

Investing in American Innovation

Meeting Our Greatest Challenges: The President's Fiscal Year 2017 Budget

Under the President's leadership, we have turned our economy around and created 14 million jobs. Our unemployment rate is below five percent for the first time in almost eight years. Nearly 18 million people have gained health coverage as the Affordable Care Act has taken effect. And we have dramatically cut our deficits by almost three-quarters and set our Nation on a more sustainable fiscal path.

Yet while it is important to take stock of our progress, this Budget is not about looking back at the road we have traveled. It is about looking forward and making sure our economy works for everybody, not just those at the top. It is about choosing investments that not only make us stronger today, but also reflect the kind of country we aspire to be – the kind of country we want to pass on to our children and grandchildren.

The Budget makes critical investments in our domestic and national security priorities while adhering to the bipartisan budget agreement signed into law last fall, and it lifts sequestration in future years so that we continue to invest in our economic future and our national security. It also drives down deficits and maintains our fiscal progress through smart savings from health care, immigration, and tax reforms.

The Budget shows that the President and the Administration remain focused on meeting our greatest challenges – including accelerating the pace of innovation to tackle climate change and find new treatments for devastating diseases; giving everyone a fair shot at opportunity and economic security; and advancing our national security and global leadership – not only for the year ahead, but for decades to come.

Creating jobs that pay good wages is the best way to grow our economy and the middle class. To compete in the 21st Century economy and make America a magnet for job creation and opportunity, we need to invest in American innovation, strengthening our manufacturing base and keeping our nation at the forefront of technological advancement. To ensure our energy security and address global climate change, we must continue to focus on domestic energy production, the development of clean energy alternatives, and the promotion of energy efficiency. The Budget therefore includes investments in research and development, and advanced manufacturing.

Investing in Research & Development.

America must accelerate the pace of innovation to create jobs, build a climate-smart economy of the future, and protect the planet. Innovation depends on robust investments in research and development (R&D). Federal funding for R&D has helped lead to new products, new capabilities, and new industries, resulting in sustainable economic growth and highly skilled, high-wage jobs. Today, we look to engineering and science to address our biggest challenges: creating jobs; improving the health of all Americans; enhancing access to clean energy, water, and food; addressing global climate change; managing competing demands on environmental resources; and ensuring the security of the Nation.

Continuing our commitment to world-class science and research, the Budget provides \$152 billion for R&D overall, a \$6 billion or 4 percent increase from 2016 enacted levels. \$4 billion of the overall \$152 billion investment in R&D is new mandatory funding. This will ensure that we make adequate R&D investments to create jobs and grow the economy, even as the Budget adheres to the discretionary spending levels set by the Bipartisan Budget Act. The Budget targets resources to areas most likely to directly contribute to the creation of transformational knowledge and technologies that can benefit society and create the businesses and jobs of the future. The Budget provides \$73 billion for basic and applied research (the “R” in R&D), a \$4 billion or 6 percent increase from 2016 enacted levels. The Budget targets investments in several key R&D priorities:

- *Clean Energy.* The Budget reflects the need to advance clean energy technology to help combat climate change and achieve the nation’s energy goals. The Budget also demonstrates a strong commitment to Mission Innovation - the landmark 20-nation commitment to accelerate public and private global clean energy innovation announced at the start of the Paris climate summit. Through this initiative the United States is seeking to double Federal clean energy R&D funding in five years. Clean energy R&D is robustly funded through discretionary appropriations of \$7.7 billion across 12 agencies, putting it on a path to double by FY2021. About 76 percent of the FY2017 government-wide funding is at the Department of Energy (DOE).
- *Water Technology.* The Budget invests in breakthrough R&D that reduces the price, energy input, and carbon emissions levels of new water supply technology, which can provide communities in water-stressed regions with new and more effective options to meet their increasing water supply needs. Examples include \$45 million of new funding for DOE to launch an Energy-Water Desalination Hub and conduct complementary R&D; \$98.6 million for the Department of the Interior’s WaterSMART program, which promotes water conservation initiatives, improved water data, and technological breakthroughs; \$15 million in additional funding for the Department of Agriculture’s (USDA) research on water supplies and conservation practices such as building healthy soils that retain water; and \$88 million for the National Science Foundation (NSF) to support basic water research to enhance the scientific and engineering knowledge base.
- *Climate Science.* The Budget includes approximately \$2.8 billion to advance actionable climate science and improve our understanding of climate change and its impacts. The U.S. Global Change Research Program (USGCRP) coordinates and integrates these Federal research investments and applications to assist the Nation and the world in understanding, assessing, predicting, and responding to the human-induced and natural processes of climate change and their related impacts and effects.
- *Basic Research.* The Budget provides DOE’s Office of Science with nearly \$5.7 billion and NSF with nearly \$8 billion. These investments support ground-breaking research and world-leading facilities across all fields of science and engineering, including clean energy, climate science, information technology, and life sciences. The Budget also provides \$826 million for the National Institute of Standards and Technology (NIST) laboratories. The Budget increases total funding for these three key basic research agencies by more than \$900 million over the 2016 level.

- *Advanced Manufacturing.* In the area of manufacturing, the Budget will support the development and scaling of new advanced manufacturing technologies, helping smaller manufacturers adopt new technologies to increase their competitiveness, and accelerating the transfer of new technologies from Federal labs to industry. In total, the Budget provides \$2 billion for Federal R&D directly supporting advanced manufacturing at NSF, Department of Defense (DOD), DOE, Department of Commerce (DOC), and other agencies, consistent with the goals and recommendations of the National Strategic Plan for Advanced Manufacturing. In addition, the Budget provides resources for new manufacturing innovation institutes to accelerate the development critical emerging manufacturing technologies.
- *Health Research.* The Budget provides \$33.1 billion to support biomedical research at the National Institutes of Health (NIH), providing about 10,000 new and competing NIH grants that will help us better understand the fundamental causes and mechanisms of disease. As a part of the cancer “moonshot” effort led by the Vice President, the Budget provides an increase of \$680 million to accelerate progress in preventing, diagnosing, and treating cancer. The Budget’s multi-year cancer initiative, which begins in FY 2016, provides resources to improve health and outcomes for patients through investments in research and infrastructure, and brings together researchers across sectors and scientific disciplines. The Budget includes \$195 million, an increase of \$45 million over FY2016, for NIH's contribution to the multi-agency Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative that is helping to revolutionize our understanding of the human brain. The Budget also includes \$300 million for NIH, an increase of \$100 million over FY 2016, for its contribution to the Precision Medicine Initiative that will accelerate our ability to develop prevention, diagnostic and treatment approaches tailored to individual patients. The increased funding will support a major scale up of a research cohort of a million or more individuals. In addition, funding will continue for the National Cancer Institute to lead research efforts on cancer genomics.
- *Agriculture R&D.* Agriculture has a significant impact on the economy and food security for the nation and the world. The Budget recognizes the importance of science and technology to meet challenges in agriculture, including the challenges presented by a changing climate, and provides significant investments in three major areas of agricultural R&D programs. Competitive research grants in USDA’s flagship Agriculture and Food Research Initiative (AFRI) are funded at the authorized level of \$700 million, double the funding provided in FY2016. USDA's in-house research programs are funded at \$1.16 billion, which includes increases for key initiatives: anti-microbial resistance, climate change, foreign animal diseases and Highly Pathogenic Avian Influenza (HPAI), and water resources to support agricultural production. Finally, \$95 million is requested in key infrastructure investments to continue the Department’s program to prepare its facilities for the 21st Century.
- *High-Performance Computing.* In July 2015, the Administration launched the National Strategic Computing Initiative (NSCI) as a whole-of-government effort to create a Federal investment strategy in high-performance computing. The Budget will enable agencies involved in the NSCI to develop a capable exascale computing system; identify and prioritize opportunities for increasing synergy between modeling and data analytic computing; develop next-generation computing technologies for a post-Moore’s Law world; create a national high-performance computing ecosystem that is accessible to new communities and addresses networking, workflow, algorithms and software, and workforce development challenges; and leverage public/private collaborations. The Budget supports NSCI R&D investments through

many agencies, with major investments from DOE (\$285 million) and NSF (\$33 million).

- *Supporting Private-Sector R&D by Simplifying and Expanding the Research and Experimentation Tax Credit.* The Research and Experimentation (R&E) Tax Credit is an important Federal incentive for private-sector research investments, and last year, the President signed legislation to make the credit permanent and expand the incentive for R&D investments by small businesses. But it can still be improved, as the complexity of applying for the R&E Tax Credit makes it less effective than it could be in spurring additional R&D investments. Currently, businesses must choose between using a complex, outdated formula that provides a 20 percent credit rate and a much simpler one that provides a 14 percent credit rate. The Budget would create a single formula with an 18 percent credit rate, which would make it more attractive and simplify tax filing for businesses.

Making America a Magnet for Jobs.

The President is committed to making America a magnet for jobs and manufacturing so that we can create new opportunities for American workers.

- *Strengthening U.S. Competitiveness for Advanced Manufacturing through a National Network for Manufacturing Innovation.* The Budget makes new investments to grow a national network of innovative manufacturing R&D hubs to help keep U.S. manufacturing in the lead on technology. This network, the National Network for Manufacturing Innovation (NNMI), plays an important part of the revitalization of American manufacturing by bringing together companies, universities, community colleges, and Government to co-invest in the development of world-leading manufacturing technologies. The Budget provides resources to launch new manufacturing institutes and sustain those underway at the Departments of Commerce, Defense, and Energy building towards the President's goal of launching 15 manufacturing institutes by the end of his term and up to 45 within ten years. To support these goals, the Budget proposes over \$250 million in discretionary resources to create and sustain manufacturing innovation institutes and an additional \$1.9 billion mandatory spending proposal to build out the remaining 27 institutes to create a national network of 45 institutes over the next ten years.
- *Expanding SelectUSA to Attract Investment to Our Shores.* In 2011, the President launched SelectUSA at the Department of Commerce, creating the first Federal effort to actively attract and retain business investment in the United States. The Budget proposes to double the \$10 million provided in the 2016 Appropriations Act to significantly expand and enhance SelectUSA, using a whole-of-Government approach.
- *Helping New Innovative Manufacturing Technologies Reach Commercial Viability.* The Budget also calls on the Congress to work together with the President to launch the \$10 billion public-private, Scale-Up Manufacturing Investment Fund to help emerging American-made advanced manufacturing technologies reach commercial-scale production. To address the gap in financing for these new manufacturing firms, the Budget proposes a \$10 billion public-private investment fund, with \$5 billion of public investment matched by \$5 billion or more of private funds. Administered by the Small Business Administration, the Scale-Up Manufacturing Investment Fund will encourage more private investment in the first commercial production facilities for American-made technology-intensive manufacturing start-ups. These funds will

help entrepreneurial firms secure capital to scale from idea to prototype, and into full commercial production, ensuring that if a technology is invented in the United States it can be made in the United States.

- *Supporting Manufacturing Investment and Insourcing.* Recent productivity growth has made the United States more competitive in attracting businesses to invest and create jobs by reducing the relative cost of doing business compared to other countries. Our tax code should reward companies that bring manufacturing back to the United States rather than encourage companies to move production offshore. That's why the Budget includes an important fix to our tax code to incentivize companies to bring offshore jobs and investments back into the United States, and closes the loophole that currently allows companies to receive a tax benefit for moving U.S. jobs offshore. In addition, because the loss of a major employer can devastate a community, and incentives could encourage investments that help such communities recover more quickly, the Budget provides a tax credit for these communities to spur re-investment and economic revitalization.
- *Facilitating the Availability of Next-Generation Wireless and Wired Broadband.* High-speed wired broadband and fast, reliable mobile connectivity are essential for new business formation, economic growth, advances in health care and energy independence, and robust democratic discourse. The Budget includes funding at Commerce's National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission to continue implementing the Spectrum Pipeline Act of 2015. This Act authorized transfers to Federal agencies from the Spectrum Relocation Fund for research, testing, and evaluation projects that are likely to make additional Federal spectrum available for commercial use via auction within the next 10 years. The Budget also expands broadband competition and access by fully funding NTIA's BroadbandUSA initiative, which supports deployment of new community broadband systems through online and in-person technical assistance, regional workshops, and guides and tools providing proven solutions to problems in broadband planning, financing, construction, and operations. In addition, the Budget proposes to nearly triple the number of U.S. Department of Agriculture broadband grants that serve the neediest, most rural communities. These grants will bring the benefits of broadband, including new educational, business, and public health and safety opportunities, to residents living in some of the most remote parts of our Nation. Within the Department of Housing and Urban Development, the Budget includes \$5 million for ConnectHome, an initiative that is providing discounted high-speed Internet, technical training, digital literacy programs, and electronic devices to residents of public and HUD-assisted housing in 28 communities across the nation.