

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 1996

Office of the Administrator

I am pleased to provide you with the 14th 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 1996, small business concerns received over \$916 million in obligated funding and successfully competed for 4,032 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

OVERVIEW

This is the 14th in a series of annual reports on the Small Business Innovation Research (SBIR) program. The Small Business Administration (SBA) 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 1996.

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 1996 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 14 years, the SBIR program has directed over 41,000 awards worth \$6.5 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 187 solicitations by the participating Federal agencies, 261,421 proposals have been received from small high-tech firms. These proposals have resulted in 41,351 awards worth \$6.5 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 4 years of receiving its Phase II award.

Another encouraging statistic involves small firms headed by minorities. In FY 1996 minority/disadvantaged-owned firms received 481 awards.

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.

NTRODUCTION

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 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 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 FY 1996 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)

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 1 or 2 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 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

- 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 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.
- 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.

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.

PROGRAM 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. 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 1996, 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 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 1996, 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 1996 SBIR Agency Obligations Summary (dollars in thousands)

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NSF	TOTAL
Agency Extramural Budget	452,928	290,455	22,672,581	3,110,400	255,050	166,119	240,358	9,415,868	5,835,000	1,978,000	44,416,759
Agency SBIR Budget	9,059	5,809	453,461	62,207	5,101	3,322	4,807	188,317	116,700	41,400	890,183
Dollars Obligated	9,059	6,083	479,280	62,468	6,728	3,280	4,789	189,219	113,957	41,437	916,300
Percent of SBIR to Extramural Budget	2.00%	2.09%	2.11%	2.01%	2.64%	1.97%	1.99%	2.01%	1.95%	2.09%	2.06%
Deficit/Surplus	0	274	25,819	261	1,627	-42	-18	902	-2,743	37	26,117

Fiscal Year 1996 Award Profile (dollars in thousands)

	DOA	DOC	DOD	DOE	DOT	ED	EPA	HHS	NASA	NSF	TOTAL
Total Phase I Awards	63	38	1,372	173	30	18	27	560	309	251	2,841
Minority/Disadvantaged Phase I Awards	7	5	197	26	1	1	4	23	47	26	337
Total Phase II Awards	33	21	613	71	12	11	13	188	156	73	1,191
Minority/Disadvantaged Phase II Awards	4	4	79	8	3	0	3	7	22	14	144
Total Phase I Dollars Awarded (\$)	3,113	1,895	110,388	12,941	2,791	712	1,864	54,117	21,245	19,873	228,939
Minority/Disadvantaged Phase I Dollars (\$)	398	248	15,461	1,945	99	40	280	2,244	3,195	1,944	25,854
Total Phase II Dollars Awarded (Obligations)	5,946	4,188	330,893	49,527	3,937	2,569	2,925	134,182	90,055	21,564	645,786
Minority/Disadvantaged Phase II Dollars (\$)	695	800	47,473	5,968	1,192	0	675	4,933	12,966	4,451	79,153
Average Amount for Phase I Awards (\$)	49	50	80	75	93	40	69	97	69	79	81

Fiscal Year 1996 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	2	1	1	12
Number of Research Topics in Solicitations	9	15	668	41	25	7	11	206	17	27	1,026
Number of Copies distributed	16,000	4,000	60,000	15,000	10,000	1,500	0	29,504	25,000	60,000	221,004
Number of Phase I Proposals Received	427	275	7,920	1,437	340	83	338	3,332	2,367	1,859	18,378
Number of Phase II Proposals Received	60	65	1,076	196	17	25	41	608	369	221	2,678
Number of Phase I Awards	63	38	1,372	173	30	18	27	560	309	251	2,841
Number of Phase II Awards	33	21	613	71	12	11	13	188	156	73	1,191

*Dollars obligated can include modifications
to previous years' awards: DOD 38,000K
HHS \$921K, NASA 2,637K.*

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 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".

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 1996 Summary

The 10 agencies participating in the SBIR program in FY 1996 released a total of 12 Phase I solicitations. The Department of Defense released two solicitations; the Department of Health and Human Services released two solicitations; the other eight agencies released one each.

In response, the participating agencies received 18,378 Phase I proposals from small high-tech enterprises. The agencies subsequently distributed a total of 2,841 Phase I awards, which represented 15.4 percent of the proposals received. A total of 2,678 Phase II proposals were received, resulting in 1,191 new awards. These awards represented 44.5 percent of all Phase II proposals received. The combined number of Phase I and Phase II proposals received in FY 1996 was 21,056. There were 4,032 awards, representing 19.1 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. (See Table 2 immediately following)

**Table 2: Number of SBIR Awards –
FY 1983 through FY 1996**

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	<u>2,841</u>	<u>1,191</u>	<u>4,032</u>
Total	30,750	10,601	41,351

There have been year-to-year increases in the dollar value of awards. During FY 1996, the 10 participating SBIR agencies awarded \$916.3 million through the SBIR program, which represented a 6 percent increase over the approximately \$864.6 million obligated in FY 1995. FY 1996 Phase I awards were worth \$228.9 million; Phase II awards, \$645.8 million. The overall total included \$42 million in modifications to non-FY 1996 awards. (See Table 3)

In FY 1996, minority/disadvantaged-owned firms received 337 Phase I awards worth \$25.9 million and 1,191 Phase II awards worth \$79.2 million.

In awarding 2-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 1996.

**Table 3: Value of SBIR Awards--
FY 1983 through FY 1996
(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*
Total	\$1,788.7	\$4,462.2	\$6,439.6*

FY 1997 EST: - \$1 billion
*includes award modifications

As in prior years, the SBA continued in FY 1996 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 6 months and beyond 6 months of the closing date of its solicitation announcement. Table 4, (immediately following) provides this information for FY 1996.

Table 4: FY 1996: Phase I Time Frame

Agency	Total FY96	No. within 6	Number More Than
	Phase I Awards	Months of Solicitation Close	6 Months After Solicitation Close
DOA	63	0	63
DOC	38	38	0
DOD	1,372	825	547
DOE	173	173	0
DOT	30	27	3
ED	18	18	0
EPA	27	0	27
HHS	506	194	312
NASA	309	296	13
NSF	251	0	251
TOTAL	2,281	1,377	904

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 \$6.5 billion has been awarded to small businesses.
- Minority/disadvantaged-owned firms have received 5,045 awards, representing 12 percent of all SBIR awards; the value of these awards has totaled 732.7 million, which is 11 percent of all dollars awarded under the program.
- The participating agencies received 223,774 Phase I proposals and 24,461 Phase II proposals in response to 187 SBIR solicitations. There has been a total of 30,750 Phase I and 10,601 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 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 1996, 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 1996

(dollars in thousands)

<i>Agency</i>	<i>Agency % Goal FY 96</i>	<i>Total R & 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	NR	1,271,370	55,135	NR	NR	NR	NR
DOC	23.5	640,023	150,457	144,088	22.5	1,799	0.3
DOD	NR	NR	NR	NR	NR	NR	NR
DOE	1.5	5,398,513	80,438	64,691	1.2	10,427	0.2
DOI	0.3	598,300	1,795	637	0.1	0	0
DOT	11	553,000	44,240	99,874	18	95,700	17
ED	NR	NR	NR	NR	NR	NR	NR
EPA	NR	33,600	NR	NR	NR	23,100	NR
HHS	2.1	11,033,094	227,282	485,271	4.4	46,023	0.4
NASA	NR	NR	NR	NR	NR	NR	NR
NSF	1.2	2,129,800	25,340	25,470	1.2	6,380	0.3
NRC	2.8	59,416	1,663	825	1.4	278	1.4
AID	NR	NR	NR	NR	NR	NR	NR
DOJ	NR	NR	NR	NR	NR	NR	NR
DVA	0.4	307,361	1,352	1,083	0.4	841	0.3
SI	8	14,883	1,191	1,131	7.6	0	0
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 1996 (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 Copntracts 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	96	9,059	NR	NR	1	4,220	1069	336,896	1,266	60,167
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	105	64,691	NR	NR	NR	NR	211	860,466	NR	NR	NR	NR
DOI	53	426	NR	NR	NR	NR	23	459	NR	NR	NR	NR
DOT	1,026	172,251	0	0	0	0	1,590	142,161	261	88,445	15	28,810
ED	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
EPA	67	13,600	NR	NR	NR	NR	23	12,800	NR	NR	NR	NR
HHS	201,965	1,536,673	940	177,778	NR	NR	201,813	1,543,462	82	11,278	54	12,897
NASA	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
NSF	99	13,480	661	53,390	NR	NR	177	157,940	18,699	2,970,980	NR	NR
NRC	24	1,532	0	0	0	0	41	5,842	22	874	2	400
AID	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DOJ	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
DVA	3	1,080	NR	NR	NR	NR	3	768	NR	NR	NR	NR
SI	1	1	NR	NR	NR	NR	1	10	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

UCCESS STORIES

SDL, INC. San Jose, California

SDL, Inc., is a rapidly growing company specializing in semiconductor lasers, fiber optics, and optoelectronics. SDL serves a variety of markets including communications, printing, data storage, medicine, and optical sensors. From 1992 through 1996, SDL participated fairly extensively in the SBIR program through the following Federal agencies: The Department of Defense, NASA, the National Science Foundation and the Department of Commerce. These SBIR funded projects have enabled the firm to develop new products for many of these markets.

Examples of such SBIR supported projects include ones which enabled SDL to develop and market the world's highest power wavelength tunable and wavelength stabilized semiconductor lasers. In 1993, SDL produced its first commercial tunable laser product. At the top of this product line is the world's highest power tunable semiconductor laser. This high-power tunable semiconductor laser replaces a titanium sapphire laser formerly used for the purpose and at a fraction of the cost and size. It has applications which include absorption and fluorescence spectroscopy, non linear frequency conversion, chemical analysis, remote sensing, and characterization of semiconductor materials.

SDL also now offers the world's highest power semiconductor laser used for Ramen spectroscopy. This laser allows the determination of parts per million of chemical constituents in a pharmaceutical or chemical manufacturing process line. Before the invention of this small, low cost laser, such on-line control of manufacturing processes was not possible.

Another SBIR program helped SDL to develop a high power visible semiconductor laser which is now being used to treat certain types of cancer. The treatment is non-invasive in that a tiny optical fiber can position the laser light directly onto the cancerous tumor. These lasers can also be used in monitoring airborne pollutants.

Development and commercialization of these types of products has supported very rapid growth in the firm. In 1995, for example, SDL's sales grew by 53 percent; sales grew 63 percent in 1996. SDL now provides employment for approximately 550 persons. Therefore, since November 1996, the firm has actually become too large to remain eligible for new SBIR participation. However, there can be little doubt that the momentum SDL gained from these projects undertaken with SBIR support has provided a strong technical and marketing team which should continue to allow corporate growth for years to come.

Reliable Biopharmaceutical Corporation St. Louis, Missouri

Reliable Biopharmaceutical Corporation, founded in 1968, is a manufacturer of biochemicals, bulk pharmaceuticals and enzymes for research and pharmaceutical use. The company was awarded Phase I and Phase II SBIR grants from the Department of Health and Human Services for the large scale "Isolation of Bulk Deoxynucleosides for AIDS Drugs" in 1989 and 1990 respectively. The grant aided the production of four basic deoxynucleosides which are used to synthesize antisense therapeutics for AIDS, cancer and other viral diseases.

Commercialization of this project has made Reliable the sole large-scale producer of deoxynucleosides in North America and the only competition offered in this country and elsewhere to the Japanese.

A number of significant spin-off products and processes based on the original work have been made. One of these was Adenosine Deaminase (ADA). This enzyme is used to convert Dideoxyadenosine (ddA) to Dideoxyinosine (ddI) which is the pharmaceutical product second only to AZT in treating AIDS. As HIV patients switched to combination therapy using ddI and protease inhibitors, the use of ADA (for ddI conversion) has increased.

The second spin-off item was the purification technology. The first generation of oligonucleotide therapeutics (antisense & ribozymes) currently in clinicals (up to Phase III) contain only deoxynucleosides. The second generation under development contains modified ribonucleosides as well as deoxynucleosides. The purification technology and analytical systems developed during the SBIR researched enabled the company to become the leading producer of these second generation molecules.

Reliable currently provides employment to 55 persons. The products generated directly from the SBIR grant have accounted for over 22 new full time jobs at Reliable. The product mix represented over \$2 million in sales in 1996 and is projected to double each of the next 2 years. As these AIDS and anti-cancer drugs go from clinical trials to full FDA approval, the commercial potential for new jobs and product sales are vast.

The entire area of operation, started with the SBIR funding from HHS, is more than just an economic success story for Reliable. The impact of the large scale isolation of deoxynucleosides on the oligonucleotide therapeutics industry is phenomenal. The role of ADA in the production of the current AIDS drugs on a commercial scale is significant because it has lowered the cost of AIDS treatments and made a whole new second generation possible.

Reliable takes great pride in its success in the SBIR program both for the jobs it has created and also for the therapeutic drugs it helps produce.

Sorbent Technologies Corporation Twinsburg, Ohio

Sorbent Technologies Corporation exemplifies the type of entrepreneurial technology company that the SBIR program was designed to leverage for the public benefit. The growing Ohio environmental company has used SBIR Phase I and Phase II awards to successfully develop, prototype, scale-up, and demonstrate a number of next-generation air pollution control technologies for the Environmental Protection Agency, Air Force, NASA, National Science Foundation, and Department of Energy.

Numerous Sorbent Technologies SBIR projects have led to innovative, full-scale systems:

- One NSF SBIR project modeled the sulfation of large composite sorbents in a duct-injection application. With additional investments from Sorbent Technologies and the State of Ohio, the new "Fluesorbent" acid rain control technology was then tested on a slipstream from an actual power plant. Now, in a \$6.5 million project, a permanent, full-scale Fluesorbent unit is going to be installed on two boilers at an Ohio heating plant.
- New mercury emission rules were recently set for municipal and medical waste incinerators and mercury limits are currently being considered for coal-fired power plants. With financial assistance from EPA SBIR grants, Sorbent Technologies has developed a unique elemental mercury control technology and is planning an Army incinerator installation later this year.
- Sorbent Technologies SBIR projects funded by the Air Force have resulted in the first air-pollution-control system ever installed on a

jet-engine test cell. Such cells are used to test-fire airplane engines after maintenance activities.

The company also has a number of other innovative air pollution control technologies at earlier stages of development. These successful SBIR projects have helped Sorbent gain investor attention, including a large equity investment by Global Environment Fund.

Sorbent Technologies' activities have already seen significant growth: The company is also looking for large corporation partners to assist in commercializing its technologies.

Memry Corporation Brookfield, Connecticut

Memry Corporation was incorporated in Delaware in 1981 and following its early organization and staffing, initiated its research and development programs in 1983. Over the next 13 years, the company received 16 Phase I and Phase II SBIR awards from HHS, NASA and the Air Force. The topics range from Agriculture, Atomic Energy, Space Craft, Mechanical Fasteners, Gas Turbine Controls, Superconducting, Vibration and Acoustic control, Electrical Devices, Shape Memory Alloy Development and Orthodontics. This diverse range of engineering research and development has provided Memry with the technology base which has made possible the design and manufacture of a variety of successful commercial products.

The company has developed a series of anti-scald valves which provide protection against accidental scalding from hot water in baths, sinks and showers in domestic and commercial housing and buildings. In the area of domestic hot water usage, Memry has created a unique shape memory valve system for electric hot water heating systems which provides improved electrical energy utilization benefiting utility load management and reducing consumer costs.

Studies of unique fasteners under SBIR programs has lead to the

development of a successful technique for providing diesel engine injector manufacturers with a fastener which has markedly improved reliability.

A new alloy was developed under NIH sponsorship, which provides orthodontists with a versatile method of teeth straightening, significantly reducing the time required for this procedure.

In recent years, the medical profession has recognized the unique properties of shape memory alloy for a wide range of instruments. In particular there is interest in devices which serve the rapidly growing field of minimally invasive surgical procedures. Memry Corporation has developed metal processing and fabrication techniques which make possible a wide variety of stents, a field projected to grow to a \$10 billion worldwide market with in the next 5 years.

Other products which have been created using shape memory technology include sports equipment, devices used in women's apparel, and antennas for mobile phones.

The company is an international leader in the field, and has, in a decade, grown to a \$15 million company with facilities in Connecticut and California. The recent development of microbore shape memory alloy tubing has made possible revolutionary medical procedures.

DISTRIBUTION OF SBIR AWARDS

The maps on the following pages show the distributions of FY 1996 SBIR awards (Phase I plus Phase II) by state. For a more detailed look at the geographical distribution of SBIR awards, the amount of funding by metropolitan area (as defined by the Census Bureau) is shown in Exhibit 1. The 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 1996 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 in the past years and also in FY 96 go to large metropolitan areas. However, small towns and rural settings are major participants in the SBIR program. In Exhibit 1, over \$140 million were awarded to communities with populations under 125,000. These communities also received 130 awards in FY 96 with an average of 100 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 96.

The metropolitan areas were also ranked by total SBIR funding, fiscal 1983-96. The top 50 areas are shown in Exhibit 2. Large metropolitan areas dominate the ranking: 16 of the first 25 have more than one million in population. The ranking is not very different from last year. The biggest gains were rendered by Cincinnati-Hamilton OH, (from 71st place to 61st place); Nashua,

NH (from 67th place to 57th place), Charlotte-Gastonia-Rock Hill, NC (from 123rd place to 111th place) and Anchorage, AK (from 130th place to 116th place).

Lastly, the metropolitan areas were ranked by total number of cumulative awards. In this Exhibit (#3), localities that are not part of a Metropolitan Statistical Area (generally with populations less than 500,000) now rank 2nd in total SBIR awards received. Many of the communities with a large number of SBIR awards, are located near major universities or Government laboratories.

Technology investment policies followed SBIR participating agencies are reflected in the amount of funding for awards made in various technology areas. Those areas are described and listed in exhibit 4.

Exhibit 5 summarizes, by participating agency, the dollar amount of FY 1996 funding made in each technology area. The accompanying graph in Exhibit 6 illustrates the FY 1996 technology distribution for all agencies combined. Exhibits 7 and 8 show corresponding distributions for the entire program to date - that is, fiscal years 1983-96.

Once again Advanced Materials received the most funds, with Electronics Device Performance and Electromagnetic Radiation/Propagation showing significant increases in funding in FY 1996. Advanced Materials and Electronic Device Performance have now surpassed \$1 billion in funding, with Advanced Materials continuing to lead all other technology areas in funding in the SBIR program.

ADMINISTRATIVE

ISSUES

NRC Leaves Program

During FY 1996 the Nuclear Regulatory Commission (NRC) notified SBA that its extramural R&D funding had been reduced far below the legislated \$100 million threshold for SBIR and was likely to remain at low levels in the years ahead. They have indicated that, because of this, they will phase out of the program. They are funding the completion of present SBIR projects but are not initiating new projects.

Publications Update

During FY 1996, 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 1996 in Washington, DC; Salt Lake City, UT and Dallas, TX.

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 of Technology**

Total SBIR Awards for Fiscal Year 96

State	Phase 1 Awards	Phase 1 \$	Phase 2 Awards	Phase 2 \$	Total Awards	Total \$
Alabama	45	3,557	29	16,191	74	19,748
Alaska	3	189	2	600	5	789
Arizona	76	5,999	16	8,342	92	14,341
Arkansas	2	145	0	0	2	145
California	644	51,836	262	157,895	906	209,731
Colorado	112	8,852	47	25,515	159	34,367
Connecticut	72	5,682	39	23,162	111	28,844
Delaware	9	694	7	4,111	16	4,805
District of Columbia	8	647	1	474	9	1,121
Florida	63	4,938	24	13,139	87	18,077
Georgia	23	1,972	3	1,301	26	3,273
Hawaii	8	652	6	3,486	14	4,138
Idaho	4	271	1	205	5	476
Illinois	38	3,003	10	8,433	48	11,436
Indiana	17	1,291	6	2,933	23	4,224
Iowa	4	284	1	190	5	474
Kansas	6	376	1	600	7	976
Kentucky	3	296	4	2,336	7	2,632
Louisiana	8	599	3	1,693	11	2,292
Maine	4	338	3	1,409	7	1,747
Maryland	112	9,225	49	27,332	161	36,557
Massachusetts	440	36,243	187	112,129	627	148,372
Michigan	50	3,924	24	13,038	74	16,962
Minnesota	41	3,251	28	15,711	69	18,962
Mississippi	7	526	1	599	8	1,125
Missouri	10	747	0	0	10	747
Montana	6	411	4	1,184	10	1,595
Nebraska	2	120	0	0	2	120
Nevada	6	445	2	961	8	1,406
New Hampshire	32	2,544	20	11,322	52	13,866

All \$ amounts in thousands

Sequence: State Name

**Small Business Administration
Office of Technology**

Total SBIR Awards for Fiscal Year 96

State	Phase 1 Awards	Phase 1 \$	Phase 2 Awards	Phase 2 \$	Total Awards	Total \$
New Jersey	99	7,955	35	19,611	134	27,566
New Mexico	56	4,330	21	13,663	77	17,993
New York	125	9,962	57	33,354	182	43,316
North Carolina	28	2,431	10	5,914	38	8,345
North Dakota	2	100	1	750	3	850
Ohio	73	5,900	41	25,088	114	30,988
Oklahoma	9	811	1	740	10	1,551
Oregon	43	3,565	18	10,513	61	14,078
Pennsylvania	102	7,975	31	17,028	133	25,003
Rhode Island	7	532	2	1,650	9	2,182
South Carolina	9	654	2	825	11	1,479
South Dakota	3	248	3	700	6	948
Tennessee	22	1,747	14	8,715	36	10,462
Texas	111	8,878	46	23,592	157	32,470
Utah	36	2,845	9	5,554	45	8,399
Vermont	8	684	5	2,972	13	3,656
Virginia	155	12,370	73	43,360	228	55,730
Washington	66	5,410	32	15,475	98	20,885
West Virginia	4	268	0	0	4	268
Wisconsin	23	1,791	10	5,888	33	7,679
Wyoming	5	381	0	0	5	381

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>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
NEW YORK AREA	15,529,300	37,251	139	230,304	1,450
LOS ANGELES AREA	13,074,800	79,839	335	548,407	3,541
CHICAGO-LAKE COUNTY	7,381,400	8,477	31	78,117	524
PHILADELPHIA AREA	5,697,200	32,087	135	224,912	1,436
BAY AREA (SF)	5,534,200	71,106	321	547,134	3,534
DETROIT-ANN ARBOR, MI	4,600,700	14,851	58	87,651	566
BOSTON,LAWRENCE,SALEM,LOWEL	4,055,700	136,404	564	911,716	5,751
DALLAS-FT.WORTH AREA	3,655,300	5,490	17	43,789	280
HOUSTON,GALVESTON, TX	3,634,300	9,192	42	63,087	440
WASHINGTON,DC-MD-VA	3,565,000	61,361	263	494,284	3,316
MIAMI-FT.LAUDERDALE, FL	2,912,000	455	5	6,608	62
CLEVELAND-AKRON AREA	2,765,600	8,164	30	40,042	251
ATLANTA, GA	2,560,500	2,668	23	34,843	256
ST LOUIS,MO-IL	2,438,000	431	6	9,615	83
PITTSBURGH-BEAVR VALLEY, PA	2,316,100	5,941	37	38,557	277
MINNEAPOLIS-ST PAUL,MN-WI	2,295,200	18,589	67	87,849	583
SEATTLE-TAKOMA AREA	2,284,400	17,065	79	127,245	831
BALTIMORE, MD	2,280,000	12,808	60	81,591	576
SAN DIEGO, CA	2,201,300	40,943	178	272,691	1,773
TAMPA-ST PETE-CLEARWATER, FL	1,914,300	1,418	3	5,956	47
PHOENIX, AZ	1,900,200	3,240	22	24,956	208
DENVER-BOULDER-LONGMONT, CO	1,847,400	27,877	128	184,816	1,232
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	4,266	12	12,683	88
MILWAUKEE-RACINE, WI	1,552,000	1,270	5	10,033	75
KANSAS CITY,MO-KS	1,517,800	929	6	9,126	61
NEW ORLEANS, LA	1,334,400	519	5	7,534	89
NORFOLK-VA BEACH-NEWPORT NE	1,309,500	4,514	16	24,983	154
COLUMBUS, OH	1,299,400	2,990	13	22,530	168
SACRAMENTO, CA	1,291,400	4,216	15	21,491	154

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
SAN ANTONIO, TX	1,276,400	4,821	19	22,743	154
INDIANAPOLIS, IN	1,212,600	1,102	3	6,741	47
BUFFALO-NIAGARA AREA	1,181,600	6,080	30	50,544	306
JACKSONVILLE+DAYTONA BEACH, FL	1,173,600	0	0	991	10
PORTLAND, OR	1,152,800	4,916	16	23,504	140
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,252	10	25,312	163
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	845	4	2,040	15
SALT LAKE CITY-OGDEN, UT	1,041,400	6,551	38	77,643	561
OKLAHOMA CITY, OK	982,900	273	3	4,088	33
ROCHESTER, NY	980,300	2,825	14	24,199	145
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	4,740	28	59,448	401
LOUISVILLE, KY-IN	962,800	140	2	3,509	27
MEMPHIS,TN-AR-MS	959,500	299	3	2,497	25
MIDDLESEX-SOMMERSET, NJ	950,100	4,838	31	36,311	268
MONMOUTH-OCEAN, NJ	935,200	1,438	9	9,844	70
DAYTON-SPRINGFIELD, OH	933,500	13,605	51	93,041	559
NASHVILLE, TN	930,700	1,884	5	6,168	50
BIRMINGHAM, AL	911,000	1,602	6	7,941	51
GREENSBORO-WINSTON SALEM, NC	899,500	1,054	6	6,416	42
ORLANDO, FL	898,400	2,123	17	33,397	222
ALBANY-SCHENECTADY, NY	843,600	4,635	28	37,296	244
HONOLULU, HI	816,700	4,138	14	20,410	123
RICHMOND-PETERSBURG, VA	810,200	215	3	3,479	28
WEST PALM BEACH-BOCA RATON, FL	755,600	1,506	7	10,708	60
STOCKTON+MODESTO, CA	749,300	97	1	1,505	11
TULSA, OK	733,500	940	3	6,453	57
AUSTIN, TX	726,400	6,443	38	45,843	301
SCRANTON, PA	725,900	0	0	660	4
ALLENTOWN-BETHLEHEM,PA-NJ	656,800	298	4	9,898	68
RALEIGH-DURHAM, NC	650,600	6,093	27	56,616	390
SYRACUSE, NY	649,300	987	4	10,800	86

All \$ amounts in thousands

EXHIBIT ONE

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
GRAND RAPIDS, MI	648,800	60	1	402	5
OMAHA, NE-IA	614,300	0	0	643	10
TOLEDO, OH	611,200	2,458	6	11,960	71
GREENVILLE-SPARTANBURG, SC	606,400	459	6	1,415	19
TUCSON, AZ	602,400	10,894	67	50,148	364
NEW HAVEN-MERIDEN+MIDDLETON	596,700	11,503	44	66,090	390
KNOXVILLE, TN	591,100	3,658	19	44,510	294
HARRISBURG-LEBANON-CARLISLE, PA	577,300	40	1	1,604	12
LAS VEGAS, NV	569,500	210	3	5,263	36
EL PASO, TX	561,500	0	0	100	2
BATON ROUGE, LA	545,700	0	0	1,868	11
SPRINGFIELD, MA	517,800	2,449	11	11,839	87
YOUNGSTOWN, OH	510,000	0	0	100	2
LITTLE ROCK-N LITTLE ROCK, AR	505,600	75	1	2,038	14
CHARLESTON, SC	485,700	225	1	865	8
ALBUQUERQUE, NM	474,400	14,137	58	97,864	629
WICHITA, KS	470,000	0	0	1,027	7
COLUMBIA, SC	444,700	120	2	766	9
FLINT, MI	434,900	0	0	1,162	7
CHATTANOOGA, TN	425,500	4,641	9	18,964	88
LANSING-E LANSING, MI	424,800	846	9	8,284	66
WORCESTER, MA	407,800	2,884	22	25,004	174
SAGINAW-BAY CITY-MIDLAND, MI	403,600	165	2	1,652	15
CANTON, OH	400,400	120	2	1,522	13
YORK, PA	397,700	0	0	1,023	5
LANCASTER, PA	393,500	1,555	6	20,571	105
JACKSON, MS	392,000	70	1	396	5
AUGUSTA, GA	390,000	0	0	50	1
DES MOINES, IA	381,300	260	2	3,216	31
COLORADO SPRINGS, CO	380,400	6,527	31	33,585	192
SHREVEPORT, LA	364,600	0	0	37	1

All \$ amounts in thousands

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 ____(\$k)</u>	<u>FY83-96 No. of Awards</u>
CORPUS CHRISTI, TX	363,300	0	0	49	1
MELBOURNE-TITUSVILLE-PALM BEACH, FL	361,200	4,586	24	39,161	242
SPOKANE, WA	356,900	2,082	7	7,153	48
FORT WAYNE, IN	356,100	170	2	586	6
MADISON, WI	344,900	6,239	26	27,334	160
SALINAS-SEASIDE-MONTEREY, CA	339,700	447	6	4,465	32
SANTA BARBARA-SANTA MARIA, CA	339,400	9,883	40	60,959	369
PENSACOLA, FL	337,100	2,517	5	7,311	39
LEXINGTON, KY	332,000	837	3	4,058	28
READING, PA	321,000	0	0	618	3
UTICA-ROME, NY	315,400	1,548	5	9,847	59
APPLETON-OSHKOSH-NEENAH, WI	307,500	70	1	1,000	8
MONTGOMERY, AL	299,000	0	0	141	3
ATLANTIC CITY, NJ	297,400	96	1	1,918	11
ROCKFORD, IL	280,300	69	1	119	2
EUGENE-SPRINGFIELD, OR	263,200	3,937	21	20,284	113
SALEM, OR	262,100	604	4	7,093	52
BINGHAMTON, NY	261,800	550	2	4,433	23
NEW LONDON-NORWICH, CT	259,500	2,562	7	9,360	61
POUGHKEEPSIE, NY	256,800	3,197	14	20,657	163
JOHNSTOWN, PA	254,100	70	1	100	2
DULUTH, MN	243,500	0	0	184	4
SOUTH BEND-MISHAWAKA, IN	241,400	251	3	1,912	20
PROVO-OREM, UT	240,500	1,781	6	5,507	36
SAVANNAH, GA	239,700	0	0	75	1
ANCHORAGE, AK	235,000	789	5	1,723	13
HUNTSVILLE, AL	233,700	17,087	62	93,700	580
ROANOKE, VA	224,900	10,488	40	48,331	308
LUBBOCK, TX	224,800	0	0	50	1
RENO, NV	224,600	1,126	4	9,297	49
TALLAHASSEE, FL	218,000	668	3	1,123	10

All \$ amounts in thousands

EXHIBIT ONE

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
KALAMAZOO, MI	217,700	50	1	1,434	12
PORTSMOUTH,DOVER,ROCHESTER	215,000	194	3	5,218	40
WATERBURY,CT	211,900	0	0	24,294	123
LINCOLN, NE	206,100	0	0	50	1
PORTLAND, ME	205,700	1,000	3	14,060	98
GAINESVILLE, FL	199,800	3,105	15	18,347	134
WACO, TX	187,600	0	0	148	3
YAKIMA, WA	183,200	0	0	380	5
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,713	13	14,310	101
ASHEVILLE, NC	170,000	331	1	1,616	14
CEDAR RAPIDS, IA	168,800	214	3	2,788	23
NASHUA, NH	163,300	7,217	25	16,427	101
TOPEKA, KS	160,800	0	0	3,430	13
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
OLYMPIA, WA	146,600	0	0	4,655	26
FARGO-MOOREHEAD,ND-MN	145,300	800	2	1,248	5
MANCHESTER, NH	145,100	500	1	3,976	16
JACKSON, MI	144,400	0	0	1,342	6
ATHENS, GA	141,500	80	1	2,906	24
MEDFORD, OR	140,000	100	1	250	4
REDDING, CA	133,100	0	0	49	1
PASCAGOULA, MS	128,200	167	2	1,187	9
WICHITA FALLS, TX	127,100	70	1	119	2
ABILENE, TX	125,900	0	0	100	2
BURLINGTON, VT	124,600	2,139	5	12,094	69
LAFAYETTE-W LAFAYETTE, IN	124,400	1,545	5	7,757	62
LAS CRUCES, NM	123,000	1,612	6	11,890	73
BLOOMINGTON-NORMAL, IL	122,700	177	3	373	5
CHARLOTTESVILLE, VA	121,400	3,860	14	13,982	89
MUNCIE, IN	120,900	0	0	95	2
BRYAN-COLLEGE STATION, TX	120,800	6,854	38	22,520	166

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

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
LAWTON, OK	120,700	338	4	4,801	25
STATE COLLEGE, PA	114,600	1,132	6	5,472	44
BELLINGHAM, WA	113,700	408	4	3,564	20
GLENS FALLS, NY	112,400	0	0	52	1
MIDLAND, TX	111,300	0	0	883	5
FAYETTEVILLE-SPRINGDALE, AR	107,400	70	1	2,849	17
SANTA FE, NM	106,200	2,115	13	19,238	115
BLOOMINGTON, IN	101,700	99	1	6,895	36
KOKOMO, IN	101,400	79	1	179	3
ROCHESTER, MN	98,000	0	0	295	3
FITCHBURG-LEOMINSTER, MA	96,300	1,121	6	6,466	46
LA CROSSE, WI	94,100	0	0	39	1
ELMIRA, NY	90,500	2,994	16	24,868	151
BISMARCK, ND	86,000	0	0	151	3
BANGOR, ME	83,400	172	2	643	10
PITTSFIELD, MA	80,900	70	1	725	7
RAPID CITY, SD	76,900	149	2	498	8
VICTORIA, TX	76,000	0	0	407	5
CASPER, WY	71,000	61	1	204	4
GRAND FORKS, ND	69,400	50	1	1,662	14

All \$ amounts in thousands

EXHIBIT TWO

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
BOSTON,LAWRENCE,SALEM,LOWEL, MA	4,055,700	136,404	564	911,716	5,751
LOS ANGELES AREA	13,074,800	79,839	335	548,407	3,541
BAY AREA (SF)	5,534,200	71,106	321	547,134	3,534
WASHINGTON,DC-MD-VA	3,565,000	61,361	263	494,284	3,316
SAN DIEGO, CA	2,201,300	40,943	178	272,691	1,773
NEW YORK AREA	15,529,300	37,251	139	230,304	1,450
PHILADELPHIA AREA	5,697,200	32,087	135	224,912	1,436
DENVER-BOULDER-LONGMONT, CO	1,847,400	27,877	128	184,816	1,232
SEATTLE-TAKOMA AREA	2,284,400	17,065	79	127,245	831
ALBUQUERQUE, NM	474,400	14,137	58	97,864	629
HUNTSVILLE, AL	233,700	17,087	62	93,700	580
DAYTON-SPRINGFIELD, OH	933,500	13,605	51	93,041	559
MINNEAPOLIS-ST PAUL, MN-WI	2,295,200	18,589	67	87,849	583
DETROIT-ANN ARBOR, MI	4,600,700	14,851	58	87,651	566
BALTIMORE, MD	2,280,000	12,808	60	81,591	576
CHICAGO-LAKE COUNTY	7,381,400	8,477	31	78,117	524
SALT LAKE CITY-OGDEN, UT	1,041,400	6,551	38	77,643	561
NEW HAVEN-MERIDEN+MIDDLETON	596,700	11,503	44	66,090	390
HOUSTON,GALVESTON, TX	3,634,300	9,192	42	63,087	440
SANTA BARBARA-SANTA MARIA, CA	339,400	9,883	40	60,959	369
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	4,740	28	59,448	401
RALEIGH-DURHAM, NC	650,600	6,093	27	56,616	390
BUFFALO-NIAGARA AREA	1,181,600	6,080	30	50,544	306
TUCSON, AZ	602,400	10,894	67	50,148	364
ROANOKE, VA	224,900	10,488	40	48,331	308
AUSTIN, TX	726,400	6,443	38	45,843	301
KNOXVILLE, TN	591,100	3,658	19	44,510	294
DALLAS-FT.WORTH AREA	3,655,300	5,490	17	43,789	280
CLEVELAND-AKRON AREA	2,765,600	8,164	30	40,042	251

All \$ amounts in thousands

EXHIBIT TWO

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
MELBOURNE-TITUSVILLE-PALM BEACH	361,200	4,586	24	39,161	242
PITTSBURGH-BEAVAR VALLEY, PA	2,316,100	5,941	37	38,557	277
ALBANY-SCHENECTADY, NY	843,600	4,635	28	37,296	244
MIDDLESEX-SOMMERSET, NJ	950,100	4,838	31	36,311	268
ATLANTA, GA	2,560,500	2,668	23	34,843	256
COLORADO SPRINGS, CO	380,400	6,527	31	33,585	192
ORLANDO, FL	898,400	2,123	17	33,397	222
MADISON, WI	344,900	6,239	26	27,334	160
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,252	10	25,312	163
WORCESTER, MA	407,800	2,884	22	25,004	174
NORFOLK-VA BEACH-NEWPORT NEWS, VA	1,309,500	4,514	16	24,983	154
PHOENIX, AZ	1,900,200	3,240	22	24,956	208
ELMIRA, NY	90,500	2,994	16	24,868	151
WATERBURY, CT	211,900	0	0	24,294	123
ROCHESTER, NY	980,300	2,825	14	24,199	145
PORTLAND, OR	1,152,800	4,916	16	23,504	140
SAN ANTONIO, TX	1,276,400	4,821	19	22,743	154
COLUMBUS, OH	1,299,400	2,990	13	22,530	168
BRYAN-COLLEGE STATION, TX	120,800	6,854	38	22,520	166
SACRAMENTO, CA	1,291,400	4,216	15	21,491	154
POUGHKEEPSIE, NY	256,800	3,197	14	20,657	163
LANCASTER, PA	393,500	1,555	6	20,571	105
HONOLULU, HI	816,700	4,138	14	20,410	123
EUGENE-SPRINGFIELD, OR	263,200	3,937	21	20,284	113
SANTA FE, NM	106,200	2,115	13	19,238	115
CHATTANOOGA, TN-GA	425,500	4,641	9	18,964	88
GAINESVILLE, FL	199,800	3,105	15	18,347	134
NASHUA, NH	163,300	7,217	25	16,427	101
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,713	13	14,310	101
PORTLAND, ME	205,700	1,000	3	14,060	98
CHARLOTTESVILLE, VA	121,400	3,860	14	13,982	89

All \$ amounts in thousands

EXHIBIT TWO

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	4,266	12	12,683	88
BURLINGTON, VT	124,600	2,139	5	12,094	69
TOLEDO, OH	611,200	2,458	6	11,960	71
LAS CRUCES, NM	123,000	1,612	6	11,890	73
SPRINGFIELD, MA	517,800	2,449	11	11,839	87
SYRACUSE, NY	649,300	987	4	10,800	86
WEST PALM BEACH-BOCA RATON, FL	755,600	1,506	7	10,708	60
MILWAUKEE-RACINE, WI	1,552,000	1,270	5	10,033	75
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	298	4	9,898	68
UTICA-ROME, NY	315,400	1,548	5	9,847	59
MONMOUTH-OCEAN, NJ	935,200	1,438	9	9,844	70
ST LOUIS, MO-IL	2,438,000	431	6	9,615	83
NEW LONDON-NORWICH, CT-RI	259,500	2,562	7	9,360	61
RENO, NV	224,600	1,126	4	9,297	49
KANSAS CITY, MO-KS	1,517,800	929	6	9,126	61
LANSING-E LANSING, MI	424,800	846	9	8,284	66
BIRMINGHAM, AL	911,000	1,602	6	7,941	51
LAFAYETTE-W LAFAYETTE, IN	124,400	1,545	5	7,757	62
NEW ORLEANS , LA	1,334,400	519	5	7,534	89
PENSACOLA, FL	337,100	2,517	5	7,311	39
SPOKANE, WA	356,900	2,082	7	7,153	48
SALEM, OR	262,100	604	4	7,093	52
BLOOMINGTON, IN	101,700	99	1	6,895	36
INDIANAPOLIS, IN	1,212,600	1,102	3	6,741	47
MIAMI-FT.LAUDERDALE, FL	2,912,000	455	5	6,608	62
FITCHBURG-LEOMINSTER, MA	96,300	1,121	6	6,466	46
TULSA, OK	733,500	940	3	6,453	57
GREENSBORO-WINSTON SALEM, NC	899,500	1,054	6	6,416	42
NASHVILLE, TN	930,700	1,884	5	6,168	50
TAMPA-ST PETE-CLEARWATER, FL	1,914,300	1,418	3	5,956	47
PROVO-OREM, UT	240,500	1,781	6	5,507	36

All \$ amounts in thousands

EXHIBIT TWO

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
STATE COLLEGE, PA	114,600	1,132	6	5,472	44
LAS VEGAS, NV	569,500	210	3	5,263	36
PORTSMOUTH,DOVER,ROCHESTER, DE	215,000	194	3	5,218	40
LAWTON, OK	120,700	338	4	4,801	25
OLYMPIA, WA	146,600	0	0	4,655	26
SALINAS-SEASIDE-MONTEREY, CA	339,700	447	6	4,465	32
BINGHAMTON, NY	261,800	550	2	4,433	23
OKLAHOMA CITY, OK	982,900	273	3	4,088	33
LEXINGTON, KY	332,000	837	3	4,058	28
MANCHESTER, NH	145,100	500	1	3,976	16
BELLINGHAM, WA	113,700	408	4	3,564	20
LOUISVILLE, KY-IN	962,800	140	2	3,509	27
RICHMOND-PETERSBURG, VA	810,200	215	3	3,479	28
TOPEKA, KS	160,800	0	0	3,430	13
DES MOINES, IA	381,300	260	2	3,216	31
ATHENS, GA	141,500	80	1	2,906	24
FAYETTEVILLE-SPRINGDALE, AR	107,400	70	1	2,849	17
CEDAR RAPIDS, IA	168,800	214	3	2,788	23
MEMPHIS, TN-AR-MS	959,500	299	3	2,497	25
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	845	4	2,040	15
LITTLE ROCK-N LITTLE ROCK, AR	505,600	75	1	2,038	14
ATLANTIC CITY, NJ	297,400	96	1	1,918	11
SOUTH BEND-MISHAWAKA, IN	241,400	251	3	1,912	20
BATON ROUGE, LA	545,700	0	0	1,868	11
ANCHORAGE, AK	235,000	789	5	1,723	13
GRAND FORKS, ND	69,400	50	1	1,662	14
SAGINAW-BAY CITY-MIDLAND, MI	403,600	165	2	1,652	15
ASHEVILLE, NC	170,000	331	1	1,616	14
HARRISBURG-LEBANON-CARLISLE, PA	577,300	40	1	1,604	12
CANTON, OH	400,400	120	2	1,522	13
STOCKTON+MODESTO, CA	749,300	97	1	1,505	11

All \$ amounts in thousands

EXHIBIT TWO

SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
KALAMAZOO, MI	217,700	50	1	1,434	12
GREENVILLE-SPARTANBURG, SC	606,400	459	6	1,415	19
JACKSON, MI	144,400	0	0	1,342	6
FARGO-MOOREHEAD, ND-MN	145,300	800	2	1,248	5
PASCAGOULA, MS	128,200	167	2	1,187	9
FLINT, MI	434,900	0	0	1,162	7
TALLAHASSEE, FL	218,000	668	3	1,123	10
WICHITA, KS	470,000	0	0	1,027	7
YORK, PA	397,700	0	0	1,023	5
APPLETON-OSHKOSH-NEENAH, WI	307,500	70	1	1,000	8
JACKSONVILLE+DAYTONA BEACH, FL	1,173,600	0	0	991	10
MIDLAND, TX	111,300	0	0	883	5
CHARLESTON, SC	485,700	225	1	865	8
COLUMBIA, SC	444,700	120	2	766	9
PITTSFIELD, MA	80,900	70	1	725	7
SCRANTON, PA	725,900	0	0	660	4
BANGOR, ME	83,400	172	2	643	10
OMAHA, NE-IA	614,300	0	0	643	10
READING, PA	321,000	0	0	618	3
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
FORT WAYNE, IN	356,100	170	2	586	6
RAPID CITY, SD	76,900	149	2	498	8
VICTORIA, TX	76,000	0	0	407	5
GRAND RAPIDS, MI	648,800	60	1	402	5
JACKSON, MS	392,000	70	1	396	5
YAKIMA, WA	183,200	0	0	380	5
BLOOMINGTON-NORMAL, IL	122,700	177	3	373	5
ROCHESTER, MN	98,000	0	0	295	3
MEDFORD, OR	140,000	100	1	250	4
CASPER, WY	71,000	61	1	204	4
DULUTH, MN-WI	243,500	0	0	184	4

All \$ amounts in thousands

EXHIBIT TWO**SBIR AWARDS by METROPOLITAN AREAS (ordered by total dollars FY 83-96)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$k)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
KOKOMO, IN	101,400	79	1	179	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
WICHITA FALLS, TX	127,100	70	1	119	2
ROCKFORD, IL	280,300	69	1	119	2
ABILENE, TX	125,900	0	0	100	2
JOHNSTOWN, PA	254,100	70	1	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
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
AUGUSTA, GA-SC	390,000	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

All \$ amounts in thousands

EXHIBIT THREE

SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$K)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
BOSTON,LAWRENCE,SALEM,LOWEL, MA	4,055,700	136,404	564	911,716	5,751
LOS ANGELES AREA	13,074,800	79,839	335	548,407	3,541
BAY AREA (SF)	5,534,200	71,106	321	547,134	3,534
WASHINGTON,DC-MD-VA	3,565,000	61,361	263	494,284	3,316
SAN DIEGO, CA	2,201,300	40,943	178	272,691	1,773
NEW YORK AREA	15,529,300	37,251	139	230,304	1,450
PHILADELPHIA AREA	5,697,200	32,087	135	224,912	1,436
DENVER-BOULDER-LONGMONT, CO	1,847,400	27,877	128	184,816	1,232
SEATTLE-TAKOMA AREA	2,284,400	17,065	79	127,245	831
ALBUQUERQUE, NM	474,400	14,137	58	97,864	629
MINNEAPOLIS-ST PAUL ,MN-WI	2,295,200	18,589	67	87,849	583
HUNTSVILLE, AL	233,700	17,087	62	93,700	580
BALTIMORE, MD	2,280,000	12,808	60	81,591	576
DETROIT-ANN ARBOR, MI	4,600,700	14,851	58	87,651	566
SALT LAKE CITY-OGDEN, UT	1,041,400	6,551	38	77,643	561
DAYTON-SPRINGFIELD, OH	933,500	13,605	51	93,041	559
CHICAGO-LAKE COUNTY	7,381,400	8,477	31	78,117	524
HOUSTON,GALVESTON, TX	3,634,300	9,192	42	63,087	440
HARTFORD-NEW BRITAIN-BRISTOL, CT	967,100	4,740	28	59,448	401
NEW HAVEN-MERIDEN+MIDDLETON, NJ	596,700	11,503	44	66,090	390
RALEIGH-DURHAM, NC	650,600	6,093	27	56,616	390
SANTA BARBARA-SANTA MARIA, CA	339,400	9,883	40	60,959	369
TUCSON, AZ	602,400	10,894	67	50,148	364
ROANOKE, VA	224,900	10,488	40	48,331	308
BUFFALO-NIAGARA AREA	1,181,600	6,080	30	50,544	306
AUSTIN, TX	726,400	6,443	38	45,843	301
KNOXVILLE, TN	591,100	3,658	19	44,510	294
DALLAS-FT.WORTH AREA	3,655,300	5,490	17	43,789	280
PITTSBURGH-BEAVER VALLEY, PA	2,316,100	5,941	37	38,557	277
MIDDLESEX-SOMMERSET, NJ	950,100	4,838	31	36,311	268
ATLANTA, GA	2,560,500	2,668	23	34,843	256
CLEVELAND-AKRON AREA	2,765,600	8,164	30	40,042	251

All \$ amounts in thousands

EXHIBIT THREE

SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$K)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
ALBANY-SCHENECTADY, NY	843,600	4,635	28	37,296	244
MELBOURNE-TITUSVILLE-PALM BEACH, FL	361,200	4,586	24	39,161	242
ORLANDO, FL	898,400	2,123	17	33,397	222
PHOENIX, AZ	1,900,200	3,240	22	24,956	208
COLORADO SPRINGS, CO	380,400	6,527	31	33,585	192
WORCESTER, MA	407,800	2,884	22	25,004	174
COLUMBUS, OH	1,299,400	2,990	13	22,530	168
BRYAN-COLLEGE STATION, TX	120,800	6,854	38	22,520	166
POUGHKEEPSIE, NY	256,800	3,197	14	20,657	163
PROVIDENCE-PAWTUCKET-FALL RIVERS	1,108,500	2,252	10	25,312	163
MADISON, WI	344,900	6,239	26	27,334	160
SAN ANTONIO, TX	1,276,400	4,821	19	22,743	154
SACRAMENTO, CA	1,291,400	4,216	15	21,491	154
NORFOLK-VA BEACH-NEWPORT NEWS, VA	1,309,500	4,514	16	24,983	154
ELMIRA, NY	90,500	2,994	16	24,868	151
ROCHESTER, NY	980,300	2,825	14	24,199	145
PORTLAND, OR	1,152,800	4,916	16	23,504	140
GAINESVILLE, FL	199,800	3,105	15	18,347	134
WATERBURY, CT	211,900	0	0	24,294	123
HONOLULU, HI	816,700	4,138	14	20,410	123
SANTA FE, NM	106,200	2,115	13	19,238	115
EUGENE-SPRINGFIELD, OR	263,200	3,937	21	20,284	113
LANCASTER, PA	393,500	1,555	6	20,571	105
NASHUA, NH	163,300	7,217	25	16,427	101
CHAMPAIGN-URBANA-RANTOUL, IL	171,100	2,713	13	14,310	101
PORTLAND, ME	205,700	1,000	3	14,060	98
CHARLOTTESVILLE, VA	121,400	3,860	14	13,982	89
NEW ORLEANS, LA	1,334,400	519	5	7,534	89
CHATTANOOGA, TN-GA	425,500	4,641	9	18,964	88
CINCINNATI-HAMILTON, OH, KY, IN	1,690,100	4,266	12	12,683	88
SPRINGFIELD, MA	517,800	2,449	11	11,839	87
SYRACUSE, NY	649,300	987	4	10,800	86

All \$ amounts in thousands

EXHIBIT THREE

SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$K)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
ST LOUIS, MO-IL	2,438,000	431	6	9,615	83
MILWAUKEE-RACINE, WI	1,552,000	1,270	5	10,033	75
LAS CRUCES, NM	123,000	1,612	6	11,890	73
TOLEDO, OH	611,200	2,458	6	11,960	71
MONMOUTH-OCEAN, NJ	935,200	1,438	9	9,844	70
ALLENTOWN-BETHLEHEM, PA-NJ	656,800	298	4	9,898	68
LANSING-E LANSING, MI	424,800	846	9	8,284	66
LAFAYETTE-W LAFAYETTE, IN	124,400	1,545	5	7,757	62
MIAMI-FT.LAUDERDALE, FL	2,912,000	455	5	6,608	62
NEW LONDON-NORWICH, CT-RI	259,500	2,562	7	9,360	61
KANSAS CITY, MO-KS	1,517,800	929	6	9,126	61
WEST PALM BEACH-BOCA RATON, FL	755,600	1,506	7	10,708	60
UTICA-ROME, NY	315,400	1,548	5	9,847	59
TULSA, OK	733,500	940	3	6,453	57
SALEM, OR	262,100	604	4	7,093	52
BIRMINGHAM, AL	911,000	1,602	6	7,941	51
NASHVILLE, TN	930,700	1,884	5	6,168	50
RENO, NV	224,600	1,126	4	9,297	49
SPOKANE, WA	356,900	2,082	7	7,153	48
INDIANAPOLIS, IN	1,212,600	1,102	3	6,741	47
TAMPA-ST PETE-CLEARWATER, FL	1,914,300	1,418	3	5,956	47
FITCHBURG-LEOMINSTER, MA	96,300	1,121	6	6,466	46
STATE COLLEGE, PA	114,600	1,132	6	5,472	44
GREENSBORO-WINSTON SALEM, NC	899,500	1,054	6	6,416	42
PORTSMOUTH,DOVER,ROCHESTER, DE	215,000	194	3	5,218	40
PENSACOLA, FL	337,100	2,517	5	7,311	39
BLOOMINGTON, IN	101,700	99	1	6,895	36
PROVO-OREM, UT	240,500	1,781	6	5,507	36
LAS VEGAS, NV	569,500	210	3	5,263	36
OKLAHOMA CITY, OK	982,900	273	3	4,088	33
SALINAS-SEASIDE-MONTEREY, CA	339,700	447	6	4,465	32
DES MOINES, IA	381,300	260	2	3,216	31

All \$ amounts in thousands

EXHIBIT THREE

SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$K)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
LEXINGTON, KY	332,000	837	3	4,058	28
RICHMOND-PETERSBURG, VA	810,200	215	3	3,479	28
LOUISVILLE, KY-IN	962,800	140	2	3,509	27
OLYMPIA, WA	146,600	0	0	4,655	26
LAWTON, OK	120,700	338	4	4,801	25
MEMPHIS, TN-AR-MS	959,500	299	3	2,497	25
ATHENS, GA	141,500	80	1	2,906	24
CEDAR RAPIDS, IA	168,800	214	3	2,788	23
BINGHAMTON, NY	261,800	550	2	4,433	23
BELLINGHAM, WA	113,700	408	4	3,564	20
SOUTH BEND-MISHAWAKA, IN	241,400	251	3	1,912	20
GREENVILLE-SPARTANBURG, SC	606,400	459	6	1,415	19
FAYETTEVILLE-SPRINGDALE, AR	107,400	70	1	2,849	17
MANCHESTER, NH	145,100	500	1	3,976	16
SAGINAW-BAY CITY-MIDLAND, MI	403,600	165	2	1,652	15
CHARLOTTE-GASTONIA-ROCK HILL, NC	1,065,400	845	4	2,040	15
GRAND FORKS, ND	69,400	50	1	1,662	14
ASHEVILLE, NC	170,000	331	1	1,616	14
LITTLE ROCK-N LITTLE ROCK, AR	505,600	75	1	2,038	14
TOPEKA, KS	160,800	0	0	3,430	13
ANCHORAGE, AK	235,000	789	5	1,723	13
CANTON, OH	400,400	120	2	1,522	13
KALAMAZOO, MI	217,700	50	1	1,434	12
HARRISBURG-LEBANON-CARLISLE, PA	577,300	40	1	1,604	12
ATLANTIC CITY, NJ	297,400	96	1	1,918	11
BATON ROUGE, LA	545,700	0	0	1,868	11
STOCKTON+MODESTO, CA	749,300	97	1	1,505	11
BANGOR, ME	83,400	172	2	643	10
TALLAHASSEE, FL	218,000	668	3	1,123	10
OMAHA, NE-IA	614,300	0	0	643	10
JACKSONVILLE+DAYTONA BEACH, FL	1,173,600	0	0	991	10
PASCAGOULA, MS	128,200	167	2	1,187	9

All \$ amounts in thousands

EXHIBIT THREE

SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96 (\$K)</u>	<u>FY96 No. of Awards</u>	<u>FY83-96 (\$k)</u>	<u>FY83-96 No. of Awards</u>
COLUMBIA, SC	444,700	120	2	766	9
RAPID CITY, SD	76,900	149	2	498	8
APPLETON-OSHKOSH-NEENAH, WI	307,500	70	1	1,000	8
CHARLESTON, SC	485,700	225	1	865	8
PITTSFIELD, MA	80,900	70	1	725	7
FLINT, MI	434,900	0	0	1,162	7
WICHITA, KS	470,000	0	0	1,027	7
JACKSON, MI	144,400	0	0	1,342	6
FORT WAYNE, IN	356,100	170	2	586	6
VICTORIA, TX	76,000	0	0	407	5
MIDLAND, TX	111,300	0	0	883	5
BLOOMINGTON-NORMAL, IL	122,700	177	3	373	5
FARGO-MOOREHEAD, ND-MN	145,300	800	2	1,248	5
YAKIMA, WA	183,200	0	0	380	5
JACKSON, MS	392,000	70	1	396	5
YORK, PA	397,700	0	0	1,023	5
GRAND RAPIDS, MI	648,800	60	1	402	5
CASPER, WY	71,000	61	1	204	4
MEDFORD, OR	140,000	100	1	250	4
WATERLOO-CEDAR FALLS, IA	151,500	0	0	605	4
DULUTH, MN-WI	243,500	0	0	184	4
SCRANTON, PA	725,900	0	0	660	4
BISMARCK, ND	86,000	0	0	151	3
ROCHESTER, MN	98,000	0	0	295	3
KOKOMO, IN	101,400	79	1	179	3
WACO, TX	187,600	0	0	148	3
MONTGOMERY, AL	299,000	0	0	141	3
READING, PA	321,000	0	0	618	3
MUNCIE, IN	120,900	0	0	95	2
ABILENE, TX	125,900	0	0	100	2
WICHITA FALLS, TX	127,100	70	1	119	2
JOHNSTOWN, PA	254,100	70	1	100	2

All \$ amounts in thousands

EXHIBIT THREE**SBIR AWARDS by METROPOLITAN AREAS (ordered by FY 83-96 decreasing # of awards)**

<u>Metropolitan Area</u>	<u>Population</u>	<u>FY96</u> <u>(\$K)</u>	<u>FY96</u> <u>No. of</u> <u>Awards</u>	<u>FY83-96</u> <u>(\$k)</u>	<u>FY83-96</u> <u>No. of</u> <u>Awards</u>
ROCKFORD, IL	280,300	69	1	119	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
REDDING, CA	133,100	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
CORPUS CHRISTI, TX	363,300	0	0	49	1
SHREVEPORT, LA	364,600	0	0	37	1
AUGUSTA, GA	390,000	0	0	50	1

All \$ amounts in thousands

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 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**

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 96 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
1000 Computer, Information Processing, Analysis												
1100 Computer and Communication Systems	154710	5540	7959	24986	4879	1738	0	0	689	712	849	202063
1200 Information Processing and Management	70125	2020	2309	20554	2625	1072	0	0	1058	344	700	100807
1300 Signal and Image Processing	61711	2774	4214	12795	1705	200	70	0	330	195	645	84641
1400 Systems Studies	8194	75	0	100	0	0	0	0	0	0	0	8369
1500 Mathematical Sciences	4338	74	0	0	371	98	0	0	0	220	50	5152
2000 Electronics												
2100 Microelectronics	58514	6074	6319	4731	2832	224	70	0	40	100	150	79055
2200 Electronics Device Performance	343551	63415	110719	80714	36059	6768	2925	0	1151	7078	5482	657861
2300 Electronic Equipment and Instrumentation	55982	2764	12252	4724	1926	782	0	0	0	325	100	78855
2400 Electromagnetic Radiation/Propagation	215324	56536	107260	59181	28385	6385	1800	130	873	6289	4933	487095
2500 Microwave and Millimeter Wave Electronics	6821	2021	1333	933	449	0	0	0	0	50	0	11607
2600 Optical Devices and Lasers	131701	10159	10243	12224	5647	274	70	0	0	700	799	171817
3000 Materials												
3100 Advanced Materials	345552	64016	110719	82174	36350	6768	2909	175	1111	7418	5432	662625
3200 Materials Processing and Manufacturing	34863	2546	1314	2044	1191	200	209	0	40	835	348	43588
3300 Coatings, Corrosion and Surface Phenomena	30483	4559	1821	3905	2816	167	435	0	0	50	200	44436
3400 Materials Performance	10707	675	1327	1028	149	529	70	0	0	185	100	14769
3500 Fundamentals and Instrumentation	4709	298	717	2072	299	0	0	0	0	205	0	8299
4000 Mechanical Performance of Vehicles, Weapons, Facilities												
4100 Hydrodynamics	1504	75	0	0	0	0	0	0	0	0	0	1578
4200 Aerodynamics	62890	597	5589	497	75	200	225	0	0	315	349	70737
4300 Acoustics	7327	150	0	803	300	0	0	0	0	0	0	8579
4400 Mechanical Performance Of Structures and Equipment	67975	1720	2601	2415	1175	292	70	175	0	630	149	77202
4500 Control	22986	2174	938	6178	727	453	0	175	39	50	50	33770
4600 Mechanical Measurements	34661	2024	1806	6913	698	702	0	0	0	375	250	47428

EXHIBIT FIVE

FY 96 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
5000 Energy And Conversion Use												
5100 Transport Sciences	75107	5025	7507	9203	2308	875	295	0	0	595	200	101114
5200 Propulsion/Combustion Technology	53618	11662	11613	9917	2256	550	1335	0	0	1135	600	92687
5300 Large Scale Energy Usage	8246	2774	594	5658	1469	0	0	0	0	200	200	19141
5400 Energy Conversion/Electric Power	28001	4174	4019	1119	812	100	0	0	0	100	0	38323
6000 Environment & Natural Resources												
6200 Atmospheric Sciences	47430	3595	5218	4387	1343	929	1370	0	0	365	350	64986
6300 Water Management	23312	2847	1840	2926	2051	100	2080	0	0	1345	688	37190
6400 Earth Sciences	20785	674	1877	2193	1491	0	501	0	39	668	150	28378
6500 Environmental Protection	3096	150	0	0	0	0	504	0	39	205	0	3994
7000 Life Sciences												
7100 Medical Instrumentation	34079	1346	1088	34443	1019	99	140	0	1179	740	99	74233
7200 Biotechnology and Microbiology	18787	1875	1594	73016	1945	74	140	0	0	1185	249	96865
7300 Behavioral Sciences	53420	2319	1011	17491	1482	723	675	175	448	418	100	78263
7400 Physiology and Miscellaneous	7649	148	665	8110	1125	75	0	0	410	2452	50	20682

multiple technology areas assigned to awards

EXHIBIT SIX**DISTRIBUTION OF FY 1996 PHASE I AND PHASE II AWARDS AMONG TECHNOLOGY AREAS**

Computer, Information Processing, Analysis	Phase I	Phase II
Computer and Communication Systems	50424	151639
Information Processing and Management	23939	76868
Signal and Image Processing	20441	64200
Systems Studies	979	7390
Mathematical Sciences	1228	3924
Electronics		
Microelectronics	18084	60971
Electronics Device Performance	225188	432673
Electronic Equipment and Instrumentation	17023	61832
Electromagnetic Radiation/propagation	171279	315816
Microwave and Millimeter Wave Electronics	3022	8585
Optical Devices and Lasers	36600	135217
Materials		
Advanced Materials	222895	439730
Materials Processing and Manufacturing	11695	31893
Coatings, Corrosion and Surface Phenomena	9769	34667
Materials Performance	4151	10618
Fundamentals and Instrumentation	1878	6421
Mechanical Performance Of Vehicles, Weapons, Facilities		
Hydrodynamics	227	1352
Aerodynamics	15440	55297
Acoustics	1864	6715
Mechanical Performance of Structures and Equipment	18454	58747
Control	6739	27030
Mechanical Measurements	12256	35172
Energy And Conversion Use		
Transport Sciences	24313	76800
Propulsion/combustion Technology	24086	68600
Large Scale Energy Usage	2718	16424
Energy Conversion/Electric Power	8467	29857

(multiple technology areas assigned to awards)

dollars in thousands

EXHIBIT SIX**DISTRIBUTION OF FY 1996 PHASE I AND PHASE II AWARDS AMONG TECHNOLOGY AREAS**

Environment & Natural Resources	Phase I	Phase II
Ocean Science	0	0
Atmospheric Sciences	14741	50245
Water Management	8954	28236
Earth Sciences	5772	22605
Environmental Protection	1043	2951
Life Sciences		
Medical Instrumentation	14597	59636
Biotechnology and Microbiology	19604	79261
Behavioral Sciences	16428	61835
Physiology and Miscellaneous	3261	17422

(multiple technology areas assigned to awards)

dollars in thousands

Exhibit Seven

FY 1983-96 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY
(dollars in thousands)

	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	Total	
1000 Computer, Information Processing, Analysis												
1100 Computer and Communication Systems	490847	35107	65014	113826	29458	10911	180	1285	7745	2127	4192	760691
1200 Information Processing and Management	389394	31752	93162	123169	25960	8763	415	1479	11109	3303	3776	692282
1300 Signal and Image Processing	319777	18902	52113	58718	15520	9464	70	481	1513	3284	4312	484154
1400 Systems Studies	99184	7181	8151	18965	2826	3498	250	3750	1094	2262	0	147162
1500 Mathematical Sciences	83475	3979	49646	12917	9948	741	262	2493	188	599	380	164629
2000 Electronics												
2100 Microelectronics	314526	33635	55921	11653	25229	1394	135	243	40	445	1413	444633
2200 Electronics Device Performance	529669	156012	203218	141882	84323	10151	6742	646	4492	12520	9272	1158926
2300 Electronic Equipment and Instrumentation	271887	47169	71783	41666	16653	6783	2364	2132	1827	6083	2364	470710
2400 Electromagnetic Radiation/Propagation	514261	117070	144587	69117	50132	10054	4645	229	2993	10551	9200	932840
2500 Microwave and Millimeter Wave Electronics	69917	10106	14254	2397	1680	49	49	0	30	50	227	98759
2600 Optical Devices and Lasers	535715	78133	112303	76976	32420	4945	1530	1901	87	2422	4587	851019
3000 Materials												
3100 Advanced Materials	730308	213895	206879	152746	101577	17375	8956	565	3689	16255	9924	1462168
3200 Materials Processing and Manufacturing	149868	48553	31909	18663	23662	1258	5221	350	70	3572	1559	284686
3300 Coatings, Corrosion and Surface Phenomena	203314	43151	40700	24425	24713	1598	4325	100	0	1127	1317	344771
3400 Materials Performance	113275	22117	21435	6460	12613	7470	345	1371	27	1823	420	187355
3500 Fundamentals and Instrumentation	32006	9456	16058	28141	9717	422	1289	851	0	508	1065	99512
4000 Mechanical Performance of Vehicles, Weapons, Facilities												
4100 Hydrodynamics	9563	1174	720	0	394	97	0	0	0	0	259	12207
4200 Aerodynamics	204159	2076	73372	1589	2995	2287	290	0	0	470	767	288006
4300 Acoustics	57112	2542	5238	2165	945	399	0	50	529	50	867	69897
4400 Mechanical Performance of Structures and Equipment	254215	9939	31366	10951	7621	3080	70	425	110	1135	872	319784
4500 Control	78407	16603	23302	22338	4537	2201	0	570	79	340	649	149024
4600 Mechanical Measurements	107484	18899	22335	18580	4405	3764	625	609	118	2832	975	180625

multiple technology areas assigned to awards

Exhibit Seven

FY 1983-96 PHASE I and II AWARDS by TECHNOLOGY AREA and AGENCY

(dollars in thousands)

	DOE	NASA	HHS	NSF	DOT	EPA	NRC	ED	DOA	DOC	Total	
5000 Energy and Conversion Use												
5100 Transport Sciences	245030	61212	88392	38165	14429	1671	1679	1606	0	5225	1218	458628
5200 Propulsion/Combustion Technology	225664	88215	66418	21338	14168	7584	6295	100	0	2552	1799	434134
5300 Large Scale Energy Usage	54173	118695	12482	18791	8542	396	626	475	40	1175	974	216369
5400 Energy Conversion/Electric Power	125631	39564	34042	10620	10146	200	837	0	0	1217	99	222356
6000 Environment and Natural Resources												
6100 Ocean Science	9138	2395	2305	0	2098	50	0	0	0	0	2359	18344
6200 Atmospheric Sciences	183872	57200	65370	46540	19800	7054	18589	437	0	5162	4694	408719
6300 Water Management	74255	13214	22941	11558	12511	1196	10951	338	0	6415	1508	154889
6400 Earth Sciences	62162	21140	5410	5428	12433	1144	1279	1063	360	6256	425	117101
6500 Environmental Protection	32301	12234	2939	1819	4242	889	13277	1078	39	801	0	69619
7000 Life Sciences												
7100 Medical Instrumentation	91803	17082	20595	375430	11135	2824	569	200	13077	2803	976	536494
7200 Biotechnology and Microbiology	70388	24239	11703	533841	20584	1261	1493	50	342	12876	489	677266
7300 Behavioral Sciences	189991	21927	19165	135727	11589	5506	1789	1288	11614	5148	1013	404757
7400 Physiology and Miscellaneous	19908	3695	14000	78870	13292	867	324	0	655	32372	1871	165855

multiple technology areas assigned to awards

EXHIBIT EIGHT**DISTRIBUTION of FY 1983-96 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

Computer, Information Processing, Analysis	Phase I	Phase II
Computer and Communication Systems	234624	526066
Information Processing and Management	196209	496073
Signal and Image Processing	138642	345512
Systems Studies	39196	107965
Mathematical Sciences	40923	123707
Electronics		
Microelectronics	125679	318954
Electronics Device Performance	501734	657192
Electronic Equipment and Instrumentation	128291	342419
Electromagnetic Radiation/Propagation	383246	549594
Microwave and Millimeter Wave Electronics	23773	74987
Optical Devices and Lasers	241848	609171
Materials		
Advanced Materials	591658	870510
Materials Processing and Manufacturing	88348	196338
Coatings, Corrosion and Surface Phenomena	106922	237849
Materials Performance	52482	134874
Fundamentals and Instrumentation	28682	70830
Mechanical Performance Of Vehicles, Weapons, Facilities		
Hydrodynamics	4180	8027
Aerodynamics	76816	211190
Acoustics	19456	50441
Mechanical Performance Of Structures and Equipment	98796	220988
Control	41507	107517
Mechanical Measurements	57036	123589

(multiple technology areas assigned to awards)

dollars in thousands

EXHIBIT EIGHT**DISTRIBUTION of FY 1983-96 PHASE I and PHASE II AWARDS AMONG TECHNOLOGY AREAS**

Energy And Conversion Use	Phase I	Phase II
----------------------------------	----------------	-----------------

Transport Sciences	132854	325774
Propulsion/Combustion Technology	133977	300157
Large Scale Energy Usage	52272	164096
Energy Conversion/Electric Power	63272	159083

Environment & Natural Resources
--

Ocean Science	3861	14484
Atmospheric Sciences	112040	296679
Water Management	54431	100458
Earth Sciences	38031	79070
Environmental Protection	23862	45757

Life Sciences

Medical Instrumentation	152067	384427
Biotechnology and Microbiology	213904	463362
Behavioral Sciences	121737	283020
Physiology and Miscellaneous	53191	112665

(multiple technology areas assigned to awards)

dollars in thousands

**All of the SBA's programs and services are provided
to the public on a nondiscriminatory basis.**

Request for copies of this SBA report should be sent to:

**U.S. Small Business Administration
Office of Technology
409 Third Street, S.W.
Washington, D.C. 20416
Telephone (202) 205-7450**

