

The Federal R&D Investment in Energy and the Environment

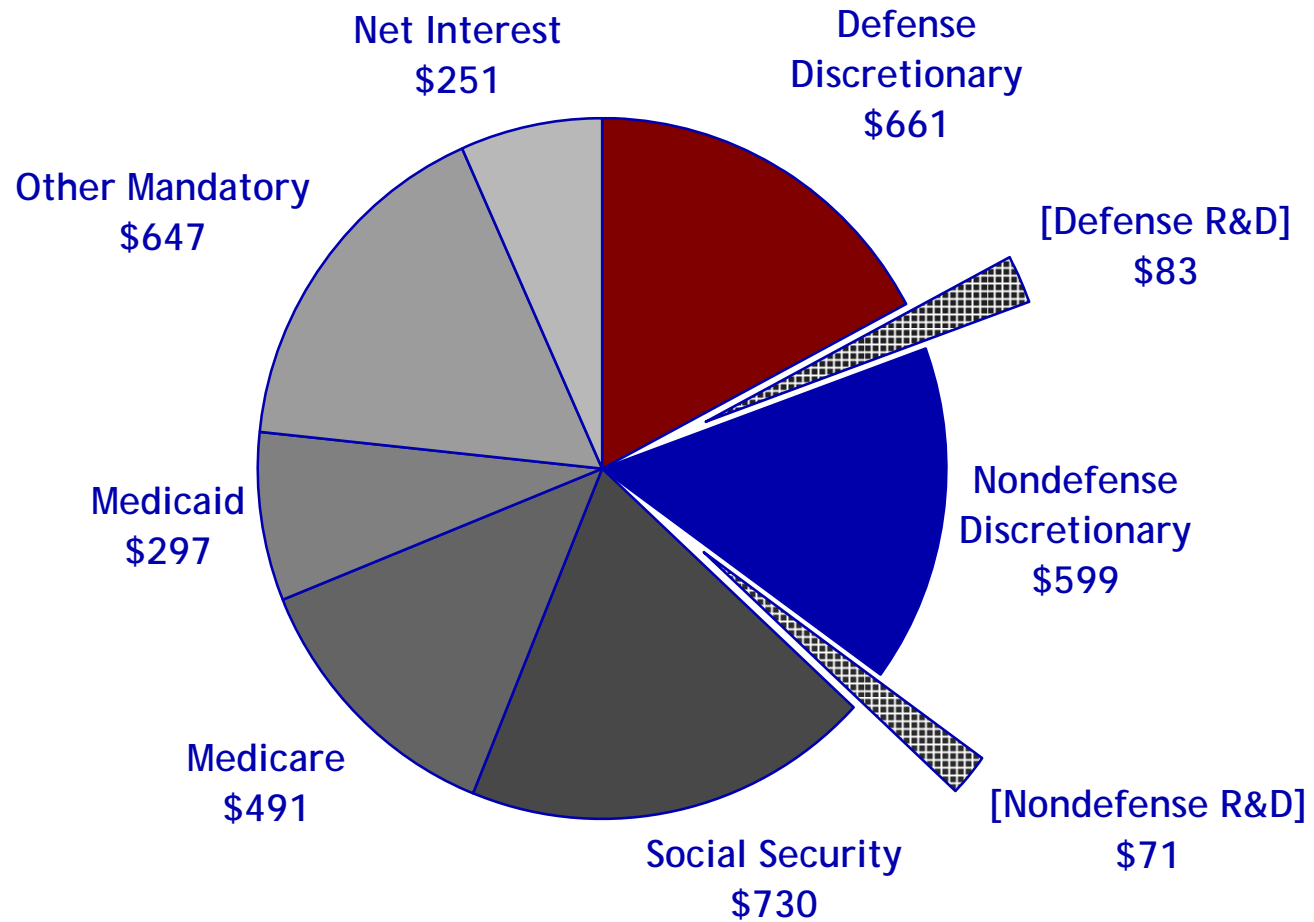
Patrick J Clemins
November 17, 2010
for the Pew Environment Group

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



Source: *Budget of the United States Government FY 2011*.

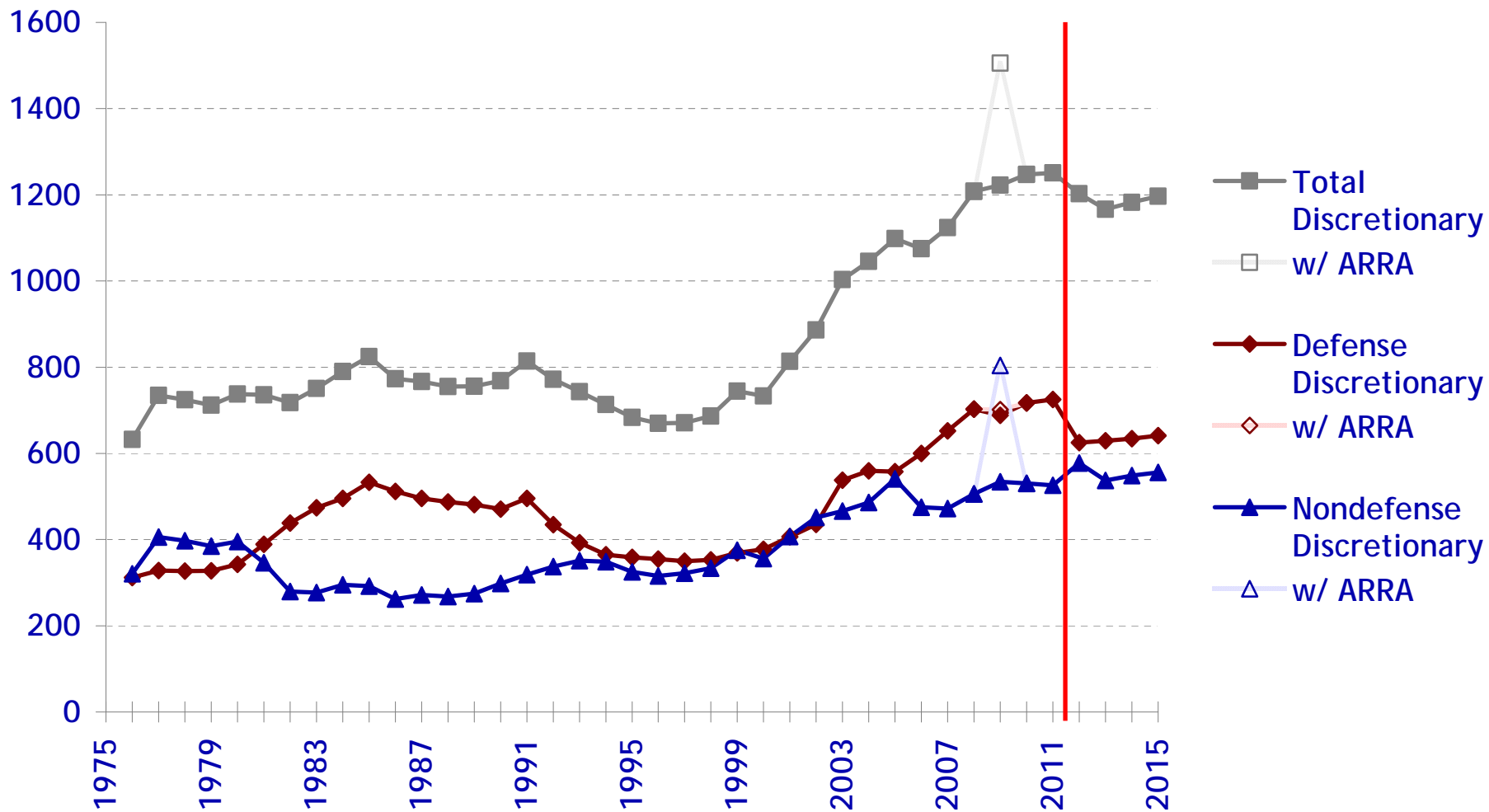
Projected unified deficit is \$1.3 trillion.

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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.*

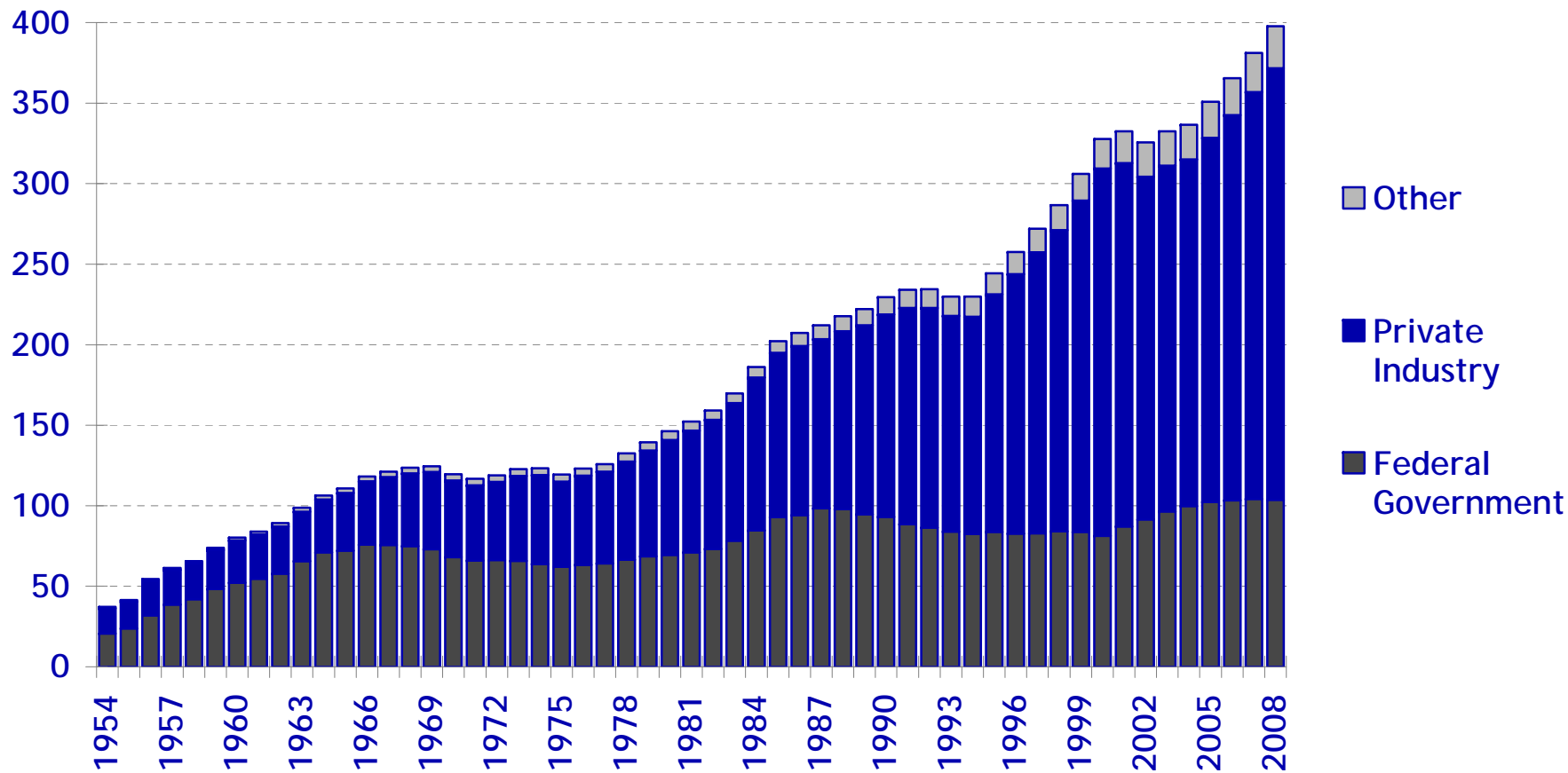
FY 2010-2015 data are budget projections.

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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)

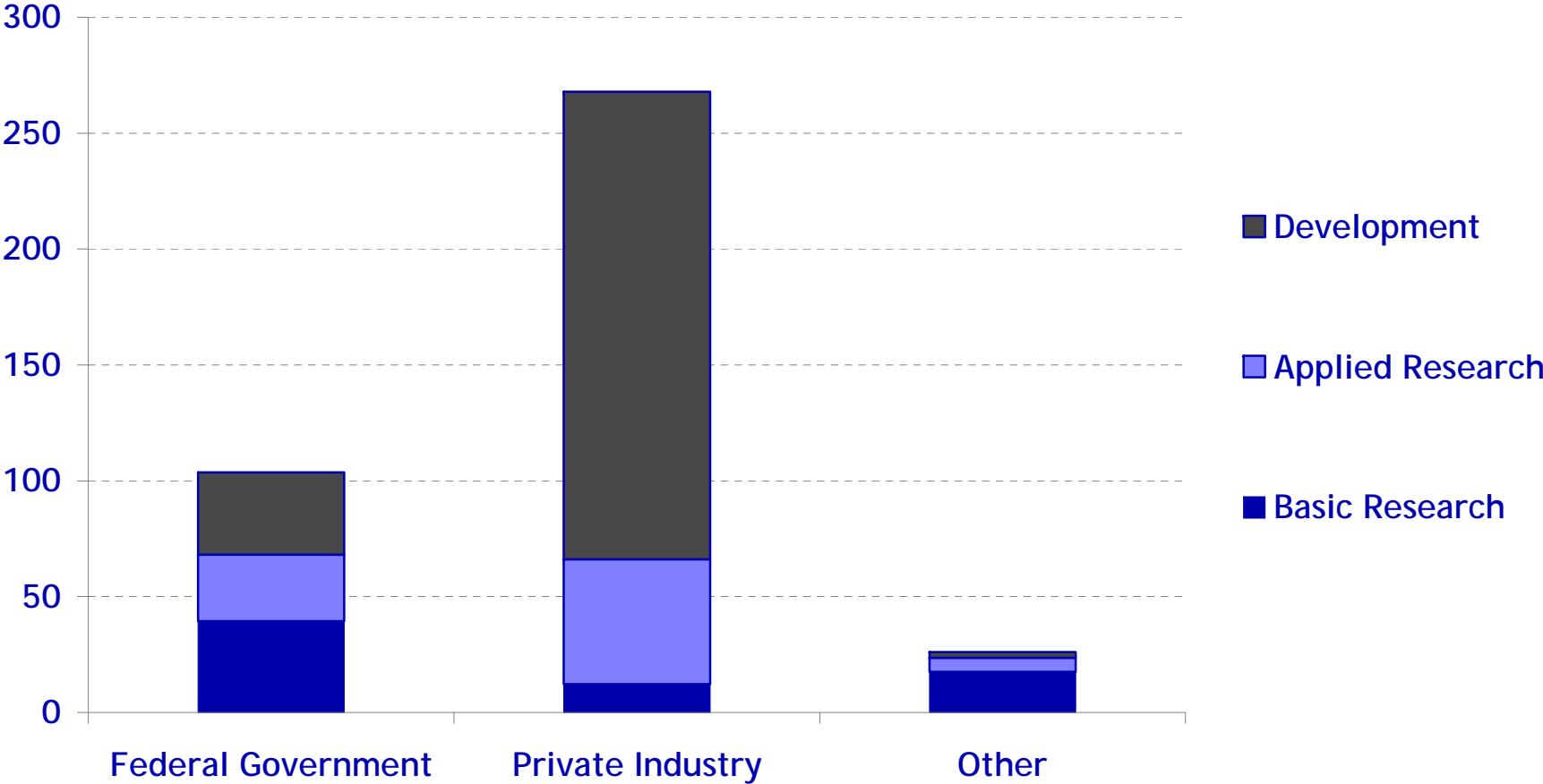
2008 figures are preliminary.

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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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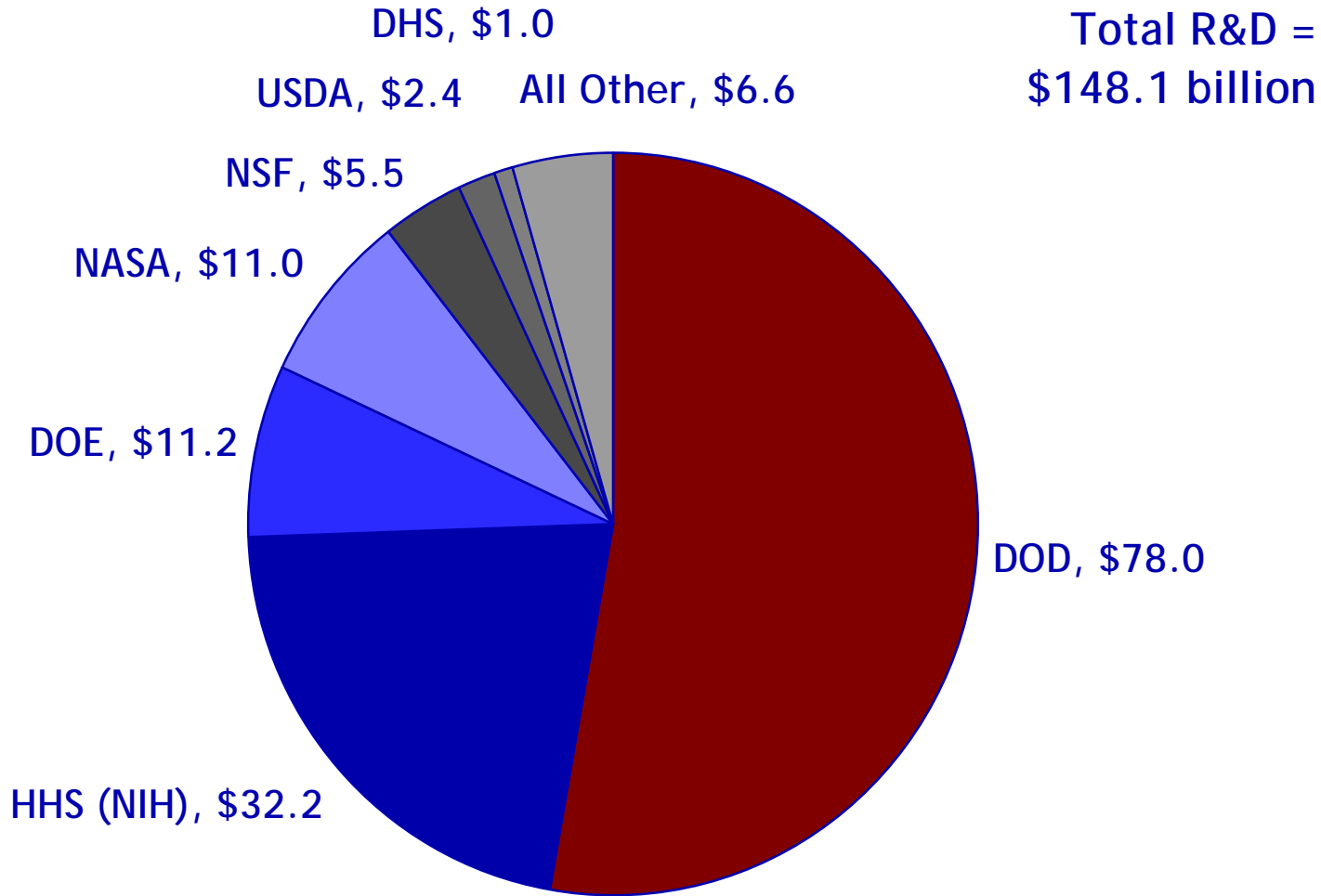


The FY 2011 Federal R&D Investment

- 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



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

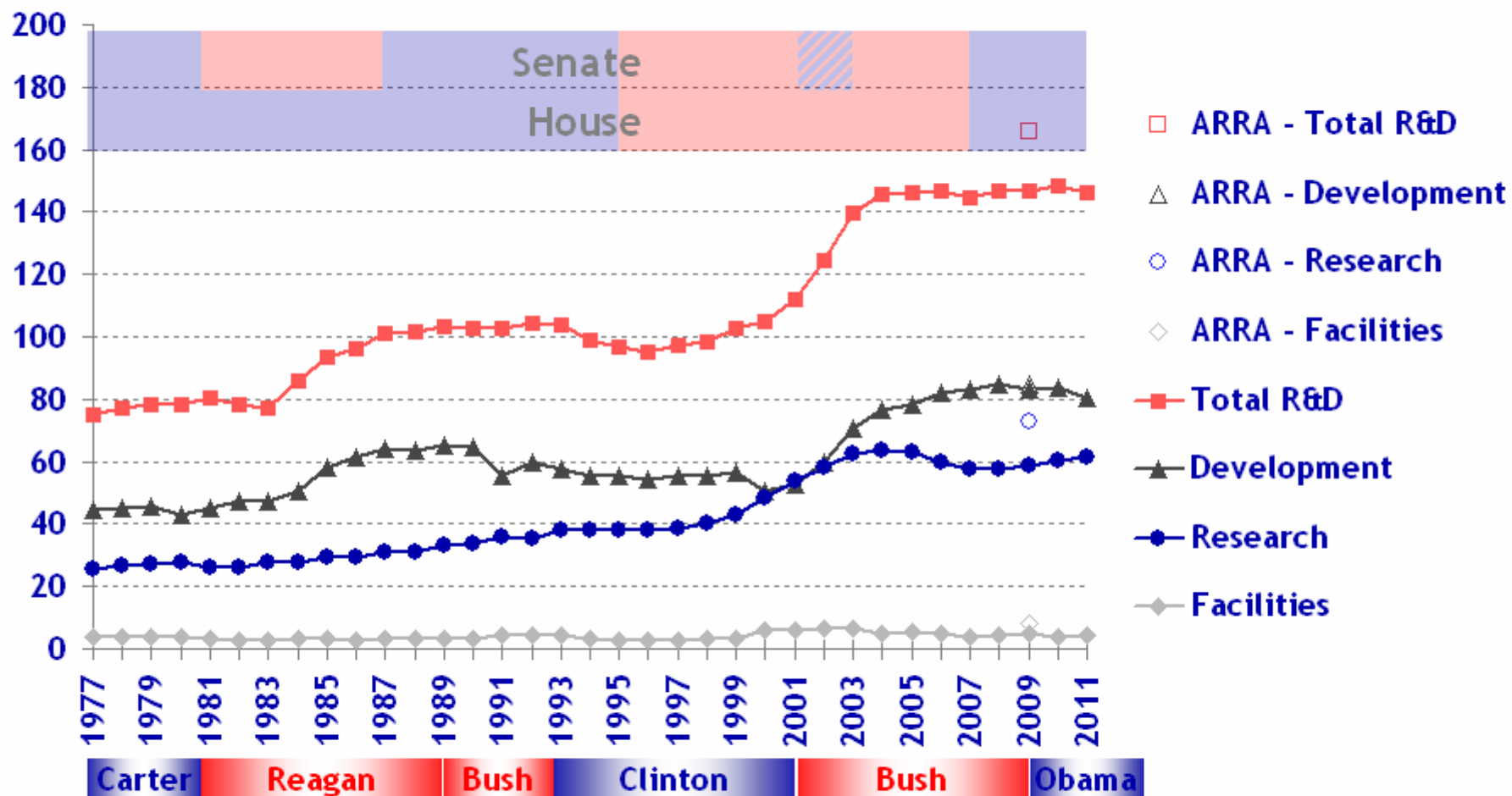
R&D includes conduct of R&D and R&D facilities.

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Trends in Federal R&D

in billions of constant FY 2010 dollars

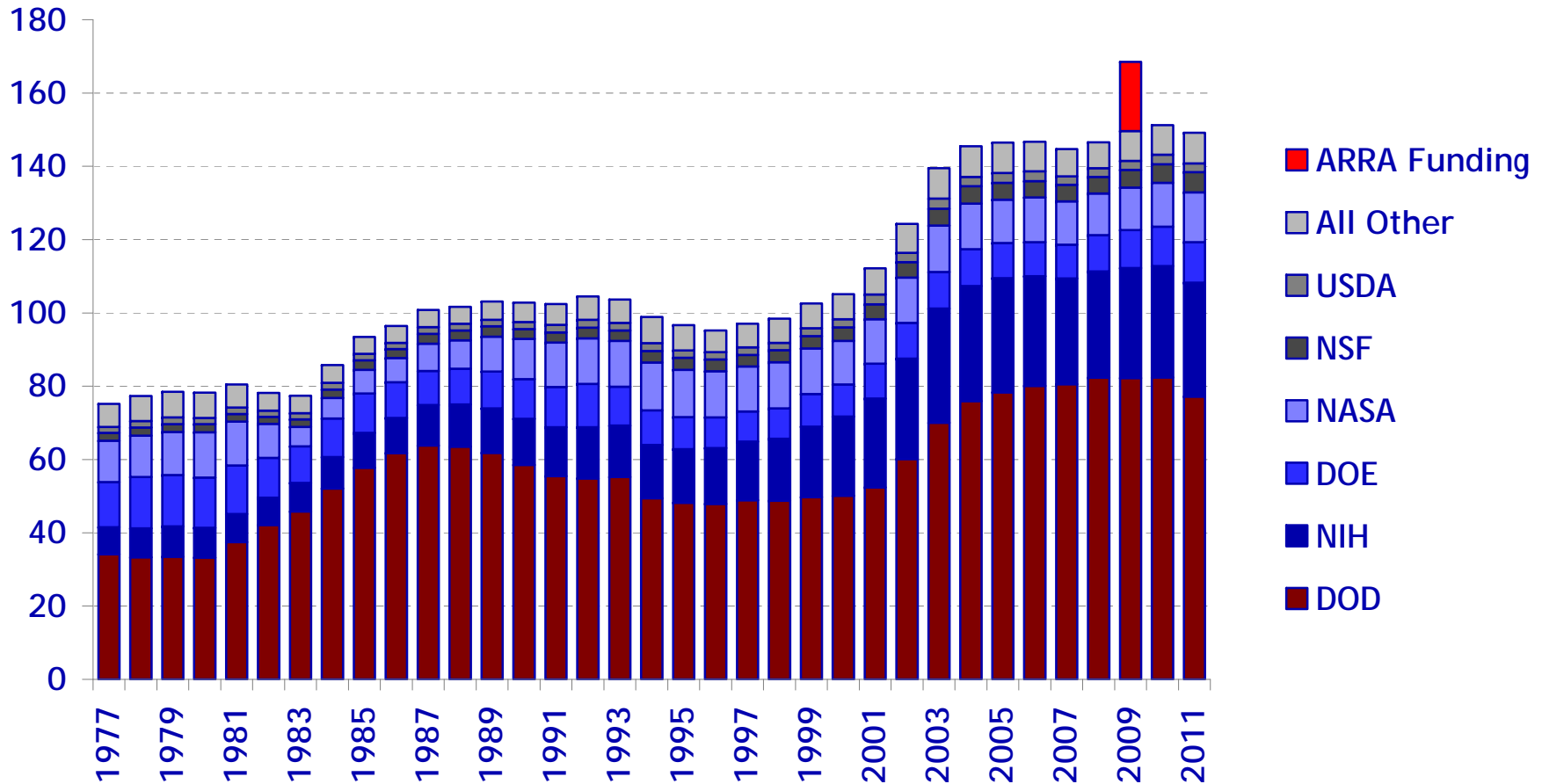


Source: AAAS analyses of R&D in annual AAAS R&D reports.
 FY 2011 figures are latest AAAS estimates of FY 2011 request.
 R&D includes conduct of R&D and R&D facilities.
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Trends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

in billions of constant FY 2010 dollars

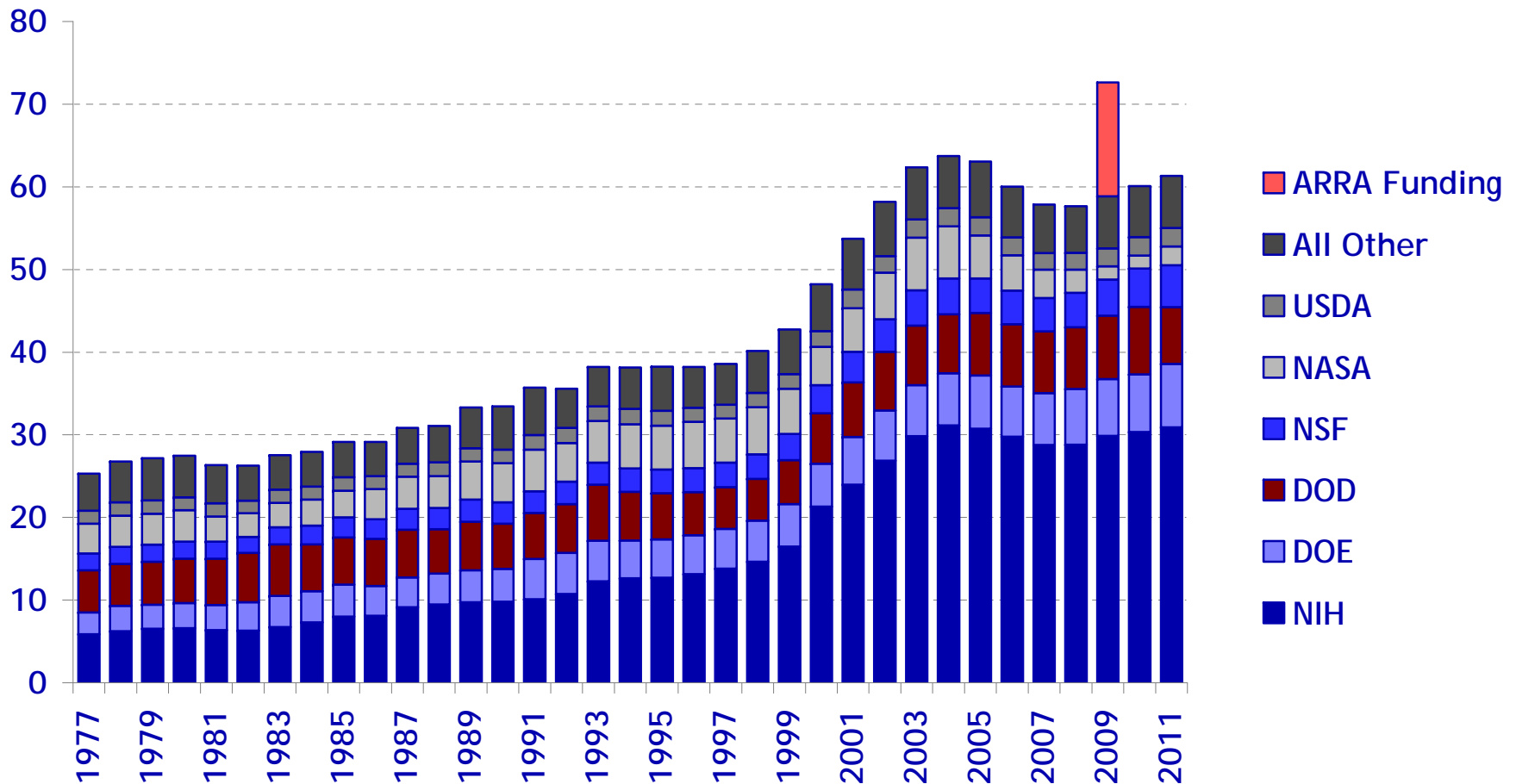


Source: AAAS Report: Research & Development series.
 FY 2010 and FY 2011 figures are latest estimates.
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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Trends in Research by Agency

in billions of constant FY 2010 dollars

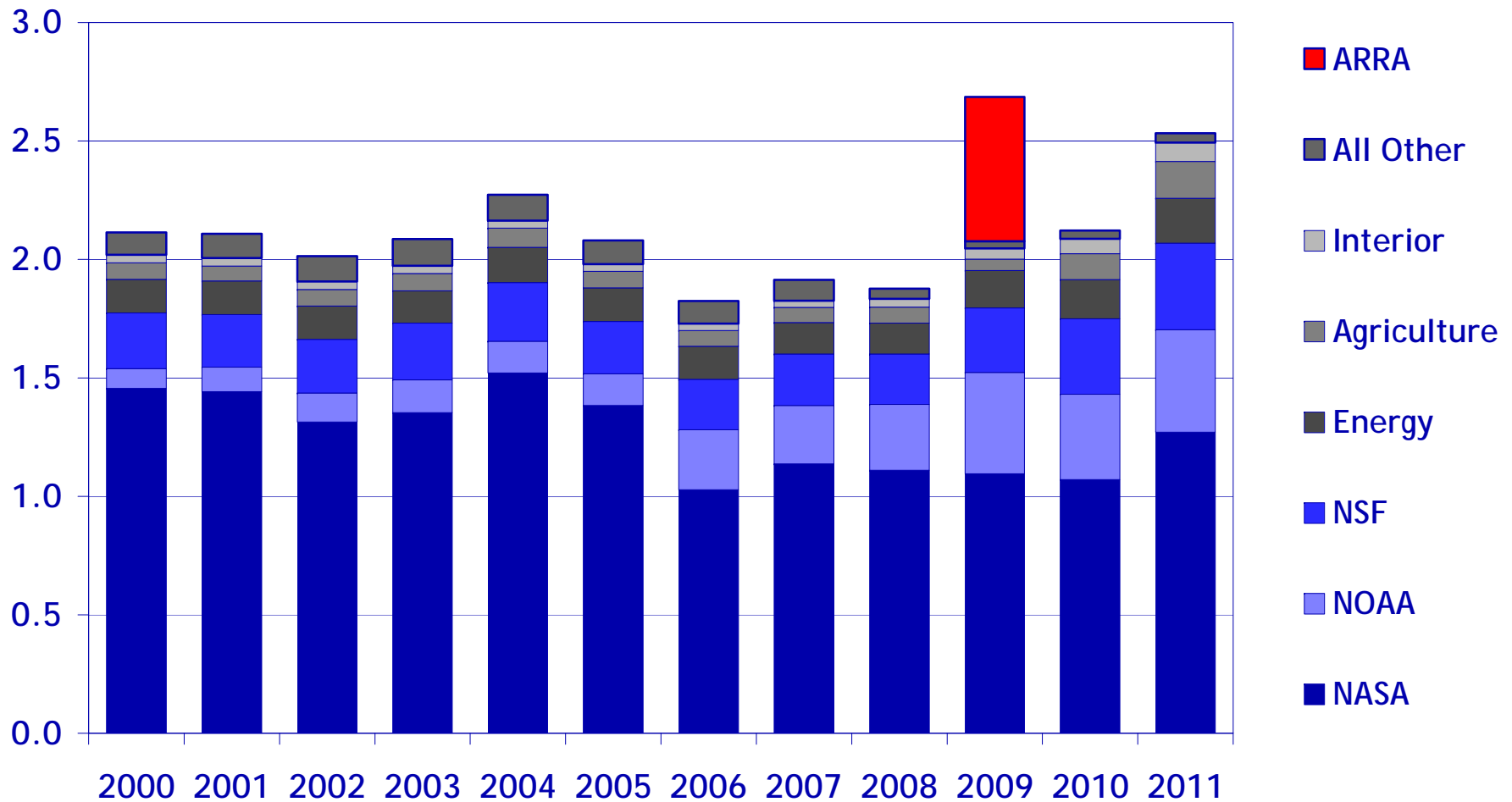


Source: AAAS Report: Research & Development series.
 FY 2010 and FY 2011 figures are latest estimates.
 Research includes basic research and applied research.
 1976-1994 figures are NSF data on obligations in the Federal Funds survey.
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U.S. Global Change Research Program, by Agency

(budget authority in billions of constant FY 2010 dollars)

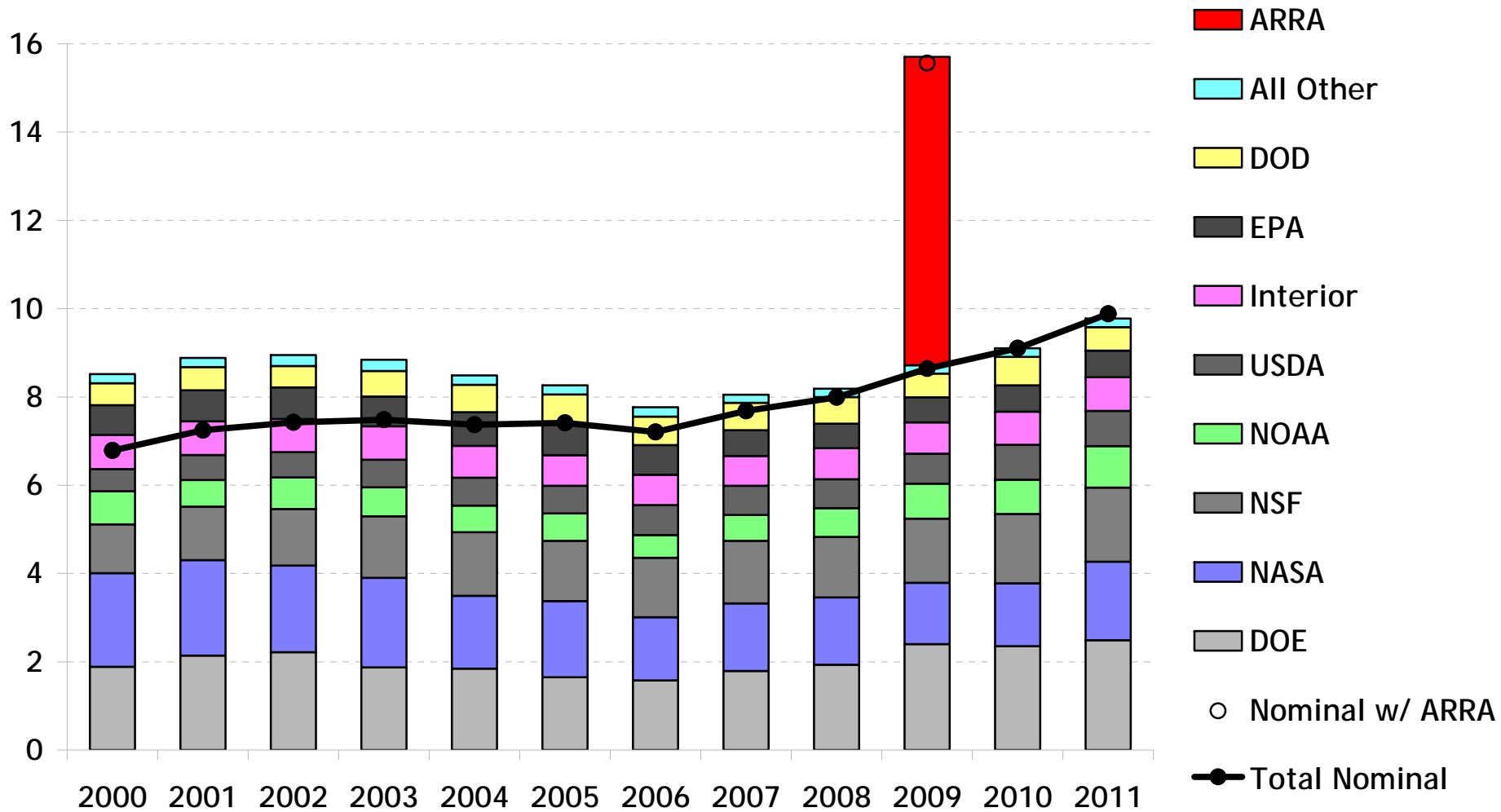


Source: USGCRP/CCSP Annual Reports and OSTP.
 Constant-dollar conversions based on OMB's GDP deflators.
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Federal Environmental R&D

billions of constant FY 2010 dollars budget authority

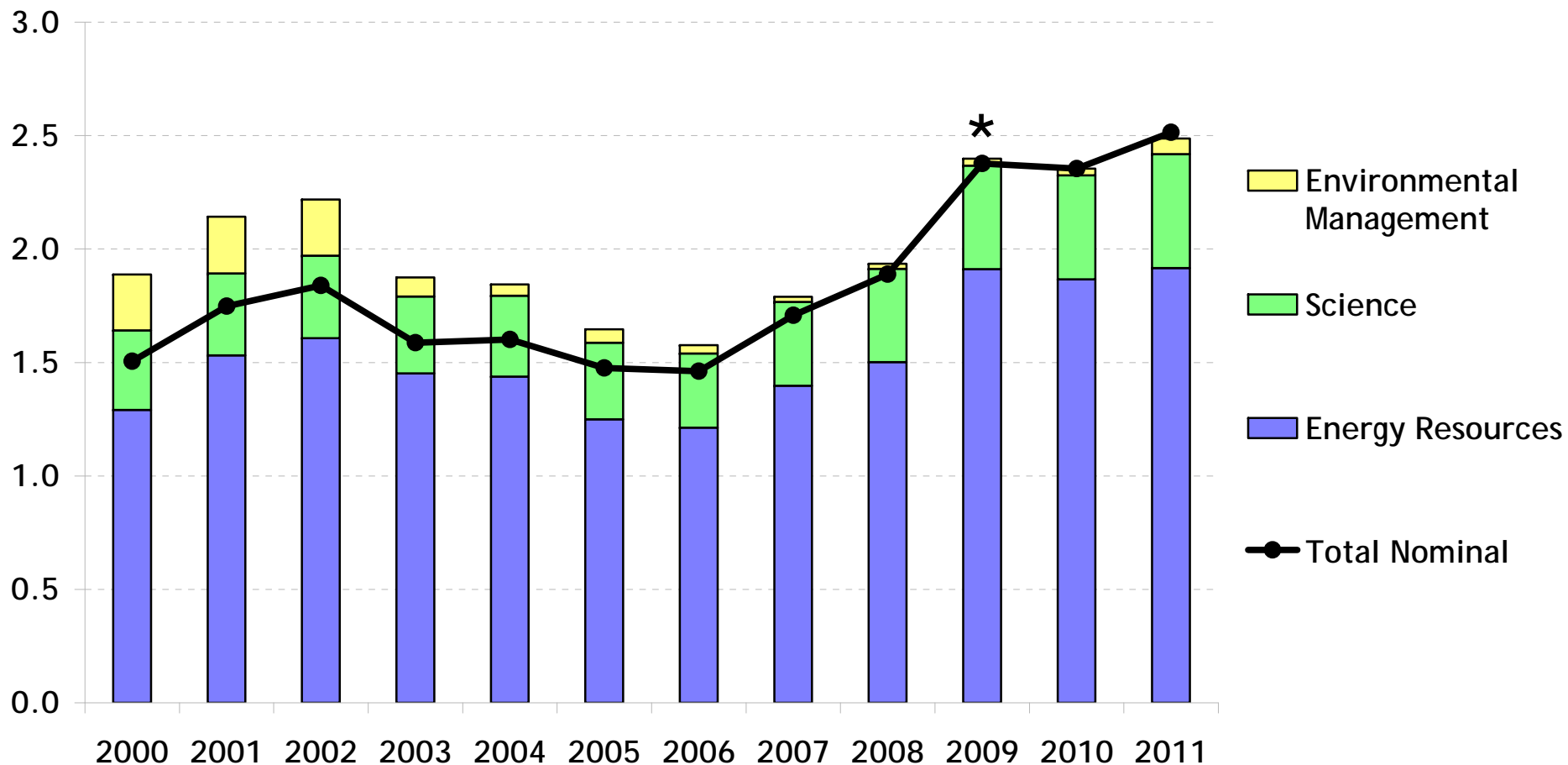


Source: OMB R&D data, *Budget of the United States Government*, agency budget justification, agency budget documents, and historical data.

Yearly values are adjusted for inflation using OMB's GDP deflators. Nominal values are unadjusted.

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.

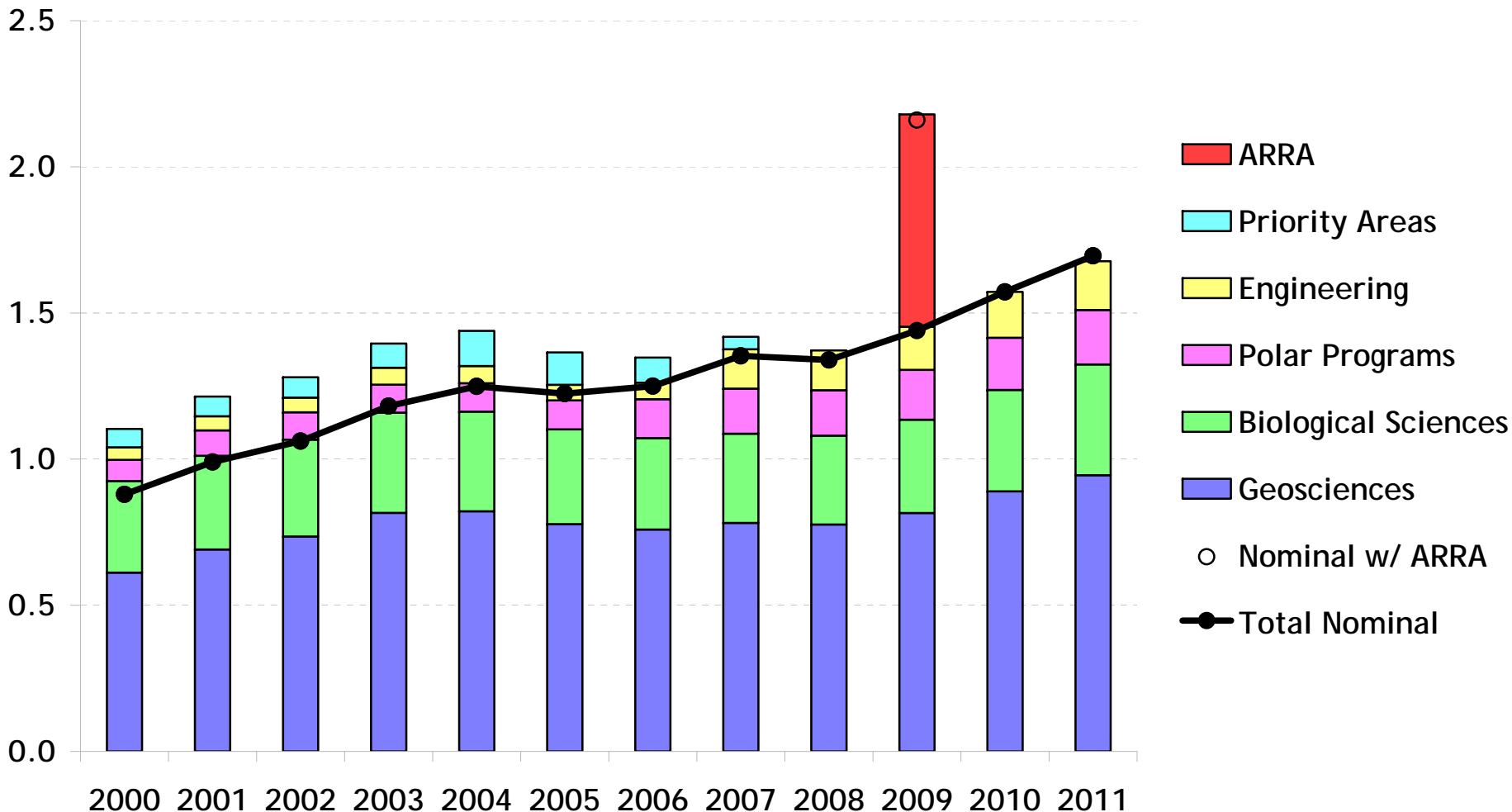
Yearly values are adjusted for inflation using OMB's GDP deflators. Nominal values are unadjusted.

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