

## **Science in its Rightful Place: Much Accomplished, Much Still to Do**

**John P. Holdren**

Science and Technology Advisor to the President  
Director, White House Office of Science and Technology Policy



**AAAS Forum on Science and Technology Policy**

**Washington, DC • April 14, 2016**

## **The new President's pledge in 2009**

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

Barack Obama, January 20, 2009



**“Science” in that line was short for  
“Science, Technology, & Innovation”  
(ST&I)**

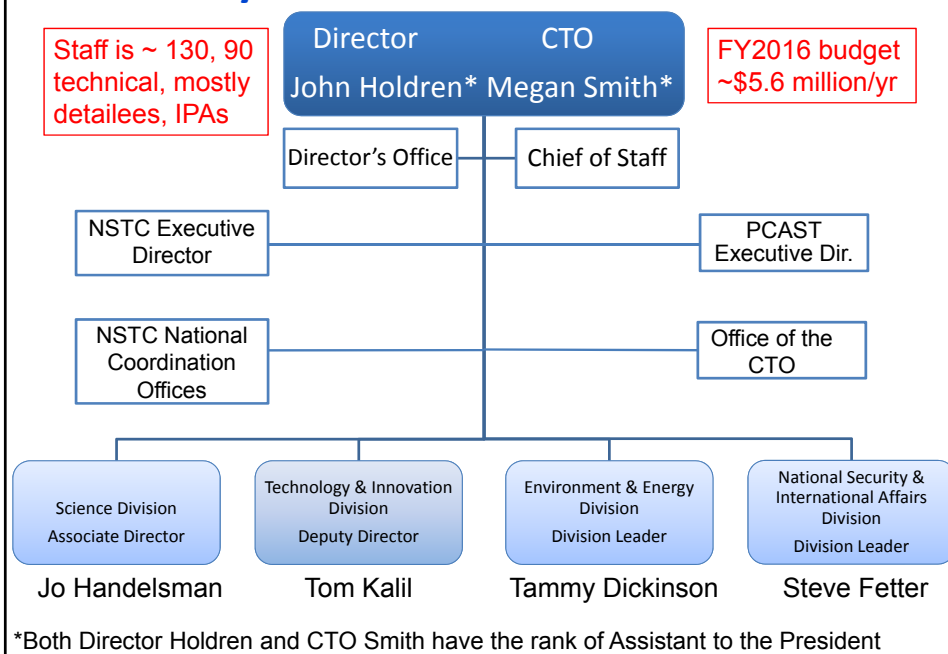
### **What he’s done to keep the pledge**

- Placed early priority on...
  - scientific integrity
  - STEM education & inclusion
  - open data & public access
  - tech innovation for economic recovery & growth
  - energy & climate change
  - advancing biomedicine & public health
  - strengthening international cooperation in S&T
  - rebalancing NASA in favor of science, advanced tech
  - exploiting modern IT and private-sector innovation talent to improve the responsiveness & effectiveness of gov’t

## Keeping the pledge (continued)

- Put a huge boost for ST&I in the Recovery Act, then protected annual ST&I budgets despite tight constraints
- To help implement it all, rebuilt White House leadership in ST&I
  - Created new WH positions: CTO, CIO, CDS, CDO
  - Restored OSTP Director's dual hat as AP for S&T
  - Restored Environment and National Security & International Affairs to status as full OSTP divisions
  - Increased OSTP staff to an all-time high
  - Revitalized President's Council of Advisors on S&T (PCAST) and National S&T Council (NSTC)

## OSTP today



## Keeping the pledge (continued)

- Recruited top ST&I talent to POTUS-appointed posts
  - 5 Nobel Laureates in science; another 25+ members of National Academies; VPs of NAS & NAE to PCAST, plus Schmidt, Mundie
  - scientists & engineers heading Dept's of Energy & Interior, as well as EPA and NIH, NSF, NOAA, NIST, USGS
- Used bully pulpit & WH venue to promote ST&I
  - Both inaugural addresses & every State of the Union, two addresses to NAS annual meetings; multiple major speeches on ST&I around the country (on space, energy, manufacturing...)
  - 6 White House Science Fairs, 2 WH Astronomy Nights for Kids, East Wing ceremonies & Oval Office welcomes for Medalists of Science and Technology & Innovation, US Nobelists & Kavli Prize winners, Intel finalists, middle-school mathletes...
- Launched unprecedented number of ST&I initiatives focused on national & global challenges

## POTUS events around STEM-ed and ST&I



1st WH Astronomy Night for Kids



Mathletes in the Oval Office



1st WH Science Fair



Honoring outstanding K-12 science teachers



Visiting MIT's Energy Lab

## Initiatives on nat'l & global challenges

### STEM EDUCATION

- Educate to Innovate
- STEM Master Teacher Corps
- 100kin10
- STEM Inclusion Initiative
- Computer Science for All

### INFOTECH / COMPUTING

- ConnectED
- Big Data Initiative
- Nat'l Strategic Computing Initiative

### INNOVATION FOR THE ECONOMY

- American Innovation Strategy
- Startup America
- Data.gov
- Challenge.gov
- Advanced Mfg Partnership / Nat'l Network for Mfg Innovation

### BIOMEDICINE & HEALTH

- Neuroscience / BRAIN Initiative
- Combating Antimicrobial Resistance
- Precision Medicine Initiative (PMI)
- Cancer Moonshot

### ENERGY & ENVIRONMENT

- New fuel-economy/CO<sub>2</sub> standards
- ARPA-E, Energy Innovation Hubs
- National Ocean Policy
- Arctic Initiative / AESC
- Pollinator Initiative
- Climate Action Plan & COP21

### NAT'L SECURITY / INTERNAT'L S&T

- Cybersecurity Initiative
- Space Weather Strategy
- Science Envoys
- Mission Innovation

## The unfinished ST&I agenda: a partial list

- Ensuring sufficient, safe, secure, sustainable, affordable food, water, & energy for all, while reducing GHGs
- Minimizing harm from changes in climate that are no longer avoidable
- Fashioning materials from abundant elements to substitute for current uses of scarce ones
- Understanding the brain & curing its ailments
- Controlling infectious & vector-borne diseases
- Defeating cancer
- Facilitating graceful aging
- Defending the planet from killer asteroids
- Sending humans into space not just to visit but to stay

### Some persistent obstacles

- Inadequate funding for R&D (public & private)
- Inadequate translation of R&D advances into practical applications
- Under-representation of females & ethnic minorities in STEM fields
- Under-representation of ST&I talent in many Federal departments, agencies, and offices
- Poor public & policy-maker understanding of ST&I
  - the role of ST&I in meet societal challenges
  - the importance of basic research
  - the value of international cooperation

### Some big opportunities on the path ahead

- Harness the full potential of partnerships (local/state/federal, public/private/academic/civil-society, international) to overcome many of the obstacles.
- Continue the “infiltration” across the gov’t of ST&I talent by aggressive recruiting, PIFs, AAAS fellows, etc.
- Apply research on “what works” in STEM inspiration, teaching, mentoring, training to increase participation in STEM careers and create a science-savvy citizenry.
- Exploit recent advances in biomedical sciences & “big data” to drastically improve healthcare.
- Build on the momentum of COP21 and the recent rapid growth of renewable-energy deployments worldwide to fashion a global revolution in clean energy.



<http://www.ostp.gov>