



## Appropriations Update: Senate Appropriations Committee Approves FY 2019 Defense Appropriations Bill

*Lewis-Burke Associates LLC – July 2, 2018*

On June 28, the Senate Appropriations Committee (SAC) approved its fiscal year (FY) 2019 defense appropriations bill with a 30-1 bipartisan vote. The bill would provide \$607.1 billion for Department of Defense (DOD) base programs, which is \$20.5 billion above the FY 2018 level, but \$10 billion below the President's FY 2019 budget request. The bill would also provide \$67.9 billion in Overseas Contingency Operations (OCO) funding.

The Committee's recommendations emphasize increased investments in research and development to acquire advanced technologies to defend the nation in a complex and shifting national security environment, with a notable increase for basic research of \$529 million more than the President's budget request.

Of interest to the research community, the bill would provide \$95.1 billion for Research, Development, Test, and Evaluation (RDT&E) programs, which surpasses the FY 2018 level by \$6.8 billion and the House bill by \$3.9 billion. Within RDT&E, the SAC would allocate \$15.4 billion for DOD's science and technology (S&T) accounts (6.1-6.3), a \$563 million (3.8 percent) increase over the FY 2018 level and \$993 million (6.9 percent) over the House's bill. The Committee explicitly recognized the role of basic research investments in providing the foundation for DOD innovation and transformational future technologies, and significantly increased basic research (6.1) accounts by \$529 million (23.3 percent) across the Services and defense-wide.

The SAC would fund the Defense Advanced Research Projects Agency (DARPA) at \$3.4 billion, \$58 million more than the House's bill and \$375 million above the FY 2018 level. The SAC also supports the Defense Health Program's R&D at \$1.6 billion, \$365 million less than the FY 2018 level but \$230 million over the House's bill.

The Committee placed significant emphasis on emerging technologies including hypersonics, directed energy, artificial intelligence (AI), microelectronics, and robotic and autonomous systems. Specific provisions include:

- **Hypersonics:** The Committee recommends an increase of \$928 million to develop hypersonics capabilities to deter threats from competitors. This includes a \$50 million increase specifically for DARPA to develop offensive hypersonic weapons.
- **Artificial Intelligence:** The Committee recommends an additional \$308 million to achieve dominance in AI, including increases of \$150 million for Project Maven and \$83 million for a Joint Artificial Intelligence Center, and directs the Undersecretary of Defense for Research and Engineering (USD(R&E)) to brief the defense committees on a plan for the additional funding.
- **Robotics and Autonomous Systems:** The SAC encourages the Secretary of the Army to invest in technologies that improve the durability of Unmanned Aerial Systems (UAS) as well as multi-fuel

capable, hybrid electric propulsion systems for UAS. The Committee also encourages the Navy to support investments in developing autonomous maritime robotic systems, noting university-based research can play a key role in enhancing a variety of underlying capabilities such as acoustic and non-acoustic detection, shared autonomy, adaptive decision making, docking, 3-D imaging, and power and data transfer.

- **Trusted Microelectronics:** The Committee recommends an additional \$447 million (76.1 percent) above the budget request to accelerate DARPA's Electronics Research Initiative (ERI) and directs USD(R&E) to provide a report on the scope of DOD's microelectronics challenges, as well as current needs for domestic manufacturing capabilities and infrastructure in order to provide future microelectronics for DOD weapon systems.

Other research priorities include:

- **Manufacturing:** Recommends an additional \$5 million for manufacturing engineering grants and encourages DOD to prioritize funding under this program to support community colleges and technical schools in order to support a workforce for the defense industrial base. The Committee also increased funding for the Manufacturing Engineering Education Program (MEEP) by \$15 million. The Committee expresses support for the Army's work in Transformative Manufacturing Technology and encourages the Secretary of the Army to transfer manufacturing technologies to the industrial base.
- **National Defense Education Program (NDEP):** Recommends an additional \$100 million for basic research under this program, recognizing that DOD needs further investments in STEM education to support national security.
- **Materials:** The bill included multiple provisions pertaining to materials. The Committee encourages the Army Research Lab (ARL) to expand its Open Campus initiative to its Materials and Manufacturing Science Labs to support education and R&D for materials and metals processing science efforts, and to continue investments in computational modeling and simulation research to quickly and efficiently characterize and develop new materials. The Committee also recommends additional funding for R&D for advanced composites for next-gen air and space vehicles, recognizing universities' continued contributions to better understand the technology and processes in developing these capabilities.
- **Technology Transfer:** The Committee continued to emphasize the importance of using research to develop new capabilities and get them into the hands of the warfighter. The bill encourages DOD to emphasize and provide funding for technology transfer to non-federal entities, including academia and non-profit organizations to leverage work being done at federal labs. The bill also directs USD(R&E) to assess DOD's test and evaluation infrastructure to further development of emerging technologies for the warfighter.
- **Space Acquisition Strategy:** The Committee expressed concerns over space-related risks and followed up on language in last year's bill for the Air Force to report on strategies for space acquisition, including progress on development efforts in space situational awareness (SSA); precision, navigation, and timing (PNT); weather; wide-band communications; and other efforts.

- **Accelerated Acquisitions:** The Committee would provide the Navy with \$1.4 billion, an increase of 150 percent over FY 2018, for programs intended to expedite acquisitions of new technologies and capabilities. The Committee also directs the Navy to submit a report discussing how programs under accelerated acquisitions are properly managed to ensure responsible use of funds and fiscal transparency.
- **Medical:** The Committee recommended \$330 million for the Peer-Reviewed Medical Research Program and detailed its priorities to include “acute lung injury, antimicrobial resistance, arthritis, autism, burn pit exposure, cardiomyopathy, chronic migraine and post-traumatic headache, congenital heart disease, constrictive bronchiolitis, diabetes, dystonia, eating disorders, emerging infectious diseases, epidermolysis bullosa, focal segmental glomerulosclerosis, frontotemporal degeneration, Guillain-Barre Syndrome, gulf war illness, hearing regeneration and restoration, hemorrhage control, hepatitis B, hereditary angioedema, hydrocephalus, immunomonitoring of intestinal transplants, inflammatory bowel diseases, interstitial cystitis, lung injury, lupus, metals toxicology, mitochondrial disease, multiple sclerosis, musculoskeletal conditions, myotonic dystrophy, nanomaterials for bone regeneration, neurofibromatosis, nutrition optimization, orthopedics, pancreatitis, Parkinson's, pathogen-inactivated blood products, polycystic kidney disease, post-traumatic osteoarthritis, pressure ulcers, pulmonary fibrosis, reconstructive transplantation, resilience training, respiratory health, Rett syndrome, rheumatoid arthritis, scleroderma, sleep disorders, spinal muscular atrophy, tinnitus, tissue regeneration, tuberculosis, tuberous sclerosis complex, vascular malformations, vision, and women's heart disease.” The SAC restricted topics to these areas and directs DOD to select projects with clear scientific merit and relevance to military health.

The Committee listed its priorities for the Peer-Reviewed Cancer Research Program to prioritize bladder cancer, blood cancers, brain cancer, colorectal cancer, immunotherapy, kidney cancer, liver cancer, mesothelioma, neuroblastoma, pancreatic cancer, pediatric brain tumors, rare cancers, and stomach cancer.

Under Defense Health R&D, the Committee would also prioritize research in orthotics and prosthetics, chronic pain management, mental and behavioral health, respiratory health, epilepsy, melanoma, sleep disorders, cell-based flu vaccines, and trauma. Lastly, the Committee directs DOD to develop a plan to ensure that women and minorities are better represented in extramurally-conducted clinical trials.

The Senate is expected to consider the defense spending bill as a package with the Labor, Health and Human Services, and Education (L-HHS-ED) bill. Senate leadership is packaging the two bills to increase odds they will pass, as defense is the top priority for Republicans and programs in the L-HHS-ED bill are a top priority for Democrats.

## FY 2019 Defense Appropriations Bill

*As reported by the Senate Appropriations Committee on June 28, 2018  
(In thousands of \$)*

	FY 2018 Enacted	FY 2019 Request	FY 2019 HAC	FY 2019 SAC	SAC vs. FY 2018	SAC vs. Request	SAC vs. HAC
<b>RDT&amp;E, total</b>	<b>88,308,133</b>	<b>91,056,950</b>	<b>91,218,284</b>	<b>95,131,819</b>	<b>6,823,686 (7.7%)</b>	<b>4,074,869 (4.5%)</b>	<b>3,913,535 (4.3%)</b>
<b>S&amp;T, Total</b>	<b>14,863,004</b>	<b>13,661,667</b>	<b>14,433,672</b>	<b>15,426,977</b>	<b>563,973 (3.8%)</b>	<b>1,765,310 (12.9%)</b>	<b>993,305 (6.9%)</b>
6.1, Total	2,343,154	2,269,206	2,298,102	2,798,456	455,302 (19.4%)	529,250 (23.3%)	500,354 (21.8%)
6.2, Total	5,681,752	5,100,359	5,571,178	5,577,344	-104,408 (1.8%)	476,985 (9.4%)	6,166 (0.1%)
6.3, Total	6,838,098	6,292,102	6,564,392	7,051,177	213,079 (3.1%)	759,075 (12.1%)	486,785 (7.4%)
<b>Army RDT&amp;E</b>	<b>10,647,426</b>	<b>10,159,379</b>	<b>10,108,108</b>	<b>10,812,458</b>	<b>165,032 (1.5%)</b>	<b>653,079 (6.4%)</b>	<b>704,350 (7.0%)</b>
Army 6.1	470,022	445,895	442,241	582,645	112,623 (24.0%)	136,750 (30.7%)	140,404 (31.7%)
Army 6.2	1,369,382	919,609	1,324,701	1,166,109	-203,273 (-14.8%)	246,500 (26.8%)	-158,592 (-12.0%)
Army 6.3	1,478,677	1,026,698	1,159,984	1,494,535	15,858 (1.1%)	467,837 (45.6%)	334,551 (28.8%)
<b>Navy RDT&amp;E</b>	<b>18,010,754</b>	<b>18,481,666</b>	<b>17,658,244</b>	<b>18,992,064</b>	<b>981,310 (5.4%)</b>	<b>510,398 (2.8%)</b>	<b>1,333,820 (7.6%)</b>
Navy 6.1	621,901	597,378	619,378	737,878	115,977 (18.6%)	140,500 (23.5%)	118,500 (19.1%)
Navy 6.2	994,110	891,471	889,198	1,027,056	32,946 (3.3%)	135,585 (15.2%)	137,858 (15.5%)
Navy 6.3	816,707	750,995	742,253	901,810	85,103 (10.4%)	150,815 (20.1%)	159,557 (21.5%)
<b>Air Force RDT&amp;E</b>	<b>37,428,078</b>	<b>40,178,343</b>	<b>40,939,500</b>	<b>40,896,667</b>	<b>3,468,589 (9.3%)</b>	<b>718,324 (1.8%)</b>	<b>-42,833 (0.1%)</b>
Air Force 6.1	520,259	517,819	516,369	642,819	122,560 (23.6%)	125,000 (24.1%)	126,450 (24.5%)
Air Force 6.2	1,434,714	1,312,342	1,384,342	1,430,342	-4,372 (-0.3%)	118,000 (9.0%)	46,000 (3.3%)
Air Force 6.3	869,117	814,797	865,797	919,097	49,980 (5.8%)	104,300 (12.8%)	53,300 (6.2%)
<b>Defense Wide RDT&amp;E</b>	<b>22,010,975</b>	<b>22,016,553</b>	<b>22,291,423</b>	<b>24,049,621</b>	<b>2,038,646 (9.3%)</b>	<b>2,033,068 (9.2%)</b>	<b>1,758,198 (7.9%)</b>
Defense Wide 6.1	730,972	708,114	720,114	835,114	104,142 (14.2%)	127,000 (17.9%)	115,000 (16.0%)
Defense Wide 6.2	1,883,546	1,976,937	1,972,937	1,953,837	70,291 (3.7%)	-23,100 (-1.2%)	-19,100 (-1.0%)

Defense					62,138	36,123	-60,623
Wide 6.3	3,673,597	3,699,612	3,796,358	3,735,735	(1.7%)	(1.0%)	(1.6%)
<b>Defense</b>					<b>-365,478</b>	<b>963,200</b>	<b>230,600</b>
<b>Health R&amp;D</b>	<b>2,039,315</b>	<b>710,637</b>	<b>1,443,237</b>	<b>1,673,837</b>	<b>(17.9%)</b>	<b>(135.5%)</b>	<b>(16.0%)</b>

*Sources and Additional Information:*

- The press release summarizing the SAC's Defense Appropriations Bill is available [here](#).
- The complete text of the SAC defense appropriations bill is available [here](#).
- The committee report is available [here](#).
- An audio of the mark up of the Defense and Labor-HHS-Ed Appropriations bill is available [here](#).
- A comprehensive analysis of the House Defense Appropriations Bill is available [here](#).