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**June 2012 COGR Meeting Friday Morning Presentation - Hourihan**

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Published Date: 06/13/2012

# The Federal R&D Budget in FY 2013: An Update

Matt Hourihan

June 8, 2012

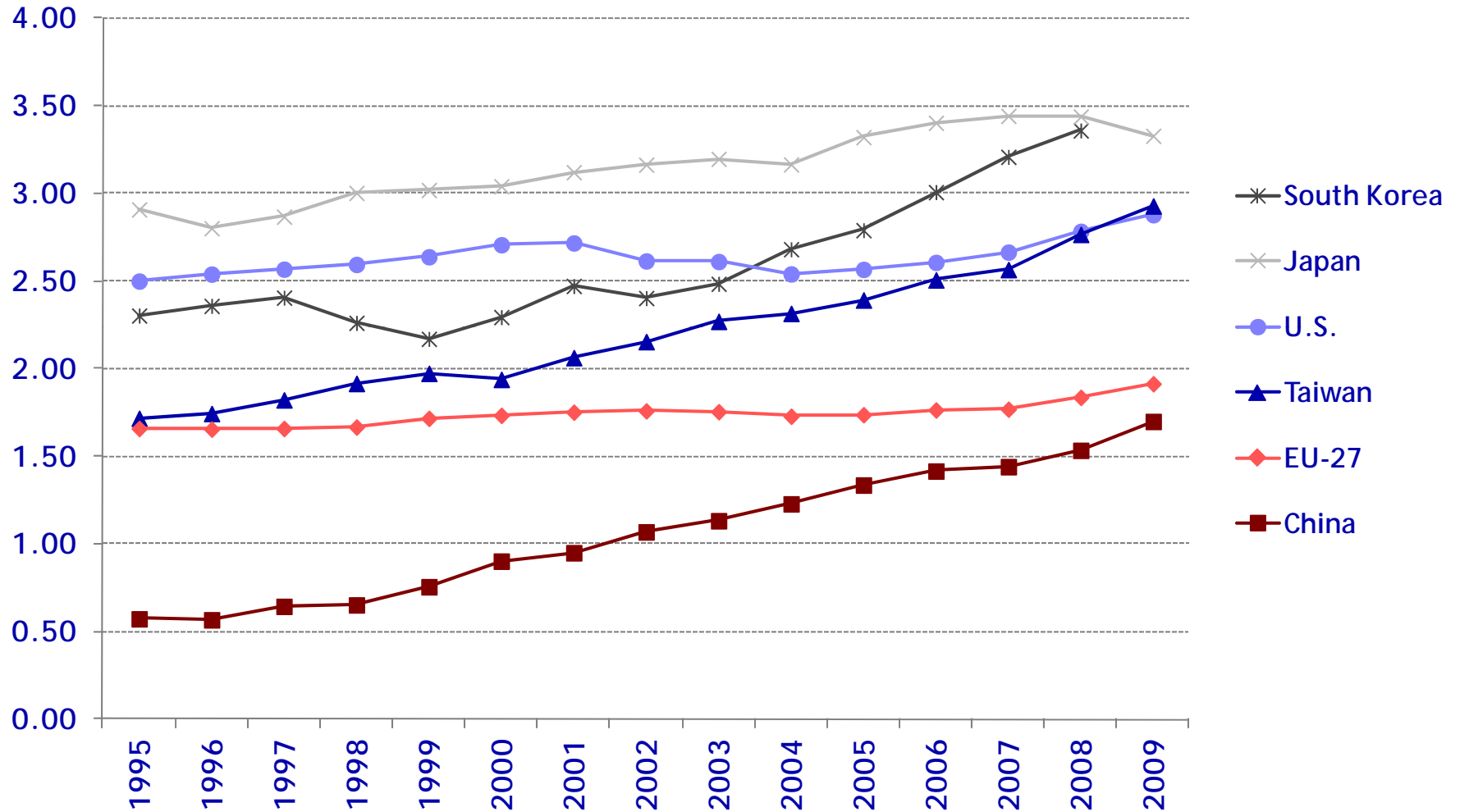
For the Council on Governmental Relations



AAAS R&D Budget and Policy Program  
<http://www.aaas.org/spp/rd>

# National R&D Investment

percent of GDP



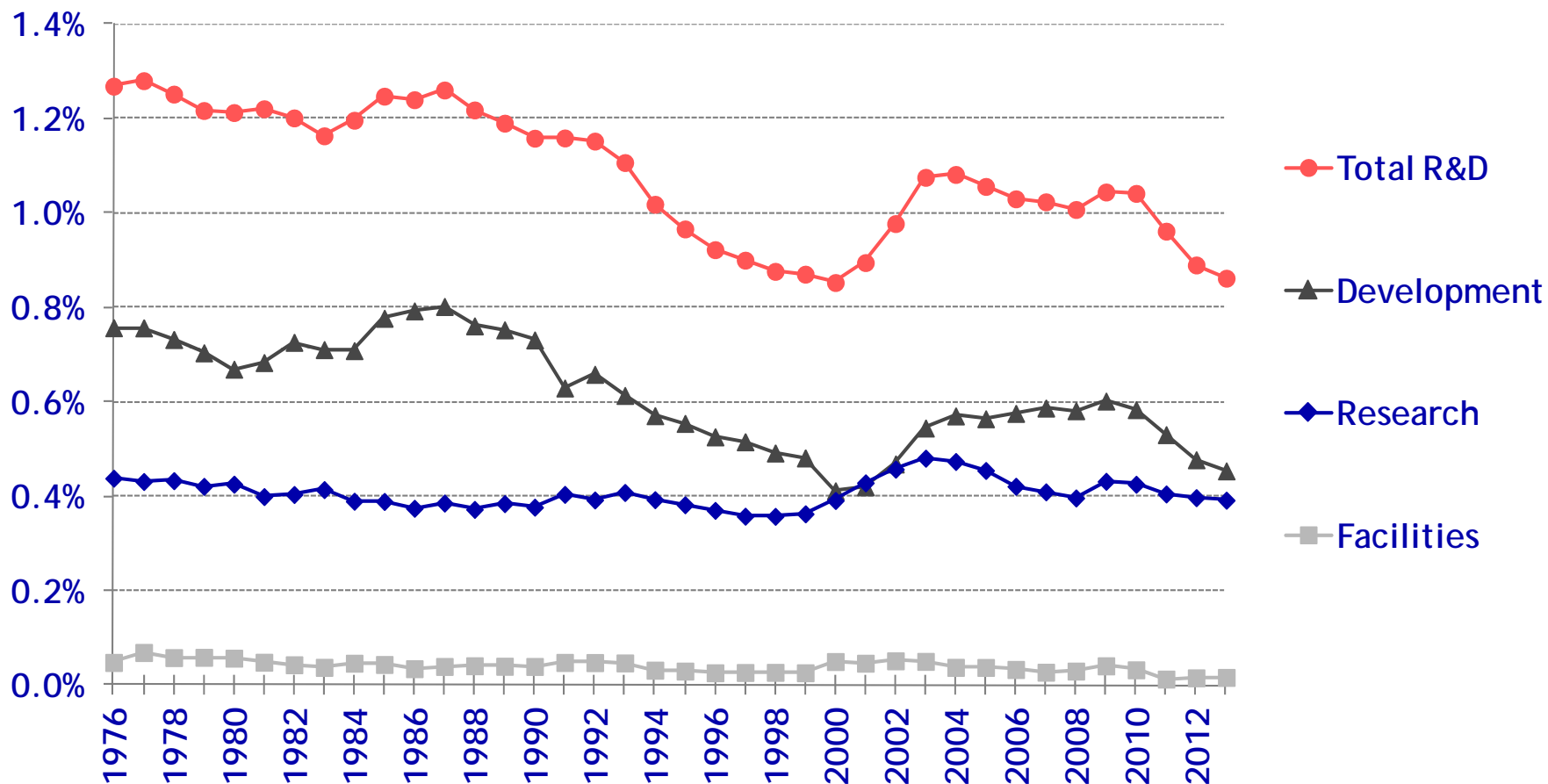
Source: OECD, Main Science and Technology Indicators, April 2011.  
2009 data for South Korea is not yet available.

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# Trends in Federal R&D

percent of GDP



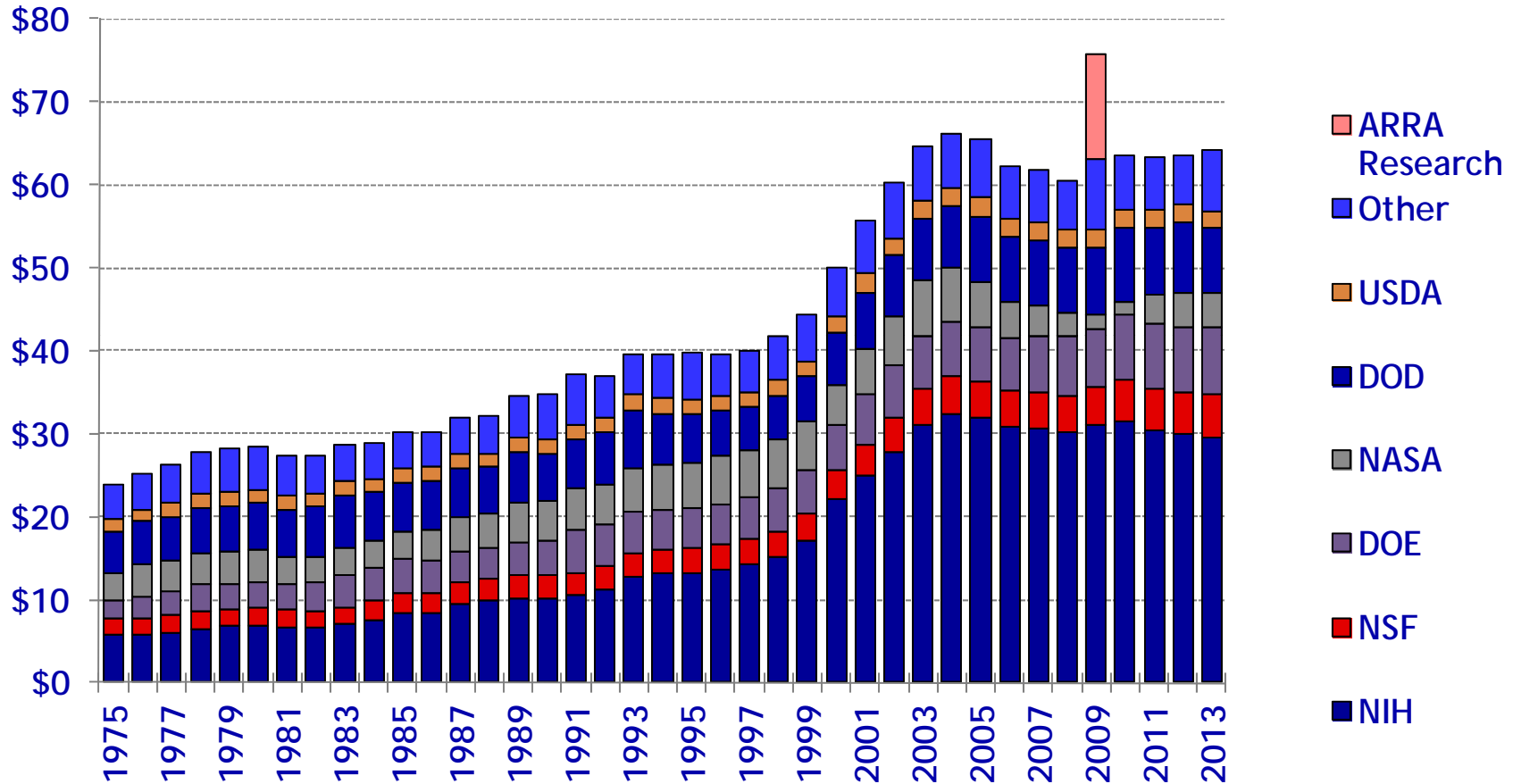
Source: Up to 1994 - National Science Foundation / National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development; 1995 to Present - AAAS Report: Research and Development series; GDP figures are from Budget of the U.S. Government FY 2013. FY 2012 and FY 2013 figures are latest estimates.

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# Trends in Research by Agency, FY 1975-2013

Billions of FY 2012 Dollars

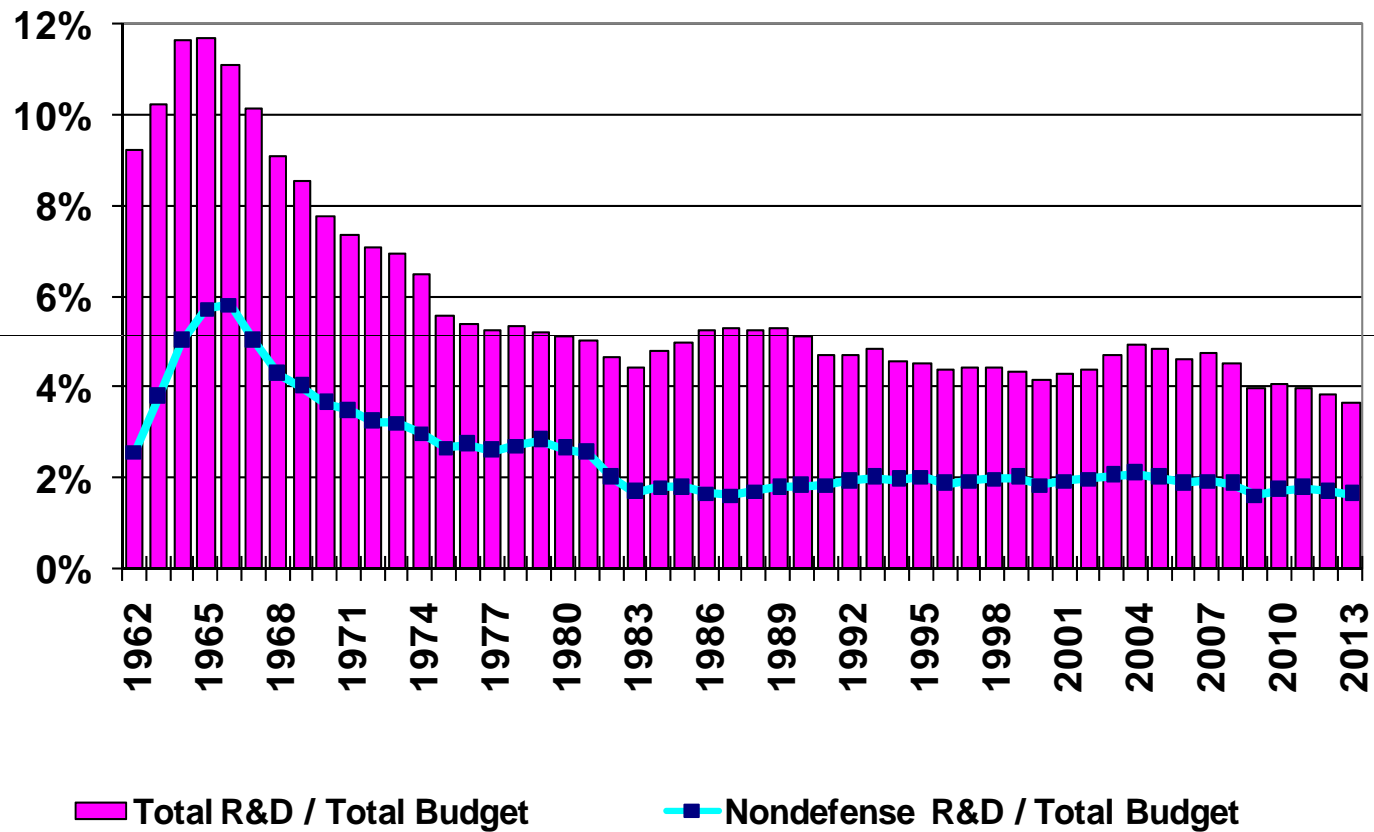


Source: 1975-1994 figures are from the NSF federal funds survey; remainder is from AAAS R&D reports. FY 2012 figures are latest estimates, FY 2013 is the President's budget.

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## R&D as Percent of the Federal Budget: FY 1962-2013, in outlays

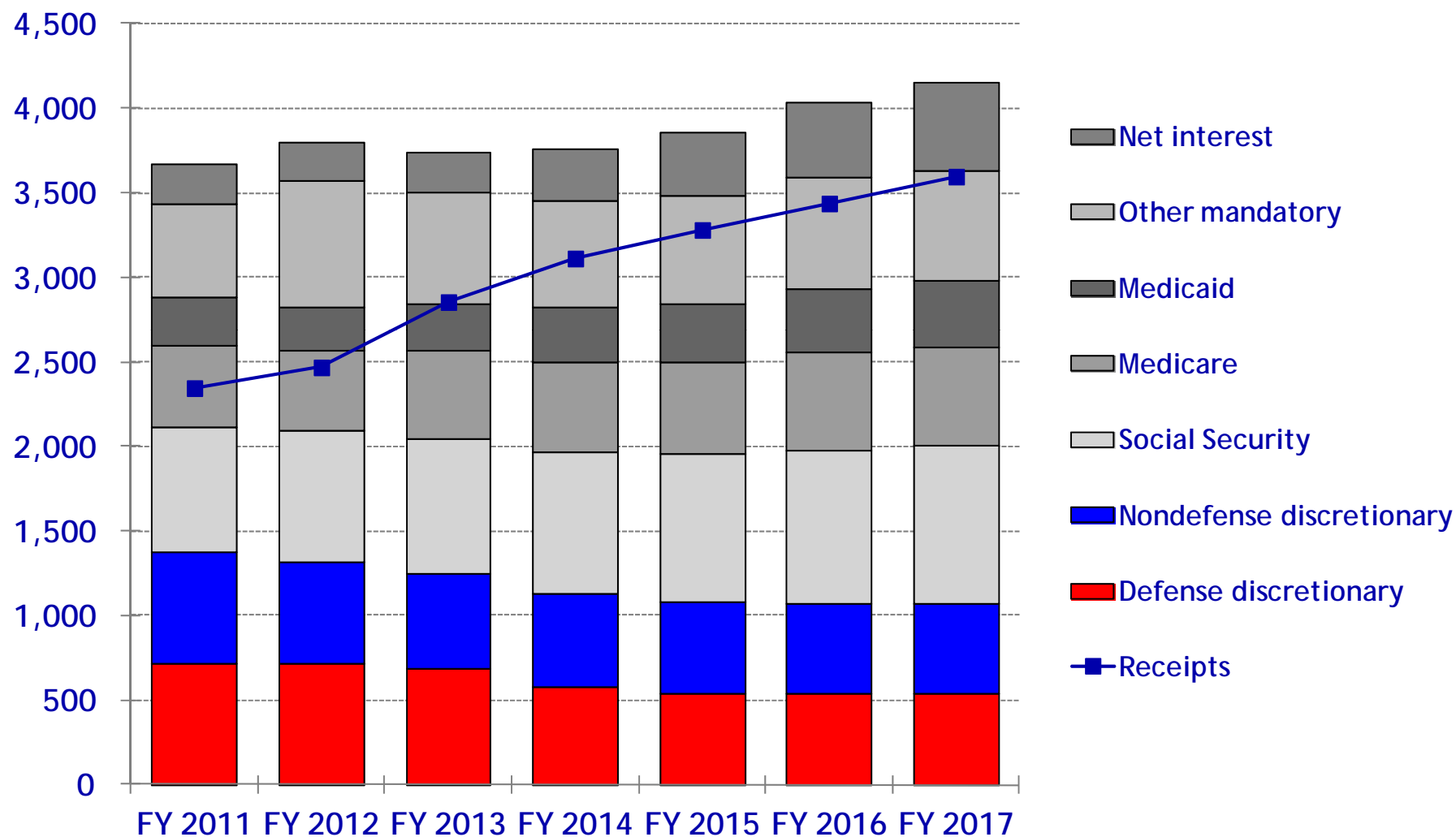


Source: AAAS, based on *Budget of the U.S. Government FY 2013*  
 Historical Tables. FY 13 data are budget proposals.  
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# FY 2013 Budget Projections

outlays in billions of constant FY 2012 dollars



Source: *Budget of the United States Government FY 2013*.  
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## Key Admin R&D Priorities

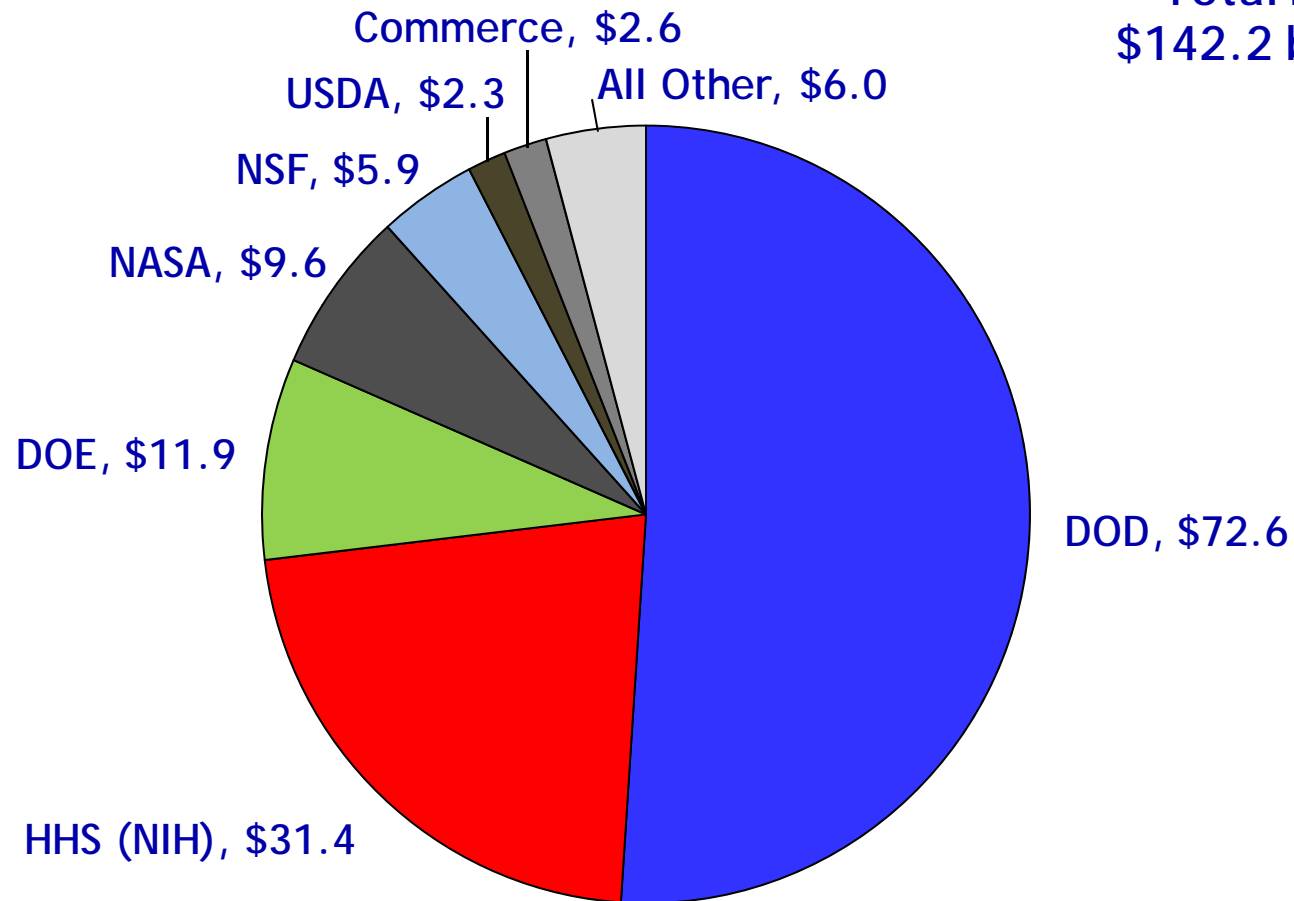
- Jobs / Innovation + Science
  - COMPETES Agencies: \$13.1 billion (+4.4% from FY2012)
  - \$2.2 billion for advanced manufacturing
  - Permanent R&D Tax Credit (~\$8 billion per year)
  - ~\$65 billion for research (+1.7% basic, +3.6% applied)
  - 100,000 STEM Educators
- A Low-Carbon Economy
  - \$6.7 billion for clean energy RDD&D
- Infrastructure
  - Wireless Innovation Fund / NextGen / Surface Transport
- Climate / Natural Resources
  - Global Change Research Program: +5.6% (\$2.6 billion)



# Total R&D by Agency, FY 2013

budget authority in billions of dollars

Total R&D =  
\$142.2 billion



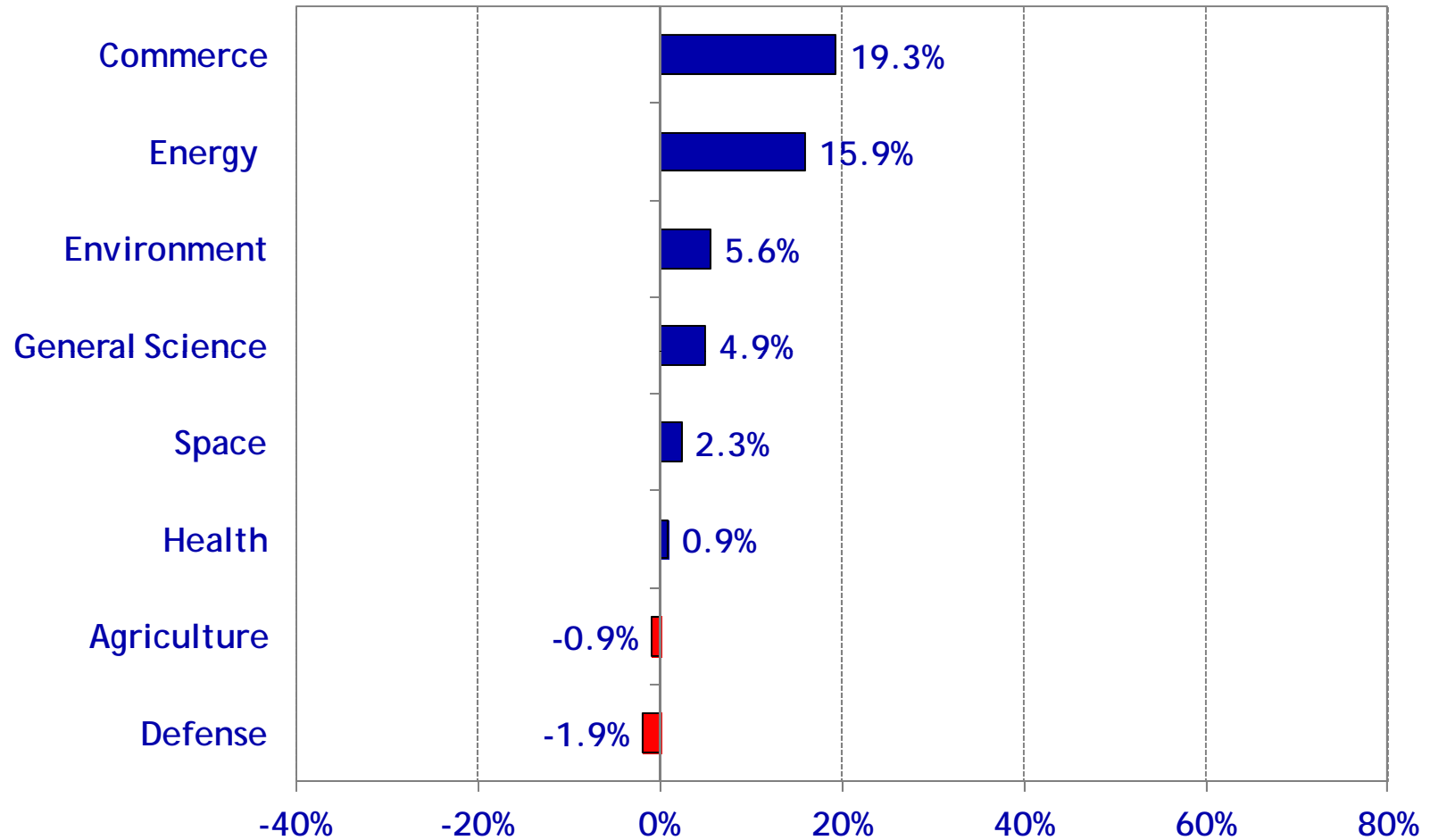
Source: OMB R&D data, agency budget justifications, and other agency documents.  
R&D includes conduct of R&D and R&D facilities.

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# FY 2013 R&D Budget Request by Function

percent change from FY 2012



Source: OMB R&D data, agency budget justifications, and agency budget documents.

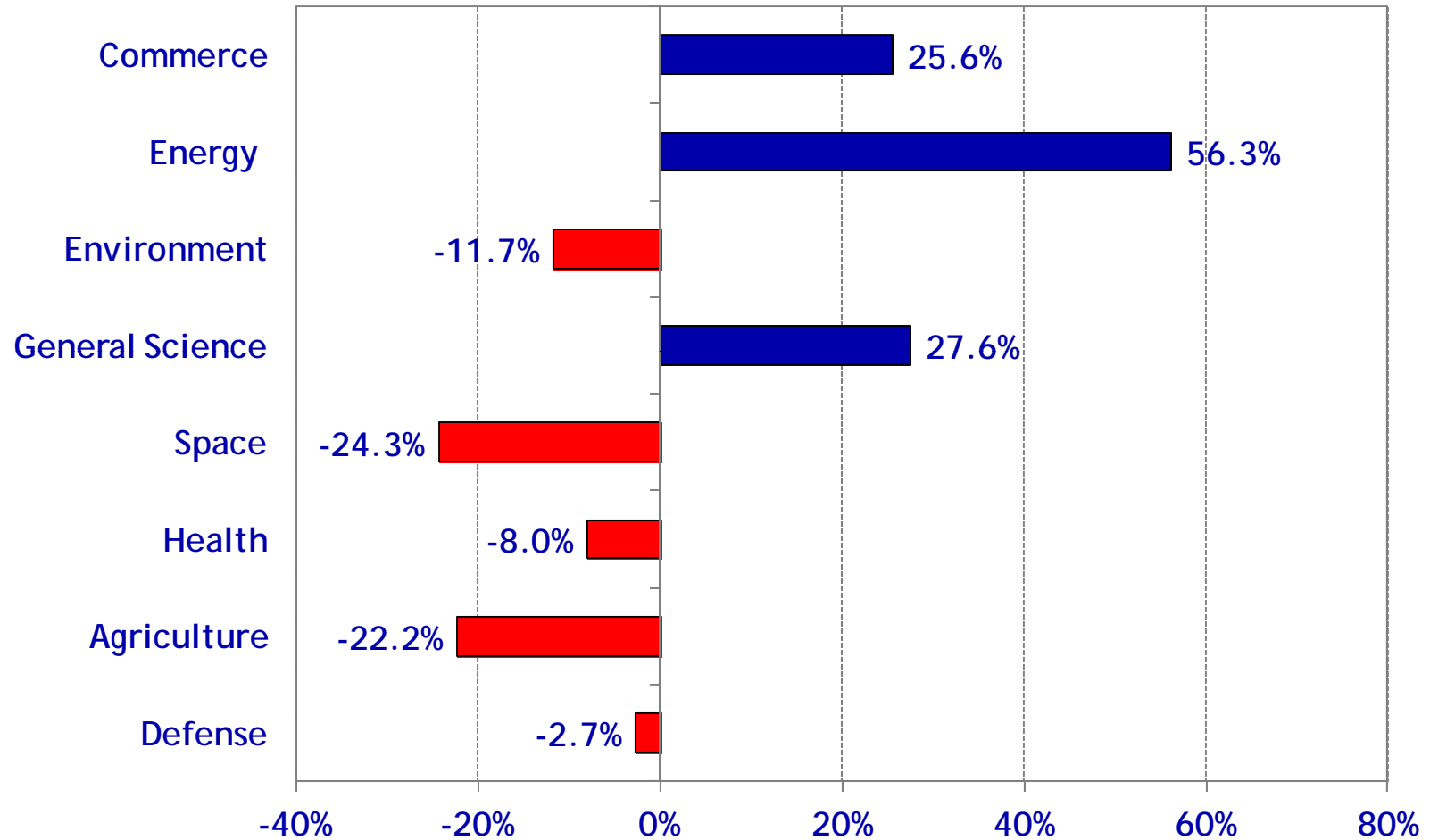
Environment includes natural resources R&D.

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# FY 2013 R&D Budget Request by Function

percent change from FY 2003, Constant FY 2012 Dollars



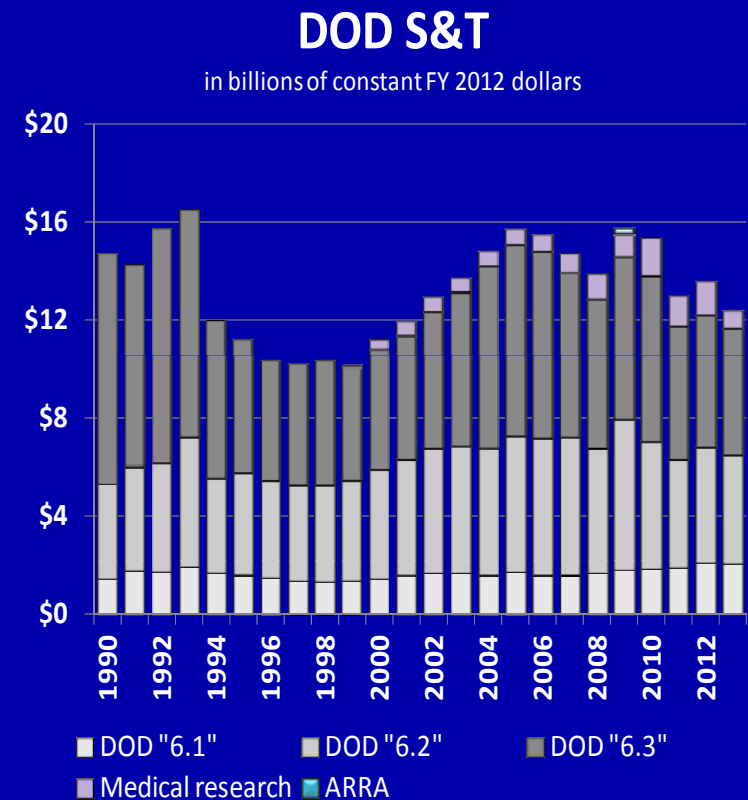
Source: AAAS Reports, OMB R&D data, agency budget justifications, and agency budget documents. Environment includes natural resources R&D.

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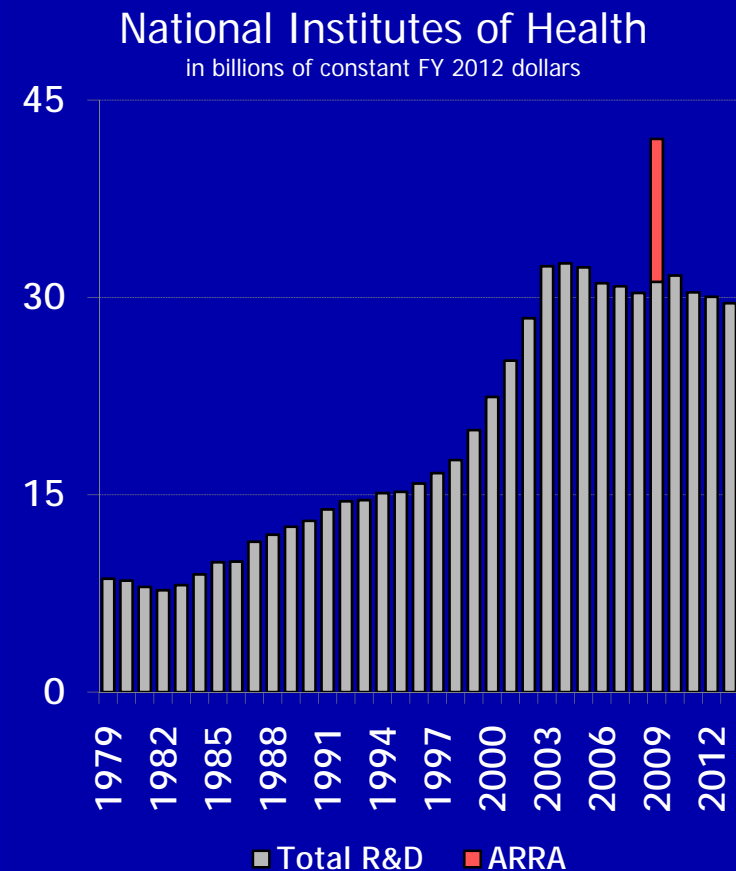
# Defense R&D: Recent Decline

- President's Budget
  - DOD: \$72.6b (-2.5%)
    - Weapons R&D main driver
    - S+T Continuing Declines (-7%)
  - DOE Atomic Weapons:
    - \$4.7b (+9.6%)
- Approps So Far...
  - House Cmte: Smaller cuts than Admin
  - Basic research = flat



# Health R&D: Flat Funding = Decline

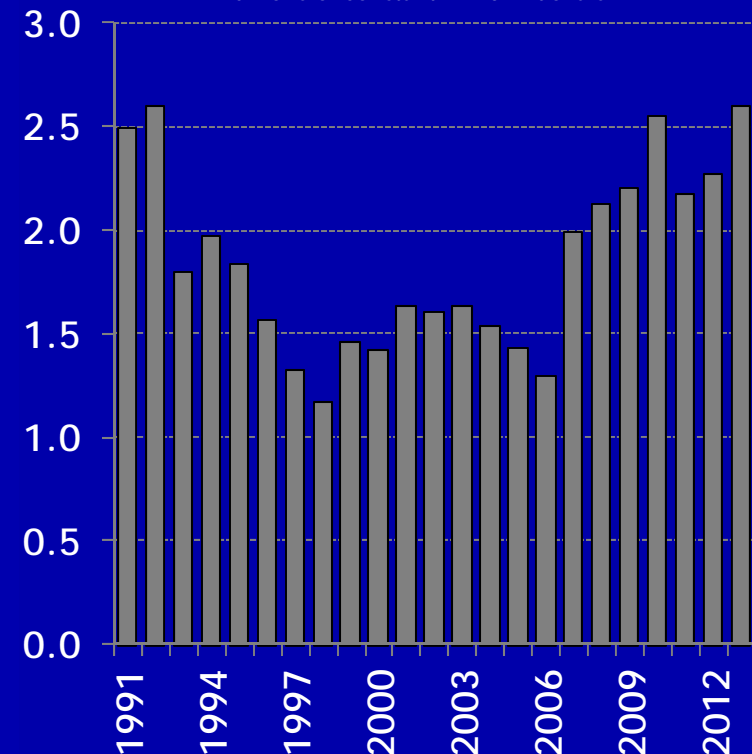
- NIH: Flat Budget (\$30b)
  - 10-year trend: -9%
  - Except for NCATS (+11%)
    - Cures Acceleration Network
  - Same money, more grants?
  - Declining success rates (all-time low in FY11)
    - Special focus on early-stage investigators
- No Approps action yet
- Defense Health Research:
  - Cut by Admin, restored by House
- VA R&D flat



# Energy R&D: Growth Area 1

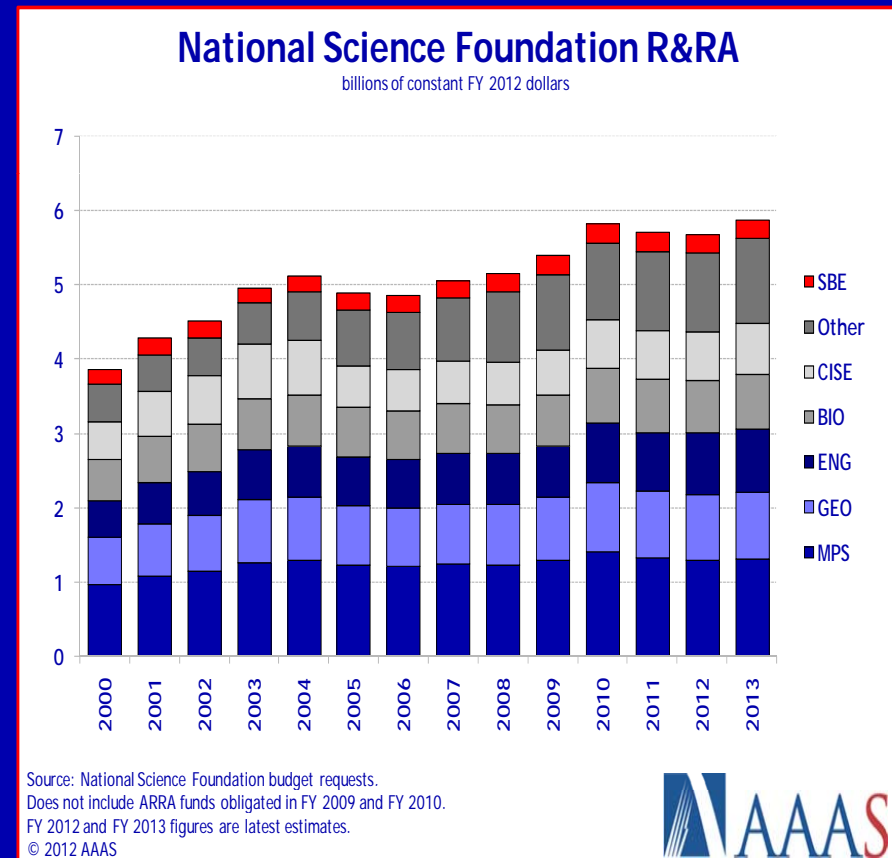
- President's Budget:
  - DOE Energy Programs: \$2.6 billion (+16%)
  - 10-year trend: +60%
  - Driven by EERE; Fossils down, nukes flat
  - ARPA-E: +27% (to \$350 million)
- Approps So Far...
  - House Cmte: Big Cuts to all but fossil energy
  - Senate Cmte: Splits difference between House and Admin

DOE Energy Programs  
in billions of constant FY 2012 dollars



## General Science: Growth Area 2

- President's Budget:
  - NSF: \$5.9B for R&D (+4.6%)
  - 10-year Trend: +20%
  - Across all priority areas
  - OneNSF Framework
  - STEM ed: +5.6% for EHR
- Approps So Far...
  - Admin getting (mostly) what they want
  - Climate Change, PoliSci programs cut in House

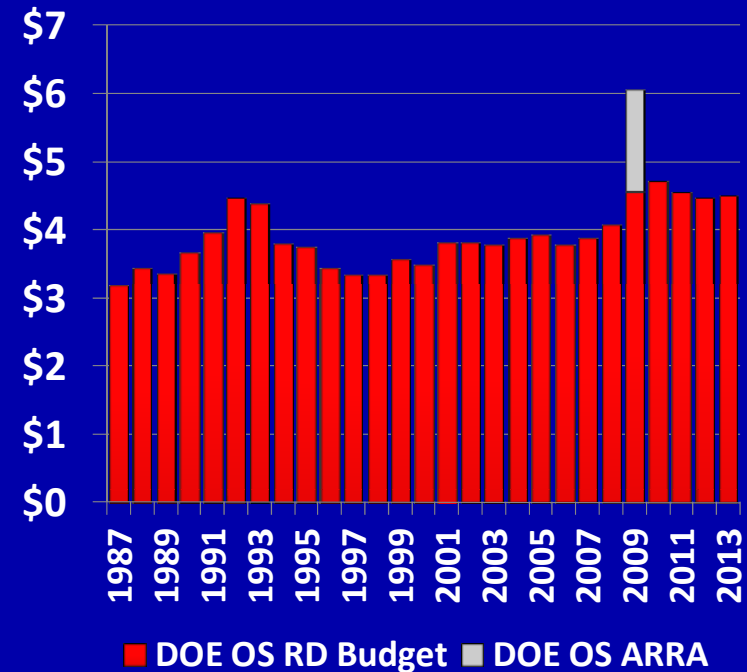


## General Science: Growth Area 2

- President's Budget:
  - DOE SC: \$4.6B for R&D (+2.4%)
  - 10-year trend: +19%
  - Physics losing out
    - ITER prioritized
  - Bio, BES, Advanced Computing up
- Approps So Far...
  - Mixed cuts in House Cmte
    - Fusion research restored
  - Basically flat in Senate
  - Neither meets Request

### DOE Science R&D Budget

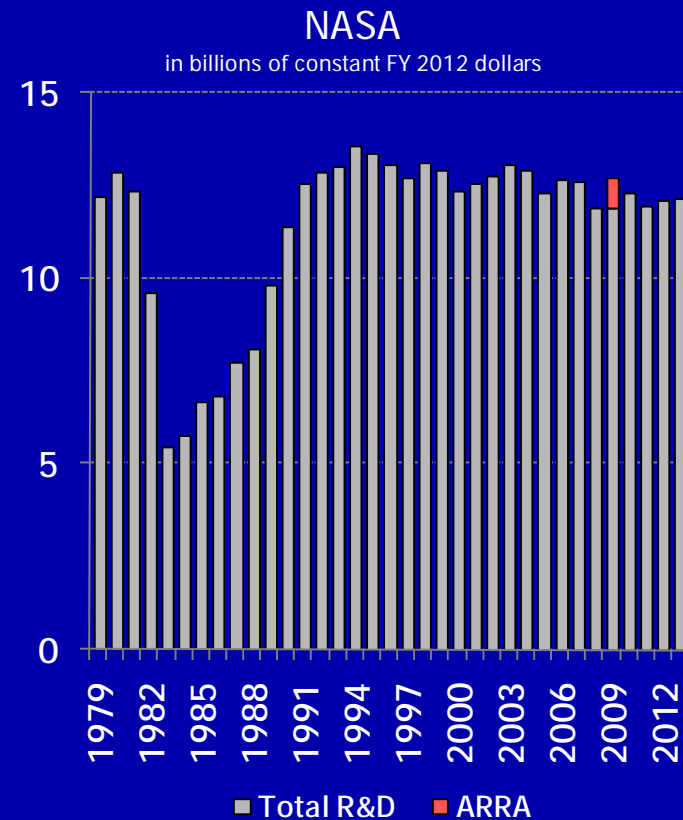
in billions of constant FY 2012 dollars





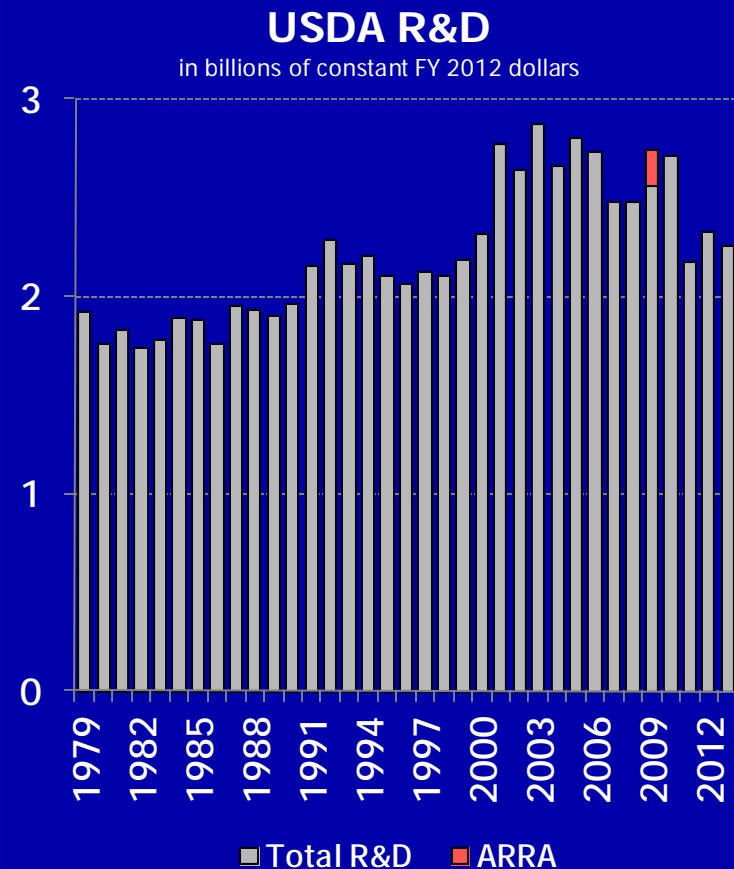
# NASA R&D: Slow Decline

- President's Budget:
  - \$9.6B: +2%
  - Planetary Science (-21%)
  - Webb ST, Space Technology continue growth
  - Commercial crew / industry partnerships
- Approps so far...
  - Small increases
  - Science, Space tech fairing well
  - Senate satellite proposal?



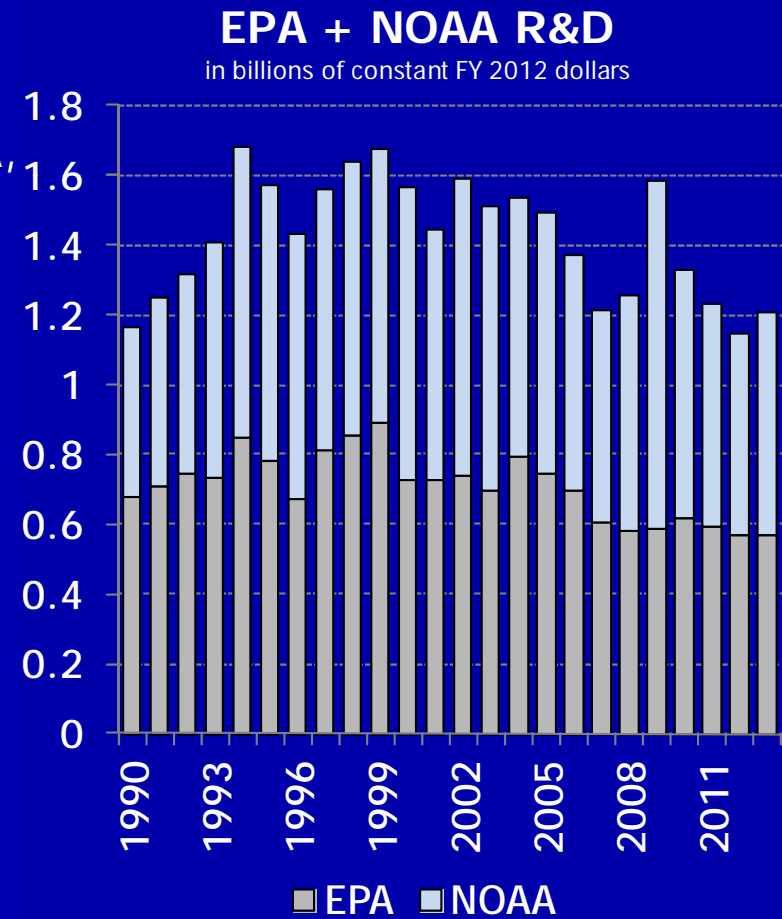
# Agriculture R&D: Recent Decline

- President's Budget:
  - USDA: \$2.3B for R&D (-1.5%)
  - 10-year trend: -21%
  - ARS (intramural), NIFA (extramural) basically flat
  - Agriculture and Food Research Initiative: \$325B (+23%)
- Approps so far...
  - Senate matches Admin



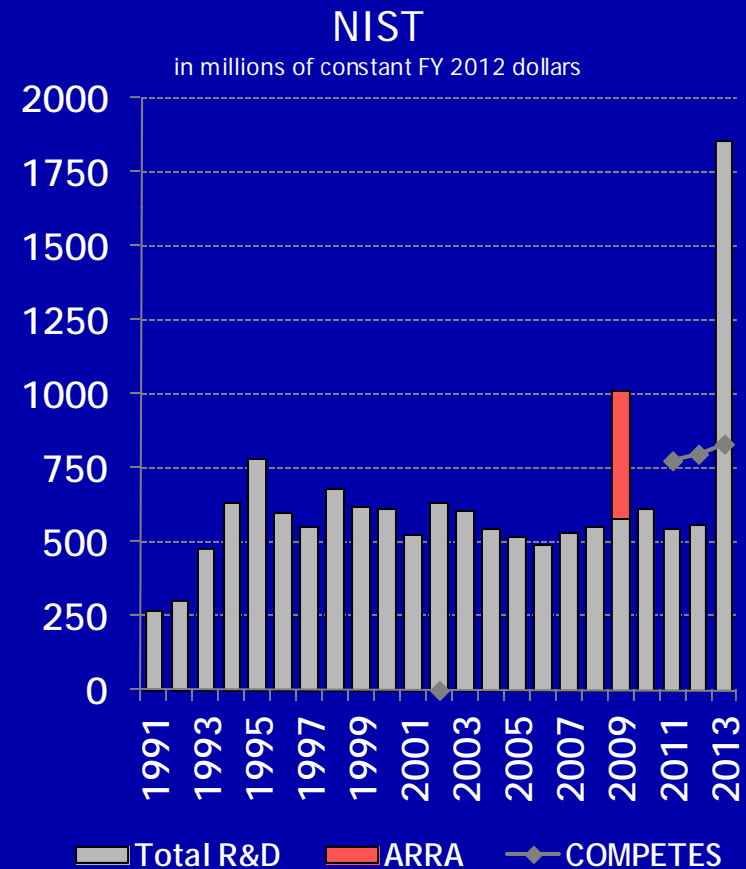
# Environment R&D: Steady Decline?

- President's Budget:
  - Small to large increases for EPA, USGS, NOAA
  - All either flat or down since FY 2003
  - US Global Change Research Program
- Approps so far...
  - Only action on NOAA: House short of request, Senate about even
  - Senate satellite proposal



# Manufacturing, Innovation, Technology: Growth Area 3?

- President's Budget:
  - NIST R&D: +18% disc, +240% total
  - 10-year trend: +9%
  - Manufacturing Network (\$1b); Wireless Innovation Fund (\$300m)
  - Plus DOE Adv. Manufacturing, NASA Space Tech, Interagency Initiatives...
  
- Approps so far...
  - Big increases for NIST in both chambers + other programs
  - Wireless Fund authorized



## What it all adds up to...

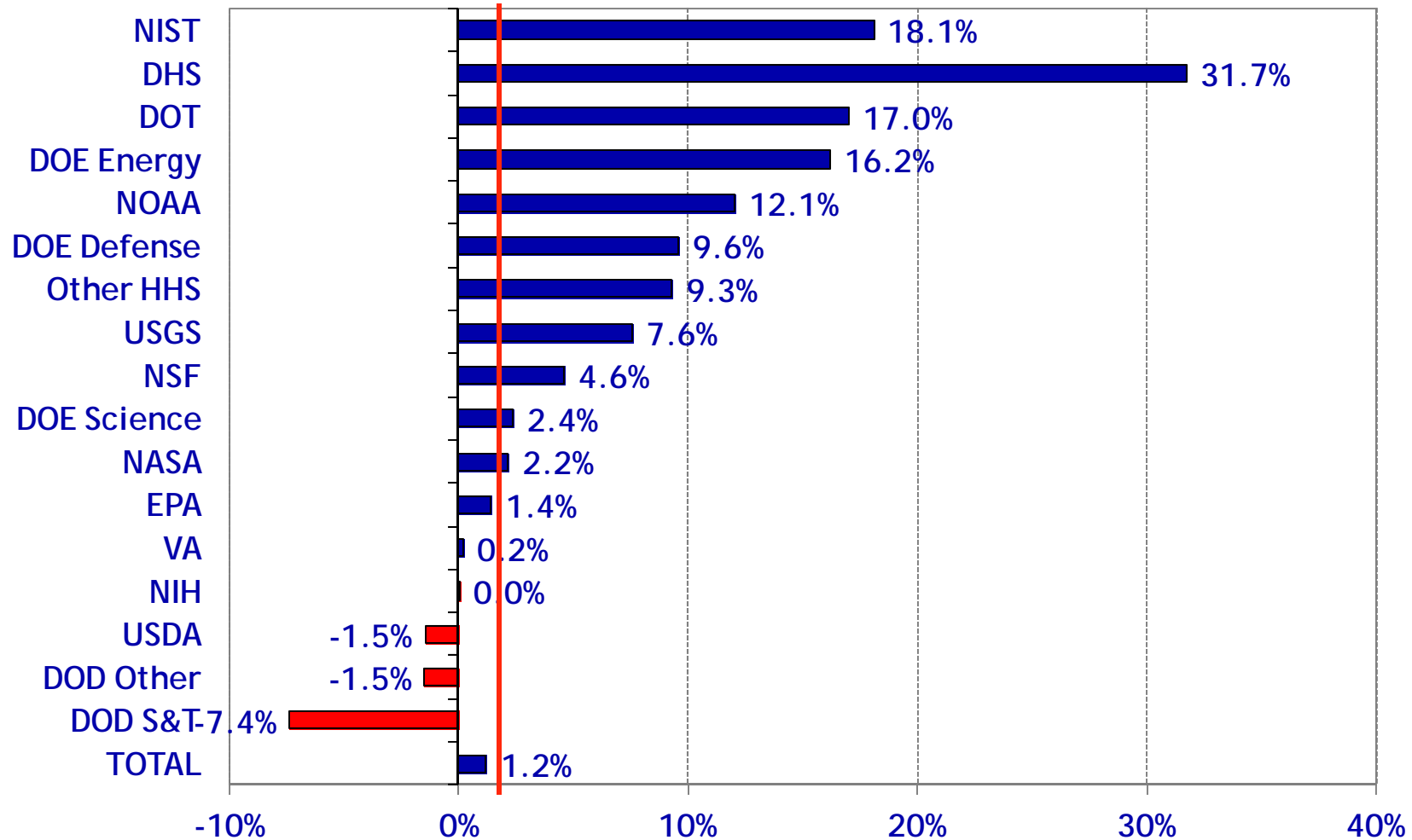
- Continued growth in General Science, plus Innovation
- Clean energy is a big question: House vs. Senate/Admin
- Admin seeking gains in environment/nat resources
- Generally, Appropriations has been solid so far

What it all means...



# R&D in the FY 2013 Budget

percent change from FY 2012



**Inflation: ~1.7%**

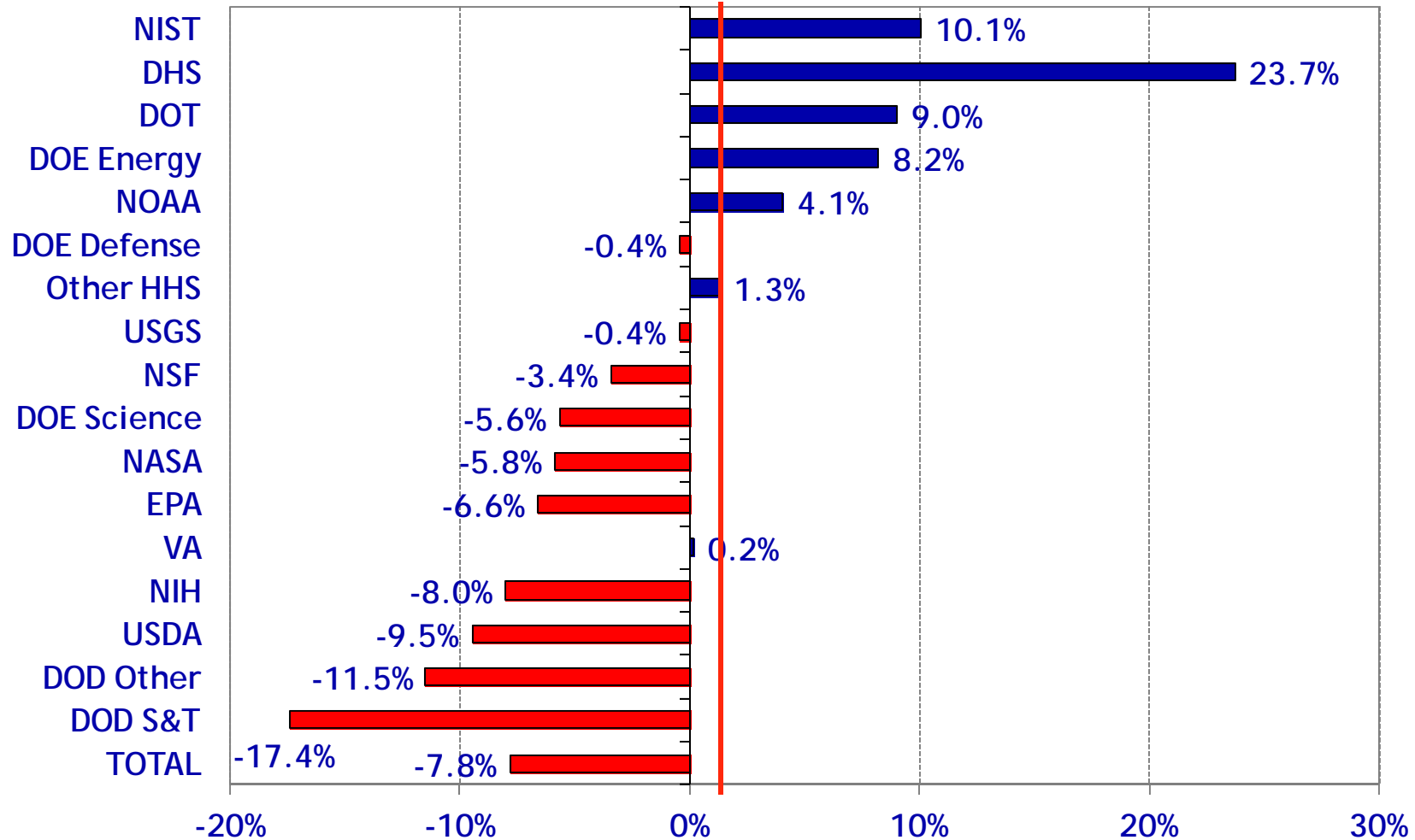
Source: OMB R&D data, agency budget justifications, and other agency documents.

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# R&D in the FY 2013 Budget + Sequester?

percent change from FY 2012



**Inflation: ~1.7%**

Source: AAAS estimates based on OMB R&D data, agency budget justifications, and the Budget Control Act.

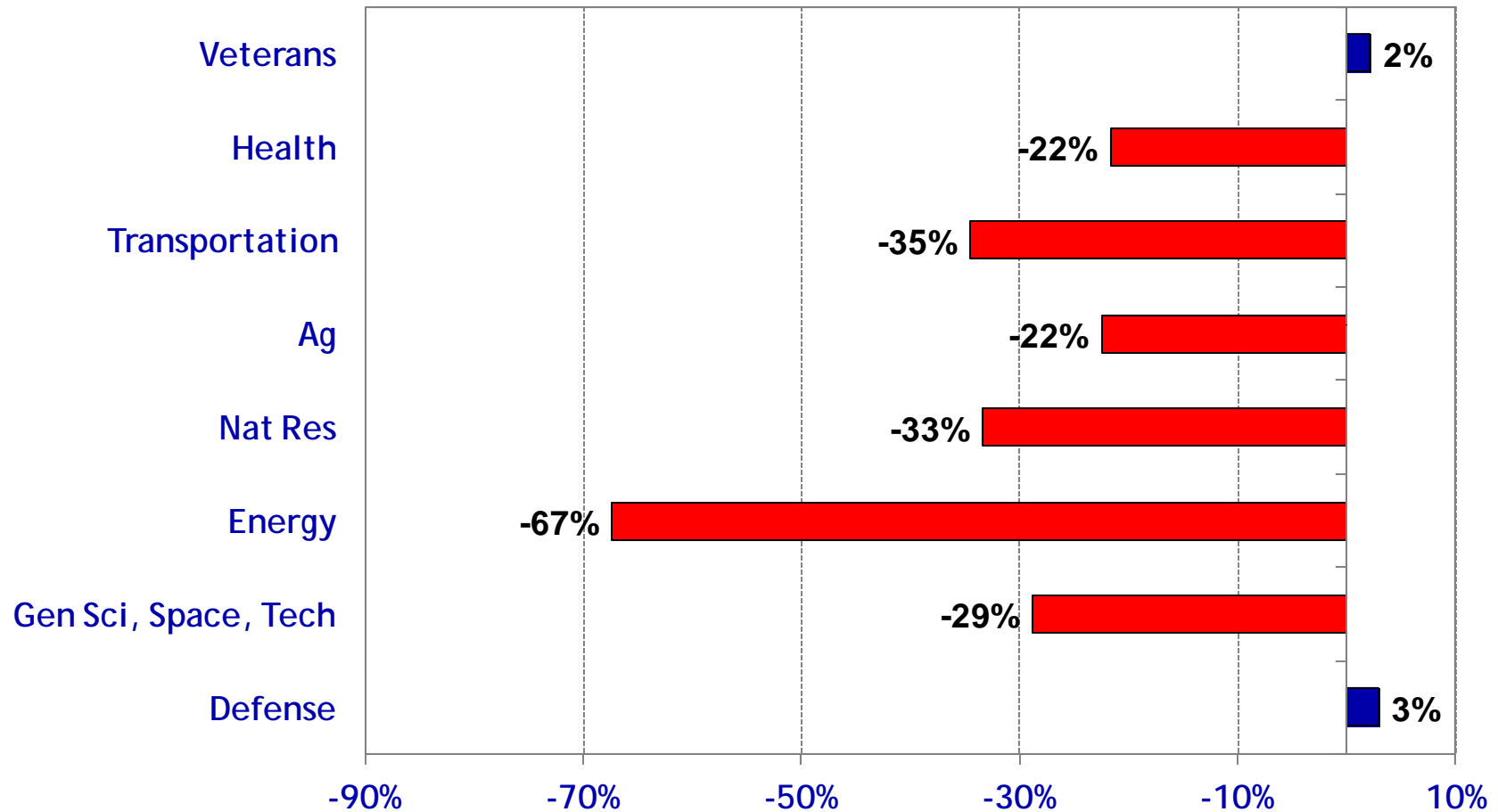
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# R&D Through 2021: House Budget + Alternative Sequester

Difference between House and Administration Budgets Over Nine Years

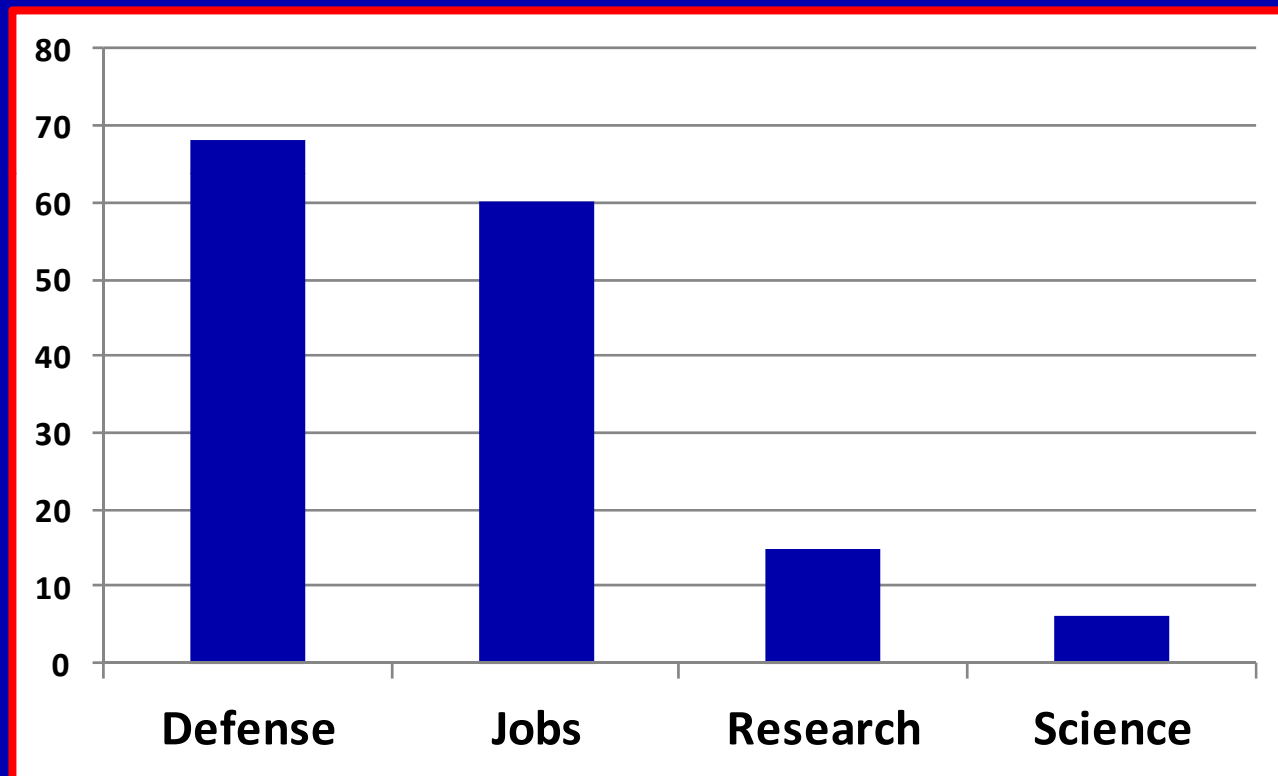


Source: AAAS estimates based on President's Request, House FY 2013 budget recommendations, and CBO analysis of Budget Control Act.

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## LexisNexis News Search: "Budget Control Act" and...



Source: *Washington Post, NY Times, Politico, Roll Call*  
(previous six months from 4/11/12)

## Next Steps...

- Spending bills moving, but will they get any done?
- How do we avert the sequester?
  - Defense v. Nondefense
- Waiting for the Lame Duck
- OMB: Additional 5% cuts in FY14



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AAAS REPORT XXXVII  
Research & Development FY 2013

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