

University of Tennessee  
Office of Research & Engagement

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# Quarterly Research Activity Report Q4 FY18

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Cumulative for July 1, 2017 – June 30, 2018



The US Navy selected Suresh Babu, UT-Oak Ridge National Laboratory Governor's Chair for Advanced Manufacturing, to lead one of its **Multidisciplinary University Research Initiative** (MURI) programs for the first time in the 30-year history of the initiative. According to the Office of Naval Research, the award will total roughly \$1.5 million a year for three years and be extendable to five years.



THE UNIVERSITY OF  
TENNESSEE  
KNOXVILLE

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OFFICE OF RESEARCH &  
ENGAGEMENT

## A Message from the AVCRD

### Proposal Submissions

In the fiscal year 2018 (FY18) the University of Tennessee, Knoxville (UT) submitted 1,764 proposals representing a 2% increase over the number of proposals submitted in the previous fiscal year (FY17) and a 3% increase above the five-year average number of proposals submitted in the last five fiscal years (FY14-FY18). The total dollar value of the submitted proposals was \$611 million signifying a 9% increase over the amount requested in FY17.

Several colleges have contributed to the increase in the total requested amount. College of Nursing (Nur) requested the largest amount in its history (\$16 million) and more than doubled the amount it requested in FY17 reflecting 122% increase in FY18. Other colleges that displayed slight to significant increases in FY18 versus FY17 amounts were College of Architecture and Design (A&D) with 46% increase, A&S - 2% increase, College of Communication and Information (C&I) - 105% increase, TCE - 12% increase, RCI- 54% increase, and the UT Space Institute (UTSI) - 12% increase.

Looking at the colleges and centers, Tickle College of Engineering (TCE) requested the largest share - 40% of the total proposal amount - followed by the College of Arts and Sciences (A&S) and Research Centers and Institutes (RCI) both requesting 23% each.



### Awards Received

UT Researchers received \$158 million in external award obligations in FY18. This amount represents a 5% decrease when compared to FY17 and a 3% increase over the five-year average award amount received during FY14-FY18. The overall 5% decrease in the FY18 award amount received was due to the 12% drop in the funds received from federal agencies (\$95 million) as well as the 22% decrease in the funds received from Private Profit sponsors (\$21 million). Alternatively, funds coming from TN Local and State Government (TN Government) and Higher Education Institutions (Higher Ed) displayed 83% (\$22 million) and 14% (\$14 million) increases respectively.

Consistent with previous years, federal agencies remained the largest source of the total obligated award dollars bringing in 60% of all obligations in FY18. Federal agencies were followed by TN Government (14%), Private Profit (13%), Higher Ed (9%), and Private Non-Profit (4%) organizations.

UT received funds from 24 federal agencies in FY18. The largest award amount came from DOE (\$42 million). The second largest federal funding was from NSF (\$20 million). It is important to note that this was the smallest dollar amount received from NSF since FY09. The amount received from NSF in FY18 decreased by 35% when compared to FY17.

Upon closer inspection, the data revealed that the Joint Institute of Computational Sciences (JICS) experienced the most significant decline in funds received from NSF. JICS saw major decreases in the NSF dollars over the last ten fiscal years (FY09-FY18) dropping from \$39 million in FY09 to zero dollars in FY18. This decline is due to the fact that JICS has broadly diversified its funding portfolio and only submitted three proposals to NSF in FY18. A comparison of the NSF award dollars with or without JICS contribution showed an overall pattern of growth in the award amount received from NSF by all other UT units until FY18.

However, the \$9 million decrease in the NSF award amount between FY17 and FY18 can also be attributed to the decreases in the NSF dollars received by several UT units including department of Electrical Engineering and Computer Science, National Institute for Mathematical and Biological Synthesis, Center for Ultra-Wide-Area Resilient Electric Energy Transmission Networks, and few others. The rest of the UT award admin units exhibited a steady flow of the NSF award dollars over this period of time.

In terms of the award amount composition by college or center or institute, TCE brought 43% (\$68 million), the largest portion of the total award amount in FY18. The next two units by the share of the total award amount were A&S with 21% (\$34 million) and RCI with 11% (\$17 million).

Analysis of the award amounts, showed that some of the colleges displayed increases in FY18 award amount when compared to FY17. Most notable are the increases of TCE (11% increase) and UTSI (95% increase). Both of these units displayed persistent growth in the award amounts received in the last ten fiscal years (FY09-FY18). Additionally TCE's FY18 award amount was the largest amount received in its history, while UTSI's amount was the second largest in UTSI history.

### Research Expenditures

The current estimate of the FY18 Total Research Expenditures (TREs) shows a significant increase of 30% in the total dollar value spent on R&D. This increase was recorded across all the colleges and units with the exception of RCI. The increases within individual colleges can be contributed to the changes in the internal reporting of the research expenditures. Traditionally, UT has underreported institutional contributions to research by not budgeting departmental

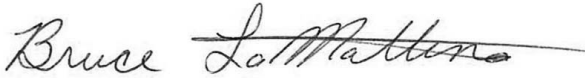
funds designated for research separately and by not reporting them to the NSF's Higher Education Research and Development Survey to account for these contributions. The estimated 30% increase in TREs in FY18 is most likely due to the improved reporting of institutional contributions to research.

The inspection of the estimated Federal Research Expenditures (FREs) shows an overall increase of 4% in FY18 comparing to FY17. The official FREs will not be collected and reported until January 2019.

### **Notable Achievements**

We are pleased to report that six UT faculty members received NSF Faculty Early Career Development (CAREER) awards in FY18. This is the second largest number of CAREER recipients in a given fiscal year in UT's history. Five of the six FY18 CAREER recipients were from TCE and one was from A&S:

- Daniel Costinett, Department of Electrical Engineering and Computer Sciences --\$500,000
- Sharani Roy, Department of Chemistry--\$624,469
- Siris Laursen, Department of Chemical and Biomolecular Engineering--\$500,080
- Joshua Sangoro, Department of Chemical and Biomolecular Engineering-- \$625,000
- Stephen Sarles, Department of Mechanical, Aerospace and Biomedical Engineering--\$540,093
- Timothy Truster, Department of Civil and Environmental Engineering--\$508,000



Bruce LaMattina  
Associate Vice Chancellor for Research Development

**PROPOSALS, AWARDS, & R&D EXPENDITURES: FY18 Q1-Q4 vs FY17 Q1-Q4 (Table 1)**

College/Center/Institute	Proposals Submitted				Awards Received				Estimated Total R&D Expenditures (HERD <sup>1</sup> )	
	No.	% No. Incr. Over FY 17	Amount Requested	% \$ Incr. Over FY 17	No. <sup>4</sup>	% No. Incr. Over FY 17	Amount Received	% \$ Incr. Over FY 17	Amount Expended <sup>2</sup>	% \$ Incr. Over FY 17
College of Architecture & Design	6	100%	\$364,918	46%	6	20%	\$295,384	20%	\$1,403,660	235%
College of Arts & Sciences	490	-6%	\$142,401,361	2%	384	-8%	\$33,836,629	-15%	\$67,579,000	54%
Haslam College of Business	30	-17%	\$4,990,568	-18%	29	-17%	\$3,760,391	-12%	\$12,820,157	79%
College of Communication & Information	24	20%	\$5,020,124	105%	16	60%	\$1,753,985	28%	\$3,790,926	112%
College of Education, Health, & Human Sciences	83	-23%	\$27,313,793	-54%	42	-2%	\$8,368,086	-26%	\$8,946,154	142%
Tickle College of Engineering	679	12%	\$243,089,800	12%	580	2%	\$67,956,202	11%	\$82,487,227	13%
College of Law	1	0%	\$12,802	0%	2	0%	\$12,802	-890%	\$2,362,363	9484%
College of Nursing	26	37%	\$15,872,090	122%	7	-13%	\$781,142	16%	\$1,623,670	305%
College of Social Work	37	-16%	\$16,748,488	-7%	29	-28%	\$5,940,078	1%	\$1,547,789	55%
Research Centers & Institutes	310	7%	\$140,436,526	54%	375	20%	\$16,899,337	-19%	\$34,438,247	-2%
UT Space Institute	58	-2%	\$13,422,410	12%	40	18%	\$5,059,599	95%	\$4,907,303	15%
Other <sup>3</sup>	19	-10%	\$1,802,094	-75%	32	-27%	\$13,440,023	-25%	\$5,738,943	16%
<b>Total</b>	<b>1,763</b>	<b>2%</b>	<b>\$611,474,974</b>	<b>9%</b>	<b>1,542</b>	<b>2%</b>	<b>\$158,103,657</b>	<b>-5%</b>	<b>\$227,645,439</b>	<b>30%</b>

**Notes**

1. HERD – The Higher Education Research and Development Survey, successor to the Survey of Research and Development Expenditures at Universities and Colleges, is the primary source of information on R&D expenditures at U.S. colleges and universities.
2. R&D expenditure data is collected from the “NSF Research Survey Estimate” report provided by UT IRIS Data Warehouse. The “NSF Research Survey Estimate” report provides an estimate of the R&D expenditures for UT colleges and research centers and institutes. This report does not contain expenditure data from the UT Research Foundation, which is included in the official NSF HERD survey during the submission of the survey. The expenditures data provided in the Office of Research & Engagement quarterly research activity report should be treated as an estimate reflecting trends for UT colleges and research centers and institutes only.
3. Other – This field captures any research proposals, awards, and expenditures not included in the categories above.
4. The Number of Awards Received represents the cumulative number of funding award increments. One project may receive multiple funding awards.

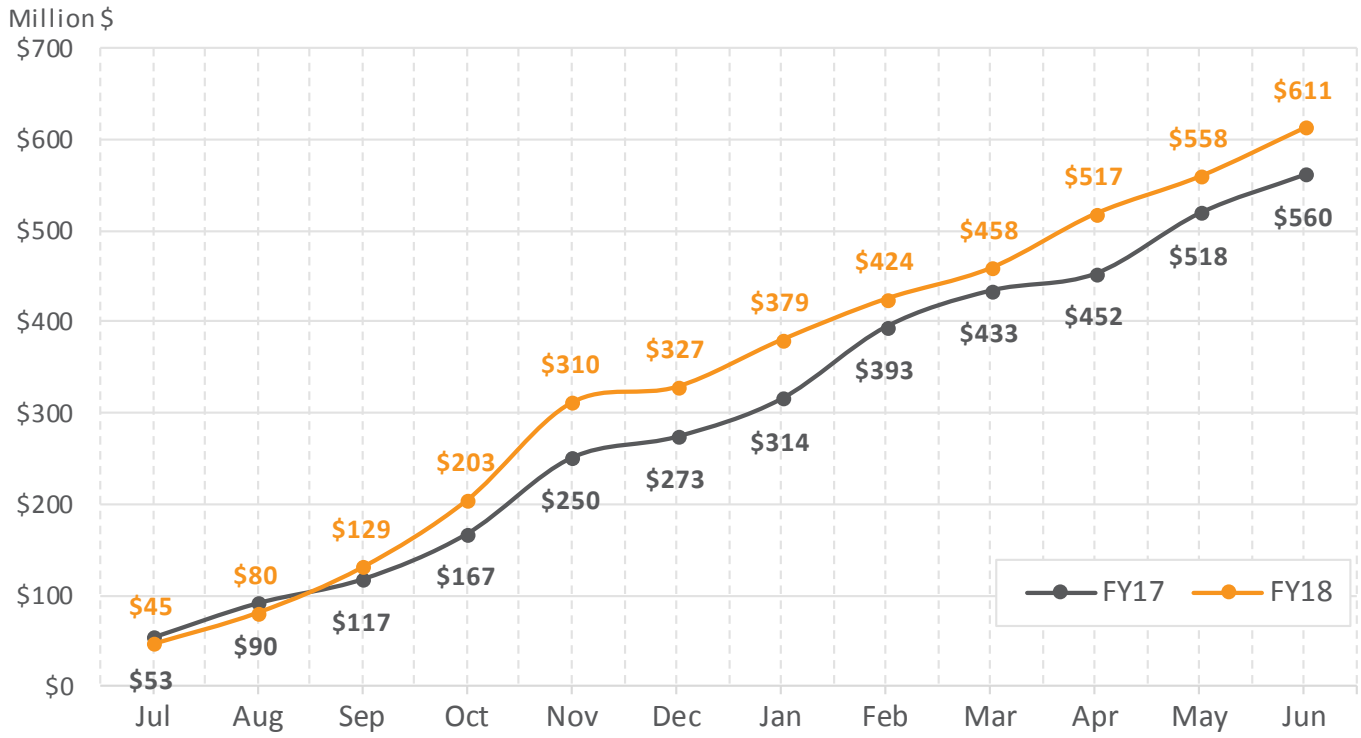
\* N/C - Not Calculable

**TOP 10 NEW PROJECTS: FY18 Q1-Q4 (Table 2)**

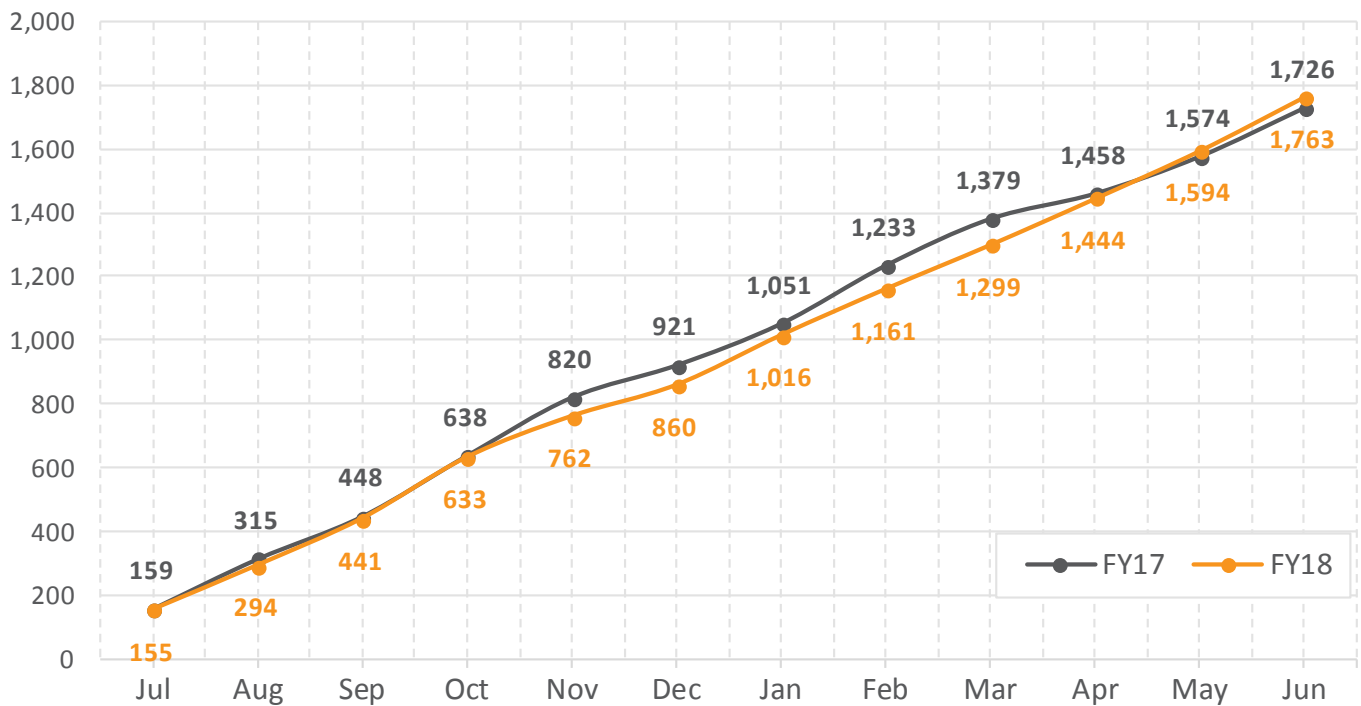
(by total anticipated dollar value)

Investigators (Primary PI First)	Award Admin Dept	PI Home Department	Project Title	Anticipated Amount	Sponsor	Activity Type	Project Begins	Project Ends
Everett, Jerry	Ctr for Transportation Rsch	Ctr for Transportation Rsch	Law Enforcement Liaison Administration	\$7,000,000	Tennessee Dept. of Safety	Public Service	10/1/2017	9/30/2022
Clarke, David; Everett, Jerry	Ctr for Transportation Rsch	Ctr for Transportation Rsch	TDOT Needs and UT Competencies	\$5,000,000	Tennessee Dept. of Transportation	Public Service	1/1/2018	12/31/2022
Schmisser, John; Bond, Ryan; Combs, Christopher; Kreth, Phillip; Moeller, Trevor	UTSI MABE Program	UTSI MABE Program	Reusable Hypersonic Vehicle Structures	\$3,356,743	U. of Dayton Research Institute	Applied Research	11/16/2017	10/20/2020
Wodarski, John	Ctr for Behavioral Health Rsch	Social Work	Tennessee HIV/AIDS, Related Substance Use Disorders, and Mental Disorders Services Program	\$2,491,849	Dept. of Health-Substance Abuse & Mental Health Services	Public Service	9/30/2017	9/29/2022
Clarke, David	Ctr for Transportation Rsch	Ctr for Transportation Rsch	Support of Fuel Economy Information Program	\$2,135,060	Dept. of Energy - Oak Ridge National Laboratory	Basic Research	1/1/2018	6/30/2020
Cunningham, Maryanne	Office of Rsch & Public Service	Office of Rsch & Public Service	FY 19 CCDF-UT SWORPS Child Care Supportive Services	\$2,084,489	Tennessee Dept. of Human Services - Child Care Planning & Development	Public Service	7/1/2018	6/30/2019
Brewer, Ernest	CAPS Outreach Ctr	CAPS Outreach Ctr	Academic Enrichment Upward Bound 2017-2022	\$1,799,528	Dept. of Education	Training	6/1/2017	5/31/2022
Brewer, Ernest	CAPS Outreach Ctr	CAPS Outreach Ctr	Veterans Upward Bound 2017-2022	\$1,667,640	Dept. of Education	Public Service	9/1/2017	8/31/2022
Brewer, Ernest	CAPS Outreach Ctr	CAPS Outreach Ctr	Math Science Upward Bound 2017-2022	\$1,567,970	Dept. of Education	Public Service	11/1/2017	10/31/2022
Wirth, Brian	Nuclear Engr	Nuclear Engr	Simulation of Fission Gas in Uranium Oxide Nuclear Fuel	\$1,500,000	Dept. of Energy - Office of Science	Basic Research	9/15/2017	9/14/2022

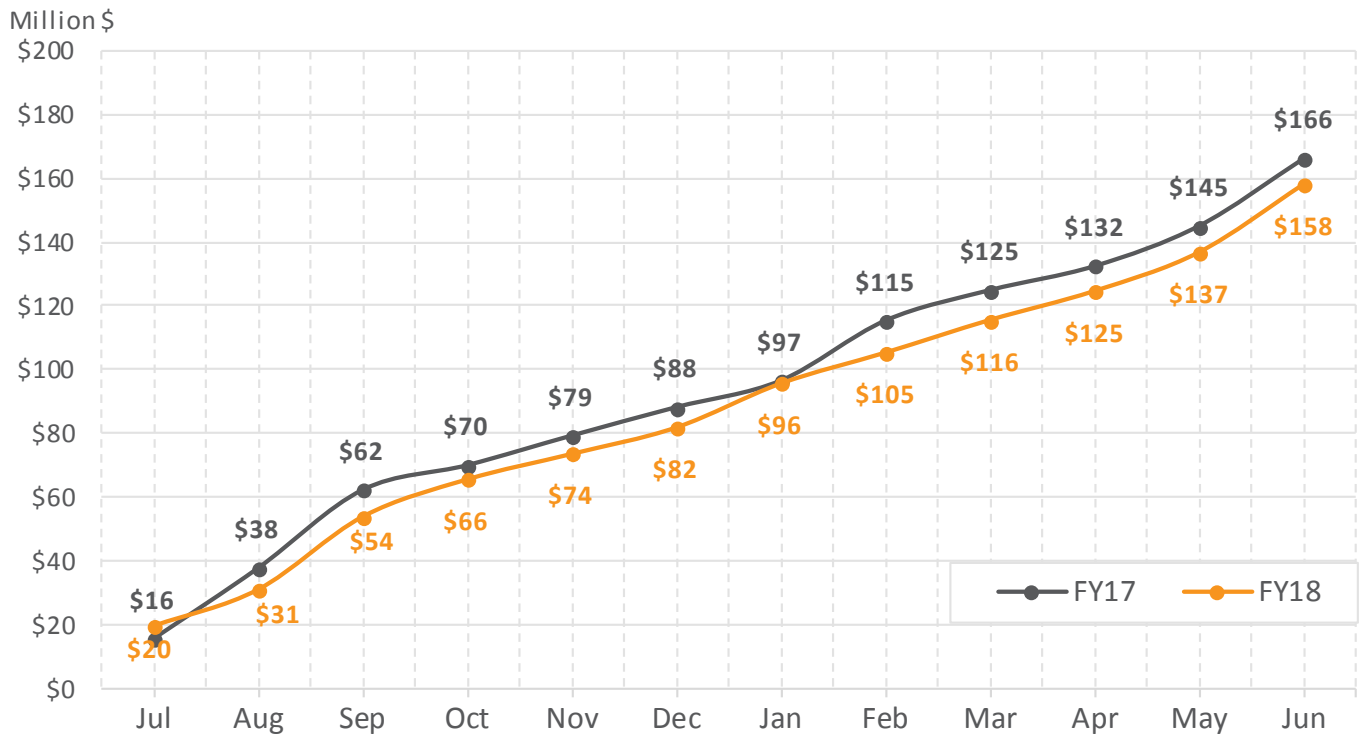
**CUMULATIVE PROPOSAL AMOUNT: FY18 vs. FY17 (Figure 1)**



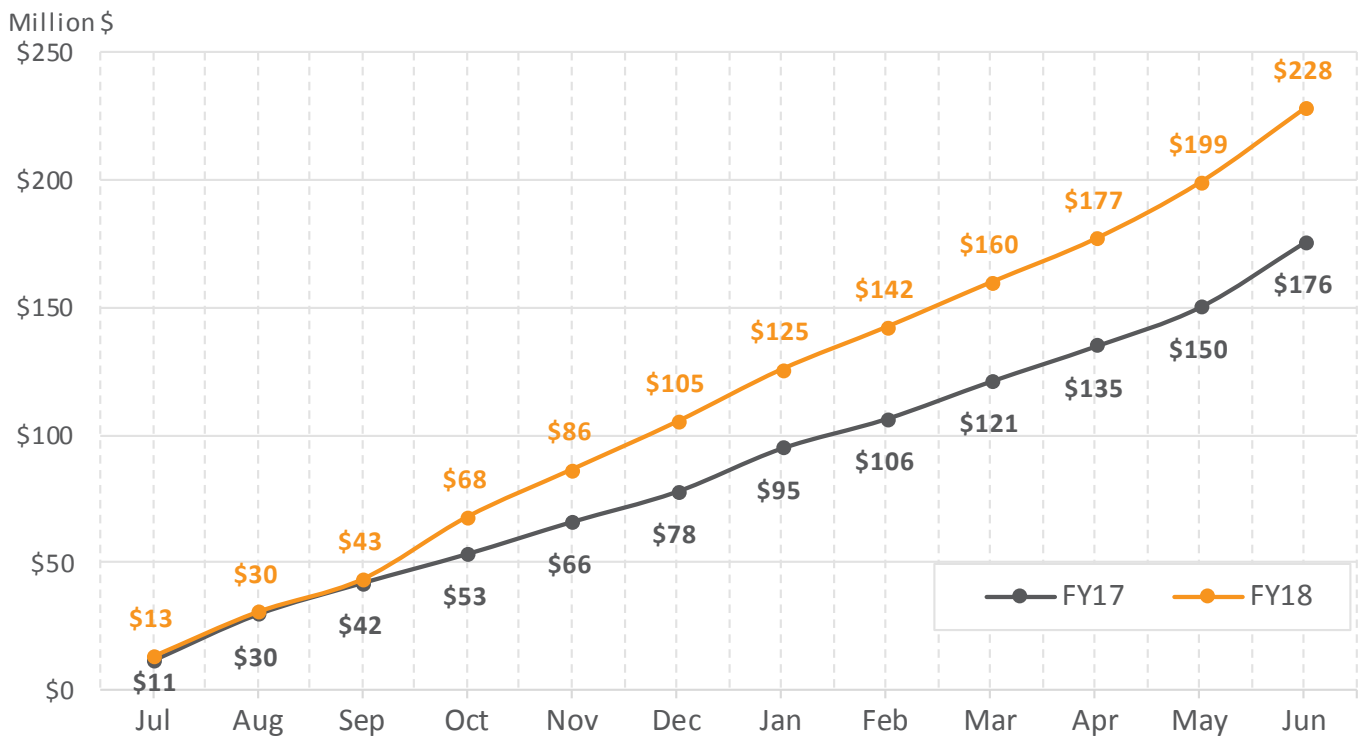
**CUMULATIVE PROPOSAL COUNT: FY18 vs. FY17 (Figure 2)**



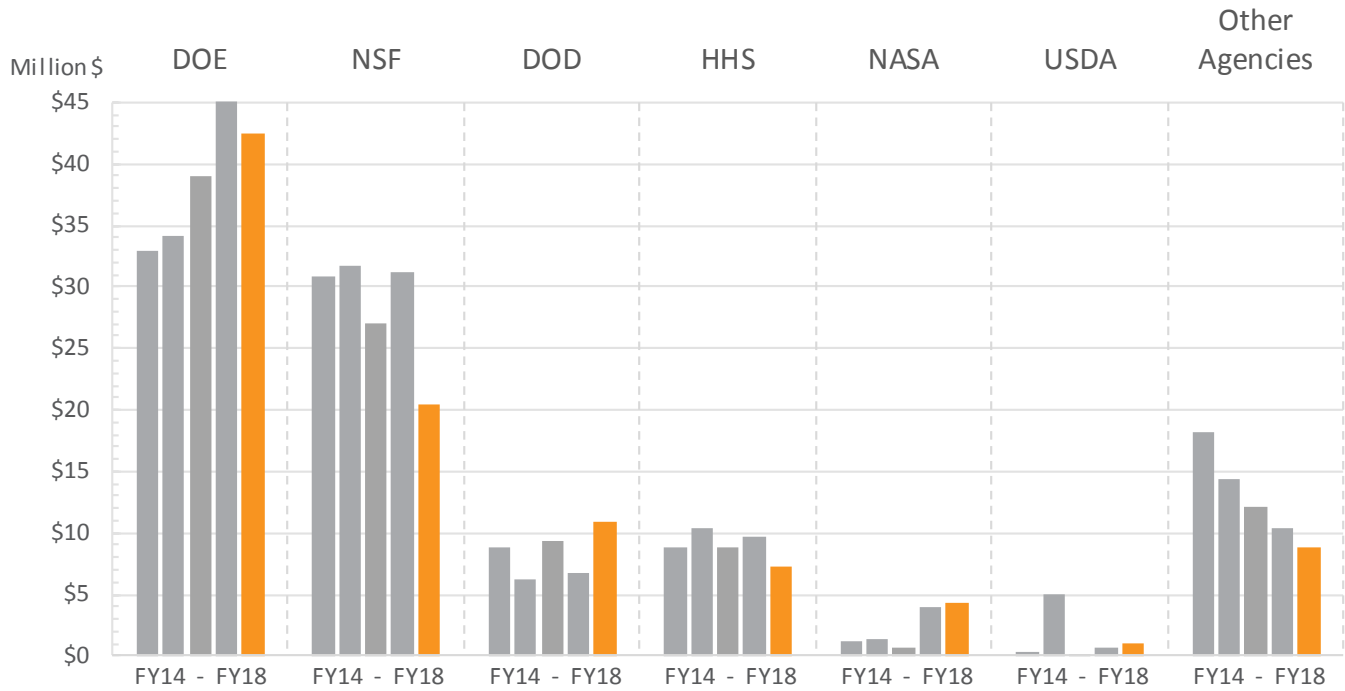
**CUMULATIVE AWARD AMOUNT: FY18 vs. FY17 (Figure 3)**



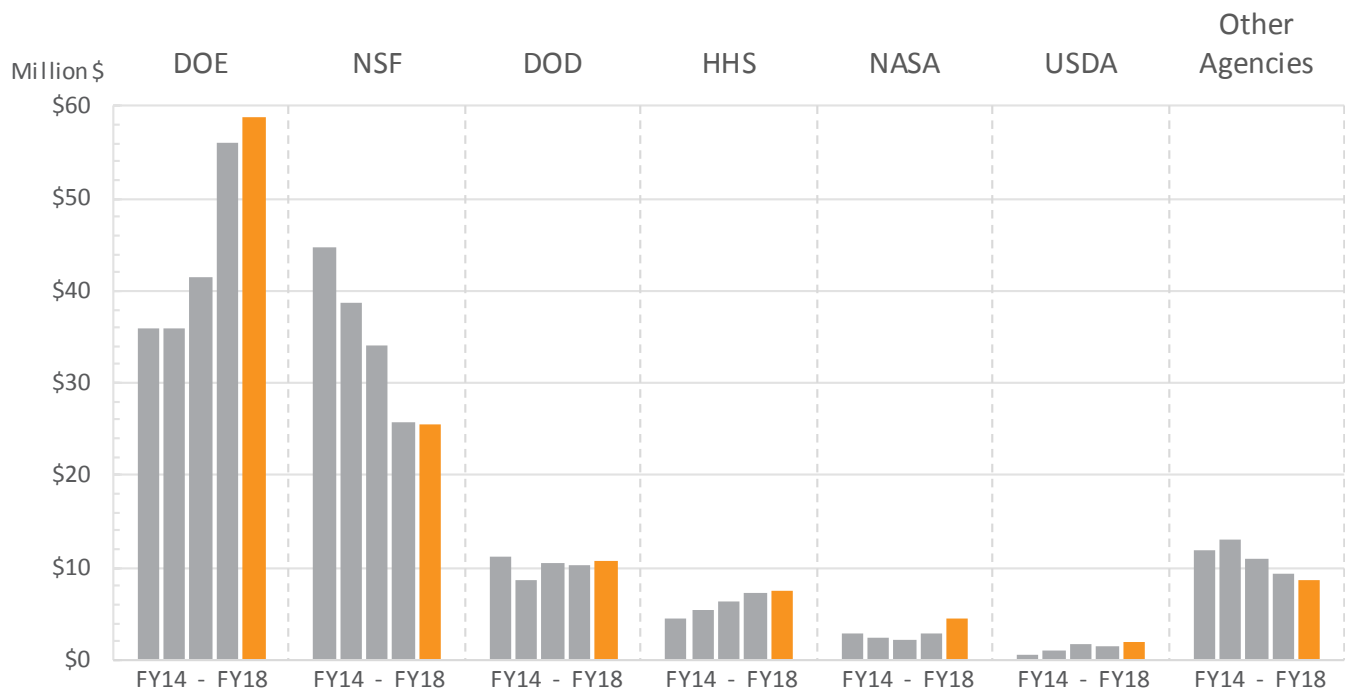
**CUMULATIVE AMOUNT EXPENDED ON R&D: FY18 vs. FY17 (Figure 4)**



**AWARDED DOLLARS BY FEDERAL AGENCY: FY14-FY18 Q1-Q4** (Figure 5)

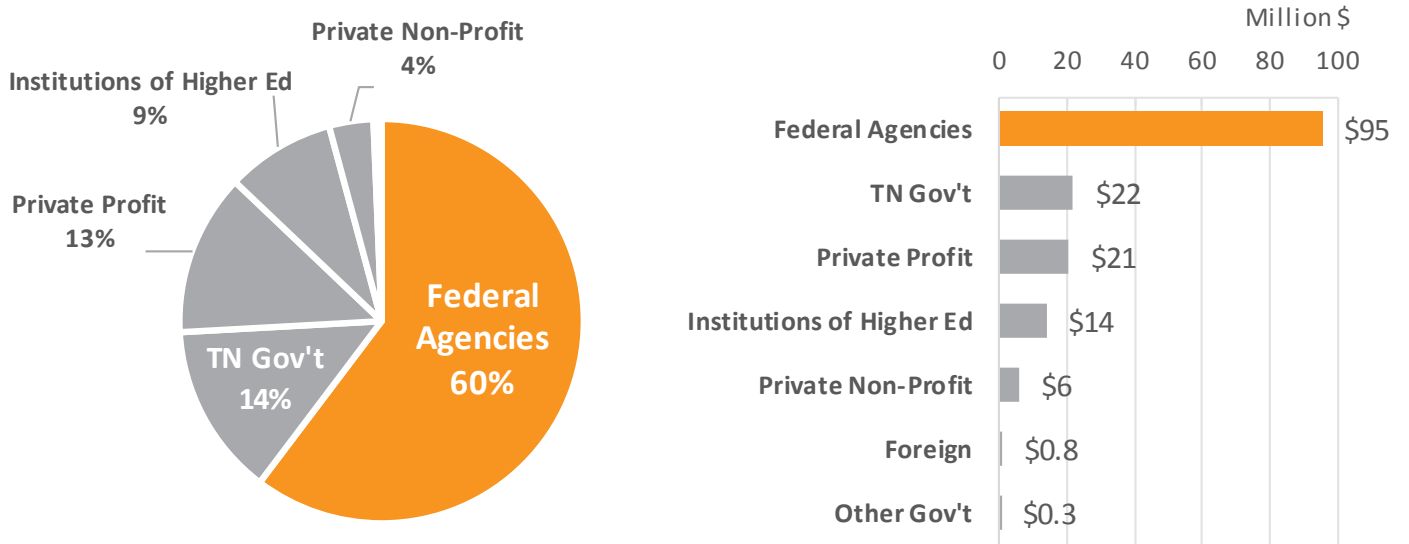


**R&D EXPENDITURES BY FEDERAL AGENCY: FY14-FY18 Q1-Q4** (Figure 6)

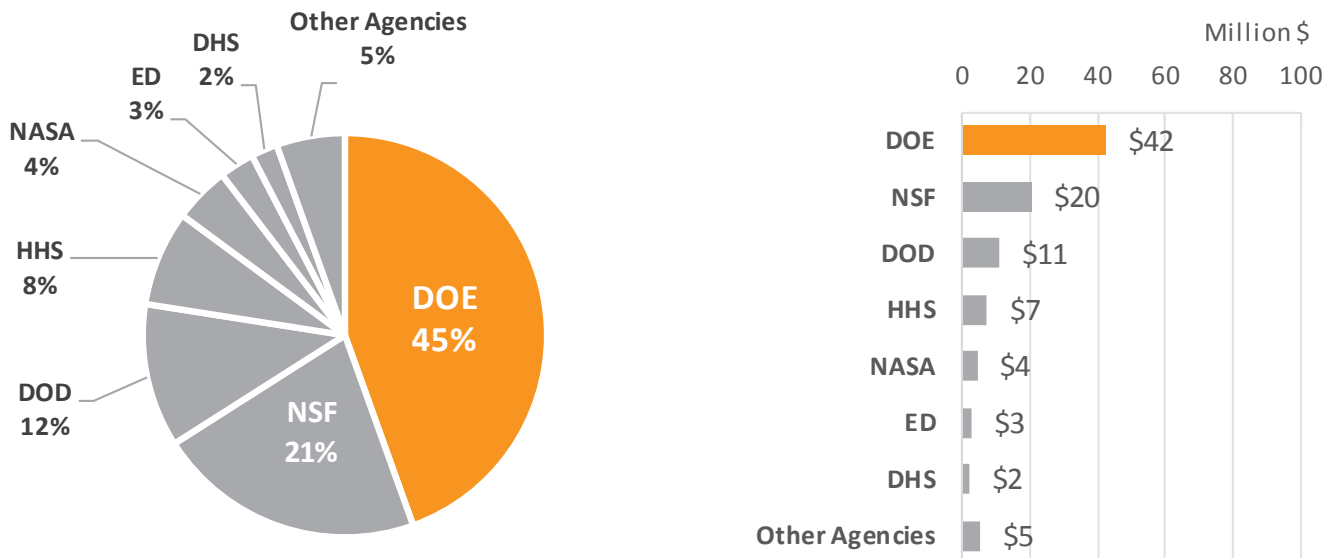




**AWARDED DOLLARS BY SOURCE: FY18 Q1-Q4** (Figure 7)

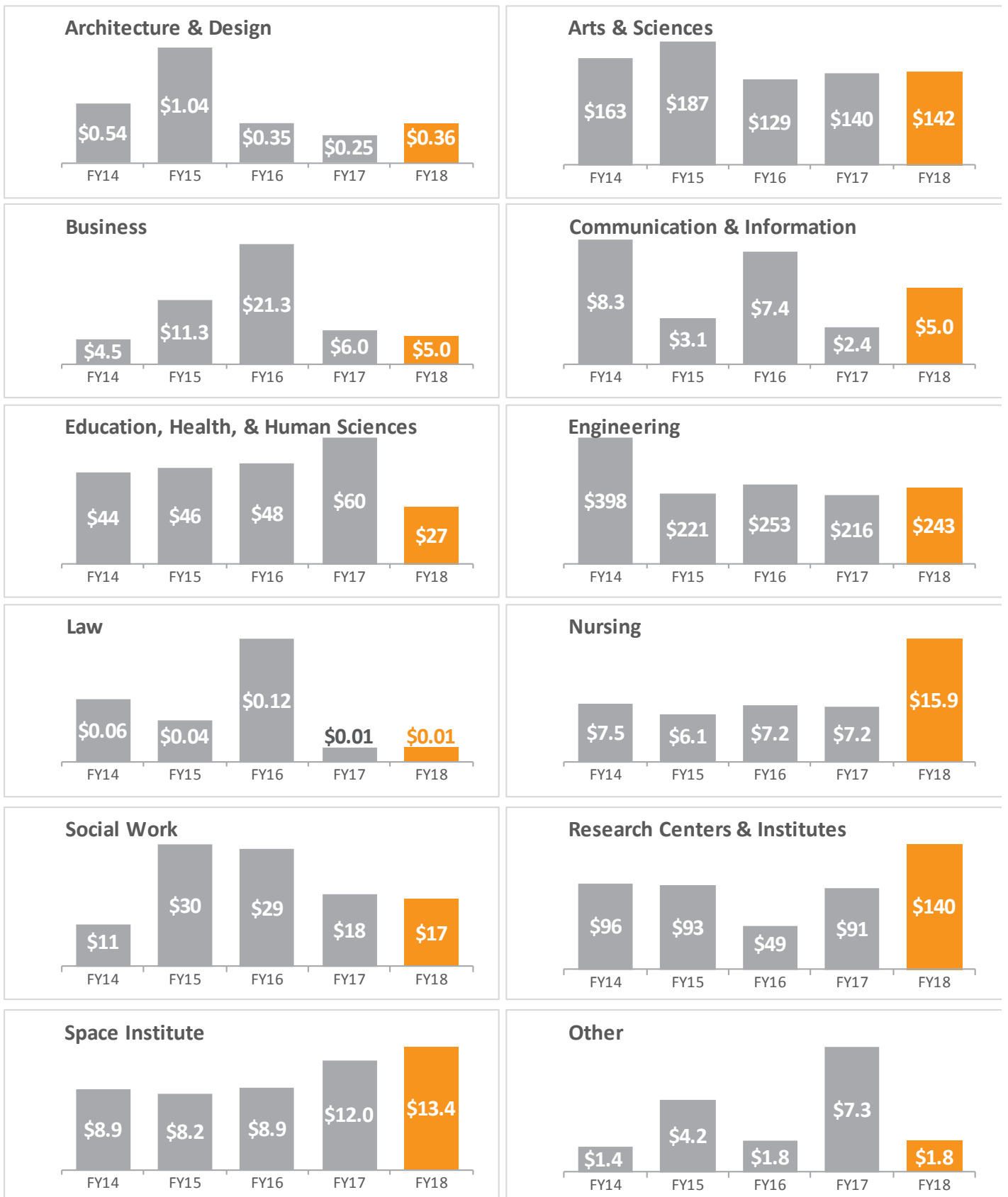


**FEDERAL AWARDED DOLLARS BY AGENCY: FY18 Q1-Q4** (Figure 8)



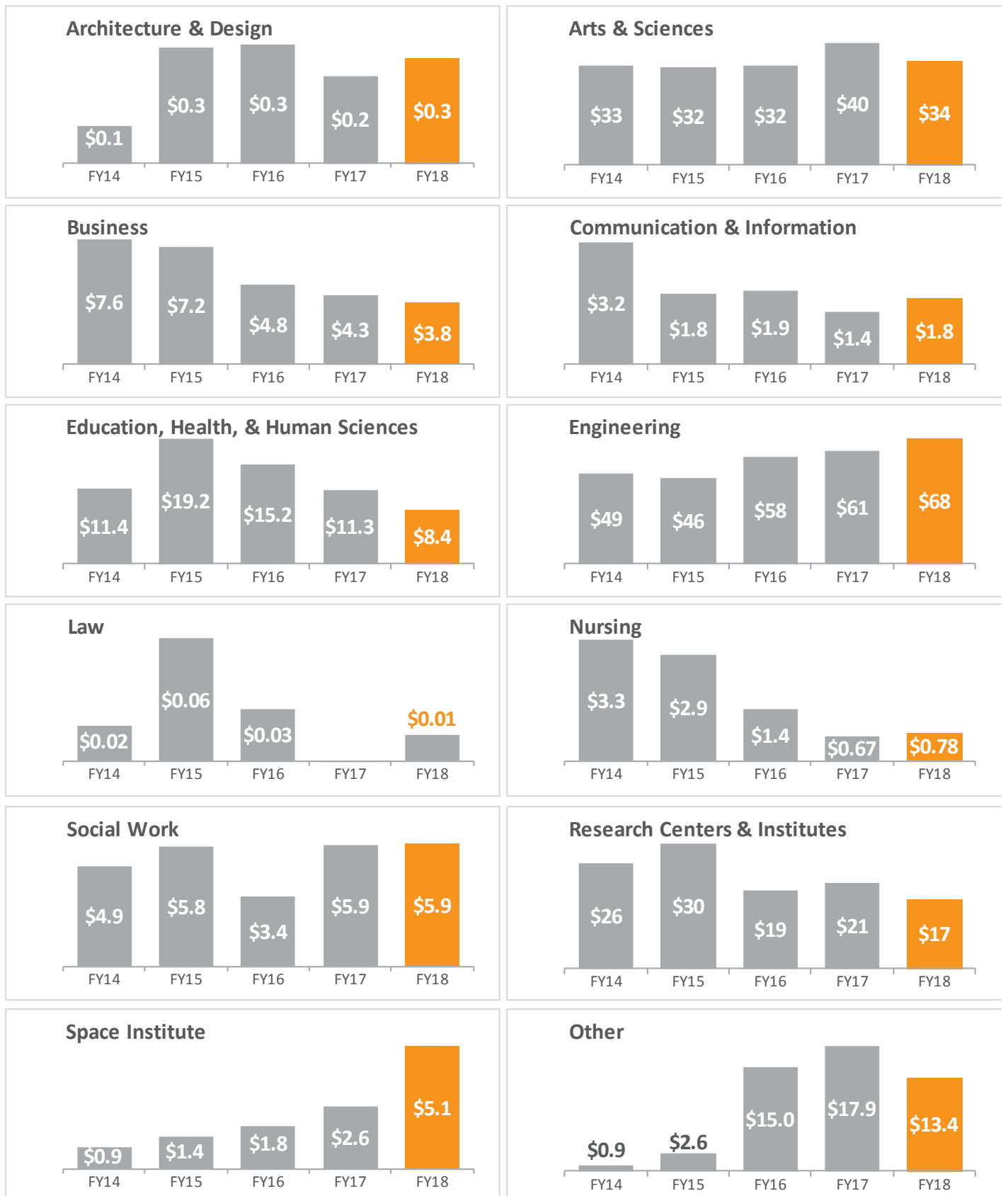
**PROPOSED AMOUNT BY COLLEGE: FY14-FY18 Q1-Q4 (Figure 9)**

(Dollars in Millions. Each chart has its own scale)



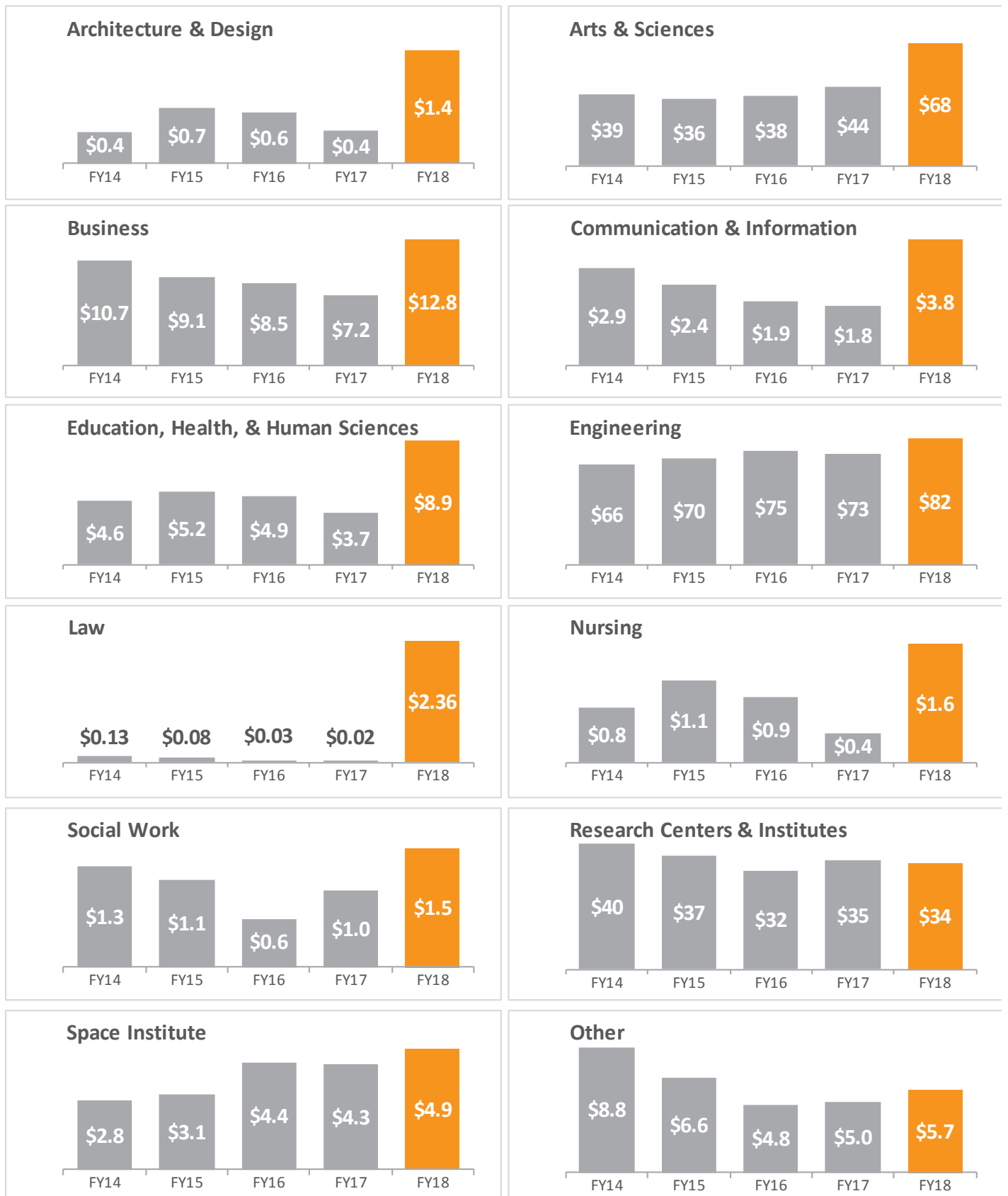
### AWARDED AMOUNT BY COLLEGE: FY14-FY18 Q1-Q4 (Figure 10)

(Dollars in Millions. Each chart has its own scale)



### AMOUNT EXPENDED ON R&D BY COLLEGE: FY14-FY18 Q1-Q4 (Figure 11)

(Dollars in Millions, Each chart has its own scale)



## Data Notes

Each Quarterly Research Report is a cumulative fiscal year-to-date summary. Award, proposal, and expenditure data include UT Knoxville, UT Space Institute, and University Wide Administration. Data depicting colleges and research centers and institutes is presented to show trends within each unit.

Award and proposal data is collected from Cayuse SP (electronic system for routing of sponsored projects) and includes projects sponsored for Basic, Applied and Developmental research activities as well as for Public Service, Training, Instruction, Scholarship, and Fellowship activities.

To ensure consistency of the Office of Research and Engagement reports, all quarterly and annual report award selection is based on the UT Report Date (award effective date). The proposal selection is based on the Proposal Approval Date.

R&D expenditure data is collected from the “NSF Research Survey Estimate” report provided by UT IRIS Data Warehouse. The data for the “NSF Research Survey Estimate” report is collected and reported according to the NSF HERD Survey and covers three R&D activities - basic research, applied research, and development. These R&D activities can have the following sources of funds: U.S. federal government, state and local government, business, nonprofit organizations, institutional funds, and other sources such as funds from foreign entities and gifts designated by the donors for research. Please visit the following link to learn more about the survey and R&D definitions: <https://www.nsf.gov/statistics/srvyherd/>.

The “NSF Research Survey Estimate” report provides an estimate of the R&D expenditures for UT colleges and research centers and institutes. This report does not contain expenditure data from the UT Research Foundation, which is included in the official NSF HERD survey during the submission of the survey. The expenditures data provided in the Office of Research & Engagement quarterly research activity report should be treated as an estimate reflecting trends for UT colleges and research centers and institutes only.

There are occasionally variations in the numbers reported for each quarter as information is updated into Cayuse SP and IRIS on a daily basis. The data for this report were collected on September 25th, 2018. The annual report will represent the final amounts for that fiscal year.