



# The 2017 Budget: Investing in American Innovation

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“Sixty years ago, when the Russians beat us into space, we didn’t deny Sputnik was up there. We didn’t argue about the science, or shrink our research and development budget. We built a space program almost overnight, and twelve years later, we were walking on the moon. That spirit of discovery is in our DNA.”

- President Barack Obama  
January 12, 2016



# R&D in the President's 2017 Budget

(budget authority in billions of current dollars)	FY 2015 Actual	FY 2016 Enacted	FY 2017 Budget	Change FY 16-17
<b>Total R&amp;D</b>	<b>138.3</b>	<b>146.1</b>	<b>152.3</b>	<b>4.2%</b>
<i>defense</i>	<i>71.7</i>	<i>76.6</i>	<i>80.0</i>	<i>4.4%</i>
<i>nondefense</i>	<i>66.5</i>	<i>69.5</i>	<i>72.4</i>	<i>4.1%</i>
<b>Research</b>	<b>66.0</b>	<b>68.9</b>	<b>72.8</b>	<b>5.7%</b>
<i>defense</i>	<i>10.9</i>	<i>10.9</i>	<i>11.8</i>	<i>7.9%</i>
<i>nondefense</i>	<i>55.2</i>	<i>58.0</i>	<i>61.0</i>	<i>5.2%</i>
<b>Development</b>	<b>69.7</b>	<b>74.5</b>	<b>76.7</b>	<b>3.0%</b>
<i>defense</i>	<i>60.5</i>	<i>65.3</i>	<i>67.6</i>	<i>3.5%</i>
<i>nondefense</i>	<i>9.2</i>	<i>9.1</i>	<i>9.1</i>	<i>-0.8%</i>



# Investing in R&D

- \$8.0 billion for the National Science Foundation (NSF).
- \$5.7 billion for the Department of Energy (DOE) Office of Science.
- \$826 million for the National Institute of Standards and Technology (NIST) laboratories.
- \$19.0 billion for NASA.
- \$33.1 billion for NIH.
- \$700 million for USDA's Agriculture and Food Research Initiative.
- \$1.2 billion for the U.S. Geological Survey.
- \$6.0 billion for NOAA.



# Accelerating Innovation for Industries of the Future

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- The Budget provides strong support for R&D that is likely to create the foundations for the industries and jobs of the future. Examples include robotics, cyber-physical systems, big data, the Materials Genome Initiative, the National Nanotechnology Initiative, and engineering biology.
- The Budget supports investments in the National Strategic Computing Initiative, including from DOE (\$285 million) and NSF (\$33 million).
- The Budget expands our capabilities in the space industries of the future: \$1.2 billion for the Commercial Crew program, \$827 million for Space Technology, and \$324 million for Advanced Exploration Systems to increase the capabilities of NASA, other government, and commercial space activities.
- The Budget includes \$318 million for civilian R&D to support innovative cybersecurity technologies.
- The Budget proposes to simplify and expand the permanently-extended Research and Experimentation Tax Credit.





“But even if the planet wasn’t at stake; even if 2014 wasn’t the warmest year on record – until 2015 turned out even hotter – why would we want to pass up the chance for American businesses to produce and sell the energy of the future?”

Now we’ve got to accelerate the transition away from dirty energy. Rather than subsidize the past, we should invest in the future.”

- President Barack Obama  
January 12, 2016



# Taking action on climate change in the 2017 Budget

- \$2.8 billion for the U.S. Global Change Research Program (USGCRP).
- USGCRP supports research to improve our ability to understand, assess, predict, and respond to global change.
- The 2017 Budget supports an integrated suite of climate change observations, process-based research, modeling, sustained assessment, adaptation science activities, and climate preparedness and resilience strategies.
- USGCRP investments support the President's Climate Action Plan.



# Arctic Highlights in the 2017 Budget

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## Coastal Resilience

- The Budget proposes a \$2 billion Coastal Climate Resilience program at the Department of the Interior that provides resources over 10 years for at-risk coastal States, local governments, and their communities to prepare for and adapt to climate change. A portion of these funds would be set aside for Alaskan communities.
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## Denali Commission

- The Budget provides the Denali Commission \$5 million to leverage and coordinate other Federal, State, and Tribal assistance (including about \$250 million across the Budget) for developing and implementing solutions to climate impacts.
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## Research & Observing

- \$63 million for NSF's Arctic research program and \$7 million for NOAA's Arctic Observing Network.
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## Icebreakers

- \$150 million for the U.S. Coast Guard for design of a heavy, polar-class icebreaker, accelerating the start of production activities by 2 years to 2020.



# Moving toward cleaner American energy

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## Mission Innovation

- The Budget supports the United States' participation in Mission Innovation. The 2017 Budget provides \$7.7 billion in FY 2017 for clean energy R&D to meet the pledge to double clean energy R&D by 2021.
- \$2.9 billion for DOE Energy Efficiency and Renewable Energy (EERE), \$804 million for nuclear energy, and \$500 million for ARPA-E.

## Modernized electric grid

- \$177 million for DOE Office of Electricity Delivery and Energy Reliability.

## 21<sup>st</sup> Century Clean Transportation Plan

- A new mandatory proposal for clean transportation system deployment, including R&D funding.
- Includes \$200 million in DOT for safety research to accelerate the development of autonomous vehicles and \$100 million in NASA R&D for low-carbon-emission aircraft.





Jo Handelsman

Associate Director for Science

White House Office of Science & Technology Policy

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PRESIDENT OBAMA'S FINAL

S T A T E

★ O F T H E ★

U N I O N

JANUARY 12, 9PM ET

“Last year, Vice President Biden said that with a new moonshot, America can cure cancer. Last month, he worked with this Congress to give scientists at the National Institutes of Health the strongest resources they’ve had in over a decade. Tonight, I’m announcing a new national effort to get it done.”

- President Barack Obama  
January 12, 2016



# Improving Americans' health through innovation in life sciences, biology, and neuroscience



- The National Cancer Moonshot begins this year with \$195 million in new NIH cancer activities. The 2017 Budget proposes \$755 million for new cancer-related research activities in NIH and FDA.
- The 2017 Budget provides \$309 million for the Precision Medicine Initiative with funding from HHS agencies.
- The BRAIN Initiative will continue with a Federal commitment of \$195 million from NIH, and a total Federal investment of nearly \$450 million.
- \$700 million for U.S. Department of Agriculture competitively-awarded extramural research grants in the Agriculture and Food Research Initiative.





“The bipartisan reform of No Child Left Behind was an important start, and together, we’ve increased early childhood education, lifted high school graduation rates to new highs, and boosted graduates in fields like engineering. In the coming years, we should build on that progress, by providing Pre-K for all, offering every student the hands-on computer science and math classes that make them job-ready on day one, and we should recruit and support more great teachers for our kids.”

- President Barack Obama  
January 12, 2016



# Preparing students with STEM skills



- \$3.0 billion for Federal science, technology, engineering, and mathematics (STEM) education programs in the 2017 Budget.
- Agencies continue to implement the Federal STEM Education 5-Year Strategic Plan.
- NSF invests \$332 million for graduate fellowships, \$59 million for graduate traineeships, and \$109 million for improving undergraduate education in the 2017 Budget.



# STEM for All

## Giving all students the opportunity to excel in STEM

- Broadly implement active learning and improved STEM teaching, which fosters more learning by all students, including those typically underrepresented in STEM.
- Reduce the impact of biases about who can be successful in STEM.
  - Convening federal STEM agencies to identify best practices and training that mitigate the effects of bias in the workplace
  - Work with the media and entertainment industry to raise awareness in changing the image of who does STEM
- Provide broad access to computer science and advanced STEM courses.



# Computer Science for All

- \$4 billion for states and \$100 million for districts in the 2017 Budget for Computer Science For All to increase access to K-12 CS education.
- NSF and the Corporation for National and Community Service are starting the effort this year with more than \$135 million in investments. These investments will take place over the next five years.





*THANK YOU*

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