



October 31, 2019

The Honorable Mark T. Esper  
Secretary  
U.S. Department of Defense  
1400 Defense Pentagon  
Washington, DC 20301

The Honorable Russell T.  
Vought  
Acting Director  
The Office of Management and  
Budget  
725 17<sup>th</sup> Street NW  
Washington, DC 20503

The Honorable Kelvin K.  
Droegemeier  
Director  
Office of Science & Technology  
Policy  
1650 Pennsylvania Avenue NW  
Washington, DC 20504

Dear Secretary Esper, Acting Director Vought, and Director Droegemeier,

As you develop the fiscal year (FY) 2021 U.S. Department of Defense (DOD) budget request, the Coalition for National Security Research (CNSR), representing the undersigned members of industry, academia, scientific and professional organizations, and non-profits, respectfully requests you include robust and sustained growth in the Defense science and technology (S&T) program including the basic research program budgets.

The discoveries and innovations that have provided the U.S. military with global technological superiority can often be traced back to investments in the Defense S&T program. Stealth and counter stealth technologies, night vision, radar, sonar, nuclear propulsion, precision munitions, jet engines, near-real-time delivery of battlefield information, and global positioning technologies all have roots in the research and development supported by the Defense S&T program including the DOD's basic research programs. Furthermore, the Defense S&T program is already laying the foundation and advancing capabilities in quantum technologies, autonomy, hypersonics, artificial intelligence, and directed energy.

Robustly investing in the Defense S&T program will be essential to meeting the objectives and goals in the *National Defense Strategy (NDS)* and the FY 2021 Research and Development (R&D) Budget Priorities Memorandum. The *NDS* objectives of sustaining Joint Force military advantages, establishing an unmatched twenty-first century national security innovation base, and ensuring we have the technologies to deter adversaries or succeed in future conflicts will require significantly investing in the Defense S&T program.<sup>1</sup> Additionally, the FY 2021 R&D memorandum sets goals for the U.S. to remain at the leading edge of S&T, maintain military superiority, and support transformative high risk and potentially high reward scientific research.<sup>2</sup> These goals are essentially the core functions of the Defense S&T program.

It is our hope that the FY 2021 budget request will not repeat the call for dramatic cuts to the Defense S&T program and will instead request funding levels consistent with expert recommendations. The FY 2020 request called for a nearly \$2 billion (-11.4%) reduction to Defense S&T including an approximately \$300 million (-8.3%) cut in defense basic research relative to FY 2019 enacted levels.<sup>3</sup> Based on the best of the current Congressional marks for FY 2020, funding for Defense S&T will fall to levels below FY 2005 after adjusting for inflation. ***CNSR joins the Defense Science Board, Council on Competitiveness, and National Academies in supporting the ultimate goal that Defense S&T funding comprises 3 percent of the overall defense base budget with defense basic research comprising at least***

<sup>1</sup> <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

<sup>2</sup> <https://www.whitehouse.gov/wp-content/uploads/2019/08/FY-21-RD-Budget-Priorities.pdf>

<sup>3</sup> <https://s28043.pcdn.co/wp-content/uploads/2019/05/2019-05-CNSR-FY20-Approps-Letter-Final.pdf>

**20 percent of the S&T budget.** Based on the higher mark in the Senate's FY 2020 Defense Appropriations bills, Defense S&T funding is more than \$2.2 billion below the recommended levels, and the defense basic research programs are nearly \$1 billion less than recommendations. Simply put, the United States needs to significantly boost its budget request for the Defense S&T program if we are to maintain our military's competitive edge and global technological superiority.

***In an effort to begin to reach recommended funding levels, we urge you to include at least a four percent increase over enacted levels in the Defense S&T program including the defense basic research programs in the FY 2021 budget request,*** as called for in [\*Innovation: An American Imperative\*](#), which the CEOs of Northrop Grumman, Lockheed Martin, Boeing, and Microsoft all signed and is endorsed by more than 500 other leading organizations from industry, academia and science and engineering.

A four percent increase over enacted levels will help stem the tide of declining Defense S&T funding and begin to address funding challenges facing the basic research programs such as the ***University Research Initiatives (URIs)*** programs. URI-sponsored university basic research regularly produces revolutionary new military technologies. Numerous advances in quantum information sciences, unmanned aircraft systems (UAS), nanotechnology, biological detection capabilities, and stealth detection sensors all stem from URI-sponsored scientific research. The core URI programs, the ***Multidisciplinary University Research Initiative (MURI)*** and ***Defense University Research Instrumentation Program (DURIP)***, simply do not have the resources to meet needs. In FY 2019, only 24 of 295 MURI proposals were funded and only \$56 million in DURIPs were awarded out of \$259 million requested. While overall funding for Research, Development, Test and Evaluation (RDT&E) is at record levels, we are not adequately supporting the fundamental research that will serve as the foundation for future technologies necessary to maintain the military's global technological superiority.

CNSR also strongly believes that to meet the *NDS* goal of having an unmatched twenty-first century national security innovation base, it is absolutely critical to invest in research and education to enhance our manufacturing capabilities and workforce. Our national security is strengthened when we support innovative efforts to overcome technological challenges facing the national security innovation base and invest in education and training programs aimed at developing the next generation science and engineering workforce. As a result, we urge you to include robust funding in the FY 2021 budget request for the ***National Defense Education Program (NDEP)***, ***Defense-Wide Manufacturing S&T Program***, and ***Manufacturing Engineering Education Program (MEEP)***.

Through its highly successful SMART Scholarship program, NDEP has provided support to approximately 2,800 students since FY 2005 with more than 2,000 past participants now working as civilian employees at DOD. The first round of MEEP awards strengthen manufacturing education from high school through graduate education, develop comprehensive apprenticeship training programs, and launch a series of courses that will include opportunities for additive manufacturing programs. With support from the Defense-Wide Manufacturing S&T Program, the Manufacturing USA institutes have conducted over 475 major applied R&D projects and more than 200,000 individuals participated in workforce development opportunities. With competitor nations such as China investing heavily in R&D and talent recruitment/development, now more than ever we need to increase our investments in scientific research and education efforts that will support a twenty-first century national security innovation base with a state-of-the-art ready workforce.

Thank you for consideration of our views. If we can be of any assistance, please do not hesitate to contact CNSR Chairman John Latini at [jl119@psu.edu](mailto:jl119@psu.edu) or (202) 216-4369.

Sincerely,

Aerospace Industries Association (AIA)  
 American Association for the Advancement of Science (AAAS)  
 American Chemical Society (ACS)  
 American Institute for Medical and Biological Engineering  
 American Mathematical Society (AMS)  
 American Psychological Association (APA)  
 American Society for Engineering Education  
 Arizona State University  
 ASME  
 Association of American Universities (AAU)  
 Association of Public and Land-grant Universities (APLU)  
 Battelle  
 Boston University  
 Brown University  
 California Institute of Technology  
 Carnegie Mellon University  
 Columbia University  
 Computing Research Association  
 Consortium for Ocean Leadership  
 Cornell University  
 Drexel University  
 Duke University  
 Dupont  
 Energetics, Inc.  
 Federation of Associations in Behavioral & Brain Sciences (FABBS)  
 Federation of Materials Societies  
 Florida International University  
 Florida State University  
 George Mason University  
 Georgia Institute of Technology  
 Harvard University  
 IEEE-USA  
 Indiana University  
 Lehigh University  
 Louisiana State University  
 Louisiana Tech University  
 Massachusetts Institute of Technology  
 Materials Research Society  
 Michigan State University  
 Michigan Technological University  
 New Mexico State University  
 Northeastern University  
 Northern Illinois University  
 Northwestern University  
 Oak Ridge Associated Universities  
 Ohio State University  
 Oregon Health and Sciences University  
 Oregon State University  
 Pace University  
 Penn State University  
 Princeton University  
 Purdue University  
 Rensselaer Polytechnic Institute  
 Rutgers, The State University of New Jersey  
 Scripps Institution of Oceanography  
 Semiconductor Industry Association  
 Society for Industrial and Applied Mathematics  
 SPIE, the international society for optics and photonics  
 SRI International  
 Temple University  
 Texas A&M University  
 The Catholic University of America  
 The George Washington University  
 The Johns Hopkins University  
 The Optical Society  
 The State University of New York  
 University of Arizona  
 University of California System  
 University of California, Davis  
 University of California, Irvine  
 University of California, Los Angeles  
 University of California, Riverside  
 University of California, San Diego  
 University of Central Florida  
 University of Cincinnati  
 University of Colorado Boulder  
 University of Delaware  
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 University of Houston  
 University of Illinois System  
 University of Iowa  
 University of Kansas  
 University of Maryland at College Park  
 University of Michigan  
 University of Missouri System  
 University of Nebraska  
 University of North Carolina – Chapel Hill  
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 Vanderbilt University  
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 West Virginia University  
 William & Mary  
 Woods Hole Oceanographic Institution  
 Yale University