November 27, 2018

The Honorable James N. Mattis
Secretary of Defense
U.S. Department of Defense
1400 Defense Pentagon
Washington, DC 20301

The Honorable Mick Mulvaney
Director
The Office of Management and Budget
725 17th Street NW
Washington, DC 20503

Dear Secretary Mattis and Director Mulvaney,

As you continue developing the fiscal year (FY) 2020 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 DOD's basic research and science and technology (S&T) program budgets.

As described in the National Defense Strategy (NDS), our competitive military advantage is eroding, and "We cannot expect success fighting tomorrow's conflicts with yesterday's weapons or equipment." The mission of the Defense S&T program is to create new technologies that enable future weapons and equipment capabilities providing the U.S. military with a competitive advantage over adversaries. For decades, investments in the Defense S&T program, including the defense basic research programs, have enabled scientific breakthroughs that gave the warfighter new capabilities needed to deter and succeed in conflicts.

For FY 2020, CNSR is concerned about the effects on funding for the Defense S&T program given President Trump's request to reduce the topline Defense budget by $33 billion. Adjusting for inflation, Defense S&T funding declined approximately 6.8 percent from FY 2005 to FY 2019 enacted. CNSR joins the Defense Science Board, Council on Competitiveness, and National Academies in supporting Defense S&T funding that comprises 3 percent of the overall defense budget with defense basic research comprising at least 20 percent of the S&T budget. Based on FY 2019 enacted levels, the Defense S&T program is more than $2.1 billion below the recommended levels, and the defense basic research programs are at least $590 million underfunded.

In an effort to begin to reach recommended funding levels, we urge you to include at least a 4 percent increase over enacted levels in the Defense S&T program including the defense basic research programs in the FY 2020 budget request, as is called for in *Innovation: An American Imperative*, which the CEOs of Northrop Grumman, Lockheed Martin, Boeing, and Microsoft all signed and is endorsed by over 500 other leading organizations from industry, academia, and science and engineering.

A 4 percent increase over enacted levels will help stem the tide of declining Defense S&T funding relative to inflation and begin to address funding challenges facing the basic research

programs such as the Multidisciplinary University Research Initiative (MURI) programs. The outcomes from MURI-sponsored research regularly produce revolutionary new military technologies, including nanotechnology, military drones, biological detection capabilities, materials for armor and force protection, sensors for stealth detection, and various innovations in semiconductors. However, from FY 2013 to FY 2018, on average, only approximately 20 MURI proposals were funded annually. Furthermore, it is our understanding that the MURI programs do not have sufficient resources to increase investments in scientific research needed for the Department's top technological priorities, namely directed energy, artificial intelligence, and hypersonics.

CNSR also strongly believes that to meet the NDS goal of having an unmatched 21st century national security innovation base, it is absolutely critical to invest in research and development to enhance our manufacturing capabilities and workforce. Our national security is enhanced when we invest in education and training programs aimed at building the next generation of our science and engineering workforce and supporting innovative efforts to overcome challenges facing the national security innovation base. As a result, we also urge you to include robust funding in the FY 2020 budget request for the National Defense Education Program (NDEP), Defense-Wide Manufacturing S&T Program, and Manufacturing Engineering Education Program (MEEP).

NDEP has provided support to approximately 2,400 students since FY 2005 with more than 1,300 past participants now working as civilian employees at DOD. MEEP recently announced its first awards to 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 nearly 270 major applied research and development projects of high priority to broad industry sectors including many in the defense industrial base. Continued and robust support for these vital education and training programs will ensure we have the workforce to support DOD's operations and our nation's manufacturing needs.

Thank you for your consideration of our views. If we can be of any assistance as you develop the FY 2020 DOD budget request, please do not hesitate to contact us at cnsr.dodresearch@gmail.com or by visiting https://cnsr4research.org.

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
Duke University
Energetics, Inc.
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
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 – Irvine
University of California – Los Angeles
University of California - Riverside
University of California – San Diego
University of California System
University of Central Florida
University of Cincinnati
University of Colorado Boulder
University of Delaware
University of Florida

University of Houston
University of Illinois System
University of Iowa
University of Maryland at College Park
University of Michigan
University of Missouri System
University of Nebraska
University of North Carolina – Chapel Hill
University of North Carolina System
University of Pennsylvania
University of Pittsburgh
University of Rhode Island
University of Rochester
University of South Florida
University of Southern California
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University of Texas System
University of Virginia
University of Washington
University of Wisconsin - Madison
Vanderbilt University
Virginia Commonwealth University
Washington State University
West Virginia University
William & Mary
Woods Hole Oceanographic Institution
Yale University