

Science & Technology Policy in the Obama Administration

John P. Holdren

Assistant to the President for Science and Technology
Director, Office of Science and Technology Policy
Co-Chair, President's Council of Advisors on Science and Technology



Remarks to the 2013-14 AAAS Fellows
September 10, 2013

**“We will restore science to
its rightful place...”**

Barack Obama, January 20, 2009



The place of science on the agenda

S&T are central to meeting key challenges of

- economic development & sustainable growth
- biomedicine & health-care delivery
- clean, safe, reliable, & affordable energy
- climate-change mitigation & adaptation
- competing uses of land & water
- the health & productivity of the oceans
- national & homeland security

as well as lifting the human spirit through discovery, invention, & expanded understanding.

The place of government in S&T

- Most basic research in natural and social sciences is done in universities, but the Federal government is the biggest funder of such research.
- Most applied research and development is done by private firms and funded by them, but Federal and state & local governments have important roles in shaping the policy & economic environments that encourage or discourage and help or hinder this private-sector R&D.

Policy for S&T in the Federal gov't...

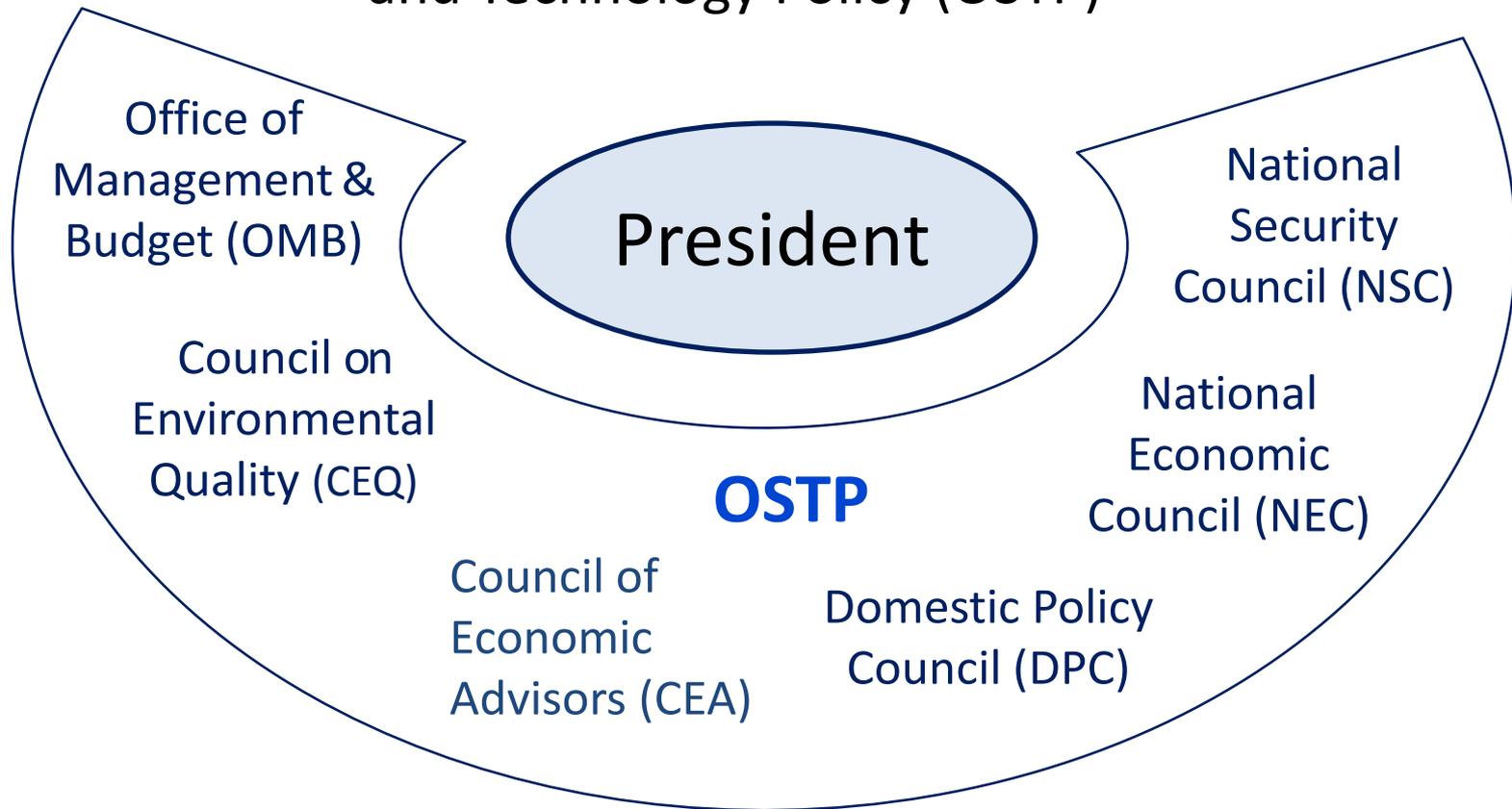
- is a shared responsibility of the Congress and the Executive Branch.
- Key Congressional committees are House Science, Technology, and Space and Senate Commerce, Justice, and Science, and of course the relevant appropriations committees and subcommittees.
- There's a long history of bipartisan agreement & cooperation on S&T issues (with some exceptions, of course).

Key executive branch S&T actors

- Dept of Defense (incl DARPA)
- Dept of HHS (NIH, CDC, FDA)
- Dept of Energy (incl NNSA, ARPA-E)
- Dept of Commerce (incl NOAA, NIST)
- Dept of Agriculture (incl ARS, NIFA)
- Dept of Interior (incl USGS)
- Dept of Homeland Security
- NASA
- National Science Foundation
- Environmental Protection Agency
- Smithsonian Institution

The place of science in the White House...

...is centered in the Office of Science and Technology Policy (OSTP)



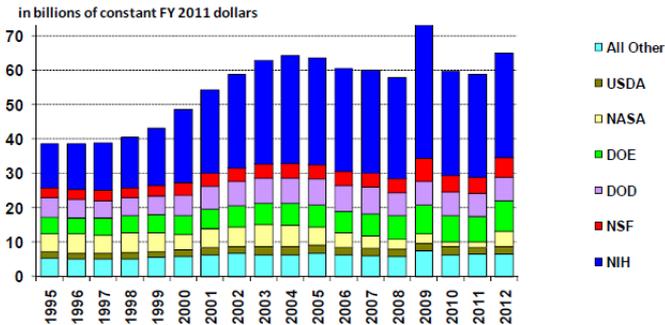
EOP also includes Offices of: Vice President, Chief of Staff, Cabinet Affairs, Communications, Intergovernmental Relations, Public Engagement, Social Secretary, US Trade Representative, Energy & Climate Change, and more.

OSTP: two major responsibilities

1. Policy for science and technology

Analysis, recommendations, & coordination with other White House offices on R&D budgets & related policies, S&T education and workforce issues, interagency S&T initiatives, broadband, open government, scientific integrity ...

Federal Research by Agency, FY 1995-2012



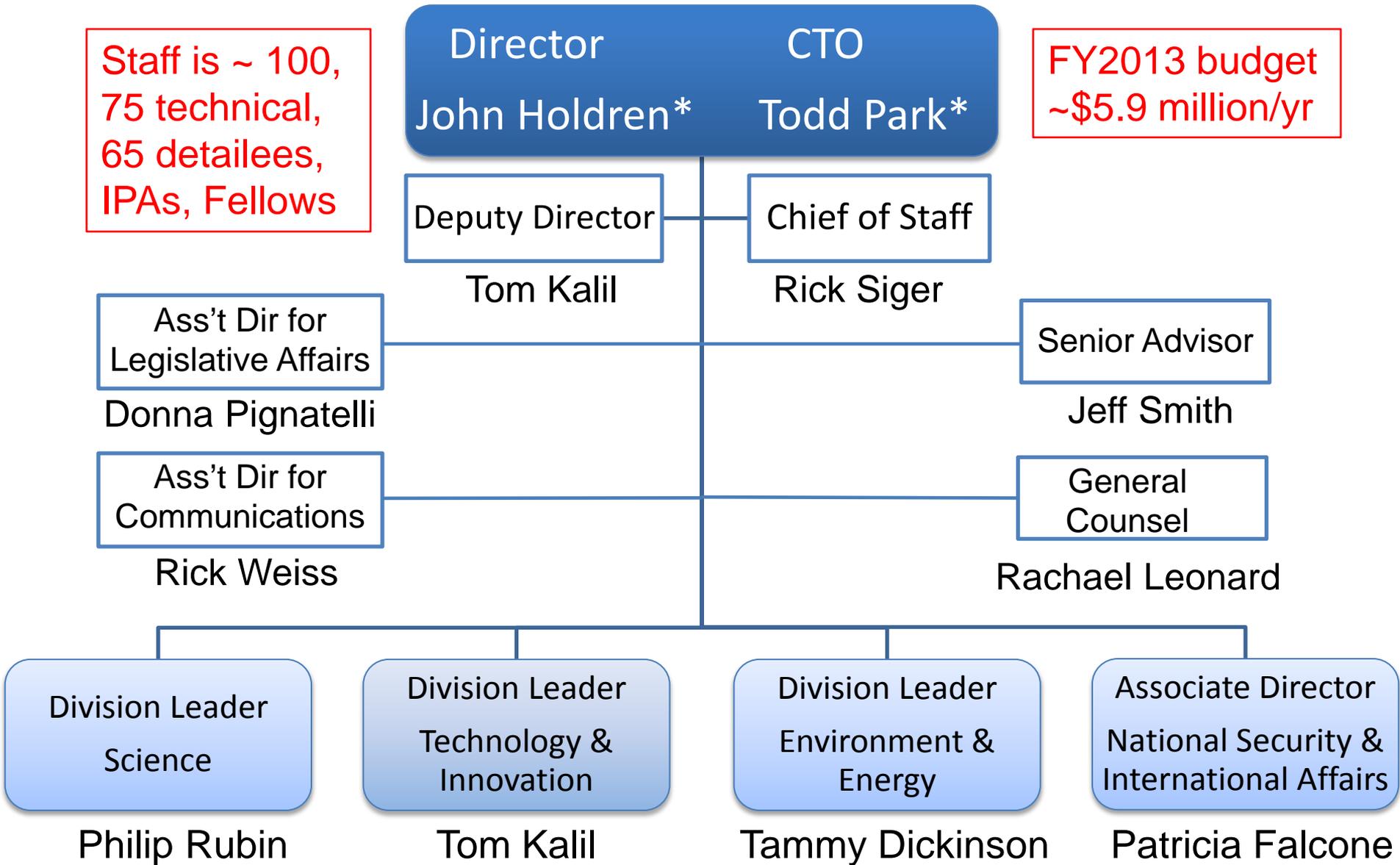
2. Science and technology for policy

Independent advice for the President about S&T germane to all policy issues with which he is concerned

OSTP's specific responsibilities also include...

- providing White House oversight for NSF and NASA;
- chairing and managing the National Science & Technology Council (NSTC);
- providing administrative and analytical support for the President's Council of Advisors on Science & Technology (PCAST);
- Jointly administering (with CEQ) the National Oceans Council (NOC);
- carrying out a range of functions in support of National Security and Emergency Preparedness Communications; and
- coordinating & overseeing US cooperation in S&T with other countries

OSTP structure



Staff is ~ 100,
75 technical,
65 detailees,
IPAs, Fellows

FY2013 budget
~\$5.9 million/yr

Director
John Holdren*
CTO
Todd Park*

Deputy Director
Tom Kalil

Chief of Staff
Rick Siger

Ass't Dir for
Legislative Affairs
Donna Pignatelli

Ass't Dir for
Communications
Rick Weiss

Senior Advisor
Jeff Smith

General
Counsel
Rachael Leonard

Division Leader
Science

Philip Rubin

Division Leader
Technology &
Innovation

Tom Kalil

Division Leader
Environment &
Energy

Tammy Dickinson

Associate Director
National Security &
International Affairs

Patricia Falcone

*Both Director Holdren and CTO Park have the rank of Assistant to the President

OSTP-managed entities

- National Science & Technology Council (NSTC)
 - Deputy secretaries & undersecretaries of cabinet departments with S&T missions, plus heads of NSF, NIH, NASA, NOAA, NIST, EPA, USGS, CDC
 - Nominally chaired by the President; chaired in practice by the OSTP Director / Science Advisor; administered by OSTP
 - Five standing committees: Science; Technology; Environment, Natural Resources, and Sustainability; National and Homeland Security; and STEM education
 - Coordinates S&T activities that cross agency boundaries, including such major initiatives as the US Global Change Research Program, the National Climate Assessment, the National Nanotechnology Initiative, and the Networking and Information Technology R&D program

OSTP-managed entities (continued)

- National Oceans Council (NOC, jointly with CEQ)
 - Responsible for implementing the National Policy on Oceans, Coasts, and the Great Lakes
- Emerging Technologies Interagency Policy Coordinating Committee (ETIPCC, jointly with OMB/OIRA & USTR)
 - Addresses the intersection of science & regulation around infotech, biotech, and nanotech
- Six ministerial-level Joint Commissions on S&T Cooperation
 - With Brazil, China, India, Japan, Korea, Russia
- S&T Working Group, US-Russia Presidential Commission
- US-China Dialogue on Innovation Policy

OSTP-managed entities (continued)

- President's Council of Advisors on Science and Technology (PCAST)
 - A PCAST or its equivalent has existed under every U.S. President since Eisenhower.
 - The 1st-term PCAST had 21 members, 20 of them, including one Co-Chair, being part-time, uncompensated Special Government Employees, appointed by the President.
 - The 21st member and other Co-Chair is the Assistant to the President for S&T / OSTP Director.
 - PCAST's function is to provide an additional high-caliber source of S&T advice for the President and to help link OSTP to the outside S&T community.
 - Administrative support for PCAST is provided by an Executive Director and two deputies housed in OSTP.

The members of the 1st-term Obama PCAST



J. Holdren



E. Lander



W. Press



M. Savitz



R. Bierbaum



C. Cassel



C. Chyba



S. J. Gates



M. Gorenberg



S. A. Jackson



R. Levin



C. Mirkin



M. Molina



E. Moniz



C. Mundie



E. Penhoet



B. Schaal



E. Schmidt

For the second term,
Shaw & Zewail have
retired, and...



D. Schrag



D. E. Shaw



A. Zewail

...Moniz became Sec of
Energy. Replacements
are pending.

PCAST studies in the Obama Administration

- The science and technology of 2009-H1N1 influenza
- Reengineering the influenza vaccine production enterprise
- Assessment of the National Nanotechnology Initiative (NNI)
- K-12 STEM education
- Accelerating the Pace of Change in Energy Technologies
- Realizing the Full Potential of Health IT to Improve Healthcare
- Networking and Information Technology R&D
- Ensuring American leadership in advanced manufacturing
- Sustaining biodiversity and other environmental capital
- Strengthening STEM teaching in the first two college years
- The Advanced Manufacturing Partnership (AMP)
- Managing government-owned spectrum for economic growth
- Accelerating drug development and approval
- The future of the US S&T enterprise
- Agricultural preparedness and related R&D
- Bolstering cybersecurity (classified)
- Options for early action on climate and energy



President Obama has embraced a high proportion of PCAST's recommendations.

Implementation of PCAST studies

PCAST recommendations embodied in the 2010-2014 budgets:

- Prepare an additional 100,000 K-12 STEM teachers by the end of the decade; launch a STEM Master Teacher Corps
- Launch an Advanced Research Projects Agency / Education (ARPA-ED)
- Initiate improvements to influenza-vaccine manufacturing to shorten production timeframe
- Conduct a DOE Quadrennial Technology Review; lay groundwork for interagency Quadrennial Energy Review (QER)
- Accelerate adoption of Electronic Health Records; develop standards for health-information exchange over the internet
- Expand research to foster the next revolution in IT, to help transform healthcare, energy efficiency, education, and transportation
- Launch a network of advanced-manufacturing centers
- Require increased clearing and sharing of electromagnetic spectrum held by Federal agencies to create more commercial opportunity

3-13 climate/energy report informed POTUS's 6-13 Climate Action Plan

Restoring science to its rightful place: other metrics

- Presidential appointments: more Nobel laureates and members of NAS, NAE, IOM than any previous administration
- Presidential podium: more attention to science, technology, and innovation in speeches than any previous president
- Presidential events: more meetings with STEM students, teachers, mentors, young scientists & engineers, astronauts, Nobelists, high-tech entrepreneurs; 3 White House Science Fairs; ...
- ST&I strategies and initiatives:
 - American Innovation Strategy; Advanced Manufacturing Partnership, Startup America; National Robotics Initiative; Materials Genome Initiative
 - Educate to Innovate; Change the Equation; STEM Master Teacher Corps
 - Data.gov; big data; public access; US Ignite; Presidential Innovation Fellows
 - National Ocean Policy; Secure Energy Blueprint; Climate Action Plan
 - Course correction for NASA

A course correction for NASA

- The NASA we inherited
 - “Constellation” human-exploration program hopelessly behind schedule & over budget
 - NASA science, technology, robotic missions, telescopes, Earth observation, aeronautics, and the ISS all imperiled by Constellation’s overruns
- Obama’s re-balanced space policy
 - “Constellation” slimmed down & retargeted, emphasizing visits to a near-Earth asteroid and Mars
 - commercial crew/cargo encouraged for low Earth orbit
 - ISS operation extended to 2020 or beyond
 - support for neglected/imperiled programs restored



SpaceX Corporation's Dragon capsule docks w the ISS, May 2012



Following the money: Federal S&T budgets

- Huge boost for S&T (~\$100B) in the Recovery Act.
- S&T investment goals: double the budgets of 3 basic science agencies; make the Research & Experimentation Tax Credit permanent; lift public + private investment in R&D to $\geq 3\%$ of GDP.
- The President's 2010, 2011, and 2012 Budgets would have put us on track to meet the goals.
- There were setbacks in 2011 & 2012 appropriations because of Budget Control Act spending caps.
- Despite setbacks, S&T fared better in 2011 and 2012 appropriations than most other sectors; 2013 CR continued 2012 levels.

R&D in the President's FY14 Budget

Budget authority in billions of current dollars	FY12 actual	FY14 proposed	percent change
Total R&D	140.9	142.8	+1.3%
<i>defense</i>	77.2	73.2	-5.2%
<i>nondefense</i>	63.7	69.6	+9.2%
Basic research	31.7	33.2	+4.5%
<i>defense</i>	2.1	2.2	+5.9%
<i>nondefense</i>	29.7	31.0	+4.4%
Applied research	31.6	35.0	+10.6%
<i>defense</i>	7.1	7.4	+4.1%
<i>nondefense</i>	24.6	27.6	+12.4%

S&T priorities for the President's 2nd term

- S&T for the economy: advancing economic recovery and job creation through S&T-based innovation to drive advanced manufacturing and new/improved products
- S&T for biomedicine and health: helping to implement the Affordable Care Act so as to get better healthcare outcomes for more Americans at lower costs
- S&T for energy and climate: advancing the coupled agendas of clean, efficient, reliable, affordable energy and climate-change mitigation/preparedness/resilience
- S&T for open government: using information science & technology to improve access to government data & services and increase public participation in government
- STEM education: strengthening the next generation of discoverers, innovators, workers, and citizens

The challenges ahead

- Sustaining support for S&T under budget cuts

Particularly difficult will be sustaining support for...

- NASA (JWST, advanced technology)
- NOAA (polar-orbiting satellites, climate service),
- DOE (CO₂ capture, fusion)
- NSF (basic research, social science)
- USDA (peer-reviewed agricultural science)
- EPA & FDA (regulatory science)
- USGCRP (climate science, sustainability science)
- international cooperation in S&T

NIH funding is less contentious but still hard to increase in percentage terms because it's already so large.

The challenges ahead (continued)

- Accelerating translation of scientific & engineering advances into economic and social benefits through closer public-private-academic partnerships
- Advancing a coherent energy-climate policy with increased public & private investments in both mitigation and adaptation
- Addressing systemic weaknesses in STEM-ed weak teacher competence in K-12, inertia w respect to adopting more effective methods at college level
- Getting key messages across why science & engineering matter (to economy, health, environment, security), how science works



<http://www.ostp.gov>