
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

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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Composition of the Proposed FY 2013 Budget
Total Outlays = $3.8 trillion

outlays in billions of dollars

- Social Security $820
- Medicare $523
- Medicaid $283
- Other Mandatory $667
- Net Interest $248
- Defense Discretionary $617
- [Defense R&D] $76
- Nondefense Discretionary $503
- [Nondefense R&D] $65

Source: Budget of the United States Government FY 2013.
Projected unified deficit is $901 billion.
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Total R&D by Agency, FY 2013

budget authority in billions of dollars

Total R&D = $142.2 billion
Defense: -1.9%
Nondefense: +5.1%

- DOD, $72.6
- HHS (NIH), $31.4
- DOE, $11.9
- NASA, $9.6
- NSF, $5.9
- USDA, $2.3
- Commerce, $2.6
- All Other, $6.0

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

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 by Character, FY 2013 Budget

Facilities + Equipment (+11.4%)
Basic (+1.6%)
Applied (+3.7%)
Development (-1.7%)

Total Research: +2.7%

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

- NIST: 239.7%
- DHS: 26.3%
- Other HHS: 21.9%
- DOT: 17.0%
- DOE Energy: 16.2%
- DOE Defense: 9.6%
- USGS: 7.6%
- NSF: 4.6%
- DOE Science: 2.4%
- NASA: 2.2%
- EPA: 2.1%
- VA: 0.2%
- NIH: 0.0%
- USDA: -1.5%
- DOD Other: -1.5%
- NOAA: -3.8%
- DOD S&T: -7.4%
- TOTAL: 1.2%

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

- NIST: 18.1%
- DHS: 26.3%
- Other HHS: 21.9%
- DOT: 17.0%
- DOE Energy: 16.2%
- DOE Defense: 9.6%
- USGS: 7.6%
- NSF: 4.6%
- DOE Science: 2.4%
- NASA: 2.2%
- EPA: 2.1%
- VA: 0.2%
- NIH: 0.0%
- USDA: -1.5%
- DOD Other: -1.5%
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- TOTAL: 1.2%

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

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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

Basic Research ("6.1") 0.2%
Applied Research ("6.2") -5.5%
Adv Tech Development ("6.3") -2.7%
Adv. Component Dev ("6.4") -7.6%
System Dev And Demon ("6.5") 3.9%
Management Support ("6.6") -6.9%
Operational Sys Dev ("6.7") -8.1%
TOTAL -2.5%

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

- Army ($8.9 bil) 2.2%
- Navy ($16.9 bil) -4.8%
- Air Force ($25.4 bil) -4.7%
- DARPA ($2.8 bil) 0.0%

Source: Congressional appropriations reports and agency budget documents.
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Changes in FY 2013 NSF Budget
percent change from FY 2012

- Comp + Info Sci: 8.6%
- Engineering: 6.1%
- EHR: 5.6%
- Polar: 3.2%
- Cyber: 3.1%
- Biological: 3.0%
- Math + Phys Sci: 2.8%
- Geosciences: 2.4%
- Social: 2.1%
- Equip / Fac: -0.4%
- TOTAL: 4.8%

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. © 2012 AAAS
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

Space Tech: 21.8%
JWST: 21.0%
Exploration: 5.9%
Heliophysics: 4.3%
Earth Science: 1.4%
Astrophysics: -2.0%
Aeronautics: -3.1%
Space Ops: -4.2%
Planetary Science: -20.6%
TOTAL: -0.3%

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

- Basic Energy Sciences: 6.6%
- Adv. Scientific Computing Res.: 3.4%
- Biological and Environmental Res.: 2.8%
- Fusion Energy Sciences: -0.7%
- High Energy Physics: -1.8%
- Nuclear Physics: -3.7%
- Office of Science R&D: 2.4%
- Defense Program R&D: 9.6%
- Energy Programs R&D: 16.2%

Source: OMB data and agency budget documents. © 2012 AAAS
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
(budget authority in millions of constant FY 2012 dollars)

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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Total: +4.1%
Federal Networking and Information Technology R&D, by Agency
(budget authority in millions of constant FY 2012 dollars)

Total: +1.8%

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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S&T Policy Forum
April 26-27, 2012
Ronald Reagan Building and International Trade Center
Washington, DC