The 2016 Budget: Investing in America's Future

Kei Koizumi

Assistant Director for Federal R&D,
White House Office of Science & Technology Policy

"Twenty-first century businesses will rely on American science and technology, research and development."

- President Barack Obama
January 20, 2015

The 2016 Budget:

- Continues our commitment to world-class science and research
- Invests in innovation
- Improves Americans' health
- Makes America a magnet for jobs
- Invests in homegrown clean energy
- Takes action on climate change
- Prepares students with STEM skills

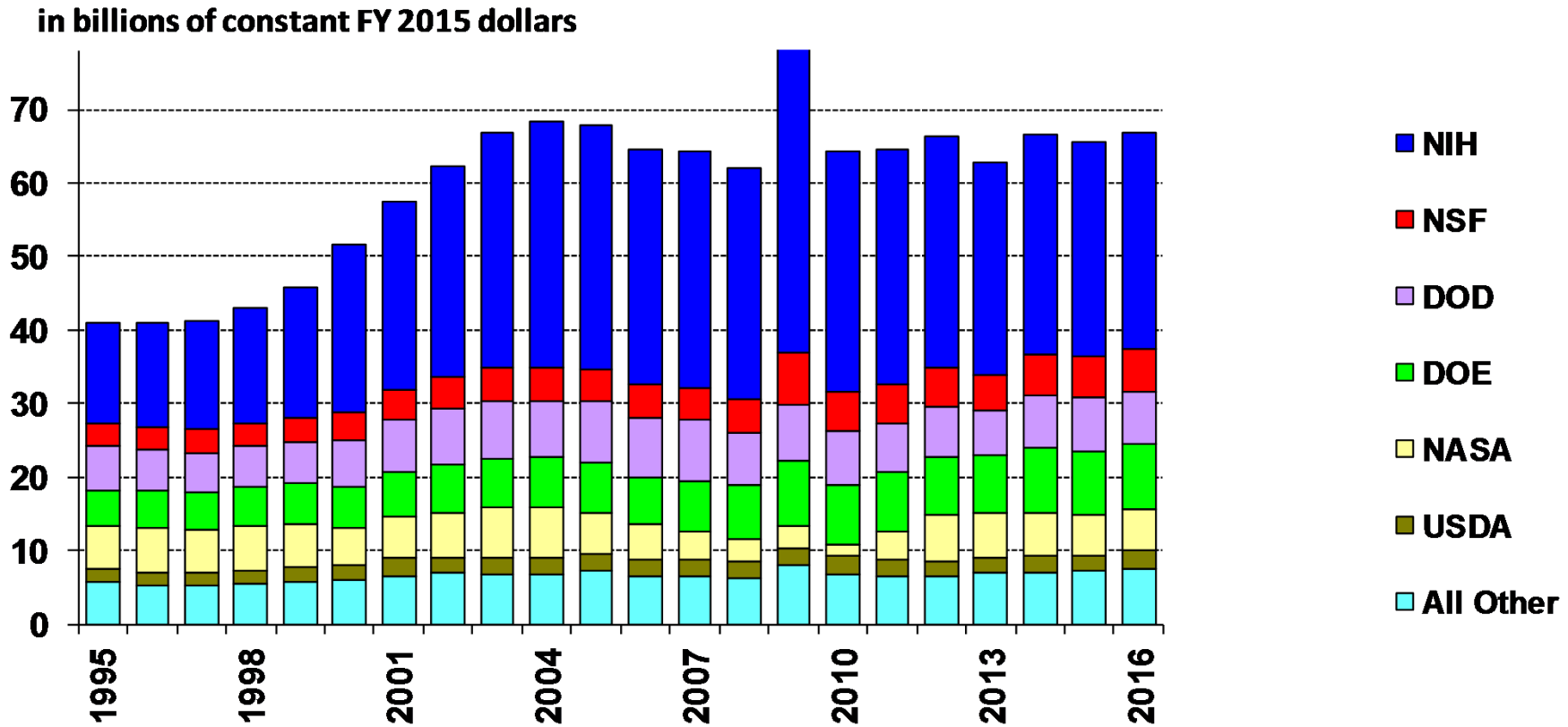
High-Risk High-Reward Research

- Also known as potentially transformative research; high-risk, high-return research; transformative research; revolutionary research; HRHR research. Sometimes referred to as the "DARPA model."S

- "[R]esearch driven by ideas that have the potential to radically change our understanding of an important existing scientific or engineering concept or leading to the creation of a new paradigm or field of science or engineering. Such research also is characterized by its challenge to current understanding or its pathway to new frontiers." – National Science Board 2007

- The Administration helped to expand Federal funding for HRHR research through the Recovery Act, and dedicated support for HRHR research is now part of the Federal R&D portfolio.

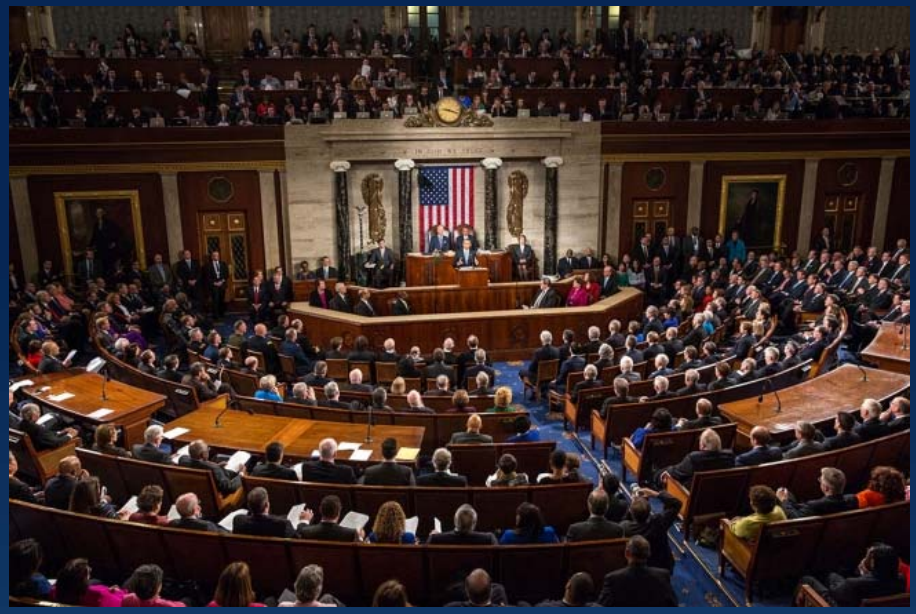
Federal Research by Agency, FY 1995-2016



FY 2009 figures include Recovery Act appropriations.
Research includes basic research and applied research.
February 2015 OSTP

Investing in Innovation for National Security

- $12.3 billion for DOD's Science & Technology (S&T) program of basic research, applied research, and advanced technology development.
- $3.0 billion for the Defense Advanced Research Projects Agency (DARPA) to maintain DOD's critical role in fostering breakthrough approaches for discovering promising technologies.
- The Budget invests in defense-related S&T across a diverse portfolio, including advanced manufacturing, energy, cybersecurity, robotics, a safe and secure nuclear arsenal, explosives detection, and biodefense.
- The Budget includes $243 million for civilian R&D to support innovative cybersecurity technologies.



"I want the country that eliminated polio and mapped the human genome to lead a new era of medicine -- one that delivers the right treatment at the right time. In some patients with cystic fibrosis, this approach has reversed a disease once thought unstoppable. So tonight, I'm launching a new Precision Medicine Initiative to bring us closer to curing diseases like cancer and diabetes, and to give all of us access to the personalized information we need to keep ourselves and our families healthier. We can do this."

- President Barack Obama
January 20, 2015

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

- The 2016 Budget provides $215 million to launch a Precision Medicine Initiative with funding from HHS agencies.
- The BRAIN Initiative will continue with a Federal commitment of over $300 million from NIH, DARPA, and NSF.
- The 2016 Budget provides over $1.2 billion for a government-wide effort to combat antibiotic-resistant bacteria.
- $31.3 billion for the National Institutes of Health (NIH) to support high-quality, innovative biomedical research.
- The Budget provides $82 million at USGS, EPA, and USDA to address pollinator health, including colony collapse disorder.

"Manufacturing is actually growing faster than the rest of the economy... And the question is, how do we keep that progress going? How do we build on it? That's why we're working to grow the jobs of tomorrow through a national network of manufacturing hubs."

- President Barack Obama

January 9, 2015

Advanced Manufacturing in the 2016 Budget

Making America a magnet for jobs

Support advanced manufacturing R&D

- $2.4 billion in advanced manufacturing R&D in the 2016 Budget.
- These investments will expand R&D on innovative manufacturing processes, advanced industrial materials, and robotics.
- Over $400 million for the DOE Advanced Manufacturing Office.

Establish a national network of manufacturing innovation institutes

- The Budget builds on the 9 manufacturing innovation institutes already funded through 2015 with more than $350 million in additional discretionary funds to support 7 new institutes.
- The Budget includes a mandatory proposal of $1.9 billion to fund the remaining 29 institutes in the national network for a total of 45.

Energy R&D Highlights in the 2016 Budget

Investing in homegrown clean energy

Clean Energy Technology

- The Budget provides $7.4 billion for clean energy technology programs across the Federal government.

- . $2.7 billion for DOE Energy Efficiency and Renewable Energy (EERE) and $325 million for ARPA-E.

Hydraulic Fracturing

- $47 million for DOE, EPA, and USGS for research to reduce health and environmental impacts from hydraulic fracturing.

Carbon Capture and Storage

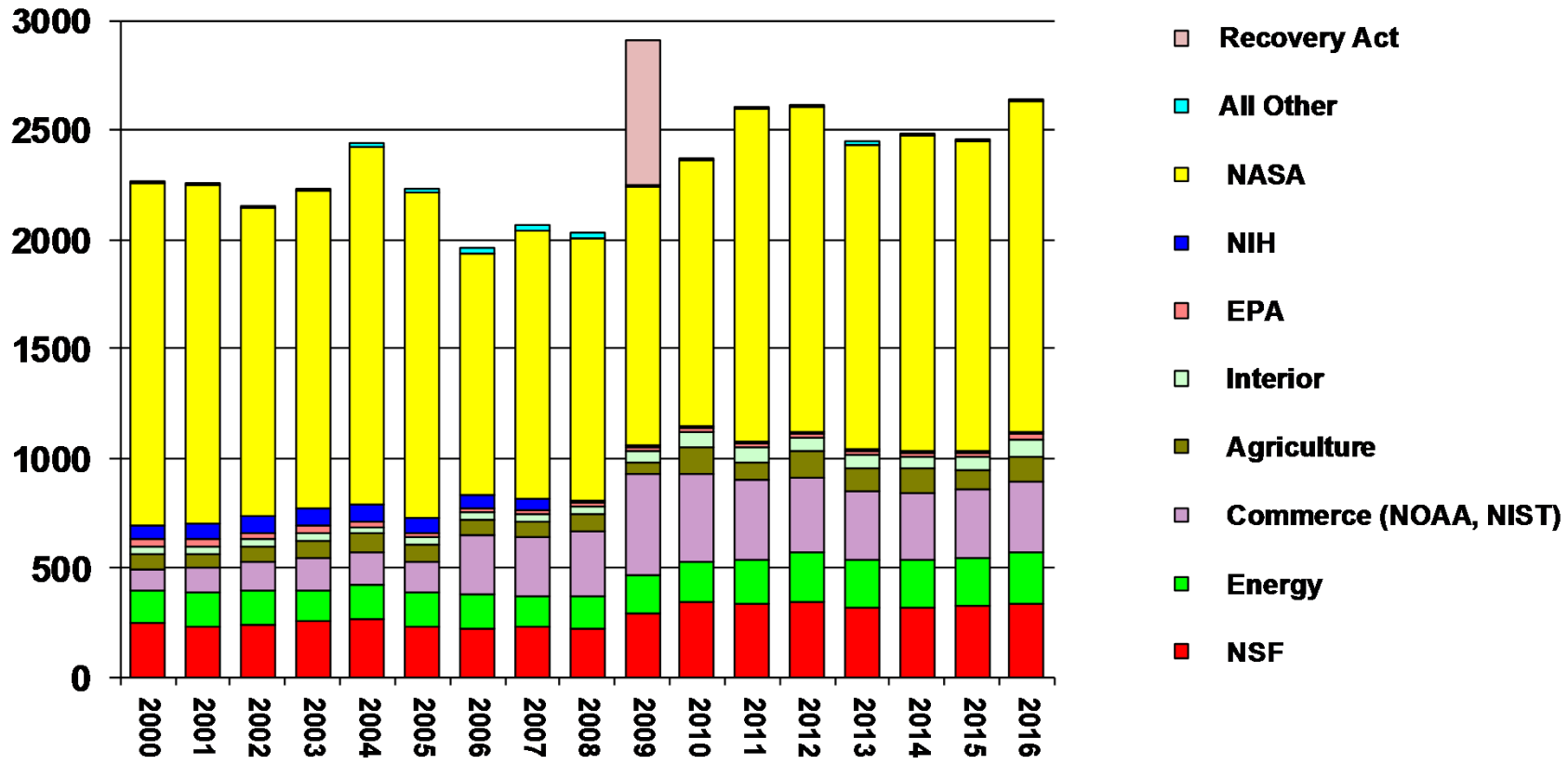
- Nearly $500 million in cleaner energy from fossil fuels, focused predominantly on development and deployment of carbon capture and storage technologies.

- The Budget proposes a $2 billion carbon capture investment and sequestration tax credit.

"And the best scientists in the world are all telling us that our activities are changing the climate, and if we don't act forcefully, we'll continue to see rising oceans, longer, hotter heat waves, dangerous droughts and floods, and massive disruptions that can trigger greater migration and conflict and hunger around the globe. The Pentagon says that climate change poses immediate risks to our national security. We should act like it. "

- President Barack Obama
January 20, 2015

US Global Change Research Program

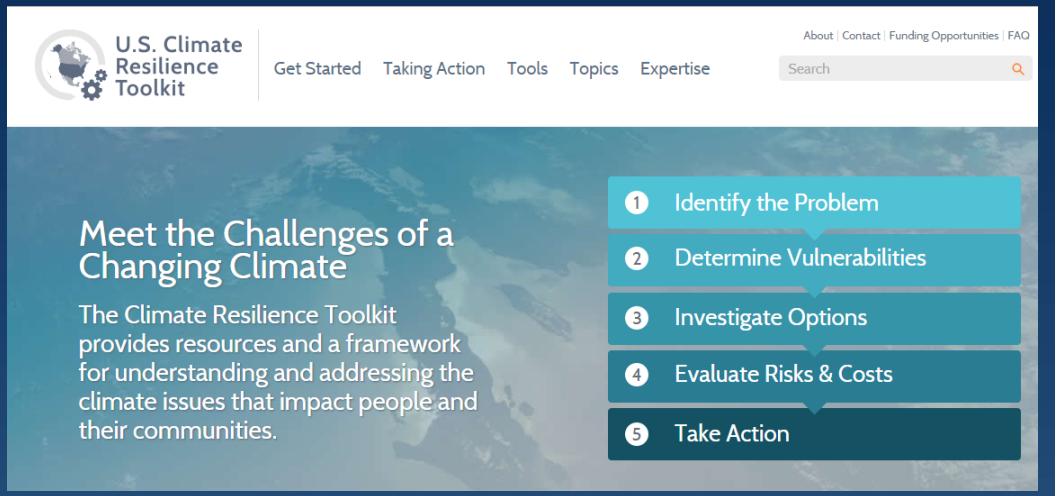


in millions of constant FY 2015 dollars

FEBRUARY 2015 OSTP

Taking action on climate change in the 2016 Budget

- $2.7 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 2016 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.
- The President's Budget provides $20 million to continue expanding and improving enhance and improve the recently-released Climate Resilience Toolkit.



Preparing students with STEM skills

- $3 billion for Federal science, technology, engineering, and mathematics (STEM) education programs in the 2016 Budget.
- Agencies will coordinate to implement the Federal STEM Education 5-Year Strategic Plan.
- $202 million for an expanded Department of Education Math and Science Partnerships program.
- NSF has a $135 million effort to improve retention of undergraduate STEM majors and improve undergraduate teaching and learning in STEM subjects.
- $338 million in NSF for the Graduate Research Fellowship program.
- The Budget establishes a Dept. of Education $125 million competitive program to help communities across America launch Next-Generation High Schools that will be laboratories for cutting-edge STEM teaching and learning.

"Fifteen years into this new century, we have picked ourselves up, dusted ourselves off, and begun again the work of remaking America. We have laid a new foundation. A brighter future is ours to write. Let's begin this new chapter together -- and let's start the work right now."

- President Barack Obama
January 20, 2015

THANK YOU

www.whitehouse.gov/ostp
@whitehouseostp