R&D in the President’s FY 2011 Budget

Patrick J Clemins
May 13, 2010
for the AAAS S&T Policy Forum

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

See the “Seminars and Presentations” section for copies of this presentation.
The FY 2011 Federal Budget

- $3.8t total budget, $1.3t unified deficit
- $1.3t discretionary budget (+0.3%)
  - $532b nondefense budget (+1.4%)
- Rescuing the Economy
- A Foundation for Economic Growth and Job Creation
  - Small business initiatives
  - Investing in science and basic research
- Restoring Responsibility
  - Three year non-security discretionary funding freeze
Composition of the Proposed FY 2011 Budget

Total Outlays = $3.8 trillion

outlays in billions of dollars

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

Source: Budget of the United States Government FY 2011.
Projected unified deficit is $1.3 trillion.
© 2010 AAAS
Trends in Discretionary Spending

budget authority in billions of constant FY 2010 dollars

FY 2010-2015 data are budget projections.
© 2010 AAAS
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.
© 2010 AAAS
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.
© 2010 AAAS
Funding Shifts: Function

- Defense
  - -$4.1b to $82.2b
  - 4.8% decrease

- Nondefense
  - +3.6b to $65.9b
  - 5.8% increase
Funding Shifts: Character

- Development
  - -$2.9b to $81.5b
  - 3.5% decrease
- Research
  - +$2.5b to $62.0b
  - 4.1% increase
Funding Shifts: NASA

- Retire space shuttle and cancel Constellation Program
- Frees $6.5b over 2 yrs to...
- Near-earth orbit through private industry
  - +$6.1b over 5 yrs
- Heavy Lift and Propulsion
  - +$559m
- International Space Station
  - +$905m to $3.2b over 4 yrs
NASA Update

- Congressional Concerns
  - U.S. space leadership
  - Reliance on industry/Russia for near-earth orbit
  - Jobs

- Hutchison (R-TX) Bill - Extends Space Shuttle & Space Station

- Administration Response
  - Use Orion technology for Space Station rescue vehicle
  - Heavy lift and propulsion: $3b over next few years
    - Final design by 2015
  - Job assistance: $40m
Funding Shifts: USDA

- Buildings and Facilities
  - -$147m to -$76m in R&D after rescissions

- Agriculture and Food Research Initiative (AFRI)
  - +$166m to $429m in total budget
  - 63.4% increase
Funding Shifts: Dept of Energy

- Fossil, -$53m
- Nuclear, -$122m
- EERE, +$35m
- Electric Grid, +$22m
- Office of Science, +$172m
- ARPA-E, +$273m
Funding Shifts: Dept of Defense

- **Basic Research**
  - +6.7% to $2.0b
- **Development**
  - -5.0% to $71.0b
- **DARPA**
  - +3.7% to $3.1b
Funding Doubling for Basic Research

- National Science Foundation
  - Total Budget: +8.0% to $7.4b
  - R&D: +9.4% to $5.5b
- National Innovation Strategy
  - Next-Generation Information and Communications Technology
  - Innovation-Based Entrepreneurship
- Workforce Development
- Broadening Participation
Funding Doubling for Basic Research

- **DOE Office of Science**
  - Total Budget: +4.4% to $5.1b
  - R&D: +3.8% to $4.6b
  - New Energy Innovation Hub
    - Batteries and Energy Storage
  - Energy Frontier Research Centers (EFRCs)
  - Advanced Computing
  - Scientific User Facilities
  - Education and Workforce Development
**Funding Doubling for Basic Research**

- **National Institute of Standards and Technology**
  - Total Budget: +7.3% to $919 million
  - NIST Labs (STRS)
    - +13.5% to $585 million
  - R&D
    - +21.7% to $706 million
- **Competitive Manufacturing and Construction in a Clean-Energy Economy**
  - +$34.6 million
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.
© 2010 AAAS
National Institutes of Health

- Total Budget: +2.8% to $32.2b
- R&D: +2.8% to $31.4b
- Cancer and autism spectrum disorders
- AIDS research - Global Fund
- National Nanotechnology Initiative: +6.0% to $382m
- Therapeutics for Rare and Neglected Diseases (TRND)
  - +$26m to $50m
- National Synchrotron Light Source-II (NSLS-II): $33m
R&D in the FY 2011 Budget Request
percent change from FY 2010

NOAA 22.0%
NIST 21.6%
NASA 17.8%
NSF 9.4%
DOE Energy 6.8%
DOE Defense 5.0%
DOE Science 3.8%
NIH 3.1%
USGS 2.8%
EPA 1.8%
VA 1.5%
DOT -1.3%
DOD -5.2%
USDA -5.5%
DHS -9.0%

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

* - Lighter colored bars indicate percent change with projected FY 2011 earmarks.
© 2010 AAAS
Earmarks

- Early February - Senate Republicans introduce amendment to make earmarks a point of order requiring 60 votes to overcome
- March 9/10 - House Democrat leaders announce ban on earmarks to for-profit entities
- March 10/11 - House Republicans vote in closed-door session to ban all earmarks
- March 17 - Senate amendment fails
- Early April - Three House Republicans break rank and request earmarks
R&D Investment Priorities

- **New Industries and Jobs**
  - Advanced materials and manufacturing methods
  - $6.1b over 5 years for commercial earth orbit

- **Cleaner Energy**
  - +$155m (+6.8%) for DOE Energy R&D

- **Healthier America**
  - +$956m (+3.1%) for National Institutes of Health R&D

- **Enhanced Security**
  - DOD Basic Research: +6.7% to $2.0b
FY 2011 R&D Budget Request by Function
percent change from FY 2010

Transportation: 43.0%
Commerce: 17.3%
Space: 12.0%
Environment: 7.4%
Energy: 6.5%
Health: 6.5%
General Science: 6.3%
International: 0.0%
Defense: -4.8%
Agriculture: -5.8%
Justice: -31.8%

Source: OMB and agency budget data.
Environment includes natural resources R&D
© 2010 AAAS
STEM Education

- $3.7b, +$32m from FY 2010
- K-12 Education
  - Dept of Ed: $450m, NASA: $63m, NSF: $41m
- RE-ENERGYSE (Undergraduate)
  - NSF: $19m, DOE: $55m
- Undergraduate Diversity
  - NSF: +14% to $103m
- Graduate Fellowships
  - NSF: +16% to $158m, NIH: +5% to $824m
  - DOD: +4% to $40m, DOE: +$10m to $15m
Next Steps

- The Senate Budget Committee has approved a budget resolution.
  - The House leadership is deciding whether to put one together and is negotiating funding levels.
- After the budget resolution, Congress determines the 302(b)s, allocating a specific amount to each appropriation subcommittee.
- Congress needs to pass 12 appropriation bills, ideally by Sept. 30, the end of FY 2010.
For More Information...

The AAAS R&D web site is http://www.aaas.org/spp/rd/