

Research and Development in the Federal Budget Process

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for the AMS 2006 Summer Policy Colloquium

AAAS R&D Budget and Policy Program

<http://www.aaas.org/spp/rd>

See the “What’s New” section for the latest updates; see the “Seminars and Presentations” section for copies of this presentation.

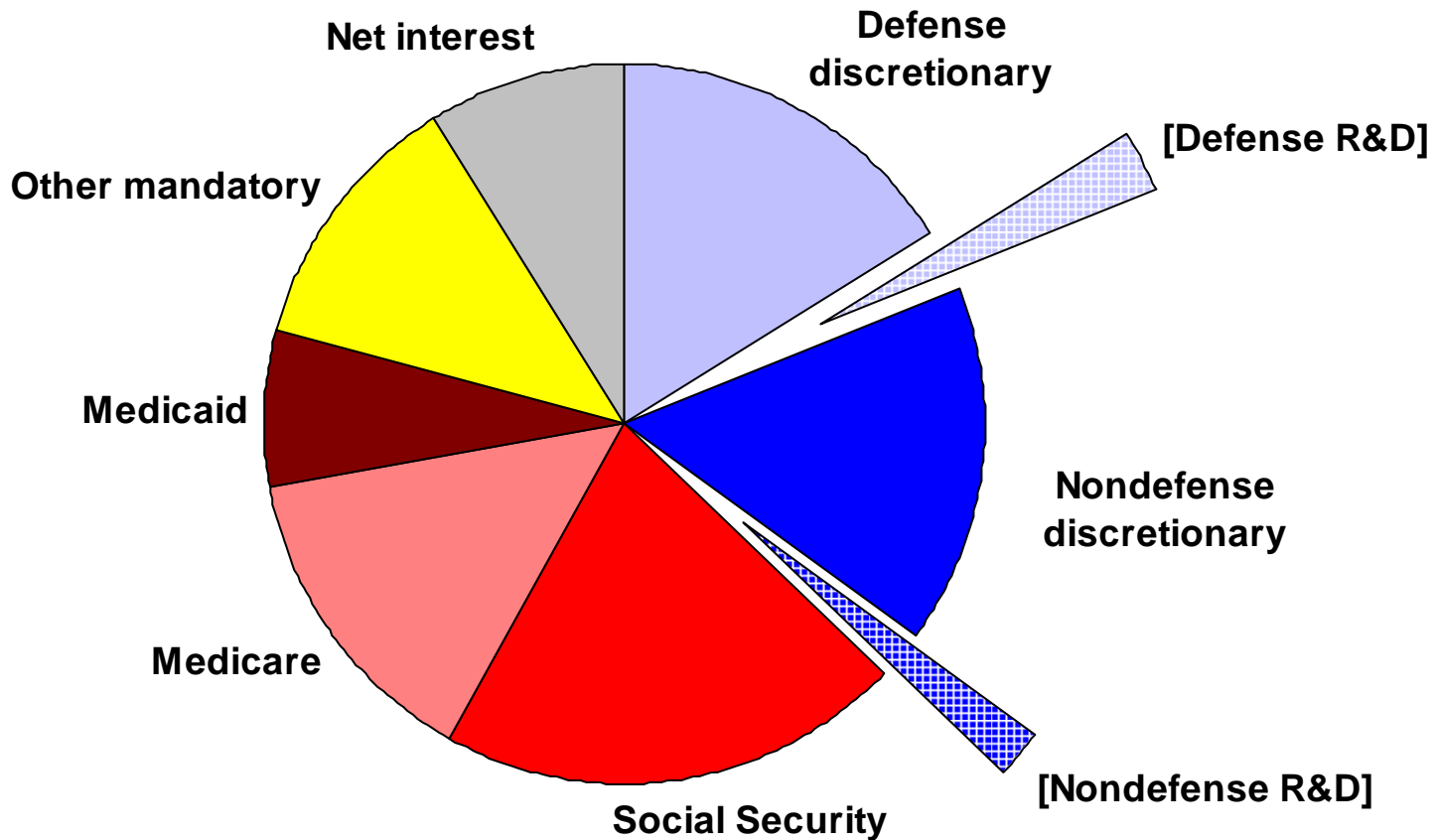


BUDGET CONTEXT FOR FY 2007: DEFICITS and BUDGET CUTS

- The budget deficit is still at record levels of \$400 billion.
- Policymakers have focused on restraining discretionary spending (appropriations) to control the deficit.
- Regular domestic spending is already falling in 2006, and the President's budget proposes further reductions in 2007 and future years.
- The budget proposes defense spending cuts, too, but only because Iraq costs aren't in the budget.
- Federal R&D investments come from the discretionary budget, so they are affected by these broad trends.

Composition of the Proposed FY 2007 Budget

Total Outlays = \$2.8 trillion



Note: Projected Unified deficit is \$354 billion.

Figures exclude most Iraq and Afghanistan military costs.

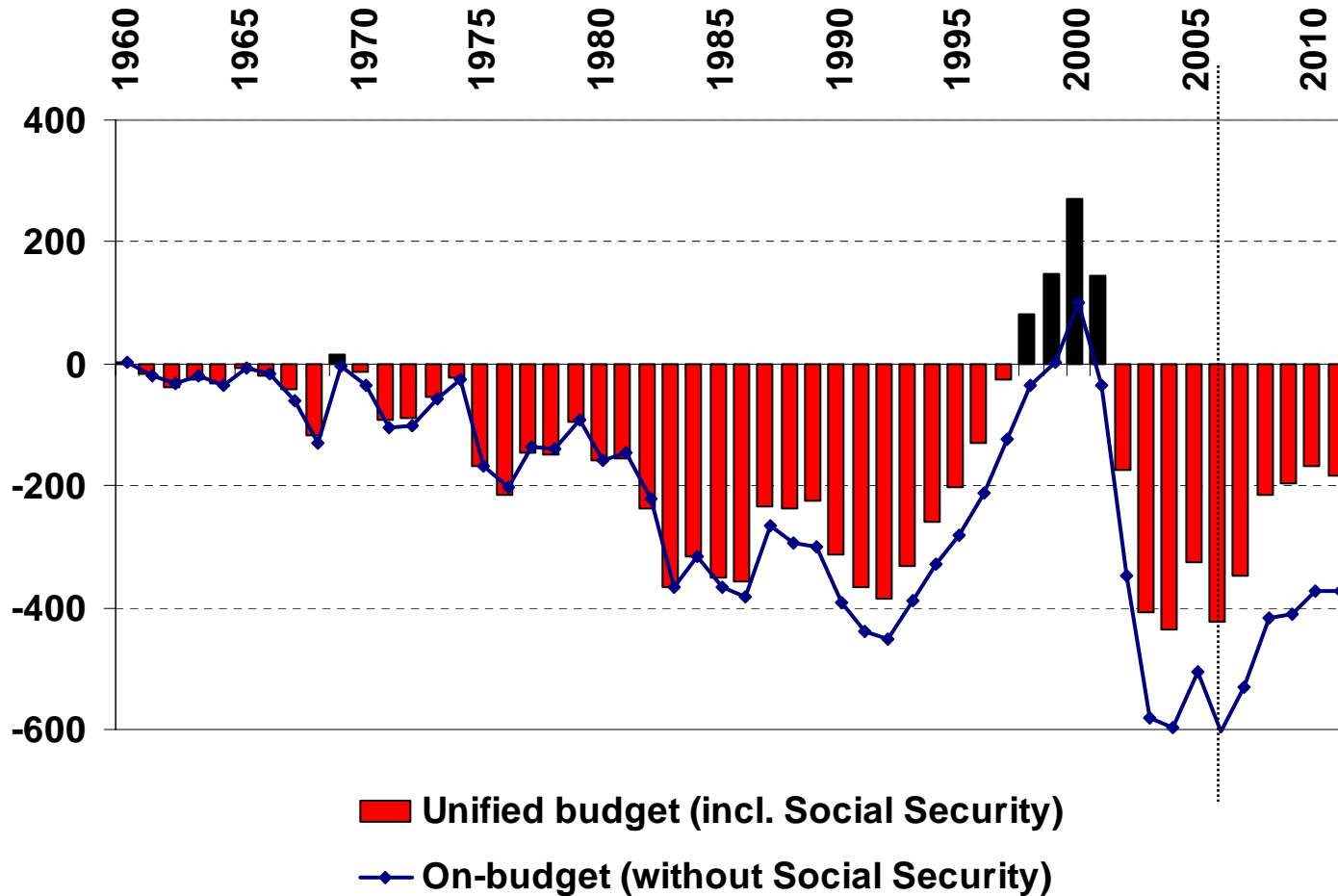
Source: AAAS, based on *Budget of the United States Government FY 2007*.

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Federal Budget Deficit (or Surplus), FY 1960-2011

in billions of CONSTANT FY 2006 dollars



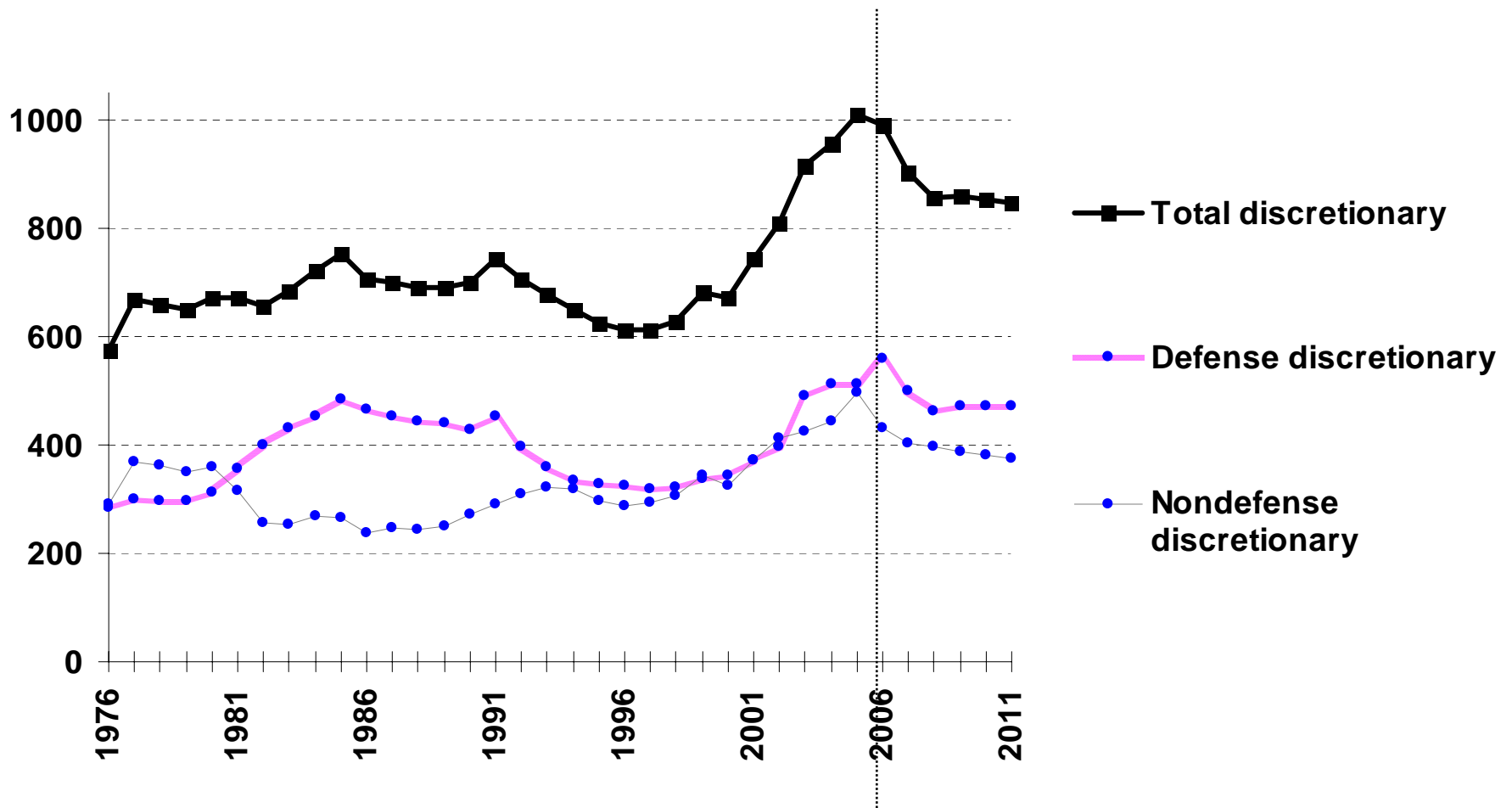
Data in fiscal years. Source: *Budget of the United States Government, FY 2007*. FY 2006 data are estimates. FY 2007-2011 data are budget projections. FY 2007 - 2011 figures exclude Iraq and Afghanistan military costs and exclude extensions of expiring tax cuts.

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Trends in Discretionary Spending, FY 1976-2011

in billions of constant FY 2006 dollars



Data in fiscal years. Source: *Budget of the United States Government, FY 2007*. FY 2006 data are estimates. FY 2007-2011 data are budget projections; defense figures based on DOD and DOE planning profiles. FY 2007 - figures exclude most Iraq and Afghanistan military costs.
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INNOVATION: MAKING PHYSICAL SCIENCES A TOP PRIORITY

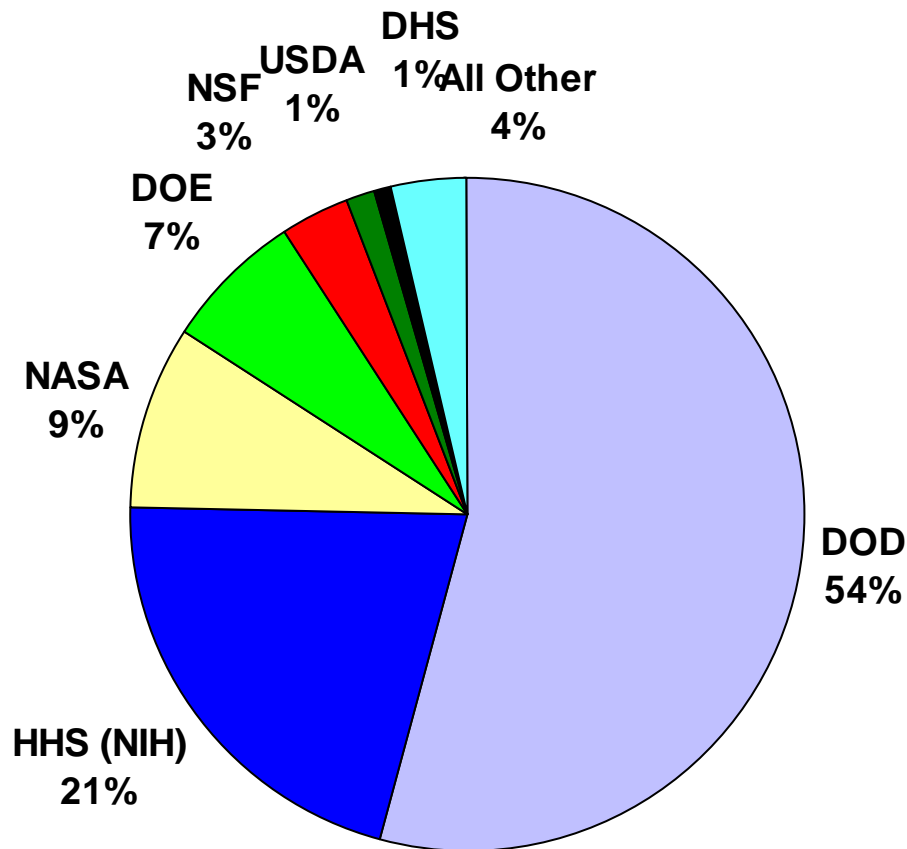
- President Bush announced the American Competitiveness Initiative (ACI) in his State of the Union address.
- The ACI is one of many responses to recent reports calling for a major government effort to address the innovation challenge. There are several congressional responses.
- For R&D investments, the theme is boosting federal support for basic research in the physical sciences (broadly defined to include engineering research).

R&D IN THE FY 2007 BUDGET: SPACE, DEFENSE, ACI PROGRAMS UP, OTHERS DOWN

- In a declining discretionary budget, there would be clear winners and losers in the federal R&D investment, up 1.8% overall.
- In addition to the ACI science programs, there would be other big winners in technology: DOD weapons development and NASA space vehicles development.
- But in a tight budget, for every increase there would be steep cuts elsewhere.

Total R&D by Agency: FY 2007 Proposed

Budget Authority in billions of dollars



Total R&D =
\$136.9 billion
(REVISED)

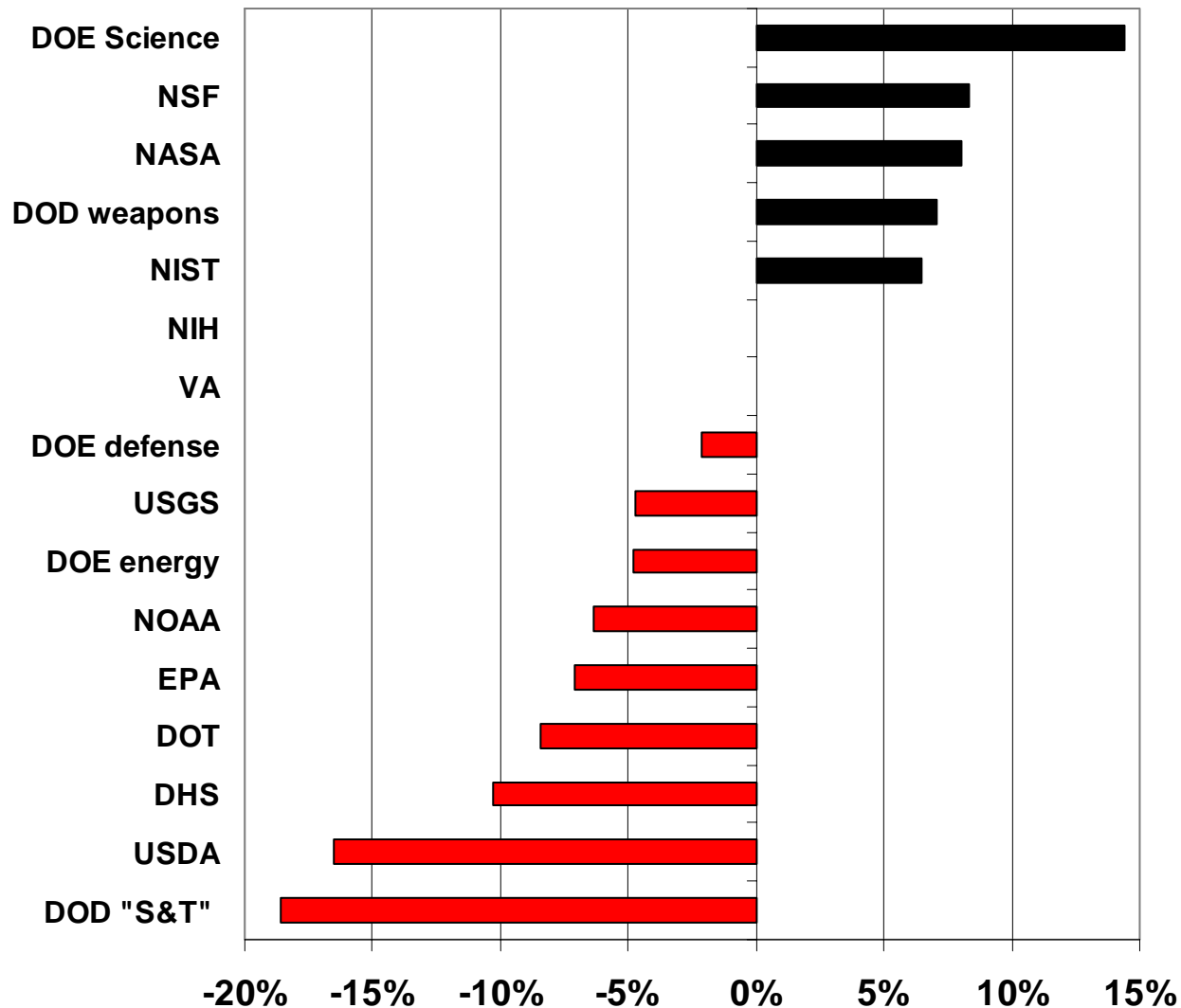
Source: AAAS, based on OMB R&D Budget Data and agency estimates for FY 2006.

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FY 2007 R&D Request (revised)

Percent Change from FY 2006



Source: AAAS, based on OMB R&D data and agency estimates for FY 2007.

DOD "S&T" = DOD R&D in "6.1" through "6.3" categories plus medical research.

DOD development = DOD R&D in "6.4" and higher categories.

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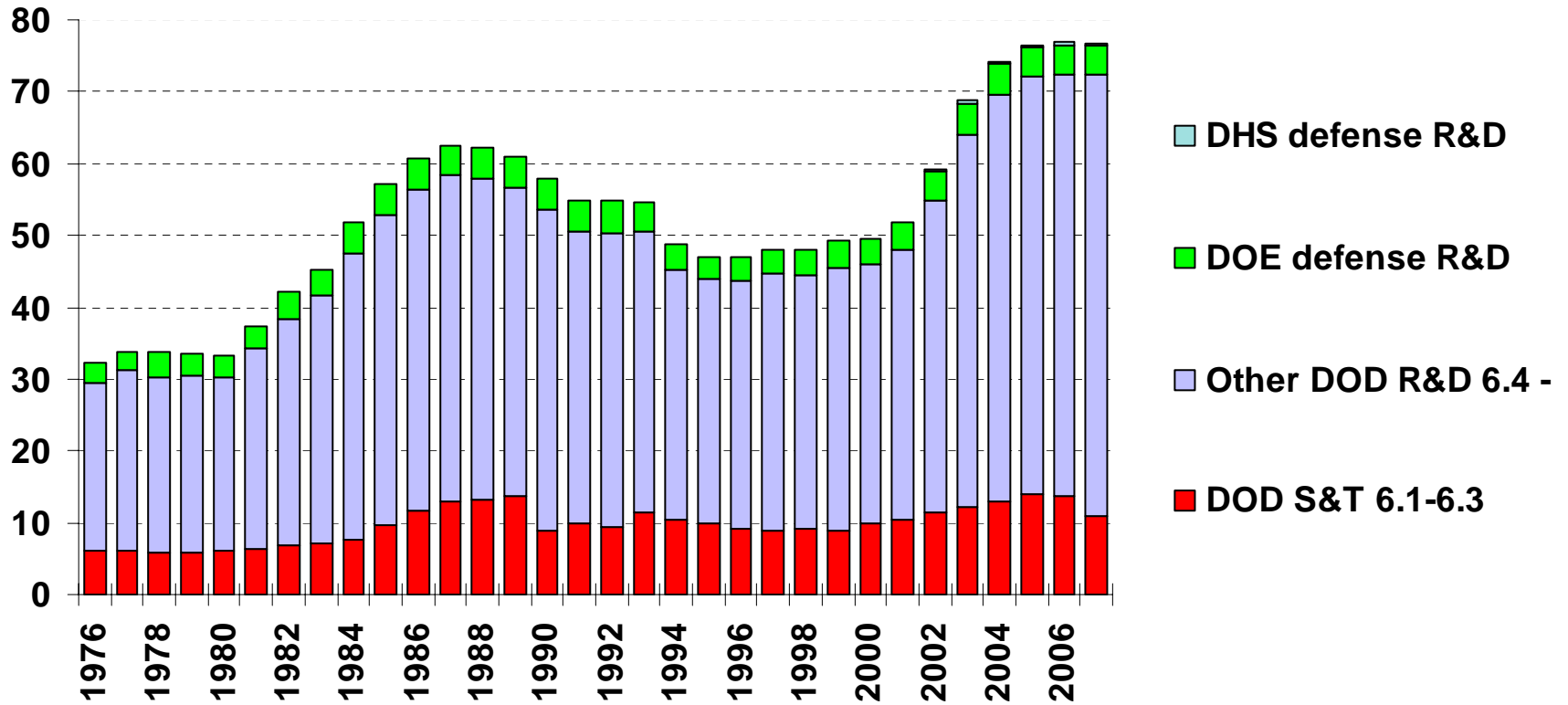


R&D IN THE FY 2007 BUDGET (2)

- The budget would be a break from the flat or declining funding of recent years for DOE Office of Science, NSF, and NIST, and would begin to reverse the real cuts of recent years.
- But there would be cuts for other research programs.
- There would be cuts even in major sponsors of the physical sciences such as DOD's "6.1" and "6.2" research programs, NASA research, and NIH.

Trends in Defense R&D, FY 1976-2007

in billions of constant FY 2006 dollars

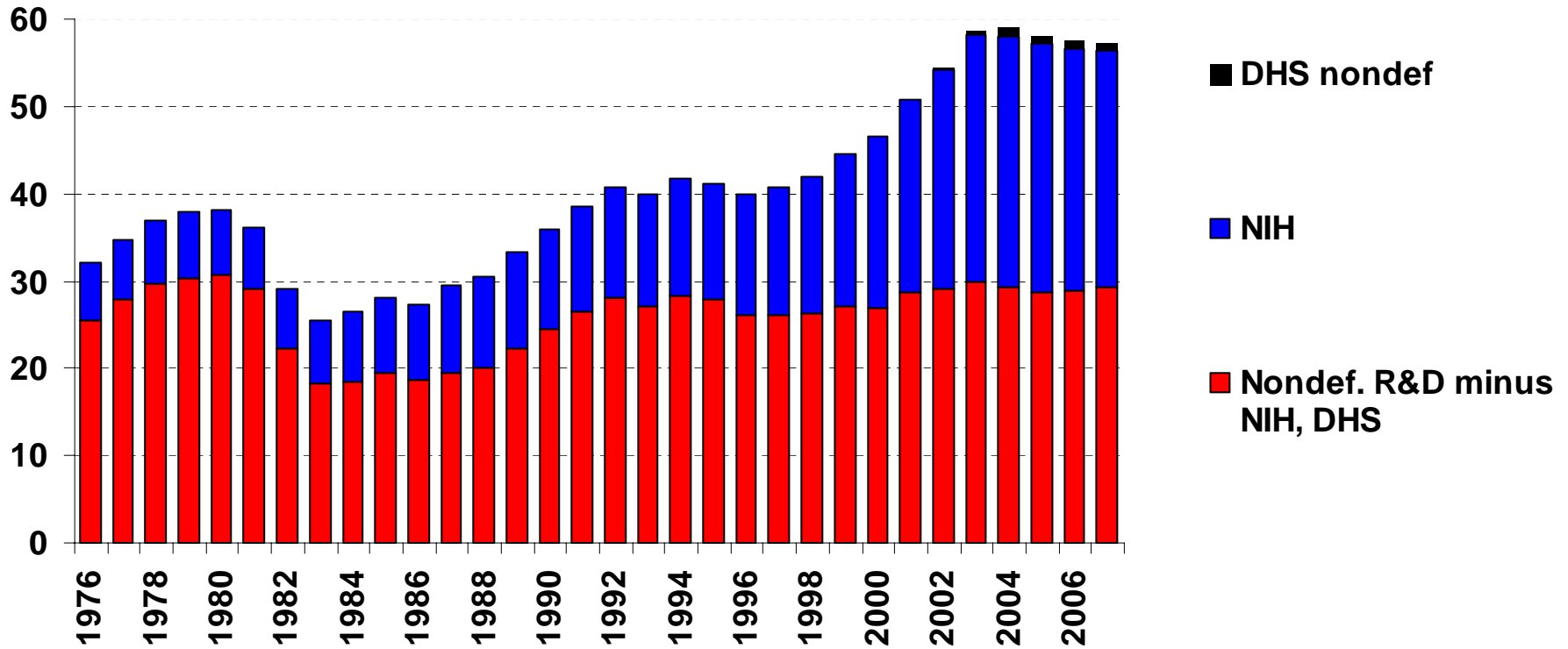


Source: AAAS analyses of R&D in *AAAS Reports VIII-XXXI*. FY 2007 figures are President's request.
 R&D includes conduct of R&D and R&D facilities. DOD S&T figures are not strictly comparable for all years because of changing definitions.
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Selected Trends in Nondefense R&D, FY 1976-2007

in billions of constant FY 2006 dollars



Source: AAAS analyses of R&D in AAAS Reports I- XXXI.

FY 2007 figures are President's request.

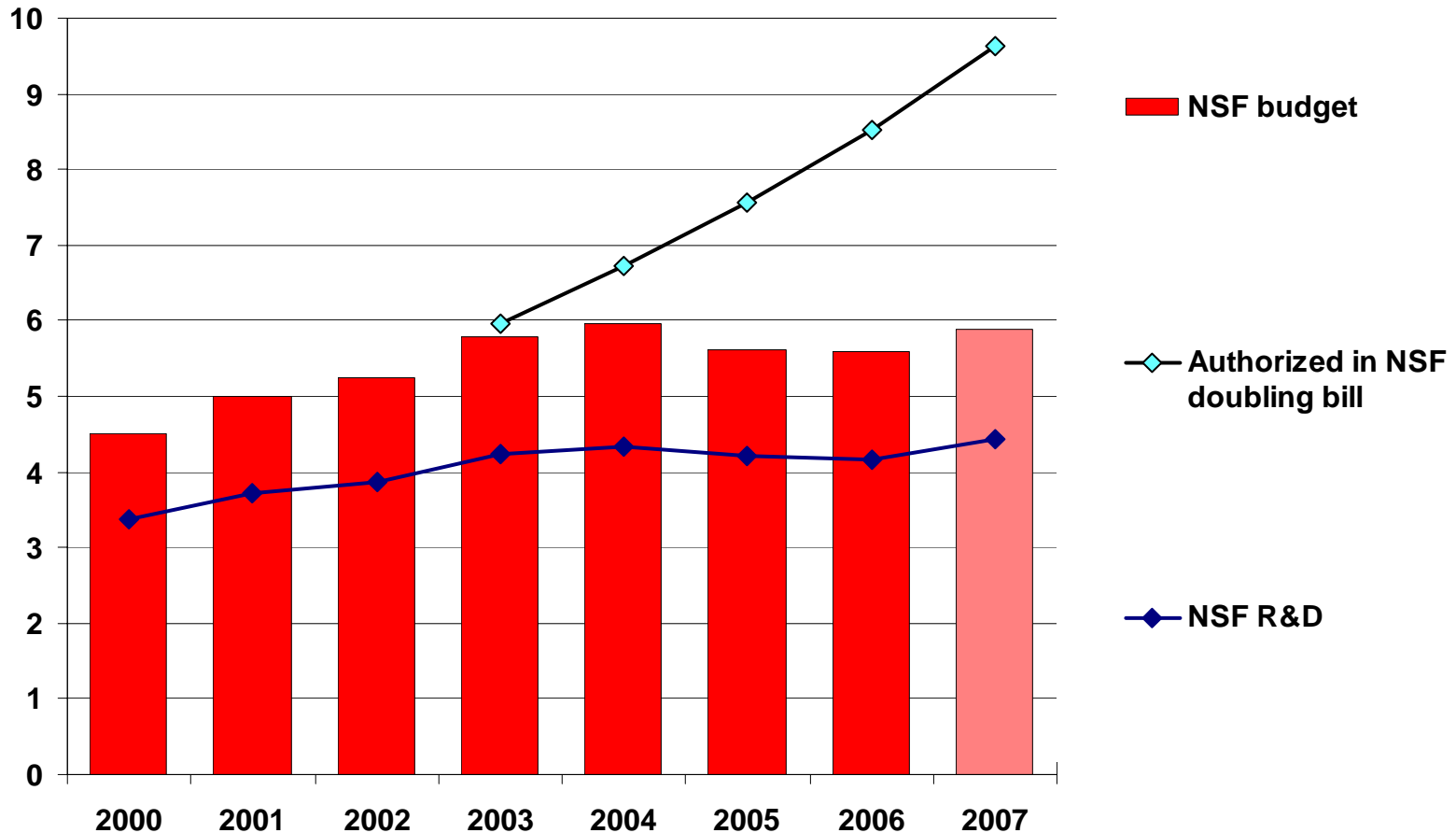
R&D includes conduct of R&D and R&D facilities.

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National Science Foundation Budget, FY 2000-2007

(budget authority in billions of constant FY 2006 dollars)



Source: National Science Foundation, Public Law 107-368, and latest AAAS estimates of FY 2007 budget. FY 2007 is budget request.

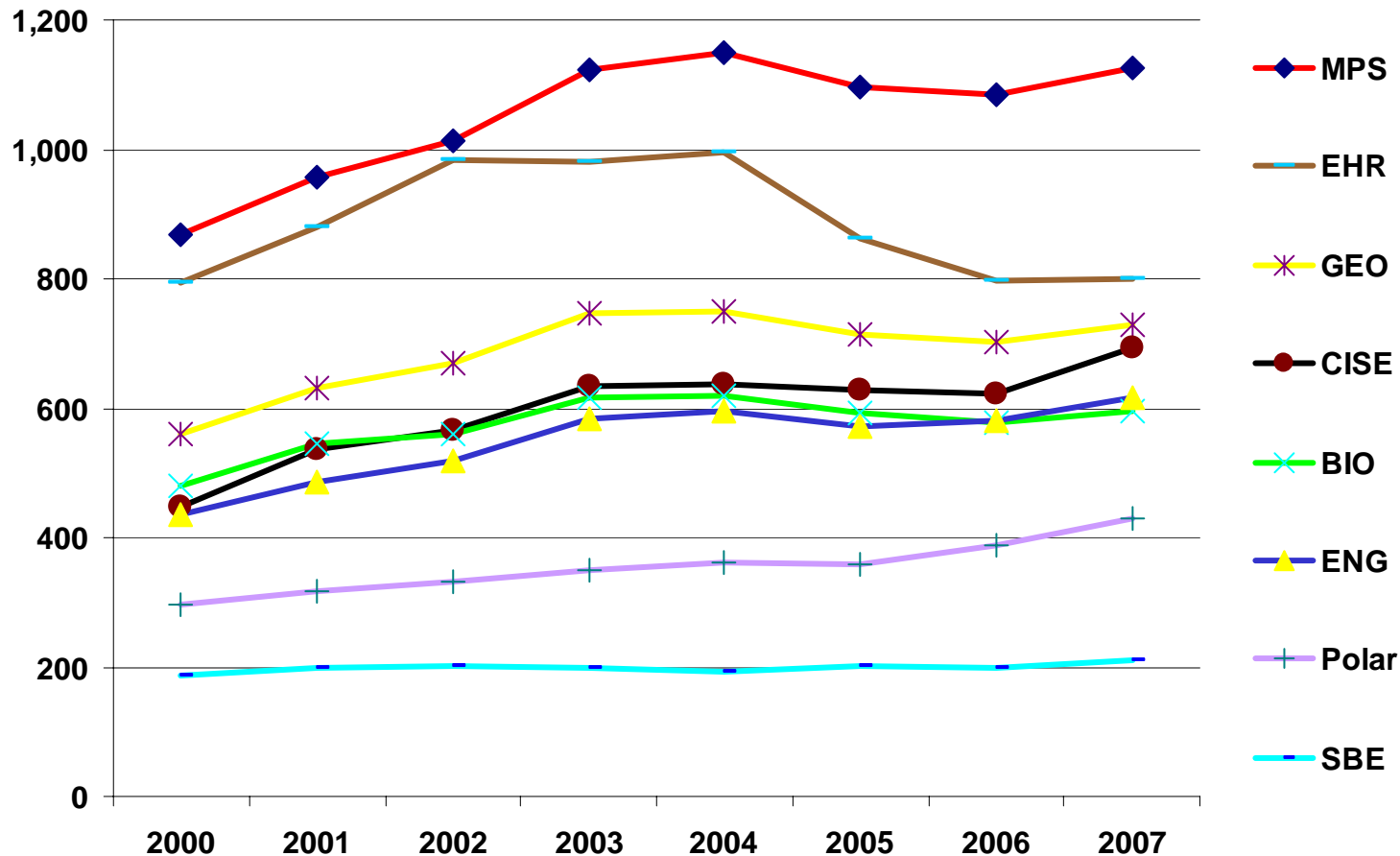
Authorized levels are authorizations in Public Law 107-368 (Dec. 2002).

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NSF Budget by Directorate, FY 2000-2007

(budget authority in millions of constant FY 2006 dollars)

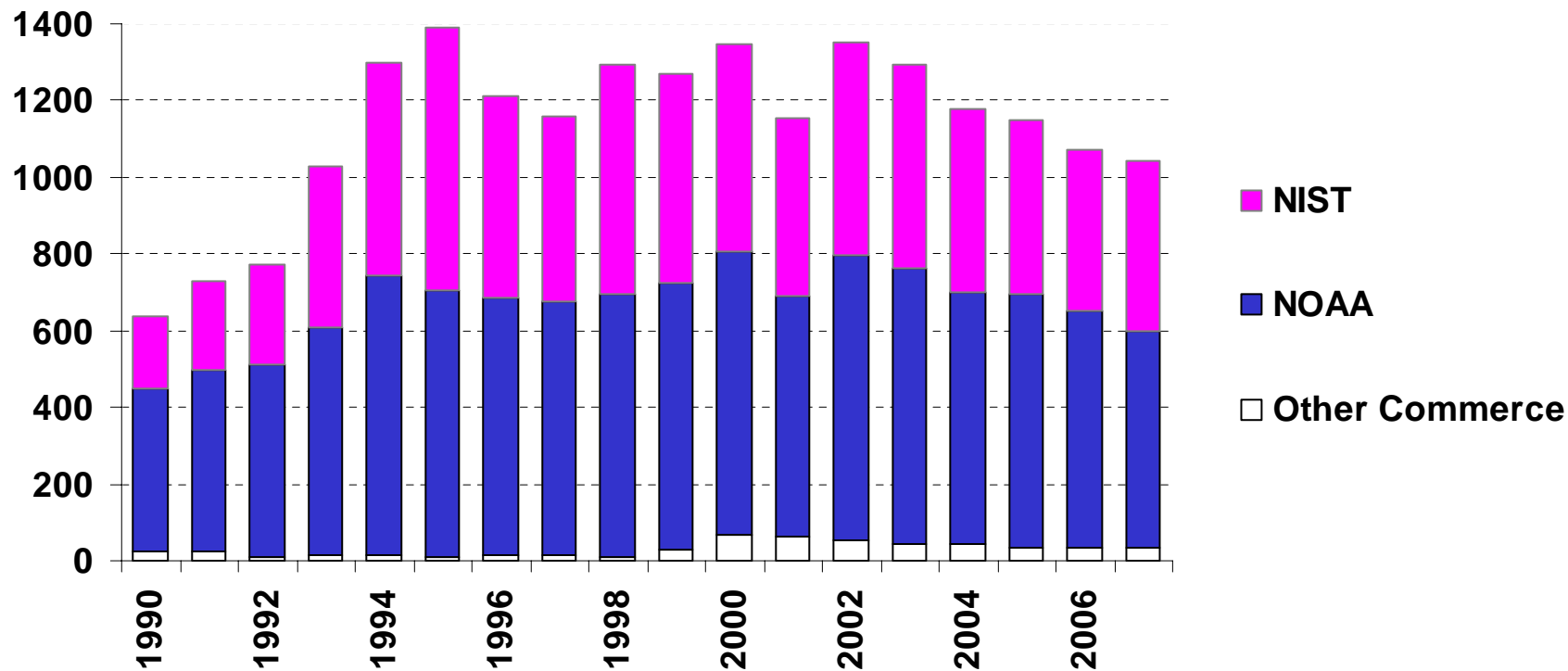


Source: National Science Foundation data. FY 2007 figures are President's request. CISE includes new Office of Cyberinfrastructure. R&D and non-R&D components included in directorate budgets. FEB, '06 © 2006 AAAS



Trends in Commerce R&D, FY 1990-2007

in millions of constant FY 2006 dollars



Source: AAAS analyses of R&D in AAAS Reports VIII-

XXXI. FY 2007 figures are President's request.

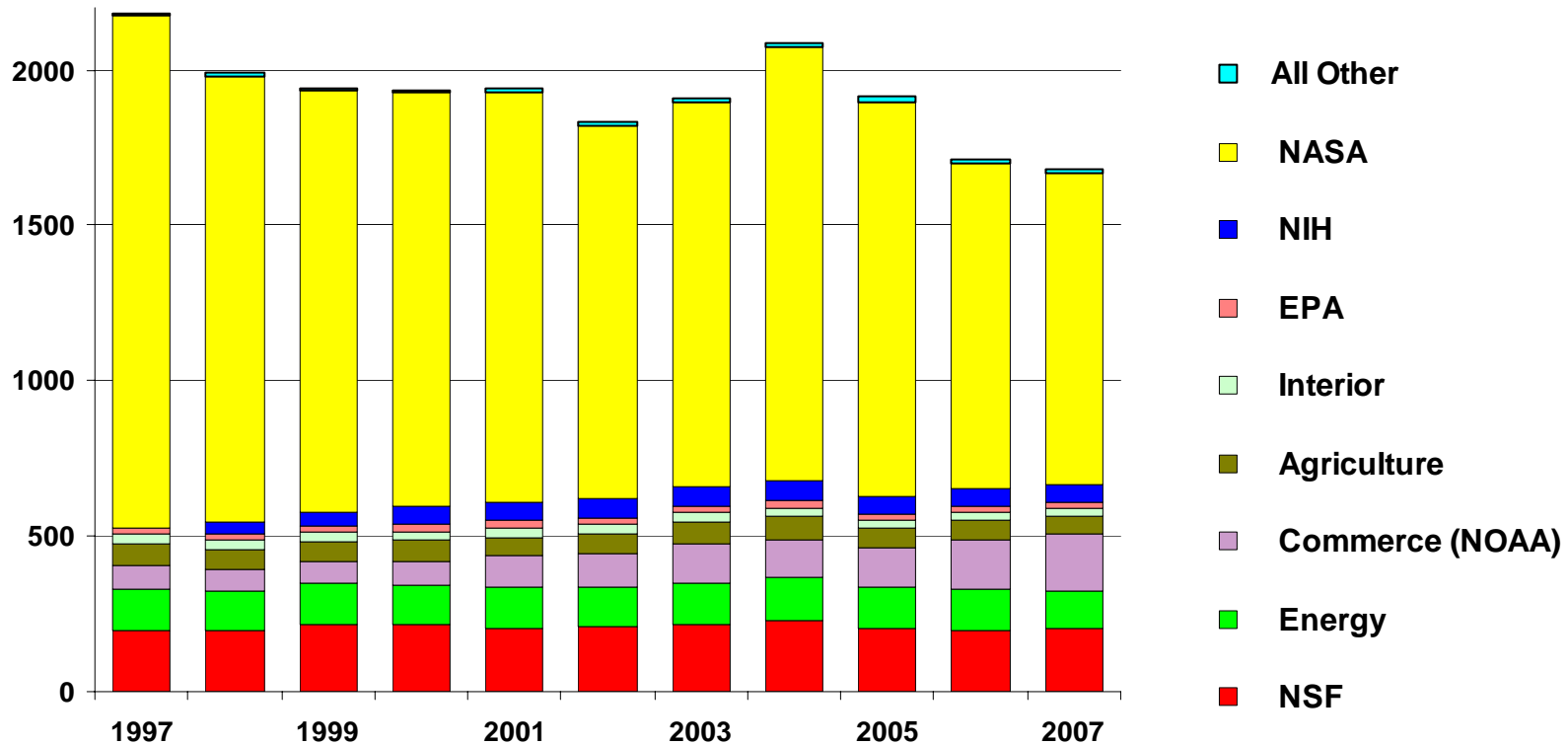
R&D includes conduct of R&D and R&D facilities.

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Climate Change Science Program, by Agency

(budget authority in millions of constant FY 2006 dollars, FY 1997-2007)

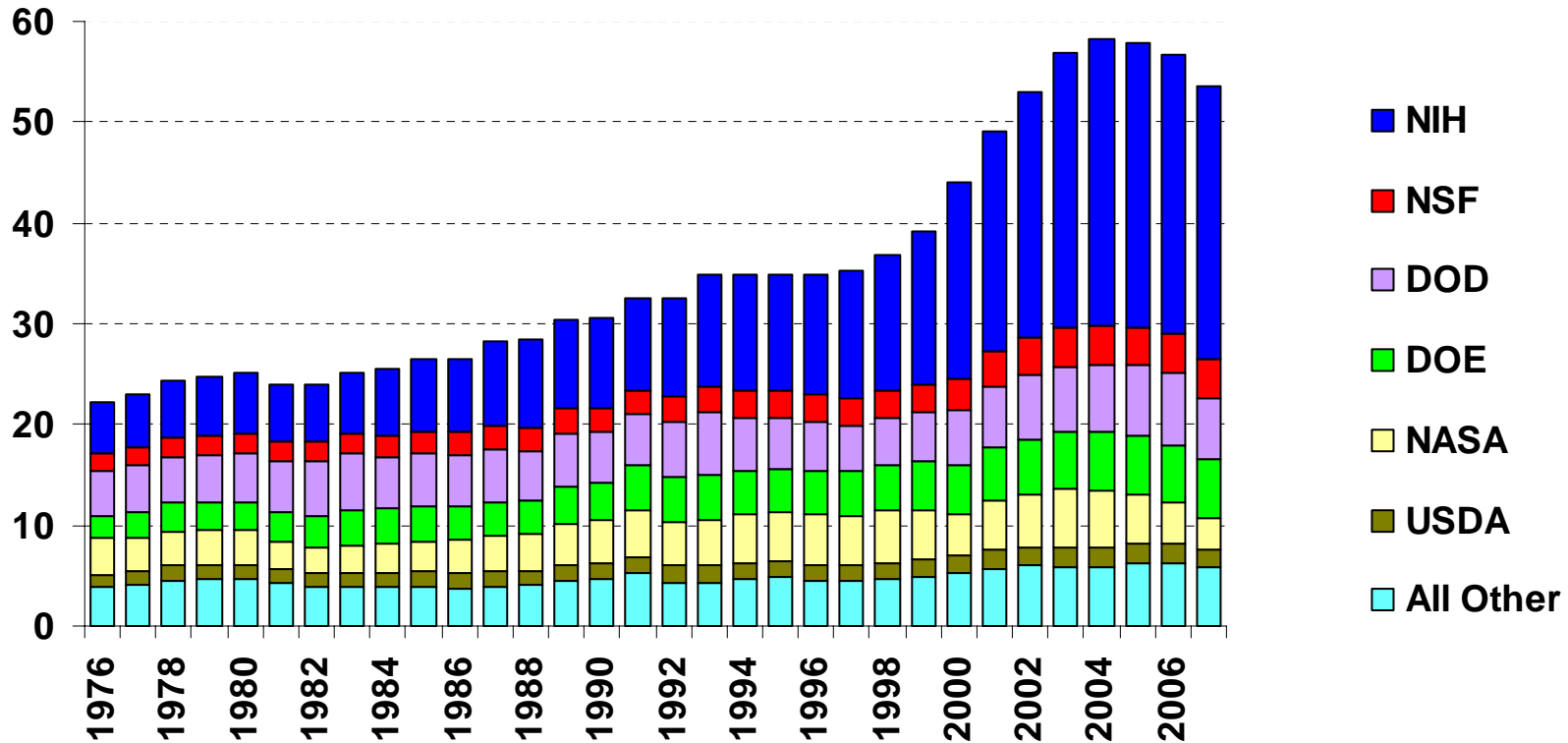


Source: Office of Management and Budget.
 FY 2007 figures represent President's request. Previous years' figures
 represent U.S. Global Change Research Program investments.
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Trends in Research by Agency, FY 1976-2007

in billions of constant FY 2006 dollars

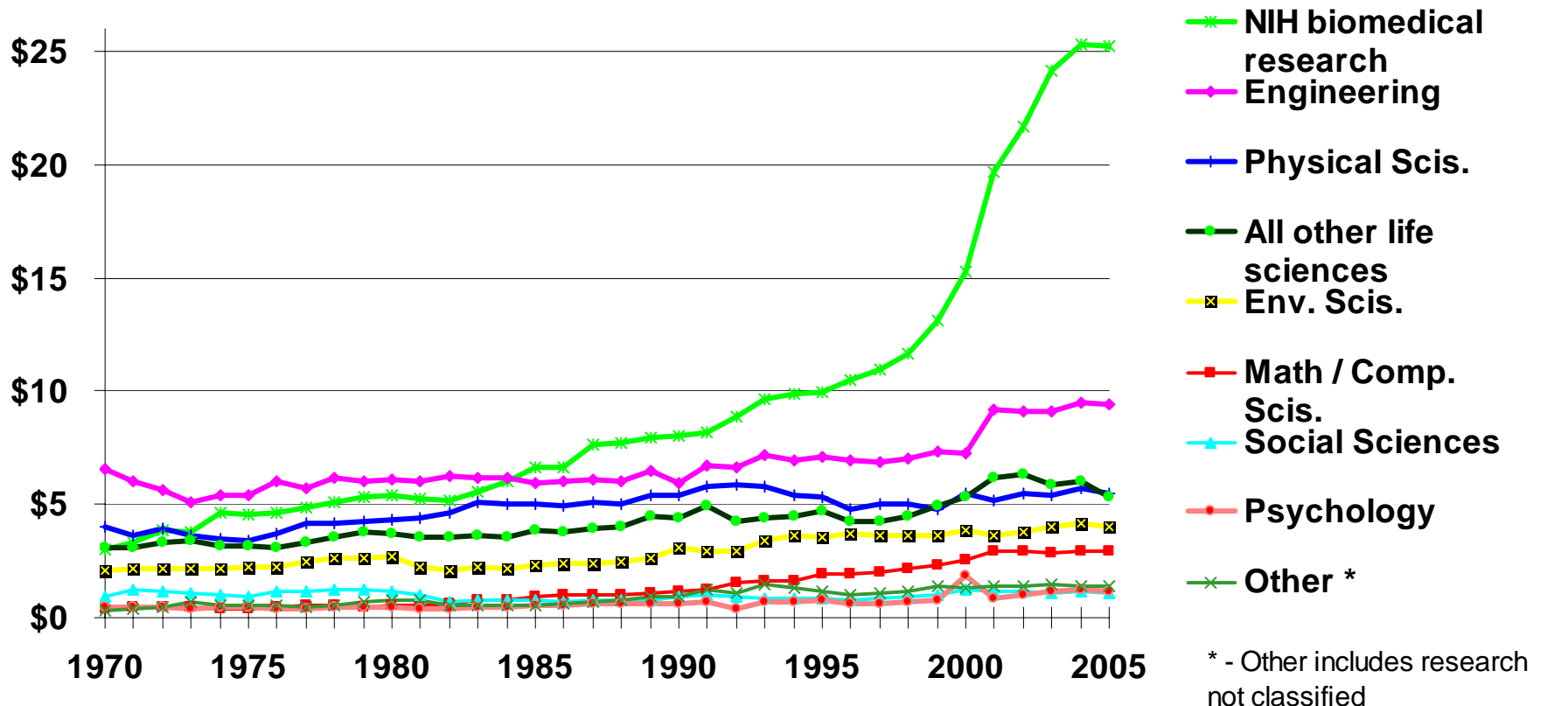


Source: AAAS analyses of R&D in annual AAAS R&D reports.
FY 2007 figures are President's request. Research includes
basic research and applied research. 1976-1994 figures are
NSF data on obligations in the Federal Funds survey.
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Trends in Federal Research by Discipline, FY 1970-2005

obligations in billions of constant FY 2006 dollars



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

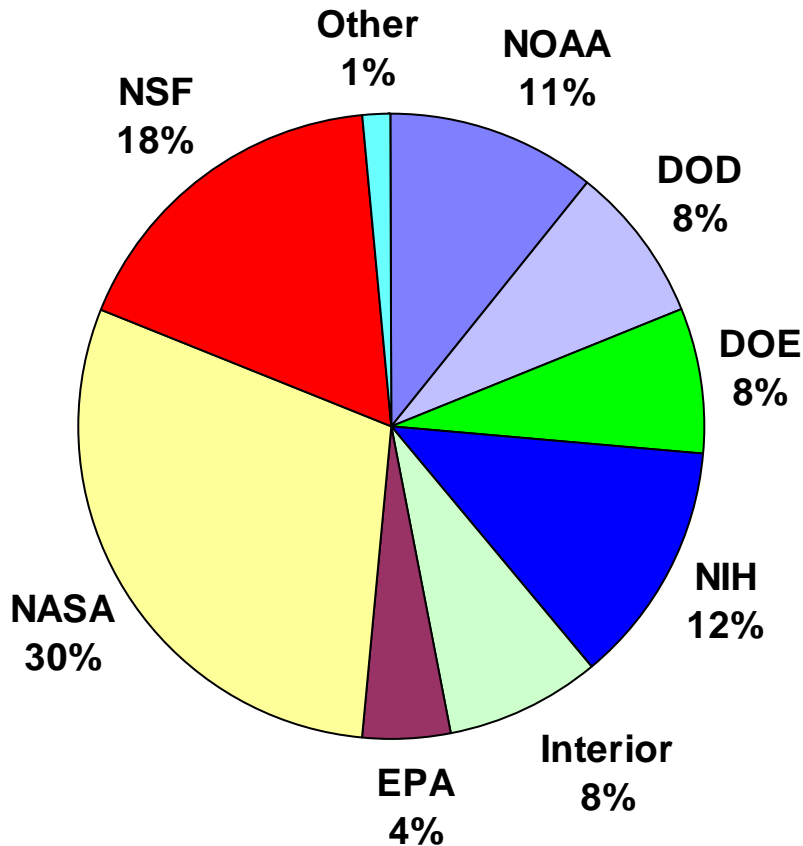
Life sciences - split into NIH support for biomedical research and all other agencies' support for life sciences.

Source: National Science Foundation, *Federal Funds for Research and Development FY 2003, 2004, 2005, 2006*. FY 2004 and 2005 data are preliminary. Constant-dollar conversions based on OMB's GDP deflators.

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Environmental Sciences Research in the FY 2005 Budget (preliminary obligations)



Total
Environmental
Sciences
Research:
\$3.9 billion
(includes basic
research and
applied research)

Environmental
Sciences include
atmospheric
sciences,
geological
sciences,
oceanography,
and other
environmental
sciences

Source: National Science Foundation, *Federal Funds for Research and Development FY 2003, 2004 and 2005, 2006*. Data exclude development and R&D facilities.

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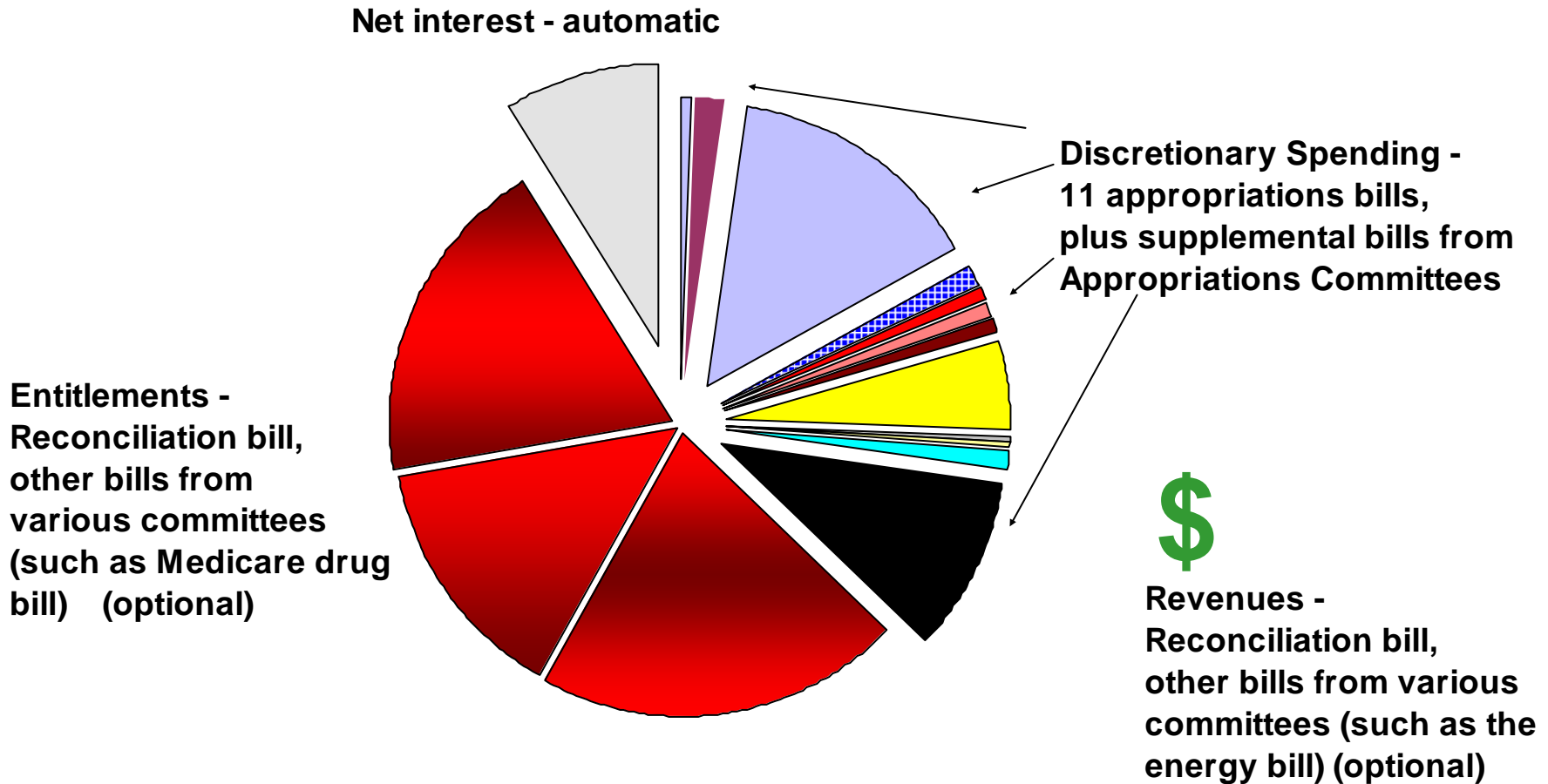


R&D IN THE BUDGET PROCESS

- Federal R&D is funded through 10 of the 11 appropriations bills that fund all discretionary programs.
- FEBRUARY – President’s budget request is released and goes to Capitol Hill.
- FEBRUARY - JUNE Congressional appropriations and authorizing committees hold public hearings and gather testimony on the budget.
- FEBRUARY – ?? Authorizing committees try to write authorizing legislation to guide spending decisions.
- APRIL – Budget committees write a budget resolution to set overall budget targets.

How the Budget Becomes Law

FY 2007 Proposal = \$2.8 Trillion



Source: AAAS, based on *Budget of the United States Government FY 2007*.
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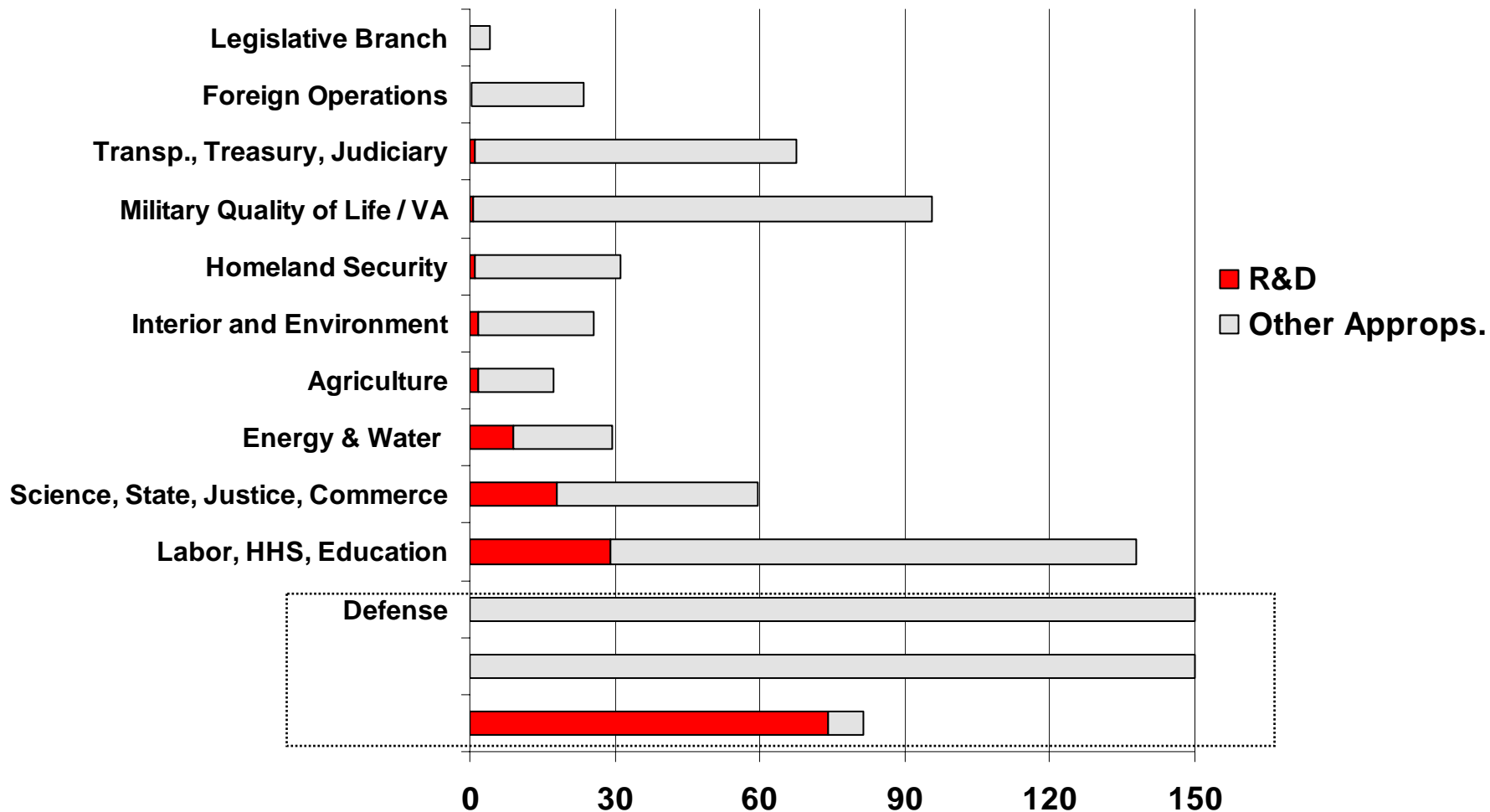


R&D IN THE BUDGET PROCESS (2)

- The House and the Senate have not been able to agree on an FY 2007 budget resolution, which is supposed to establish the discretionary spending total.
- MAY - ?? The House has started to write its appropriations bills anyway, with the Senate to follow this month.
- Program-by-program funding levels will be decided in appropriations bills. There are 11 bills; 4 handle 95 percent of the federal R&D portfolio, but DOD, NIH, NSF/NASA/NOAA, and DOE are considered separately.
- Many interagency efforts such as climate change R&D, and environmental research are appropriated in several bills.

R&D and Non-R&D Funding by Appropriations Bill

FY 2007 Request, Billions of dollars budget authority



Source: AAAS, based on estimates of R&D in FY 2007. budget and Budget of the U.S. Government FY 2007. Defense bill is in three lines. Includes conduct of R&D and R&D facilities.
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THIS WEEK IN CONGRESS

- The House is working with \$873 billion in 2007 for appropriations, the same as the request. This means a cut in domestic spending.
- The House has drafted 8 of the 11 bills, and is expected to approve the Homeland Security bill this week.
- The Senate hopes to start drafting its bills this month.
- Congress hopes to finalize a **2006** supplemental appropriations bill this week of \$94~ billion for Iraq war and other 'emergencies'.

CONGRESS: WHAT'S NEXT

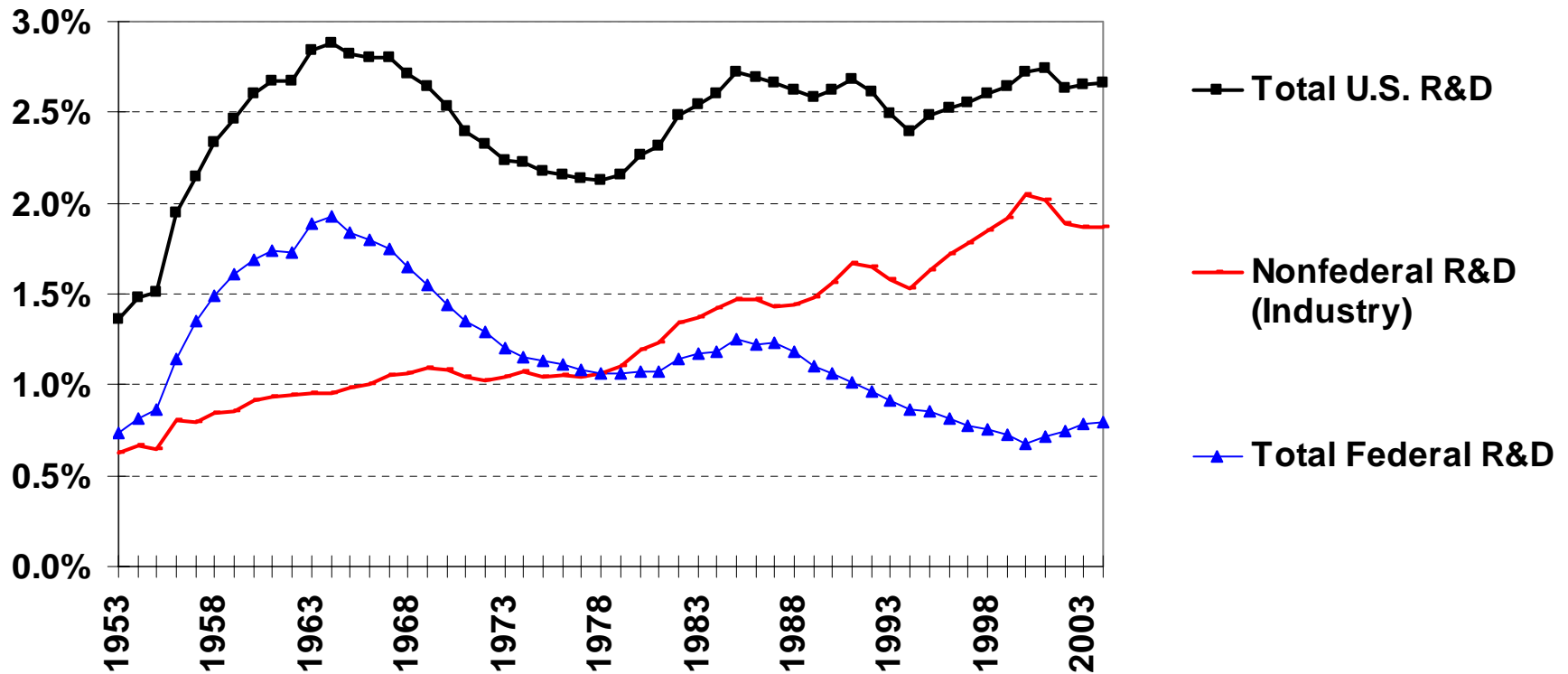
Congress will try to cut domestic spending in FY 2007 appropriations. So there will be a fierce competition for resources.

The last appropriations bills may not get enacted until well after the November elections.

There are many congressional proposals to address the innovation challenge, but the problem is finding the resources.

U.S. R&D as Percent of Gross Domestic Product

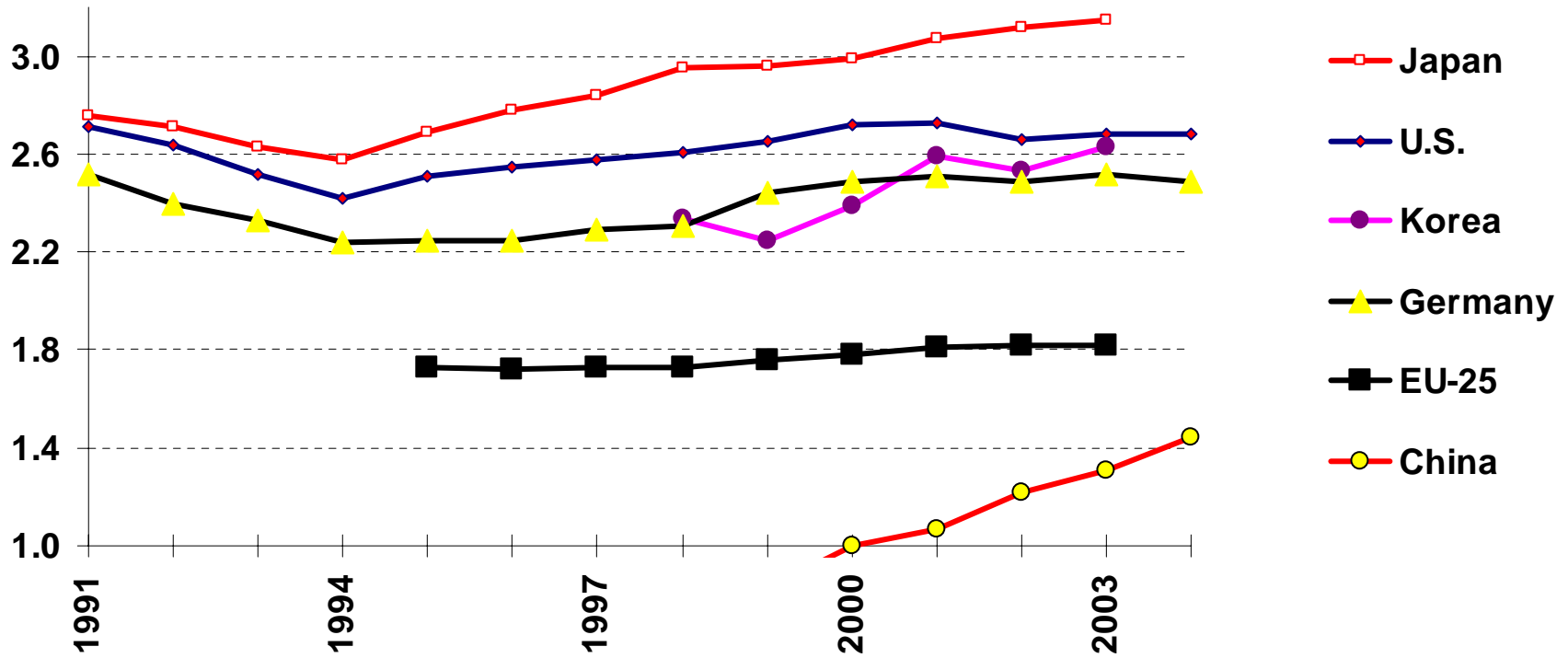
Total, Industrial, and Federal R&D - 1953-2004



Source: NSF, Division of Science Resources Statistics.
2004 data are projections. Includes defense and nondefense R&D.
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Total National R&D as % of GDP, 1991-2004



Source: National Science Foundation, National Patterns of R&D Resources and OECD, Main Science and Technology Indicators. Data not available for all nations for all years. JANUARY '06 © 2006 AAAS



FOR MORE INFORMATION...

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

