailed view of the geographical distribution of SBIR awards is presented in Exhibit One.

Metropolitan areas are listed in order of their population in millions (column 1). The next two columns show the SBIR funding (Phase I plus Phase II) for FY 1997 and the number of awards made to that metropolitan area. The last two columns show the cumulative funding and SBIR awards per metropolitan area.

As reported last year, most SBIR awards are made to small businesses located in large metropolitan areas. However, companies located in small towns and rural settings are major participants in the SBIR program. Over \$184 million was awarded to firms in communities with populations under 125,000. These communities also received 150 awards in FY 1997 with an average of 228 thousand per award. As a group, these communities would rank first in the top five of all metropolitan areas in terms of total dollars awarded in FY 1997.

Metropolitan areas are also ranked by total SBIR funding, FY 1983-97. The top 50 areas are shown in Exhibit Two. Large metropolitan areas dominate the ranking: 16 of the first 25 have more than one million in population. The ranking is largely unchanged from last year. The biggest gains were in Greenville-Spartanburg, SC (from 126<sup>th</sup> place to 114<sup>th</sup> place); Eugene, OR (from 55<sup>th</sup> place to 47<sup>th</sup> place); Monmouth, NJ

(from 73<sup>rd</sup> place to 62<sup>nd</sup> place); Pittsfield, MA (from 139<sup>th</sup> place to 129<sup>th</sup> place); and Greensboro, NC (from 90<sup>th</sup> place to 81<sup>st</sup> place).

Metropolitan areas are ranked by total number of cumulative awards. In Exhibit Three, localities that are not part of a Metropolitan Statistical Area (generally with populations less than 500,000) rank 2<sup>nd</sup> in total SBIR awards received. It should be noted that many of the communities with a large number of SBIR awards are located near major universities or Government laboratories.

Technology investment policies of agencies participating in the SBIR program are reflected in the amount of funding for awards in various technology areas. Those areas are listed in Exhibit Four.

Exhibit Five summarizes, by participating agency, the dollar amount of FY 1997 funding made in each technology area Exhibit Six illustrates the FY 1997 technology distribution for all agencies combined. Exhibits Seven and Eight show corresponding distributions for the entire program to date - that is, FY 1983-97.

Electronic Device Performance, Advanced Materials, and Electromagnetic Radiation/Propagation were the leading technology areas funded in FY 1997. Advanced Materials and Electronic Device Performance have now surpassed \$2 billion in funding, with Advanced Materials continuing to lead all other technology areas in funding in the SBIR program.



## ADMINISTRATIVE ISSUES

### Publications Update

All publicly distributed SBIR documents have been 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 1997 in Washington, DC; Anaheim, California and Orlando, Florida.

### 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/sbir>
  - 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 Technology

Total SBIR Awards Fiscal Year 97

State	Phase 1 Awards	Phase 1 Dollars	Phase 2 Awards	Phase 2 Dollars	Total Awards	Total Dollars
Alabama	56	4,739	36	22,759	92	27,498
Alaska	2	155	0	0	2	155
Arizona	68	5,184	29	14,931	97	20,115
Arkansas	11	1,020	0	0	11	1,020
California	693	58,757	326	192,505	1019	251,262
Colorado	146	11,993	55	33,193	201	45,186
Connecticut	79	6,385	39	24,498	118	30,883
Delaware	15	1,120	9	4,424	24	5,544
District of Columbia	8	649	6	3,856	14	4,505
Florida	76	6,391	35	20,454	111	26,845
Georgia	36	2,864	12	8,538	48	11,402
Hawaii	11	901	3	1,533	14	2,434
Idaho	3	193	1	749	4	942
Illinois	53	4,593	14	9,341	67	13,934
Indiana	14	1,158	11	6,143	25	7,301
Iowa	3	225	2	1,078	5	1,303
Kansas	6	569	3	1,699	9	2,268
Kentucky	8	655	3	3,352	11	4,007
Louisiana	6	459	2	480	8	939
Maine	3	190	2	1,389	5	1,579
Maryland	184	15,537	55	34,125	239	49,662
Massachusetts	508	43,007	202	123,124	710	166,131
Michigan	71	6,082	31	18,507	102	24,589
Minnesota	54	4,440	20	12,893	74	17,333
Mississippi	3	195	2	888	5	1,083
Missouri	15	1,260	5	2,323	20	3,583
Montana	5	330	0	0	5	330
Nebraska	6	485	3	921	9	1,406
Nevada	9	705	3	1,615	12	2,320
New Hampshire	39	3,233	24	14,860	63	18,093
New Jersey	97	8,002	40	24,962	137	32,964

ordered by: State

Small Business Administration

Office Technology

Total SBIR Awards Fiscal Year 97

State	Phase 1 Awards	Phase 1 Dollars	Phase 2 Awards	Phase 2 Dollars	Total Awards	Total Dollars
New Mexico	58	4,505	24	13,440	82	17,945
New York	125	10,331	67	37,229	192	47,560
North Carolina	36	3,233	20	12,606	56	15,839
North Dakota	6	429	1	220	7	649
Ohio	121	10,369	41	25,834	162	36,203
Oklahoma	9	655	3	1,993	12	2,648
Oregon	43	3,703	24	14,018	67	17,721
Pennsylvania	114	9,494	56	32,895	170	42,389
Puerto Rico	1	70	0	0	1	70
Rhode Island	1	6	5	3,340	6	3,346
South Carolina	7	595	1	746	8	1,341
South Dakota	6	462	1	294	7	756
Tennessee	30	2,449	12	5,990	42	8,439
Texas	135	11,264	41	25,696	176	36,960
Utah	30	2,583	15	8,113	45	10,696
Vermont	14	1,133	1	750	15	1,883
Virginia	199	16,071	80	52,676	279	68,747
Washington	85	7,039	29	16,778	114	23,817
West Virginia	1	74	2	1,168	3	1,242
Wisconsin	32	2,800	12	7,683	44	10,483
Wyoming	3	204	4	1,944	7	2,148

ordered by: State

Small Business Administration

Office of Technology

Total SBIR Awards for Fiscal Year 97

State	Phase 1 Awards	Phase 1 Dollars	Phase 2 Awards	Phase 2 Dollars	Total Awards	Total Dollars
California	693	58,757	326	192,505	1019	251,262
Massachusetts	508	43,007	202	123,124	710	166,131
Virginia	199	16,071	80	52,676	279	68,747
Maryland	184	15,537	55	34,125	239	49,662
New York	125	10,331	67	37,229	192	47,560
Colorado	146	11,993	55	33,193	201	45,186
Pennsylvania	114	9,494	56	32,895	170	42,389
Texas	135	11,264	41	25,696	176	36,960
Ohio	121	10,369	41	25,834	162	36,203
New Jersey	97	8,002	40	24,982	137	32,984
Connecticut	79	6,385	39	24,498	118	30,883
Alabama	56	4,739	36	22,759	92	27,498
Florida	76	6,391	35	20,454	111	26,845
Michigan	71	6,082	31	18,507	102	24,589
Washington	85	7,039	29	16,778	114	23,817
Arizona	68	5,184	29	14,931	97	20,115
New Hampshire	39	3,233	24	14,860	63	18,093
New Mexico	58	4,505	24	13,440	82	17,945
Oregon	43	3,703	24	14,018	67	17,721
Minnesota	54	4,440	20	12,893	74	17,333
North Carolina	36	3,233	20	12,606	56	15,839
Illinois	53	4,593	14	9,341	67	13,934
Georgia	36	2,864	12	8,538	48	11,402
Utah	30	2,583	15	8,113	45	10,696
Wisconsin	32	2,800	12	7,683	44	10,483
Tennessee	30	2,449	12	5,990	42	81,439
Indiana	14	1,158	11	6,143	25	7,301
Delaware	15	1,120	9	4,424	24	5,544
District of Columbia	8	649	6	3,856	14	4,505
Kentucky	8	655	3	3,352	11	4,007
Missouri	15	1,260	5	2,323	20	3,583
Rhode Island	1	6	5	3,340	6	3,346
Oklahoma	9	655	3	1,993	12	2,648

ordered by: Total Dollars



Small Business Administration

Office of Technology

Total SBIR Awards for Fiscal Year 97

State	Phase 1 Awards	Phase 1 Dollars	Phase 2 Awards	Phase 2 Dollars	Total Awards	Total Dollars
Hawaii	11	901	3	1,533	14	2,434
Nevada	9	705	3	1,615	12	2,320
Kansas	6	569	3	1,699	9	2,268
Wyoming	3	204	4	1,944	7	2,148
Vermont	14	1,133	1	750	15	1,883
Maine	3	190	2	1,389	5	1,579
Nebraska	6	485	3	921	9	1,406
South Carolina	7	595	1	746	8	1,341
Iowa	3	225	2	1,078	5	1,303
West Virginia	1	74	2	1,168	3	1,242
Mississippi	3	195	2	888	5	1,083
Arkansas	11	1,020	0	0	11	1,020
Idaho	3	193	1	749	4	942
Louisiana	6	459	2	480	8	939
South Dakota	6	462	1	284	7	756
North Dakota	6	429	1	220	7	649
Montana	5	330	0	0	5	330
Alaska	2	155	0	0	2	155
Puerto Rico	1	70	0	0	1	70

ordered by: Total Dollars

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97 No. of Awards</u>	<u>FY83-97 (\$k)</u>	<u>FY83-97 No. of Awards</u>
NEW YORK AREA	15,529,300	33,049	136	263,294	1,585
LOS ANGELES AREA	13,074,800	94,929	383	643,736	3,925
CHICAGO-LAKE COUNTY	7,381,400	9,642	53	87,759	577
PHILADELPHIA AREA	5,697,200	38,868	148	263,780	1,584
BAY AREA (SF)	5,534,200	85,203	341	631,079	3,874
DETROIT-ANN ARBOR, MI	4,600,700	20,437	74	108,813	641
BOSTON, LAWRENCE, SALEM, LOWEL, MA	4,055,700	150,265	593	1,061,568	6,344
DALLAS-FT. WORTH AREA	3,655,300	6,501	21	50,290	301
HOUSTON, GALVESTON, TX	3,634,300	8,909	41	71,996	481
WASHINGTON, DC-MD-VA	3,565,000	87,894	381	582,543	3,700
MIAMI-FT. LAUDERDALE, FL	2,912,000	4,006	12	10,614	74
CLEVELAND-AKRON AREA	2,765,600	13,596	50	53,638	301
ATLANTA, GA	2,560,500	11,120	44	45,963	300
ST. LOUIS, MO-IL	2,438,000	2,866	13	12,481	96
PITTSBURGH-BEAVER VALLEY, PA	2,316,100	6,101	36	44,658	313
MINNEAPOLIS-ST. PAUL, MN-WI	2,295,200	16,771	67	104,620	650
SEATTLE-TAKOMA AREA	2,284,400	17,109	92	144,354	923
BALTIMORE, MD	2,280,000	13,471	65	95,062	641
SAN DIEGO, CA	2,201,300	44,829	187	317,520	1,960
TAMPA-ST. PETE-CLEARWATER, FL	1,914,300	167	2	6,123	49
PHOENIX, AZ	1,900,200	4,933	21	29,889	229
DENVER-BOULDER-LONGMONT, CO	1,847,400	39,819	175	224,635	1,407
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	2,610	24	15,293	112
MILWAUKEE-RACINE, WI	1,552,000	1,081	6	11,114	81
KANSAS CITY, MO-KS	1,517,800	2,241	9	11,367	70
NEW ORLEANS, LA	1,334,400	671	5	8,205	94
NORFOLK-VA BEACH-NEWPORT NEWS	1,309,500	3,834	15	29,357	169
COLUMBUS, OH	1,289,400	6,957	22	28,737	189
SACRAMENTO, CA	1,291,400	4,919	21	26,410	175
SAN ANTONIO, TX	1,276,400	5,991	23	28,734	177
INDIANAPOLIS, IN	1,212,600	742	3	7,483	50

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
BUFFALO-NIAGARA AREA	1,181,600	7,395	30	57,939	336
JACKSONVILLE-DAYTONA BEACH, FL	1,173,600	0	0	991	10
PORTLAND, OR	1,152,800	5,517	30	29,086	171
PROVIDENCE-PAWTUCKET-FALL RIVERS, RI	1,108,500	4,404	14	29,716	177
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	1,594	3	3,634	18
SALT LAKE CITY-OGDEN, UT	1,041,400	8,446	42	85,440	602
OKLAHOMA CITY, OK	982,900	1,593	7	5,681	40
ROCHESTER, NY	980,300	2,114	11	26,313	156
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	11,678	35	71,126	436
LOUISVILLE, KY-IN	962,800	1,464	6	4,973	33
MEMPHIS, TN-AR-MS	959,500	508	3	3,005	28
MIDDLESEX-SOMMERSET, NJ	950,100	8,299	35	43,910	302
MONMOUTH-OCEAN, NJ	935,200	4,946	12	14,790	82
DAYTON-SPRINGFIELD, OH	933,500	11,840	56	104,881	615
NASHVILLE, TN	930,700	1,212	8	7,380	58
BIRMINGHAM, AL	911,000	1,043	7	8,984	58
GREENSBORO-WINSTON SALEM, NC	899,500	1,902	7	8,318	49
ORLANDO, FL	898,400	4,622	22	38,019	244
ALBANY-SCHENECTADY, NY	843,600	10,586	39	47,882	283
HONOLULU, HI	816,700	2,434	14	22,844	137
RICHMOND-PETERSBURG, VA	810,200	155	2	3,634	30
WEST PALM BEACH-BOCA RATON, FL	755,600	1,909	7	12,617	67
STOCKTON-MODESTO, CA	749,300	0	0	1,505	11
TULSA, OK	733,500	310	4	6,763	61
AUSTIN, TX	726,400	7,661	47	53,504	348
SCRANTON, PA	725,900	0	0	660	4
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	1,262	16	11,160	84
RALEIGH-DURHAM, NC	650,600	11,643	43	67,959	431
SYRACUSE, NY	649,300	1,946	7	12,746	93
GRAND RAPIDS, MI	646,800	619	4	1,021	9
OMAHA, NE-IA	614,300	210	3	853	13

All \$ amounts in thousands

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
TOLEDO, OH	611,200	659	3	12,619	74
GREENVILLE-SPARTANBURG, SC	606,400	1,121	5	2,536	24
TUCSON, AZ	602,400	14,921	79	65,069	443
NEW HAVEN-MERIDEN-MIDDLETON, CT	596,700	8,265	39	74,355	429
KNOXVILLE, TN	591,100	4,349	18	48,859	312
HARRISBURG-LEBANON-CARLISLE, PA	577,300	965	3	2,569	15
LAS VEGAS, NV	569,500	1,313	6	6,576	42
EL PASO, TX	561,500	0	0	100	2
BATON ROUGE, LA	545,700	100	1	1,968	12
SPRINGFIELD, MA	517,800	778	8	12,617	95
YOUNGSTOWN, OH	510,000	0	0	100	2
LITTLE ROCK-N LITTLE ROCK, AR	505,600	0	0	2,038	14
CHARLESTON, SC	485,700	70	1	935	9
ALBUQUERQUE, NM	474,400	12,437	58	111,051	688
WICHITA, KS	470,000	0	0	1,027	7
COLUMBIA, SC	444,700	50	1	816	10
FLINT, MI	434,900	75	1	1,237	8
CHATTANOOGA, TN-GA	425,500	2,705	14	21,669	102
LANSING-E LANSING, MI	424,800	1,733	10	10,017	76
WORCESTER, MA	407,800	5,449	25	30,503	200
SAGINAW-BAY CITY-MIDLAND, MI	403,600	150	2	1,802	17
CANTON, OH	400,400	183	2	1,705	15
YORK, PA	397,700	214	3	1,237	8
LANCASTER, PA	393,500	3,254	10	23,825	115
JACKSON, MS	392,000	0	0	396	5
AUGUSTA, GA	390,000	268	3	318	4
DES MOINES, IA	381,300	1,443	7	4,659	38
COLORADO SPRINGS, CO	380,400	5,309	24	38,894	216
SHREVEPORT, LA	364,600	0	0	37	1
CORPUS CHRISTI, TX	363,300	0	0	49	1
MELBOURNE-TITUSVILLE-PALM BEACH, FL	361,200	7,384	30	46,545	272

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
SPOKANE, WA	356,900	922	3	8,075	51
FORT WAYNE, IN	356,100	0	0	586	6
MADISON, WI	344,900	8,284	33	35,618	193
SALINAS-SEASIDE-MONTEREY, CA	339,700	1,212	7	5,677	39
SANTA BARBARA-SANTA MARIA, CA	339,400	18,435	58	79,394	427
PENSACOLA, FL	337,100	1,784	7	9,095	46
LEXINGTON, KY	332,000	3,857	9	7,915	37
READING, PA	321,000	750	1	1,368	4
UTICA-ROME, NY	315,400	1,824	6	11,671	65
APPLETON-OSHKOSH-NEENAH, WI	307,500	820	2	1,820	10
MONTGOMERY, AL	299,000	0	0	141	3
ATLANTIC CITY, NJ	297,400	736	1	2,654	12
ROCKFORD, IL	280,300	713	1	832	3
EUGENE-SPRINGFIELD, OR	263,200	8,022	27	28,306	140
SALEM, OR	262,100	788	3	7,881	55
BINGHAMTON, NY	261,800	1,313	6	5,746	29
NEW LONDON-NORWICH, CT-RI	259,500	2,659	7	12,019	68
POUGHKEEPSIE, NY	256,800	1,792	6	22,699	170
JOHNSTOWN, PA	254,100	0	0	100	2
DULUTH, MN-WI	243,500	55	1	239	5
SOUTH BEND-MISHAWAKA, IN	241,400	145	2	2,057	22
PROVO-OREM, UT	240,500	2,250	3	7,757	39
SAVANNAH, GA	239,700	0	0	75	1
ANCHORAGE, AK	235,000	155	2	1,878	15
HUNTSVILLE, AL	233,700	24,923	84	118,473	664
ROANOKE, VA	224,900	11,523	41	59,854	349
LUBBOCK, TX	224,800	200	2	250	3
RENO, NV	224,600	264	3	9,561	52
TALLAHASSEE, FL	218,000	660	2	1,783	12
KALAMAZOO, MI	217,700	75	1	1,509	13
PORTSMOUTH,DOVER,ROCHESTER, DE	215,000	2,641	11	7,484	50

All \$ amounts in thousands

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
WATERBURY, CT	211,900	0	0	24,294	123
LINCOLN, NE	206,100	0	0	50	1
PORTLAND, ME	205,700	1,024	5	15,084	103
GAINESVILLE, FL	199,800	3,844	21	22,191	155
WACO, TX	187,600	0	0	148	3
YAKIMA, WA	183,200	0	0	380	5
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,653	9	16,963	110
ASHEVILLE, NC	170,000	0	0	1,616	14
CEDAR RAPIDS, IA	168,800	100	1	2,888	24
NASHUA, NH	163,300	6,516	14	22,943	115
TOPEKA, KS	160,800	97	1	3,527	14
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
OLYMPIA, WA	146,600	1,273	3	5,928	29
FARGO-MOOREHEAD, ND-MN	145,300	125	2	1,373	7
MANCHESTER, NH	145,100	0	0	3,976	16
JACKSON, MI	144,400	174	2	1,516	8
ATHENS, GA	141,500	0	0	2,906	24
MEDFORD, OR	140,000	825	2	1,075	6
REDDING, CA	133,100	0	0	49	1
PASCAGOULA, MS	128,200	572	1	1,759	10
WICHITA FALLS, TX	127,100	600	1	719	3
ABILENE, TX	125,900	75	1	175	3
BURLINGTON, VT	124,600	1,171	6	13,265	75
LAFAYETTE-W. LAFAYETTE, IN	124,400	3,408	9	11,165	71
LAS CRUCES, NM	123,000	1,508	4	13,398	77
BLOOMINGTON-NORMAL, IL	122,700	747	1	1,120	6
CHARLOTTESVILLE, VA	121,400	5,088	20	19,070	109
MUNCIE, IN	120,900	0	0	95	2
BRYAN-COLLEGE STATION, TX	120,800	6,814	37	29,334	203
LAWTON, OK	120,700	745	1	5,546	26
STATE COLLEGE, PA	114,800	1,758	14	7,230	58

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
BELLINGHAM, WA	113,700	809	4	4,373	24
GLENS FALLS, NY	112,400	55	1	107	2
MIDLAND, TX	111,300	0	0	883	5
FAYETTEVILLE-SPRINGDALE, AR	107,400	147	2	2,996	19
SANTA FE, NM	106,200	3,655	15	22,893	130
BLOOMINGTON, IN	101,700	300	3	7,195	39
KOKOMO, IN	101,400	0	0	179	3
ROCHESTER, MN	98,000	458	5	753	8
FITCHBURG-LEOMINSTER, MA	96,300	1,738	6	8,204	52
LA CROSSE, WI	94,100	0	0	39	1
ELMIRA, NY	90,500	4,541	16	29,409	167
BISMARCK, ND	86,000	0	0	151	3
BANGOR, ME	83,400	753	2	1,396	12
PITTSFIELD, MA	80,900	724	3	1,449	10
RAPID CITY, SD	76,900	443	3	941	11
VICTORIA, TX	76,000	0	0	407	5
CASPER, WY	71,000	397	1	601	5
GRAND FORKS, ND	69,400	369	3	2,031	17

All \$ amounts in thousands

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)

<u>Metropolitan Area</u>	<u>Population</u>	FY97 (k)	FY97 No. of Awards	FY83-97 (k)	FY83-97 No. of Awards
BOSTON,LAWRENCE,SALEM,LOWEL, MA	4,055,700	150,265	593	1,061,568	6,344
LOS ANGELES AREA	13,074,800	94,929	383	643,736	3,925
BAY AREA (SF)	5,534,200	85,203	341	631,079	3,874
WASHINGTON, DC-MD-VA	3,565,000	87,894	381	582,543	3,700
SAN DIEGO, CA	2,201,300	44,829	187	317,520	1,960
PHILADELPHIA AREA	5,697,200	38,868	148	263,780	1,584
NEW YORK AREA	15,529,300	33,049	136	263,294	1,585
DENVER-BOULDER-LONGMONT, CO	1,847,400	39,819	175	224,635	1,407
SEATTLE-TAKOMA AREA	2,284,400	17,109	92	144,354	923
HUNTSVILLE, AL	233,700	24,923	84	118,473	664
ALBUQUERQUE, NM	474,400	12,437	58	111,051	688
DETROIT-ANN ARBOR, MI	4,600,700	20,437	74	108,813	641
DAYTON-SPRINGFIELD, OH	933,500	11,840	56	104,881	615
MINNEAPOLIS-ST. PAUL, MN-WI	2,295,200	16,771	67	104,620	650
BALTIMORE, MD	2,280,000	13,471	65	95,062	641
CHICAGO-LAKE COUNTY	7,381,400	9,642	53	87,759	577
SALT LAKE CITY-OGDEN, UT	1,041,400	8,446	42	85,440	602
SANTA BARBARA-SANTA MARIA, CA	339,400	18,435	58	79,394	427
NEW HAVEN-MERIDEN+MIDDLETON, NH	596,700	8,265	39	74,355	429
HOUSTON,GALVESTON, TX	3,634,300	8,909	41	71,996	481
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	11,678	35	71,126	436
RALEIGH-DURHAM, NC	650,600	11,643	43	67,959	431
TUCSON, AZ	602,400	14,921	79	65,069	443
ROANOKE, VA	224,900	11,523	41	59,854	349
BUFFALO-NIAGARA AREA	1,181,600	7,395	30	57,939	336
CLEVELAND-AKRON AREA	2,765,600	13,596	50	53,638	301
AUSTIN, TX	726,400	7,661	47	53,504	348
DALLAS-FT. WORTH AREA	3,655,300	6,501	21	50,290	301
KNOXVILLE, TN	591,100	4,349	18	48,859	312
ALBANY-SCHENECTADY, NY	843,600	10,586	39	47,882	283
MELBOURNE-TITUSVILLE-PALM BEACH, FL	361,200	7,384	30	46,545	272

All \$ amounts in thousands



SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)

<u>Metropolitan Area</u>	<u>Population</u>	FY97 (k)	FY97 No. of Awards	FY83-97 (k)	FY83-97 No. of Awards
ATLANTA, GA	2,560,500	11,120	44	45,963	300
PITTSBURGH-BEAVER VALLEY, PA	2,316,100	6,101	36	44,658	313
MIDDLESEX-SOMMERSET, NJ	950,100	8,299	35	43,910	302
COLORADO SPRINGS, CO	380,400	5,309	24	38,894	216
ORLANDO, FL	898,400	4,622	22	38,019	244
MADISON, WI	344,900	8,284	33	35,618	193
WORCESTER, MA	407,800	5,449	25	30,503	200
PHOENIX, AZ	1,900,200	4,933	21	29,889	229
PROVIDENCE-PAWTUCKET-FALL RIVERS, RI	1,108,500	4,404	14	29,716	177
ELMIRA, NY	90,500	4,541	16	29,409	167
NORFOLK-VA BEACH-NEWPORT NEWS, VA	1,309,500	3,834	15	29,357	169
BRYAN-COLLEGE STATION, TX	120,800	6,814	37	29,334	203
PORTLAND, OR	1,152,800	5,517	30	29,086	171
COLUMBUS, OH	1,298,400	6,957	22	28,737	189
SAN ANTONIO, TX	1,276,400	5,991	23	28,734	177
EUGENE-SPRINGFIELD, OR	263,200	8,022	27	28,306	140
SACRAMENTO, CA	1,291,400	4,919	21	26,410	175
ROCHESTER, NY	980,300	2,114	11	26,313	156
WATERBURY, CT	211,900	0	0	24,294	123
LANCASTER, PA	393,500	3,254	10	23,825	115
NASHUA, NH	163,300	6,516	14	22,943	115
SANTA FE, NM	106,200	3,655	15	22,893	130
HONOLULU, HI	816,700	2,434	14	22,844	137
POUGHKEEPSIE, NY	256,800	1,792	6	22,699	170
GAINESVILLE, FL	199,800	3,844	21	22,191	155
CHATTANOOGA, TN-GA	425,500	2,705	14	21,669	102
CHARLOTTESVILLE, VA	121,400	5,088	20	19,070	109
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,653	9	16,963	110
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	2,610	24	15,293	112
PORTLAND, ME	205,700	1,024	5	15,084	103
MONMOUTH-OCEAN, NJ	935,200	4,946	12	14,790	82

All \$ amounts in thousands

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)

<u>Metropolitan Area</u>	<u>Population</u>	FY97 (k)	FY97 No. of Awards	FY83-97 (k)	FY83-97 No. of Awards
LAS CRUCES, NM	123,000	1,508	4	13,398	77
BURLINGTON, VT	124,600	1,171	6	13,265	75
SYRACUSE, NY	649,300	1,946	7	12,746	93
TOLEDO, OH	611,200	659	3	12,619	74
SPRINGFIELD, MA	517,800	778	8	12,617	95
WEST PALM BEACH-BOCA RATON, FL	755,600	1,909	7	12,617	67
ST. LOUIS, MO-IL	2,438,000	2,866	13	12,481	96
NEW LONDON-NORWICH, CT-RI	259,500	2,659	7	12,019	68
UTICA-ROME, NY	315,400	1,824	6	11,671	65
KANSAS CITY, MO-KS	1,517,800	2,241	9	11,367	70
LAFAYETTE-W LAFAYETTE, IN	124,400	3,408	9	11,165	71
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	1,262	16	11,160	84
MILWAUKEE-RACINE, WI	1,552,000	1,081	6	11,114	81
MIAMI-FT. LAUDERDALE, FL	2,912,000	4,006	12	10,614	74
LANSING-E. LANSING, MI	424,800	1,733	10	10,017	76
RENO, NV	224,600	264	3	9,561	52
PENSACOLA, FL	337,100	1,784	7	9,095	46
BIRMINGHAM, AL	911,000	1,043	7	8,984	58
GREENSBORO-WINSTON SALEM, NC	899,500	1,902	7	8,318	49
NEW ORLEANS, LA	1,334,400	671	5	8,205	94
FITCHBURG-LEOMINSTER, MA	96,300	1,738	6	8,204	52
SPOKANE, WA	356,900	922	3	8,075	51
LEXINGTON, KY	332,000	3,857	9	7,915	37
SALEM, OR	262,100	788	3	7,881	55
PROVO-OREM, UT	240,500	2,250	3	7,757	39
PORTSMOUTH, DOVER, ROCHESTER, DE	215,000	2,641	11	7,484	50
INDIANAPOLIS, IN	1,212,600	742	3	7,483	50
NASHVILLE, TN	930,700	1,212	8	7,380	58
STATE COLLEGE, PA	114,600	1,758	14	7,230	58
BLOOMINGTON, IN	101,700	300	3	7,195	39
TULSA, OK	733,500	310	4	6,763	61

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)

<u>Metropolitan Area</u>	<u>Population</u>	FY97 (k)	FY97 No. of Awards	FY83-97 (k)	FY83-97 No. of Awards
LAS VEGAS, NV	569,500	1,313	6	6,576	42
TAMPA-ST. PETE-CLEARWATER, FL	1,914,300	167	2	6,123	49
OLYMPIA, WA	146,600	1,273	3	5,928	29
BINGHAMTON, NY	261,800	1,313	6	5,746	29
OKLAHOMA CITY, OK	982,900	1,593	7	5,681	40
SALINAS-SEASIDE-MONTEREY, CA	339,700	1,212	7	5,677	39
LAWTON, OK	120,700	745	1	5,546	26
LOUISVILLE, KY-IN	962,800	1,464	6	4,973	33
DES MOINES, IA	381,300	1,443	7	4,659	38
BELLINGHAM, WA	113,700	809	4	4,373	24
MANCHESTER, NH	145,100	0	0	3,976	16
RICHMOND-PETERSBERG, VA	810,200	155	2	3,634	30
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	1,594	3	3,634	18
TOPEKA, KS	160,800	97	1	3,527	14
MEMPHIS, TN-AR-MS	959,500	508	3	3,005	28
FAYETTEVILLE-SPRINGDALE, AR	107,400	147	2	2,996	19
ATHENS, GA	141,500	0	0	2,906	24
CEDAR RAPIDS, IA	168,800	100	1	2,888	24
ATLANTIC CITY, NJ	297,400	736	1	2,654	12
HARRISBURG-LEBANON-CARLISLE, PA	577,300	965	3	2,569	15
GREENVILLE-SPARTANBURG, SC	606,400	1,121	5	2,536	24
SOUTH BEND-MISHAWAKA, IN	241,400	145	2	2,057	22
LITTLE ROCK-N LITTLE ROCK, AR	505,600	0	0	2,038	14
GRAND FORKS, ND	69,400	369	3	2,031	17
BATON ROUGE, LA	545,700	100	1	1,968	12
ANCHORAGE, AK	235,000	155	2	1,878	15
APPLETON-OSHKOSH-NEENAH, WI	307,500	820	2	1,820	10
SAGINAW-BAY CITY-MIDLAND, MI	403,600	150	2	1,802	17
TALLAHASSEE, FL	218,000	660	2	1,783	12
PASCAGOULA, MS	128,200	572	1	1,759	10
CANTON, OH	400,400	183	2	1,705	15

All \$ amounts in thousands

**SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97</u> <u>(k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
ASHEVILLE, NC	170,000	0	0	1,616	14
JACKSON, MI	144,400	174	2	1,516	8
KALAMAZOO, MI	217,700	75	1	1,509	13
STOCKTON-MODESTO, CA	749,300	0	0	1,505	11
PITTSFIELD, MA	80,900	724	3	1,449	10
BANGOR, ME	83,400	753	2	1,396	12
FARGO-MOOREHEAD, ND-MN	145,300	125	2	1,373	7
READING, PA	321,000	750	1	1,368	4
YORK, PA	397,700	214	3	1,237	8
FLINT, MI	434,900	75	1	1,237	8
BLOOMINGTON-NORMAL, IL	122,700	747	1	1,120	6
MEDFORD, OR	140,000	825	2	1,075	6
WICHITA, KS	470,000	0	0	1,027	7
GRAND RAPIDS, MI	648,800	619	4	1,021	9
JACKSONVILLE-DAYTONA BEACH, FL	1,173,600	0	0	991	10
RAPID CITY, SD	76,900	443	3	941	11
CHARLESTON, SC	485,700	70	1	935	9
MIDLAND, TX	111,300	0	0	883	5
OMAHA, NE-IA	614,300	210	3	853	13
ROCKFORD, IL	280,300	713	1	832	3
COLUMBIA, SC	444,700	50	1	816	10
ROCHESTER, MN	98,000	458	5	753	8
WICHITA FALLS, TX	127,100	600	1	719	3
SCRANTON, PA	725,900	0	0	660	4
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
CASPER, WY	71,000	397	1	601	5
FORT WAYNE, IN	356,100	0	0	586	6
VICTORIA, TX	76,000	0	0	407	5
JACKSON, MS	392,000	0	0	396	5
YAKIMA, WA	183,200	0	0	380	5
AUGUSTA, GA	390,000	268	3	318	4

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars)

<u>Metropolitan Area</u>	<u>Population</u>	FY97 (k)	FY97 No. of <u>Awards</u>	FY83-97 (k)	FY83-97 No. of <u>Awards</u>
LUBBOCK, TX	224,800	200	2	250	3
DULUTH, MN-WI	243,500	55	1	239	5
KOKOMO, IN	101,400	0	0	179	3
ABILENE, TX	125,900	75	1	175	3
BISMARCK, ND	86,000	0	0	151	3
WACO, TX	187,600	0	0	148	3
MONTGOMERY, AL	299,000	0	0	141	3
GLENS FALLS, NY	112,400	55	1	107	2
JOHNSTOWN, PA	254,100	0	0	100	2
YOUNGSTOWN, OH	510,000	0	0	100	2
EL PASO, TX	561,500	0	0	100	2
MUNCIE, IN	120,900	0	0	95	2
SAVANNAH, GA	239,700	0	0	75	1
LINCOLN, NE	206,100	0	0	50	1
REDDING, CA	133,100	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

**SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97 No. of Awards</u>	<u>FY83-97 (\$k)</u>	<u>FY83-97 No. of Awards</u>
BOSTON, LAWRENCE, SALEM, LOWEL, MA	4,055,700	150,265	593	1,061,568	6,344
LOS ANGELES AREA	13,074,800	94,929	383	643,736	3,925
BAY AREA (SF)	5,534,200	85,203	341	631,079	3,874
WASHINGTON, DC-MD-VA	3,565,000	87,894	381	582,543	3,700
SAN DIEGO, CA	2,201,300	44,829	187	317,520	1,960
NEW YORK AREA	15,529,300	33,049	136	263,294	1,585
PHILADELPHIA AREA	5,697,200	38,868	148	263,780	1,584
DENVER-Boulder-Longmont, CO	1,847,400	39,819	175	224,635	1,407
SEATTLE-TAKOMA AREA	2,284,400	17,109	92	144,354	923
ALBUQUERQUE, NM	474,400	12,437	58	111,051	688
HUNTSVILLE, AL	233,700	24,923	84	118,473	664
MINNEAPOLIS-ST. PAUL, MN-WI	2,295,200	16,771	67	104,620	650
BALTIMORE, MD	2,280,000	13,471	65	95,062	641
DETROIT-ANN ARBOR, MI	4,600,700	20,437	74	108,813	641
DAYTON-SPRINGFIELD, OH	933,500	11,840	56	104,881	615
SALT LAKE CITY-OGDEN, UT	1,041,400	8,446	42	85,440	602
CHICAGO-LAKE COUNTY	7,381,400	9,642	53	87,759	577
HOUSTON, GALVESTON, TX	3,634,300	8,909	41	71,996	481
TUCSON, AZ	602,400	14,921	78	65,069	443
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	11,678	35	71,126	436
RALEIGH-DURHAM, NC	650,600	11,643	43	67,959	431
NEW HAVEN-MERIDEN-MIDDLETON, CT	596,700	8,265	39	74,355	429
SANTA BARBARA-SANTA MARIA, CA	339,400	18,435	58	79,394	427
ROANOKE, VA	224,900	11,523	41	59,854	349
AUSTIN, TX	726,400	7,661	47	53,504	348
BUFFALO-NIAGARA AREA	1,181,600	7,395	30	57,939	336
PITTSBURGH-BEAVERTON VALLEY, PA	2,316,100	6,101	36	44,658	313
KNOXVILLE, TN	591,100	4,349	18	48,859	312
MIDDLESEX-SOMMERSET, NJ	950,100	8,299	35	43,910	302
CLEVELAND-AKRON AREA	2,765,600	13,596	50	53,638	301
DALLAS-FT. WORTH AREA	3,655,300	6,501	21	50,290	301
ATLANTA, GA	2,560,500	11,120	44	45,963	300

SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97 No. of Awards</u>	<u>FY83-97 (\$k)</u>	<u>FY83-97 No. of Awards</u>
ALBANY-SCHENECTADY, NY	843,600	10,586	39	47,882	283
MELBOURNE-TITUSVILLE-PALM BEACH, FL	361,200	7,384	30	46,545	272
ORLANDO, FL	898,400	4,622	22	38,019	244
PHOENIX, AZ	1,900,200	4,933	21	28,889	229
COLORADO SPRINGS, CO	380,400	5,309	24	38,894	216
BRYAN-COLLEGE STATION, TX	120,800	6,814	37	29,334	203
WORCESTER, MA	407,800	5,449	25	30,503	200
MADISON, WI	344,900	8,284	33	35,618	193
COLUMBUS, OH	1,299,400	6,957	22	28,737	189
PROVIDENCE-PAWTUCKET-FALL RIVERS, RI	1,108,500	4,404	14	29,716	177
SAN ANTONIO, TX	1,276,400	5,991	23	28,734	177
SACRAMENTO, CA	1,291,400	4,919	21	26,410	175
PORTLAND, OR	1,152,800	5,517	30	29,086	171
POUGHKEEPSIE, NY	256,800	1,792	6	22,699	170
NORFOLK-VA BEACH-NEWPORT NEWS, VA	1,308,500	3,834	15	29,357	169
ELMIRA, NY	90,500	4,541	16	29,409	167
ROCHESTER, NY	980,300	2,114	11	26,313	156
GAINESVILLE, FL	199,800	3,844	21	22,191	155
EUGENE-SPRINGFIELD, OR	263,200	8,022	27	28,308	140
HONOLULU, HI	816,700	2,434	14	22,844	137
SANTA FE, NM	106,200	3,655	15	22,893	130
WATERBURY, CT	211,900	0	0	24,294	123
NASHUA, NH	163,300	6,516	14	22,943	115
LANCASTER, PA	393,500	3,254	10	23,825	115
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	2,610	24	15,293	112
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,653	9	16,963	110
CHARLOTTESVILLE, VA	121,400	5,088	20	19,070	109
PORTLAND, ME	205,700	1,024	5	15,084	103
CHATTANOOGA, TN-GA	425,500	2,705	14	21,869	102
ST LOUIS, MO-IL	2,438,000	2,866	13	12,481	96
SPRINGFIELD, MA	517,800	778	8	12,617	95
NEW ORLEANS, LA	1,334,400	671	5	8,205	94

SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97</u> <u>(\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
SYRACUSE, NY	649,300	1,946	7	12,746	93
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	1,262	16	11,160	84
MONMOUTH-OCEAN, NJ	935,200	4,946	12	14,790	82
MILWAUKEE-RACINE, WI	1,552,000	1,081	6	11,114	81
LAS CRUCES, NM	123,000	1,508	4	13,398	77
LANSING-E LANSING, MI	424,800	1,733	10	10,017	76
BURLINGTON, VT	124,600	1,171	6	13,265	75
TOLEDO, OH	611,200	659	3	12,619	74
MIAMI-FT. LAUDERDALE, FL	2,912,000	4,006	12	10,614	74
LAFAYETTE-W. LAFAYETTE, IN	124,400	3,408	9	11,165	71
KANSAS CITY, MO-KS	1,517,800	2,241	9	11,367	70
NEW LONDON-NORWICH, CT-RI	259,500	2,659	7	12,019	68
WEST PALM BEACH-BOCA RATON, FL	755,600	1,909	7	12,617	67
UTICA-ROME, NY	315,400	1,824	6	11,671	65
TULSA, OK	733,500	310	4	6,763	61
STATE COLLEGE, PA	114,600	1,758	14	7,230	58
BIRMINGHAM, AL	911,000	1,043	7	8,984	58
NASHVILLE, TN	930,700	1,212	8	7,380	58
SALEM, OR	262,100	788	3	7,881	55
FITCHBURG-LEOMINSTER, MA	96,300	1,738	6	8,204	52
RENO, NV	224,600	264	3	9,561	52
SPOKANE, WA	356,900	922	3	8,075	51
PORTSMOUTH,DOVER,ROCHESTER, DE	215,000	2,641	11	7,484	50
INDIANAPOLIS, IN	1,212,600	742	3	7,483	50
GREENSBORO-WINSTON SALEM, NC	899,500	1,902	7	8,318	49
TAMPA-ST. PETE-CLEARWATER, FL	1,914,300	167	2	6,123	49
PENSACOLA, FL	337,100	1,784	7	9,095	46
LAS VEGAS, NV	569,500	1,313	6	6,576	42
OKLAHOMA CITY,OK	982,900	1,593	7	5,681	40
BLOOMINGTON, IN	101,700	300	3	7,195	39
PROVO-OREM, UT	240,500	2,250	3	7,757	39
SALINAS-SEASIDE-MONTEREY, CA	339,700	1,212	7	5,677	39



SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97 No. of Awards</u>	<u>FY83-97 (\$k)</u>	<u>FY83-97 No. of Awards</u>
DES MOINES, IA	381,300	1,443	7	4,659	38
LEXINGTON, KY	332,000	3,857	9	7,915	37
LOUISVILLE, KY-IN	962,800	1,464	6	4,973	33
RICHMOND-PETERSBERG, VA	810,200	155	2	3,634	30
OLYMPIA, WA	146,600	1,273	3	5,928	29
BINGHAMTON, NY	261,800	1,313	6	5,746	29
MEMPHIS, TN-AR-MS	959,500	508	3	3,005	28
LAWTON, OK	120,700	745	1	5,546	26
BELLINGHAM, WA	113,700	809	4	4,373	24
ATHENS, GA	141,500	0	0	2,906	24
CEDAR RAPIDS, IA	168,800	100	1	2,888	24
GREENVILLE-SPARTANBURG, SC	606,400	1,121	5	2,536	24
SOUTH BEND-MISHAWAKA, IN	241,400	145	2	2,057	22
FAYETTEVILLE-SPRINGDALE, AR	107,400	147	2	2,996	19
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	1,594	3	3,634	18
GRAND FORKS, ND	69,400	369	3	2,031	17
SAGINAW-BAY CITY-MIDLAND, MI	403,600	150	2	1,802	17
MANCHESTER, NH	145,100	0	0	3,976	16
ANCHORAGE, AK	235,000	155	2	1,878	15
CANTON, OH	400,400	183	2	1,705	15
HARRISBURG-LEBANON-CARLISLE, PA	577,300	965	3	2,569	15
TOPEKA, KS	160,800	97	1	3,527	14
ASHEVILLE, NC	170,000	0	0	1,616	14
LITTLE ROCK-N LITTLE ROCK, AR	505,600	0	0	2,038	14
KALAMAZOO, MI	217,700	75	1	1,509	13
OMAHA, NE-IA	614,300	210	3	853	13
BANGOR, ME	83,400	753	2	1,396	12
TALLAHASSEE, FL	218,000	660	2	1,783	12
ATLANTIC CITY, NJ	297,400	736	1	2,654	12
BATON ROUGE, LA	545,700	100	1	1,968	12
RAPID CITY, SD	76,900	443	3	941	11
STOCKTON-MODESTO, CA	749,300	0	0	1,505	11

SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97</u> <u>(\$k)</u>	<u>FY97</u> <u>No. of</u> <u>Awards</u>	<u>FY83-97</u> <u>(\$k)</u>	<u>FY83-97</u> <u>No. of</u> <u>Awards</u>
PITTSFIELD, MA	80,900	724	3	1,449	10
PASCAGOULA, MS	128,200	572	1	1,759	10
APPLETON-OSHKOSH-NEENAH, WI	307,500	820	2	1,820	10
COLUMBIA, SC	444,700	50	1	816	10
JACKSONVILLE-DAYTONA BEACH, FL	1,173,600	0	0	991	10
CHARLESTON, SC	485,700	70	1	935	9
GRAND RAPIDS, MI	648,800	619	4	1,021	9
ROCHESTER, MN	98,000	458	5	753	8
JACKSON, MI	144,400	174	2	1,516	8
YORK, PA	397,700	214	3	1,237	8
FLINT, MI	434,900	75	1	1,237	8
FARGO-MOOREHEAD, ND-MN	145,300	125	2	1,373	7
WICHITA, KS	470,000	0	0	1,027	7
BLOOMINGTON-NORMAL, IL	122,700	747	1	1,120	6
MEDFORD, OR	140,000	825	2	1,075	6
FORT WAYNE, IN	356,100	0	0	586	6
CASPER, WY	71,000	397	1	601	5
VICTORIA, TX	76,000	0	0	407	5
MIDLAND, TX	111,300	0	0	883	5
YAKIMA, WA	183,200	0	0	380	5
DULUTH, MN-WI	243,500	55	1	239	5
JACKSON, MS	392,000	0	0	396	5
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
READING, PA	321,000	750	1	1,368	4
AUGUSTA, GA-SC	390,000	268	3	318	4
SCRANTON, PA	725,900	0	0	660	4
BISMARCK, ND	86,000	0	0	151	3
KOKOMO, IN	101,400	0	0	179	3
ABILENE, TX	125,900	75	1	175	3
WICHITA FALLS, TX	127,100	600	1	719	3
WACO, TX	187,600	0	0	148	3
LUBBOCK, TX	224,800	200	2	250	3

SBIR AWARDS by METROPOLITAN AREAS (ordered by decreasing FY83-97 total awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY97 (\$k)</u>	<u>FY97 No. of Awards</u>	<u>FY83-97 (\$k)</u>	<u>FY83-97 No. of Awards</u>
ROCKFORD, IL	280,300	713	1	832	3
MONTGOMERY, AL	299,000	0	0	141	3
GLENS FALLS, NY	112,400	55	1	107	2
MUNCIE, IN	120,900	0	0	95	2
JOHNSTOWN, PA	254,100	0	0	100	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
REDDING, CA	133,100	0	0	49	1
LINCOLN, NE	206,100	0	0	50	1
SAVANNAH, GA	239,700	0	0	75	1
CORPUS CHRISTI, TX	363,300	0	0	49	1
SHREVEPORT, LA	364,600	0	0	37	1

## 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

## 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

## 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 SCIENCES

- 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

## **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**

**FY 97 PHASE I and PHASE II AWARDS by TECHNOLOGY AREA and AGENCY**  
(dollars in thousands)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	ED	DOA	DOC	Total
<b>1000 Computer, Information Processing, Analysis</b>											
1100 Computer and Communication Systems	190788	13586	11841	42497	5187	1097	277	2345	1189	2488	271298
1200 Information Processing and Management	90365	3963	5566	29601	1858	499	70	1773	384	847	134926
1300 Signal and Image Processing	74553	4250	5080	22934	2934	75	225	772	110	1148	112080
1400 Systems Studies	3996	417	0	950	0	0	0	0	0	50	5413
1500 Mathematical Sciences	2186	1022	64	640	288	0	0	0	0	250	4450
<b>2000 Electronics</b>											
2100 Microelectronics	77570	7007	5605	3688	4025	298	225	0	335	698	99452
2200 Electronics Device Performance	545976	77142	110372	86975	53485	4095	2444	3590	9804	4296	898180
2300 Electronic Equipment and Instrumentation	69752	6310	9722	11333	2036	387	70	50	654	798	101113
2400 Electromagnetic Radiation/Propagation	328944	34771	105886	86386	46582	3596	1046	2595	7909	2446	600141
2500 Microwave and Millimeter Wave Electronics	9881	1500	670	300	150	0	0	0	0	0	12301
2600 Optical Devices and Lasers	148849	24165	10623	22810	4907	100	504	0	220	2892	215069
<b>3000 Materials</b>											
3100 Advanced Materials	533907	75742	110711	90446	53185	4095	2824	3339	9804	4194	887949
3200 Materials Processing and Manufacturing	49868	10370	2522	3550	1565	500	520	50	694	991	70630
3300 Coatings, Corrosion and Surface Phenomena	37452	10842	4569	2295	3957	100	590	0	52	698	60553
3400 Materials Performance	10491	3670	531	4413	823	0	225	0	55	249	20458
3500 Fundamentals and Instrumentation	7135	1050	670	3509	75	0	0	50	0	100	12589
<b>4000 Mechanical Performance of Vehicles, Weapons, Facilities</b>											
4100 Hydrodynamics	169	75	69	0	0	0	0	0	0	0	313
4200 Aerodynamics	74782	4874	7571	1493	297	0	70	0	200	850	90137
4300 Acoustics	5062	786	140	950	225	98	0	0	55	100	7416
4400 Mechanical Performance of Structures and Equipment	73977	7324	6246	4368	1636	1499	295	150	55	343	95892
4500 Control	26831	2932	2697	11058	1742	0	140	50	438	392	46281
4600 Mechanical Measurements	44435	7516	3680	5763	385	298	0	50	380	949	63457
<b>5000 Energy and Conversion Use</b>											
5100 Transport Sciences	73304	16680	13423	7463	2934	1000	575	0	255	648	116262
5200 Propulsion/Combustion Technology	70054	20428	13775	6571	6858	500	1289	0	1240	1199	121913
5300 Large Scale Energy Usage	5974	6594	280	4081	1349	0	0	50	0	200	18528
5400 Energy Conversion/Electric Power	27986	7180	5326	1524	1698	0	0	0	55	100	43849

multiple technology areas assigned to awards



**FY 97 PHASE I and PHASE II AWARDS by TECHNOLOGY AREA and AGENCY**

(dollars in thousands)

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	ED	DOA	DOC	Total
<b>6000 Environment and Natural Resources</b>											
6100 Ocean Science	0	0	69	0	0	0	0	0	0	0	69
6200 Atmospheric Sciences	57483	6014	3913	3089	1817	1092	1767	0	764	899	76837
6300 Water Management	25160	10392	2809	1616	1941	0	1693	0	1294	849	45753
6400 Earth Sciences	19524	4007	1270	1498	675	0	490	249	1694	300	29705
6500 Environmental Protection	5339	825	140	1587	0	0	520	249	0	0	8660
<b>7000 Life Sciences</b>											
7100 Medical Instrumentation	37798	8665	3245	98829	1175	100	0	500	500	549	141360
7200 Biotechnology and Microbiology	17358	1949	2205	82869	2409	298	140	0	2367	350	109943
7300 Behavioral Sciences	61695	10559	2744	31893	1262	1598	210	2195	862	548	113568
7400 Physiology and Miscellaneous	4674	1574	734	8946	581	0	210	50	2737	250	19756

multiple technology areas assigned to awards

**DISTRIBUTION of FY 1997 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	63095	208203
Information Processing and Management	34565	100361
Signal and Image Processing	30652	81428
Systems Studies	1530	3884
Mathematical Sciences	1616	2834
<b>Electronics</b>		
Microelectronics	22268	77184
Electronics Device Performance	193224	704955
Electronic Equipment and Instrumentation	23412	77701
Electromagnetic Radiation/Propagation	115871	484270
Microwave and Millimeter Wave Electronics	3537	8763
Optical Devices and Lasers	49067	166002
<b>Materials</b>		
Advanced Materials	192713	695236
Materials Processing and Manufacturing	15742	54888
Coatings, Corosion and Surface Phenomena	16112	44441
Materials Performance	5512	14946
Fundamentals and Instrumentation	2156	10432
<b>Mechanical Performance of Vehicles, Weapons, Facilities</b>		
Hydrodynamics	313	0
Aerodynamics	18454	71683
Acoustics	3334	4082
Mechanical Performance of Structures and Equipment	23852	72040
Control	11425	34856
Mechanical Measurements	14607	48850
<b>Energy And Conversion Use</b>		
Transport Sciences	25807	90455
Propulsion/Combustion Technology	29875	92038
Large Scale Energy Usage	4425	14103
Energy Conversion/Electric Power	8452	35397

dollars in thousands

**DISTRIBUTION of FY 1997 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

	Phase I	Phase II
<b>Environment and Natural Resources</b>	69	0
Ocean Science		
Atmospheric Sciences	19502	57334
Water Management	12811	32942
Earth Sciences	5662	24044
Environmental Protection	870	7790
<b>Life Sciences</b>		
Medical Instrumentation	61966	79394
Biotechnology and Microbiology	30568	79375
Behavioral Sciences	26184	87384
Physiology and Miscellaneous	5194	14562

dollars in thousands

**FY 1983-87 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY (dollars in thousands)**

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	ED	DOA	DOC	Total
<b>1000 Computer, Information Processing, Analysis</b>											
1100 Computer and Communication Systems	698044	54308	80895	160737	35144	12008	456	10091	3316	6880	1062986
1200 Information Processing and Management	487308	36913	103304	155561	28118	9262	485	12883	3686	4823	843622
1300 Signal and Image Processing	400425	25035	80191	84839	19103	9539	295	2285	3393	5460	611046
1400 System Studies	102675	7793	8651	20321	2826	3498	250	1084	2262	50	153170
1500 Mathematical Sciences	86715	5001	49710	13557	10236	741	262	188	599	630	170133
<b>2000 Electronics</b>											
2100 Microelectronics	407552	42825	62325	16800	29647	1693	360	40	780	2111	564374
2200 Electronics Device Performance	1105409	240692	321591	245311	143284	14246	9187	8082	22324	13568	2124939
2300 Electronic Equipment and Instrumentation	351558	53772	82804	54463	21378	7170	2434	1877	6737	3162	587488
2400 Electromagnetic Radiation/Propagation	877013	157086	257474	150838	101794	13650	5691	5588	18460	11646	1599470
2500 Microwave and Millimeter Wave Electronics	79698	13797	14924	3595	2128	49	49	30	50	227	114546
2600 Optical Devices and Lasers	700750	105677	124225	104982	38816	5045	2035	87	2642	7479	1093639
<b>3000 Materials</b>											
3100 Advanced Materials	1302421	299264	326088	260885	160238	21470	11780	7029	26059	14118	2429917
3200 Materials Processing and Manufacturing	207230	60119	34730	23411	25327	1758	5741	119	4266	2550	365601
3300 Coatings, Corrosion And Surface Phenomena	243615	54987	45868	27314	29069	1697	4915	0	1180	2016	410761
3400 Materials Performance	125725	26252	21966	11672	13486	7470	570	27	1878	669	211087
3500 Fundamentals and Instrumentation	39841	10704	16827	31847	9888	422	1289	50	508	1165	113392
<b>4000 Mechanical Performance of Vehicles, Weapons, Facilities</b>											
4100 Hydrodynamics	9732	1249	789	0	394	97	0	0	0	259	12520
4200 Aerodynamics	281566	6950	85225	3082	3292	2287	360	0	670	1617	385049
4300 Acoustics	62274	3328	5578	3115	1170	497	0	529	105	867	77613
4400 Mechanical Performance of Structures and Equipment	331749	19146	37908	16309	9258	4579	365	280	1189	1215	422403
4500 Control	107713	19830	26288	35424	6279	2201	140	129	778	1042	200404
4600 Mechanical Measurements	155570	28965	26015	25396	4890	4062	625	168	3212	1924	251436
<b>5000 Energy and Conversion Use</b>											
5100 Transport Sciences	327310	82910	101815	47096	17563	2671	2254	0	5480	1866	590570
5200 Propulsion/Combustion Technology	298056	115141	83345	29301	22026	8064	7584	0	3792	2998	570425
5300 Large Scale Energy Usage	65584	128415	12761	24362	10341	396	626	90	1175	1174	245398
5400 Energy Conversion /Electric Power	155613	47120	39468	12343	11844	200	897	0	1272	189	268896

multiple technology areas assigned to awards

**FY 1983-97 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY (dollars in thousands)**

	DOD	DOE	NASA	HHS	NSF	DOT	EPA	ED	DOA	DOC	Total
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**6000 Environment and Natural Resources**

6100 Ocean Science	9138	2395	2374	0	298	50	0	0	0	2359	18413
6200 Atmospheric Sciences	250318	63311	71083	50128	23560	8146	20356	0	5926	5593	498859
6300 Water Management	100739	23803	25751	13375	15551	1196	12644	0	7709	2357	203464
6400 Earth Sciences	81785	25943	6780	7920	13658	1144	1769	608	7949	725	149344
6500 Environmental Protection	37241	13058	3179	3406	4242	889	13797	287	801	0	77979

**7000 Life Sciences**

7100 Medical Instrumentation	128377	26640	24936	473957	13405	2924	569	13577	3303	1524	690413
7200 Biotechnology and Microbiology	89834	28628	14008	634067	23288	1559	1632	342	15243	839	809490
7300 Behavioral Sciences	260568	35465	23008	171862	12951	7104	1999	13809	6010	1562	535626
7400 Physiology and Miscellaneous	25251	5768	14735	90575	13873	867	534	705	35110	2121	189538

multiple technology areas assigned to awards

DISTRIBUTION of FY 1983-97 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS

**Computer, Information Processing, Analysis**      **Phase I**    **Phase II**

Computer and Communication Systems	311756	751210
Information Processing and Management	239045	604577
Signal and Image Processing	175823	435223
Systems Studies	41215	111855
Mathematical Sciences	42931	127202

**Electronics**

Microelectronics	156948	407426
Electronics Device Performance	752777	1371562
Electronic Equipment and Instrumentation	159173	428315
Electromagnetic Radiation/Propagation	551493	1047977
Microwave and Millimeter Wave Electronics	28999	85547
Optical Devices and Lasers	305682	787957

**Materials**

Advanced Materials	846132	1583785
Materials Processing and Manufacturing	108868	256734
Coatings, Corrosion and Surface Phenomena	126723	284038
Materials Performance	59502	151584
Fundamentals And Instrumentation	31629	81762

**Mechanical Performance of Vehicles, Weapons, Facilities**

Hydrodynamics	4493	8027
Aerodynamics	98884	286165
Acoustics	23090	54523
Mechanical Performance of Structures and Equipment	126250	296153
Control	55815	144589
Mechanical Measurements	75061	176375

DISTRIBUTION of FY 1983-97 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS

Energy And Conversion Use	Phase I	Phase II
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Transport Sciences	165771	424799
Propulsion/Combustion Technology	172889	397536
Large Scale Energy Usage	60833	184465
Energy Conversion/Electric Power	73810	195086

Environment & Natural Resources
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Ocean Science	3930	14484
Atmospheric Sciences	136852	362008
Water Management	68864	134600
Earth Sciences	46131	103214
Environmental Protection	25081	52898

Life Sciences
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Medical Instrumentation	224899	465514
Biotechnology and Microbiology	260651	548840
Behavioral Sciences	155436	380190
Physiology and Miscellaneous	61143	128395