The Federal R&D Investment in Energy and the Environment

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for the Pew Environment Group

AAAS R&D Budget and Policy Program
http://www.aaas.org/spp/rd
Composition of the Proposed FY 2011 Budget

Total Outlays = $3.8 trillion

outlays in billions of dollars

- Net Interest: $251
- Social Security: $730
- Medicare: $491
- Medicaid: $297
- Other Mandatory: $647
- Defense Discretionary: $661
- [Defense R&D]: $83
- Nondefense Discretionary: $599
- [Nondefense R&D]: $71

Source: Budget of the United States Government FY 2011.
Projected unified deficit is $1.3 trillion.

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Trends in Discretionary Spending
budget authority in billions of constant FY 2010 dollars

Source: Budget of the United States Government, FY 2011. FY 2010-2015 data are budget projections. © 2010 AAAS
Federal R&D Funding by Source
outlays in billions of constant 2008 dollars

Source: NSF, Division of Science Resources Statistics,
National Patterns of R&D Resources (NSF 08-318)
2008 figures are preliminary.
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Character of R&D, 2008
outlays in billions of dollars

Source: NSF, Division of Science Resources Statistics,
National Patterns of R&D Resources (NSF 08-318)
Figures are preliminary.
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The FY 2011 Federal R&D Investment

- Total R&D: $148.1b, -0.3% from FY 2010
  - Basic Research: $30.4b, +4.3%
  - Applied Research: $31.6b, +2.1%
  - Development: $81.5b, -2.9%
  - Equipment and Facilities: $4.6b, +1.3%
- $82.2b for defense R&D, -4.8%
- $65.9b for non-defense R&D, +5.9%
- -1.4% in constant dollars from FY 2010
- +0.7% in constant dollars since FY 2004
  - Peak in FY 2009
Total R&D by Agency, FY 2011
budget authority in billions of dollars

- DOD, $78.0
- HHS (NIH), $32.2
- DOE, $11.2
- NASA, $11.0
- All Other, $6.6
- NSF, $5.5
- USDA, $2.4
- DHS, $1.0

Total R&D = $148.1 billion

Source: OMB R&D budget 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 Federal R&D
in billions of constant FY 2010 dollars

Source: AAAS analyses of R&D in annual AAAS R&D reports.
FY 2011 figures are latest AAAS estimates of FY 2011 request.
R&D includes conduct of R&D and R&D facilities.
1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Trends in R&D by Agency
in billions of constant FY 2010 dollars

FY 2010 and FY 2011 figures are latest estimates.
1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Trends in Research by Agency
in billions of constant FY 2010 dollars

FY 2010 and FY 2011 figures are latest estimates.
Research includes basic research and applied research.
1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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U.S. Global Change Research Program, by Agency
(budget authority in billions of constant FY 2010 dollars)

Source: USGCRP/CCSP Annual Reports and OSTP.
Constant-dollar conversions based on OMB's GDP deflators.
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Federal Environmental R&D
billions of constant FY 2010 dollars budget authority

Source: OMB R&D data, Budget of the United States Government, agency budget justification, agency budget documents, and historical data.
Yearly values are adjusted for inflation using OMB's GDP deflators. Nominal values are unadjusted.
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Environmental R&D at the Department of Energy
(budget authority in billions of constant FY 2010 dollars)

Source: OMB R&D data, *Budget of the United States Government*, agency budget justification, agency budget documents, and historical data.

* ARRA adds $5.7 billion in Environmental R&D in FY 2009.

Yearly values are adjusted for inflation using OMB's GDP deflators. Nominal values are unadjusted. ARRA figure includes more non-R&D items than a typical year due to programmatic funding decisions.

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Environmental R&D at the National Science Foundation
(budget authority in billions of constant FY 2010 dollars)

Source: OMB R&D data, Budget of the United States Government, agency budget justification, agency budget documents, and historical data.
Yearly values are adjusted for inflation using OMB's GDP deflators. Nominal values are unadjusted.
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Recent Energy Initiatives

- EERE - Biomass/Biorefinery ($777m), Geothermal ($393m), Building Efficiency ($319m), Weatherization ($5.0b), Energy Efficiency and Conservation Grants ($2.8b), Appliance Rebate Program ($299m), Advanced Battery Manufacturing ($2.0b), Alternative Fueled Vehicles ($299m), Transportation Electrification ($398m)

- ED - Smart Grid Investments ($4.1b)

- Fossil - Carbon Capture ($2.6b), Clean Coal Round 3 ($800m)

- Nuclear - Restructure proposed in 2011, splits Gen IV and 2010 into Reactor Concepts and Enabling Technology - Fuel Cycle R&D

- ARPA-E - $400m in ARRA, $300m requested in 2011
Industry Innovation Initiatives

- S.3839 - SBIR/STTR Extended through January 31, 2011
  - Keeps same percentages (SBIR: 2.5%, STTR: 0.3%)
- R&D Tax Credit Proposal
  - Make the tax credit permanent
  - Increase simple formula credit from 14 to 17 percent
- ARRA Report: $100 billion in innovation
  - $18.7 billion in R&D
- H.R.5297 - Small Business Jobs and Credit Act
  - $30 billion small business lending fund
  - $12 billion in tax breaks
- “Make it in America” Agenda
- Patent Reform