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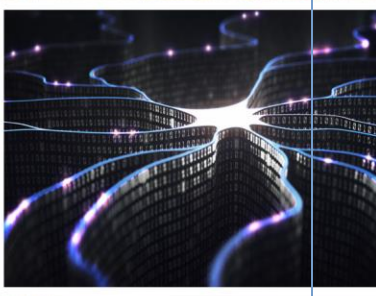

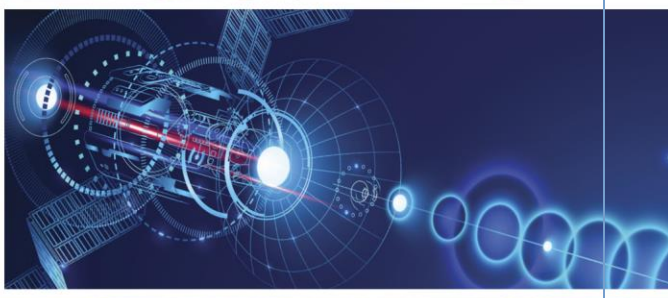

Annual Report FISCAL YEAR 2016

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1 | Message from the SBA Administrator

It is my honor as the 25th Administrator of the U.S. Small Business Administration (SBA) and a member of President Trump's cabinet to support and advocate for America's 30 million small businesses. These entrepreneurs drive economic growth and employ nearly half of all American workers. SBA is committed to ensuring all entrepreneurs and innovators have access to the tools and opportunities they need to compete and succeed.

In my two years as Administrator, I've described how SBA is one of the best kept secrets in government. The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs – or "America's Seed Fund"– are examples of the incredible work we're supporting. The SBIR and STTR programs serve as the nation's premier source of early-stage, high-risk funding for research and development (R&D) based small businesses. In 2016, SBA and the 11 SBIR/STTR participating agencies provided over $2.66 billion of non-dilutive funding to entrepreneurs. The funding and assistance provided through these programs enabled thousands of small businesses to compete for contracts and grants to develop and commercialize new technologies, all without losing equity or intellectual property.

SBA is committed to effective and efficient oversight of the SBIR and STTR Programs. This Fiscal Year 2016 Annual Report to Congress on the SBIR/STTR Programs provides analysis on all aspects of the program, as well as highlighting the achievements of the programs and the investments made at each agency. The report also demonstrates the value small businesses bring to the table when given the opportunity to develop their cutting-edge solutions. The SBIR and STTR Programs offer an impressive return on the taxpayer's investment, while upholding our fundamental responsibility to meet the Federal government's R&D needs and stimulate economic growth.

Under President Trump's pro-business policies, our small businesses are utilizing the strong economic environment to hire more people, increase wages and benefits, and invest in the overall growth of their companies. These opportunities will continue to have a long-lasting and meaningful impact on our nation's communities and households.

It is a distinct privilege for me to play a part in SBA's role to help SBIR/STTR small businesses launch and thrive. I've seen firsthand how their hard work and dedication lifts their employees and communities, while also advancing new technologies setting America apart on the world stage as the leader in innovation.

Sincerely,

Linda E. McMahon

Linda E. McMahon
Administrator
U.S. Small Business Administration

2 | Small Business Innovation Research (SBIR) Program Overview

The SBIR Program is a highly competitive program that encourages U.S. small businesses to engage in Federal Research/Research and Development (R/R&D) that has the potential for commercialization. Through a competitive awards-based program, SBIR enables small businesses to explore their technological potential and provides the incentive to profit from commercialization. By including qualified small business concerns (SBCs) in the Federal R/R&D arena, high-tech innovation is stimulated and the U.S. gains entrepreneurial spirit by encouraging participation by women and socially and economically disadvantaged persons as it meets its specific R/R&D needs. This Fiscal Year 2016 (FY16) Annual Report provides comprehensive summary data and performance results for the SBIR and STTR Programs, aggregating information as reported to the SBA from the 11 federal agencies participating in the SBIR Program and the 5 federal agencies participating in the Small Business Technology Transfer (STTR) Programs (Participating Agencies).

SBIR Mission and Program Goals

The mission of the SBIR Program is to support scientific excellence and technological innovation through the investment of federal research funds in critical American priorities to build a strong national economy. The goals of the SBIR Program are to:

- Stimulate technological innovation;
- Meet Federal Government R/R&D needs;
- Foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons; and
- Increase private-sector commercialization of innovations derived from federal R/R&D funding.

Participating Agencies

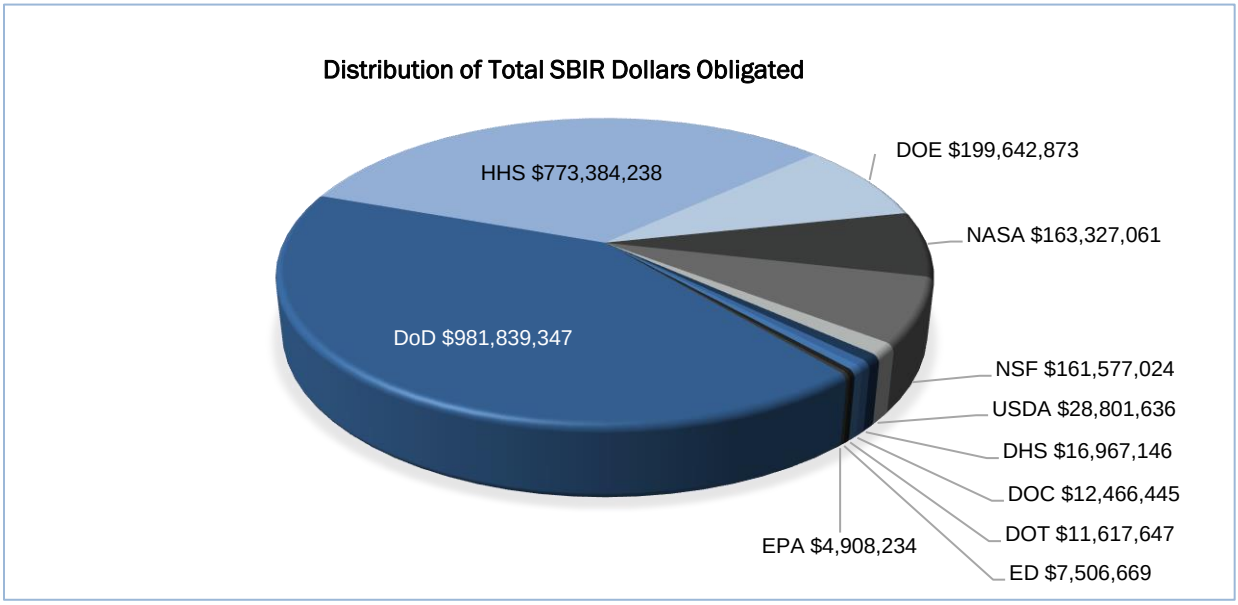
The Small Business Act (the Act) requires the SBIR Participating Agencies to allocate certain percentages of their extramural R/R&D budgets to fund small business R/R&D activities through the SBIR Programs. For FY16, federal agencies with extramural R/R&D budgets exceeding $100 million were required to obligate a minimum of 3.0% of their FY16 extramural R/R&D budgets for SBIR awards to small businesses. Each agency administers its own individual program within guidelines established by Congress and the Policy Directives established by SBA. These agencies designate R/R&D topics in their solicitations and accept proposals from eligible small businesses. SBIR Phase I and Phase II awards are made on a competitive basis after proposal evaluation. Section 9(e)(1) of the Act defines extramural budget as “the sum of the total obligations minus amounts obligated for such activities by employees of the agency in or through government-owned, government-operated facilities, except that for the Department of Energy it shall not include amounts obligated for atomic energy defense programs solely for weapons activities or for naval reactor programs, and except that for the Agency for International Development it shall not include amounts obligated solely for general institutional support of international research centers or for grants to foreign countries.” The following 11 federal agencies participate in the SBIR Program (SBIR Participating Agencies):

- Department of Agriculture (USDA);
- Department of Commerce (DOC);
- Department of Defense (DoD);
- Department of Education (ED);
- Department of Energy (DOE);
- Department of Health & Human Services (HHS);
- Department of Homeland Security (DHS);
- Department of Transportation (DOT);
- Environmental Protection Agency (EPA);
- National Aeronautics & Space Administration (NASA); and
- National Science Foundation (NSF).

FY16 SBIR Program Summary

In FY16, Participating Agencies' total SBIR obligations amounted to $2,362,038,320 of which 74% or $1,755,223,585 is attributable to DoD and HHS. The chart below shows the distribution of these funds across Civilian Agencies and DoD.

Chart 1: Distribution of Total SBIR Dollars Obligated - Participating Agencies



3 | Small Business Technology Transfer (STTR) Program Overview

The STTR Program expands funding opportunities in the federal innovation R/R&D arena. The unique feature of the STTR Program is the requirement for a small business to formally partner with a research institution in Phase I and Phase II. The STTR Program's important role is to bridge the gap between performance of fundamental scientific research and commercialization of the resulting innovations.

STTR Mission and Program Goals

The mission of the STTR Program is to support scientific excellence and technological innovation through the investment of federal research funds in critical American priorities to build a strong national economy. The goals of the STTR Program are to:

- Stimulate technological innovation;
- Foster technology transfer through cooperative R/R&D between small businesses and research institutions;
- Foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons; and
- Increase private-sector commercialization of innovations derived from federal R/R&D.

Participating Agencies

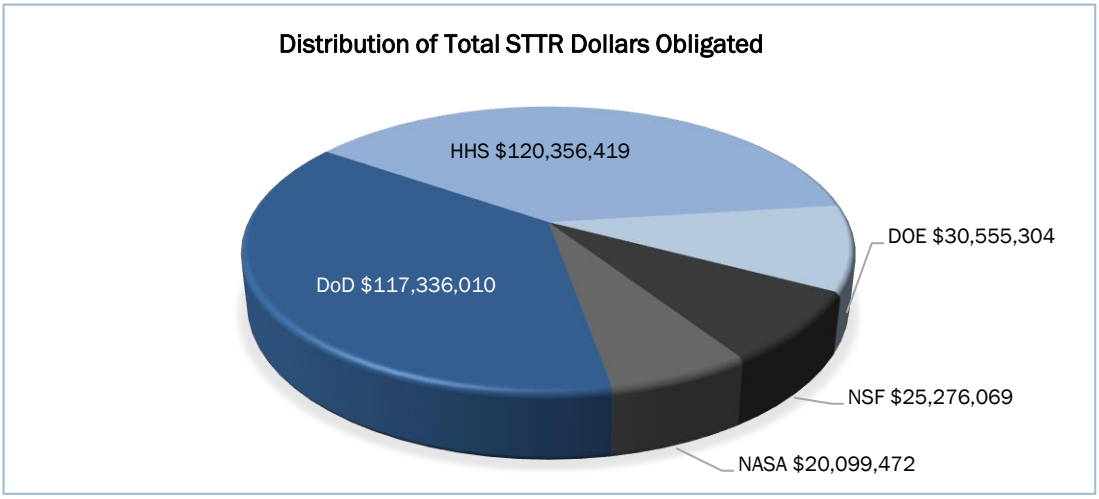
The Act requires STTR Participating Agencies with extramural R/R&D budgets exceeding $1 billion to obligate a minimum of 0.45% of their extramural R/R&D budgets to fund small business R/R&D activities through the STTR Program. Each agency administers its own individual program within guidelines established by Congress and the Policy Directive established by SBA. These agencies designate R/R&D topics in their solicitations and accept proposals from small businesses working in cooperation with allowable federally funded research and development centers and non-profit research institutions.

- Department of Defense (DoD)
- Department of Energy (DOE);
- Department of Health & Human Services (HHS);
- National Aeronautics & Space Administration (NASA); and
- National Science Foundation (NSF).

FY16 STTR Program Summary

In FY16, Participating Agencies' total STTR obligations amounted to $313,623,274 of which almost 76% or $237,692,429 is attributable to DoD and HHS. The chart below shows the distribution of these funds.

Chart 2: Distribution of Total STTR Award Dollars – Participating Agencies



4 | SBIR/STTR Programs are Structured in Three Phases

Phase I: Feasibility-Related Experimental Study or Theoretical Research/Research and Development

The objective of Phase I is to determine the scientific and technical merit, feasibility, and commercial potential of the proposed R/R&D efforts and to determine the quality of performance of the small business awardee prior to providing further federal support in Phase II. SBIR/STTR Phase I awards generally range from $150,000 to $225,000 for a 6-to-12-month period of performance.

Phase II: Continued Research/Research and Development Effort

The objective of Phase II is to continue the R&D efforts initiated in Phase I. Funding is based on the results achieved in Phase I and the scientific and technical merit and commercial potential of the project proposed in Phase II. SBIR/STTR Phase II awards generally range from $750,000 to $1,500,000 for a two-year period of performance.

Phase III: Commercialization Effort

Phase III refers to work that derives from, extends, or completes an effort made through SBIR/STTR-funded Phase I or II R/R&D but is funded by sources other than the SBIR/STTR Programs. To the greatest extent practicable, federal entities, including government prime contractors pursuing R/R&D or production developed under the SBIR/STTR Programs, shall issue Phase III awards (using funds other than SBIR/STTR) to the SBIR/STTR awardee which developed the technology. The competition for SBIR/STTR Phase I and Phase II awards satisfies competition requirements for the Armed Services Procurement Act, the Federal Property and Administrative Services Act, and the Competition in Contracting Act, allowing federal agencies to issue direct or sole source awards to SBIR/STTR awardees for Phase III efforts.

5 | SBIR Program – Civilian Agency Summary Data

The FY16 Annual Report is the first time SBIR Program Agency Summary Data is reported separately by Civilian Agencies and the Department of Defense. Furthermore, this is the first time DoD data is separated by Service Agencies and Components. Tables 1 and 2 provide proposal and award summary data from each of the 10 Civilian Participating Agencies. This data is submitted by the agencies through the SBA Annual Report submission site and further analyzed to develop percent ratios for many of the reported fields. Though the data has been validated by the agencies, SBA identified data verification challenges, and continues to work with agencies on improving the accuracy of all reported data. Details on the SBA analysis are provided in Section 9 of this report.

Table 1: SBIR Program – Civilian Agency Summary Data – HHS, DOE, NASA, NSF, and USDA

Phase	REPORT FIELD	HHS	DOE	NASA	NSF	USDA
Phase I	Solicitations Released (#)	22	3	1	2	1
	Proposals Received (#) / Selection Rate (%)	5,881 / 12%	1,434 / 20%	1,317 / 26%	1,737 / 14%	478 / 16%
	New Phase I Awards (#)	690	286	340	250	76
	Obligations for New Phase I Awards ($)	$159,250,944	$44,541,543	$42,208,393	$47,726,606	$7,490,512
	Obligations on Prior-Year Phase I Awards ($)	$27,180,924	$0	$0	$1,011,346	$0
Phase II	Proposals Received (#) / Selection Rate (%)	809 / 50%	331 / 45%	328 / 42%	191 / 57%	66 / 52%
	New Phase II Awards (Initial + Second) (#)	402	148	139	109	34
	"Second Phase II" Awards (subset) (#)	33	20	0	0	0
	Obligations for New Phase II Awards ($)	$322,373,241	$151,924,915	$104,279,751	$80,438,392	$20,279,261
	Obligations for "Second Phase II" Awards (subset) ($)	$26,612,477	$19,547,688	$0	$0	$0
	Obligations on Prior-Year Phase II Awards ($)	$244,562,799	$480,000	$6,354,674	$26,368,320	$0
Phase III	Total Phase III Awards ($) +	$0	$3,324,021	$8,874,752	$0	$0
Admin	Total Obligations for Discretionary Technical Assistance (DTA) ($)	$1,934,301	$2,368,510	$184,742	$1,272,978	$729,628
	Agency Provided DTA (subset) ($)	$1,884,301	$2,003,610	$0	$803,398	$729,628
	Small Business funded DTA (subset) ($) *	$50,000	$364,900	$184,742	$469,580	$0
	Administrative Funding Pilot (AFPP) (3%) ($)	$8,996,526	$692,805	$4,694,000	$5,228,962	$302,235
	Civilian CRP Pilot ($)	$9,135,503	$0	$5,790,243	$0	$0
Totals	Total SBIR Obligations ($)	$773,384,238	$199,642,873	$163,327,061	$161,577,024	$28,801,636
	Amount of Extramural R/R&D the Agency reported to SBA	$25,859,796,811	$6,528,019,000	$6,036,000,000	$5,444,000,000	$707,988,706
	Percent SBIR Obligations made in FY 2016 as determined using Agency provided Extramural R/R&D (See Section 9 for details)	2.99%	3.06%	2.71%	2.97%	4.07%

+ Agencies cannot use SBIR/STTR funding for Phase III awards and these dollars are not part of Total SBIR Obligations. This table includes Phase III dollars under the SBIR and STTR programs. * These are DTA funds provided by the agency directly to the awardee through grant or contract and thus already included in PI/PII obligation award amounts.

Table 2: SBIR Program – Civilian Agency Summary Data - DHS, DOC, DOT, ED, and EPA

Phase	REPORT FIELD	DHS	DOC	DOT	ED	EPA	SBIR TOTAL All Civilian Agencies
Phase I	Solicitations Released (#)	1	2	1	1	1	35
	Proposals Received (#) / Selection Rate (%)	208 / 18%	218 / 19%	68 / 4%	247 / 4%	83 / 16%	11,671 / 15%
	New Phase I Awards (#)	38	41	3	9	13	1,746
	Obligations for New Phase I Awards ($)	$4,140,105	$4,407,332	$449,850	$1,249,670	$1,298,730	$312,763,685
	Obligations on Prior-Year Phase I Awards ($)	$0	$0	$0	$0	$0	$28,192,270
Phase II	Proposals Received (#) / Selection Rate (%)	32 / 50%	31 / 68%	34 / 44%	12 / 42%	17 / 53%	1,851 / 49%
	Total Phase II Awards (Initial + Second) (#)	16	21	15	5	9	898
	"Second Phase II" Awards (subset) (#)	4	0	5	0	0	62
	Obligations for New Phase II Awards ($)	$10,277,399	$7,677,005	$10,214,081	$4,499,890	$2,699,826	$714,663,761
	Obligations for "Second Phase II" Awards (subset)	$2,998,000	$0	$3,998,892	$0	$0	$53,157,057
	Obligations on Prior-Year Phase II Awards ($)	$1,550,096	$0	$800,496	$1,656,744	$799,678	$282,572,807
Phase III	Total Phase III Awards ($) +	$4,101,624	$297,866	$0	$0	$0	$16,598,263
Admin	Total Obligations for Discretionary Technical Assistance (DTA) ($)	$20,000	$199,780	$35,000	$0	$110,000	$6,854,939
	Agency Provided DTA (subset) ($)	$0	$199,780	$35,000	$0	$110,000	$5,765,717
	Small Business funded DTA (subset) ($) *	$20,000	$0	$0	$0	$0	$1,089,222
	Administrative Funding Pilot (AFPP) (3%) ($)	$0	$182,328	$118,220	$100,365	$0	$20,315,441
	Civilian CRP Pilot ($)	$999,546	$0	$0	$0	$0	$15,925,292
Totals	Total SBIR Obligations ($)	$16,967,146	$12,466,445	$11,617,647	$7,506,669	$4,908,234	1,380,198,973
	Amount of Extramural R/R&D the Agency reported to SBA	$390,303,540	$283,376,400	$309,371,000	$230,646,029	$155,552,700	$45,945,054,186
	Percent SBIR Obligations made in FY 2016 as determined using Agency provided Extramural R/R&D (%) (See Section 9 for more details)	4.35%	4.40%	3.76%	3.25%	3.16%	3.00%

+ Agencies cannot use SBIR/STTR funding for Phase III awards and these dollars are not part of Total SBIR Obligations. This table includes Phase III dollars under the SBIR and STTR programs.
* These are DTA funds provided by the agency directly to the awardee through grant or contract and thus already included in PI/PII obligation award amounts

SBIR Program Award Distribution by Participating Civilian Agency

In FY16, the Participating Civilian Agencies' total SBIR obligations amounted to $1,380,198,973 of which 56% came from HHS. Over 38% of total dollars were attributable to DOE, NASA, and NSF, with the remaining 6% of total FY16 SBIR award dollars being obligated by USDA, DHS, DOC, ED, DOT, and EPA. The chart below shows the distribution of funds across the agencies.

Chart 3: Distribution of Total SBIR Dollars Obligated – Civilian Agencies

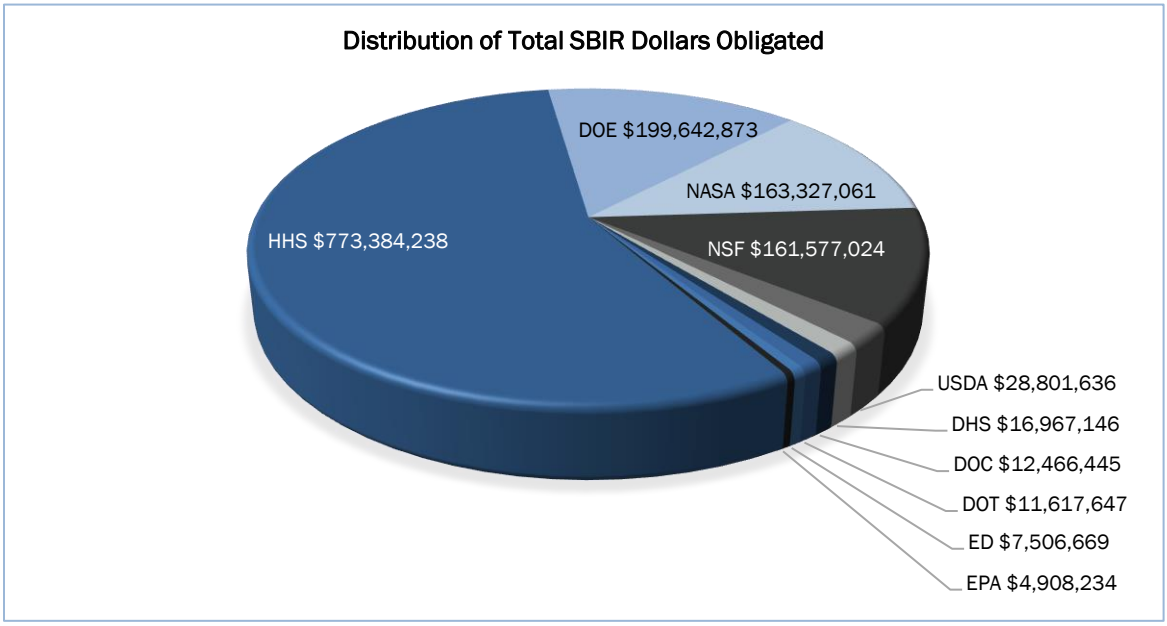


Table 3: SBIR Program Performance Snapshot – Civilian Agencies

SBIR Summary Statistics
• $1,027,427,446 in 2,644 new awards • $312,763,685 in 1,746 new Phase I awards • $714,663,761 in 898 new Phase II awards • $28,192,270 in prior-year Phase I awards • $282,572,807 in prior-year Phase II awards • 15% of Phase I proposals received awards • 49% of Phase II proposals received awards • $128,733,554 or 13% of new SBIR obligations, went to Women-Owned Small Business Concerns • $74,595,942 (over 7%) of new SBIR obligations went to Socially and Economically Disadvantaged-Owned Small Business Concerns • $81,450,336 or approximately 8% of new SBIR obligations, went to HUBZone-certified Small Business Concerns

- Congress directs the SBIR Program to foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons. The following tables and charts summarize SBIR participation across Participating Agencies by women-owned small businesses (WOSB); socially and economically disadvantaged small businesses (SDB); and small businesses located in Historically Underutilized Business Zones (HUBZone). For definitions of WOSB see the Policy Directive § 3(ss), for SDB see § 3(ll) and for HUBZone see 15 USC § 632(p)(3).

Table 4: SBIR Program – Civilian Agency Summary Data by Socioeconomic Group – HHS, DOE, NASA, NSF, and USDA

Socio Group	Phase	REPORT FIELD	HHS	DOE	NASA	NSF	USDA
WOSB	Phase I	WOSB Proposals Received / % of Total	845 / 14%	156 / 11%	167 / 13%	286 / 16%	80 / 17%
		WOSB Awards / % of New Phase I Awards	88 / 13%	28 / 10%	33 / 10%	47 / 19%	5 / 7%
		WOSB Obligations / % of New Phase I Award	$21,078,280 / 12%	$4,477,460 / 10%	$4,065,502 / 10%	$8,856,818 / 19%	$497,227 / 7%
	Phase II	WOSB Proposals Received / % of Total	109 / 13%	17 / 5%	74 / 23%	39 / 20%	9 / 14%
		WOSB Awards / % of New Phase II Awards	62 / 15%	2 / 1%	13 / 9%	22 / 20%	6 / 18%
		WOSB Obligations / % of New Phase II Award	$44,450,772 / 14%	$2,009,998 / 1%	$10,511,751 / 10%	$16,271,080 / 20%	$3,529,988 / 17%
SDB	Phase I	SDB Proposals Received / % of Total	313 / 5%	97 / 7%	172 / 13%	292 / 17%	34 / 7%
		SDB Awards / % of New Phase I Awards	27 / 4%	6 / 2%	37 / 11%	30 / 12%	5 / 7%
		SDB Obligations / % of New Phase I Award	$6,631,041 / 2%	$974,818 / 2%	$4,570,509 / 11%	$5,814,872 / 12%	$451,662 / 6%
	Phase II	SDB Proposals Received / % of Total	16 / 2%	18 / 5%	64 / 20%	20 / 10%	0 / 0%
		SDB Awards / % of New Phase II Awards	12 / 3%	10 / 7%	8 /6%	14 / 13%	0 / 0%
		SDB Obligations / % of New Phase II Award	$9,555,315 / 3%	$11,693,187 / 8%	$5,263,972 / 5%	$10,421,113 / 13%	$0 / 0%
HUB Zone	Phase I	HUBZone Proposals Received / % of Total	3 / 0%	112 / 8%	30 / 2%	143 / 8%	62 / 13%
		HUBZone Awards / % of New Phase I Awards	0 / 0%	12 / 4%	4 / 1%	16 / 6%	5 / 7%
		HUBZone Obligations / % of New Phase I Award Obligations	$0 / 0%	$1,870,083 / 4%	$499,646 / 1%	$3,163,668 / 7%	$498,212 / 7%
	Phase II	HUBZone Proposals Received / % of Total	1 / 0%	30 / 9%	5 / 2%	11 / 6%	7 / 11%
		HUBZone Awards / % of New Phase II Awards	1 / 0%	11 / 7%	2 / 1%	7 / 6%	3 / 9%
		HUBZone Obligations / % of New Phase II Award Obligations	$287,140 / 0%	$10,855,044 / 7%	$1,504,319 / 1%	$5,249,093 / 7%	$1,798,914 / 9%

Table 5: Civilian Agency Summary Data by Socioeconomic Group – DHS, DOC, DOT, ED, and EPA

Socio Group	Phase	REPORT FIELD	DHS	DOC	DOT	ED	EPA	SBIR TOTAL All Civilian Agencies
WOSB	Phase I	WOSB Proposals Received / % of Total	33 / 16%	26 / 12%	12 / 18%	64 / 26%	11 / 13%	1,680 / 14%
		WOSB Awards / % of New Phase I Awards	6 / 16%	5 / 12%	1 / 33%	2 / 22%	2 / 15%	219 / 13%
		WOSB Obligations / % of New Phase I Award Obligations	$599,472 / 14%	$574,568 / 13%	$149,937 / 33%	$205,020 / 16%	$199,999 / 15%	$42,090,549 / 13%
	Phase II	WOSB Proposals Received / % of Total	4 / 13%	3 / 10%	7 / 21%	3 / 25%	5 / 29%	270 / 15%
		WOSB Awards / % of New Phase II Awards	2 / 13%	2 / 10%	7 / 47%	2 / 40%	3 / 33%	121 / 13%
		WOSB Obligations / % of New Phase II Award Obligations	$1,497,729 / 15%	$799,635 / 10%	$4,870,627 / 48%	$1,799,904 / 40%	$900,000 / 33%	$86,643,005 / 12%
SDB	Phase I	SDB Proposals Received / % of Total	27 / 13%	26 / 12%	11 / 16%	30 / 12%	10 / 12%	1,012 / 9%
		SDB Awards / % of New Phase I Awards	4 / 11%	4 / 10%	1 / 33%	0 / 0%	1 / 8%	116 / 7%
		SDB Obligations / % of New Phase I Award Obligations	$395,303 / 10%	$439,067 / 10%	$149,927 / 33%	0 / 0%	$99,389 / 8%	$21,463,154 / 7%
	Phase II	SDB Proposals Received / % of Total	1 / 3%	2 / 6%	10 / 29%	0 / 0%	2 /12%	133 / 7%
		SDB Awards/ % of New Phase II Awards	1 / 6%	1 / 5%	2 / 13%	0 / 0%	0 / 0%	121 / 13%
		SDB Obligations / % of New Phase II Award Obligations	$759,963 / 7%	$300,000 / 4%	$1,499,998 / 15%	$0 / 0%	$0 / 0%	$53,132,788 / 5%
HUB Zone	Phase I	HUBZone Proposals Received / % of Total	0 / 0%	10 / 5%	3 / 4%	12 / 5%	2 / 2%	377 / 3%
		HUBZone Awards / % of New Phase I Awards	0 / 0%	5 / 12%	0 / 0%	0 / 0%	0 / 0%	42 / 2%
		HUBZone Obligations / % of New Phase I Award Obligations	$0 / 0%	$538,630 / 12%	$0 / 0%	$0 / 0%	$0 / 0%	$14,166,725 / 4%
	Phase II	HUBZone Proposals Received / % of Total	0 / 0%	1 / 3%	1 / 3%	0 / 0%	0 / 0%	56 / 3%
		HUBZone Awards / % of New Phase II Awards	0 / 0%	0 / 0%	1 / 7%	0 / 0%	0 / 0%	25 / 3%
		HUBZone Obligations / % of New Phase II Award Obligations	$0 / 0%	$0 / 0%	$346,573 / 3%	$0 / 0%	$0 / 0%	$67,283,611 / 9%

Chart 4: Percent of Phase I SBIR Dollars to Socioeconomic Groups – Civilian Agencies

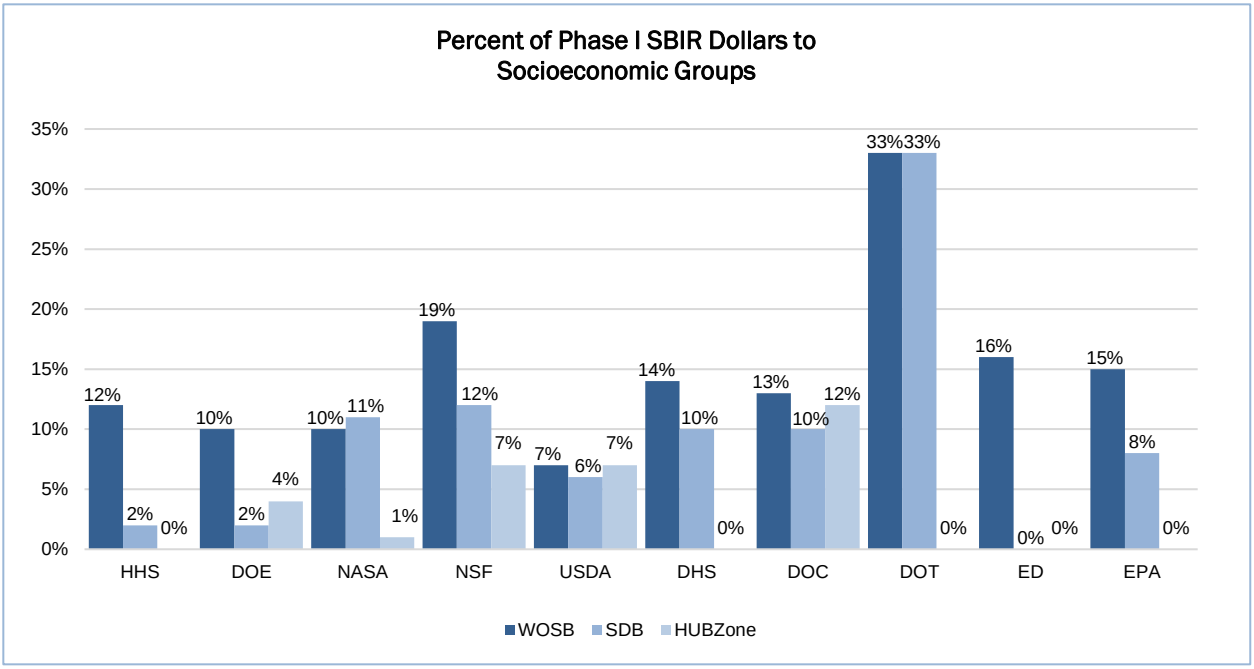
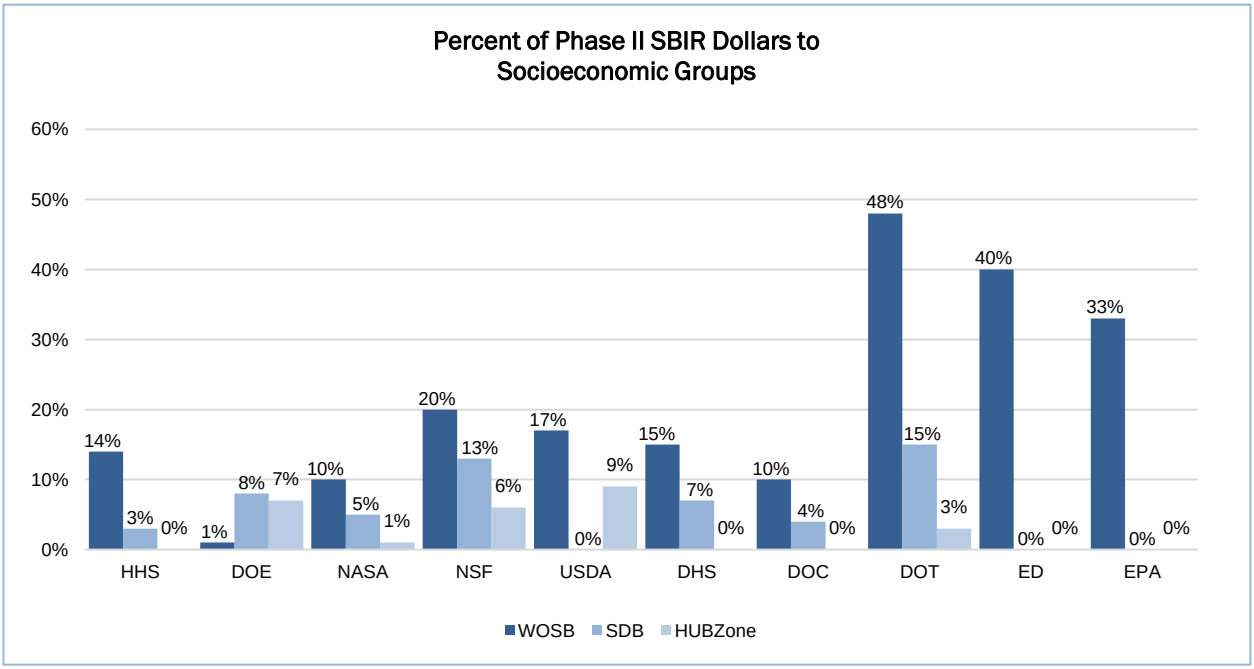


Chart 5: Percent of Phase II SBIR Dollars to Socioeconomic Groups – Civilian Agencies



6 | SBIR Program – DoD Summary Data

To facilitate the review of the FY16 data collected on the DoD SBIR Program and present a more comprehensive reflection of individual DoD component program performance, the DoD data is organized in Tables 6 and 7 by DoD Service Agencies (Navy, Air Force, and Army) and the Fourth Estate (DARPA, MDA, DHP, CBD, SOCOM, DTRA, DLA, DMEA, and OSD). This data is submitted by the DoD through the SBA Annual Report submission site. SBA requires the data included in this report be a summation of individual awards uploaded to SBA by the DoD, and that this data match what is available on SBIR.gov. SBA, the DoD, and the Components identified errors which are discussed in detail in Section 9. Due to significant delays in obtaining accurate data from DoD, SBA decided to move forward with this report while continuing to work with the DoD to address the challenges in properly uploading the DoD data. SBA intends to provide an updated annual report when these issues are resolved.

Table 6: SBIR Program – DoD Summary Data – Service Agencies and Fourth Estate

Phase	REPORT FIELD	Navy	Air Force	Army	Fourth Estate	DoD Total Reported
Phase I	Solicitations Released (#)	3	3	3	3	3
	Proposals Received (#) / Selection Rate (%)	2,066 / 19%	1,938 / 16%	1,518 / 12%	1,467 / 19%	6,989 / 17%
	New Phase I Awards (#)	385	307	186	285	1163
	Obligations for New Phase I Awards ($)	$34,628,560	$45,977,368	$18,618,374	$31,075,910	$130,300,212
	Obligations on Prior-Year Phase I Awards ($)	$8,724,477	$449,678	$1,445,912	$2,605,034	$13,225,101
Phase II	Proposals Received (#) / Selection Rate (%)	244 / 76%	515 / 45%	262 / 42%	411 / 41%	1,432 / 48%
	New Phase II Awards (Initial + Second) (#)	185	230	110	169	694
	"Second Phase II" Awards (subset) (#)	48	50	52	38	188
	Obligations for New Phase II Awards ($)	$117,428,815	$168,522,851	$60,469,513	$148,041,864	$494,463,043
	Obligations for "Second Phase II" Awards (subset) ($)	$23,200,166	$46,832,412	$29,196,597	$33,706,910	$132,936,085
	Obligations on Prior-Year Phase II Awards ($)	$126,322,594	$93,129,513	$40,626,747	$43,418,367	$303,497,221
Phase III	Total Phase III Awards+ (For both SBIR and STTR) ($)+	$503,501,467	$235,120,596	$18,086,410	$7,130,927	$763,839,400
Admin	Total Obligations for Discretionary Technical Assistance (DTA) ($)	$2,229,957	$0	$0	$99,764	$2,329,721
	Agency Provided DTA (subset) ($)	$2,229,957	$0	$0	$99,764	$2,329,721
	Small Business funded DTA (subset) *	$0	$0	$0	$0	$0
	Administrative Funding Pilot (AFPP) (3%) ($)	$6,674,990	$5,853,250	$1,501,000	$19,024,809	$33,054,049
	DoD 1% CRP ($)	$1,680,000	$2,920,000	$370,000	N/P	$4,970,000
Totals	Total SBIR Obligations ($)	$297,689,393	$316,852,660	$123,031,546	$244,265,748	$981,839,347
	Amount of Extramural R/R&D the Agency reported to SBA	$10,120,425,993	$9,761,877,658	$6,400,978,000	$10,419,251,442	$36,702,533,093
	Percent SBIR Obligations made in FY 2016 as determined using Agency provided Extramural R/R&D (See Section 9 for details)	2.94%	3.25%	1.92%	2.34%	2.68%

N/P– denotes data was "Not Provided" to SBA
+ Agencies cannot use SBIR/STTR funding for Phase III awards and these dollars are not part of Total SBIR Obligations. Phase III dollars listed includes both SBIR and STTR programs.
* These are DTA funds provided by the agency directly to the awardee through grant or contract and thus already included in PI/PII obligation award amounts

DoD Service Agencies and Fourth Estate

In FY16, DoD Service Agencies and Fourth Estate's total SBIR obligations amounted to $981,839,347 of which almost 63% is attributable to Navy and Air Force. The chart below shows the distribution of these funds across the DoD Components.

Chart 6: Distribution of Total SBIR Dollars Obligated – DoD Service Agencies and Fourth Estate

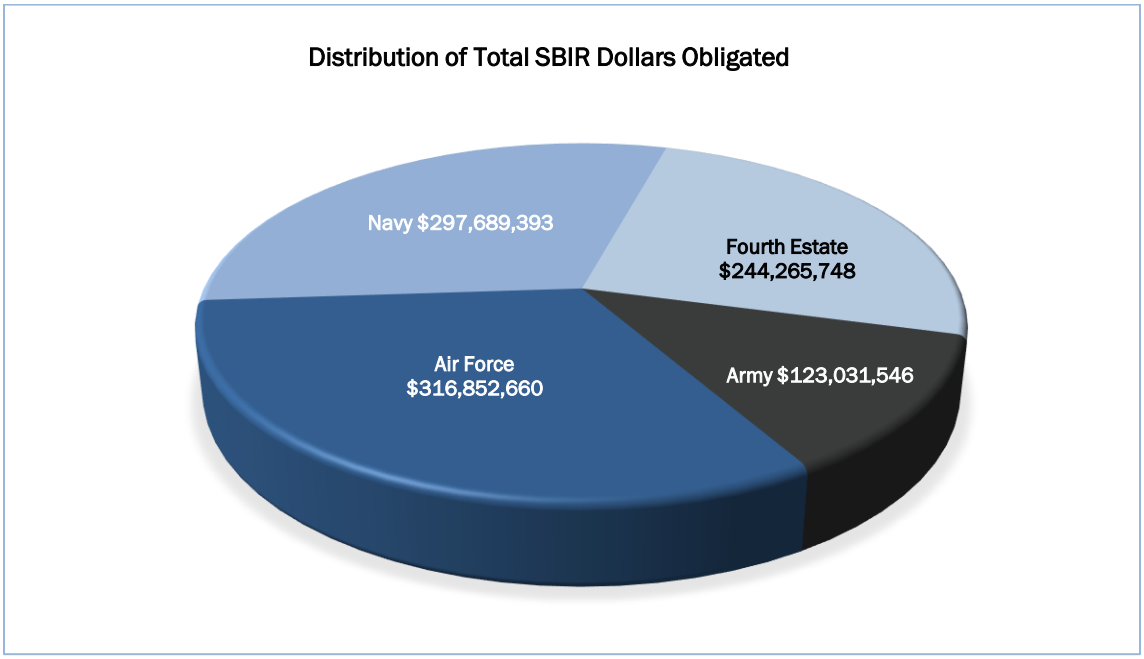


Table 7: SBIR Program Performance Snapshot – DoD Components

SBIR Summary Statistics
• $624,763,255 in 1,857 new awards • $130,300,212 in 1,163 new Phase I awards • $494,463,043 in 694 new Phase II awards • $13,225,101 in prior-year Phase I awards • $303,497,221 in prior-year Phase II awards • 17% of Phase I proposals received awards • 55% of Phase II proposals received awards • $94,151,400 (~15%) of new SBIR obligations, went to Women-Owned Small Business Concerns • $39,977,557 (over 6%) of new SBIR obligations, went to Socially or Economically Disadvantaged-Owned Small Business Concerns • $9,186,905 (~1%) of new SBIR obligations went to HUBZone-certified Small Business Concerns

Congress directs the SBIR Program to foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons. The following tables and charts summarize SBIR participation across Participating Agencies by women-owned small businesses (WOSB); socially and economically disadvantaged small businesses (SDB); and small businesses located in Historically Underutilized Business Zones (HUBZone).

Table 8: SBIR Program – DoD Summary Data by Socioeconomic Group – Service Agencies and Fourth Estate

Socio Group	Phase	REPORT FIELD	Navy	Air Force	Army	Fourth Estate	DoD Total Reported*
WOSB	Phase I	WOSB Proposals Received / % of Total	323 / 16%	320 / 17%	227 / 15%	261 / 18%	1,131 / 16%
		WOSB Awards / % of New Phase I Awards	53 / 14%	50 / 16%	25 / 13%	54 / 19%	182 / 16%
		WOSB Obligations / % of New Phase I Award Obligations	4,938,679 / 14%	7,498,018 / 16%	2,496,574 / 13%	5,649,853 / 18%	20,583,120 / 16%
	Phase II	WOSB Proposals Received / % of Total	27 / 11%	64 / 12%	45 / 17%	59 / 14%	195 / 14%
		WOSB Awards / % of New Phase II Awards	30 / 16%	33 / 14%	16 / 15%	20 / 12%	99 / 14%
		WOSB Obligations / % of New Phase II Award Obligations	23,005,890 / 20%	22,922,640 / 14%	8,115,127 / 13%	19,524,620 / 13%	73,568,280 / 15%
SDB	Phase I	SDB Proposals Received / % of Total	191 / 9%	155 / 8%	137 / 9%	170 / 12%	653 / 9%
		SDB Awards / % of New Phase I Awards	22 / 6%	16 / 5%	14 / 8%	20 / 7%	72 / 6%
		SDB Obligations / % of New Phase I Award Obligations	1,898,651 / 5%	2,396,850 / 5%	1,413,615 / 8%	2,332,481 / 8%	8,041,597 / 6%
	Phase II	SDB Proposals Received / % of Total	20 / 8%	38 / 7%	24 / 9%	23 / 6%	105 / 7%
		SDB Awards / % of New Phase II Awards	10 / 5%	14 / 6%	11 / 10%	10 / 6%	45 / 6%
		SDB Obligations/ % of New Phase II Award Obligations	7,254,210 / 6%	11,006,060 / 7%	5,456,945 / 9%	8,218,753 / 6%	31,935,960 / 6%
HUB Zone	Phase I	HUBZone Proposals Received / % of Total	37 / 2%	20 / 1%	18 / 1%	28 / 2%	103 / 1%
		HUBZone Awards / % of New Phase I Awards	4 / 1%	4 / 1%	1 / 1%	7 / 2%	16 / 1%
		HUBZone Obligations / % of New Phase I Award Obligations	459,449 / 1%	599,512 / 1%	99,993 / 1%	464,540 / 1%	1,623,494 / 1%
	Phase II	HUBZone Proposals Received / % of Total	2 / 1%	5 / 1%	3 / 1%	13 / 3%	23 / 2%
		HUBZone Awards / % of New Phase II Awards	4 / 2%	1 / 0%	1 / 1%	4 / 2%	10 / 1%
		HUBZone Obligations / % of New Phase II Award Obligations	2,491,970 / 2%	726,947 / 0%	375,746 / 1%	3,968,749 / 3%	7,563,411 / 2%

Chart 8: Percent of Phase I SBIR Dollars to Socioeconomic Groups – DoD Service Agencies and Fourth Estate

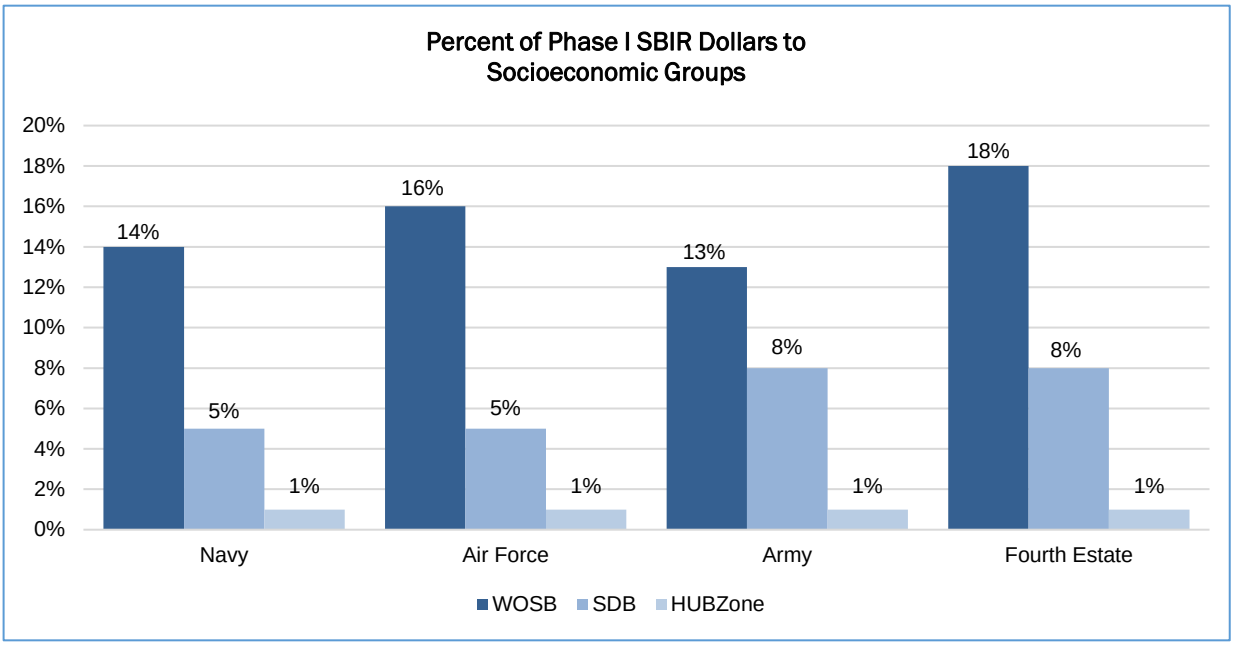
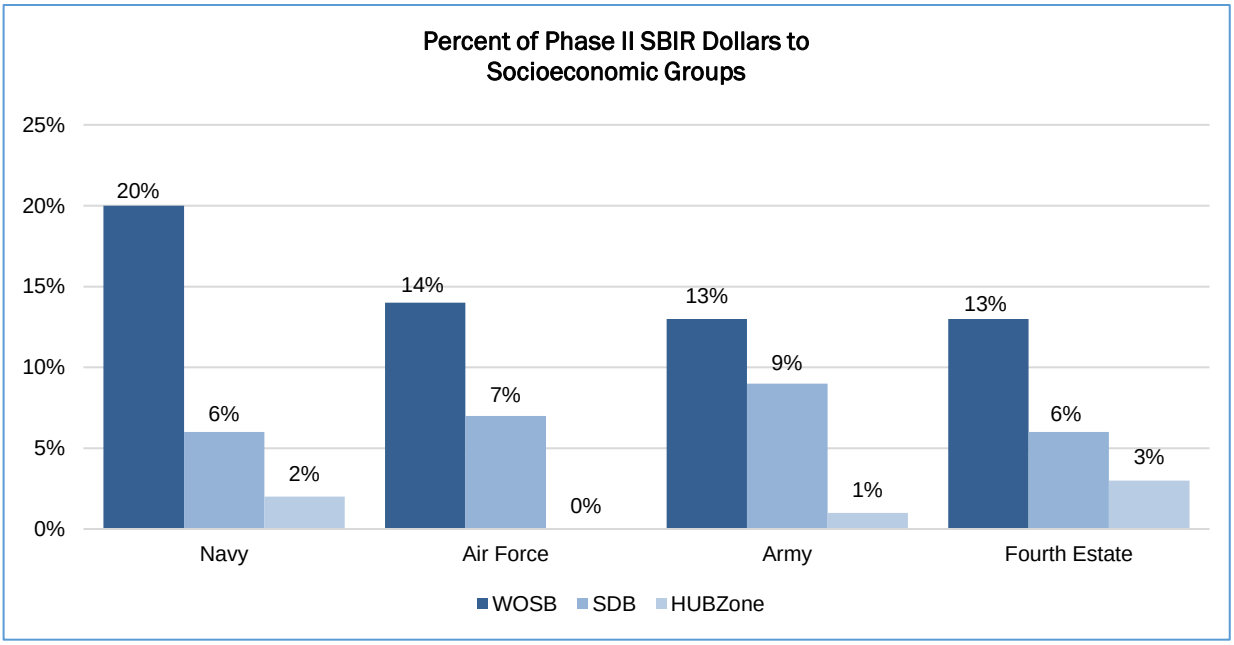


Chart 7: Percent of Phase II SBIR Dollars to Socioeconomic Groups – DoD Service Agencies and Fourth Estate



7 | STTR Program – Civilian Agency Summary Data

Table 9 provides proposal and award summary data from the four Civilian Agencies whose extramural R/R&D obligations exceed $1 billion, thereby mandating participation in the STTR program. STTR program proposal and award summary data for the DoD is provided in Table 10. This data is submitted by the Agencies through the SBA annual report submission site, verified by SBA, and further analyzed to develop percent ratios for many of the reported fields. Though the data has been validated by the Agencies, SBA has identified data verification challenges, and continues to work with the Agencies to improve the accuracy of all reported data. Details on the SBA analysis are provided in Section 9.

Table 9: STTR Program – Civilian Agency Summary Data - HHS, DOE, NASA, and NSF

Phase	REPORT FIELD	HHS	DOE	NASA	NSF	STTR TOTAL All Civilian Agencies
Phase I	Solicitations Released (#)	10	2	1	2	15
	Proposals Received (#) / Proposal Selection Rate (%)	1,476 / 14%	245 / 18%	128 / 45%	434 / 19%	2,283 / 17%
	New Phase I Awards (#)	207	44	58	81	390
	Obligations for New Phase I Awards ($)	$49,739,995	$6,896,562	$7,219,979	$18,213,075	$82,069,611
	Obligations on Prior-Year Phase I Awards ($)	$3,810,743	$0	$0	$719,157	$4,529,900
	Total Obligations for Research Institutions / % of New + Prior Obligations	$23,926,763 / 45%	$2,620,451 / 38%	$3,080,459 / 43%	$7,734,503 / 41%	$37,362,176 / 43%
Phase II	Proposals Received (#) / Proposal Selection Rate (%)	126 / 39%	48 / 46%	48 / 35%	36 / 22%	258 / 37%
	New Phase II Awards (Initial + Second) (#)	49	22	17	8	96
	"Second Phase II" Awards (subset) (#)	1	2	0	0	3
	Obligations for New Phase II Awards ($)	$36,077,206	$23,359,352	$12,760,306	$5,858,667	$78,055,531
	Obligations for "Second Phase II" Awards (subset) ($)	$875,076	$1,999,702	$0	$0	$2,874,778
	Obligations on Prior-Year Phase II Awards ($)	$25,729,283	$0	$119,187	$485,170	$26,333,640
	Total Obligations for Research Institutions / % of New + Prior Obligations	$27,113,472 / 44%	$6,499,754 / 28%	$4,827,114 / 37%	$2,139,486 / 34%	$40,579,826 / 39%
Admin	Obligations for Discretionary Technical Assistance (DTA)	$5,000	$304,390	$80,000	$0	$389,390
	Agency Provided DTA (subset) ($)	$0	$299,390	$0	$0	$299,390
	Small Business funded DTA (subset) *	$5,000	$5,000	$80,000	$0	$90,000
	Obligations for "Phase 0" Programs (NIH only) ($)	$4,999,192	N/R	N/R	N/R	$4,999,192
Totals	Total STTR Obligations ($)	$120,356,419	$30,555,304	$20,099,472	$25,276,069	$196,287,264
	Extramural R/R&D to Determine Minimum Spending Requirement Reported to SBA ($)	$25,859,796,811	$6,528,019,000	$6,036,000,000	$5,444,000,000	$43,867,815,811
	STTR Obligations as Share of Extramural R/R&D (%)	0.47%	0.47%	0.33%	0.46%	0.45%

*These amounts are already included in PI/PII obligation award amounts N/R– Not Required as only NIH has this authority

STTR Program Award Distribution by Participating Civilian Agency

In FY16, the Participating Civilian Agencies' total STTR obligations amounted to $196,287,264 of which nearly 61% came from HHS.

Chart 9: Distribution of Total STTR Dollars Obligated – Civilian Agencies

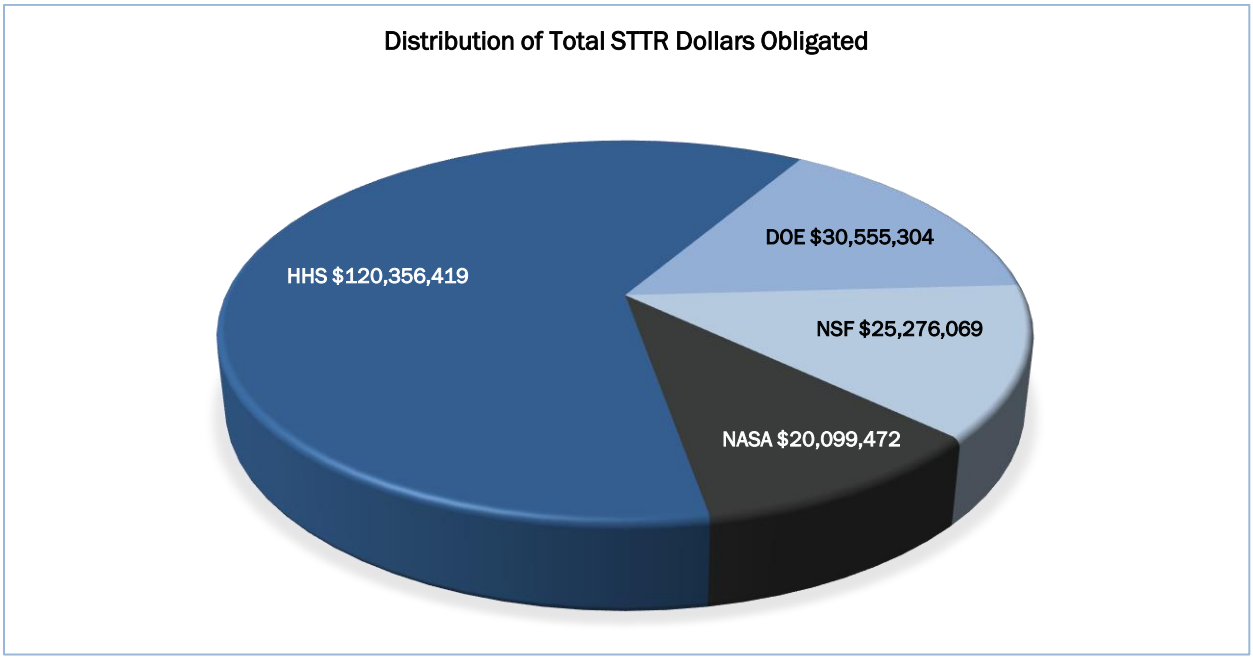


Table 10: STTR Program Performance Snapshot – Civilian Agencies

STTR Summary Statistics
• $160,125,142 in 486 new awards • $82,069,611 in 390 new Phase I awards • $78,055,531 in 96 new Phase II awards • $4,529,900 in prior-year Phase I awards • $26,333,640 in prior-year Phase II awards • 17% of Phase I proposals received awards • 37% of Phase II proposals received awards • $14,075,312 (9%) of new STTR obligations went to Women-Owned Small Business Concerns • $11,787,689 (7%) of new STTR obligations, went to Socially and Economically Disadvantaged-Owned Small Business Concerns • $3,264,752 (2%) of new STTR obligations, went to HUBZone-certified Small Business Concerns

Congress directs the STTR Program to foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons. The following tables and charts summarize STTR participation across Participating Agencies by women-owned small businesses (WOSB); socially and economically disadvantaged small businesses (SDB); and small businesses located in Historically Underutilized Business Zones (HUBZone).

Table 11: STTR Program – Civilian Agency Summary Data by Socioeconomic Group – HHS, DOE, NASA, and NSF

Socio Group	Phase	REPORT FIELD	HHS	DOE	NASA	NSF	TOTAL
WOSB	Phase I	WOSB Proposals Received (#) / Percent of Total (%)	191 / 13%	32 / 13%	11 / 9%	69 / 16%	303 / 13%
		WOSB Awards (#) / Percent of New Phase I Awards (%)	26 / 13%	5/ 11%	4 / 7%	9 / 11%	44 / 11%
		WOSB Obligations ($) / % of New Phase I Award Obligations	$5,454,822 / 11%	$824,505 / 12%	$498,050 / 7%	$2,010,698 / 11%	$8,788,075 / 10%
	Phase II	WOSB Proposals Received (#) / Percent of Total (%)	19 / 15%	3 / 6%	0 / 0%	11 / 31%	33 / 13%
		WOSB Awards (#) / Percent of New Phase II Awards (%)	6 / 12%	0 / 0%	0 / 0%	2 / 25%	8 / 8%
		WOSB Obligations ($) / % of New Phase II Award Obligations	$3,800,359 / 8%	$0 / 0%	$0 / 0%	$1,486,878 / 25%	$5,287,237 / 7%
SDB	Phase I	SDB Proposals Received (#) / Percent of Total (%)	52 / 4%	13 / 5%	25 / 20%	61 / 14%	151 / 7%
		SDB Awards (#) / Percent of New Phase I Awards (%)	5 / 2%	1 / 2%	9 / 16%	9 / 11%	24 / 6%
		SDB Obligations ($) / % of New Phase I Award Obligations	$948,666 / 2%	$149,798 / 2%	$1,122,322 / 16%	$2,023,546 / 11%	$4,244,332 / 5%
	Phase II	SDB Proposals Received (#) / Percent of Total (%)	5 / 4%	5 / 10%	5 / 10%	4 / 11%	19 / 7%
		SDB Awards (#)/ Percent of New Phase II Awards (%)	2 / 4%	4 / 19%	2 / 12%	0 / 0%	8 / 8%
		SDB Obligations ($) / % of New Phase II Award Obligations	$1,043,433 /2%	$4,999,998 / 22%	$1,499,926 / 12%	$0 / 0%	$7,543,357 / 10%
HUB Zone	Phase I	HUBZone Proposals Received (#) / Percent of Total (%)	0 / 0%	17 / 7%	2 / 2%	20 / 5%	39 / 2%
		HUBZone Awards (#) / Percent of New Phase I Awards (%)	0 / 0%	5 / 11%	1 / 2%	4 / 5%	10 / 3%
		HUBZone Obligations ($) / % of New Phase I Award Obligations	$0 / 0%	$749,881 / 11%	$115,821 / 2%	$899,733 / 5%	$1,765,435 /2%
	Phase II	HUBZone Proposals Received (#) / Percent of Total (%)	0 / 0%	5 / 10%	2 / 4%	3 / 8%	10 / 4%
		HUBZone Awards (#) / Percent of New Phase II Awards	0 / 0%	0 / 0%	1 / 6%	1 / 13%	2 / 2%
		HUBZone Obligations ($) / % of New Phase II Award Obligations	$0 / 0%	$0 / 0%	$749,317 / 6%	$750,000 / 13%	$1,499,317 /2%

Chart 11: Percent of Phase I STTR Dollars to Socioeconomic Groups – Civilian Agencies

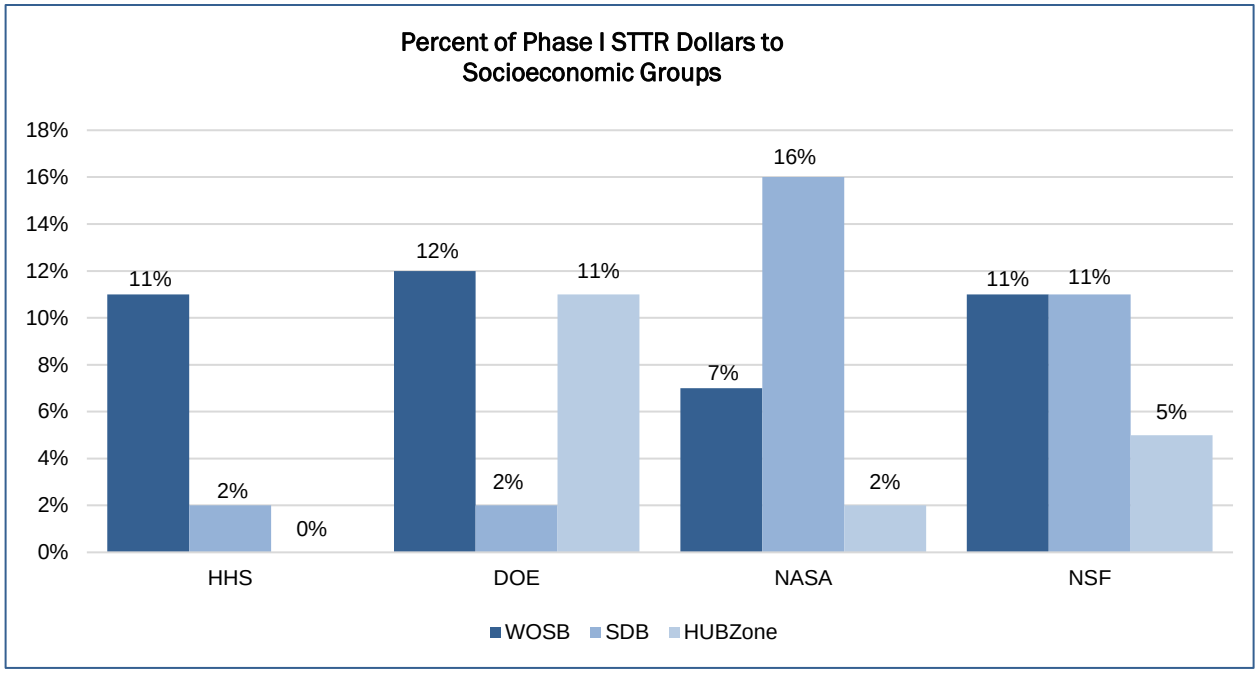
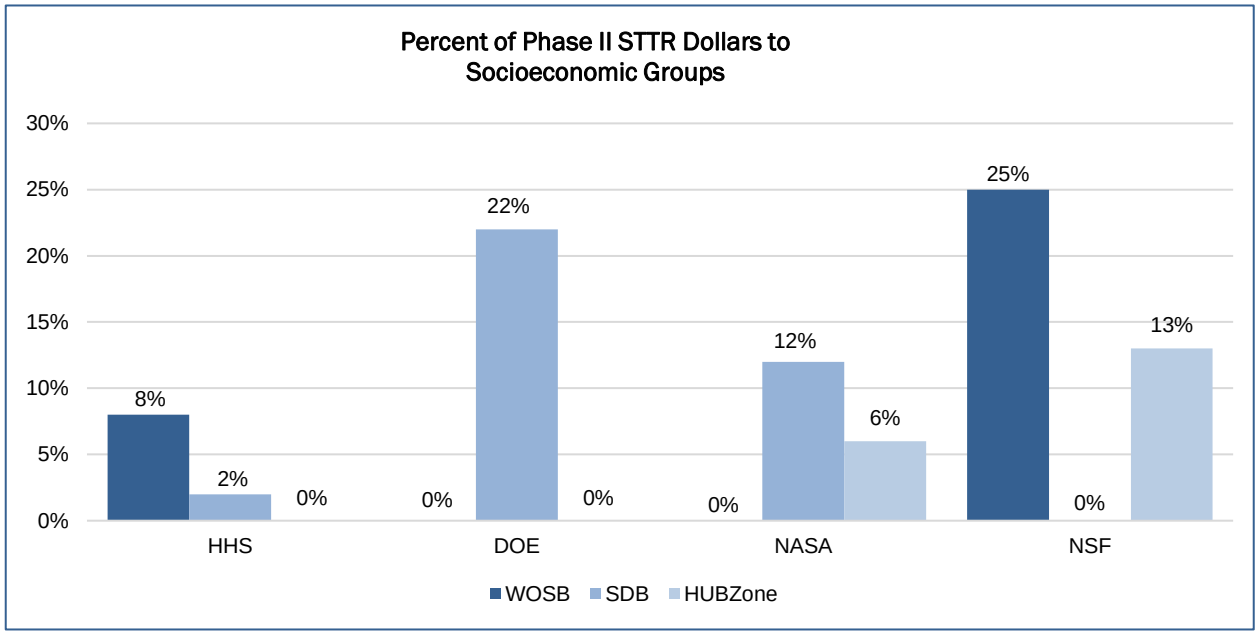


Chart 10: Percent of Phase II STTR Dollars to Socioeconomic Groups – Civilian Agencies



8 | STTR Program – DoD Summary Data

DoD Summary Data

To facilitate the review of the FY16 data collected on the DoD STTR Program, and present a more comprehensive reflection of individual DoD component program performance, the DoD data is organized by DoD Service Agencies (Navy, Air Force, and Army), and the Fourth Estate (DARPA, MDA, DHP, CBD, SOCOM, DTRA, DLA, DMEA, and OSD). This data is submitted by the DoD through the SBA Annual Report submission site. SBA requires the data included in this report be a summation of individual awards uploaded to SBA by the DoD, and that this data match what is available on SBIR.gov. SBA, the DoD, and the Components identified errors which are discussed in detail in Section 9. Due to significant delays in obtaining accurate data from DoD, SBA decided to move forward with this report while continuing to work with the DoD to address the challenges in properly uploading the DoD data. SBA intends to provide an updated annual report when these challenges are resolved.

Table 12: STTR Program – DoD Summary Data – Service Agencies and Fourth Estate

Phase	REPORT FIELD	Navy	Air Force	Army	Fourth Estate	DoD Total
Phase I	Solicitations Released (#)	2	3	1	3	3
	Proposals Received (#) / Proposal Selection Rate (%)	193 / 35%	196 / 32%	118/ 31%	173 / 21%	680 / 30%
	New Phase I Awards (#)	68	63	37	37	205
	Obligations for New Phase I Awards ($)	$5,440,182	$9,445,272	$5,521,733	$4,601,815	$25,009,002
	Obligations on Prior-Year Phase I Awards ($)	$2,168,850	$595,052	$0	$99,870	$2,863,772
	Total Obligations for Research Institutions / % of New + Prior	$1,879,526 / 25%	$3,703,205 / 37%	$3,399,698 / 62%	$3,157,364 / 67%	$12,139,794 / 44%
Phase II	Proposals Received (#) / Proposal Selection Rate (%)	41 / 73%	82 / 48%	46 / 41%	31 / 52%	200 / 52%
	Total Phase II Awards (Initial + Second) (#)	30	39	19	16	104
	"Second Phase II" Awards (subset) (#)	4	4	0	2	10
	Obligations for New Phase II Awards ($)	$18,140,291	$23,152,196	$10,704,718	$13,033,135	$65,030,340
	Obligations for "Second Phase II" Awards (subset) ($)	$1,399,391	$2,408,789	$0	$796,521	$4,604,701
	Obligations on Prior-Year Phase II Awards ($)	$11,343,351	$6,702,909	$4,153,610	$2,233,026	$24,432,896
	Total Obligations for Research Institutions / % of New + Prior	$14,563,850/ 49%	$13,212,223 / 44%	$10,326,092 / 69%	$7,181,086 / 47%	$45,283,251 / 51%
Admin	Obligations for Discretionary Technical Assistance (DTA) ($)	N/P	N/P	N/P	N/P	N/P
	Agency Program DTA (subset) ($)	$0	N/P	$0	$0	$0
	Small Business DTA (subset) ($)	N/P	N/P	N/P	N/P	$0
Totals	Total STTR Obligations ($)	$37,092,674	$39,895,429	$20,380,061	$19,967,846	$117,336,010
	Extramural R/R&D to Determine Minimum Spending Reported to SBA ($)	$10,571,087,993	$9,761,877,658	$6,400,978,000	$10,419,251,442	$37,153,195,093
	STTR Obligations as Share of Extramural R/R&D (%)	0.35%	0.41%	0.32%	0.19%	0.32%

N/P - Not Provided

DoD Service Agencies and Components

DoD Service Agencies and Fourth Estate's STTR obligations totaled $117,336,010 in FY16, of nearly 32% was attributable to the Navy, 34% was attributable to the Air Force, 17% was attributable to the Army, and 17% was attributable to the Fourth Estate as shown below.

Chart 12: Distribution of Total STTR Dollars Obligated – DoD Service Agencies and Fourth Estate

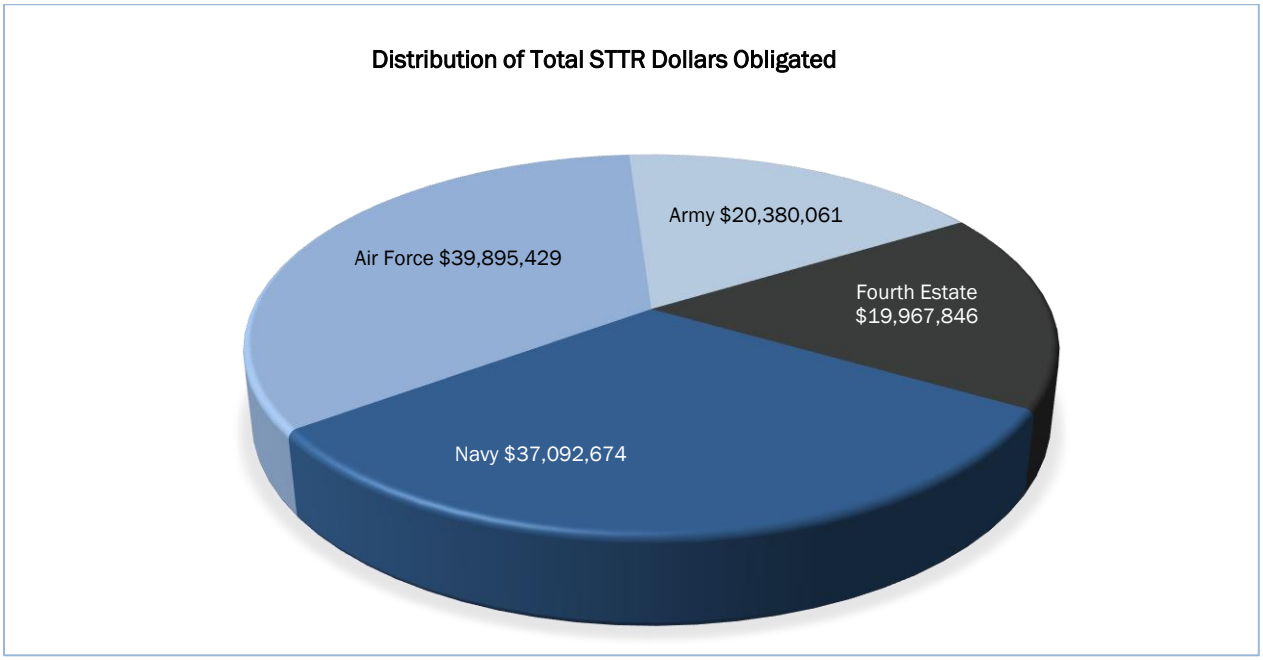


Table 13: STTR Program Performance Snapshot – DoD Components

STTR Summary Statistics
• $90,039,342 in 308 new Phase I and Phase II awards • $25,009,002 in 205 new Phase I awards • $65,030,340 in 104 new Phase II awards • $2,863,772 in prior-year Phase I awards • $24,432,896 in prior-year Phase II awards • 30% of Phase I proposals received awards • 52% of Phase II proposals received awards • $10,246,042 (11%) of new STTR obligations, went to Women-Owned Small Business Concerns • $7,151,245 (8%) of new STTR obligations, went to Socially and Economically Disadvantaged-Owned • $1,079,707 (1%) of new STTR obligations, went to HUBZone-certified Small Business Concerns

Congress directs the STTR Program to foster and encourage participation in innovation and entrepreneurship by women and socially and economically disadvantaged persons. The following tables and charts summarize STTR participation across Participating Agencies by women-owned small businesses (WOSB); socially and economically disadvantaged small businesses (SDB); and small businesses located in Historically Underutilized Business Zones (HUBZone).

Table 14: STTR Program – DoD Agency Summary Data by Socioeconomic Group – Service Agencies and Fourth Estate

Socio Group	Phase	REPORT FIELD	Navy	Air Force	Army	Fourth Estate	DoD Total
WOSB	Phase I	WOSB Proposals Received (#) / Percent of Total (%)	25 / 13%	22 / 11%	18 / 15%	29 / 17%	94 / 14%
		WOSB Awards (#) / Percent of New Phase I Awards (%)	11 / 16%	6 / 10%	4 / 11%	6 / 16%	27 / 13%
		WOSB Obligations ($) / % of New Phase I Award Obligations	$878,821 / 16%	$899,681 /10%	$599,943 / 11%	$654,909 / 14%	$3,033,354 / 12%
	Phase II	WOSB Proposals Received (#) / Percent of Total (%)	6 / 15%	5 / 6%	8 / 17%	5 / 16%	24 / 12%
		WOSB Awards (#) / Percent of New Phase II Awards (%)	4 / 13%	5 / 13%	1 / 5%	2 / 13%	12 / 12%
		WOSB Obligations ($) / % of New Phase II Award Obligations	$2,911,481 / 16%	$2,812,463 / 12%	$500,000 / 5%	$988,744 / 8%	$7,212,688 / 11%
SDB	Phase I	SDB Proposals Received (#) / Percent of Total (%)	15 / 8%	21 / 11%	10 / 8%	18 / 10%	64 / 9%
		SDB Awards (#) / Percent of New Phase I Awards (%)	6 / 9%	9 / 14%	2 / 5%	1 / 3%	18 / 9%
		SDB Obligations ($) / % of New Phase I Award Obligations	$479,153 / 9%	$1,349,193 / 14%	$300,000 / 5%	$149,968 / 3%	$2,278,314 / 9%
	Phase II	SDB Proposals Received (#) / Percent of Total (%)	2 / 5%	8 / 10%	2 / 4%	2 / 6%	14 / 7%
		SDB Awards (#)/ Percent of New Phase II Awards (%)	0 / 0%	6 / 15%	1 / 5%	1 / 6%	8 / 8%
		SDB Obligations ($) / % of New Phase II Award Obligations	0 / 0%	$3,374,890 / 15%	$500,000/ 5%	$998,041 / 8%	$4,872,931 / 7%
HUB Zone	Phase I	HUBZone SBC Proposals Received (#) / Percent of Total (%)	3 / 2%	2 / 1%	1 / 1%	2 / 1%	8 / 1%
		HUBZone SBC Awards (#) / % of New Phase I Awards	1 / 1%	1 / 2%	0 / 0%	1 / 3%	3 / 1%
		HUBZone SBC Obligations ($) / % of New Phase I Award Obligations	$79,999 / 1%	$149,938 / 2%	0 / 0%	$99,770 / 2%	$329,707 / 1%
	Phase II	HUBZone SBC Proposals Received (#) / Percent of Total (%)	1 / 2%	1 / 1%	0 / 0%	0 / 0%	2 / 1%
		HUBZone SBC Awards (#) / % of New Phase II Awards	0 / 0%	1 / 3%	0 / 0%	0 / 0%	1 / 1%
		HUBZone SBC Obligations ($) / % of New Phase II Award Obligations	0 / 0%	$750,000 / 3%	0 / 0%	0 / 0%	$750,000 / 1%

Chart 13: Percent of Phase I STTR Dollars to Socioeconomic Groups – DoD Service Agencies and Fourth Estate

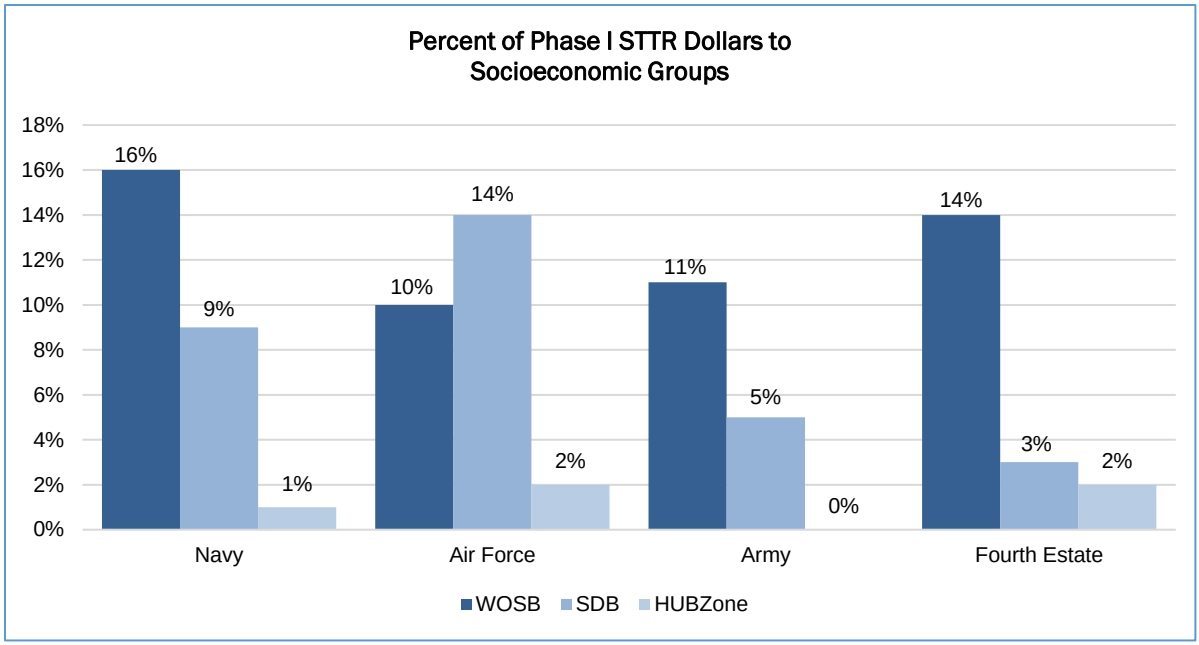
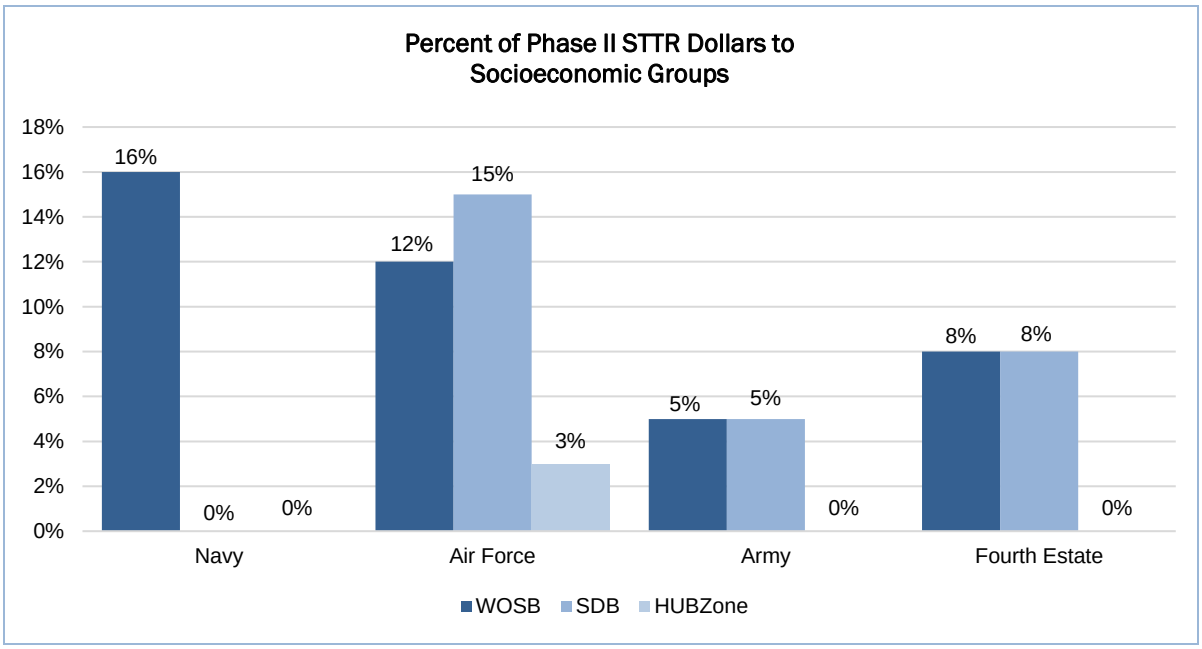


Chart 14: Percent of Phase II STTR Dollars to Socioeconomic Groups – DoD Service Agencies and Fourth Estate



9 | Minimum Spending Requirements and Understanding the Variance Between Extramural R/R&D Reported to SBA and NSF NCSES

The Policy Directive specifies the percentage of SBIR or STTR funds be measured based on agency extramural R/R&D funds obligated during the Fiscal Year. This is expressed as a percentage of extramural R/R&D and defines a minimum spending requirement. Therefore, the size of the SBIR/STTR Programs in any given year is dependent on the size of the extramural R/R&D budgets of the Participating Agencies for that year. For FY16, the Small Business Act (15 U.S.C. § 638 (f)(1) and (n)(1)) set the minimum percentage as not less than 3.0% for the SBIR Program and not less than 0.45% for the STTR Program. Agencies are required to meet or exceed these minimum percentages.

Participating Agency Compliance with Meeting Minimum Spending Requirements

Per 15 U.S.C. § 638, Participating Agencies are required to report to SBA the methodology used to calculate the amount of the extramural budget. This information is due not later than four months after the date of the enactment of each Agency's appropriations act. By March 15, each Participating Agency is responsible for reporting to SBA their total R/R&D extramural funds obligated from the prior Fiscal Year. This enables SBA to evaluate compliance with minimum spending requirements. Agencies face varying challenges regarding reporting and meeting these minimum spending requirements. These challenges are explained in the May 2016 GAO report, *Small Business Research Programs Agencies Have Improved Compliance with Spending and Reporting Requirements, but Challenges Remain* (https://www.gao.gov/products/GAO-16-492), and the May 2017 GAO report, *Small Business Research Programs: Most Agencies Met Spending Requirements, but DoD and EPA Need to Improve Data Reporting* (https://www.gao.gov/products/GAO-17-453). The issues are summarized below:

- The first challenge is identifying a common and transparent accounting of agency extramural R/R&D obligations for the year. The original Congressional intent in using extramural R/R&D as the basis for the SBIR/STTR funding requirement is clear: this is the portion of an agency's total R/R&D budget performed by non-federal employees and may therefore be performed by small businesses through grants and contracts. Section (e)(1) of 15 U.S.C. § 638 defines the term "extramural budget" as:

  > [T]he sum of the total obligations [for R/R&D] minus amounts obligated for such activities by employees of the agency in or through Government-owned, Government- operated facilities, except that for the Department of Energy it shall not include amounts obligated for atomic energy defense programs solely for weapons activities or for naval reactor programs, and except that for the Agency for International Development it shall not include amounts obligated solely for general institutional support of international research centers or for grants to foreign countries."

  As prescribed in Section 10(h)(4)(i) of the February 2014 SBIR/STTR Policy Directives, Participating Agencies must report the total fiscal year extramural R/R&D obligations as reported to the National Science Foundation[1] pursuant to the Annual Budget of the United States Government, commonly known as the NSF National Center for Science and Engineering Statistics (NCSES) Survey of Federal Funds for Research and Development (NCSES Survey). Currently the extramural R/R&D obligations reported by Participating Agencies to the NCSES Survey may differ from the amounts reported to the SBA. Therefore, SBA requested Participating Agencies provide a rationale for any variance between the amounts reported to SBA for the Annual Report and amounts reported to NSF for the NCSES Survey. Participating Agency explanations are provided in this report.
- The second challenge stems from the statutory definition of extramural budget, which looks to the amount that a Participating Agency "obligated" during the Fiscal Year. While most Participating Agencies report amounts of extramural R/R&D funding obligations, two agencies, the DoD and EPA, continue to report

[1]NSF's National Center for Science and Engineering Statistics (NCSES) at https://www.nsf.gov/statistics/srvyfedfunds/#sd indicates that there are some measurement problems known to exist in the data that is collected by the Survey of Federal Funds for Research and Development.

extramural R/R&D budget appropriations rather than the actual amount of funding obligated during the Fiscal Year. In this case, SBA cannot validate whether these Participating Agencies met their SBIR/STTR minimum spending requirements because the total extramural R/R&D obligations is unknown and the budget authority may be different.

- The third challenge is Participating Agencies never know the full obligations for their SBIR/STTR awards or extramural R/R&D spending until the Fiscal Year is over. They must do their best to estimate these amounts and make minor adjustments when possible during the year.
- The fourth challenge involves delays in the contracting process, especially for agencies with multi-year budget authority. Even when a Participating Agency plans to obligate funds during the fiscal year to meet the minimum spending requirement, delays in the contracting process may prevent those awards from being issued in that fiscal year and cause the agency to miss the minimum spending requirement.
- The final challenge is that Participating Agencies that receive appropriations later in the fiscal year may encounter challenges in obligating the minimum spending requirement in the remainder of that particular fiscal year if they do not make awards under a Continuing Resolution. For example, DoD does not release its SBIR/STTR allocation under a Continuing Resolution.

Beginning with this FY16 annual report, SBA intends to analyze the minimum spending of Civilian and Defense agencies separately. This will enable a more detailed review and discussion on the DoD components. The total extramural R/R&D amounts each Civilian Participating Agency reported to SBA and used to determine the SBIR/STTR minimum spending requirement for FY16 is shown in Table 15. Participating Agencies are required to report this data annually to SBA by March 15. Through a separate process, the NCSES Survey of Federal Funds for Research and Development administers an annual census completed by the federal agencies conducting R&D programs. As one of 13 federal statistical agencies, NCSES is mandated to collect, interpret, analyze, and disseminate objective data on the science and engineering enterprise. Beginning with the FY13 annual report, SBA compared extramural R/R&D budgets reported through the NCSES Survey and the Annual Report upload. This comparison is a useful tool in identifying minimum spending requirement compliance.

SBIR/STTR Program Funding as Share of Agency Reported Extramural R/R&D – Civilian Agencies

Table 15: SBIR/STTR Program Funding as Share of Agency Reported Extramural R/R&D - Civilian Agencies

	SBIR								STTR		
	Calculation using Extramural Levels Reported by Participating Agency to SBA					Calculation using Extramural Levels Reported on NCSES Survey			SBA		NCSES
Agency +	Amount Obligated for SBIR Awards as Reported to SBA ($)	Amount of Program Exemptions Reported to SBA ($) ++	Extramural R/R&D Reported to SBA by Participating Agency minus Exemptions *	% Measured by SBIR obligations divided by Agency reported Extramural R/R&D (3.0% Min)	Total Extramural R/R&D Obligations Reported to SBA ($)	Total Extramural R/R&D Obligations Reported to NCSES[2] ($)	Extramural R/R&D Amount Reported to NCSES minus Exemptions Reported by Participating Agency to SBA ($)	% Measured using NCSES Extramural R/R&D Obligations (3.0% Min)	Amount Obligated for STTR Awards as Reported to SBA ($)	% Measured by Extramural R/R&D Obligations Reported to SBA (0.45% Min)	% Measured by Extramural R/R&D Obligations Reported to NCSES (0.45% Min)
HHS	$773,384,238	$0	$25,859,796,811	2.99%	$25,859,796,811	$25,093,200,000	$25,093,200,000	3.08%	$120,356,419	0.47%	0.48%
DOE[3]	$199,642,873	$5,454,273,000	$6,528,019,000	3.06%	$11,982,292,000	$10,661,200,000	$5,206,927,000	3.83%	$30,555,304	0.47%	0.59%
NASA	$163,327,061	$0	$6,036,000,000	2.71%	$6,036,000,000	$10,618,700,000	$10,618,700,000	1.54%	$20,099,472	0.33%	0.19%
NSF	$161,577,024	$0	$5,444,000,000	2.97%	$5,444,000,000	$5,490,000,000	$5,490,000,000	2.94%	$25,276,069	0.46%	0.46%
USDA	$28,801,636	$51,351,897	$707,988,706	4.07%	$759,340,603	$819,500,000	$768,148,103	3.75%			
DHS	$16,967,146	$0	$390,303,540	4.35%	$390,303,540	$345,900,000	$345,900,000	4.91%			
DOC	$12,466,445	$0	$283,376,400	4.40%	$283,376,400	$295,700,000	$295,700,000	4.22%			
DOT[4]	$11,617,647	$473,726,000	$309,371,000	3.76%	$783,097,000	$683,600,000	$209,874,000	5.54%			
ED	$7,506,669	$0	$230,646,029	3.25%	$230,646,029	$233,400,000	$233,400,000	3.22%			
EPA	$4,908,234	$0	$155,552,700	3.16%	$155,552,700	$252,700,000	$252,700,000	1.94%			
TOTAL	**$1,380,198,973**	**$5,979,350,897**	**$45,945,054,186**	**3.00%**	**$51,924,405,083**	**$54,493,900,000**	**$48,514,549,103**	**2.84%**	**$196,287,264**	**0.43%**	**0.40%**

+Agencies are listed in descending order of Extramural R/R&D Amounts Reported to SBA
++ Many agencies do not have authority under 15 U.S.C § 638 to exempt any Extramural R/R&D dollars from the budget calculation
*Some Participating Agencies reported this figure in terms of dollars obligated, while others reported this figure in terms of amounts appropriated for the Fiscal Year. See Table 16

[2] NSF's National Center for Science and Engineering Statistics (NCSES) at https://ncsesdata.nsf.gov/fedfunds/2016/html/ffs2016_dst_007.html .
[3] DOE exemptions include Weapons Activities and Naval Reactors.
[4] DOT exemptions include FAA and FHWA's State Planning and Research Program.

The following subsections summarize SBA's assessment of whether each Participating Civilian Agency complied with SBIR/STTR minimum spending requirement, any variance between extramural R/R&D amounts reported to SBA and the NCSES Survey, and the Agency response to SBA regarding variance. SBA analyzed compliance through two measures: 1) by determining the percentage of funding obligated for SBIR/STTR awards based on the extramural R/R&D amount and amount of program exemptions reported to SBA, and 2) by determining the percentage of funding obligated for SBIR/STTR awards based on the total extramural R/R&D amount reported by the Agency for the NCSES Survey minus the amount of program exemptions reported to SBA.

An Agency is considered to have complied with the minimum spending requirements for FY16 if, as per the SBIR and STTR Policy Directives, the Agency has obligated not less than 3.0% of their extramural R/R&D budgets for SBIR, and not less than 0.45% of their extramural R/R&D budgets for STTR for awards to small business concerns, based on both the extramural R/R&D amount reported to SBA and that reported for the NCSES Survey. Overages of these percentages indicate that the Agency "exceeded" the minimum spending requirement.

There are two primary reasons SBA was "Unable to Determine" compliance with minimum spending requirements: 1) discrepancies in extramural R/R&D amounts reported to SBA compared to amounts reported for the NCSES Survey, and 2) inability to validate program exemptions. An agency is measured "Did Not Comply" when the data reported to both SBA and NCSES fell below the minimum spending requirement or SBA determined the justification for failure to meet the minimum spending requirement does not align with the guidelines in the statute. A detailed analysis of each Agency's compliance with the minimum spending requirement is below.

Table 16: Compliance with the Minimum Spending Requirement – Civilian Agencies

Agency+	Whether Extramural R/R&D is Reported to SBA as Obligations (O) or Appropriations (A)	Timeframe to Obligate Allocated Funding	SBA Analysis of Compliance with SBIR/STTR Minimum Spending Requirements
HHS	O	1-year	Unable to Determine for SBIR/Exceeded for STTR
DOE	O	No-year	Unable to Determine
NASA	O	2-year	Did Not Comply
NSF	O	2-year	Did Not Comply for SBIR/Exceeded for STTR
USDA	O	1-year and No-year	Exceeded
DHS	O	3-year	Exceeded
DOC	O	2-year	Exceeded
DOT	O	No-year	Exceeded
ED	O	1-year	Exceeded
EPA*	A	2-year	Did Not Comply

*The EPA is the only Participating Civilian Agency that reports its extramural R/R&D budget as appropriations. The other civilian agencies report extramural R/R&D budget as obligations.

HHS. SBA is unable to determine whether HHS complied with the minimum spending requirement for SBIR obligations but determined they exceeded the minimum spending requirement for STTR obligations. HHS reported FY16 SBIR obligations divided by extramural R/R&D obligations fall below the 3.0% minimum spending requirement for SBIR at 2.99%. However, using the NCSES reported R/R&D extramural figure they exceed the 3.0% minimum spending requirement coming in at 3.08% for SBIR. SBA believes HHS made a good faith effort to meet the minimum spending requirement but must list the agency as "Unable to Determine" based on the information provided. In SBA's analysis of STTR obligations, HHS exceeded the minimum STTR spending requirement. Based on the agency reported extramural R/R&D amount HHS exceeded the 0.45% minimum spending requirement for STTR at 0.47% and using the extramural R/R&D amount reported for the NCSES Survey, HHS exceeded the minimum spending requirement for STTR at 0.48%. HHS reports no exemptions.

The extramural R/R&D obligation amount HHS reported to SBA is $766,596,811 more than the amount reported for the NCSES Survey. In terms of the difference between extramural R/R&D obligations reported to SBA and the NCSES Survey.

HHS responded:

There are differences in the way the various institutes report their extramural R/R&D budgets. For instance:

National Institutes of Health (NIH) – "The report to the NSF also includes administrative and intramural research funds."

Centers for Disease Control and Prevention (CDC)

> The NSF Federal Funds Survey reporting period is normally in April-May of each year. CDC determined the SBIR Set-Aside earlier in the year in order to allocate the FY16 budgets to Chief Information Officers (CIOs) as directed by Office of Management and Budget (OMB). The amount used to calculate the SBIR Set-Aside was the most current FY15 actual obligation amount available at the time of the calculation. When CIOs reported the FY15 actual amount to the NSF Federal Funds Survey, later in the year, there was a revision to the actual used earlier to calculate the set-aside. The revision was the result of a more thorough review of R&D extramural activity by the CIOs. The FY 2015 extramural actual reported to the NSF Federal Funds Survey was $318,093,842 which is $553,742 more than that used to calculate the set-aside.

Administration for Community Living (ACL)

> SBIR estimates are somewhat higher than NSF for two reasons – first, the latest submission to NSF was based on estimated, not actual. Second, ACL read the definition of R&D slightly differently than the SBIR definition. The result is the amount ACL reported for SBIR is higher than for the NSF report. Specifically, for SBIR, ACL adds the total award amount of grants that are primarily research or development. For NSF, ACL deducts that part of any given grant that is not research. For example, grant A may be 80% research and 20% training. For NSF, ACL reports the 80%. For SBIR, ACL reports 100%.

DOE. SBA is unable to determine whether DOE complied with the minimum spending requirement because SBA cannot validate DOE's exempted programs. Based on the extramural R/R&D amount and amount of funding obligated for SBIR and STTR awards reported by the agency to SBA, less exempted program amounts, DOE exceeded the minimum spending requirement for SBIR at 3.06% and exceeding the minimum spending requirement for STTR at 0.47%. DOE explained this "resulted primarily from the carryover of prior year SBIR/STTR funding." Based on the extramural R/R&D amount reported for the NCSES Survey, less exemptions, DOE exceeded the minimum spending requirement for both SBIR at 3.83% and STTR at 0.59%.

The extramural R/R&D obligation amount DOE reported to SBA is $1,321,092,000 more than the amount reported for the NCSES Survey. DOE reports exemptions of $5,454,273,000. However, given that SBA does not have the authority or access to validate the lines of funding that are exempt, and with over 45% of DOE's reported extramural R/R&D budget falling into this category, SBA is unable to determine the minimum spending requirement calculation for DOE.

In terms of the difference between extramural R/R&D obligations reported to SBA and the NCSES Survey.

DOE responded that:

> [T]he primary difference between extramural R/R&D obligations reported to SBA and the NSF Federal Funds Survey is their exempted programs, which include: Weapons Activities; Naval Reactors; and programs that do not receive funding through the annual appropriations process (Bonneville Power Administration). Therefore, the extramural R&D obligations for R&D reported to NSF are significantly higher than the amount reported to the SBA. In addition, beginning in FY 2016, DOE was instructed by the OMB to include new costs that had previously not been classified as R&D in its total R&D. These 'indirect' extramural R&D costs are included in the total R&D reported by DOE to NSF. "Instructions from OMB have indicated that these indirect costs are not subject to SBIR/STTR allocations. DOE treats these as intramural costs when reported to NSF. However, individual DOE programs may not have consistently reported these as intramural costs.

NASA. SBA has determined NASA did not meet the minimum spending requirement for SBIR and STTR. Based on the extramural R/R&D amount and amount of funding obligated for SBIR and STTR awards reported by the agency to SBA, NASA did not comply with the minimum spending requirement for SBIR at 2.71% or STTR at 0.33%.

Additionally, based on the extramural R/R&D amount reported for the NCSES Survey, NASA did not comply with the minimum spending requirement for SBIR at 1.54% or STTR at 0.19%. NASA assessed only 57% of their extramural R/R&D budget as reported to the NCSES Survey for the SBIR and STTR Programs. The extramural R/R&D obligation amount NASA reported to the NCSES Survey is $4,582,700,000 more than the extramural R/R&D amount reported to SBA. This equates to $137,481,000 in potential SBIR funding and $20,622,150 in STTR funding. SBA considers R/R&D obligated to support contractors for use in procurement to be considered extramural funding, which should be assessed for the SBIR/STTR Programs. However, NASA exempted these funds from the SBIR and STTR assessment. NASA reports no exemptions.

NASA's explanation for the short fall on extramural SBIR and STTR obligations is that:

> NASA's FY16 President's Budget included $200M for SBIR/STTR, which covered the anticipated requirement, plus provided a small cushion to protect against any changes in appropriations. However, our reassessment after NASA's FY16 appropriations and corresponding Initial Operating Plan (IOP) indicated that we would need additional funding above the total included in both the President's Budget and congressionally approved Operating Plan. In June 2016, NASA attempted to reprogram the additional funding needed before the end of the fiscal year but was unsuccessful. NASA continues to monitor the needs for SBIR during the FY 2017 continuing resolution and has developed several options that will respond to any changes in requirements levels for the FY 2017 reporting period.

NASA's explanation for the large variance between the extramural R/R&D obligations reported to SBA and the NCSES Survey is that:

> [T]he data reported to NSF for R&D obligations includes all NASA R&D. The only exclusions included in the data set for intramural R&D are administrative costs for R&D performance such as personnel and travel. For the SBIR/STTR calculations, NASA follows the definition of extramural budget as defined in the statute and in the Small Business Administration Policy Directive. The definition states that "extramural budget" is 'The sum of the total obligations for R/R&D minus amounts obligated for R/R&D activities by employees of a Federal agency in or through Government-owned, Government operated facilities.' Based on this definition, NASA identifies the exclusions that are considered intramural R&D. In addition to the exclusions in the NCSES Survey for FY16, NASA also excluded the following categories from total R/R&D obligations reported to SBA:
>
> Support contractors performing NASA Center on- or near-site science, engineering, technical or management services; (~$1.0 billion)
> Launch vehicle procurements (as these are transportation costs); (~$0.26 billion)
> Procurements and administrative expenses associated with NASA "in-house" performed R&D projects and activities (~$3.5 billion).

NSF. SBA has determined NSF did not meet the minimum spending requirement for their SBIR obligations but determined NSF exceeded the minimum spending requirement for STTR obligations. Based on the NSF extramural R/R&D amount and amount of funding obligated for SBIR and STTR awards reported to SBA, NSF did not meet with the minimum spending requirement for the SBIR at 2.97% but exceeded the minimum spending requirement for STTR at 0.46%. Based on the extramural R/R&D amount reported for the NCSES Survey, NSF did not meet with the minimum spending requirement for SBIR at 2.94% but met the minimum spending requirement for STTR at 0.46%. SBA is also unable to determine whether NSF complied with the SBIR minimum spending requirement because of the discrepancy between compliance based on the extramural R/R&D amount reported to SBA and the amount reported for the NCSES Survey. NSF reports no exemptions.

The extramural R/R&D obligations reported to SBA is $46,000,000 less than the amount reported for the NCSES Survey, or $1,380,000 in potential SBIR funding.

NSF provided the following explanation:

> NSF's baseline expenditures were $161,577,024 which is 2.97% of the extramural R/R&D amount for FY16. However, NSF also spent $801,198 on activities directly benefitting the SBIR/STTR awardees, which, when added to the baseline expenditures, brings the total expenditures to $162,378,222, for a total of 2.98% spending for the SBIR program. NSF exceeded the minimum spending requirement for STTR. NSF spent the additional $801,198 on activities related to the SBIR program that directly benefitted the SBIR

> program and the SBIR awardees, including additional technical assistance support to SBIR awardees. In addition, and consistent with NSF policy and practice across the agency, some of the funds listed in this line were spent on the costs of conducting our external merit review process (including reviewer travel and contract support). If the additional amount of funding for these activities is included in the total obligations, the total would be $162,378,222, for a total of 2.98% spending for the SBIR program. Some FY16 funding was used for activities to occur in FY17. NSF did not use any of its SBIR budget for costs associated with salaries and expenses.

USDA. Based on SBA's analysis of compliance, USDA exceeded the SBIR minimum spending requirement. Based on the extramural R/R&D amount and amount of funding obligated for SBIR awards reported by the agency to the SBA, USDA exceeded the minimum spending requirement for SBIR at 4.07%. Based on the extramural R/R&D amount reported for the NCSES Survey, USDA exceeded the minimum spending requirement for SBIR at 3.75%.

The extramural R/R&D obligation amount the USDA reported to SBA is $60,159,397 less than the amount reported for the NCSES Survey. In response to the SBA inquiry regarding the variance between its total extramural R/R&D amount reported to SBA ($759,340,603) and to the NCSES Survey ($819,500,000).

USDA stated that:

> The NSF data call for total extramural R/D amounts is due in April 2017. The SBIR annual report is due in March 2017. There is an expectation that USDA could adjust the figures reported in this report for the NSF data call in April. For the first time USDA listed exemptions which were equal to $51,351,897. [USDA] agencies exempted are the USDA Agricultural Research Service and the USDA Forest Service. The USDA Agricultural Research Service reported exemptions totaling $50,084,498.00 and these were for extramural research related to operations, not research and development. The USDA Forest Service reported exemptions totaling $1,267,399.00 and these were for General and Administrative (G&A) expenses such as Collections Agreement, Research Cost-Reimbursable Agreement, Challenge Cost-Share Agreement, Cooperative Fire Protection Agreement, Inter-agency Agreement, Cooperative Law Enforcement Agreement, Letter of Intent, Memorandum of Understanding, Participating Agreement, Cooperative Research & Development Agreement, Cooperative Forest Road Agreement, Master Service-wide Letter of Intent, and Master Service-wide MOU.

DHS. Based on SBA's analysis of compliance, DHS exceeded the SBIR minimum spending requirement. Based on the extramural R/R&D amount and amount of funding obligated for SBIR and STTR awards reported by the agency to SBA, DHS exceeded the minimum spending requirement for SBIR at 4.35%. Based on the extramural R/R&D amount reported for the NCSES Survey, DHS exceeded the minimum spending requirement for SBIR at 4.91%. DHS reports no exemptions.

The total extramural R/R&D obligations DHS reported to SBA is $44,403,540 more than that reported for the NCSES Survey. Regarding the variance between the extramural R/R&D reported to SBA and that reported for the NCSES Survey.

DHS explained that:

> [T]he Science and Technology (S&T) Directorate and Domestic Nuclear Detection Office (DNDO) provide funding for their respective SBIR Programs separately and independently from each other. Per the S&T Directorate Chief Financial Officer, in FY16, the S&T Directorate received $665.4M in its Research, Development, Acquisitions and Operations account (RDA&O) appropriation. Of that amount, certain programs are excluded for the purposes of determining the S&T Directorate's extramural budget, totaling $182.8M in exclusions. The remainder is $472.6M for R&D funding less $130.6M of intramural R&D leaving a remaining balance of $342.4M for the extramural R&D budget. The total DNDO R&D budget is comprised of all funds supporting research and development within DNDO's Research, Development, and Operations (RD&O) appropriation. Programs within the Operations portion of RD&O appropriation are classified as non R&D and consist of programs/projects supporting operational capability development and testing & evaluation. Of the R&D classified budget, DNDO's extramural obligations consist of all R&D obligations not spent internally to the U.S. Government (USG). The DNDO has an overall RD&O budget of $71.5M. There were no exclusions and the intramural total was $23.2M. This resulted in an overall DNDO extramural budget of $48.3M.

DOC. Based on the way SBA analyzes compliance, DOC exceeded the SBIR minimum spending requirement. Based on the extramural R/R&D amount and amount of funding obligated for SBIR awards reported by the agency to SBA, the DOC exceeded the minimum spending requirement for SBIR at 4.40%. Based on the extramural R/R&D amount reported for the NCSES Survey, the DOC exceeded the minimum spending requirement for SBIR at 4.22%. However, the total extramural R/R&D obligation DOC reported to SBA is $12,323,600 less than the amount reported for the NCSES Survey. DOC reports no exemptions.

Regarding the variance between the extramural R&D budget reported to SBA and the NCSES survey.

DOC stated that:

> [T]he National Institute of Standards and Technology (NIST) uses actual extramural R&D obligations from the prior fiscal year to provide funds for the SBIR Program in the following fiscal year (e.g. SBIR funds made available to award in FY 2016 were based on actual FY 2015 extramural R&D obligations). In an effort to ensure that NIST awards the minimum amount that should be awarded to small business in the current fiscal year, the agency uses a higher SBIR rate than the minimum rate allowed for that fiscal year (e.g. the minimum rate for FY 2016 is 3%. NIST will use a rate of 3.4%). The National Oceanic Atmospheric Administration (NOAA) uses actual extramural R&D obligations from the prior fiscal year to provide funds for the SBIR Program in the current fiscal year (e.g. SBIR funds made available to award in FY 2016 were based on actual FY 2015 extramural R&D obligations). In an effort to ensure that NOAA expends the minimum set-aside requirement on small businesses in the current fiscal year, the agency uses a higher SBIR rate than the minimum rate required for that fiscal year (e.g. the minimum rate for FY 2016 is 3%. NOAA will use a rate of 3.4%).

DOT. Based on the way SBA analyzes compliance, DOT exceeded the SBIR minimum spending requirement. Based on extramural R/R&D amount and amount of funding obligated for SBIR awards reported by the agency to the SBA, the DOT exceeded the minimum spending requirement for SBIR at 3.76%. Based on the extramural R/R&D amount reported for the NCSES Survey less exempted program amounts reported by DOT to SBA, DOT exceeded the minimum spending requirement for SBIR at 5.54%. The total extramural R/R&D obligation amount DOT reported to SBA is $99,497,000 more than that reported for the NCSES Survey.

DOT reports exemptions of $473,726,000 which would potentially double their SBIR allocation adding an additional $14,211,780 in SBIR awards.

DOT's explanation for the variance between the extramural R/R&D reported by the agency to the SBA and NCSES Survey is that:

> [T]he request for the FY16 obligations from the DOT Operating Administration is sent from the Office of the Secretary (OST) at the time that the FY17 President's budget is announced. Because DOT is currently under a Continuing Resolution, FY16 actual obligations are currently not known. The general methodology includes the following: After the FY 2017 President's Budget is released, the OST Budget Office will send a data call to the modal budget offices, requesting that they provide: (1) FY 2016 actual, (2) FY 2017 enacted, and (3) FY 2018 President's Budget levels and the associated extramural and intramural R&D breakouts. The FY 2016 actual totals are based on accounting data from DOT's financial management system (Delphi). The modal budget offices provide the requested data and OST Budget consolidates the modal responses in an Excel spreadsheet. No database is used to collect this data. OST Budget requests that the modal budget offices ensure that the RD&T budget data tie to the 2018 Budget, and to the Department's R&D Control Tables.
>
> DOT also noted that the Federal Aviation Administration (FAA) remains exempt from the Competition in Contracting Act (CICA) and is excluded from the SBIR assessment per the DOT and Related Agencies Appropriation act of 1996, PL 104-50 (approved 15 Nov 1995). This 1996 DOT Appropriations Act includes exemptions for FAA from many Federal procurement laws, including SBIR, Competition in Contracting Act (CICA), and the Federal Acquisition Regulation (FAR). In addition, Federal Highway Administration (FHWA)'s State Planning and Research Program is excluded per 23 USC 505(b)(3).

ED. Based on the way SBA analyzes compliance, ED exceeded the SBIR minimum spending requirement. Based on the extramural R/R&D amount and amount of funding obligated for SBIR and STTR awards reported by the agency to SBA, ED exceeded the minimum spending requirement for SBIR at 3.25%. Based on the extramural R/R&D amount reported for the NCSES Survey, ED exceeded the minimum spending requirement for SBIR at 3.22%.

EPA. SBA has determined EPA did not meet the minimum SBIR spending requirement. EPA did meet the minimum spending requirements using extramural R/R&D amount reported to SBA with SBIR at 3.16% but is significantly under the minimum for SBIR at 1.94%, based on the extramural R/R&D amount reported for the NCSES Survey. SBA does not consider EPA's explanation on why the extramural R&D reported to SBA is so far off that reported as part of the NCSES reporting and thus determines them to not meet the minimum SBIR spending requirement. EPA reports no exemptions.

The extramural R/R&D amount reported to SBA as appropriations is $97,147,300 less than the amount reported for the NCSES Survey. This is an additional $2,914,419 in potential SBIR funding, which would be more than a 50% increase in EPA's SBIR allocation.

EPA responded that:

> [T]hese reports are at the request of two different entities. Because these reports are addressing separate issues, they use different methodologies. The NSF Funds Survey data reflects EPA's FY16 enacted budget levels and not obligations, which is consistent with their reporting to SBA. Because of the complexity of the data reported in the NSF survey, EPA uses a simplified approach in calculating "intramural" (payroll and travel only) versus "extramural" (research and research support) for those purposes. Based on SBA definitions, and a lower level of complexity of the data EPA developed for this effort, in-house research support costs are classified as intramural, in addition to payroll and travel resources.

SBA does not agree with EPA's explanation for using different methodologies for gathering the extramural R/R&D amount as reported to SBA and NCSES. The NCSES Survey is over 40% higher than the extramural R/R&D amounts reported to SBA.

SBIR/STTR Program Funding as Share of Agency Reported Extramural R/R&D – DoD Components

Table 17: SBIR/STTR Program Funding s Share of Agency Reported Extramural R/R&D – DoD Components

	SBIR								STTR		
	Calculation using Extramural Levels Reported by Participating Agency to SBA					Calculation using Extramural Levels Reported on NCSES Survey			SBA		NCSES
Component	Amount Obligated for SBIR Awards as Reported to SBA ($)	Amount of Program Exemptions Reported to SBA ($)	Extramural R/R&D Reported to SBA by Participating Agency minus Exemptions *	% Measured by SBIR obligations divided by Agency reported Extramural R/R&D (3.0% Min)	Total Extramural R/R&D Obligations Reported to SBA ($)	Total Extramural R/R&D Obligations Reported to NCSES[5] ($)	Extramural R/R&D Amount Reported to NCSES minus Exemptions Reported by Participating Agency to SBA ($)	% Using NCSES Extramural R/R&D Obligations (3.0% Min)	Amount Obligated for STTR Awards as Reported to SBA ($)	% Measured by Extramural R/R&D Obligations Reported to SBA (0.45% Min)	% Measured by Extramural R/R&D Obligations Reported to NCSES (0.45% Min)
Navy	$297,689,393	$2,987,457,000	$10,120,425,993	2.94%	$13,107,882,993	$11,035,100,000	$8,047,643,000	3.70%	$37,092,674	0.37%	0.46%
Air Force	$316,852,660	$22,691,000	$9,761,877,658	3.25%	$9,784,568,658	$22,149,600,000	$22,126,909,000	1.43%	$39,895,429	0.41%	0.18%
Army	$123,031,546	$322,257,000	$6,400,978,000	1.92%	$6,723,235,000	$3,829,100,000	$3,506,843,000	3.51%	$20,380,061	0.32%	0.58%
4th Estate	$244,265,748	$2,335,805,000	$10,419,251,442	2.34%	$12,755,056,442	$9,956,600,000	$7,620,795,000	3.21%	$19,967,846	0.19%	0.26%
DoD Total	$981,839,347	$5,668,210,000	$36,702,533,093	2.68%	$42,370,743,093	$46,970,400,000	$41,305,034,000	2.38%	$117,336,010	0.32%	0.28%
Fourth Estate Break Out**											
DARPA	$67,372,973	$104,412,000	$2,582,895,000	2.61%	$2,687,307,000	2,702,700,000	2,598,288,000	2.59%	$4,543,015	0.18%	0.17%
MDA	$51,846,197	$2,089,132,000	$2,570,845,000	2.02%	$4,659,977,000				$10,075,763	0.39%	
DHP	$50,841,358	$17,449,000	$2,113,452,000	2.41%	$2,130,901,000				$2,049,626	0.10%	
CBD	$10,261,559	$29,426,000	$552,611,000	1.86%	$582,037,000				$150,524	0.03%	
SOCOM	$10,000,730	$92,542,000	$460,795,000	2.17%	$553,337,000				$1,550,176	0.34%	
DTRA	$7,943,964	$2,844,000	$303,551,109	2.62%	$306,395,109				$1,149,206	0.38%	
DLA	$10,642,597	$0	$96,176,000	11.07%	$96,176,000				$449,536	0.47%	
DMEA	$1,599,152	$0	$63,946,000	2.50%	$63,946,000				$0	0.00%	
OSD	$14,632,644	$0	$1,674,980,333	0.87%	$1,674,980,333				$0	0.00%	

[5] NSF's National Center for Science and Engineering Statistics (NCSES) July, 2018 survey at https://ncsesdata.nsf.gov/fedfunds/2016/html/ffs2016_dst_009.html

*All of the DoD Service Agencies and Components reported this figure in terms of amounts appropriated for the Fiscal Year not obligated by the end of the year as required. See Table 18

The data in Table 17 presents FY16 data of the Navy, Army, Air Force, Fourth Estate and combined DoD activity. The components from the Fourth Estate which participate in the SBIR and STTR program include the Defense Advanced Research Projects Agency (DARPA), Missile Defense Agency (MDA), Defense Health Program (DHP), Special Operations Command (SOCOM), Chemical and Biological Defense (CBD), Defense Threat Reduction Agency (DTRA), Defense Microelectronics Activity (DMEA), Defense Logistics Agency (DLA), and the Office of the Secretary of Defense (OSD).

SBA separated the reporting of the DoD and civilian agencies. The DoD data is shown for each of the three Service Agencies and the Fourth Estate in an effort to provide a more transparent picture of individual component performance and facilitate the review and analysis of the FY16 data. This was necessary due to the challenge's SBA had in certifying the data uploaded from DoD. The DoD Office of Small Business Programs (OSBP) collects all the component data and uploads it through the SBA Annual Report submission site. SBA requires the data in this report to be a summation of the individual awards uploaded to SBA. This ensures the report data matches that available through the SBIR.gov site. All the FY16 DoD data was provided through a single DoD OSBP service contractor. The DoD had significant challenges in submitting their FY16 data with the first submission being 177 days late (see Table 30 of Section 23). After a review of the data SBA determined that it was incomplete and would need to be resubmitted. SBA has worked closely with DoD over the last year and received many additional uploads in an effort to correct the data with the last upload used for this report being received in December 2018. Due to the continuous challenges with obtaining accurate data from DoD, SBA decided to move forward with this report while continuing to work with the DoD to address the remaining data errors. SBA has identified the areas in this report in which the data is suspect and reached out to the individual Components asking them for validation of their data. SBA, the DoD, and the Components have identified errors which has been followed by additional data uploads. SBA has incorporated these issues and the direct responses from the DoD and its Components in the sections below and throughout this report. SBA and the DoD have spent substantial resources in correcting and validating this data and SBA now believes the funding and award data to be over 95% accurate. SBA will continue to work with DoD and will be pushing to obtain the data the DoD components provide to the DoD as another way to cross check the DoD data. This was done for several of the components this time and was often a key tool in identifying errors. If SBA identifies substantial corrections to the data in this report, SBA intends to update the data through SBIR.gov. SBA determined it was more important to publish the FY16 report and focus on preparing the FY17 and FY18 reports. Obtaining the data directly from the DoD components in the same format and concurrently when submitted to the DoD will reduce the errors and cost involved in correcting and validating the data for both the DoD and SBA.

SBA cannot properly validate DoD data because DoD does not provide year-end total extramural R/R&D obligation amounts to SBA. Furthermore, SBA cannot validate funding listed as exempted. As such, SBA has to use total extramural R/R&D obligations based on budget appropriation and not final obligations as directed by law, something all other agencies except EPA provide. The DoD individual components provide SBA with a Methodology Report early in the Fiscal Year. This report is used to pull the estimated exemptions and extramural R/R&D listed in column 3 and 4 of Table 17. Obtaining final year-end obligation amounts from each DoD component would enable a more accurate assessment of their compliance with the minimum spending requirement. SBA would also like to receive that data by the funding appropriation year and funding obligation year. This would enable SBA to report both by obligation year and year of funding appropriation to address the challenge DoD has in obligating SBIR funding at the same rate as other funding. SBA believes delineating the DoD's obligations and award data between individual Service Agencies and the Fourth Estate provides Congress as well as the public with a more a transparent representation of the DoD SBIR/STTR Program. This report shows the DoD had large variations between Extramural R/R&D reported to SBA and that reported to NCSES (columns 6 and 7 of Table 17). Three of the groups reported lower extramural dollars to NCSES, while Air Force reported higher for NCSES. The Air Force and Army totals varied greatly with one being twice as large and the other half the size.

The following subsections summarize SBA's analysis of each of the DoD Service Agencies and Fourth Estate data to include any variances or concerns identified. SBA analyzed compliance through two measures: 1) by determining the percentage of funding obligated for SBIR/STTR awards based on the extramural R/R&D amount minus the amount of program exemptions reported to SBA by the Agency (column 5), and 2) by determining the percentage of funding obligated for SBIR/STTR awards based on the total extramural R/R&D amount reported by the Agency through the NCSES Survey minus the amount of program exemptions reported to SBA (column 9).

An entity is considered to have complied with the minimum spending requirements in FY16, if they obligated not less than 3.0% of their extramural R/R&D budgets for SBIR and not less than 0.45% of their extramural R/R&D budgets for STTR for awards to small business concerns. This calculation is based on both the extramural R/R&D amount

reported to SBA and that reported for the NCSES Survey. Overages of these percentages indicate the entity "Exceeded" the minimum spending requirement. There are two reasons in which SBA was "Unable to Determine" compliance with minimum spending requirements: 1) discrepancies in the extramural R/R&D amounts reported to SBA compared to the amounts reported for the NCSES Survey, and 2) inability to validate program exemptions. An entity is measured "Did Not Comply" when the data reported in both areas fall below these levels or SBA determined the justification for missing the numbers was not valid. A detailed analysis of each entity's compliance with the minimum spending requirement is below.

The DoD has two-year funding, meaning they can obligate their annually appropriated dollars over a two-year period. To provide a more comprehensive account of the DoD's compliance with meeting the minimum spending requirements, SBA would like the DoD to report SBIR and STTR obligations by the year the funding was appropriated and the year that funding was obligated. The DoD will also need to provide the total extramural R&D obligations (the non SBIR/STTR funds used as the denominator in determining the minimum percent) in the same way. Having a two-year account of this information would enable SBA to validate DoD's compliance with the minimum spending requirements. SBA requested the Service Agencies and Fourth Estate provide the two-year funding data for this report.

DoD wasn't able to provide all of that information for this report; however they provided the following explanation: DOD has two-year SBIR/STTR funding. As a result, determination on whether set aside obligations are met for FY16 funds would need to be calculated at the close of FY17. At the close of FY17 DOD SBIR had obligated a total of $167,578,589 of FY16 STTR funds and $1,058,518,772 of FY16 SBIR funds. Total set aside amount for SBIR in FY16 was $1,120,183,597. Total set aside amount for STTR in FY16 was $168,027,540.

Table 18: Compliance with the Minimum Spending Requirement – DoD Service Agencies and Fourth Estate

Agency+	Whether Extramural R/R&D Is Reported to SBA as Obligations (O) or Appropriations (A)*	Timeframe to Obligate Allocated Funding	SBA Analysis of Compliance with SBIR/STTR Minimum Spending Requirements
Navy	A	2-year	Unable to Determine
Air Force	A	2-year	Unable to Determine
Army	A	2-year	Did Not Comply for SBIR, Unable to Determine for STTR
Fourth Estate	A	2-year	Unable to Determine for SBIR, Did Not Comply for STTR

* Agencies report their extramural R/R&D budget to SBA as either obligations or appropriations. DoD reports its extramural R/R&D budget as appropriations.

Navy. SBA is unable to determine whether the Navy complied with the minimum spending requirement for their SBIR and STTR obligations. The Navy reported FY16 SBIR obligations divided by extramural R/R&D budget to SBA fall below the 3.0% minimum spending requirement for SBIR at 2.94%. But using the NCSES reported R/R&D extramural figure they exceed the 3.0% minimum spending requirement coming in at 3.70% for SBIR. Based on the agency reported extramural R/R&D amount the Navy falls below the 0.45% minimum spending requirement for STTR at 0.37% but using the extramural R/R&D amount reported for the NCSES Survey, the Navy exceeded the minimum spending requirement for STTR at 0.46%. The extramural R/R&D amount reported to SBA is $2,072,782,993 more than the amount reported for the NCSES Survey.

The Navy reported $2,987,457,000 in exemptions but SBA cannot validate this value. The Navy does not provide SBA with the end-of year-obligations of extramural R/R&D so SBA must use the numbers provided early in the year through their Methodology Report. The Navy has two-year funding, meaning they can obligate their annually appropriated dollars over two years.

Air Force. SBA is unable to determine if Air Force complied with the minimum spending requirement for their SBIR and STTR obligations. The Air Force reported to SBA that FY16 SBIR obligations divided by extramural R/R&D budget exceeded the 3.0% minimum spending requirement for SBIR at 3.25% but using the NCSES reported R/R&D extramural they came below at 1.43%. In SBA's analysis of STTR obligations, the Air Force did not meet the 0.45% minimum STTR spending requirement using either the extramural R/R&D amount reported to SBA (0.41%) or the NCSES Survey (0.18%). The extramural R/R&D amount reported to SBA is $12,365,031,342 less than the amount reported for the NCSES Survey, which is an over 50% difference in these numbers.

The Air Force only reported $22,691,000 in exemptions which is substantially lower than the other DoD Agencies. SBA cannot validate this number. The Air Force also does not provide SBA with the end-of-year obligations of extramural R/R&D so SBA must use the numbers provided to SBA early in the year provided through their Methodology Report.

Air Force explained:

> Air Force disagrees with SBA's assessment. Air Force has two-years to obligate funds for its technical efforts. As such, Air Force's compliance with the minimum spending requirement should be assessed against a two-year period rather than per fiscal year. Air Force obligated all of its extramural R&D funds appropriated in FY16 within the two-year period. By the end of the two-year period (September 30, 2017), the Air Force obligated 100% of the FY16 appropriated dollars set aside to meet the STTR minimum spending requirement ($0 remaining unobligated) and the SBIR minimum spending requirement ($197 remaining unobligated). For FY16 appropriated dollars, Air Force obligated 0.45% for the STTR program and 3.25% for the SBIR program. Air Force will work with SBA and NCSES to ensure the accurate measurement and reporting of SBIR/STTR award amounts and total extramural R/R&D obligations.

Army. SBA has determined that Army did not comply as they did not meet the minimum spending requirement for SBIR and was unable to determine for STTR based on the extramural R/R&D amount reported to SBA. The Army reported FY16 SBIR obligations divided by extramural R/R&D budget that was reported to SBA fell below the 3.0% minimum spending requirement for SBIR at 1.92% but exceeded it using the NCSES Survey at 3.51% for SBIR. The Army fell below the 0.45% minimum spending requirement for STTR at 0.32% using the extramural R/R&D amount reported to SBA but exceed it when using the extramural R/R&D amount reported for the NCSES Survey, the Army exceeded the minimum spending requirement for STTR at 0.58%. The extramural R/R&D amount reported to SBA is $2,894,135,000 more than the amount reported for the NCSES Survey which is almost a 50% difference in these numbers.

The Army reported $322,257,000 in exemptions. SBA cannot validate this number. The Army also does not provide SBA with the end-of-year obligations of extramural R/R&D so SBA must use the numbers provided to SBA early in the year provided through their Methodology Report.

Army response:

> During FY16, the Army spent $85,448,000 of FY15 funds and $105,749,000 of FY16 funds on SBIR projects. The Army also spent $82,804,000 of FY16 funds during FY17 on SBIR projects.

Fourth Estate. SBA is unable to determine if the Fourth Estate met the minimum spending requirement for SBIR and determined they did not comply with the minimum spending STTR based on the extramural R/R&D amount reported to SBA. The Fourth Estate reported FY16 SBIR obligations divided by extramural R/R&D budget to SBA fall below the 3.0% minimum spending requirement for SBIR at 2.34% but using the NCSES reported R/R&D extramural they exceeded it at 3.20%. In SBA's analysis of STTR obligations, the Fourth Estate did not meet the 0.45% minimum STTR spending requirement using the extramural R/R&D amount reported to SBA at 0.19% and using the NCSES Survey reported R/R&D extramural at 0.26%. The extramural R/R&D amount reported to SBA is $2,798,456,442 more than the amount reported for the NCSES Survey.

The Fourth Estate reported $2,335,805,000 in exemptions which is substantially lower than the other DoD Agencies. SBA cannot validate this number. The Fourth Estate also does not provide SBA with the end-of-year obligations of extramural R/R&D so SBA must use the numbers provided to SBA early in the year provided through their Methodology Report.

Several of the organizations under the Fourth Estate, specifically DARPA, MDA, OSD and DHP, each have SBIR budgets well above 6 of the 10 SBIR Civilian Participating Agencies and thus having more details on each of these DoD Components would provide a deeper insight into the SBIR obligations. While DoD did not provide end-of-year obligations for the Components, SBA obtained the following responses from SOCOM and DARPA:

USSOCOM response:

> USSOCOM SBIR Office leverages the two-year nature of the R&D SBIR funds and the inherent flexibility and agility of the SBIR Program to meet the dynamic needs of the USSOCOM Science and Technology Directorate, USSOCOM Program Executive Offices, US Army Special Operations Command, Naval Special Warfare and Air Force Special Operations Command. USSOCOM SBIR Program Office continuous gathering of Phase I Topics and Phase II Request for Proposals leveraging other SBIR efforts results in a varying number of SBIR efforts for each FY. To help fund an increase from eleven (11) FY16 to ninety one (91) FY17 SBIR efforts with FY16 funds, USSOCOM SBIR Program Office funded four FY16 SBIR efforts with $5,094,701 FY15 funds: $3,978,764 from the Office Secretary Defense Office of Small Business Programs and $1,115,937 from the Joint Science and Technology Office for Chemical and Biological Defense. Leveraging these other Agency expiring funds resulted in USSOCOM SBIR Program reporting the expenditure of only $5,901,000 of $13,823,850 FY16 SBIR set-aside funds.
>
> Additionally, USSOCOM SBIR Program participates in all three DOD SBIR/STTR Broad Agency Announcements with proposals being delivered in October, February and June resulting in awards being made in the first quarter of the next FY. USSOCOM SBIR Program flexibility allows the program to work around higher priority efforts which may also push awards into the next FY. Typically, USSOCOM Phase II SBIR efforts transition to the USSOCOM Program Executive Offices to become a Program of Record (POR) or part of a POR after completion of Phase II and so current FY SBIR efforts influence budgets three to four years out. USSOCOM SBIR Program Office provides risk reduction to the Program Executive Offices by maturing SBIR efforts to a Technology Readiness Level 7 and budgeting $450,000 for three Phase I and $1M for one follow on Phase II efforts. Budgeted funding freed up from Cancelation of topics due to a changing environment is applied to the next waiting SBIR efforts which may be awarded in the next FY. This results in no correlation of current year SBIR obligations to current year extramural R&D obligations.

DARPA response:

> DARPA received SBIR funding with 2 year expiration dates and due to the nature of the agency and the SBIR program, DARPA regularly retains a portion of the FY funding to help bridge the gap in funds between Fiscal Years due to Continuing Resolutions that do not distribute funds within DARPA for SBIR efforts. Ongoing contract due bills and planned new awards are expected throughout the first and sometimes second quarter with no new FY funding allocated at the beginning of the FY which requires DARPA to appropriately manage the SBIR funds to last through this CR period but therefore shows that only a portion

of the funds were obligated during that FY. As of the end of each FY, all the prior years' DARPA SBIR funds have been fully obligated meeting the set aside requirement for the agency.

DTRA response:

The Defense Threat Reduction Agency (DTRA) has two-year SBIR funding, meaning the Agency can obligate their appropriated dollars over a two-year period. Table 17 of the FY2016 Annual Report states that DTRA obligated $7,943,964, resulting in a 2.62% rate, thereby reportedly not meeting the minimum spending requirement. DTRA does not agree with this calculation as the Agency's approved FY2017 Annual Report Worksheet reflects a total obligation of $10,081,691 for FY2016. This obligated amount includes all of the FY2016 funds plus a $993,000 MIPR. The resultant amount of obligation equates to 2.99% of the Extramural Funds which essentially meets the minimum spending requirements.

10 | Extramural Trend Data – 2012 to 2016

The following provides the Extramural and SBIR obligation trends for the "Big 5" agencies, (DoD, HHS, DOE, NASA, and NSF) for years 2012 to 2016. Note that "Exemptions" are allowed under 15 USC § 638 for DoD and DOE. However, other agencies have been known to identify exceptions and/or exemptions based on other legislation or the agency's interpretation of what constitutes an exception/exemption.

Table 19: Extramural Trend Analysis – DoD, HHS, DOE, NASA, and NSF

DOD							
FY	**Total Extramural R/D&D Reported to NSF NCSES**	**Total Extramural R/R&D Including Exemptions Reported to SBA ($)**	**$ Program Exemptions**	**$ Extramural R/R&D to Determine Set Aside**	**$ Obligated for SBIR Awards**	**% Obligated / Extramural**	**Min Spending REQ %**
2012	$53,291,800,000	N/P	N/P	$38,816,200,000	$1,070,758,000	2.76%	2.60%
2013	$43,314,800,000	N/P	N/P	$33,879,164,718	$977,669,046	2.89%	2.70%
2014	$43,865,600,000	N/P	N/P	$31,556,545,718	$1,056,795,663	3.35%	2.80%
2015	$41,333,700,000	$40,387,481,759	$6,676,078,000	$33,711,403,759	$956,913,114	2.84%	2.90%
2016	$46,970,400,000	$42,821,405,093	$5,647,934,449	$36,702,533,093	$981,839,347	2.68%	3.00%

HHS							
FY	**Total Extramural R/D&D Reported to NSF NCSES**	**Total Extramural R/R&D Including Exemptions Reported to SBA ($)**	**$ Program Exemptions**	**$ Extramural R/R&D to Determine Set Aside**	**$ Obligated for SBIR Awards**	**% Obligated / Extramural**	**Min Spending REQ %**
2012	$24,746,900,000	$24,762,500,000	$0	$24,762,500,000	$656,480,000	2.65%	2.60%
2013	$23,296,300,000	$23,321,614,455	$0	$23,321,614,455	$630,108,449	2.70%	2.70%
2014	$24,100,600,000	$24,096,641,379	$0	$24,096,641,379	$680,729,893	2.82%	2.80%
2015	$23,627,900,000	$24,244,452,788	$0	$24,244,452,788	$714,379,162	2.95%	2.90%
2016	$25,093,200,000	$25,859,796,811	$0	$25,859,796,811	$770,750,293	2.98%	3.00%

N/P – Not Provided

DOE							
FY	**Total Extramural R/D&D Reported to NSF NCSES**	**Total Extramural R/R&D Including Exemptions Reported to SBA ($)**	**$ Program Exemptions**	**$ Extramural R/R&D to Determine Set Aside**	**$ Obligated for SBIR Awards**	**% Obligated / Extramural**	**Min Spending REQ %**
2012	$9,071,800,000	N/P	N/P	$6,143,402,000	$169,797,000	2.76%	2.60%
2013	$9,302,600,000	N/P	N/P	$5,899,125,005	$158,637,390	2.69%	2.70%
2014	$10,021,100,000	$9,976,752,234	$3,921,500,000	$6,055,252,234	$182,758,991	3.02%	2.80%
2015	$10,319,300,000	$11,699,955,601	$5,645,250,000	$6,054,705,601	$193,555,724	3.20%	2.90%
2016	$10,661,200,000	$11,982,292,000	$5,454,273,000	$6,528,019,000	$199,642,873	3.06%	3.00%

NASA							
FY	**Total Extramural R/D&D Reported to NSF NCSES**	**Total Extramural R/R&D Including Exemptions Reported to SBA ($)**	**$ Program Exemptions**	**$ Extramural R/R&D to Determine Set Aside**	**$ Obligated for SBIR Awards**	**% Obligated / Extramural**	**Min Spending REQ %**
2012	$8,976,400,000	$5,727,600,000	$0	$5,727,600,000	$139,184,000	2.43%	2.60%
2013	$8,792,500,000	$5,217,000,000	$0	$5,217,000,000	$133,221,539	2.55%	2.70%
2014	$9,214,900,000	$4,742,000,000	$0	$4,742,000,000	$144,553,504	3.05%	2.80%
2015	$9,542,400,000	$4,960,320,000	$0	$4,960,320,000	$158,335,561	3.19%	2.90%
2016	$10,618,700,000	$6,036,000,000	$0	$6,036,000,000	$163,327,061	2.71%	3.00%

NSF							
FY	**Total Extramural R/D&D Reported to NSF NCSES**	**Total Extramural R/R&D Including Exemptions Reported to SBA ($)**	**$ Program Exemptions**	**$ Extramural R/R&D to Determine Set Aside**	**$ Obligated for SBIR Awards**	**% Obligated / Extramural**	**Min Spending REQ %**
2012	$5,082,000,000	$5,110,530,000	$0	$5,110,530,000	$131,305,000	2.57%	2.60%
2013	$4,938,400,000	$4,877,000,000	$0	$4,877,000,000	$142,882,120	2.93%	2.70%
2014	$5,316,800,000	$4,688,000,000	$0	$4,688,000,000	$140,066,833	2.99%	2.80%
2015	$5,579,900,000	$5,367,000,000	$0	$5,367,000,000	$147,733,251	2.75%	2.90%
2016	$5,490,000,000	$5,444,000,000	$0	$5,444,000,000	$161,577,024	2.97%	3.00%

N/P – Not Provided

11 | Awards Exceeding Guideline Amounts

The Act currently sets guideline amounts for Phase I awards at $150,000 and Phase II awards at $1 million. Participating Agencies with smaller budgets have traditionally chosen to solicit for award sizes at or less than the guideline amounts, with the rationale that it allows them to issue a larger number of awards to reach a wider range of viable solutions to R&D needs. Agencies with larger budgets tend to make more awards that exceed the guideline amounts with the rationale that in some cases larger award sizes are needed when dealing with capital intensive research projects, while their larger SBIR/STTR budgets still allow them to fund a sufficiently wide range of proposals under the guideline thresholds. Agencies may, at their discretion, exceed the guideline amounts by up to 50%, making the effective maximum award amounts $225,000 for a Phase I award and $1.5 million for Phase II awards. Information about individual awards is available on SBIR.gov.

Table 20: Awards Exceeding Guideline Amounts by More Than 50%

Awards Exceeding Guideline Amounts by More Than 50%				
Program	**Phase**	**DoD**	**HHS**	**DOE**
SBIR	Phase I	1,163	690	286
	Number / Pct. Exceeding	0 / 0%	262 / 38%	1 / 0.3%
	Phase II	694	402	148
	Number / Pct. Exceeding	20 / 3%	106 / 26%	0 / 0%
STTR	Phase I	205	207	44
	Number / Pct. Exceeding	0 / 0%	80 / 39%	0 / 0%
	Phase II	104	49	22
	Number / Pct. Exceeding	2 / 2%	18 / 37%	0 / 0%
(Guidelines allow up to $225,000 for Phase I, $1,500,000 for Phase II) *includes FY16 obligations on prior year awards				

The Act provides that a Participating Agency may request a waiver from the SBA for certain awards to exceed the cap. The SBA established in the SBIR/STTR Policy Directives that an agency making such a request must provide the SBA with: 1) evidence that the limitations on award size interfere with the ability of the agency to fulfill its R&D mission; 2) evidence that the agency will minimize, to the maximum extent practicable, the number of awards that exceed the cap for the topic area; and, 3) evidence that research costs for the topic area differ significantly from those in other areas to warrant going over the cap. The latter becomes an important distinction for agencies, such as HHS (including the NIH), DoD, and DOE, when costs to mature technology to a level in which it can be transitioned, or commercialized to the next level may exceed the cap. For any Participating Agency waiver request approved, that agency must report to SBA any such awards made, to include the identity and location of each recipient.

For FY16, NIH requested, and the SBA approved, waivers granting NIH authority to solicit and make awards over the cap for specific topics, particularly for life science- and biomedical-related research topics involving clinical trials conducted within rigorous regulatory environments at substantially higher costs and any life science area with higher costs. The SBA approved NIH's waiver request under the condition that NIH would monitor and report quarterly to the SBA any awards exceeding a Phase I or Phase II cap. DoD and DOE requested, and the SBA approved, waivers for awards exceeding the cap on a case-by-case/project-by-project basis.

HHS provided the following justification:

> For awards exceeding guideline amounts is based on the fact that the length of time and cost of research involving development and evaluation of certain technologies exceed that of the routinely awarded for SBIR/STTR awards. Such technologies include, but are not limited to, nanotechnologies; genetically engineered proteins; inducible gene expression; combinatorial chemistry approaches; biosilicon devices; toxicology models; drug discovery/drug evaluation approaches; mammalian and non-mammalian models of disease; biocompatible biomaterials; acousto-optics and opto-electronics; diagnostic imaging technologies; biomarkers; biomedical biosensors; and NMR spectroscopy instrumentation.
>
> NIH is the steward of medical and behavioral research. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce the burdens of illness and disability.
>
> The goals of the agency are:

- To foster fundamental creative discoveries, innovative research strategies, and their applications as a basis for ultimately protecting and improving health;
- To develop, maintain, and renew scientific human and physical resources that will assure the Nation's capability to prevent disease;
- To expand the knowledge base in medical and associated sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research; and
- To exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

In realizing these goals, the NIH provides leadership and direction to programs designed to improve health by conducting and supporting research:

- In the causes, diagnosis, prevention, and cure of human diseases;
- In the processes of human growth and development;
- In the biological effects of environmental contaminants;
- In the understanding of mental, addictive and physical disorders; and
- In directing programs for the collection, dissemination, and exchange of information in medicine and health, including the development and support of medical libraries and the training of medical librarians and other health information specialists.

According to NIH, in order to accomplish this mission with its SBIR/STTR Programs, their projects must be funded at a level which is typically over the statutory guidelines:

- To cover the cost of research in the biomedical and behavioral arenas because in many cases it is above the statutory guidelines and higher than most research and development research areas;
- To a level where the project will attract third party funding and partnerships after the SBIR/STTR project period to move products along the commercialization path. This can ultimately take years and possibly tens/hundreds of millions of dollars after the SBIR/STTR Phase; and
- To move products far enough along for regulatory filings, testing, and approval.

Underfunding a NIH Phase I, II, or IIB SBIR/STTR project could cause projects to fail and not reach the market due to any one or more of the above. As a consequence, NIH states that it would not be able to fulfill its mission and could not bring life-saving and life-changing technologies to the market.

12 | SBIR/STTR Proposal Selection Rates

Proposal selection rates are the number of awards made divided by the total number of proposals received. The SBA monitors the selection rates for Phase I Awards and Phase II Awards.

SBIR Program

In FY16, small businesses submitted a total of 11,671 Phase I proposals across the ten Participating Civilian Agencies. Those agencies selected 1,764 new Phase I awards, resulting in an average Phase I proposal selection rate of 15%. The ten civilian agencies received 2,177 Phase II proposals. Agencies selected 909 new Phase II awards, resulting in an average Phase II proposal selection rate of 42%. DOE (4), NIST (1), and NOAA (3) made Phase I awards for a topic which they received a single proposal.

Small businesses submitted a total of 8,598 SBIR Phase I proposals across the DoD Service Agencies and Fourth Estate. The DoD selected 1,033 Phase I contracts, resulting in an average Phase I proposal selection rate of 12%. The DoD received 1,238 SBIR Phase II proposals. The DoD selected 668 new Phase II awards, resulting in an average selection rate of 54%. The DoD made one Phase I award for a topic which they received a single proposal.

Chart 15: SBIR Phase I Proposal Selection Rates

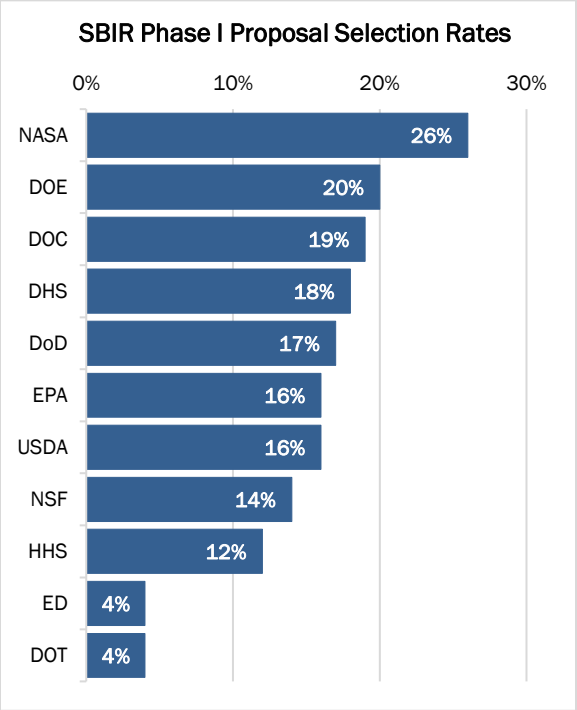
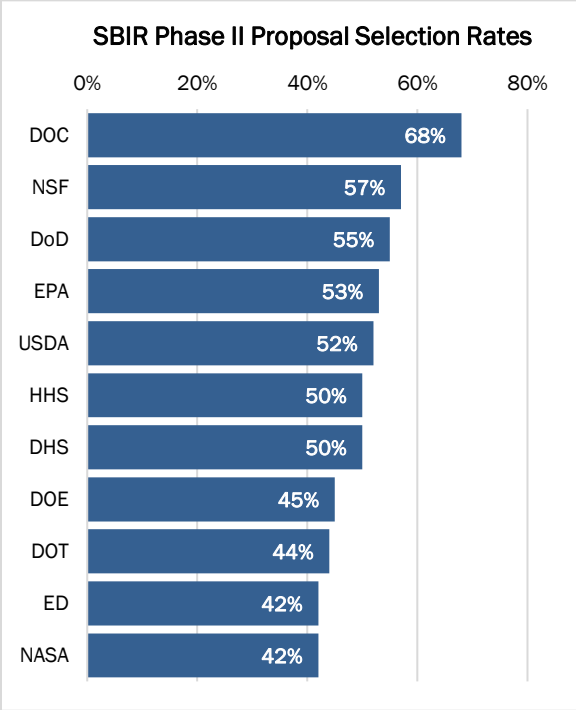


Chart 16: SBIR Phase II Proposal Selection Rates



STTR Program

In FY16, small businesses submitted a total of 2,283 STTR Phase I proposals across the four Participating Civilian Agencies. Those agencies selected 390 new Phase I awards, resulting in an average Phase I proposal selection rate of 17%. The four civilian agencies received 279 Phase II proposals. Agencies selected 94 new Phase II awards, resulting in an average Phase II proposal selection rate of 34%. DOE and NASA each made a Phase I award for a topic in which they received a single proposal.

Small businesses submitted a total of 680 Phase I proposals across the DoD Service Agencies and Fourth Estate. The DoD selected 205 Phase I contracts, resulting in an average Phase I proposal selection rate of 30%. The DoD received

200 Phase II proposals. The DoD selected 104 new Phase II awards, resulting in an average selection rate of 52%. The DoD did not make any Phase I awards for a topic in which they received a single proposal.

Chart 17: STTR Phase I Proposal Selection Rates

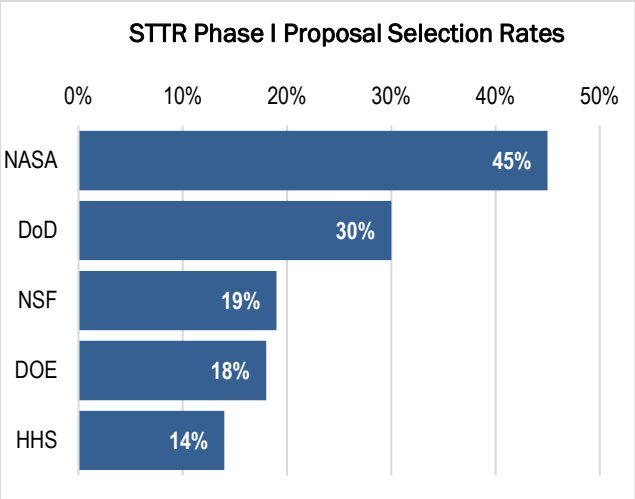
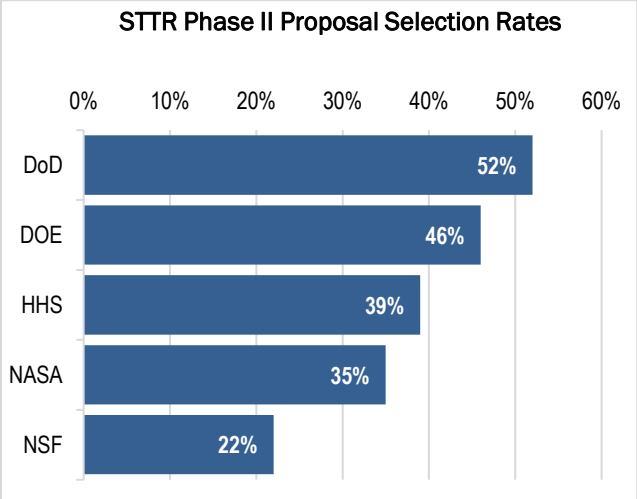


Chart 18: STTR Phase II Proposal Selection Rates



13 | SBIR/STTR Awards by U.S. State & Territory

The following table shows the total dollar amount and number of SBIR and STTR Phase I and Phase II awards across the U.S. This data is also publicly available on a searchable database at www.SBIR.gov and remains current to include subsequent funding of ongoing projects.

The SBA has noted that more SBIR/STTR funding goes to states with the largest populations and those that have a record of receiving substantial R&D funding from Federal programs outside of the SBIR and STTR Programs. For SBIR and STTR funding specifically:

- Approximately 69% of total FY16 SBIR award dollars were concentrated among the states of California, Massachusetts, Virginia, Maryland, New York, Colorado, Pennsylvania, Texas, Ohio, North Carolina and Illinois.
- Approximately 63% of total FY16 STTR award dollars were concentrated among the states of California, Massachusetts, Pennsylvania, Virginia, Maryland, New York, Texas, Illinois, Ohio and North Carolina.

States with a high concentration of both FY16 SBIR and STTR award dollars include California, Massachusetts, Maryland, Pennsylvania, Virginia, New York and Texas.

The SBA and Participating Agencies have worked to coordinate outreach efforts and tap into the innovation pipelines within the 26 most underrepresented regions: Alaska, Arkansas, Delaware, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maine, Mississippi, Missouri, Montana, Nebraska, Nevada, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, and Wyoming. Key outreach contacts have been identified within these states (and all states and territories) to include economic development agencies, universities, accelerators, and state or local small business service providers, to foster cross-collaboration, increase small business awareness, and encourage future participation in the SBIR/STTR Programs.

Additionally, administrative funds to specifically enable outreach for SBIR/STTR participation in underrepresented states have been allocated by the agencies and approved by SBA, most notably for the FY16 SBA Road Tour which visited 13 underrepresented states (Arkansas, Georgia, Indiana, Iowa, Kansas, Missouri, Nebraska, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee and Wyoming).

Table 21: SBIR/STTR Awards by U.S. State and Territory

State	SBIR Phase I		STTR Phase I		SBIR Phase II		STTR Phase II		SBIR Total Awards		STTR Total Awards		SBIR/STTR Total Awards	
	(#)	($)	(#)	($)	(#)	($)	(#)	($)	(#)	($)	(#)	($)	(#)	($)
AK	2	$194,981	1	$149,968	0	$384,966	0	$0	2	$579,947	1	$149,968	3	$729,915
AL	54	$8,418,721	12	$1,890,823	28	$25,314,385	6	$4,060,145	82	$33,733,106	18	$5,950,968	100	$39,684,073
AR	7	$1,266,989	2	$374,674	3	$3,850,899	1	875076	10	$5,117,888	3	$1,249,750	13	$6,367,638
AZ	53	$7,962,993	19	$3,520,776	21	$25,114,914	3	$3,776,465	74	$33,077,907	22	$7,297,241	96	$40,375,148
CA	620	$104,160,299	85	$17,762,094	356	$387,240,832	41	$41,370,208	976	$491,401,131	126	$59,132,302	1102	$550,533,433
CO	157	$24,564,838	21	$2,992,359	74	$79,807,687	7	$6,334,567	231	$104,372,525	28	$9,326,926	259	$113,699,451
CT	32	$5,158,174	11	$2,032,279	28	$29,789,552	2	$1,999,978	60	$34,947,726	13	$4,032,257	73	$38,979,983
DC	11	$1,694,430	2	$349,786	7	$4,489,649	0	305643	18	$6,184,079	2	$655,429	20	$6,839,508
DE	16	$2,532,545	3	$623,999	14	$12,146,895	1	$736,878	30	$14,679,440	4	$1,360,877	34	$16,040,317
FL	78	$11,110,688	25	$4,254,584	45	$42,866,275	2	$2,247,270	123	$53,976,964	27	$6,501,854	150	$60,478,817
GA	39	$6,400,932	8	$1,994,216	20	$19,455,103	1	$2,631,424	59	$25,856,035	9	$4,625,640	68	$30,481,675
HI	14	$2,732,122	1	$80,000	7	$9,848,968	0	$0	21	$12,581,090	1	$80,000	22	$12,661,090
IA	12	$2,546,216	6	$1,279,690	4	$5,799,817	1	240880	16	$8,346,033	7	$1,520,570	23	$9,866,603
ID	5	$726,660	1	$225,000	4	$2,843,737	0	$148,773	9	$3,570,396	1	$373,773	10	$3,944,169
IL	79	$13,545,285	19	$3,806,349	32	$35,836,162	6	$5,975,812	111	$49,381,448	25	$9,782,161	136	$59,163,609
IN	29	$5,047,973	12	$2,661,261	7	$8,997,241	1	$1,458,657	36	$14,045,214	13	$4,119,918	49	$18,165,132
KS	4	$503,628	1	$294,965	4	$5,131,603	0	$0	8	$5,635,231	1	$294,965	9	$5,930,196
KY	15	$2,920,485	6	$1,011,225	13	$12,463,526	4	$3,504,920	28	$15,384,011	10	$4,516,145	38	$19,900,156
LA	3	$540,054	3	$719,850	4	$2,479,972	0	$0	7	$3,020,026	3	$719,850	10	$3,739,876
MA	295	$54,681,891	45	$8,947,569	176	$213,558,635	16	$18,803,951	471	$268,240,526	61	$27,751,520	532	$295,992,046
MD	128	$23,348,610	27	$4,675,954	82	$97,052,255	7	$9,394,114	210	$120,400,865	34	$14,070,068	244	$134,470,933
ME	8	$1,258,724	0	$0	1	2042143	0	$0	9	$3,300,867	0	$0	9	$3,300,867
MI	55	$8,911,706	7	$1,266,235	38	$46,338,017	5	$4,727,706	93	$55,249,723	12	$5,993,941	105	$61,243,664
MN	43	$8,581,547	12	$1,947,070	24	$25,312,198	2	$2,254,590	67	$33,893,745	14	$4,201,660	81	$38,095,405
MO	23	$4,609,953	6	$1,647,525	11	$11,297,136	0	$0	34	$15,907,089	6	$1,647,525	40	$17,554,614
MS	5	$614,262	0	$0	2	1051000	0	$0	7	$1,665,262	0	$0	7	$1,665,262
MT	15	$2,489,865	4	$990,847	4	$6,679,760	0	$0	19	$9,169,625	4	$990,847	23	$10,160,472
NC	64	$12,475,781	23	$4,533,804	41	$46,774,904	7	$6,295,172	105	$59,250,685	30	$10,828,976	135	$70,079,661
ND	2	$248,394	0	$0	1	750000	0	$0	3	$998,394	0	$0	3	$998,394

NE	6	$1,163,890	3	$972,531	1	$786,734	1	$1,290,938	7	$1,950,624	4	$2,263,469	11	$4,214,093
NH	35	$5,990,209	6	$1,043,799	22	$23,910,688	1	$1,899,701	57	$29,900,896	7	$2,943,500	64	$32,844,396
NJ	62	$10,174,483	11	$1,667,960	43	$40,450,614	3	$3,284,729	105	$50,625,096	14	$4,952,689	119	$55,577,785
NM	42	$5,872,768	8	$1,272,804	22	$24,112,912	6	$6,059,639	64	$29,985,680	14	$7,332,443	78	$37,318,123
NV	3	$575,285	2	$303,902	7	$5,558,108	1	$499,959	10	$6,133,394	3	$803,861	13	$6,937,255
NY	114	$21,927,766	25	$5,020,597	74	$79,065,444	12	$12,955,488	188	$100,993,210	37	$17,976,085	225	$118,969,295
OH	105	$15,535,345	25	$4,051,360	56	$61,073,589	8	$8,697,694	161	$76,608,935	33	$12,749,054	194	$89,357,989
OK	12	$1,756,055	2	$299,940	5	$5,490,366	0	$0	17	$7,246,420	2	$299,940	19	$7,546,360
OR	39	$6,855,266	8	$1,774,036	21	$23,480,035	4	$5,493,294	60	$30,335,301	12	$7,267,330	72	$37,602,631
PA	102	$19,334,259	30	$6,121,445	62	$69,905,786	10	$9,404,647	164	$89,240,044	40	$15,526,092	204	$104,766,136
PR	1	$225,000	2	$448,916	1	$750,000	0	$0	2	$975,000	2	$448,916	4	$1,423,916
RI	5	$944,305	1	$79,573	6	$7,284,946	0	$0	11	$8,229,251	1	$79,573	12	$8,308,824
SC	10	$3,350,674	6	$1,578,334	5	$7,300,985	0	$706,207	15	$10,651,659	6	$2,284,541	21	$12,936,200
SD	0	$0	2	$370,647	1	$1,039,229	0	$0	1	$1,039,229	2	$370,647	3	$1,409,876
TN	11	$1,446,916	8	$1,325,727	11	$10,354,616	0	$0	22	$11,801,532	8	$1,325,727	30	$13,127,259
TX	133	$21,979,974	33	$6,307,845	73	$68,991,394	12	$9,854,234	206	$90,971,367	45	$16,162,078	251	$107,133,446
UT	31	$6,068,323	10	$1,774,816	11	$12,851,015	7	$6,299,018	42	$18,919,338	17	$8,073,834	59	$26,993,172
VA	154	$21,494,954	33	$4,916,851	98	$105,562,818	16	$15,836,512	252	$127,057,772	49	$20,753,363	301	$147,811,135
VT	9	$1,547,820	0	$0	4	5216457	0	$0	13	$6,764,277	0	$0	13	$6,764,277
WA	53	$12,251,616	15	$3,369,147	40	$42,653,831	3	$4,389,024	93	$54,905,447	18	$7,758,171	111	$62,663,618
WI	22	$5,920,564	5	$1,588,960	9	$14,233,951	2	$2,995,224	31	$20,154,516	7	$4,584,184	38	$24,738,700
WV	2	$204,997	1	$115,821	1	$2,147,684	0	$0	3	$2,352,681	1	$115,821	4	$2,468,502
WY	4	$724,849	0	$0	2	$1,782,359	0	$0	6	$2,507,208	0	$0	6	$2,507,208

The number of awards are only for new awards during FY16. The dollars obligated includes funding for both new and prior year awards. Agencies have the ability to update the number and dollar amounts for awards so this data may be updated on SBIR.gov. The data represented in this table reflects a snapshot of data pulled on 09/20/18

14 | SBIR/STTR Award Timelines

A focus of the SBIR/STTR Reauthorization Act of 2011, which was part of the National Defense Authorization Act for Fiscal Year 2012, was to reduce gaps between the close of the solicitation, the notification of award, and the performance start date. The Policy Directive prescribed the duration between the closing date of the solicitation and the notification of recommendation of award to be no more than one year for NIH or NSF and 90 calendar days for all other agencies. The Policy Directive also prescribed the duration between the closing date of the solicitation and the first date of the period of performance on the funding agreement as 15 months for NIH and NSF and no more than 180 calendar days for all other agencies. The data set used in this section pulls from proposal notification and award timeline data that the agencies upload to SBA. SBA has determined through our analysis that this data is incomplete and continues to work with the agencies to ensure more complete and accurate data is provided in the future. This is part of the data quality improvement program that SBA and the agencies are working on.

Civilian Agencies SBIR Timelines

DOE, NASA, NSF, DHS, ED, DOC, and DOT reported 100% of Phase I SBIR awards were issued within the required timeline. DOE, NSF, ED, and DOC reported 100% of Phase II SBIR awards were issued within the required timeline.

Table 22: SBIR Award Timelines – Civilian Agencies

SBIR TIMELINES	HHS	DOE	NASA	NSF	USDA	DHS	ED	DOC	DOT	EPA
Average time between Phase I Solicitation Close and Award Notification (days)	208	84	86	185	153	84	89	86	68	193
Average time between Phase I Notification and First Day of Period of Performance (days)	69	44	44	20	154	60	14	42	70	99
Percentage of Phase I Awards where the time between Solicitation Close and Notification was less than or equal to 90 days (1 year for HHS and NSF only)	97%	100%	100%	100%	0%	100%	100%	100%	100%	0%
Percentage of Phase I Awards where time between Solicitation Close and First Day of Performance was less than or equal to 180 days (15 months for HHS and NSF only)	94%	99%	100%	100%	0%	100%	100%	100%	100%	0%
Average time between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance (days)	92	146	143	223	340	142	187	129	282	366
Average time between Phase II Solicitation Close Date, or Proposal Receipt Date, and Award Notification Date (days)	221	76	95	209	99	84	84	60	47	121
Average time between Phase II Notification Date and First Day of Period of Performance (days)	62	61	49	8	92	67	4	35	159	167
Percentage of Phase II Awards where time between Solicitation Close, or Proposal Receipt, and Notification Date was less than or equal to 90 days (<=1 year for HHS and NSF only)	93%	100%	97%	100%	0%	37%	100%	100%	87%	0%
Percentage of Phase II Awards where time between Solicitation Close, or Proposal Receipt, and First Day of Performance was less than or equal to 180 days (<=15 months for HHS and NSF only)	92%	92%	96%	100%	0%	100%	100%	100%	27%	0%

USDA and EPA showed timelines exceeding six months for all of their Phase I and Phase II awards. Regarding the longer than prescribed timelines, USDA explained that the agency "uses an external scientific peer review process similar to NSF and NIH and cannot meet the 90-day maximum timeline from the Phase I proposal due date to award selection notification requirement. USDA has noted that the agency could meet the one year timeline as congressionally prescribed for NIH and NSF."

HHS and DOE Phase II timelines also included Fast-Track projects that used the Phase I Solicitation Close Date when the project proposal was submitted. Using this close date had the potential to increase the average Phase II timelines.

The following FY16 charts are organized by Participating Agency and contrast the performance on Phase I and Phase II SBIR activity. Specific average SBIR times for each agency are as follows:

Chart 19: SBIR Average Time Between Phase I Solicitation Close to Award Notification - Civilian

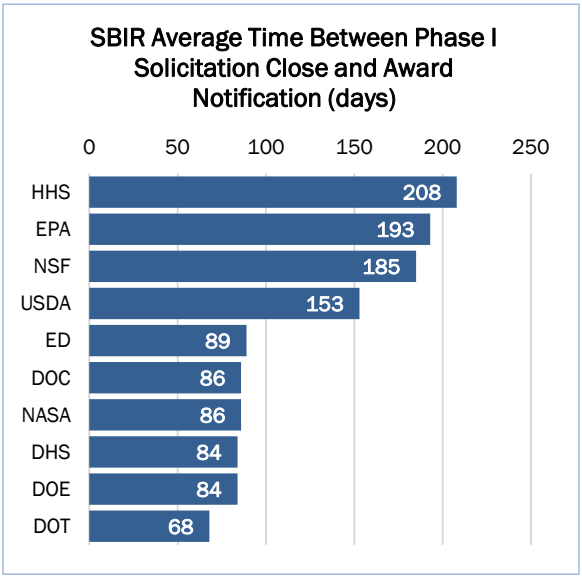


Chart 20: SBIR Average Time Between Phase II Solicitation Close to Award Notification - Civilian

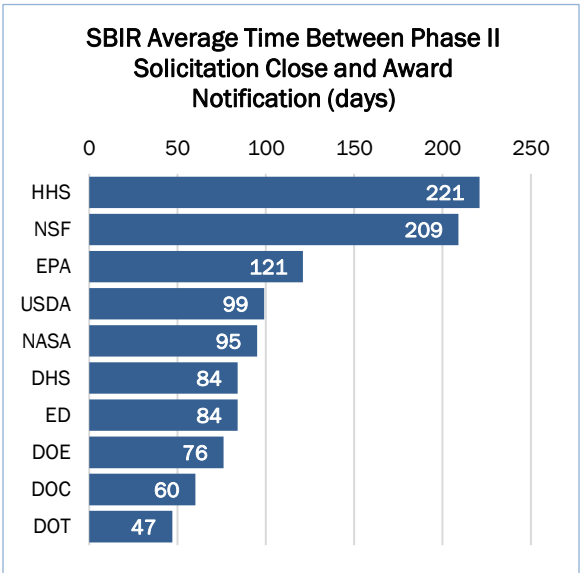
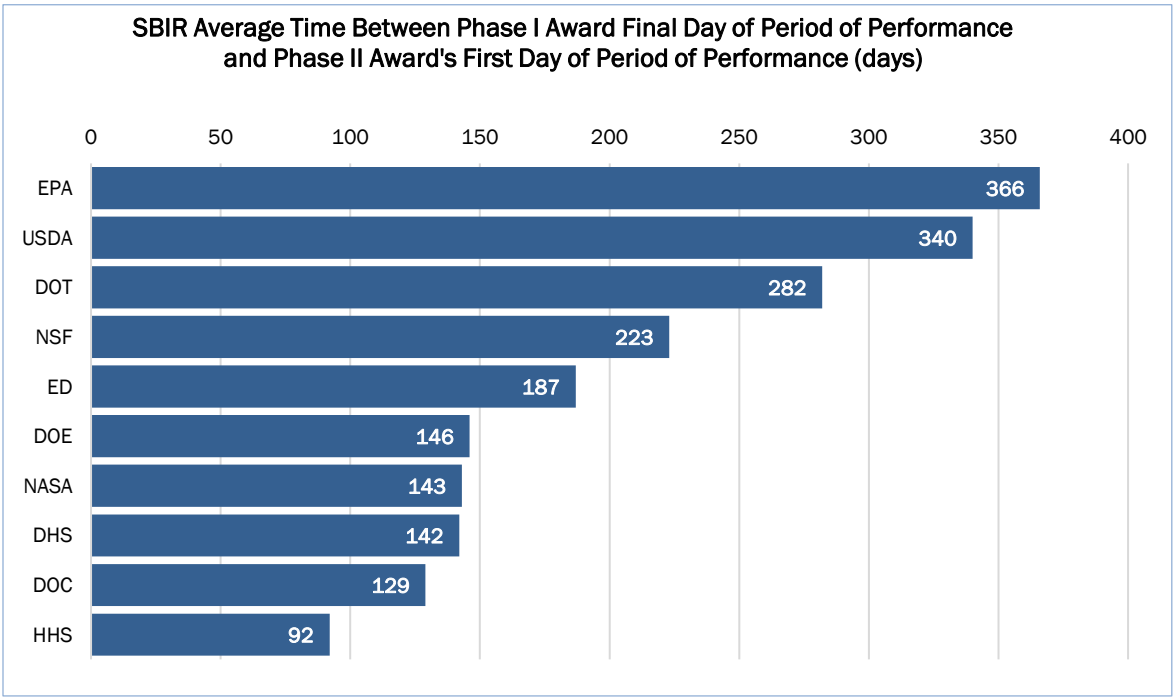


Chart 21: SBIR Average Time Between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance - Civilian Agencies



DoD Service Agencies and Fourth Estate SBIR Timelines

Table 23 below shows how the Navy, Air Force, Army, and Fourth Estate performed on the SBIR program during FY16.

Table 23: SBIR Award Timelines – DoD Service Agencies and Fourth Estate

SBIR TIMELINES	Navy	Air Force	Army	4th Estate	DoD Total
Average time between Phase I Solicitation Close and Award Notification (days)	73	82	84	94	82
Average time between Phase I Notification and First Day of Period of Performance (days)	66	73	108	123	87
Percentage of Phase I Awards where the time between Solicitation Close and Notification was less than or equal to 90 days	88%	97%	96%	67%	87%
Percentage of Phase I Awards where time between Solicitation Close and First Day of Performance was less than or equal to 180 days	92%	82%	42%	61%	74%
Average time between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance (days)	211	195	251	217	212
Average time between Phase II Solicitation Close Date, or Proposal Receipt Date, and Award Notification Date (days)	96	95	72	78	87
Average time between Phase II Notification Date and First Day of Period of Performance (days)	132	152	171	152	150
Percentage of Phase II Awards where time between Solicitation Close, or Proposal Receipt, and Notification Date was less than or equal to 90 days	60%	72%	85%	78%	72%
Percentage of Phase II Awards where time between Solicitation Close, or Proposal Receipt, and First Day of Performance was less than or equal to 180 days	44%	37%	47%	33%	40%

The Policy Directive prescribed the duration between the closing date of the solicitation and the notification of recommendation of award to be no more than 90 calendar days. SBA measures the percent of total notifications that meant the 90 day timeframe. The percentages came to 97% for the Air Force, 96% for the Army, 88% for the Navy, and 67% for the Fourth Estate. These numbers trending worse than compared to FY15 and are concerning.

The more concerning timeframe for small businesses is the gap between the end of the Phase I and start of the Phase II when they know they are expected to perform Phase II work but are not currently funded. This is shown in row 5, the average time between the end of the Phase I and Start of the Phase II. The timeframes for the DoD were higher than the 180-day goal and higher than most of the Civilian agencies. The gap between Phase I and II is trending down for the DoD compared to FY15 but much of that is due to removing second Phase II's from the award data being analyzed, an issue that was corrected from the FY15 data. However many of the other timeframes are trending longer and this gap is an area the DoD needs to work on, especially if they want to attract new firms to their program. The quality of the data associated with award and notification dates has been a problem for the DoD and many of the agencies. SBA has a lower confidence level in the accuracy of timeline data than the funding and total award numbers. SBA continues to work with the DoD to improve the quality of this reporting. The FY19 NDAA tasked GAO to perform a study on award timeframes and the challenges with making Phase I and II awards. SBA strongly supports this effort which should help to address areas the agencies can work on to make improvements.

The following FY16 charts are organized by DoD Service Agency and Fourth Estate and contrast the performance on Phase I and Phase II SBIR activity. Specific average SBIR times for each of the DoD Service Agencies and Fourth Estate were as follows:

Chart 19: Average Time Between Phase I Solicitation Close and Award Notification - DoD Service Agencies and Fourth Estate

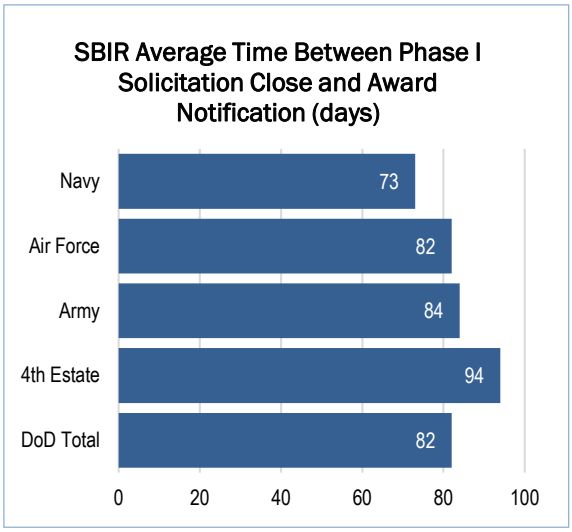


Chart 20: Average Time Between Phase II Solicitation Close and Award Notification - DoD Service Agencies and Fourth Estate

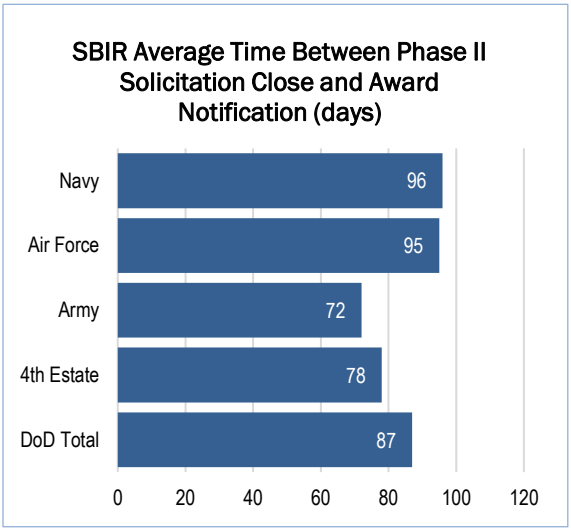
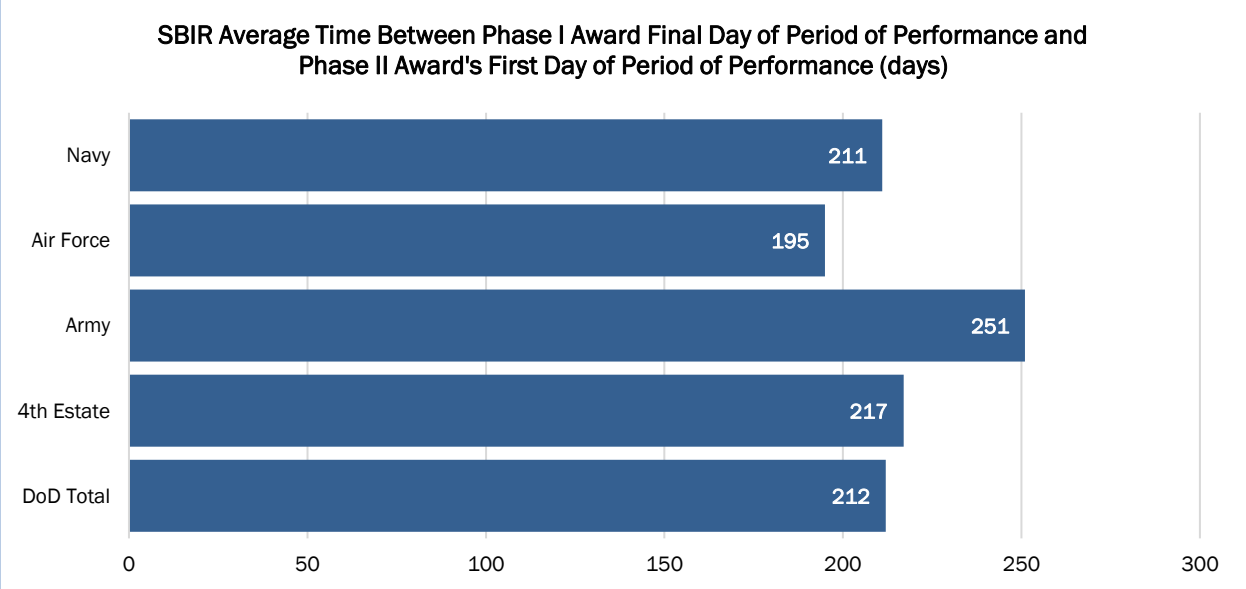


Chart 21: SBIR Average Time Between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance - DoD Service Agencies and Fourth Estate



Civilian Agencies STTR Timelines

DOE, NASA, and NSF reported 100% of Phase I STTR and Phase II STTR awards were issued within the required timeline. HHS reported that 97% of Phase I and 94% of Phase II STTR awards were issued within the required timeline.

Table 24: STTR Award Timelines – Civilian Agencies

STTR Award Timelines	HHS	DOE	NASA	NSF
Average time between Phase I Solicitation Close and Award Notification (days)	226	84	86	189
Av Average time between Phase I Notification and First Day of Period of Performance (days)	80	46	45	12
Percentage of Phase I Awards where the time between Solicitation Close and Notification was less than or equal to 90 days (1 year for HHS and NSF only)	97%	100%	100%	100%
Percentage of Phase I Awards where time between Solicitation Close and First Day of Performance was less than or equal to 180 days (15 months for HHS and NSF only)	87%	98%	100%	100%
Average time between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance (days)	84	145	103	328
Average time between Phase II Solicitation Close Date, or Proposal Receipt Date, and Award Notification Date (days)	231	76	74	223
Average time between Phase II Notification Date and First Day of Period of Performance (days)	69	79	27	5
Percentage of Phase II Awards where time between Solicitation Close or Proposal Receipt and Notification Date was less than or equal to 90 days (1 year for HHS and NSF only)	94%	100%	100%	100%
Percentage of Phase II Awards where time between Solicitation Close or Proposal Receipt and First Day of Performance was less than or equal to 180 days (450 days or 15 months for HHS and NSF only)	86%	81%	100%	100%

Chart 23: STTR Average Time Between Phase I Solicitation Close to Award Notification - Civilian Agencies

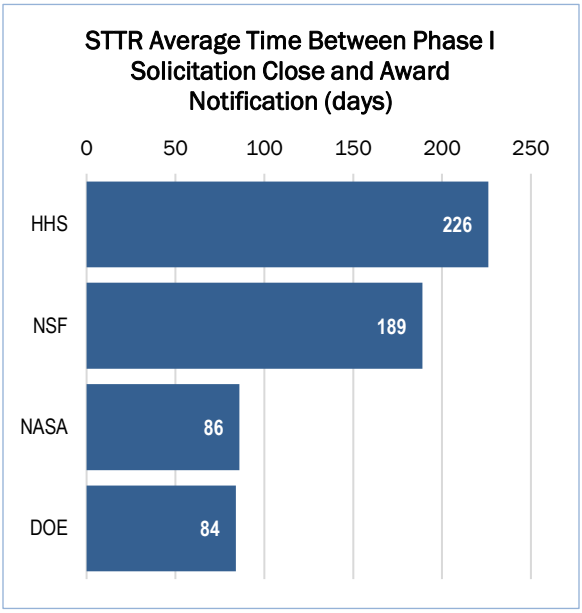


Chart 22: STTR Average Time Between Phase II Solicitation Close to Award Notification - Civilian Agencies

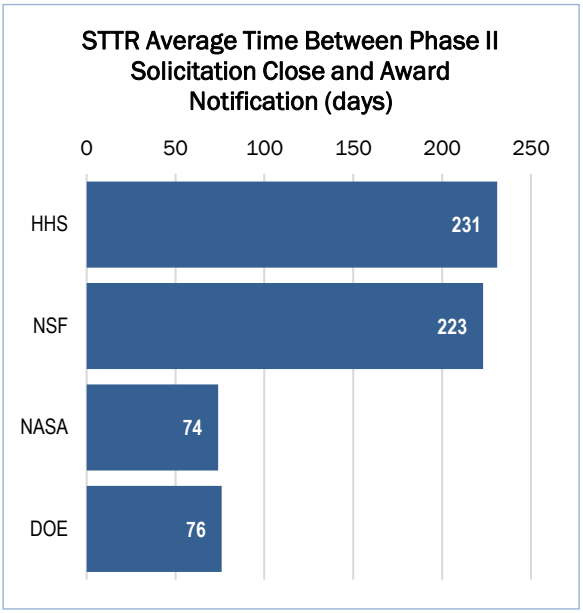
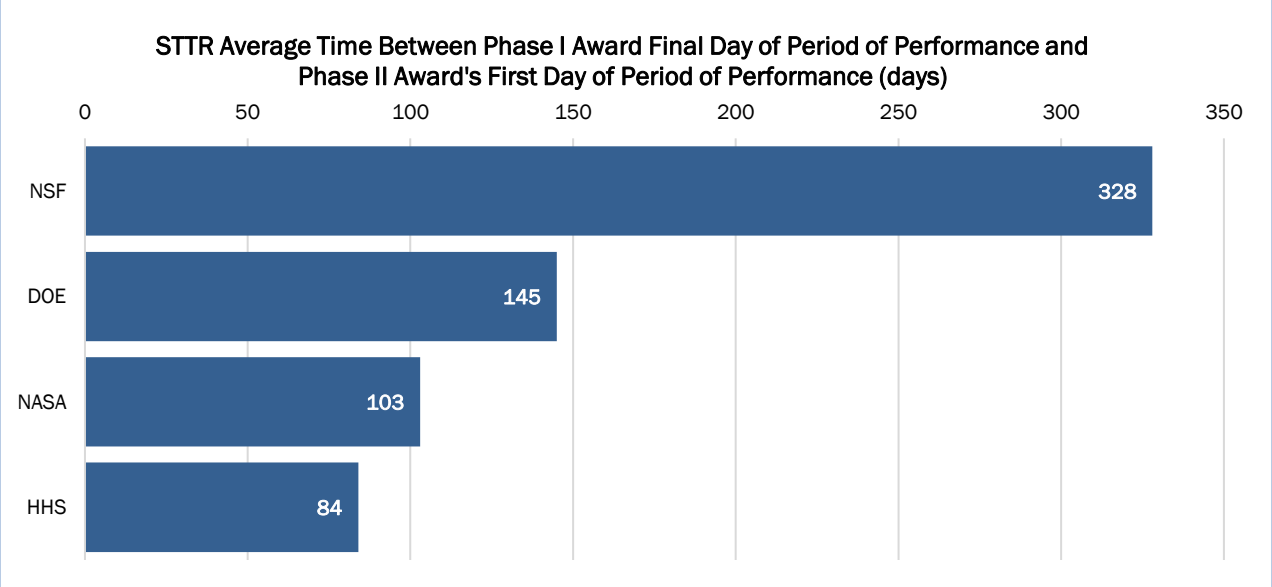


Chart 24: STTR Average Time Between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance - Civilian Agencies



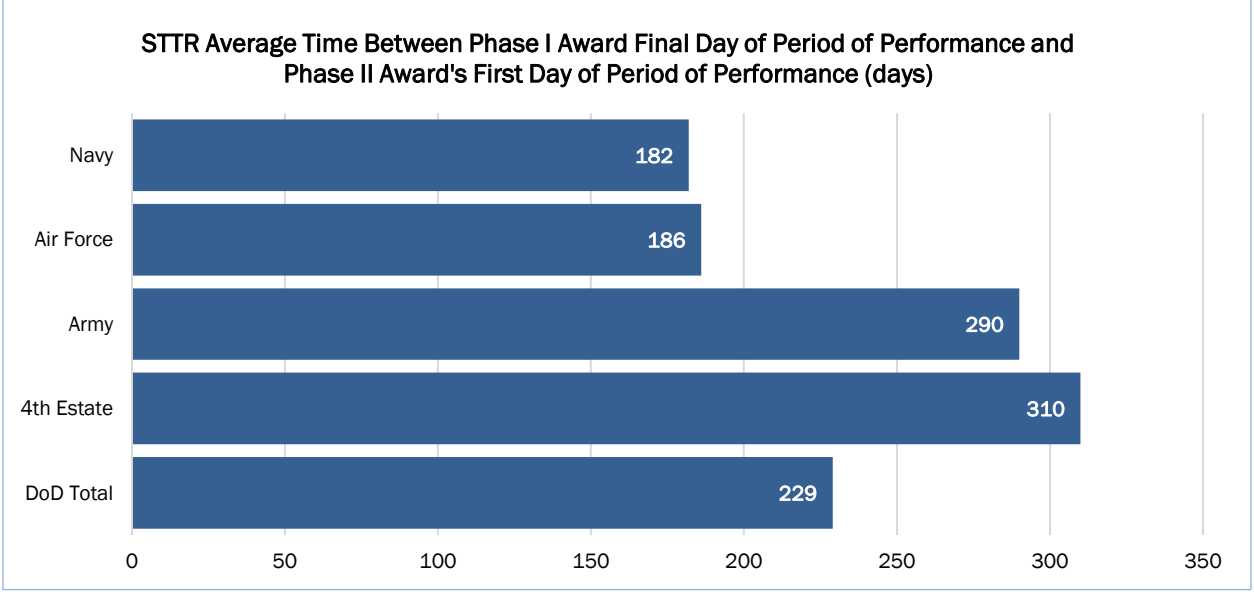
DoD Services Agencies and Fourth Estate STTR Timelines

Table 25 below shows how DoD Service Agencies and Fourth Estate performed during FY16 in the STTR program. The Air Force, Navy, DARPA, and MDA Phase I STTR awards were issued within the required timeline.

Table 25: STTR Award Timelines Across the DoD

STTR Award Timelines	Navy	Air Force	Army	4th Estate	DoD Total
Average time between Phase I Solicitation Close and Award Notification (days)	77	93	90	78	84
Average time between Phase I Notification and First Day of Period of Performance (days)	41	83	116	125	83
Percentage of Phase I Awards where the time between Solicitation Close and Notification was less than or equal to 90 days	57%	81%	14%	100%	64%
Percentage of Phase I Awards where time between Solicitation Close and First Day of Performance was less than or equal to 180 days	100%	73%	41%	46%	71%
Average time between Phase I Award Final Day of Period of Performance and Phase II Award's First Day of Period of Performance (days)	182	186	290	310	229
Average time between Phase II Solicitation Close Date, or Proposal Receipt Date, and Award Notification Date (days)	105	93	90	84	94
Average time between Phase II Notification Date and First Day of Period of Performance (days)	142	156	123	180	150
Percentage of Phase II Awards where time between Solicitation Close or Proposal Receipt and Notification Date was less than or equal to 90 days	31%	54%	95%	81%	59%
Percentage of Phase II Awards where time between Solicitation Close or Proposal Receipt and First Day of Performance was less than or equal to 180 days	34%	41%	16%	31%	33%

Chart 27: STTR Average Time Between Phase I Award Final Day of Performance and Phase II Award's First Day of Period of Performance - DoD Service Agencies and Fourth Estate



15 | SBIR/STTR Administrative Funding Pilot Program (AFPP)

The SBIR/STTR Reauthorization Act of 2011 authorized a pilot program permitting Participating Agencies to use up to 3% of their SBIR funding for the administrative, oversight, and contract processing costs of both the SBIR and STTR Programs. To use the authority, agencies are required to submit for SBA approval an AFPP work plan, including estimated costs for the activities. Each proposed plan was required to improve program performance in areas such as streamlining award processes, enhancing reporting, and expanding outreach eff0rts to underrepresented individuals. As part of the Annual Report submission, SBA requires agencies to report their AFPP obligations and performance criteria outcomes organized into the following areas: 1) Outreach; 2) Commercialization; 3) Streamlining and Simplification; 4) Prevention and Detection of Fraud, Waste, and Abuse; 5) Reporting; and 6) Administration and Implementation of Reauthorization. Agency AFPP "approved" budgets and actual obligations are shown below.

Table 26: Administrative Funding Pilot Program

AFPP Maximum Allowable and Obligated Amount per Agency			
Agency	**Max Allowable**	**Funding Approved**	**Obligated**
Navy	$9,2000,000	$9,200,000	$6,674,990
Air Force	$8,786,000	$8,786,000	$5,853,250
Army	$5,700,000	$5,700,000	$1,501,000
DoD Fourth Estate	$9,631,719	$9,631,719	$19,024,809
HHS	$21,800,000	$21,800,000	$8,996,526
DOE (Program Office)	$5,675,483	$1,362,116	$692,805
NSF	$5,656,800	$5,228,962	$5,228,962
NASA	$4,855,862	$4,694,000	$4,694,000
USDA	$690,000	$690,000	$302,235
DHS	Not participating	Not participating	Not participating
DOT	$228,806	$118,220	$118,220
NOAA (DOC)	$182,328	$182,328	$182,328
NIST (DOC)	$96,000	$32,000	$31,000
ED	$233,308	$101,100	$100,365
EPA	Not participating	Not participating	Not participating

In total, SBA approved $67,526,445 of FY16 SBIR budget dollars in agency submitted AFPP plans and agencies obligated $53,400,490 through the pilot. The difference between the approved plan and the amount obligated was primarily attributed to the constraints surrounding the timing of the following factors: 1) the length of agency appropriations; 2) the program office receipt of SBIR funding; and, 3) the amount of time available to make obligations. If funding was not used for planned AFPP activities, agencies obligated those funds for SBIR awards.

15 U.S.C. § 638 (mm)(2)(B) permits SBIR agencies to request a waiver for the requirement to use a portion of their AFPP funds to increase the participation by small businesses who are socially and economically disadvantaged, majority-owned and controlled by women, and those in historically underrepresented states in the SBIR. None of the participating agencies requested a waiver in FY16.

SBA received and approved work plans from nine Participating Agencies: DoD, HHS, DOE, NSF, NASA, ED, USDA, DOT, and DOC (NIST and NOAA). EPA and DHS did not participate in the AFPP program in FY16. These amount of AFPP requested and obligated by the agencies varied significantly. DOE, NSF, NASA, DOT, DOC (NIST), and ED requested and were approved for an amount below the maximum allowable AFPP funding level. Navy, Air Force, Army, DoD Fourth Estate, HHS, USDA, and DOC (NOAA) requested and were approved for the maximum allowable AFPP funding level.

Navy, Air Force, Army, HHS, DOE, USDA, NIST obligated less their respective maximum approved amounts. NASA and NOAA were the only agency where obligations exactly matched their approved amount. NSF, DOT, and NOAA obligated AFPP funds above their original approved work plan but contacted SBA during the Fiscal Year to discuss the changes. Moreover, their final approved obligations were at or below their respective maximum allowable amounts.

The DoD's Fourth Estate was the only agency which exceeded the maximum allowable administrative funding amount. On December 14, 2016, SBA approved the agency for the maximum allowance ($9,631,719). They obligated $19,024,809, exceeding the allowance by $9,393,090 (a 98% overage). DoD asserted they did not exceed the ceiling since they used remaining funding from the other DoD agencies, namely the Army, Air Force, and Navy. SBA disagrees with this assessment for two reasons. First, the Army, Air Force, and Navy are considered separate Agencies as defined in 5 U.S.C. § 102, 15 U.S.C. § 638(e)(2), and § (3)(m) of the SBIR Policy Directive. Hence, DoD Fourth Estate would not have the authority to use the allowance of Army, Air Force, and Navy. Second, even if drawing from the Services' authority were allowable, the DoD never requested permission from SBA to go above the level submitted in their original plan. SBA was only notified of the spending after the obligations were reported.

The AFPP is an essential tool for the agencies, as it generates dedicated resources toward support initiatives to improve the program and improve the experience for small businesses participating in the program. Specifically, agencies used the funds to: update and/or upgrade information technology systems to accommodate new reporting requirements; modify program application, review, and selection processes and procedures to shorten award timelines; develop targeted marketing and commercialization plans; assess prior awardee commercialization efforts; and, extensive outreach to increase small business concern participation, especially from underrepresented communities. Additional examples of agency efforts under the AFPP pilot are provided below.

Outreach

DOE. Outreach summary for FY16:

- Phase O Application Assistance program assisted underrepresented groups achieve award success rates comparable to the overall application pool. The program provided services to 94 eligible small businesses intending to apply to the DOE FY 2016 Phase I Funding Opportunity Announcements. Of this number, 66 (70%) submitted Phase I applications, and 13 (20%) received a Phase I award.
- Reached more than 1,850 individuals through extensive use of webinars to inform potential applicants about DOE's topic areas and funding opportunities.
- Transitioned to a cloud-based email delivery client, which greatly simplified the ability to utilize email communication with applicants and awardees.

NSF. Outreach summary for FY16:

- In order to increase program awareness and encourage the addition of SBIR companies to investment portfolios, NSF sponsored and exhibited at twelve trade shows, including Angel Capital Association Summit, BIO International Convention, FETC, SXSW Eco, iMatSci, ISTE, WEFTEC, Semicon West, Venture Summit West, SPIE Startup Challenge, New England Venture Summit, and NY Venture Summit.
- Supported two cohorts for initial pilots of the Phase Zero I-Corps program led by the SBIR Program. The pilot is designed to spur non-academic teams determine the commercial readiness of their technology concept and identify the key obstacles that must be overcome to launch their product into the marketplace.

USDA. Initiated the development of an Outreach Training and Technical Assistance Program in 2016. The program was developed under a working relationship with the USDA-NIFA supported Regional Rural Development Centers. One product of this relationship was a series of webinars hosted on the USDA SBIR website to guide small businesses through the basics of the SBIR program, including how to submit their application. In FY17, USDA found increased submission from 10 of the 19 states where they conducted outreach activities in FY16.

SBA. SBA and SBIR/STTR Participating Agencies partnered with state innovation leaders across 14 underserved states, held 1,580 one-on-one meetings with innovators through the SBIR Road Tour in FY16 (additional information available in Section 19).

Army. Assisted 925 small businesses, including 661 from underrepresented states) through participation in 22 outreach events. Army also led numerous webinars to provide support to underserved states. As a result, Army increased participation of targeted groups by ten percent.

Navy. Increased Phase I to Phase II transition by conducting 99 Phase I site visits. Navy also led and participated in a variety of conferences, SBIR events, and industry days. Furthermore, Navy executed the 3rd Annual Navy Topics Workshop, which allowed over 175 small business professionals from eleven states to meet with NAVSEA representatives to discuss opportunities in the third SBIR and STTR broad agency announcement. To expand the reach and scope from previous years, the workshop was webcast to satellite sites in ten states.

Air Force. Conducted information interchange sessions to encourage participation from woman-owned small businesses (WOSB), minority owned small businesses (MOSB), and small disadvantaged businesses (SDB); provide a state based opportunity to engage SBIR and STTR program leaders; increase knowledge sharing with state and federal innovation leaders; and strengthen state and federal coordination as it relates to the SBIR/STTR programs. Furthermore, Air Force reached 760 small businesses through outreach events.

MDA. Participated in 8 conferences, 4 workshops/lab days, and 12 SBIR Road Tour stops. Furthermore, MDA led 57 email campaigns to promote, announce, remind, and invite more than 13,000 contacts for the three SBIR and STTR DoD broad agency announcements, outreach events, and deadlines for the DoD Velociter Program.

DARPA. To enhance participation in their solicitations, DARPA conducted vetting of 774 minority serving institutions – Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities, American Indian and Alaska Native Serving Institutions, Predominantly Black Institutions and Asian American and Native American Pacific Islander Serving Institutions. Based on innovative and advanced technology nature of DARPA research, ninety-five institutions were identified as having relevant offerings – degree programs, highest degree offered and technical discipline. Fifty-four institutions were added to the MSI weekly alert distribution list expanding it to 91 institutions. DARPA received positive feedback from the recipients that they appreciated the outreach and information.

HHS. Outreach summary for FY16:

- 119 events (in person and virtual) hosted in 39 states, plus the District of Columbia (DC) that collectively reached over 11,300 attendees, an increase of over 25% since FY 15
- Reached over 1,800 attendees and 15 states during the SBIR Road Tour
- 346 SDB reached, an increase of 25% since FY 15
- 769 WOSB reached, an increase of 150% since FY 15
- Collaborated with the IDeA program to reach 19 IDeA states
- The 18th Annual HHS SBIR/STTR conference was hosted in Orlando, Florida on November 15 – 17, 2016. The conference reached 461 attendees from 40 states plus the Republic of Korea and Puerto Rico, 40 universities, and 176 businesses. This event included a workshop designed for WOSB/SDB

Commercialization

DOT. Exercised the first option of the Commercialization Assistance Program contract and oversaw implementation of contract for Phase I Solicitation and planning for Phase II support.

NSF. Provided funding for the “Beat-the-Odds Boot Camp” which is designed to help NSF SBIR and STTR Phase I grantees reduce "customer risk" as early as possible in the venture development process, thereby improving the likelihood of building a successful company.

HHS. Supported the I-Corps at NIH program; partnered with SBA via a Cooperative Enhancement Agreement to support Growth Accelerator Fund Competition (GAFC); and sent awardee companies to pitch at various investor events across the country.

NASA. Increased collaboration with federal agencies, small business assistance organizations, and industry. These formal and informal partnerships will lead to increased infusion and commercialization outcomes.

Navy. Commercialization summary for FY16:

- Updated the Phase III Guidebook with lessons learned and added an SBIR/STTR Data Rights User Guide
- Funded testing of SBIR-developed technologies with prime contractors

- Continued implementation of a Primes Initiative targeted to key defense industry firms to improve industry business models for SBIR/STTR engagement with goal of increasing the transition of SBIR-developed technology with industry partners
- Expanded training efforts at NAVSEA warfare centers on best practices and benefits of utilizing the SBIR/STTR programs and the Phase III Guidebook
- Initiated a pilot with the Fleet Readiness Center to develop topics to address operation and support cost reductions for Navy platforms and systems
- Established a Phase I Transition Planning and Systems Integration Pilot effort starting with SBIR 16.2. Pilot is designed to improve transition of SBIR-developed technology by facilitating relationships between Phase I awardees and Prime contractors

Air Force. Commercialization summary for FY16:

- The Technology Acceleration Program (TAP) Pilot Year 2 project enabled selected participating companies to deliver a comprehensive Phase II business plan that clearly outlines their business intent for meeting both the Air Force and commercial market needs. The impact was indicated by the evaluations these companies received on their Phase II proposal.
- The Transition Agent (Commercialization Readiness) Pilot Year 3 expanded the roles of transition agents at AFRL and centers to include support for the technology maturation and technology transition planning process as well as integration of technology with Air Force Development Planning, Technology Roadmaps, and Major Command (MAJCOM) Capability Planning.
- The Operational Exercise Experimentation and Demo Pilot provided an opportunity for AF SBIR/STTR companies to test, experiment, conduct data collection, insert, and/or otherwise showcase/demonstrate state-of-the-art warfighting technologies in a realistic operational environment
- Provided transition agents to directly support all AF labs and centers for SBIR/STTR technology transition.
- Sponsored CRP Small Business Industry Days (SBIDs), pioneered by Air Force CRP, in conjunction with the Air Force centers and PEOs. The SBIDs focused on identifying product capabilities, contract opportunities and technology development by matching stakeholders from centers/PEOs, large business, and small business communities

DoD. The DoD Velociter Program provided commercialization and transition support for more than 200 DoD SBIR/STTR companies from 36 states. The DoD Velociter Program provides direct mentorship to Phase I and Phase II participants and online learning resources for those not enrolled in the program (Phase 0)

MDA. Coordinated with sixteen MDA Program Offices to prepare follow-on contract awards for Phase III efforts and Phase II enhancements. The FY16 Phase III program included three awards and totaled $7.1M. MDA also amended the Phase III Acquisition process to be organized around stakeholders meetings. The new process enhanced communication between Contract Specialists and Research Area Leads (RALs) by involving both parties at the very beginning of the acquisition process. Regular stakeholder meetings kept all parties apprised of current contract statuses and provided a forum for open dialogue. The process has already improved contract award time by identifying changes to contract structure, deliverables and statement of work during the development of acquisition requirements documents.

DARPA. Assisted 100 active Phase II projects on average per month through the Transition and Commercialization Support Program (TCSP). DARPA focused on increased participation in TCSP through implementation of an auto-enroll process to capture all Phase II projects, and a greater focus on Major Defense Contractor/Prime and Federal Agency coordination for visibility of DARPA Phase II efforts. This included a specific coordination activity to leverage the AF and Army.

USDA. Implemented the Innovations in Food, Agriculture, Science and Technology (I-FAST) pilot program. Four teams received $50,000 to start a business, identify their commercial market, understand their value proposition, and move their innovation towards full commercialization. At the conclusion of the program, three of the four teams determined the innovation originally developed at the academic institution was viable in a commercial market and subsequently applied for SBIR funding.

NOAA. Implemented a Commercialization Assistance Program beginning with the FY16 Phase II awardees.

Streamlining and Simplification

NASA. Began modernizing the Electronic Handbooks to streamline business processes and improve the user experience.

HHS. Streamlining and simplification summary for FY16:

- Improved document management support and work on Clinical trials
- Development of electronic pilot SBIR contract solicitation and contract receipt system (eCRS) for trans-NIH
- Hired additional grants management support and program analysts

Navy. Streamlining and simplification summary for FY16:

- Continued a contracting pilot with 33 ONR Phase II awards at Naval Air Command (NAVAIR) Lakehurst to reduce time to award Phase II contracts and gap between the end of Phase I and the start of Phase II. Of the Phase II awarded in FY16, time to award Phase II decreased by 114% and gap time between Phase I and II was reduced to zero.
- Continued development of a common set of forms to improve quality and reduce confusion and burdens placed on small business concerns. Also developed standard procedures to ensure consistent and accurate implementation of assessment procedures.
- Developed materials for Technical POCs, Procurement and Contracting officers, and Program Executive Officers (PEO) on processes and procedures to increase efficiency and reduce time to award. Conducted additional training before each solicitation cycle.
- Continued implementation of new Topic Development Guide to increase efficiency of the topic development process and the quality of topics overall. Conducted training at DON SBIR/STTR Training Workshop reaching over 100 Navy attendees.
- Decreased time to award NAVAIR Phase II contracts by 21% (from an average of 120 days to 95 days).
- Funded TPOCs and CORs to assist PEOs with participation in monthly meetings/checkups with existing SPAWAR SBIR/STTR performers to ensure successful contract oversight and transition to target Program of Record

MDA. Hired an IT specialist, which enable MDA to implement a new streamlined SharePoint proposal evaluation system. The new system eliminated the use of Excel spreadsheets as evaluation forms, decreased the administrative burden of tracking those spreadsheets, and eliminated in aggregating those scores.

DOT. Hired two Contract Specialists dedicated to working on SBIR contracting activities.

Prevention and Detection of Fraud, Waste, and Abuse

HHS. Hired support staff to assist in prevention and detection of fraud, waste, and abuse and provided support for FWA site visits. Furthermore, HHS participated in the annual HHS FWA training and supported the training of CDC SBIR staff.

Navy. Reviewed and adjudicated over 2,218 proposal packages from DoD for red flags identified on Cover Sheets. This included expanded centralized review of all cover sheet flags to the Navy level to minimize potential of fraud, waste, and abuse

USDA. Provided training for Phase II grantees at the Phase II commercialization workshop.

Reporting

USDA. Worked with SBA and NIFA IT staff to develop a process to upload unawarded proposal data into the SBIR.gov database.

NASA. Automated the transfer of annual report data to SBA. Reducing the amount of manual entry will ensure consistent and correct responses to data requests.

DARPA. Reporting summary for FY16:

- Increased coordination with other agencies relative to cross-agency awards, second Phase 2 awards, and enhancements
- Additional tracking and reporting of Direct to Phase 2 Pilot awardees and Discretionary Technical Assistance (DTA) usage
- Supported GAO Inquiry on SBIR transition, the annual Energy and Manufacturing Reporting, as well as ad hoc data calls – Congressional, SBA, and Office of Small Business Programs.

SBA. SBA developed a web-based tool that allows companies to submit and update data on their Phase III "Commercialization" activity. SBA incorporated the look and feel of the DoD's Company Commercialization Report (CCR) and imported approximately 5,000 reports from the DoD into SBIR.gov. The system is now live on SBIR.gov.

Imported award data from FY04 to FY10 from the legacy TechNet system into SBIR.gov to address missing data fields and firm duplications.

Massive data cleansing effort that migrated awards, merging approximately 1,500 duplicative firms and 800 awards to address data challenges.

Administration and Implementation of Reauthorization

HHS. Invested in IT solutions, conducted outcome/statistical analysis, and other staffing for implementation/administration of reauthorization.

Navy. Provided program, policy, procedures, and legislation guidance and training to NAVSEA PEO Program Managers, Deputy Program Managers, CORs, and Contracting Officers

NOAA. Implemented new initiatives to streamline subtopic development, solicitations, and the contract award process.

16 | Government Phase III Funding

Phase III is the commercialization phase and includes revenue generated by sales, as well as later stage investment in SBIR/STTR funded technology. By definition, Phase III is not supported with SBIR or STTR dollars, but with other sources of funding or revenue generated from sales.

Agencies that award grants typical focus on and receive the bulk of their funding to support advanced R&D that addresses the mission area of that agency. Those that award contracts, such as DoD and NASA, receive substantial funding to purchase product and services that support the mission of their agency. For "granting" agencies the majority of the Phase III opportunities will come from the private sector. However, the "contracting" agencies align their SBIR/STTR topics in a way that if successful will have a transition path into a program or platform. These contracting agencies are expected to use appropriated later stage RDT&E and procurement funds to further develop or purchase the SBIR/STTR developed technology. For the contracting agencies, Phase III's are typically awarded directly between the agency and the SBIR/STTR firm.

Table 1 and Table 6 provide the reported Phase III awards from each agency and the range is substantial. Congress has focused substantial attention on encouraging DoD Phase III activity to include requesting the setting of Phase II transition goals and incentives to DoD Acquisition Program Offices and prime contractors. This is discussed in more detail in Section 17. DoD Phase III activity is shown in Table 6 and the range of Phase III dollars varies across the DoD. The SBA would like to encourage the DoD to study this issue, review the root cause of this difference, and identify if best practices used by some DoD components could be shared with others to increase overall DoD Phase III awards.

It was not until the FY 15 Annual Report that SBA started to collect Phase III data from the agencies and SBA understands the challenges with collecting and reporting this data. SBA is working with the agencies to develop tools to create a more efficient way to collect this data, but it will always be difficult for companies that no longer participate in the SBIR or STTR programs. Collecting data on Phase III funding from private sector sales, licenses, equity investment and acquisition will always be a challenge for the Federal Government.

SBA will continue to work with the agencies in an effort to improve Phase III activity and reporting, but it will always be an area in which only partial data can be obtained. In addition, the cost for collecting more accurate and complete data will have to be measured against the benefit that the data provides to tax payers.

Economic Impact Studies

SBA and the eleven participating agencies are committed to capturing the economic impact of SBIR/STTR awardees and using this knowledge to stimulate additional economic growth opportunities. Impact studies funded by SBA or the eleven participating agencies can be found at https://www.sbir.gov/node/832335.

17 | SBIR/STTR Commercialization Programs

DoD Commercialization Readiness Program (CRP)

The Commercialization Readiness Program (CRP) was originally authorized and created as part of the National Defense Authorization Act of Fiscal Year 2006 as the Commercialization Pilot Program (CPP) under the Secretary of Defense and the Secretary of each Military Department. Congress permanently authorized the program through the SBIR/STTR Reauthorization Act of 2011. The purpose of the CRP is to pay for activities that accelerate the transition of DoD SBIR/STTR-funded technologies to Phase III, especially those providing significant benefit to the nation's warfighters in improved performance, new capabilities, increased reliability, and cost savings well exceeding investment. Phase III commercialization work derives from, extends, or completes efforts made under prior funding agreements under the SBIR/STTR Programs, and requires small businesses to obtain funding from the private sector and/or non-SBIR/STTR government sources. Under the CRP, up to 1% of the available SBIR funding may be used by DoD Service Agencies and Fourth Estate for payment of expenses incurred to support CRP activities. The CRP pays for activities that enhance the connectivity among SBIR/STTR firms, prime contractors, and DoD science & technology and acquisition communities.

According to Section 9 of the Act (15 USC § 638(y)), for any contract with a value of $100,000,000 or greater, DoD is authorized to establish goals for the transition of Phase III technologies in subcontracting plans and require a prime contractor on such a contract to report the number and dollar amount of contracts entered into by that prime contractor for Phase III SBIR/STTR projects. In addition, DoD must set a goal to increase the number of Phase II SBIR and STTR contracts that lead to technology transition into programs of record or fielded systems; use incentives to encourage agency program managers and prime contractors to meet these goals; and submit to SBA the number and percentage of Phase II SBIR/STTR contracts that led to technology transition into programs of record or fielded systems; information on the status of each project that received funding through the CRP and efforts to transition those projects into programs of record or fielded systems; and a description of each incentive used and the effectiveness of that incentive in meeting the goal.

To date, the DoD has not provided SBA with the number and percentage of Phase IIs leading to technology transition; information on the status of each project receiving funding through CRP and efforts to transition those projects; as well as any details or evidence they set a goal to increase Phase II's that lead to technology transition or a description of the incentives used to increase the effectiveness. The DoD does provide SBA with a CRP report which describes the activities and firms helped under CRP funding and authority. The full FY16 DoD CRP report will be posted on https://www.sbir.gov/annual-reports-files.

Commercialization Readiness Pilot Program for Civilian Agencies (CRPP)

The SBIR/STTR Reauthorization Act of 2011 created the Civilian Agency Commercialization Readiness Pilot Program (CRPP) that allows an agency to use up to 10% of its SBIR/STTR budget for additional awards to SBIR/STTR awardees. The size of these awards may be up to three times the Phase II guideline amount. This is a completely different program from the DoD CRP. SBA approved CRPP authority for HHS, NASA, DHS and DOC/NIST. The following agencies did not request CRPP authority: DOE, NSF, USDA, ED, DOC/NOAA, DOT, and EPA.

HHS. In Fiscal Year 2013 (FY13), HHS requested and received approval from SBA to have a CRPP. HHS began planning the CRPP once securing SBA approval on August 29, 2013. In FY14 and FY15, NIH sought and received guidance from NIH Office of the General Counsel, Grants Policy, Peer Review, and other necessary offices to develop CRPP solicitations. Draft CRPP solicitations were developed and circulated for internal input, refinement, and clearances. According to HHS, this process took longer than expected due to the unique nature of the CRPP authority. HHS issued its CRPP solicitations on November 2, 2015 (FY16) and held an informational webinar (see https://sbir.nih.gov/engage/news#dec4). The first CRPP applications were received and awards made in FY16. HHS received 67 CRPP proposals in FY16, of which 15 were funded with $9,135,503 in Total Dollars Obligated. HHS did not differentiate its CRPP program between follow-on to Phase II funding and Phase II commercialization funding.

Table 27: Commercialization Readiness Pilot Program for Civilian Agencies (CRPP) - HHS

Company	Project Title	Amount
Amprion, Inc.	Development of a Biochemical Diagnosis for Creutzfeldt Jakob disease	$1,254,529
Apex Biomedical Company, LLC	Advanced Bicycle Helmet Technology for Prevention of Traumatic Brain Injury	$617,779
APT Therapeutics, Inc.	Human Apyrase Therapy for Acute Ischemic Stroke	$968,157
Artann Laboratories, Inc.	Vaginal Tactile Imager for Pelvic Floor Biomechanical Assessment	$575,753
Checkup and Choices, LLC	An Internet Application for SMART Recovery	$263,179
Chemica Technologies, Inc.	Arsenic Selective Ligand-Anchored Fiber for Purification of Drinking Water	$199,426
Columbus Nanoworks, Inc.	Ip landscape search for applications of fluorescent nanodiamonds	$50,000
Cytex Therapeutics, Inc.	Hip-Joint Resurfacing with Functional Human Cartilage	$187,590
Evenuk, Inc.	Advanced Image Analysis Tools for Diabetic Retinopathy Telemedicine Application	$500,000
Genefludics, Inc.	Near patient molecular diagnostics test for infections	$989,569
Isense, LLC	Rapid Identification of Pathogenic Bacteria in Blood causing Sepsis	$998,515
Platelet Biogenesis, Inc.	Development of an intellectual property (ip) strategy for the commercial advancement of a direct phase ii sbir-funded human platelet bioreactor	$50,000
Sanaria, Inc.	Pfspz Vaccines Quality Systems Manufacturing Regulatory and Clinical Quality and Data Management Support for Product Commercialization	$991,532
Vision Quest Biomedical, LLC	Computer based Screening for Diabetic Retinopathy	$499,791
Weinberg Medical Physics, Inc.	High quality compact portable low field head MRI with ultra fast gradients	$989,683

DHS. Of the two SBIR Programs in DHS, only the Science and Technology (S&T) Directorate administered a CRPP in FY16. Building on the success of its inaugural FY14 CRPP pilot, the DHS S&T SBIR Program Office utilized less than 10% of its SBIR Program funds (or $999,546.47) in FY16 to help its small business awardees address two issues related to transitioning new products to market: technology maturation and end-user knowledge.

For technology maturation, DHS S&T's SBIR Program Office provided additional funding, via separate CRPP awards, to four of its SBIR awardees to help them increase their technologies' readiness levels:

Table 28: Commercialization Readiness Pilot Program for Civilian Agencies (CRPP) - DHS

Company	Project Title	Amount
Telesecurity Sciences, Inc.	Automatic Threat Recognition Algorithm for Volumetric CT Data	$199,769.75
Denim Group, Ltd	Hybrid Analysis Mapping (HAM)	$199,795.15
BlueRISC, Inc.	Software-based Dynamic Mobile trusted Module (SW-dMTM)	$199,981.58
Sandia Research Corp.	Subsurface Communications System for Robotics	$199,999.99

SBIR-funded technology may be technically successful, but if the market is unaware of its existence or of its potential, it serves no useful purpose. DHS' S&T Directorate's SBIR CRPP began to address the issue of end-user knowledge in FY14 through membership in the Auto Harvest Foundation. A new contract was provided for the Auto Harvest Foundation membership in FY16 for $50,000.00. Also, in FY16, three contracts were awarded to DHS S&T SBIR Program awardees at $50,000 each so that the awardees could participate in the DHS/NSF I-Corps program beginning in October 2016. Specifically, BlockCypher (Redwood City, CA), ElanTech (Columbia, MD) and Oceanit Laboratories, Inc. (Honolulu, HI) each received awards to participate in the I-Corps program.

NASA. NASA obligated $5,790,243 for its CRPP in FY16. While NASA did not award any new CRPPs in FY16, the $5.79M additional obligations committed and payable in FY16 was for awards made in FY14 and FY15.

In 2013, NASA received approval from SBA to initiate a CRPP, as authorized in Section 5123 of P.L. 112-81. NASA used the Air Force CRP program to model many aspects of implementation. The objective of the NASA CRPP was an infusion into a NASA application or a commercialization to industry, not an incremental improvement in technology readiness level alone. Technology maturation without infusion or commercialization was not in the scope of the CRPP. The CRPP was intended to provide the bridge to infusion and commercialization for technologies which could not accomplish this within other funding opportunities. The NASA CRPP operated as a matching funding arrangement, with a 1:1 ratio target (SBIR/STTR to non-SBIR/STTR funds).

DOC/NIST. NIST obligated no SBIR funds towards CRPP awards in FY16.

18 | Other SBIR/STTR Reporting Requirements

Awards to Small Business Concerns Majority-Owned by Venture Capital Operating Companies

The SBIR/STTR Reauthorization Act of 2011 provided authority to SBIR Participating Agencies to use a portion of their program funds for awards to firms that are majority-owned by multiple venture capital operating companies (VCOCs), hedge funds (HFs) or private equity firms (PEFs). NIH and the Centers for Disease Control and Prevention (CDC) and DOE's Advanced Research Projects Agency-Energy (ARPA-E) elected to begin using this authority in 2013. Hereafter, firms that were majority-owned by multiple VCOCs, HFs, or PEFs referred to as portfolio companies.

HHS/NIH. In FY13, NIH submitted its written determination to SBA and Congress that NIH intended to exercise the authority to allow portfolio companies to apply to its SBIR Program. Every new NIH SBIR solicitation issued after January 28, 2013 allowed portfolio companies to apply to the NIH SBIR Program.

HHS/CDC. On July 30, 2014, HHS/CDC submitted its written determination to SBA and Congress that CDC intended to exercise the authority to allow portfolio companies to apply to its SBIR Program. Every new HHS SBIR solicitation that CDC participates in issued after July 30, 2014, allowed portfolio companies to apply to the CDC SBIR Program.

HHS put controls in place to ensure that overall spending on NIH and CDC portfolio companies would not exceed 25% or 15% of its SBIR set-aside respectively. The total percent of SBIR funds HHS obligated in FY16 to majority-owned by multiple venture capital, hedge funds or private equity firms came to 1.2%, well below the thresholds.

Table 29: HHS SBIR Awards to SBC majority-owned by multiple VCOCs, hedge funds or private equity firms

Number of proposals received	20
Number of awards	13
Total dollar amount of awards	$6,124,729
Number of Phase I proposals Received	13
Number of Phase I Awards	8
Total dollar amount of Phase I Awards	$1,916,805
Number of Phase II proposals received	7
Number of Phase II Awards	5
Total dollar amount of Phase II Awards	$4,207,924
Number of non-competing awards	3 (year 2 or 3 of a Phase II, funded one FY at a time)
Total dollar amount of non-competing Phase II Awards	$2,964,821
Overall dollar amount of awards (competing and non-competing)	$9,089,550

Phase III Appeals

Pursuant to Section 4(c)(8) of the SBIR/STTR Policy Directives, Participating Agencies were to notify the SBA before they pursue follow-on work on a technology developed under an SBIR/STTR Award with an entity other than the SBIR/STTR Awardee that developed the technology. The SBA did not receive such a notification from any funding agency during FY16. The SBA could also be contacted directly by SBIR/STTR awardees seeking assistance with perceived violations of the Phase III preference requirements or SBIR/STTR data rights. In such cases, the SBA would work with the awardee and the relevant agency to resolve the issue and may, if warranted, appeal an agency decision or action to pursue Phase III work with another entity. None of the Participating Agencies or SBIR/STTR awardees reported Phase III appeals in FY16.

Outreach to Women- and Socially and Economically Disadvantaged-Owned Small Business Concerns, and Underrepresented States

Pursuant to 15 USC § 638(b)(7)(C), the SBA reports a description of the extent to which each federal agency is increasing outreach and awards to firms owned and controlled by women or by socially and economically disadvantaged individuals under each of the SBIR and STTR Programs. Award information can be found in the Agency Summary Data in Sections 6 and 7 of this report and outreach in section 15.

Participating Agency Compliance with Executive Order 13329 - Encouraging Innovation in Manufacturing (E.O. 13329)

Per 15 U.S.C. § 638(ss), the Annual Report must contain the following information about Executive Order (E.O.) 13329:

- a description of efforts undertaken by the head of the federal agency to enhance United States manufacturing activities;
- a comprehensive description of the actions undertaken each year by the head of the federal agency in carrying out the SBIR or STTR Program of the agency in support of Executive Order 13329 [note to this section] (69 Fed. Reg. 9181; relating to encouraging innovation in manufacturing);
- an assessment of the effectiveness of the actions described in paragraph (2) at enhancing the research and development of United States manufacturing technologies and processes;
- a description of efforts by vendors selected to provide discretionary technical assistance under subsection (q)(1) to help SBIR and STTR concerns manufacture in the United States; and
- recommendations that the program managers of the SBIR or STTR Program of the agency consider appropriate for additional actions to increase the effectiveness of enhancing manufacturing activities.

Pursuant to E.O. 13329, agencies must give priority to small business concerns that participate in or conduct R/R&D "…relating to manufacturing processes, equipment and systems; or manufacturing workforce skills and protection." Each agency includes in its Annual Report to the SBA a synopsis of its implementation of these requirements. Agencies utilized a variety of approaches in addressing the E.O. 13329 directive. For most, these requirements are assessed within the scope of each agency's R/R&D needs with tangible numbers of solicitation topics, awards, and dollars. Mechanisms commonly used by agencies to give priority to manufacturing-related work include: adding manufacturing-related topics in solicitations; requesting in solicitations that proposals address any possible manufacturing-related elements of the small businesses' proposed work, technological approach, delivery or resulting technological applicability to manufacturing processes; and, noting in solicitations that including such elements in proposals may provide a competitive advantage in the award selection process. Additionally, cross-agency collaborations, targeted outreach efforts, and other agency-specific activities related to manufacturing contribute to addressing the objectives of E.O. 13329. A detailed report on the individual agencies' activities and initiatives is located at https://www.sbir.gov/annual-reports-files.

Participating Agency Compliance with the Energy Independence and Security Act of 2007 (EISA)

Section 9(z) of the Act, 15 U.S.C. § 638(z) requires that the Annual Report include a determination of whether Participating Agencies give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system research and development projects.

Pursuant to the Energy Independence and Security Act of 2007 (Pub. L. No. 110-140) and Policy Directives issued by the SBA, Participating Agencies must give high priority to small business concerns that participate in or conduct energy efficiency or renewable energy system R/R&D projects. Agencies utilize a variety of approaches to comply with EISA and the Policy Directives. For some, such as DOE, these efforts are ingrained in the agency mission and therefore easy to assess in very tangible ways. Mechanisms commonly used by agencies – aside from specifically adding energy related topics in solicitations – include adding that proposals address any energy efficiency or renewable energy aspects related to the small businesses' technological approach, delivery or technological applicability. Cross-agency collaborations, outreach efforts, and other initiatives also become critical to assessing the collective

achievements of the program rather than focusing on individual agency performance. Each Participating Agency's Annual Report addresses EISA compliance by including: examples of SBIR/STTR projects related to energy efficiency or renewable energy; procedures and mechanisms used during the reporting fiscal year to give priority to energy efficiency and renewable energy projects in SBIR/STTR; and, specific actions taken to promote and support energy efficiency and renewable energy research projects. A detailed report on the individual agencies' activities and initiatives is located at https://www.sbir.gov/annual-reports-files.

Interagency Policy Committee (IPC)

The Interagency Policy Committee (IPC), as created by the SBIR/STTR Reauthorization Act of 2011, is co-chaired by the SBA and the White House Office of Science and Technology Policy (OSTP). The IPC is comprised of representatives from all SBIR/STTR Participating Agencies with the collective purpose to review issue areas and make policy recommendations on ways to improve SBIR/STTR Program effectiveness and efficiency. Throughout FY16, the SBA, OSTP, and the agency representatives (Program Managers) collaborated through the IPC in bimonthly Program Managers' meetings at the SBA to formulate policy recommendations to be submitted to Congress. The IPC also achieved significant accomplishments in the areas of government data and reporting mechanisms through continued build-out of the www.SBIR.gov portal for registered users, creating administrative and programmatic efficiencies for agency reporting officials and small businesses participating in the SBIR/STTR Programs.

Annual Report on SBIR/STTR Program Goals

Pursuant to Section 15 USC § 638(nn), added by the SBIR/STTR Reauthorization Act of 2011:

> The head of each Federal agency required to participate in the SBIR Program or the STTR Program shall develop metrics to evaluate the effectiveness and the benefit to the people of the United States of the SBIR Program and the STTR Program of the Federal agency that are science-based and statistically driven; reflect the mission of the Federal agency; and include factors relating to the economic impact of the programs.

It further requires the agency to conduct an annual evaluation using these metrics and provide that report to the House and Senate Small Business Committees and House Committee on Science, Space and Technology, as well as the SBA Administrator. SBA followed up and verified with the Participating Agencies that no individual reports were submitted to Congress to address the reporting requirement pursuant to Section 15 USC § 638(nn). Agencies indicated that they feel the SBA Annual Report meets the spirit of this provision.

Direct to Phase II Awards

The SBIR/STTR Reauthorization Act of 2011 granted the authority to the National Institutes of Health, Department of Defense, and the Department of Education to make Phase II awards to small business concerns without regard to whether the company was provided a Phase I award. Prior to such an award, the heads of those agencies, or designees, must issue a written determination that the small business has demonstrated the scientific and technical merit and feasibility of the ideas that appear to have commercial potential. The determination must be submitted to SBA prior to issuing the Phase II award.

The National Defense Authorization Act for Fiscal Year 2019 reauthorized this authority through FY22. The bill also requested SBA provide an analysis and metrics on the program. In accordance with the requirement, SBA has provided metrics and analysis on agency use of the Direct to Phase II authority for FY16.

NIH. The National Institutes of Health received 497 Direct to Phase II applications in FY16. NIH made 84 Direct to Phase II awards, resulting in a 16.9% success rate. Direct to Phase II awards represented approximately 28% of the 299 new Phase II awards. Furthermore, NIH's Direct to Phase II awards had a lower new Phase II award selection rate than Regular Phase IIs (30.7%) and Phase IIBs (31.9%). NIH uses the program to fund technologies in which the firm has already matured past the Phase I feasibility stage with their own resources and is ready for the Phase II demonstration stage. Direct to Phase II at NIH typically reduces the technology maturation time by two years, which brings critical medical technologies to the public faster.

DoD. The Department of Defense awarded 23 new Direct to Phase II awards in FY16. These awards totaled $24,113,622. The participating components included the Air Force (9 awards, $11,545,653), DARPA (8 awards, $4,821,001), DLA (1 award, $999,391), and DoD-OSD (5 awards, $6,747,576). The program has been extremely beneficial to the DOD by allowing them to accelerate the transition of new technologies to the warfighter. It has been shown to reduce the time from identified need to Phase III by two to three years. The DOD uses this authorization in places where there is a critical need and identified Phase III funding and through the pilot has fielded several successes.

ED. The Department of Education has not used the authority since its inception due to the limitations of their budget size.

Table 30: Direct to Phase II Awards

Agency	Awards	Amount
NIH	84	$74,799,524
DoD Fourth Estate	14	$12,567,969
Air Force	9	$11,545,653
ED	0	$0

NIH Phase 0 Proof of Concept Partnership Pilot Program

The SBIR/STTR Reauthorization Act of 2011 authorized the Director of the National Institutes of Health to use p to $5,000,000 of the required expenditures for STTR for a Proof of Concept Partnership Pilot Program. The pilot was designed to accelerate the creation of small businesses and the commercialization of research innovations from qualifying institutions. The original authorization enabled the Director to make awards for up to $1,000,000 per year for up to three years. This authorization included a report from Director of National Institutes of Health to Congress but did not specify a publication date.

The National Defense Authorization Act for Fiscal Year 2019 reauthorized this authority through FY22. The bill also requested SBA evaluate the report submitted by the Director of National Institutes of Health on the pilot program. As of submission of the SBIR and STTR Annual Report for Fiscal Year 2016, NIH has not published the final report. NIH plans to submit the final report to Congress during Fiscal Year 2019. SBA is in communication with NIH on the status of their report and intends to analyze the report in accordance with the requirement in the next Annual Report following the report's publication.

19 | SBA SBIR/STTR Accomplishments

The Office of Investment and Innovation (OII) is the office at SBA responsible for the oversight and management of the SBIR and STTR Programs for the Administrator. SBA responsibilities identified in Section 9 of the Small Business Act (15 USC § 638(b)) include: assisting small businesses in participating in the SBIR/STTR Programs; coordinating and monitoring Federal agency operation of the SBIR/STTR Programs; managing databases and SBIR/STTR Program data; and reporting activities to Congress.

Advocacy for SBIR/STTR

In FY16, SBA-OII continued focusing on building stronger relationships with the 11 Participating Agencies and improving assistance provided to potential applicants, especially those from underrepresented communities. These efforts were carried out through increased meetings and improved responsiveness to the Participating Agencies, the SBIR Road Tour, major upgrades to the SBIR.gov business intelligence database platform, working with the university startup community and the quarterly Intellectual Property webinar series with the U.S. Patent and Trademark Office (USPTO).

SBA continued improving and expanding the training tools available on the SBIR.gov training portal. SBA also connected with hundreds of stakeholders across the innovation ecosystem, including entrepreneur support organizations that could promote these tools to enhance existing training. OII continued leading SBIR Program Manager Meetings which focused on outreach strategies, individual agency best practices, agency challenges, improved data integration, and continued enhancement of the SBIR.gov portal to improve user experience. Furthermore, OII worked on identifying and expanding the local/state resource partnership directory on SBIR.gov that included relevant access points to support services that could assist entrepreneurs on the SBIR/STTR Programs. Additional activities are discussed below.

SBIR Road Tour

The SBIR Road Tour is a national outreach effort to increase program access and awareness. The SBIR Road Tour brought Program Managers from the 11 Participating Agencies directly to potential applicants. The 14-state tour (South East, West Central, and Midwest) provided 1,357 attendees with a local opportunity to hear directly from Program Managers and facilitated 1,580 one-on-one meetings. The SBIR Road Tour continued its efforts to reach historically underrepresented states and individuals (including women-owned as well as socially and economically disadvantaged small businesses). Furthermore, these stops offered opportunities to engage local innovation support organizations and the R&D community.

Training

SBA-OII continued improving the training tools available on SBIR.gov while reaching out to hundreds of stakeholders across the innovation ecosystem, including entrepreneur support organizations that could promote these tools to enhance existing training.

Online Tutorials

SBA-OII released a series of Online Tutorials, which provide free training to entrepreneurs on topics related to winning SBIR/STTR proposals. Over 16,000 used these tutorials in FY16.

Train the Trainer

SBA's resource partners (including Small Business Development Centers (SBDCs), Procurment Technical Assistance Centers (PTACs), and other local support organizations) provide invaluable services to small businesses. OII initiated the Train the Trainer program to guide service providers on how to identify and support prospective SBIR companies. In FY16, OII piloted the program with a group of Growth Accelerator award recipients.

2016 New England Regional Summit at MIT

SBA-OII spearheaded the 2016 New England Regional Summit, a two-day engagement opportunity for technology innovators and entrepreneurs. The summit was a coordinated effort amongst participating SBIR/STTR agencies to engage, identify, and encourage participation in the SBIR/STTR Programs, particularly by women-owned small businesses. The conference included approximately 900 attendees and over 350 one-on-one meetings.

National SBIR/STTR Conferences

SBA-OII also lead the 2016 National SBIR/STTR Conference (Washington, DC). The Conference included 2,400 combined attendees, 185 workshop attendees, and 1,067 one-on-one meetings.

Annual Reports

SBA-OII created new templates for Annual Report agency submission to address issues raised by the Government Accountability Office (GAO) and the Participating Agencies.

Interagency Policy Committee

The Interagency Policy Committee (IPC), as created by the SBIR/STTR Reauthorization Act of 2011, was co-chaired by the SBA and the White House Office of Science and Technology Policy (OSTP). The IPC was comprised of representatives from all SBIR/STTR Agencies with the collective purpose to review issue areas and make policy recommendations on ways to improve SBIR/STTR Program effectiveness and efficiency. Regular Agency Program Managers' meetings were reestablished at SBA and focused on outreach strategies, individual agency best practices, agency challenges, improved data integration and continue enhancement of the SBIR.gov portal to improve user experience.

- SBA-OII facilitated the bi-monthly meetings with the SBIR/STTR Program Managers.
- SBA-OII facilitated, participated, and/or convened a number of stakeholders across the innovation ecosystem to help improve upon the SBIR/STTR Programs as they used the SBA developed entrepreneur's tool kit.
- SBA-OII led the IPC on Fueling Small Business Innovation as it directly worked in conjunction with the President's Lab to Market initiative.
- Continuing from initial efforts in 2014 and buildout in 2015, SBA-OII and the SBIR/STTR IPC continued the campaign to help raise more positive awareness around the SBIR/STTR Programs through the use of social media platforms such as Twitter, LinkedIn and Facebook.
- The working group for the SBIR/STTR IPC initiated the creation of a @SBIRGov Twitter handle, which was officially given the premiere Verified status in 2016 and facilitated various Twitter chat conversations regarding SBIR/STTR efforts. In addition, LinkedIn platform was used to help share updates about the SBIR/STTR Programs from conferences, events, news stories, solicitation postings, and programmatic activities to help spur interest, dialogue, and continued engagement amongst the innovation ecosystem stakeholders.

USPTO IP-Law Webinar Series

OII continued facilitating the quarterly IP-Law webinar series for small businesses with U.S. Patent and Trade Office.

20 | Agency Summaries

Department of Health and Human Services (HHS)

The HHS SBIR/STTR Programs are administered by the National Institutes of Health (NIH) to invest in early-stage biomedical, health, and life science companies creating a wide range of innovative technologies aligning with NIH's mission to improve health and save lives. A key objective of this work is translating promising technologies with strong potential for commercialization to the private sector through strategic public and private partnerships, so that life-saving innovations reach consumer markets.

FY 2016 SBIR/STTR Highlights

- Awarding over 1,300 SBIR/STTR Phase I, Phase II, Phase IIB, and Fast Track applications to US small businesses.
- Implemented and launched Civilian Commercialization Readiness Pilot Program (CRPP).
- HHS Technical Assistance (Niche Assessment, Commercialization Accelerator, I-Corps) Programs assisted ~300 SBCs.

FY 2016 SBIR/STTR Success Stories

- 2016 HHS Tibbetts Awardees include Illumina (California) for the SBIR Hall of Fame; 23andMe (California), FirstString Research (South Carolina), and Vindico NanoBioTechnology, Inc. (Kentucky) for Tibbetts.
- A small sample of highlighted companies include Sharklet (Colorado - went public and was acquired); Baebies (North Carolina - completed Series B financing and received FDA clearance on its SEEKER screening system); and Alba-Technic (Maine - winner of the NFL Head Health Challenge III sponsored by NFL, GE, Under Armour and NIST).

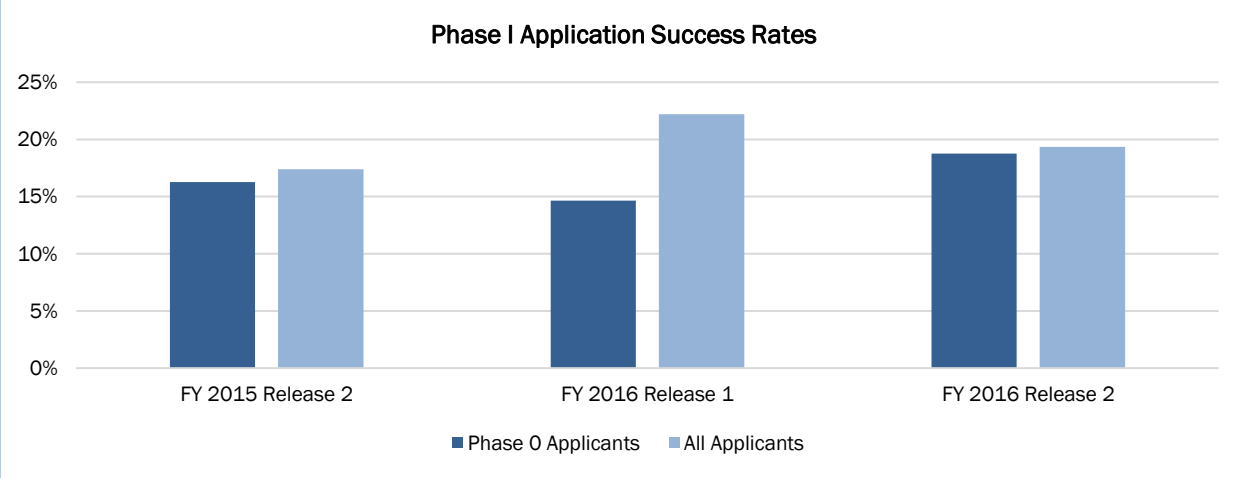
FY 2016 Commercialization/Outreach Activities

- 119 outreach events (39 states, including 19 IDeA states), reaching over 11,300 attendees; increase of over 25% from FY15.
- Reached over 1,800 attendees and 15 states during the SBIR Road Tour.
- 346 SDB reached, an increase of 25% since FY15; 769 WOSB reached, an increase of 150% since FY15.
- The 18th Annual HHS SBIR/STTR conference was hosted in Orlando, FL on Nov. 15 – 17, 2016, reaching 461 attendees from 40 states plus Puerto Rico, 40 universities, and 176 businesses. This event included a WOSB/SDB workshop.
- Coordinated an HHS Women and Minority Outreach Small Business group to develop strategies to increase WOSB/SDB.
- Fostered relationships with several professional societies that work closely with women and minorities.
- Organized the BIO Innovation Zone for 50 HHS SBIR/STTR funded companies, in partnership with the NSF and BIO.

Department of Energy (DOE)

DOE Phase 0 Assistance Program: DOE offers Phase I application support to help under-represented (UR) small businesses navigate the DOE SBIR/STTR application process. After an initial intake assessment, one or more proposal preparation services are offered free of charge to those UR firms seeking to submit a DOE SBIR/STTR Phase I application. Implementation began in the second half of FY 2015, so FY 2016 was the first full year of operation. As shown in the chart below, further improvements are needed so that these new applicants can consistently achieve success rates comparable to the overall applicant pool.

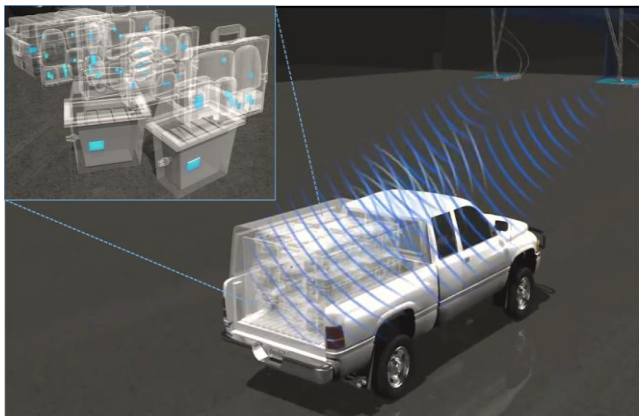
Chart 31: Phase I Application Success Rates



Participant Feedback: DOE Phase 0 Assistance Program

- "I was quite pleased with the Phase 0 program and the help I received preparing my Phase I SBIR. The program was not only informative about the expectations of the Phase I SBIR but encouraging as well."
- "Several times I had started applications but felt a lack of confidence and didn't go through with the submission. However, having a coach helped me find that confidence to submit the proposal, which eventually led to a recommendation for an award."

DOE 2016 Outcomes Highlight: Dirac Solutions Inc.| Pleasanton, CA



Under a DOE SBIR Phase II award, Dirac Solutions Inc. (DSI) developed a practical, cost-effective, passive radio-frequency identification (RFID) sensor. This is a tag that works similarly to a bar code but can be activated at a much larger distance and can transmit encrypted information without a battery. DSI's RFID tag technology finds the most immediate application in situations in which a large number of items need to be entered into a secure electronic inventory in a short time. A typical situation is the deployment of supplies in response to a nuclear or terrorism incident. The items to be deployed might be located in a warehouse cluttered environment, packed in metal containers, and they might be subjected to radiation and/or need to be stored for very long times. The technology developed by DSI allows such a challenging inventory to be completed in a matter of a few minutes by a single person. In 2016, four of DOE's Nuclear First Responder facilities in New Mexico, Texas, Idaho, and California were equipped with the DSI's inventory automation system, reducing their effort of checking their gear from 5 hours to 30 minutes. With DSI's technology the tagged equipment can also be reported to a cloud-based database for more global inventory management between the nuclear emergency response facilities.

Department of Homeland Security (DHS)

The DHS SBIR Program serves to increase small business access to DHS R&D opportunities while providing innovative solutions for DHS technology needs. The DHS SBIR Program is administered through the Science and Technology Directorate (S&T) and the Domestic Nuclear Detection Office (DNDO).

S&T SBIR focuses on near-term commercialization and delivery of operational prototypes to federal, state and local emergency responders and managers, as well as internal DHS operational units to support the DHS missions: Prevent Terrorism and Enhance Security, Secure and Manage Our Borders, Enforce and Administer Our Immigration Laws, Safeguard and Secure Cyberspace, and Strengthen National Preparedness and Resilience.

DNDO SBIR focuses on aggressive and expedited small business R&D developing break-through technologies to prevent nuclear and radiological terrorism; address gaps in the Global Nuclear Detection Architecture; improve the performance, cost, and operations of nuclear detections and forensics; and, possess near-term technological potential for successful transitioning to system development, acquisition, deployment, and/or commercialization.

DHS SBIR Addresses the R&D Needs of the 7 DHS Operational Units (as well as First Responders nationwide)

- U.S. Coast Guard, U.S. Transportation Security Administration, U.S. Customs and Border Protection, Federal Emergency Management Agency, U.S. Citizenship and Immigration Services, U.S. Immigration and Customs Enforcement, and U.S. Secret Service.

DHS SBIR-funded Technology Enables U.S. Small Businesses to be Successful and Profitable

- 384 Small Businesses in 43 States have received DHS SBIR Funding
- 92 Patents Filed
- 28 Patents Issued
- 23 Patents Pending
- 50+ Commercial Products in the Market*
- 30+ Mergers and Acquisitions

** data from a 2013 survey (includes standalone products, active licenses, products with DHS technology incorporated)*

Commercialization Readiness Pilot Program: In FY2016, while continuing its Commercialization Assistance Program, the DHS SBIR Program initiated several efforts aimed at improving the chances of commercial success of SBIR technology efforts and the small businesses developing them. Key aspects of this approach include: mentoring of small businesses to improve business and marketing skills including end-user product knowledge, additional investment in promising Phase II technologies to improve technical readiness, inclusion of DHS SBIR firms in the NSF I-Corps program, and a strategic partnership with AutoHarvest that provides a marketplace opportunity for DHS SBIR firms with technologies related to transportation security.

Department of Agriculture (USDA)

The USDA SBIR Program offers competitively-awarded grants to qualified small businesses to support high quality, advanced concepts research related to important scientific problems and opportunities in agriculture that could lead to significant public benefits.

FY 2016 SBIR/STTR Highlights

- The USDA SBIR Program continues to see the number of Phase I applications go up. In FY16 the program reviewed 478 applications, up from 424 applications in FY15.
- In FY16, the USDA SBIR Program awarded 78 Phase I grants of which 45 awards were to Small Businesses that had no prior USDA SBIR awards.

FY 2016 SBIR/STTR Success Stories

- SPLAT Verb - a 'Drop-In' Technology to Manage the Mountain Pine Beetle (MPB). This project targeted management solutions for MPB, a bark beetle species that responds to SPLAT Verb as an anti-aggregation semiochemical proven to be extremely efficient in repelling MPB: 100% protection of single pine trees and 89% protection of tree stands. Registered by EPA in 2014, SPLAT Verb is sold directly to US Forestry, as well as through distributors to individual consumers with US sales of over $2.7M to date.
- Hook ME & CL - a pheromone product for the efficient, economic, long-term control of Bactrocera fruit flies with easy-to use field application tools already available to small and mid-sized Hawaiian farms. Over the last two years, ISCA has sold over $10M directly to growers, government programs, or through the distributors worldwide.
- QM Power, Inc. – A 2015 SBIR Phase I company that is developing the Q-Sync electric motor technology that uses less electronic components to reach and maintain a synchronous speed. Q-Sync promises to enable higher efficiency and lower cost than state-of-the-art fan motors currently sold on the market. QM Power's new motor underwent an impartial study conducted by Alternative Energy Systems Consulting and showed a 37% energy savings over conventional electric motors in operating fans for supermarket refrigeration systems. To read the article go to: http://www.bizjournals.com/kansascity/news/2016/05/10/qm-power-q-sync-motor-energy-savings.html.
- The Local Crowd – A 2015 SBIR Phase II project titled "Enhancing Rural Access to Capital Through Development of a Local Crowdfunding Incubator" was featured by Wyoming Public Radio in a story discussing the launch of their crowdfunding pilot was launched. For a transcript of the story go to: http://wyomingpublicmedia.org/post/laramie-pilot-new-crowdfunding-platform.
- Stony Creek Colors - commercialized bio-based indigo and other bio-based colorants used to dye textiles and decrease U.S. reliance on imported dyes synthesized from toxic chemicals. The company is positioning indigo as a replacement for tobacco, and as a way for farmers to keep high value crops on their land in the Southeastern U.S. Stony Creek has contracted with 10 local farmers to grow natural indigo. PHASE III SUCCESS: Over $1 million in private investment to scale up crop production; successful sale of bio-based product into industrial markets.

FY 2016 Commercialization/Outreach Activities

In FY16 the USDA SBIR staff attended all four SBIR/STTR Road Tours, three Regional Events, two National SBIR Conferences and three Ag focused investor conferences. At these events, USDA SBIR staff provided presentations on the USDA SBIR Program and conducted ono-on-one meetings with prospective small companies to determine how the technologies being developed would fit into USDA SBIR's priorities and topic areas. At the investment conferences, USDA SBIR staff focused on communicating the value of the SBIR Program to the Ag Investment community and how they can interact with the program and serve as a potential source for Phase III funding.

During FY2016, USDA implemented the Innovations in Food, Agriculture, Science and Technology (I-FAST) pilot program. I-FAST helps scientists and engineers broaden the impact of their USDA NIFA-funded research by encouraging collaboration between academia and industry to translate fundamental agricultural innovations into the marketplace. Selected USDA I-FAST project teams participated in an NSF I-Corps entrepreneur educational program. Over the course of the I-FAST program, four teams met with over 100 potential customers and worked to understand the market for the innovation. At the conclusion of the program, three of the four teams determined the innovation originally developed at the academic institution was viable in a commercial market. As a result, the three successful teams each created a new company, hired employees and one of the companies submitted a Phase I application to

USDA and NSF for Phase I funding in 2017. The companies are continuing to coordinate with prospective customers and clients.

Department of Transportation (DOT)

The U.S. DOT SBIR Program is a highly competitive, awards-based program that encourages domestic small businesses to engage in research or research and development (R/R&D) addressing high priority research areas within U.S. DOT. The U.S. DOT SBIR Program favors research that has the potential for commercialization in areas such as safety, infrastructure and materials, and intelligent transportation systems. Over the past five years, the U.S. DOT SBIR Program has invested $50 million in qualified small businesses.

FY 2016 SBIR/STTR Highlights

- Fifteen Phase II and IIB awards were made in FY16 – one of the highest number of Phase II/IIB awards in a single year for DOT.
- First full year of the Commercialization Assistance Program (CAP)

FY 2016 SBIR/STTR Success Stories

- Five SBIR Success Stories were featured on the U.S. DOT SBIR website in FY16 at https://www.volpe.dot.gov/work-with-us/small-business-innovation-research/sbir-success-stories.
- Beginning in May 2016, the U.S. DOT SBIR Program Office was reorganized to include two Contracting Officers within the office to increase coordination across all SBIR activities.

FY 2016 Commercialization / Outreach Activities

- The U.S. DOT's Commercialization Assistance Program (CAP), began with the 15.1 Phase I awards made at the end of FY15. The majority of the work took place in FY16, with 16 of 19 Phase I awardees participating.
- The program continued in FY16 and grew to include Phase II awardees stemming from the FY15 solicitation. Feedback from both awardees and DOT staff was positive.

Department of Education (ED)

With a nearly $8M budget in 2016, ED SBIR awarded 19 entrepreneurial small businesses to develop the next generation of cutting edge research-based technology products to support students, teachers, or administrators in regular or special education.

FY 2016 SBIR Highlights

- Approximately 2 million students in 10,000 schools in 50 states and more than 70 countries used education technology learning products developed through ED SBIR in 2016. Examples include learning games, simulated virtual environments, adaptive tutors that scaffold learning as students progress, teacher and administrator formative assessment dashboards that generate real-time data to inform real-time decision making, and assistive technologies for students with disabilities.
- On December 14, 2016, ED SBIR hosted the 4th annual ED GAMES EXPO, a cross government /private industry/ public showcase for SBIR-developed learning games in education, health, and defense out of SBIR Programs at ED, NSF, NIH, DOA, DoD, and DARPA. In 2016 ED SBIR published a blog titled "SBIR Women Developers Got Game" on the 2015 Expo.
- The ED SBIR Program and its awardees were represented at several White House stakeholder meetings on topics including game-based learning, maker space projects, and technology delivered assessments. The ED SBIR Program authored a blog on the White House website and ED SBIR Program and awardees were featured in a White House Fact Sheet.

FY 2016 SBIR Success Stories

- ED SBIR maintains a Success Story page on its website.
- ED SBIR published one of the most widely read blogs on the 1776 website on *What Pokémon Go Means for Education.*
- Two ED SBIR companies won Tibbetts Awards: Sokikom and Agile Mind
- Many ED SBIR awardees won prestigious national industry awards for their SBIR-supported innovation Brainquake; Strange Loop Games; Readorium; Science4Us; Electric Funstuff; & Querium.
- Many ED SBIR companies were featured in the national media in 2016. See a sample of stories in Huffington Post; EdSurge; TechCrunch;. Fox NY; TIME; National Endowment for the Humanities; *Smithsonian Magazine*; *Education Week*; *EDNet Insights*; *EDScoop*; and *Fast Company*.
- Several ED SBIR projects published research findings in peer reviewed publications.

FY 2016 Commercialization/Outreach Activities

- ED SBIR partnered with SBA on the 2016 Growth Accelerator Program to build capacity for research by entrepreneurs.
- ED SBIR provided pre-solicitation technical assistance to a record 400+ small businesses in 2016.

Environmental Protection Agency (EPA)

EPA's SBIR Program is a small program with the big mission – to develop and commercialize technologies that protect human health and the environment. EPA works to keep its annual solicitation responsive and relevant. Interaction and communication within the Agency is key to identifying the most important and current environmental needs in areas such as drinking water, air quality, manufacturing, green building and homeland security.

FY 2016 Key Highlights

- Commercialization - EPA works hard to help its small businesses commercialize their technologies. The proposal evaluation criteria were updated to place an increased emphasis on commercialization, including business expertise, partnerships and track record. Peer reviewers with commercialization experience now make up a significant portion of each peer review panel. EPA also provides commercialization assistance to all its Phase I and Phase II companies. In addition, EPA has a commercialization option where Phase II companies can receive a funding supplement of up to $100,000 from EPA for securing 3rd party investment.
    - In FY16 the focus on commercialization paid off as almost 90% of EPA's Phase II small businesses applied for the Phase II option meaning that they had secured outside investment. Three of these companies are highlighted below.

FY 2016 SBIR Success Stories

EP Purification *(Champaign, Illinois)* EPA SBIR Phase II Award recipient in 2015 designs and manufactures water disinfection systems based on the production of ozone (O_3) in hundreds or thousands of microscopic channels. This technology is lighter, smaller, and more robust than conventional ozone systems, and is now in operation in more than 30 countries worldwide. EP Purification received third party investment to scale up its production lines.

Providence Photonics *(Baton Rouge, Louisiana)* EPA SBIR Phase II Award recipient in 2015 developed an advanced optical gas imaging technology to monitor flare combustion efficiency remotely and autonomously. With this information, facility operators can make the necessary adjustments, manually or automatically, to improve the efficiency of their flares, which improves facility operations and minimizes harmful emissions. Providence Photonics has reached a distribution agreement with and received investment from a global leader in the flare manufacturing market.

Ecovative *(Green Island, New York)* EPA SBIR Phase II Award recipient in 2015 developed MycoFlex™ materials, a replacement for hydrocarbon-derived plastics for applications such as furniture. Ecovative has grown to 80+ employees, operating two manufacturing facilities in Upstate-New York, producing eco-friendly mushroom packaging, formaldehyde-free engineered wood, and fully grown furniture. Ecovative received third party investment from organizations looking to support innovative, sustainable materials that could be used in manufacturing.

National Aeronautics and Space Administration (NASA)

The NASA SBIR and STTR programs fund the research, development, and demonstration of innovative technologies that fulfill NASA needs as described in the annual Solicitation and have significant potential for successful commercialization. Commercialization encompasses the transition of technology into products and services for NASA mission programs, other Government agencies and non-Government markets. NASA research and technology areas solicited in 2016 are aligned by the Agency's Mission Directorates. The Directorates identify high priority research and technology needs for their respective programs and projects. The needs are explicitly described in the topics and subtopics descriptions developed by technical experts at NASA's Centers.

FY 2016 Key Highlights

- Increased Outreach Efforts:
  - **Subtopic Workshop:** NASA held its first ever SBIR/STTR Subtopic Workshop. The purpose of this event was to build NASA's relationship with the small business community and increase communication between NASA and potential proposers. It included the following presentations: Technical presentations and breakout sessions in 15 topic areas, Guest presentations by OSBP, RED, and FWA and keynote speeches, Panel Discussion by prime contractors on Mentor-Protégé Program, and SBIR 101.

    Attendance:

    In-person: Day 1, September 12: 267, Day 2, September 13: 172

    Virtual (3 rooms): Day 1, September 12: 636, Day 2, September 13: 394
  - **HBCU Road Tours:** NASA's Office of Small Business Programs (OSBP), in collaboration with the Office of Education (OE) and the Space Technology Mission Directorate (STMD), hosted the NASA HBCU/MSI Technology Infusion Road Tour. Together, these three offices provided an open platform for HBCU and MSI representatives to learn about NASA's Mentor-Protégé Program (MPP), STMD's Small Business Innovative Research/Small Business Technical Transfer (SBIR/STTR) opportunities as well as OE's grant and cooperative agreement opportunities.
- EHB Modernization: The program is currently working on modernizing the electronic handbook (EHB) to provide a seamless user experience by building an intuitive, user-friendly and integrated digital service. The purpose of modernization is to make the EHB more user-centric and less process-centric to improve user efficiency and enable achievement of program goals.

FY 2016 SBIR Success Stories

- **Photon Systems, Inc: "Deep Ultraviolet (UV) Laser for Mars 2020 SHERLOC Instrument"**
  - The 11-person team at Photon Systems has been working with NASA since the late 90s to develop a DUV laser and the related resonance Raman and fluorescence spectrometer that will be instrumental in exploring Mars in 2020. Photon Systems has contracts with NASA worth $3 million; additional contracts with the DOD worth $4 million and commercial contracts worth $8 million.

- **ORBITAL TECHNOLOGY CORPORATION (ORBITEC): "Deployable Vegetable Production Unit (VEGGIE)"**
  - Through the NASA SBIR program, ORBITEC developed VEGGIE, which is currently in use aboard the ISS to grow fresh vegetables, plants and flowers. A second VEGGIE unit is set to join its counterpart in 2016. ORBITEC received a Phase III contract, $1.34 million directly related to VEGGIE; additional multimillion dollar contracts for technologies that stemmed from the VEGGIE SBIR project.

National Science Foundation (NSF)

The NSF SBIR/STTR Programs seek to transform scientific discovery into societal and economic benefit by catalyzing private-sector commercialization of technological innovations. The program focuses on startups and new small businesses who are looking to prove out innovative, high-risk and high-impact products and services to meet demonstrated market needs. The program is flexible, entrepreneur-friendly, and works across almost all areas of technology and almost all market sectors. For more information, visit www.nsf.gov/SBIR.

FY 2016 SBIR Highlights

- Process Improvements – Implemented a change in the SBIR/STTR award payment process that eliminated the (up to) 10-day waiting period to release new grant funds disbursements. Also changed Phase II submission process to permit Phase I awardees to apply for Phase II during the Phase I award, which we anticipate will reduce the Phase II funding gap for these companies by more than 50%.
- Increased Focus on Start-ups – In FY16, of all Phase I SBIR/STTR award recipients, 89% of recipients had fewer than 10 employees, 80% were formed in the past five years, and 92% had no prior Phase II awards from any agency.
- Engaging and Supporting First-Time Applicants – A total of 52% of all Phase I proposals received in FY2016 were from first-time applicants (i.e. companies who had never submitted a proposal to NSF before). A total of 59% of all Phase I awards made based on these proposals were to first-time NSF applicants.

FY 2016 SBIR Success Stories

- Acquisition Highlights – The calendar year 2016 saw ten confirmed acquisitions of recent grantees (including Stratatech, MIOX, Bioo Scientific, and Active Spectrum) and two initial public offerings (Novan and Everspin). The total value of these transactions exceeded $250 million (with many of the acquisition terms still unknown).
- R&D100 Awards – Six NSF-funded companies (active and former) awarded R&D100 awards in 2016: Adelphi Technology, Fiber Materials Inc., MER Corporation, Qualcomm, UES Inc., and Wavelength Electronics.
- Featured Grantee – New Phase II grantee VocalID offers synthetic, personalized voices for the voiceless. The company was featured in Bloomberg, NBC Nightly News, The Washington Post, Mashable, The Wall Street Journal, and dozens of other media outlets.
    - **https://www.youtube.com/watch?v=w32u8_YJWao**

FY 2016 Outreach Activities

- Outreach to The Community – SBIR/STTR staff at NSF attended over 60 events in FY2016 (in more than 25 different states) to market the program and engage with applicants and other stakeholders.
- Trade Show Outreach – Helped to grow the NSF-founded Eureka Park at the Consumer Electronics Showcase to over 200 start-ups and entrepreneurs. Led, with NIH, an effort that brought 50 NSF and 50 NIH grantees as exhibitors at the BIO International Convention. Also offered support to dozens of other grantee companies to attend other relevant tradeshows and events.
- Incubator Outreach – Partnered with the Small Business Administration on the 2016 Growth Accelerator Fund Competition (GAFC) program, directly supporting ten accelerators around the country which are well-aligned with the applicant and grantee community at NSF, and with a focus on broadening participation in the program.

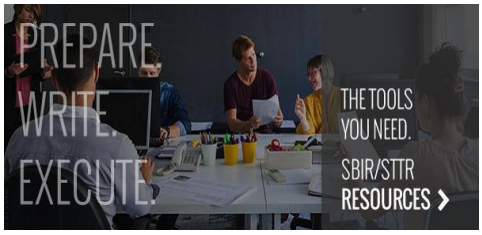
Department of Commerce (DOC)

The Department of Commerce's SBIR Programs are administered by the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA). Both programs fund small businesses to perform research and development in technology areas that align with the agencies' missions as described in annual solicitations. The technologies demonstrate significant potential for successful commercialization.

In FY 2016, NIST and NOAA SBIR Programs accomplished the following:

- Commercialization Assistance Program: Participating awardees are provided with individualized training, business mentorship and support which should improve their potential of commercialization success.
- In FY16, NIST continued its Technology Commercialization Assistance Program (TCAP) for NIST Phase I and Phase II awardees.
- In FY16, NOAA initiated and implemented its own Commercialization Assistance Program (NOAA-CAP) for NOAA Phase II awardees.
- Both NIST and NOAA used available Administrative Funding to increase outreach to underserved states and minorities by participating in two SBA-sponsored Road Tours and the MIT Women's conference. NOAA, in addition, utilized the Administrative Funding to hire staff which helped not only implement and administer the NOAA-CAP, but also assisted in the administrative improvements below.
- Administrative initiative improvements:
    - The average duration of time between a Phase I award's Notification Date and the first day of the award's period of performance was reduced from 87 days in FY15 to 42 days in FY16; a 52% improvement.
    - The average duration of time between a Phase I award's final day of the period of performance and its associated Phase II award's first day of the period of performance was reduced from 193 days in FY15 to 129 days in FY16; a 33% improvement
    - The average duration of time between a Phase II award's associated Solicitation Close Date or Proposal Receipt Date and the award Notification Date was reduced from 77 days in FY15 to 60 days in FY16; a 24% improvement.
    - The average duration of time between a Phase II award's Notification Date and the first day of the award's period of performance was reduced from 58 days in FY15 to 35 days in FY16; a 40% improvement.

21 | Federal and State Technology (FAST) Partnership Program



The Federal and State Technology Partnership (FAST) Program, reestablished under the Consolidated Appropriations Act of 2010, is a competitive grants program administered by the SBA and designed to strengthen the technological competitiveness of small businesses. FAST improves the participation of small technology firms in the innovation and commercialization of new technology, thereby helping keep the United States on the forefront of R&D in science and technology. All 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and the American Samoa may receive funding for an array of services (e.g., outreach and technical assistance) in support of the SBIR/STTR Programs.

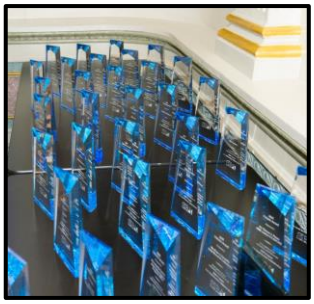
FAST is an important catalyst for stimulating economic development among small, high technology businesses through federally-funded innovation and R&D programs, with an emphasis on helping socially and economically disadvantaged firms compete in the SBIR/STTR Programs. FAST program participants support areas such as: small business R&D assistance; technology transfer from universities to small businesses; technological diffusion of innovation benefiting small businesses; proposal development and mentoring for small businesses applying for SBIR/STTR grants; and, commercializing technology developed through SBIR/STTR grants.

In FY16, the SBA awarded 16 FAST grants for up to $125,000 each, and five FAST grants for up to $200,000 to state and local economic development agencies, business development centers, and colleges and universities to support innovative, technology-driven small businesses. FAST candidates were submitted through each of their state and territorial governors, as each governor may submit only one proposal. Panels of SBIR Program Managers conducted evaluations. Panel recommendations were jointly reviewed by SBA, DoD, and NSF, and FAST awards were made based upon the merits of each proposal. Varying levels of matching funds were required, based upon the state and territory location of each economic development agency. The FAST award project and budget periods were for 12 months, beginning September 1, 2016.

The following 2016 FAST awardees were announced by SBA on June 26, 2016:

- **Connecticut** | Connecticut Innovations Incorporated
- **Kansas** | Wichita State University
- **Kentucky** | Kentucky Science & Technology Corporation
- **Louisiana** | Louisiana State University and A&M College
- **Minnesota** | Minnesota High Tech Association
- **Mississippi** | Innovate Mississippi
- **New Mexico** | The Regents of New Mexico State University
- **New York** | The Research Foundation for the State University of New York
- **North Dakota** | University of North Dakota
- **Ohio** | Ohio Aerospace Institute
- **Oregon** | Oregon Built Environment & Sustainable Technologies Center
- **South Dakota** | Governor's Office of Economic Development
- **Texas** | The University of Texas at San Antonio
- **Virginia** | Center for Innovative Technology
- **Wisconsin** | Board of Regents of the University of Wisconsin System, UWEX
- **Wyoming** | University of Wyoming
- **Arkansas** | University of Arkansas System
- **California** | Riverside Community College District
- **Idaho** | Boise State University
- **Nebraska** | Board of Regents, Univ. of NE dba Univ. of NE at Omaha
- **Pennsylvania** | Ben Franklin Technology Partners Corporation

22 | Tibbetts Awards and SBIR Hall of Fame



The annual Tibbetts Awards, named for SBIR Program pioneer Roland Tibbetts (see Appendix – History of the SBIR and STTR Programs), are presented to models of excellence for developing and commercializing new technologies through participation in the SBIR/STTR Programs. Small businesses having received SBIR or STTR awards are eligible for the Tibbetts Awards, and winners are selected based upon the merit of their SBIR/STTR-funded work, the economic and societal impacts of their technological innovations, and the successful commercialization of developed technologies. Similarly, individuals selected for Tibbetts Awards are selected based upon the merit of their roles in SBIR/STTR-funded R&D without having received any SBIR or STTR award assistance.

The SBIR Hall of Fame recognizes companies with extraordinary successes in research, innovation, and commercialization within the SBIR Program. Eligible nominees must have previously won an SBIR award and shown continued and significant contributions to the goals of the SBIR Program by demonstrating success beyond participating in the SBIR Program through ingenuity, resolve, and longevity.

The 2016 Tibbetts and SBIR Hall of Fame Awards were presented during a White House ceremony on January 10, 2017, and honored 37 high-tech small businesses, three supporting organizations, and five individuals with Tibbetts Awards for their outstanding roles in federal R&D, innovation, and job creation. In addition, the SBA inducted two companies into the SBIR Hall of Fame. During the ceremony, then SBA Administrator Maria Contreras-Sweet also received the 2016 SBIR Person of the Year award for her work, passion, dedication, and promotion of the SBIR/STTR Programs.

SBIR Hall of Fame

Atlantia Offshore Limited

Illumina, Inc.

Tibbetts Organizations

Fannin Innovation Studio

Larta Institute

Utah's SBIR-STTR Assistance Center (SSAC)

Tibbetts Individuals

Robert Brooke

William A. Gern, Ph.D.

David Linz

Lore-Ann Ponirakis

David L. Sikora

Tibbetts Companies

- 23andMe | California
- Agile Mind, Inc. | Texas
- Attagene, Inc. | North Carolina
- Biopsy Sciences | Florida
- CSSI (Composite Support & Solutions, Inc.) | California
- Diagnostics for the Real World | California
- EnChroma | California
- Exelus, Inc. | New Jersey
- FirstString Research | South Carolina
- Ginkgo Bioworks | Massachusetts
- GVD Corporation | Massachusetts
- KeraMed, Inc. | California
- Lucid | California
- Lynntech, Inc. | Texas
- Made In Space, Inc. | California
- Makai Ocean Engineering, Inc. | Hawaii
- Mikro Systems, Inc. | Virginia
- MMA Design LLC | Colorado
- Niowave, Inc. | Michigan
- OMAX Corporation | Washington
- Operative Experience, Inc. | Maryland
- OptiPro Systems, LLC | New York
- Parabon® NanoLabs, Inc. | Virginia
- Pathfinder Systems, Inc. | Colorado
- Physical Sciences, Inc. (PSI) | Massachusetts
- PittMoss, LLC | Pennsylvania
- Privo Technologies | Massachusetts
- QuesTek Innovations LLC | Illinois
- Referentia Systems, Inc. | Hawaii
- SFP Works, LLC | Michigan
- Sokikom | California
- Stratatech Corporation | Wisconsin
- Tangible Haptics (Tanvas) | Illinois
- Third Wave Systems | Minnesota
- Texas Research Institute Austin, Inc. (TRI) | Texas
- Triton Systems, Inc. | Massachusetts
- Vindico NanoBioTechnology, Inc. | Kentucky

23 | U.S. Small Business Administration (SBA) Overview

The SBA is charged with overseeing the SBIR/STTR Programs across the Federal Government, serving as the coordinating agency for all SBIR and STTR Participating Agencies. The SBA's Office of Innovation and Technology, within OII, assists small businesses in obtaining SBIR/STTR funding, monitors the SBIR/STTR Participating Agencies in their individual program implementations, provides policy guidance and directives as authorized by statute, reviews agency progress and performance, collects required annual reporting data, and reports to the U.S. Congress. The SBA administers the program with maximum flexibility, allowing the Participating Agencies to tailor their SBIR/STTR activities in ways that best address their unique agency missions, cultures, and R&D needs. The SBA issues Policy Directives to provide guidance that governs the Participating Agencies' program implementation, compliance, and reporting. The SBA maintains updated versions of the SBIR and STTR Program Policy Directives at www.SBIR.gov.

SBIR/STTR Business Intelligence Platform – Housed at www.SBIR.gov

The SBA maintains the central, SBIR/STTR Program-wide web portal for accessing award and performance information through the single point of entry at www.SBIR.gov. The primary purpose of the continual investment in the informational data system and public and government-facing SBIR.gov web portal is to meet the statutory requirement in 15 USC § 638 (k) of developing, maintaining, and making available to the public and government a searchable, up-to-date, electronic database that includes—

(A) the name, size, location, and an identifying number assigned by the Administrator, of each small business concern that has received a Phase I or Phase II SBIR or STTR award from a federal agency;

(B) a description of each Phase I or Phase II SBIR or STTR award received by that small business concern, including—

(i) an abstract of the project funded by the award, excluding any proprietary information so identified by the small business concern;

(ii) the federal agency making the award; and

(iii) the date and amount of the award; and to also provide interested stakeholders with a one-stop-shop repository of valuable and searchable SBIR/STTR Program information.

The complex platform collects and hosts multiple levels of programmatic information across the following seven relational databases and as required by 15 USC § 638(b)(7)(G), SBA describes the extent to which Participating Agencies are providing information in a timely manner needed to maintain these databases:

- *Solicitations.* All SBIR/STTR solicitations and topics from all agencies are provided to SBA prior to each agency's solicitation release. Not all agencies provide this information in a timely manner and it is an area that SBA is trying to improve with the agencies.
- *Applications.* All SBIR/STTR proposals from all agencies are collected by SBA during the Annual Reporting cycle. SBA continues to work with the Participating Agencies in FY16 to collect unawarded proposal coversheet data.
- *Company Registry.* Company-specific and proprietary information collected from all SBIR/STTR small business applicants and awardees.
- *Awards.* All SBIR/STTR awards from all agencies by number and dollar amount are collected on an annual basis. Not all agencies have provided this information in a timely manner (see Annual Report bullet immediately following).
- *Annual Report.* All Agencies are required to report SBIR/STTR activities to the SBA on an annual basis by March 15th for the previous fiscal year.

Table 31: SBIR Annual Report Submission History by Agency Size

Agency	First Submission Date	Days (Early / Late*)	Final Submission Date	Days (Early /Late*)
DoD+	9/08/2017	+177	12/13/2018	+638
HHS*	4/07/2017	+23	4/07/2017	+23
DOE	3/15/2017	0	3/29/2017	+14
NSF	3/31/2017	+16	3/31/2017	+16
NASA	3/15/2017	0	3/15/2017	0
DHS	3/28/2017	+13	3/28/2017	+13
ED	3/14/2017	-1	3/16/2017	-1
USDA	4/20/2017	+36	4/20/2017	+36
DOT	3/15/2017	0	3/15/2017	0
EPA	3/09/2017	-6	3/09/2017	-6
DOC	3/17/2017	+2	3/20/2017	+5

+ As discussed in Section 9, DoD uploaded the entire awards submission multiple times. DoD made the final upload on 12/13/2018.
*SBA identified minor award data errors with HHS data during a 2018 review. This required a revised final upload in 2018.

- *Commercialization*. Company-specific and proprietary information collected from all SBIR/STTR small business awardees and awarding agencies on all SBIR/STTR award commercialization efforts and results; and,
- *Other*. Information required by statute to be submitted but does not fit into any of the other databases.

Throughout FY16, SBA and the agencies continued to work together to improve the government databases' data and reporting mechanisms while providing transparency to mitigate fraud, waste, and abuse. Efforts specifically made in FY16 included the reconciliation of differences in award data collected across agencies and across years from legacy systems.

Although certain database elements containing proprietary information are unavailable to the public, the www.SBIR.gov portal allows visitors the flexibility to self-identify into roles based on individual interests and needs. Users may search award topics, solicitations and award activity by Participating Agency or small business. Small businesses may connect with outside resource partners for SBIR/STTR-related support or services and utilize outreach tools and informational links to agency offices, conference listings, registrations, webinars, tutorials, and blogs.

24 | Appendix: SBIR/STTR Program History

For the U.S. government to recognize the necessity of federal engagement of small businesses in R&D of high risk technology development and to coordinate such a network would not have been possible without the support of key framers, politicians, and legislators. The 'Father' of the SBIR Program, Roland Tibbetts (pictured right), experienced firsthand how government programs affect individuals after President Roosevelt signed the GI Bill into law in 1944. Previously, a distinguished first lieutenant in the U.S. Army Air Corp during World War II, Tibbetts was able to complete his undergraduate degree at Boston University and then his MBA at Harvard due to benefits from the GI Bill. After garnering close to 20 years of corporate experience, including serving as the VP of two small, high-tech firms, Tibbetts was appointed as a Senior Program Officer at NSF in 1972. As an NSF program manager, Tibbetts was known as a task master with well-honed instincts for enabling potentially game-changing projects. He also recognized the importance of small, high-tech firms to the economy and observed the fierce opposition they faced from other recipients when pursuing federal R&D funding.

Senator Edward Kennedy (pictured on the left) also recognized the vital role that small businesses play in America's growing economy and spent much of the 1970s tirelessly championing for NSF to support the research of qualified small businesses as the chairman of the National Science Foundation Subcommittee of the Senate Labor and Public Welfare Committee. Kennedy continued to introduce different proposals to increase the percentage of the budget directed toward small businesses. Once NSF recognized the need for ongoing support for small business, the Foundation instituted the SBIR Program in 1977.

In addition to Senator Kennedy, much of the legislative support for the SBIR Program was directly due to the work of Arthur and Judith Obermayer, 2015 SBIR Hall of Fame recipients (also pictured above with Senator Kennedy). As early as 1970, Arthur testified before the U.S. Congress on the challenges small R&D companies faced in dealing with the government. He also lobbied alongside Kennedy for the initial 1974 NSF Authorization Act, which was actualized in the first NSF SBIR Program, designed by Roland Tibbetts. Tibbetts envisioned a 3-phase structure to foster the R&D of small, high-tech businesses and push them to realize their commercial potential. He believed these firms were instrumental in converting government R&D into public benefit through technological innovation and commercial applications, therefore stimulating aggregate economic growth. Of the 42 Phase I Awards and 21 Phase II Awards selected in 1977, one firm went on to discover the cystic fibrosis gene and complete the Human Genome Map, a small language-understanding firm (then MicroComputer) became Symantec, and a high-risk firm (then Relation Technology Inc.) became the data giant Ingres Corporation. It seems that Arthur Obermayer was on to something when he advised the Congressional committee in 1978 that the NSF SBIR Program was "potentially…the most significant government program of this century in the field of science and technology."

Due to the success of the NSF SBIR Program, in 1979 the Small Business Administration concluded SBIR Programs should be installed at all government agencies involving research to encourage U.S. innovation and technology. Senator Kennedy, an avid supporter of small businesses, spearheaded legislation to institute a government-wide SBIR Program. He and other legislators called for every federal agency with a budget over $100 million to establish a program modeled after Tibbetts' NSF SBIR Program. The Obermayers convinced most delegates at the 1980 White House Conference on Small Business to support SBIR. President Reagan signed a government-wide SBIR Program

into law in 1982 (pictured on the right). To date, the Programs have resulted in 70,000 issued patents, close to 700 public companies, and approximately $41 Billion in venture capital investments.

Legislative History

The SBIR Program was created by enactment of Public Law 97-219, the Small Business Innovation Development Act of 1982. The program was reauthorized with the enactment of the Small Business R&D Enhancement Act of 1992, Public Law 102-564. Title I of the bill expanded and reauthorized the SBIR Program while Title II created the STTR Program.

In September 1996, Public Law 104-208 reauthorized the STTR Program through FY 1997. In December 1997, Public Law 105-135 reauthorized the program through September 30, 2006. In 2000 the SBIR Program was re-authorized until September 2009 by the Small Business Innovation Research Program Reauthorization Act of 2000. In October 2001, Public Law 107-50 reauthorized the STTR Program through FY 2009 and increased the program set-aside from 0.15% to 0.30% which began in Fiscal Year 2004.

From 2009 to 2011, the SBIR and STTR Programs were authorized by a series of Continuing Resolutions issued by Congress. In December 2011, the Programs were reauthorized until Fiscal Year 2017 (FY17) by the 2012 National Defense Authorization Act, Public Law 112-81. The bill also increased the minimum set-aside amounts for both Programs:

SBIR: Participating Agencies with extramural R&D budgets exceeding $100M were required to set aside 2.6% of their Fiscal Year 2012 (FY12) extramural R&D budget for SBIR Awards to small businesses (an increase of 0.1% over Fiscal Year 2011). The minimum percentage was then set to increase in increments of 0.1% each year until FY16 when it reaches 3.0%. For FY17 and each fiscal year thereafter, the minimum percentage will remain at 3.2%, unless subsequently modified by statute.

STTR: Participating Agencies with extramural R/R&D budgets exceeding $1B were required to set aside 0.35% of their FY12 and FY13 extramural R&D budget for STTR Awards to small businesses (an increase of 0.05% over Fiscal Year 2011). The minimum percentage was then set to increase to 0.40% for FYs 2014 and 2015, and again to 0.45% for FY16 and remain for each fiscal year thereafter, unless subsequently modified by statute.

In December 2016, the National Defense Authorization Act for Fiscal Year 2017 (P.L. 114-328) extended the SBIR and STTR programs through September 30, 2022. In August 2018, the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115-232) made several changes to the statute, including modifying language regarding business and technical assistance and extending the expired pilot authorities through September 30, 2022. The SBIR and STTR statute is codified at 15 U.S.C. § 638.

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