

Research and Development in the Federal Budget

Matt Hourihan
March 5, 2012

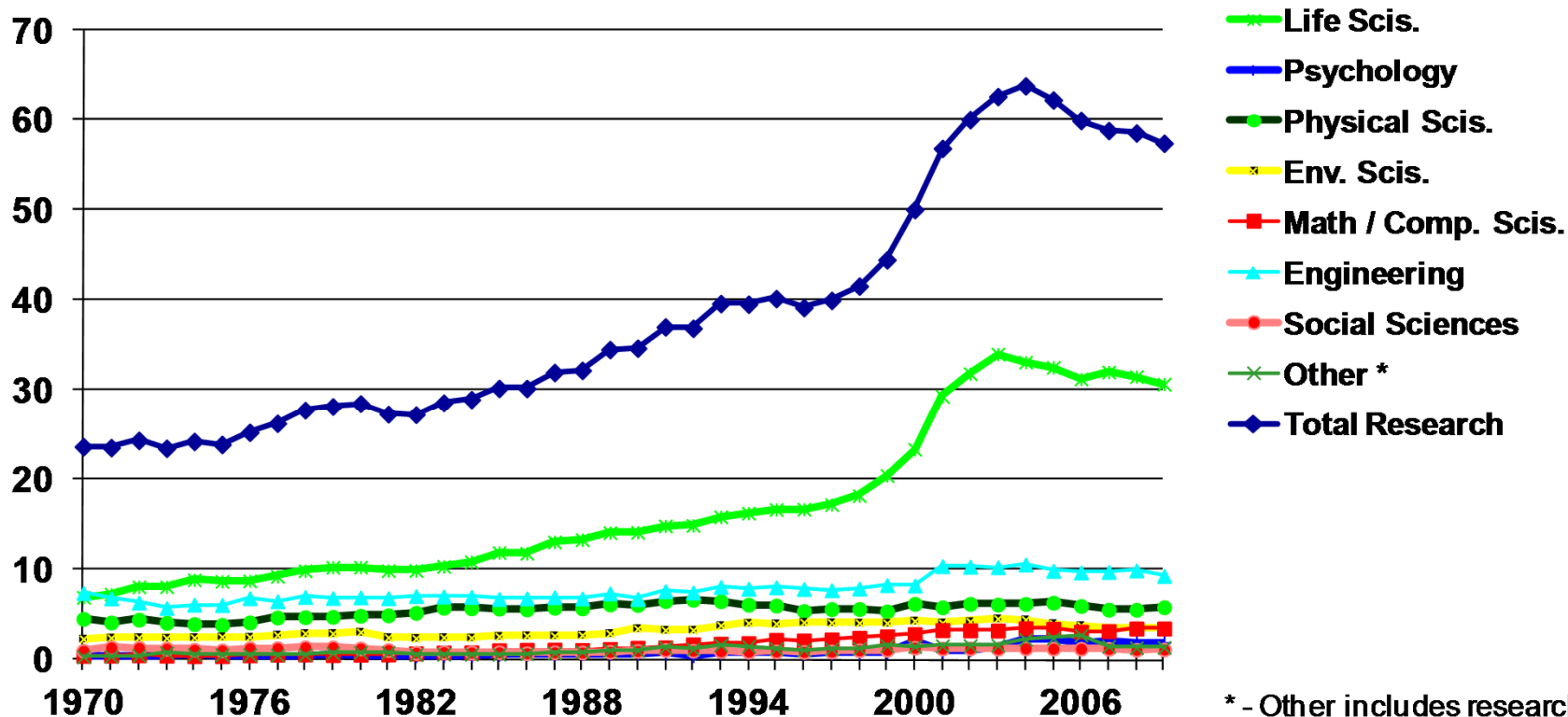
for the ASEE Engineering Research Council



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

Trends in Federal Research by Discipline, FY 1970-2009

obligations in billions of constant FY 2012 dollars



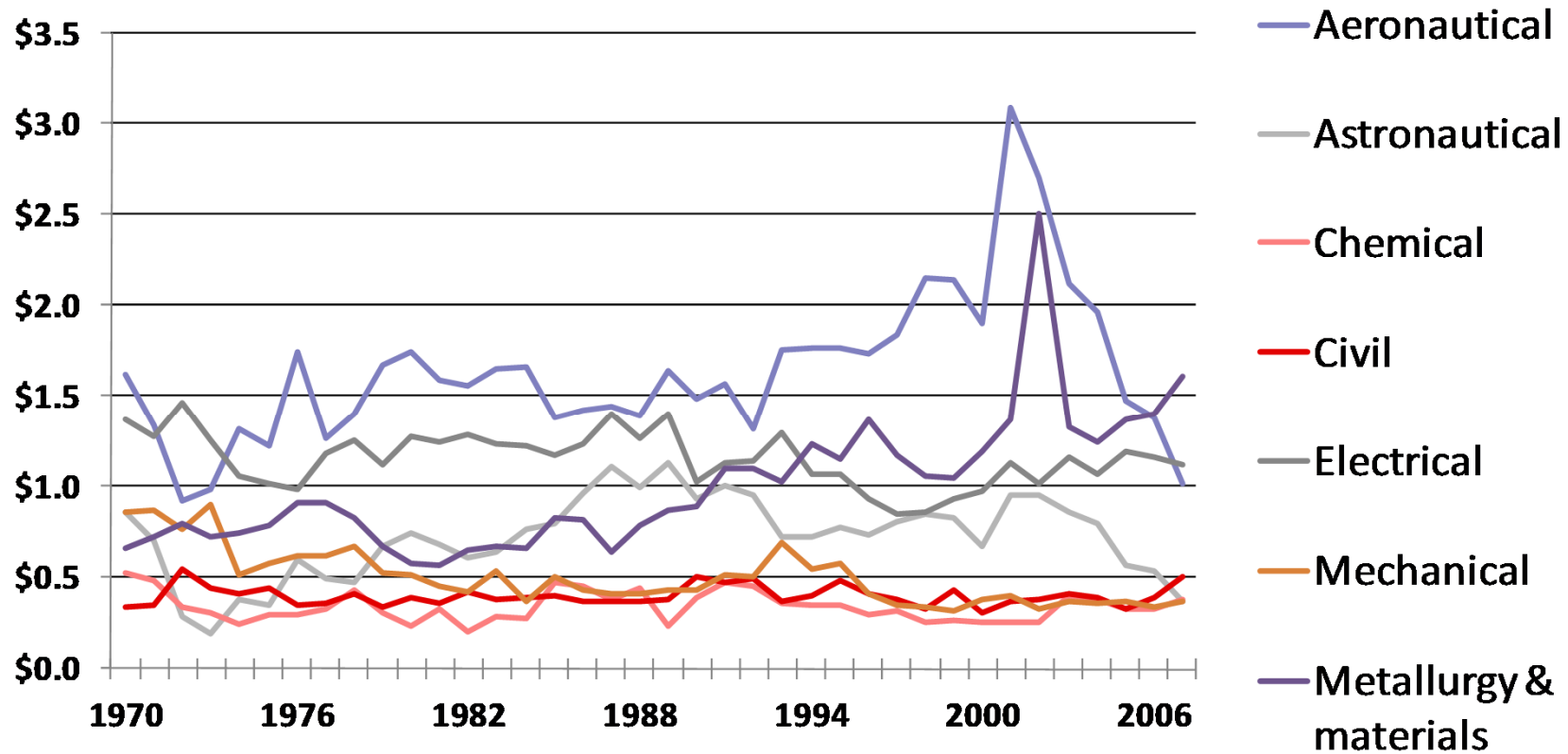
* - Other includes research not classified (includes basic research and applied research; excludes development and R&D facilities)

Source: National Science Foundation, *Federal Funds for Research and Development* series. FY 2009 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators.
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Trends in Engineering Funding, FY 1970-2009

obligations in billions of constant FY 2012 dollars

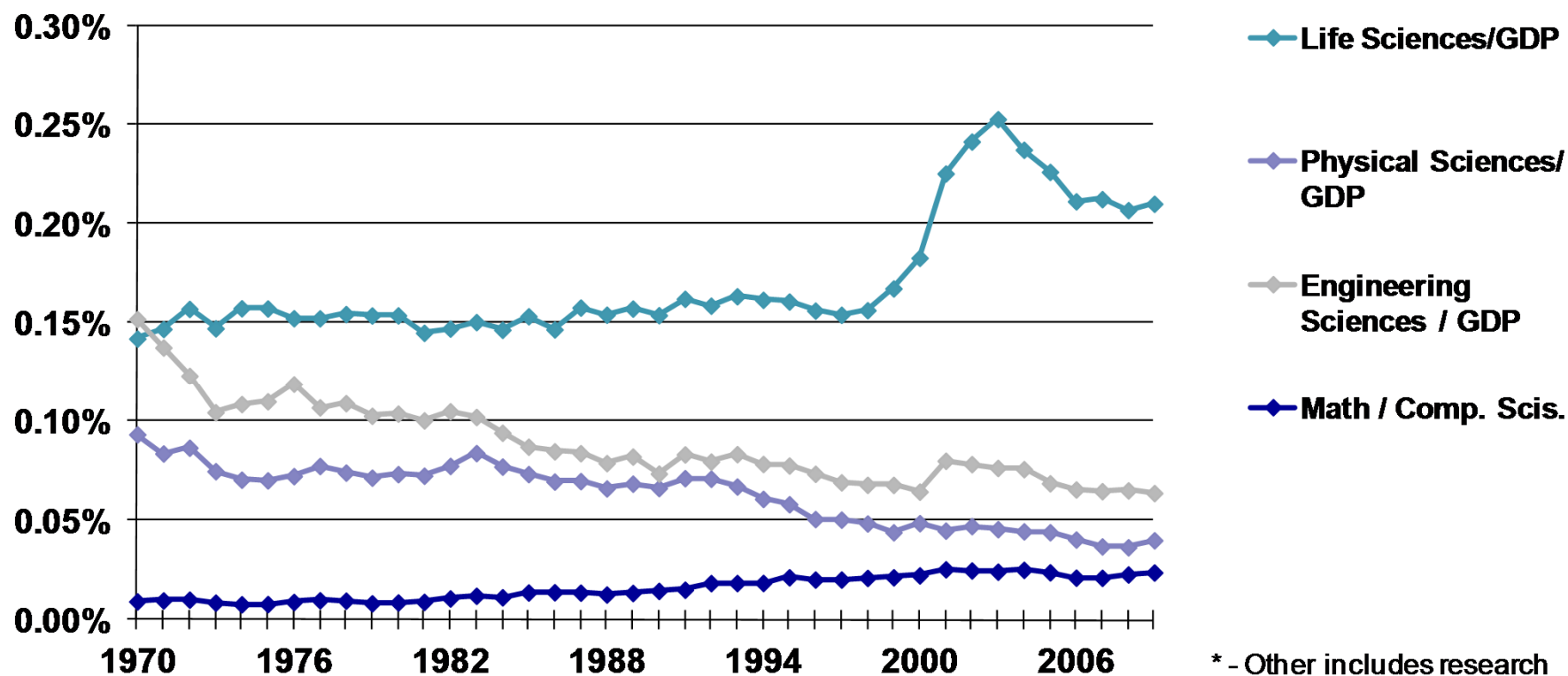


Source: National Science Foundation, *Federal Funds for Research and Development* series. FY 2009 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators.

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Federal Funds as a Percent of GDP, FY 1970-2009



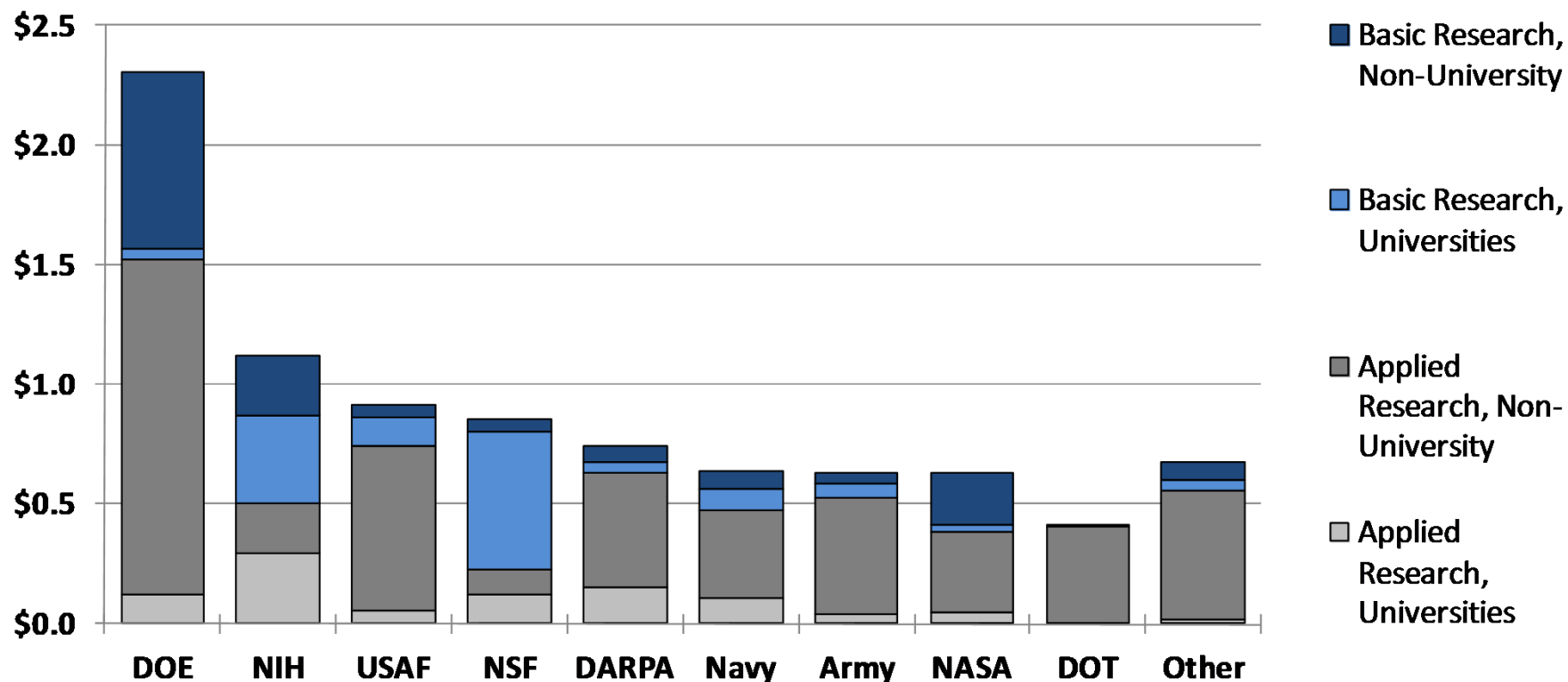
* - Other includes research not classified (includes basic research and applied research; excludes development and R&D facilities)

Source: National Science Foundation, *Federal Funds for Research and Development* series. FY 2009 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators.
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Basic and Applied Engineering R&D Funding, FY 2009 (Preliminary)

obligations in billions



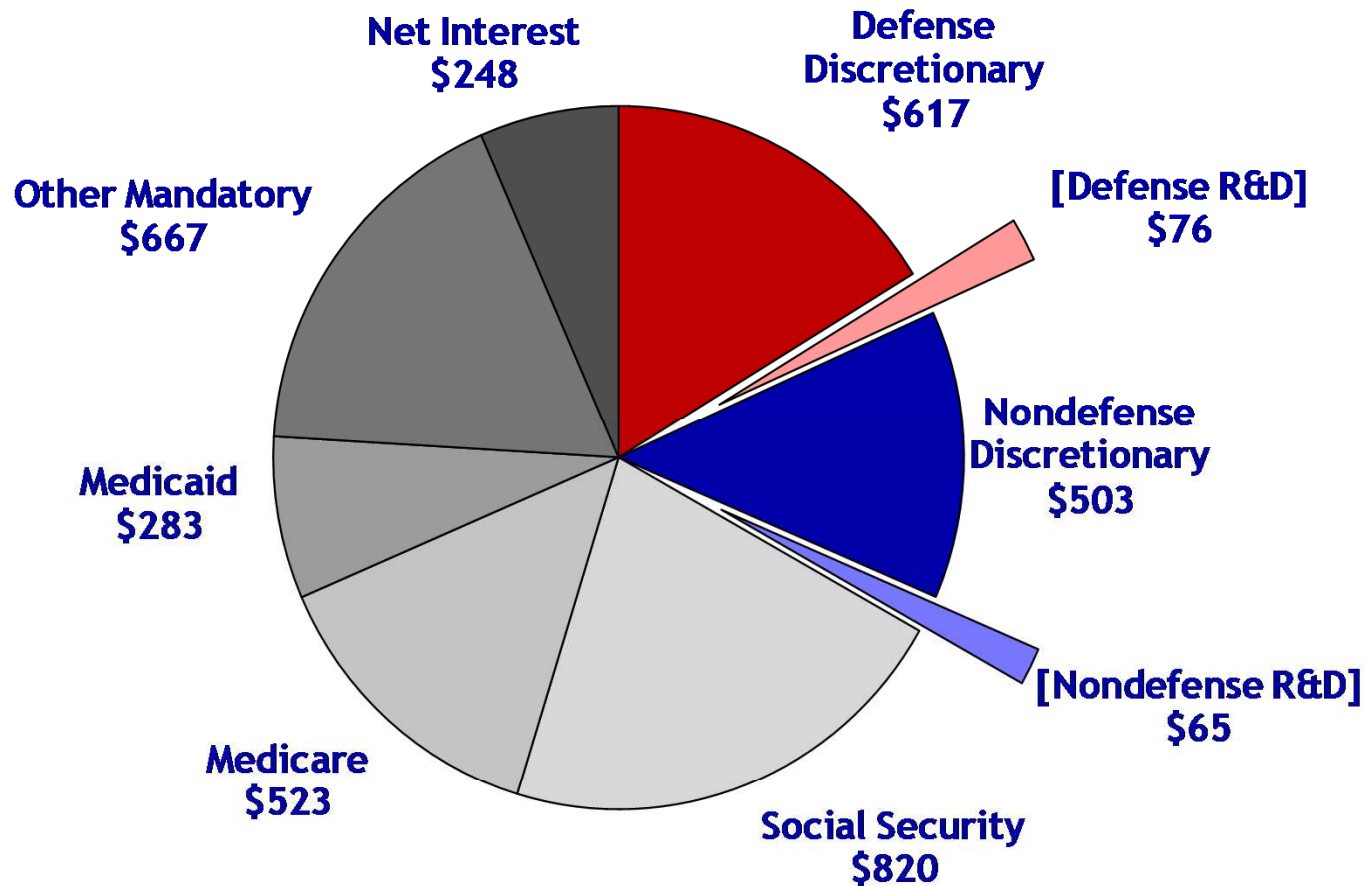
Source: National Science Foundation, *Federal Funds for Research and Development* series.
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Composition of the Proposed FY 2013 Budget

Total Outlays = \$3.8 trillion

outlays in billions of dollars



Source: *Budget of the United States Government FY 2013*.

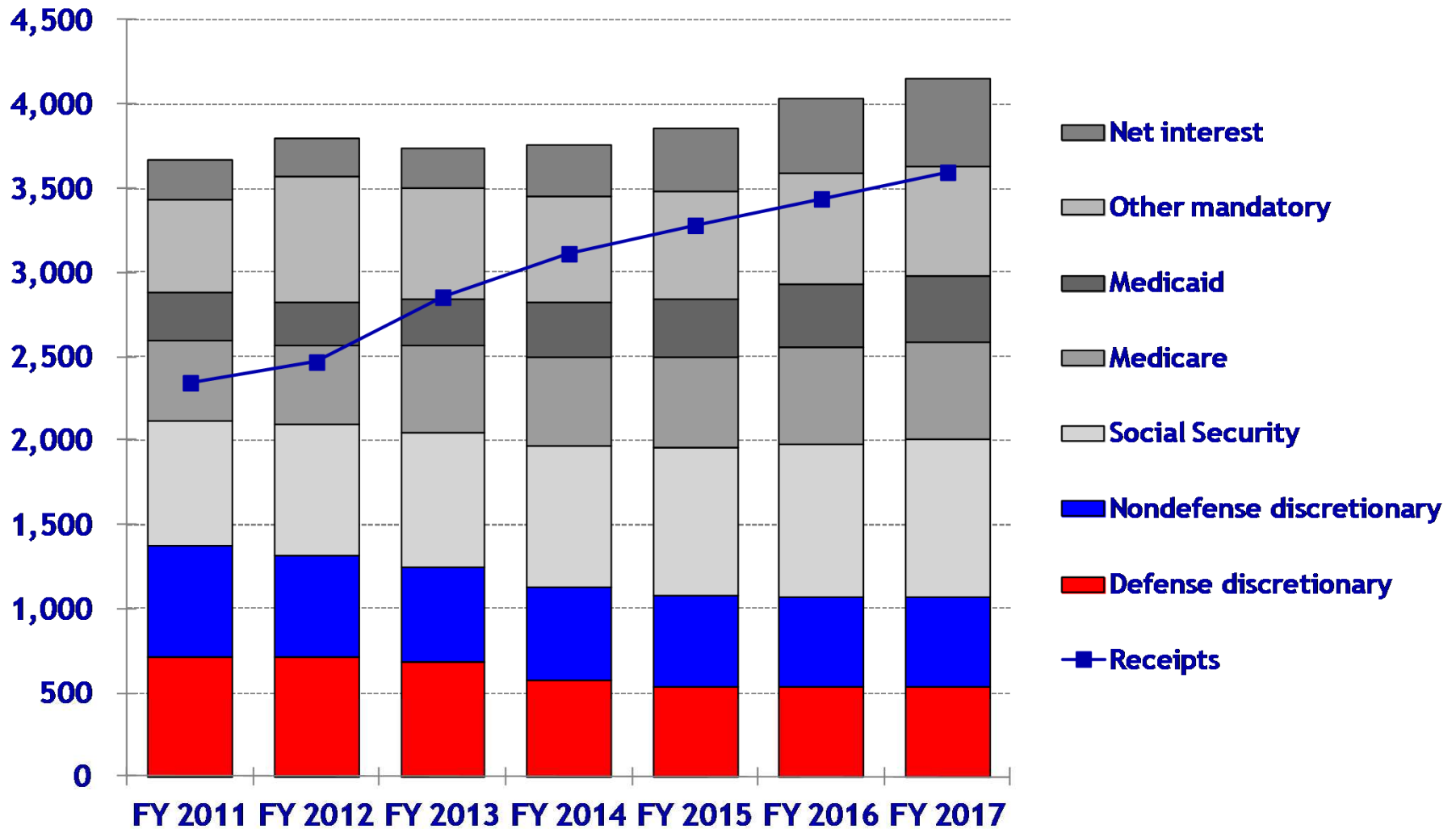
Projected unified deficit is \$901 billion.

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FY 2013 Budget Projections

outlays in billions of constant FY 2012 dollars

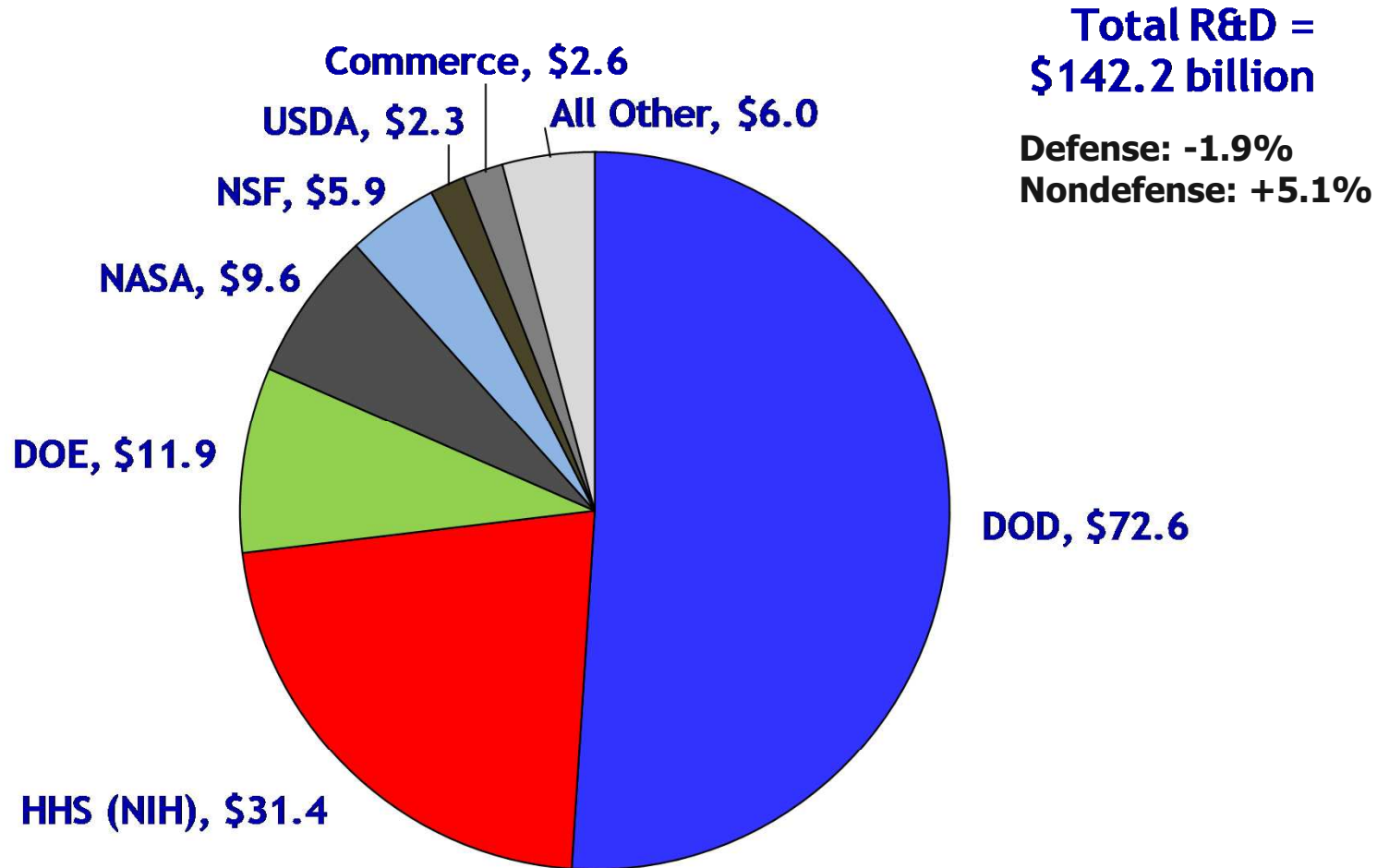


Source: *Budget of the United States Government FY 2013*.
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Total R&D by Agency, FY 2013

budget authority in billions of dollars



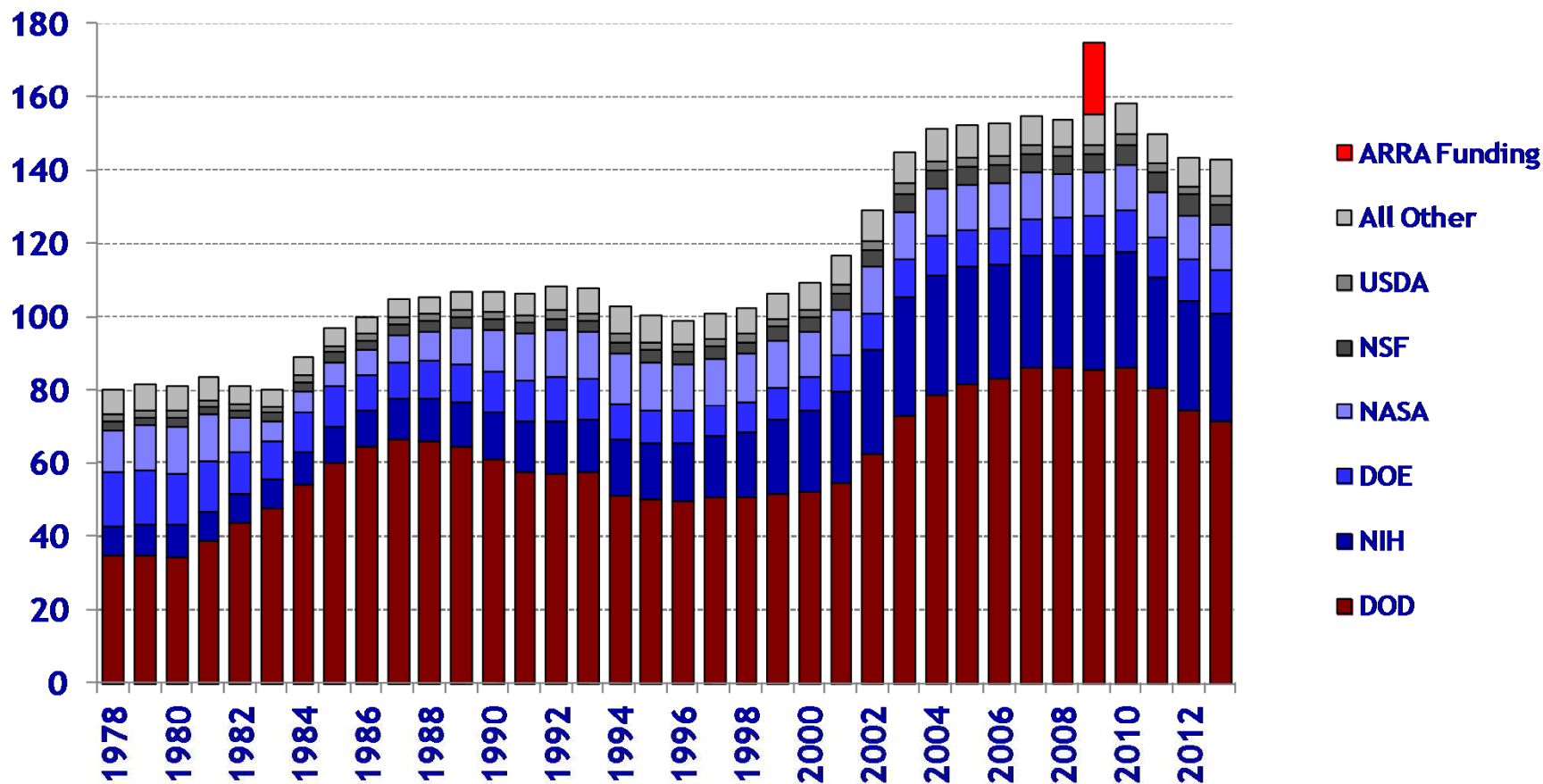
Source: OMB R&D data, agency budget justifications, and other agency documents.
R&D includes conduct of R&D and R&D facilities.

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Trends in R&D by Agency

in billions of constant FY 2012 dollars

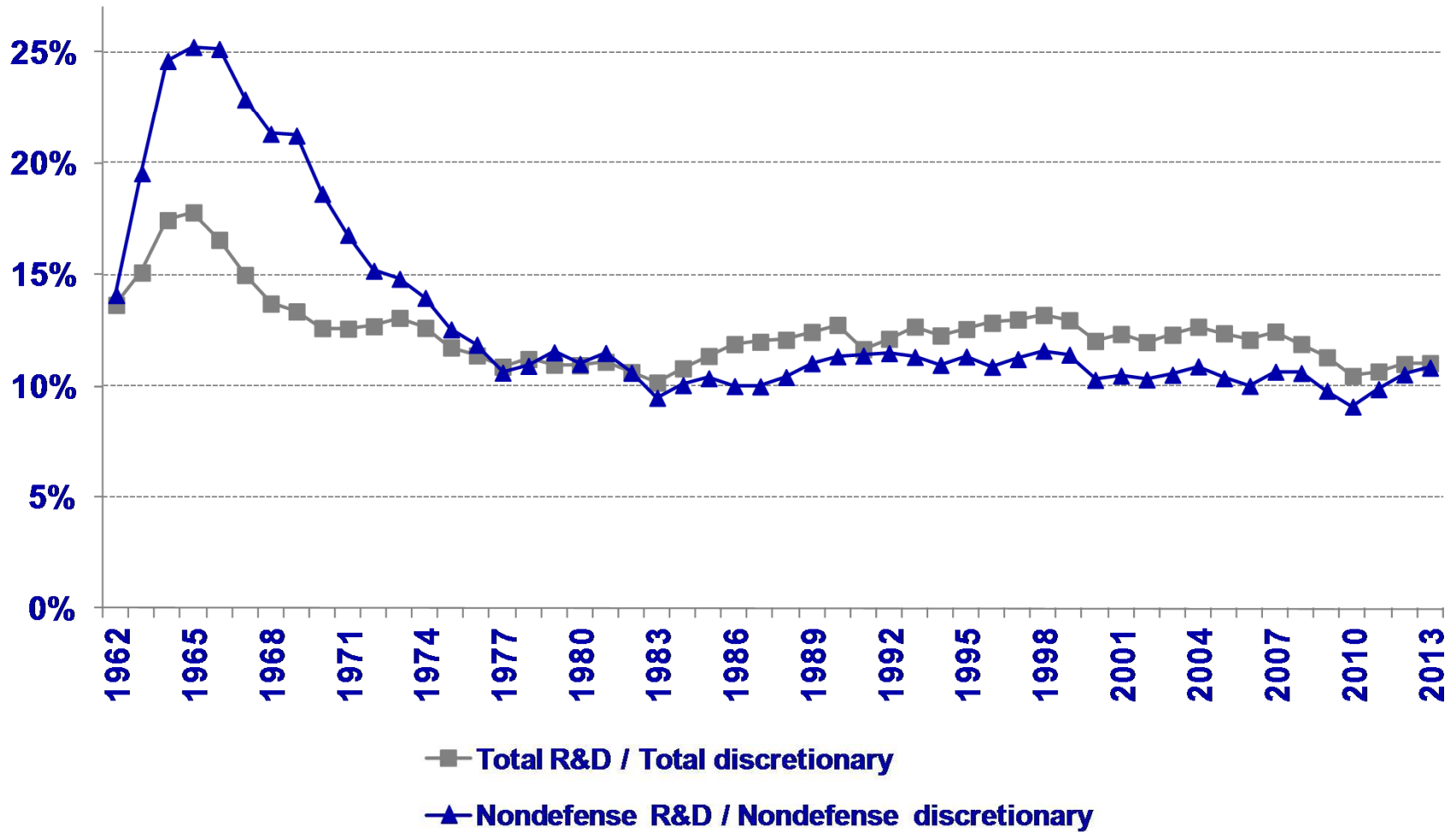


Source: AAAS Report: Research & Development series.
 FY 2012 and FY 2013 figures are latest estimates.
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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R&D as Percent of Discretionary Spending

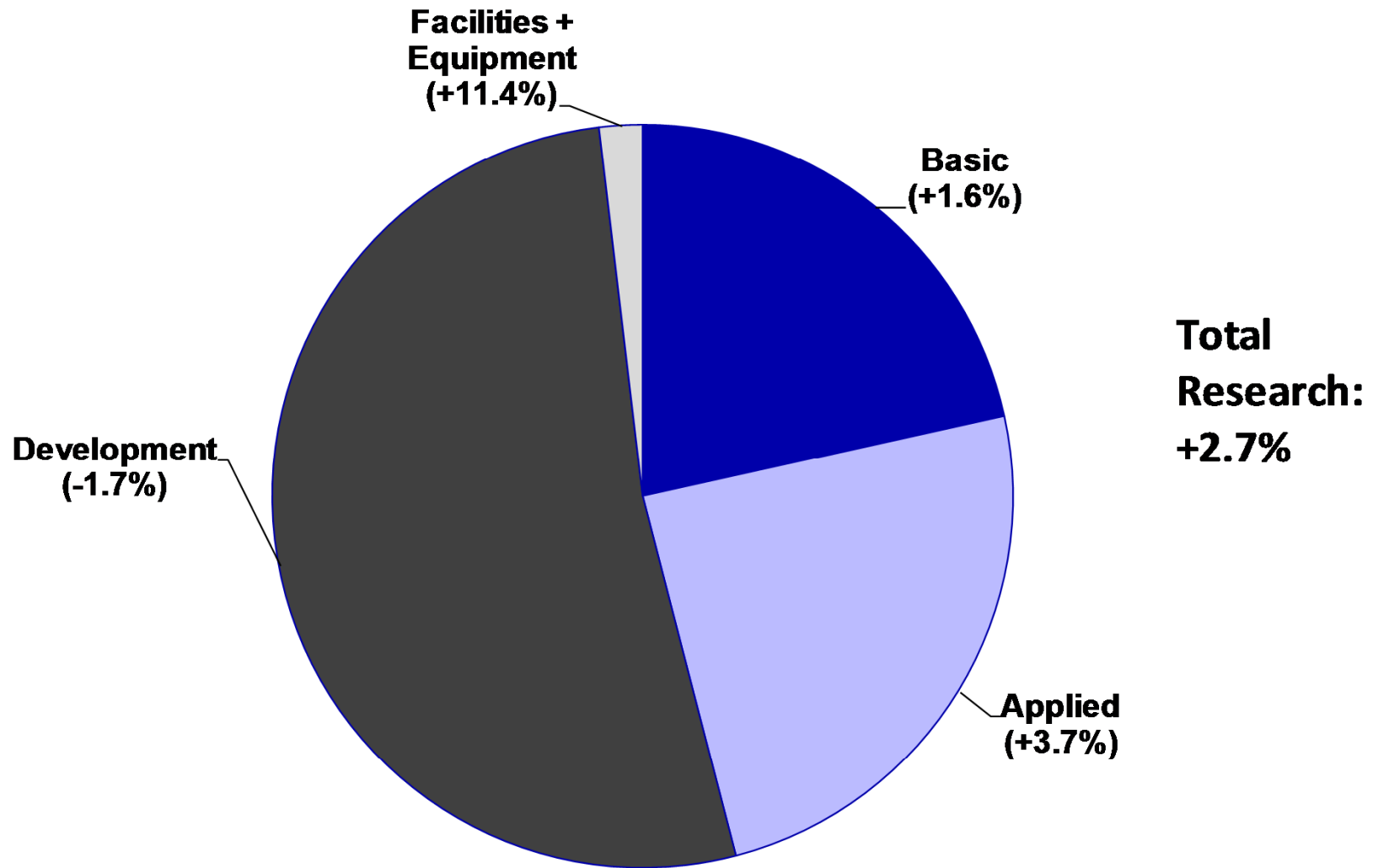
percentage of outlays



Source: *Budget of the U.S. Government FY 2013*.
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R&D by Character, FY 2013 Budget



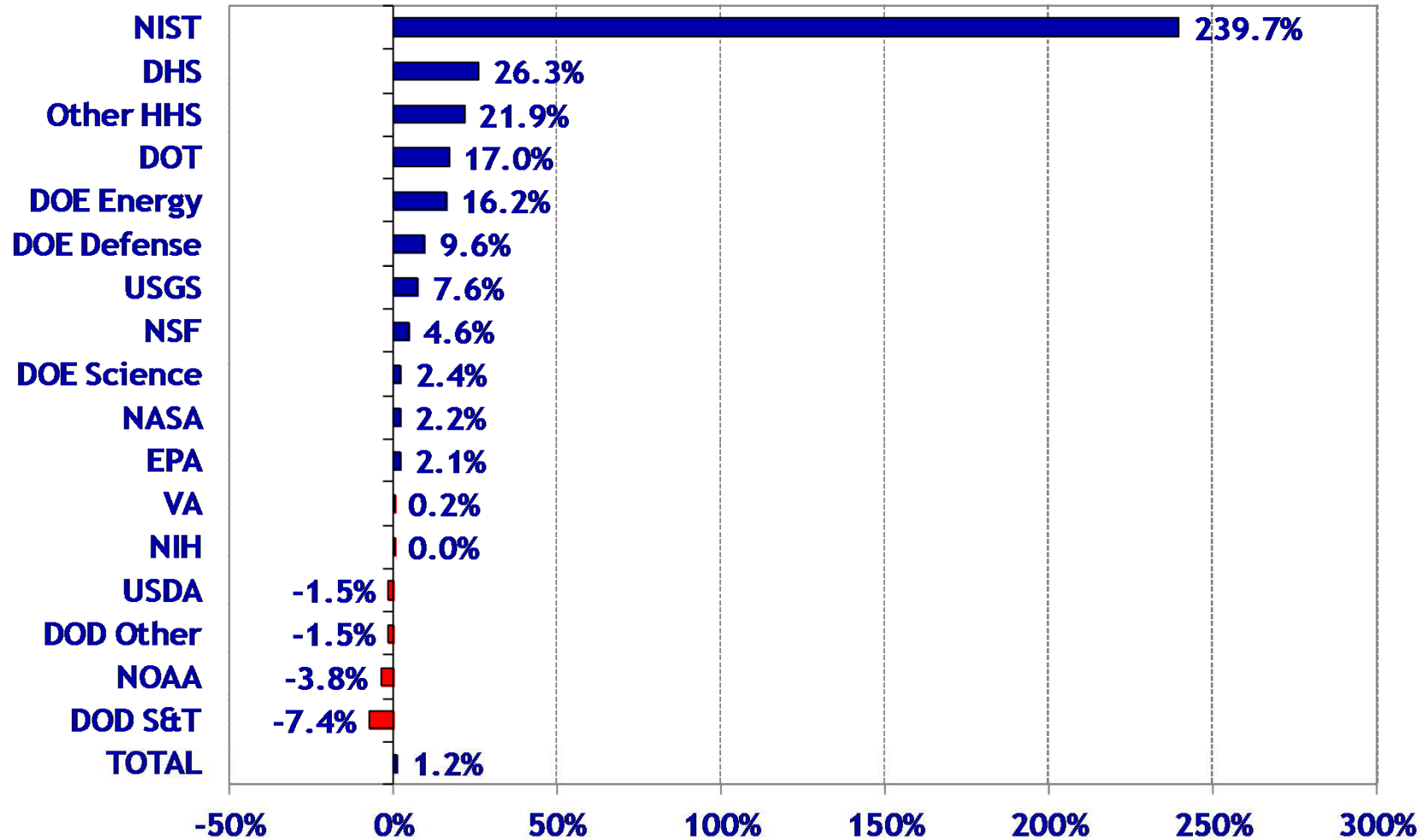
Source: OMB R&D data, agency budget justifications, and other agency documents.
R&D includes conduct of R&D and R&D facilities.

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R&D in the FY 2013 Budget

percent change from FY 2012



DOE "S&T": DOE R&D in "6.1" through "6.3" categories

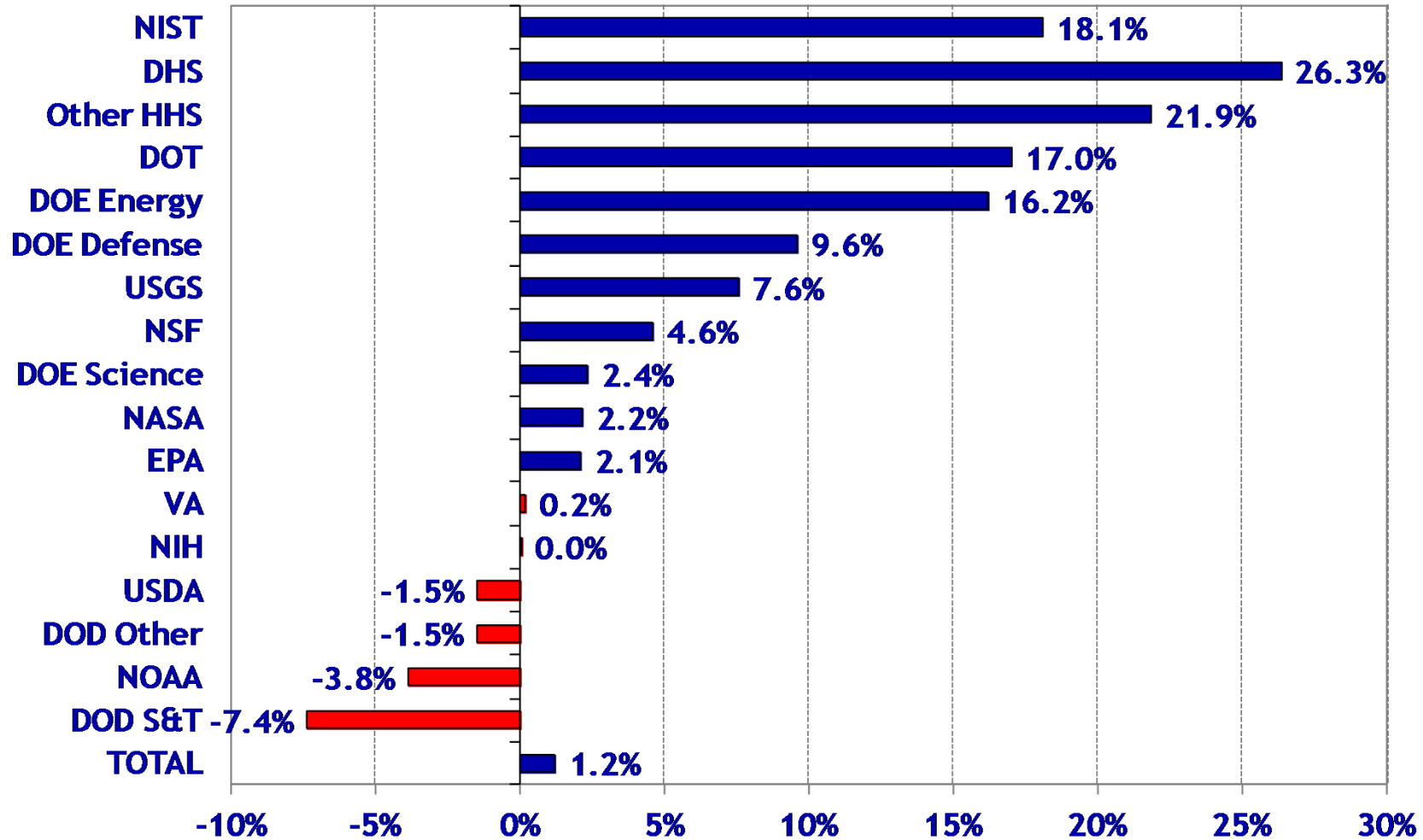
Source: OMB R&D data, agency budget justifications, and other agency documents.

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R&D in the FY 2013 Budget

percent change from FY 2012



DOD "S&T" = DOD R&D in "6.1" through "6.3" categories

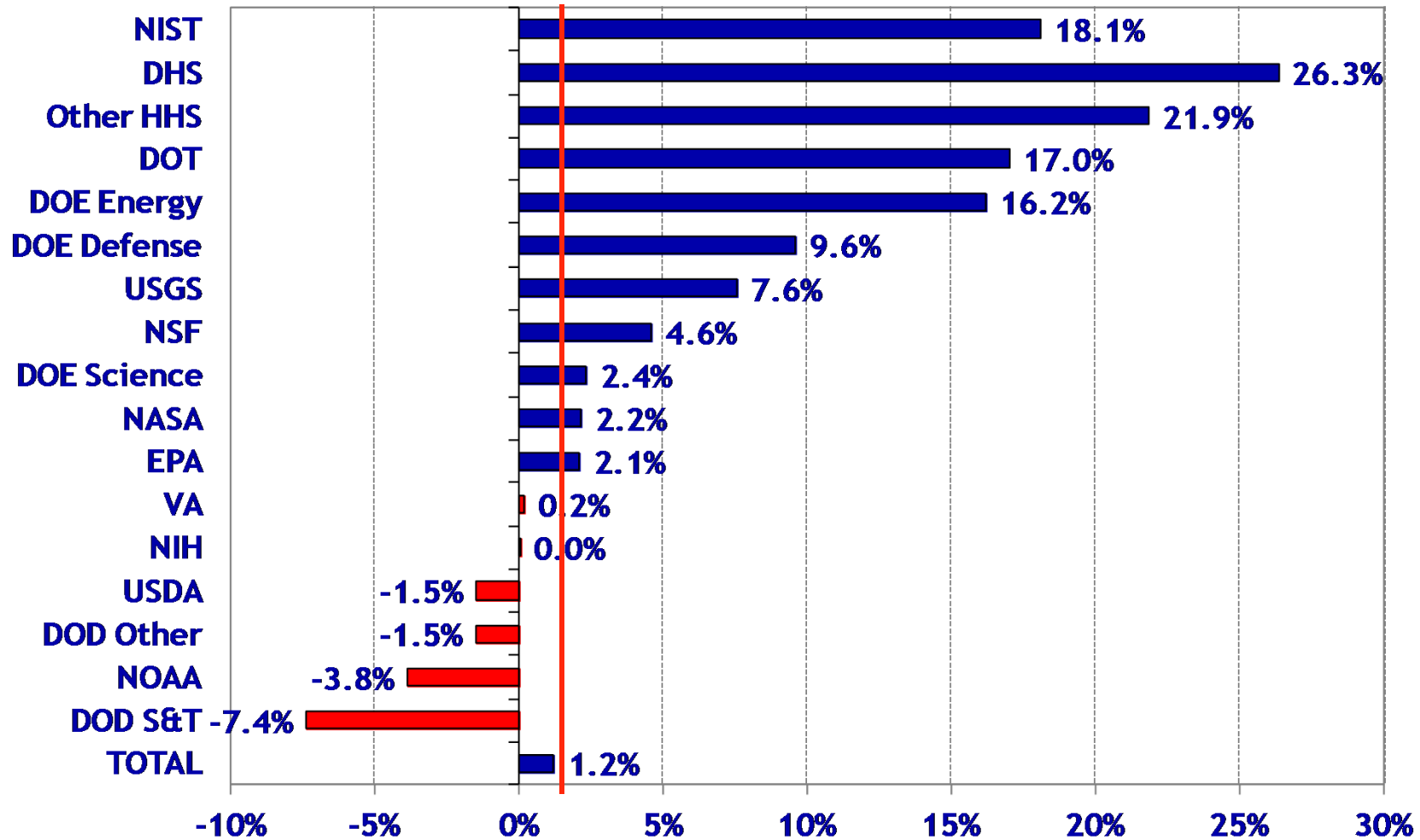
Source: OMB R&D data, agency budget justifications, and other agency documents.

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R&D in the FY 2013 Budget

percent change from FY 2012



DOD "S&T" = DOD R&D in "6.1" through "6.2" categories

Inflation: ~1.7%

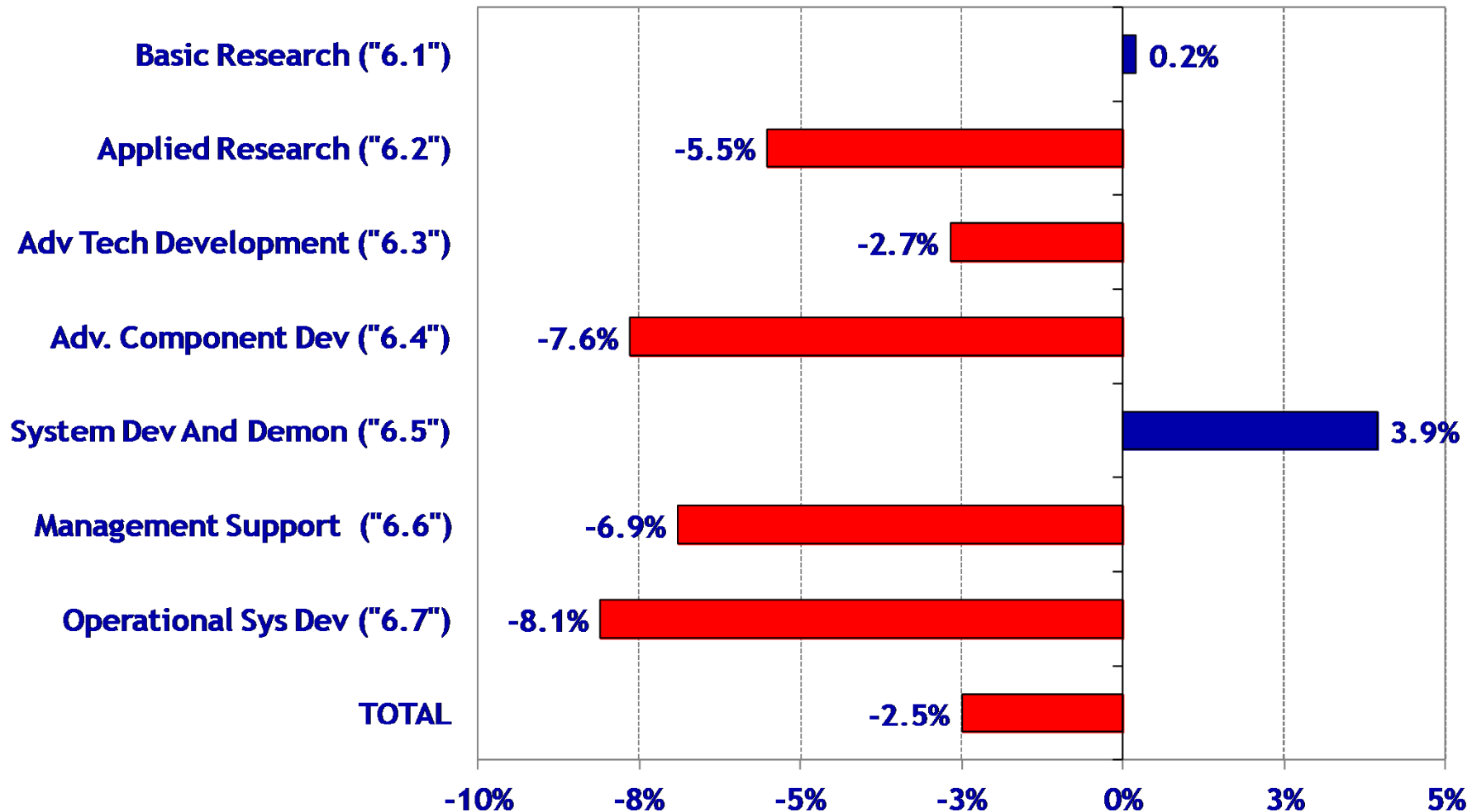
Source: OMB R&D data, agency budget justifications, and other agency documents.

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Changes in FY 2013 DOD R&D Budget

percent change from FY 2012



DOD "S&T" : DOD R&D in "6.1" through "6.3" categories

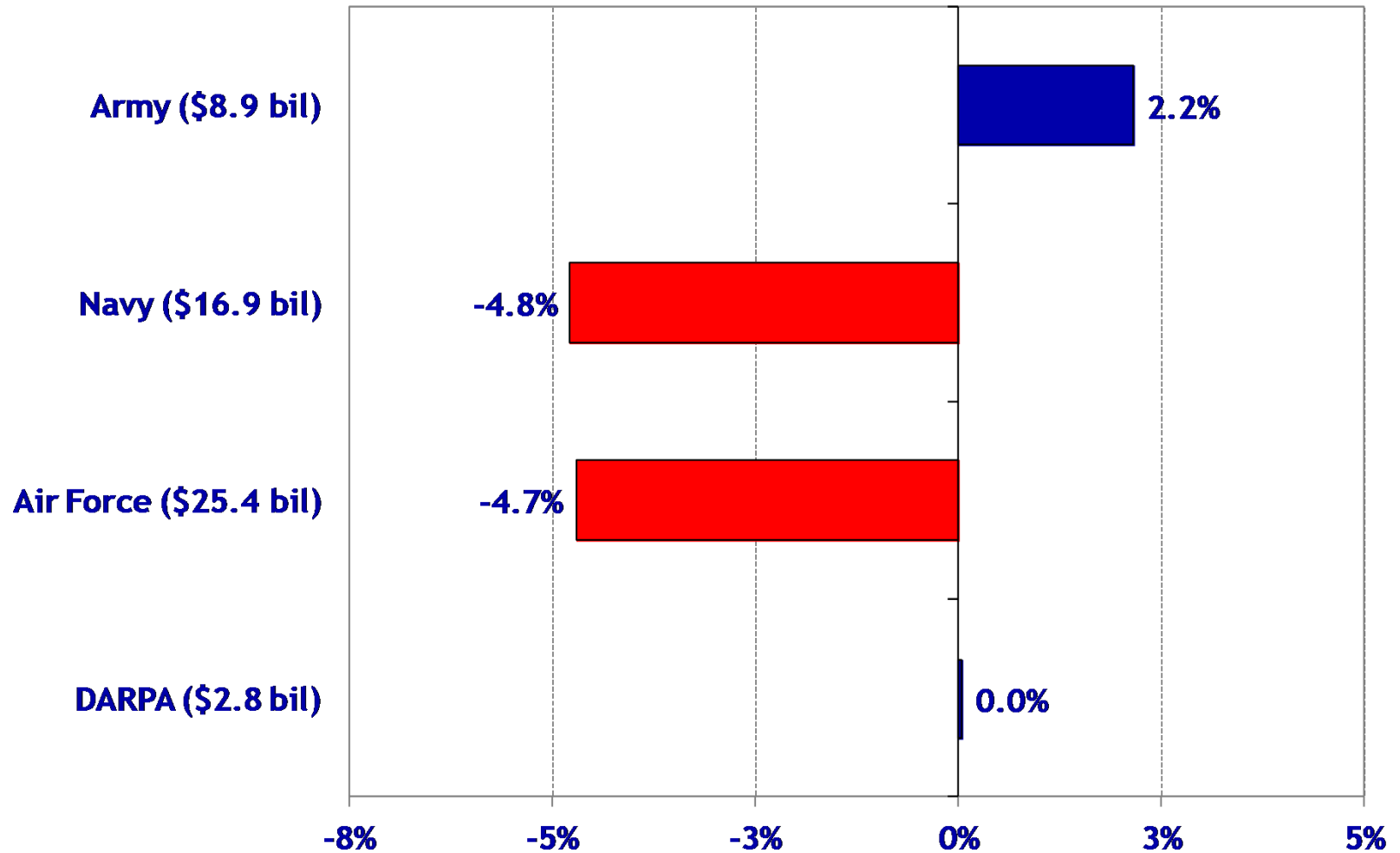
Source: Congressional appropriations reports and agency budget documents.

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Changes in FY 13 DOD R&D by Dept / Agency

percent change from FY 2012



DOD "S&T" = DOD R&D in "6.1" through "6.3" categories

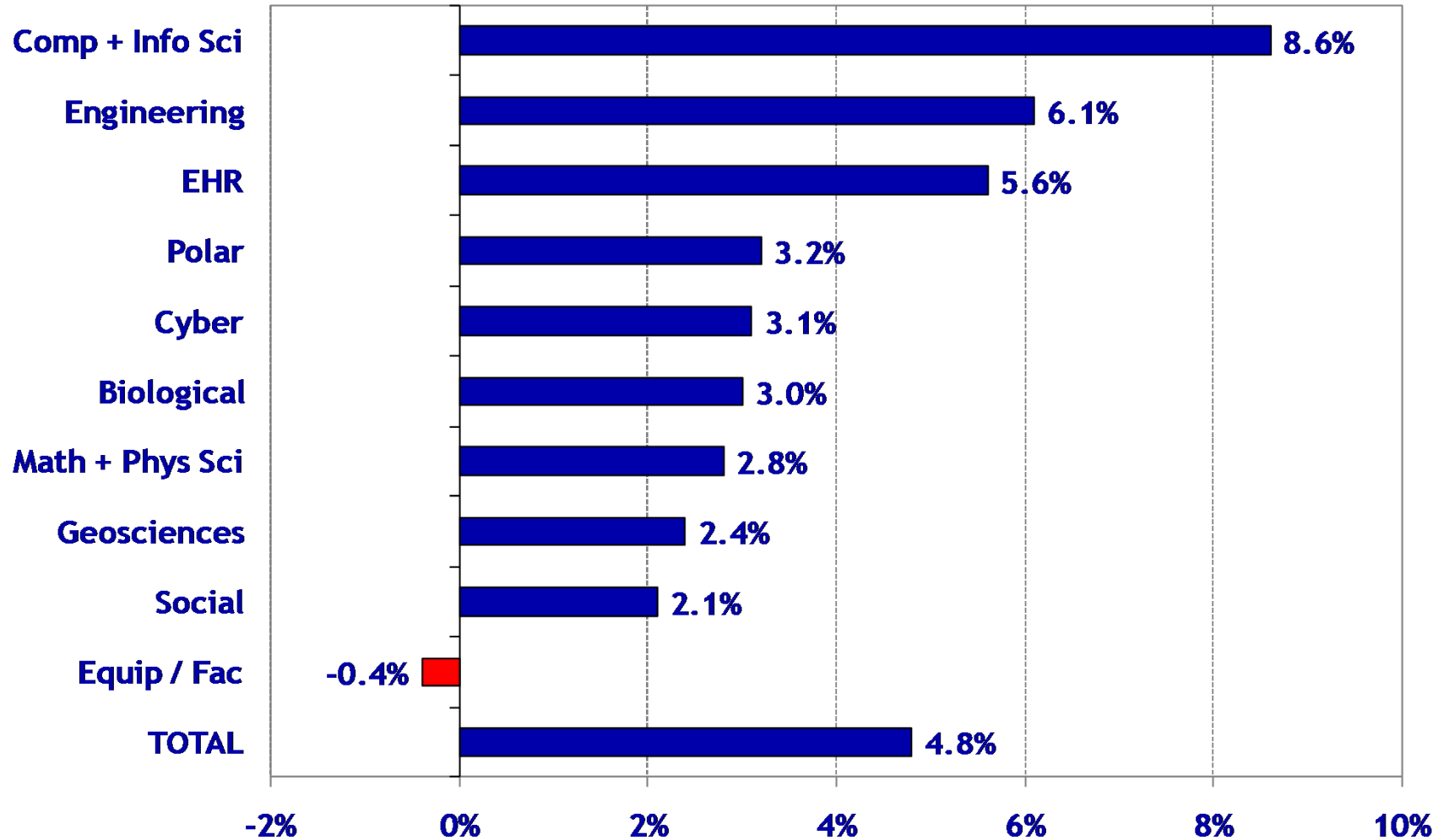
Source: Congressional appropriations reports and agency budget documents.

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Changes in FY 2013 NSF Budget

percent change from FY 2012



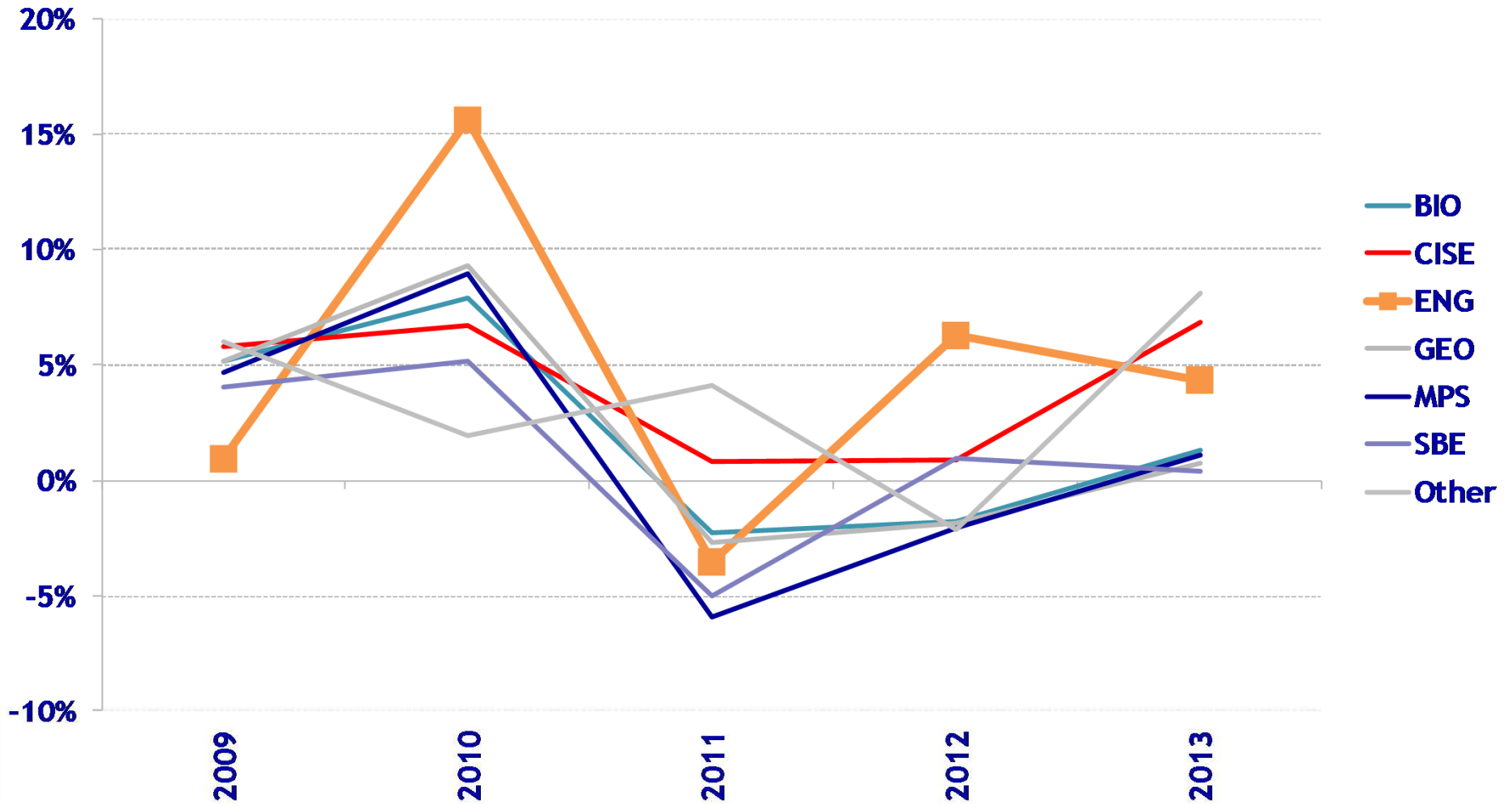
DOE "S&I" + DOE R&D in "6.1" through "6.3" categories

Source: Agency budget documents.
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Recent Changes in NSF R&RA

Annual Rate of Change in Budget Authority



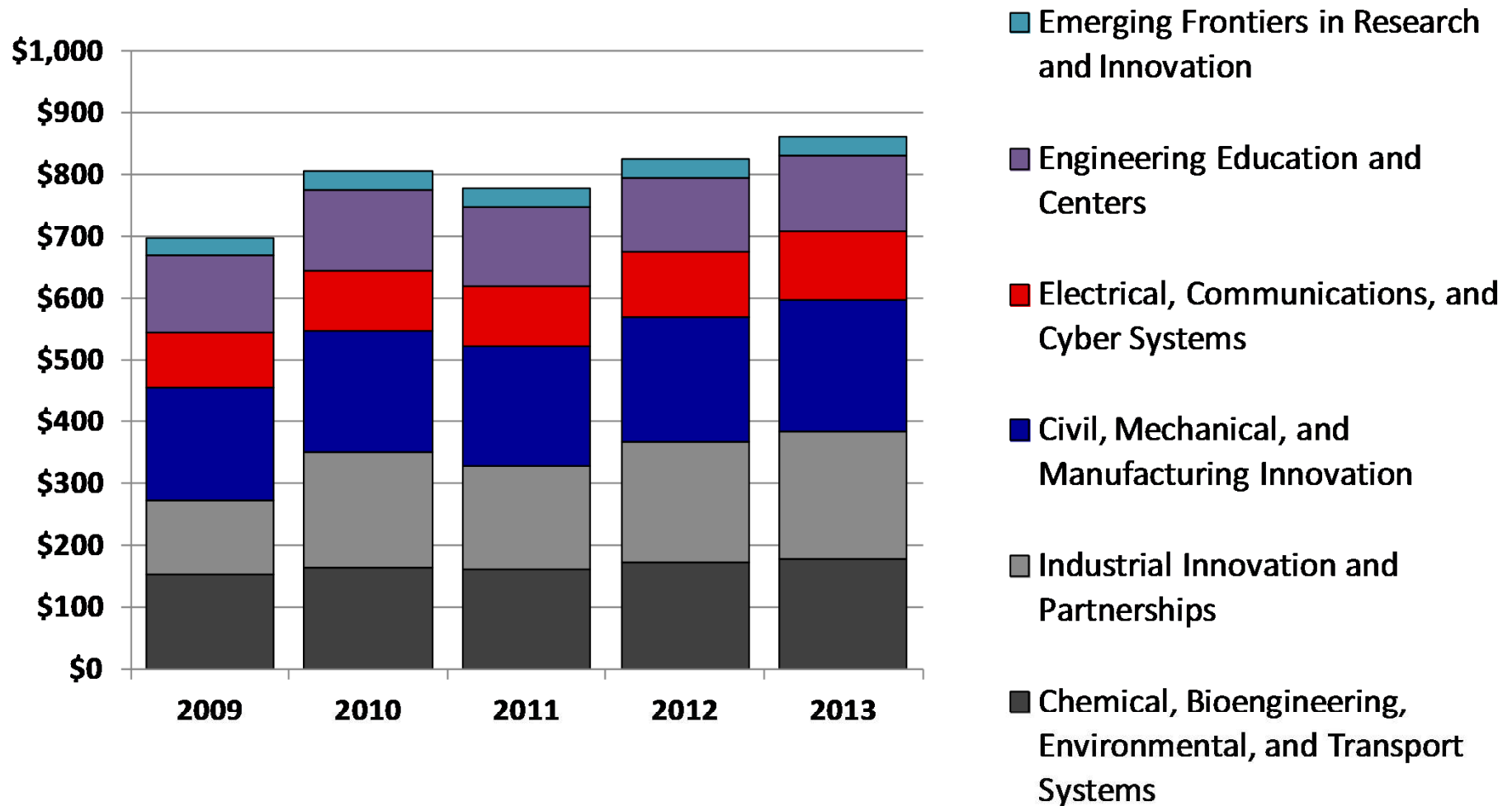
Source: AAAS analysis of agency data. Annual change is based on constant-dollar calculations.

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NSF Engineering Directorate Budget, FY 2009-2013

(budget authority in millions of constant FY 2012 dollars)



Source: AAAS analysis of agency documents. Does not include ARRA funding in FY 09.

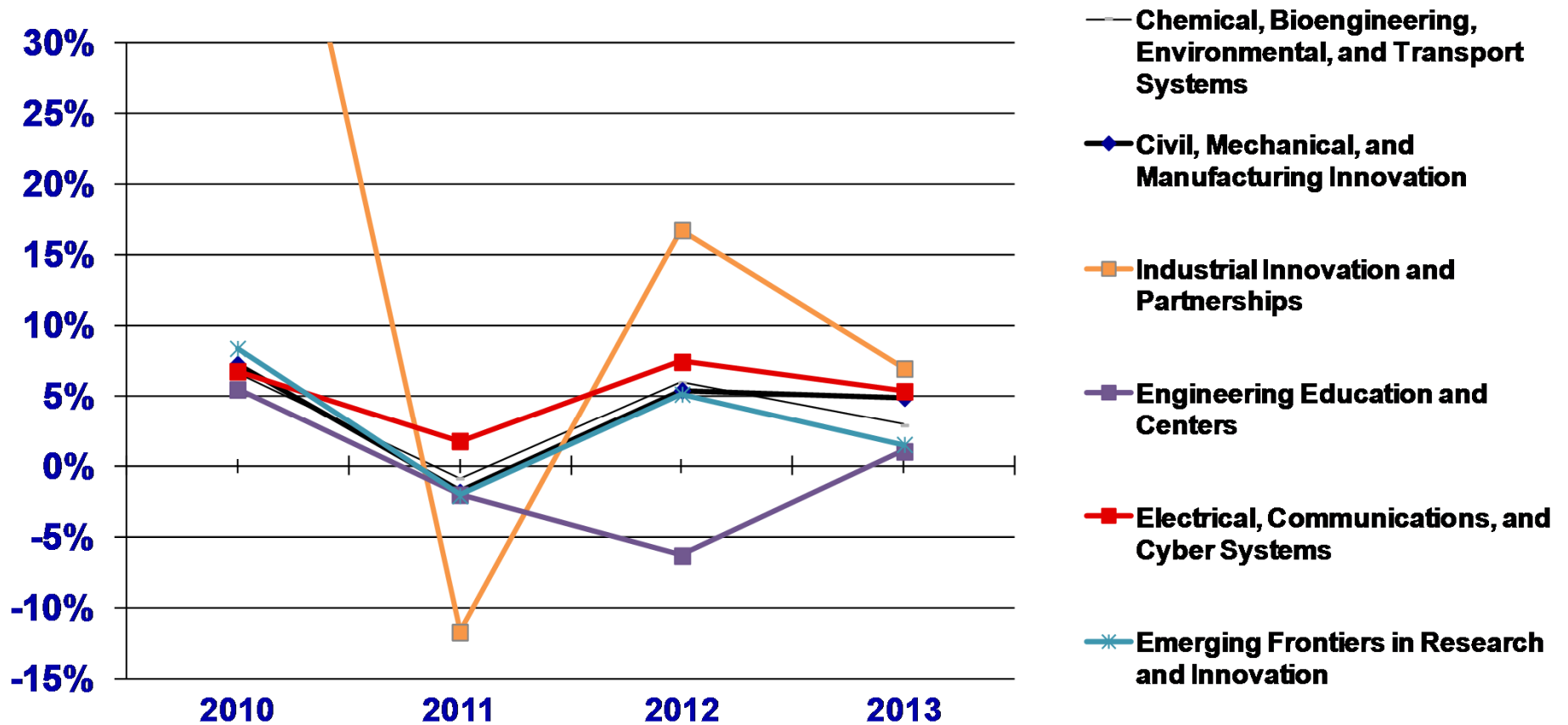
FY 2013 is the budget request.

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Recent Changes in NSF Engineering

Annual Rate of Change in Budget Authority



Source: AAAS analysis of agency data. Annual change is based on constant-dollar calculations.

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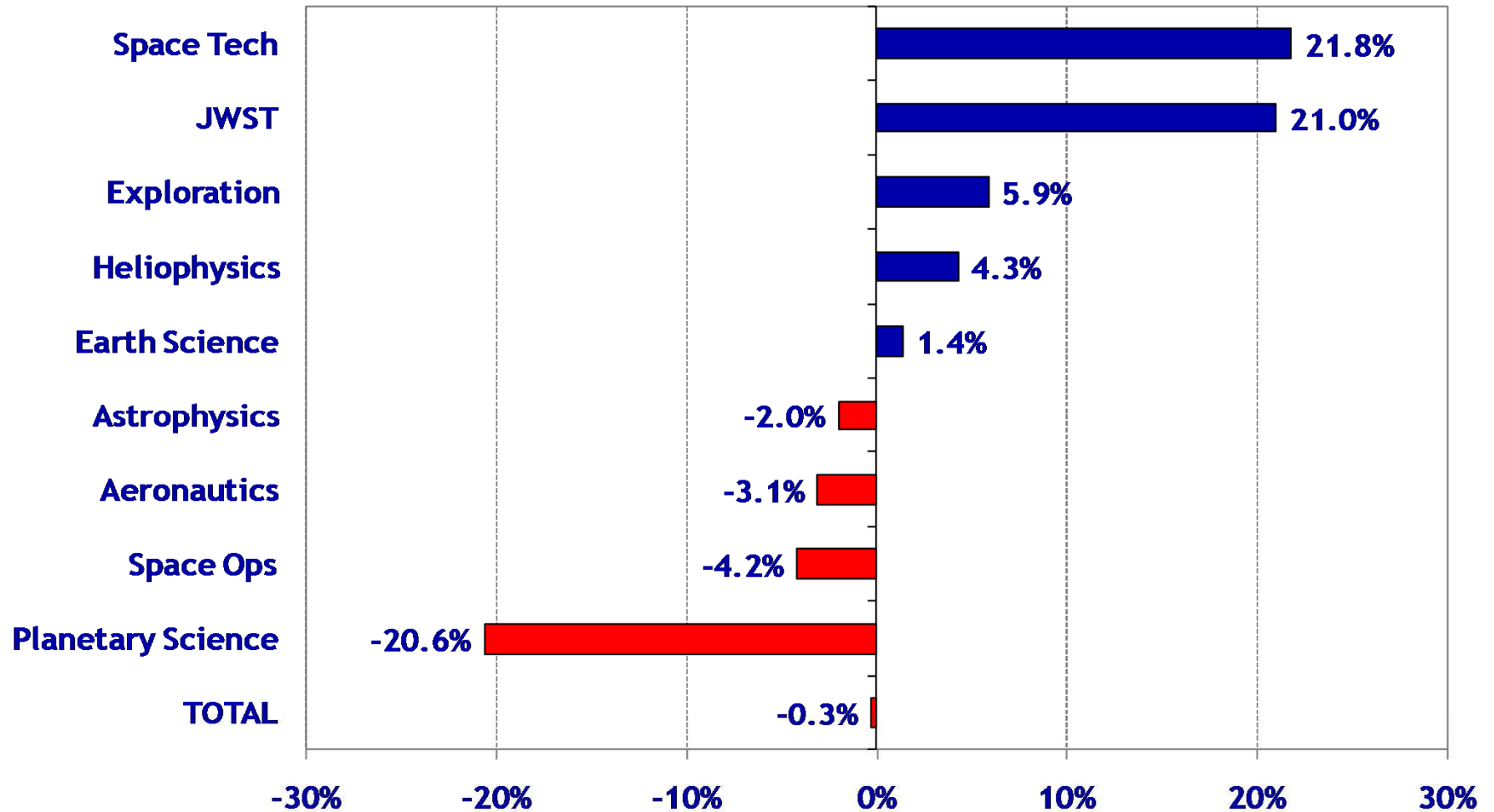


NSF Engineering Investments

- Advanced Manufacturing +41% (\$68 million)
- CEMMSS doubling to \$110 million
- CIF 21: doubling to \$11 million
- CAREER (Young Investigator Support): +4.8% to \$53 million, 125 awards
- Clean Energy Technology: +5% to \$128 million
- NNI: +4.8% to \$174 million; NITRD: \$4.3 million
- SBIR/STTR: +8% to \$165 million
- SEES, S+T Centers, ERCs essentially flat

Changes in FY 2013 NASA Budget

percent change from FY 2012



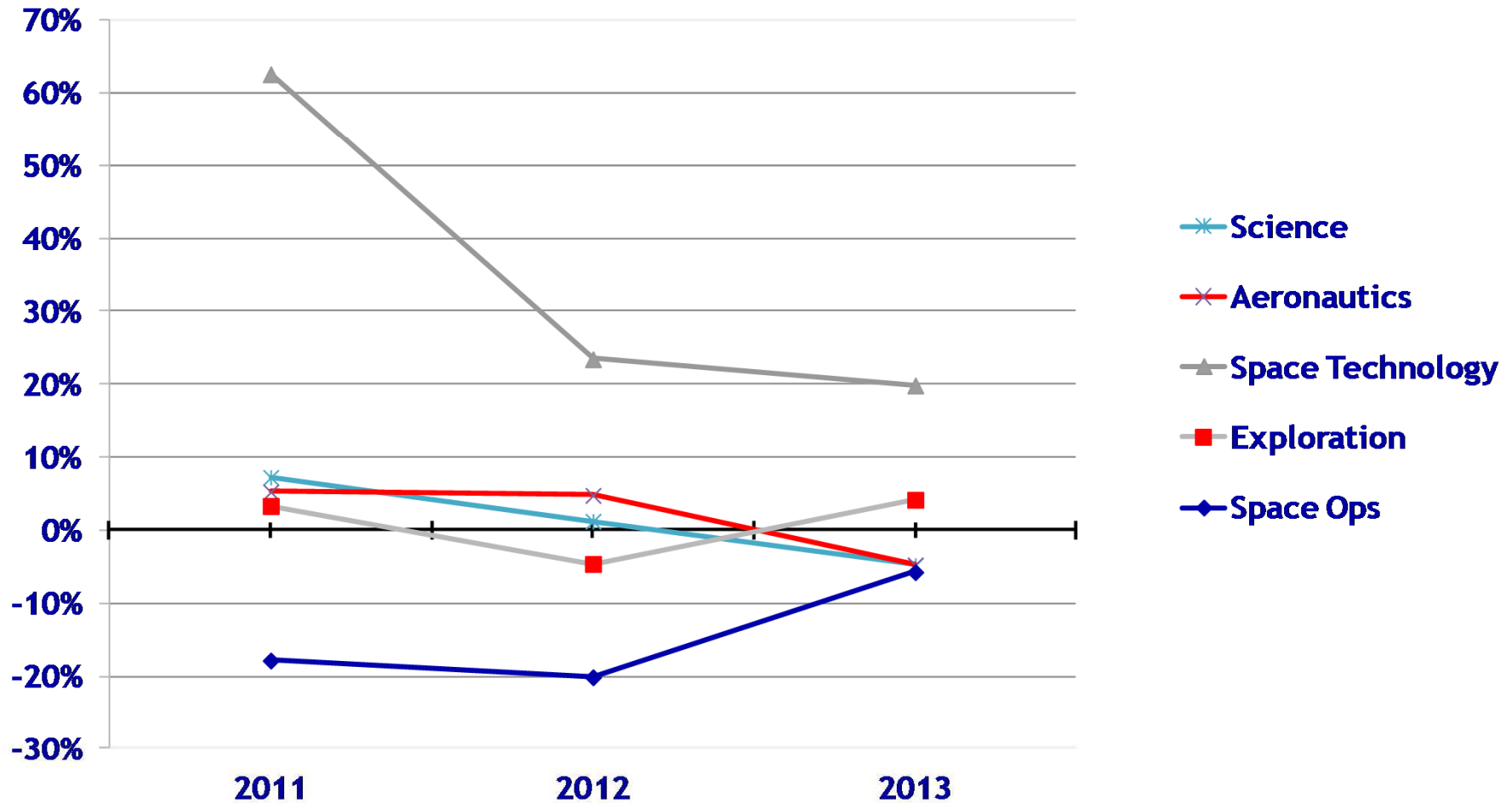
DOO "S&I" (DOO R&D) in "6.1" through "6.3" categories

Source: Agency budget documents.
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Recent Changes in NASA Funding

Annual Rate of Change in Budget Authority



Source: AAAS analysis of agency data. Annual change is based on constant-dollar calculations.

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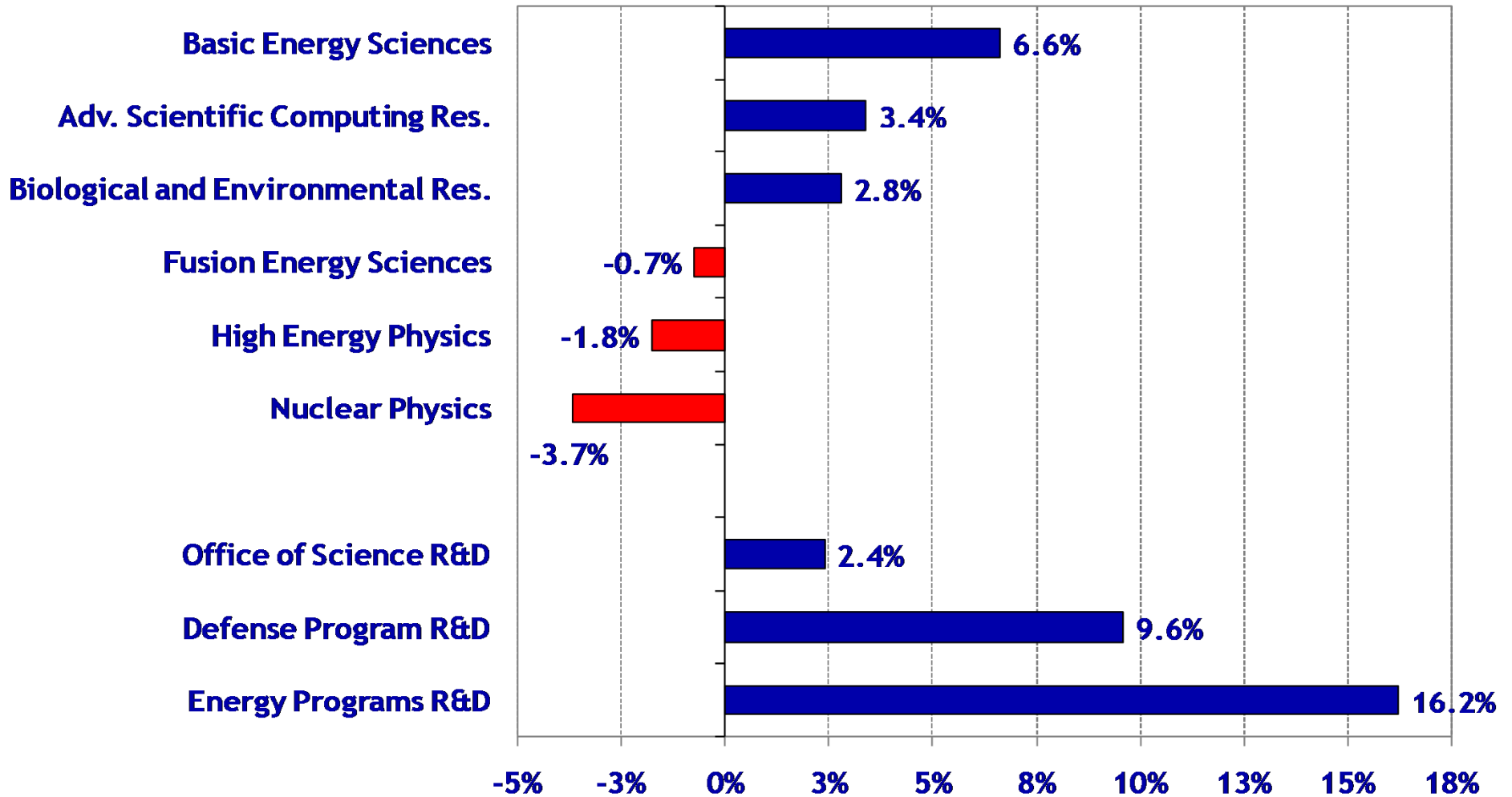


NASA Investments

- Science:
 - Planetary Science: No more ExoMars, but alternate study underway
 - James Webb ST continues growth (+21%, \$628 million)
- Exploration:
 - Orion MPCV on track for FY14 but System Dev down (-7.9%, \$2.8 bil)
 - Commercial crew transport system funding doubled (\$830 mil)
- Space Ops: 21st C Launch Complex moving forward, space comms and nav boosted by \$200 mil (\$650 total)
- Space Tech: Crosscutting Dev up 56.5% (\$294 million)
 - Small boost to SBIR

Changes in FY 2013 DOE Budget

percent change from FY 2012



DOE "S&I" : DOE R&D in "6.1" through "6.3" categories

Source: OMB data and agency budget documents.
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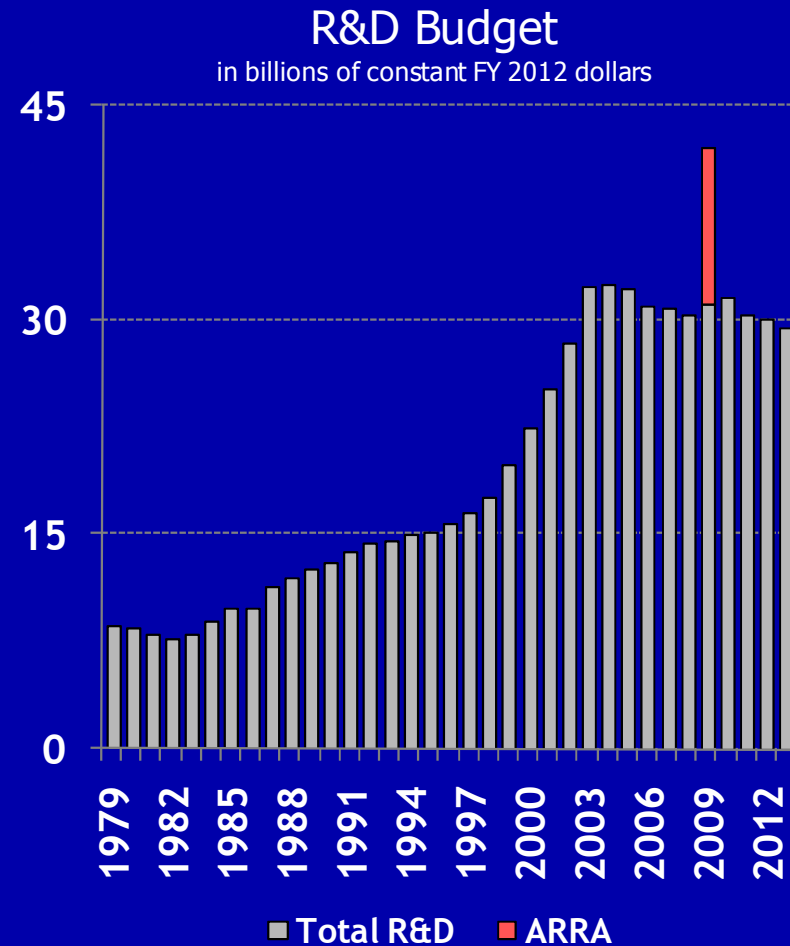


DOE

- Guided by Quadrennial Technology Review
- ITER prioritized over other fusion work
- Flat budget (?) for Exascale Computing initiative
- ARPA-E: +27% (to \$350 million)
- \$140 million for Energy Innovation Hubs
 - New hub: Grid Modernization (OE)
- \$120 million for Energy Frontier Research Centers

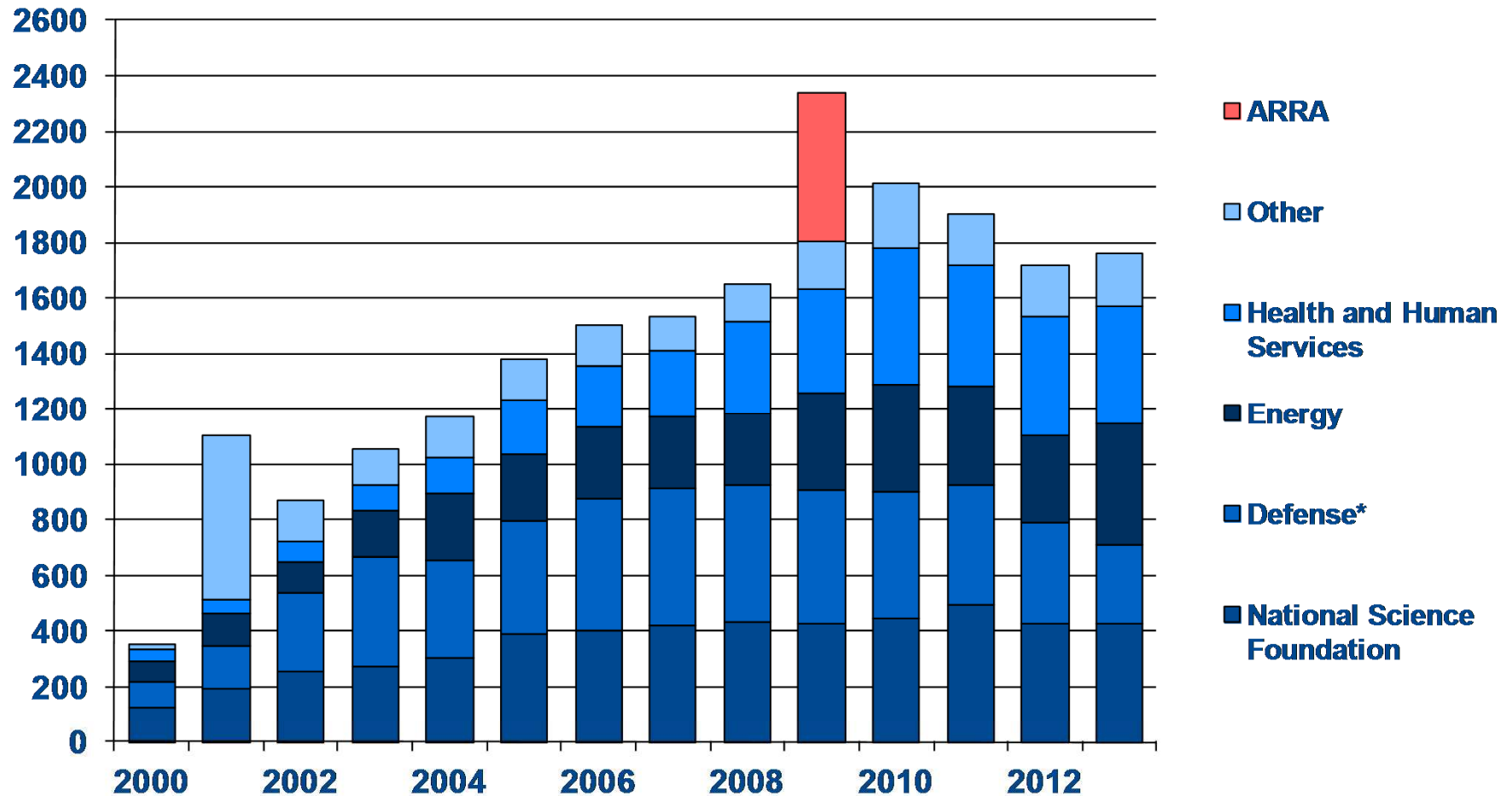
NIH

- Flat budget
 - NCATS lone gainer (+11%, to \$639 million).
- Agency will seek an 8% increase in new grants
 - Reduced grant duration
 - 1% cut to continuing grants
 - No more inflation adjustments



Federal Nanotechnology R&D, by Agency: FY 2000-2013

(budget authority in millions of constant FY 2012 dollars)



Total: +4.1%

Source: NNI budget supplements.

* DOD changed its accounting starting in 2005, resulting in larger totals.

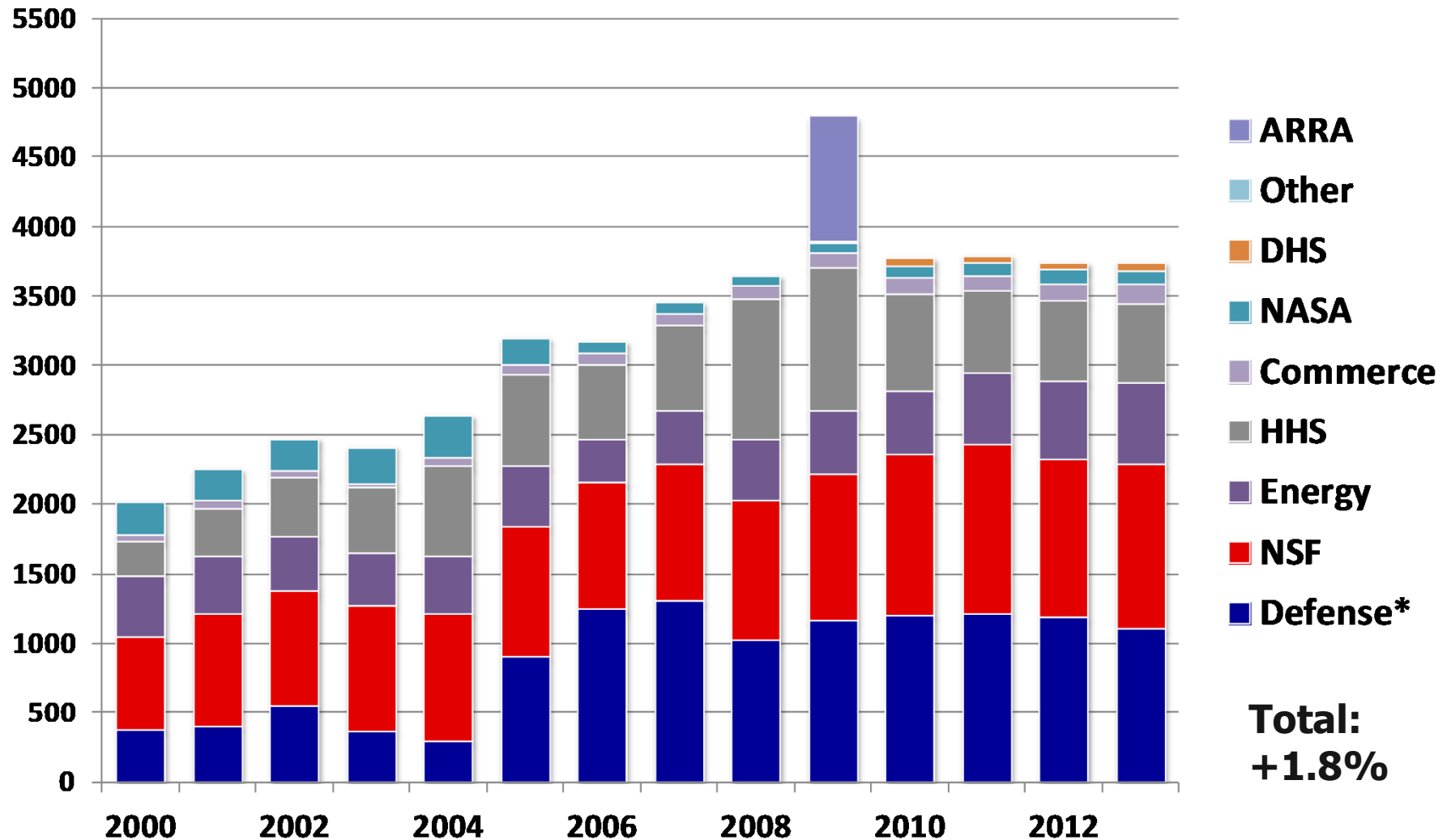
Adjusted for inflation using OMB's GDP deflators.

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Federal Networking and Information Technology R&D, by Agency

(budget authority in millions of constant FY 2012 dollars)



Source: NITRD budget supplements.
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FY13 Next Steps

- No Budget Resolution
 - Deeming resolution in the House?
- Rogers' Tight Ship
- Sequestration (?)
 - Would cut R&D-relevant discretionary spending by roughly \$90 billion per year (~8 or 9%)
 - No action prior to election?

For more info...

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www.aaas.org/spp/rd/

S&T Policy Forum

April 26-27, 2012

Ronald Reagan Building and International Trade Center

Washington, DC

