



Support Critical Science and Technology Funding; Oppose Proposed FY 2018 Cuts

The National Photonics Initiative (NPI) urges Congress to reject the President's proposed science R&D cuts in the FY 2018 budget request and provide strong investments in science R&D programs.

President Donald Trump is proposing cuts to many science and research and development (R&D) agencies and programs in his Fiscal Year (FY) 2018 budget. Only topline numbers are available at this time, with more details forthcoming in May. Notably, the President proposes deep funding cuts to the Department of Energy's (DOE) Office of Science and the National Institutes of Health (NIH), among other agencies.

Stable investments in science R&D programs are critical for the advancement of our society, economy, national security and the future of our nation. Optics and photonics – the science and application of light – benefit greatly from federal R&D investments and, in turn, contribute to innovations that reach beyond scientific discovery. Photonics generates, controls and detects particles of light to advance manufacturing, robotics, medical imaging, next-generation displays, defense technologies, biometric security, image processing, communications, astronomy and much more.

FY 2018 Proposed Budget

Oppose cuts and support increased funding for DOE Office of Science

The DOE Office of Science is the nation's largest funder of research in the physical sciences and plays a dominant role in underwriting engineering, mathematics and computer research. It supports discoveries in new fields such as biotechnology, nanotechnology and supercomputing – enabled by optics and photonics – and is critical to our nation's economy and competitiveness. The Office of Science has provided grants to researchers and facilities in all 50 states and the District of Columbia, to DOE's national laboratories and more than 300 higher education institutions. President Trump's FY 2018 budget proposes to cut 17 percent – \$900 million – from the Office of Science. The President has also proposed eliminating critical programs such as the Advanced Research Projects Agency-Energy (ARPA-e).

Oppose cuts and support increased funding at NIH

The mission of NIH is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life and reduce illness and disability. NIH is the lead agency for cancer research and the BRAIN Initiative, which is authorized to fund increases over the next decade through the recently enacted 21st Century Cures Act. While the Act authorizes increases for cancer and brain research for FY 2018, the President has proposed an overall 18 percent, or \$5.8 billion, cut at NIH that includes a yet-to-be-determined amount of 21st Century Cures Act funding.

Oppose cuts and support increased funding for NIST

The National Institute of Standards and Technology (NIST) was created to ensure America's scientific and economic competitiveness throughout the world. Promoting innovation and advancement in

measurement, standards and technology, NIST has enhanced US economic markets and everyday lives for more than a century. NIST is the lead agency for two key manufacturing programs: the Manufacturing Extension Partnership Program (MEP) and National Network for Manufacturing Innovation (NNMI).

MEPs are public-private partnerships that foster innovative collaborations between industry, academia and state and local governments to provide small- and medium-sized manufacturers in all 50 states access to resources that help them identify growth opportunities and tools and services to improve their processes and create new products. Unfortunately, President Trump's FY 2018 budget proposes eliminating the MEP.

The NNMI program accelerates US manufacturing innovation in technologies with commercial applications by leveraging resources that bridge the gap between basic research and product development. Within the NNMI are a series of Institutes for Manufacturing Innovation (IMIs). Advanced optics and photonics can be leveraged across a wide range of disciplines and applications and are ideally suited for IMIs. The White House Office of Management and Budget's (OMB) recommendations for FY 2017 reductions include preventing NIST from awarding an additional IMI this year.

Oppose cuts and support increased funding for NSF

The National Science Foundation (NSF) is a key funder of optics and photonics research. An example is the Laser Interferometer Gravitational-Wave Observatory (LIGO), which recently measured gravitational waves from a binary black hole merger. This discovery, enabled by photonics, confirms Einstein's Theory of General Relativity. Another example is work being done by researchers to make solar cells that can be used on almost any surface, including windows, walls, computer bags and clothing. President Trump's topline FY 2018 proposal does not address NSF's budget; however, OMB recently proposed NSF reduce grant awards for the remainder of FY 2017.

Oppose cuts and support increases to DOD's Science and Technology Program

The Department of Defense (DOD) is a key federal supporter of research in the physical sciences. The R&D supported by DOD's Science and Technology Program plays a direct role in protecting and equipping our nation's armed forces to carry out their present and future missions and is the source of many of the innovations that drive our high technology economy. Recent breakthroughs in optics and photonics at the agency include bringing directed-energy weapons systems closer to deployment, and these systems could provide efficient, cost-effective countermeasures in an age of drones and other airborne threats. While the President's FY 2018 budget proposes a three percent increase in DOD funding, how those funds will be distributed is unknown.

About the NPI

The NPI is a collaborative alliance among industry, academia and government seeking to raise awareness of photonics and the impact of photonics on our everyday lives; increase cooperation and coordination to advance photonics-driven fields; and drive US funding and investment in areas of photonics critical to maintaining US economic competitiveness and national security. The initiative is led by a coalition of scientific societies, including the American Physical Society (APS), the IEEE Photonics Society (IPS), the Laser Institute of America (LIA), The Optical Society (OSA) and SPIE, the International Society for Optics and Photonics (SPIE).

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