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U.S. DEPARTMENT OF ENERGY

The Federal Science Investment:
Berkeley Lab's Roll in the Nation's Innovation Ecosystem

Don Medley
Head of Federal Government Relations
Lawrence Berkeley National Laboratory

Community Advisory Group

September 10, 2012

Science Drives Innovation

Science and technology have been responsible for over half of the growth of the U.S. economy since WWII, when the federal government first prioritized peacetime science mobilization. Based on work by Robert Solow, who won the Nobel Prize in economics in 1987 for the research behind this statement. His major point: capital and labor are not the only things that drive economic growth.

"Innovations that drive lasting economic growth emerge from the most advanced science, mathematics and technology." — Susan Hockfield, president of MIT, speaking to the annual meeting of the National Governors Association.

National Science Policy?

National Science Foundation (NSF)
National Institutes of Health (NIH)
Defense Advanced Research Projects Agency (DARPA)
Department of Energy
Office of Naval Research (ONR)
Air Force Office of Scientific Research (AFOSR)
National Institute of Food and Agriculture (NIFA)
National Aeronautics and Space Administration (NASA)
National Oceanic and Atmospheric Administration (NOAA)
National Institute of Standards and Technology (NIST)
United States Geological Survey (USGS)
DHS Directorate for Science and Technology (S&T)
Veterans Health Administration Office of Research and Development (ORD)
Agricultural Research Service (ARS)
Army Research Laboratory (ARL)
Naval Research Laboratory (NRL)
Force Research Laboratory (AFRL)

National Science Policy?

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Office of Science and Technology Policy

OSTP's Mission

The mission of the Office of Science and Technology Policy is threefold; first, to provide the President and his senior staff with accurate, relevant, and timely scientific and technical advice on all matters of consequence; second, to ensure that the policies of the Executive Branch are informed by sound science; and third, to ensure that the scientific and technical work of the Executive Branch is properly coordinated so as to provide the greatest benefit to society.

Strategic Goals and Objectives

Ensure that Federal investments in science and technology are making the greatest possible contribution to economic prosperity, public health, environmental quality, and national security

Energize and nurture the processes by which government programs in science and technology are resourced, evaluated, and coordinated

Sustain the core professional and scientific relationships with government officials, academics, and industry representatives that are required to understand the depth and breadth of the Nation’s scientific and technical enterprise, evaluate scientific advances, and identify potential policy proposals

Generate a core workforce of world-class expertise capable of providing policy-relevant advice, analysis, and judgment for the President and his senior staff regarding the scientific and technical aspects of the major policies, plans, and programs of the Federal government

National Science Policy?

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National Oceanic and Atmospheric Administration (NOAA)
National Institute of Standards and Technology (NIST)
United States Geological Survey (USGS)
DHS Directorate for Science and Technology (S&T)
Veterans Health Administration Office of Research and Development (ORD)
Agricultural Research Service (ARS)
Army Research Laboratory (ARL)
Naval Research Laboratory (NRL)
Force Research Laboratory (AFRL)

Office of Science in the DOE Energy R&D Portfolio

U.S. Department of Energy

National Nuclear Security Administration

- Los Alamos
- Sandia
- Lawrence Livermore

Mission: Enhance global security through nuclear deterrence, nonproliferation and counterterrorism.

Environmental Management

- Savannah River

Mission: Safe cleanup of the environmental legacy from nuclear weapons development and nuclear energy research.

Applied Energy Research

- NREL
- Idaho National Engineering Laboratory
- National Energy Technology Laboratory

Mission: Clean energy technologies to strengthen the economy, protect the environment, and reduce dependence on foreign oil.

Office of Science

- Ames
- Argonne
- Brookhaven
- Fermi
- Lawrence Berkeley
- Oak Ridge
- Pacific Northwest
- Princeton Plasma Physics
- SLAC
- Thomas Jefferson

Mission: Support basic and applied research to advance the science and technology foundations necessary to accomplish DOE missions.

Berkeley Lab: A DOE Office of Science Lab

- Advanced Scientific Computing
- Basic Energy Sciences
- Biological & Environmental Research
- Fusion Energy
- High Energy Physics
- Nuclear Physics

Office of Science

34 Office of Science National Scientific User Facilities

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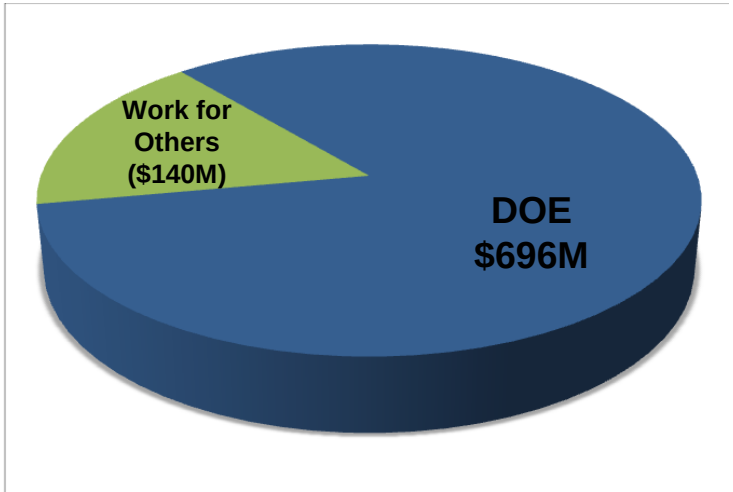
U.S. DEPARTMENT OF ENERGY

Berkeley Lab Budget (FY 2011)
$836M (including ARRA)



Berkeley Lab National User Facilities

- Advanced Light Source
- ESnet (Energy Sciences Network)
- Joint Genome Institute
- Molecular Foundry
- National Center for Electron Microscopy
- National Energy Research Scientific Computing Center

Societal needs for technical solutions to energy and environment problems will intensify

Materials by Design
will propel new technologies for energy and manufacturing

The Biology Revolution
will deepen and impact other disciplines

Reliance on Computation
will expand while massive data sets will challenge

Physics Chemical Sciences Materials Science Mathematics

A Foundation of Basic Science

Government Relations Tools

BRIEFS Arrange for our scientists to provide briefs. Individual and group briefings/meetings

SUBMIT HEARING and NOMINEE QUESTIONS Highlights a topic of interest or concern

AVAILABILITY Arrange for our staff to provide expert advice on relevant topics to Congressional staff and or Members

PARTICIPATION Industry and Professional Forums on Capitol Hill

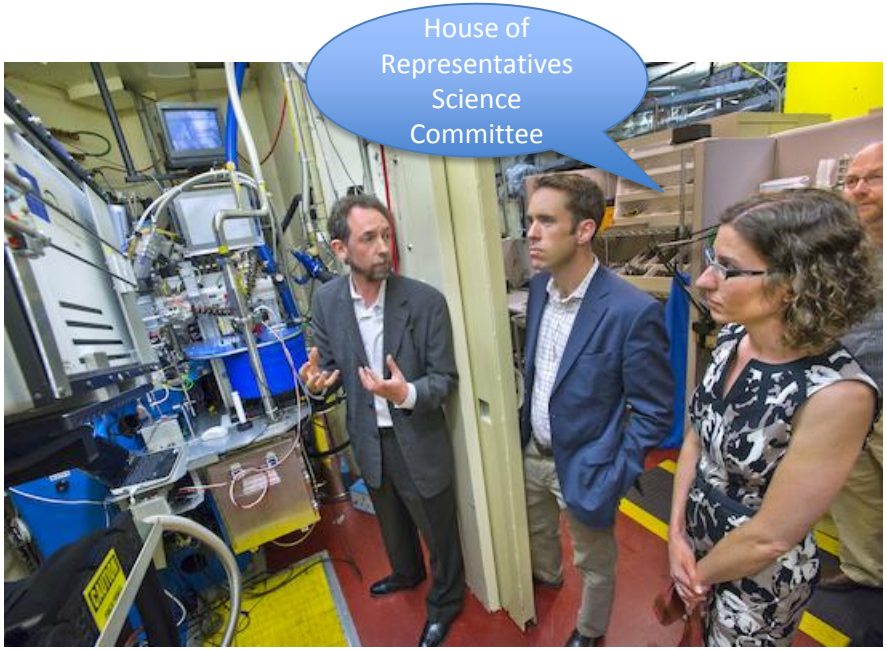
TOURS Congressional staff to tour Berkeley Lab facilities

SCIENCE ADVISORY Consider being a science advisor to our Representatives

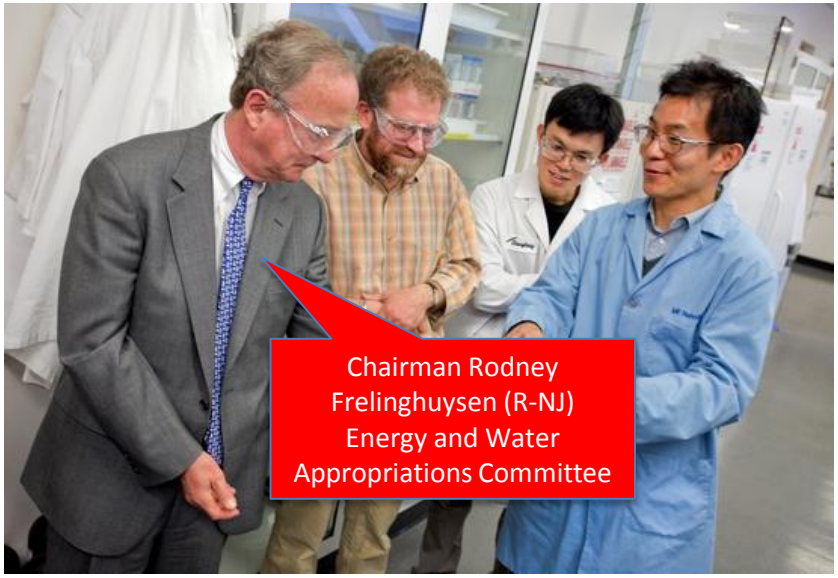
POLICY CHANGES Language that would benefit the business of your organization

CONGRESSIONAL RECORD Statements about your organization or notable accomplishment submitted by a Member of Congress

LEGISLATIVE CHANGES Respond to questions regarding olicy changes, report language, increasing budget requests


House of Representatives Science Committee


Congressman John Garamendi


Chairman Rodney Frelinghuysen (R-NJ) Energy and Water Appropriations Committee


Congressman George Miller

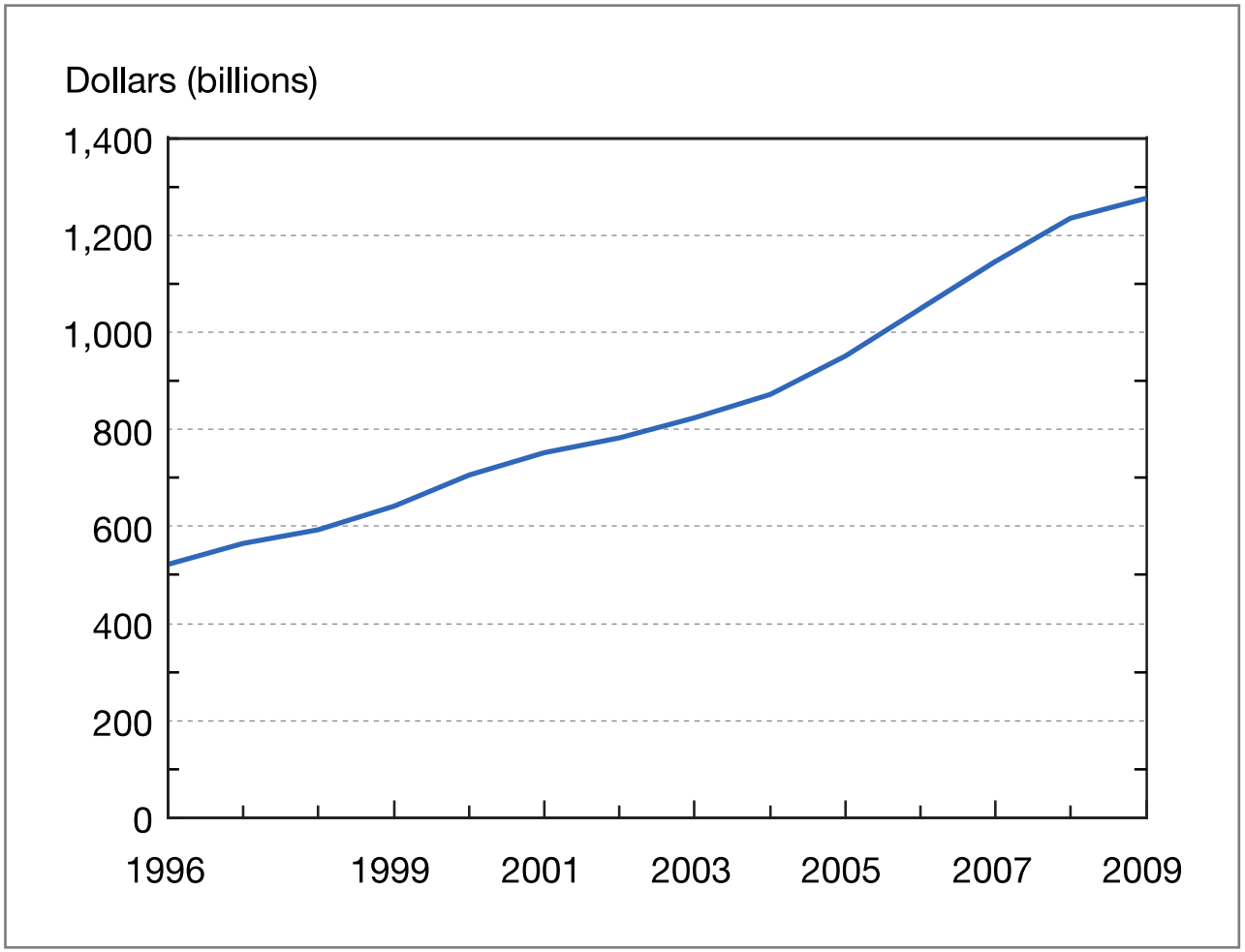
National User Facilities Organization Exhibitions and Meetings

ARPA-E in DC

University of California Day in DC

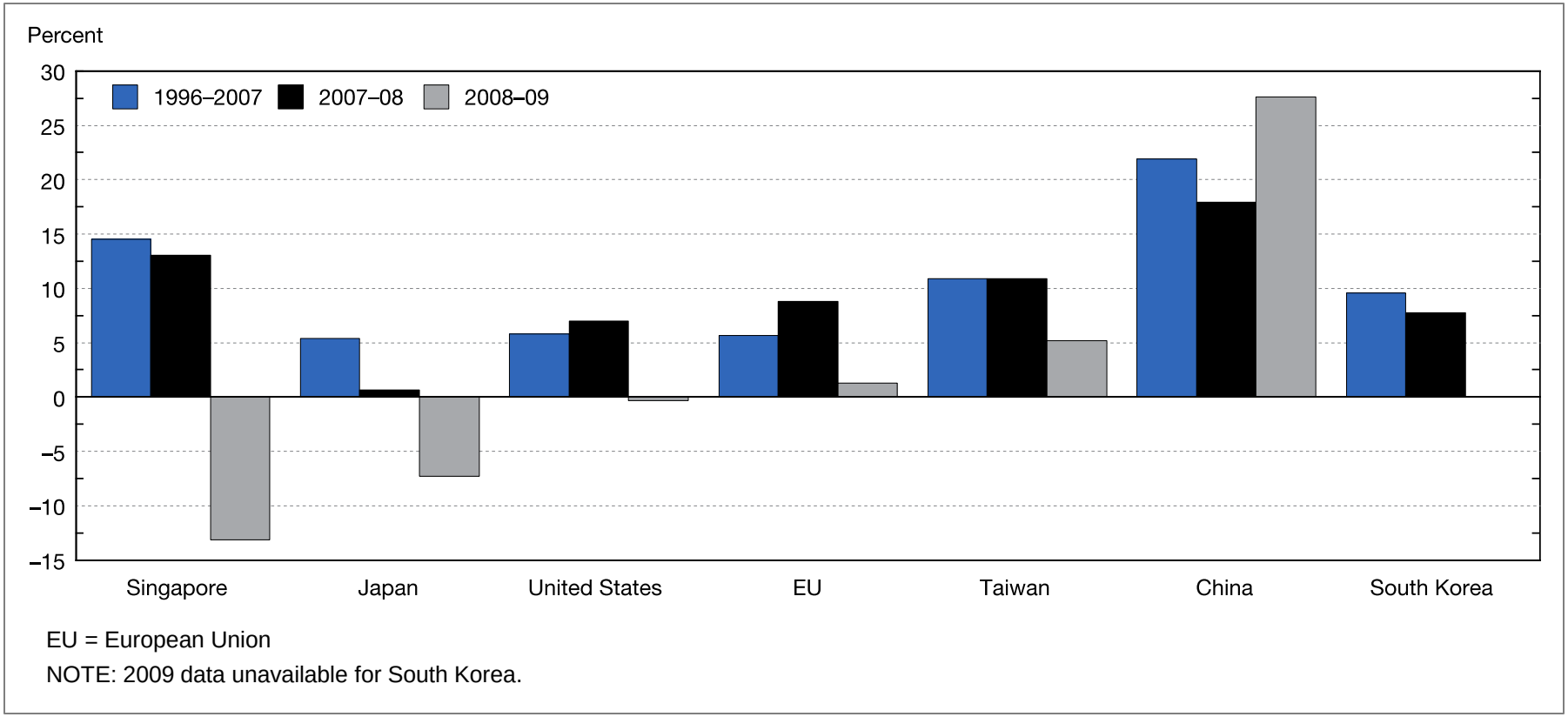
Energy Storage Briefings

Estimated R&D expenditures worldwide: 1996–2009



NSF, Science and Engineering Indicators 2010

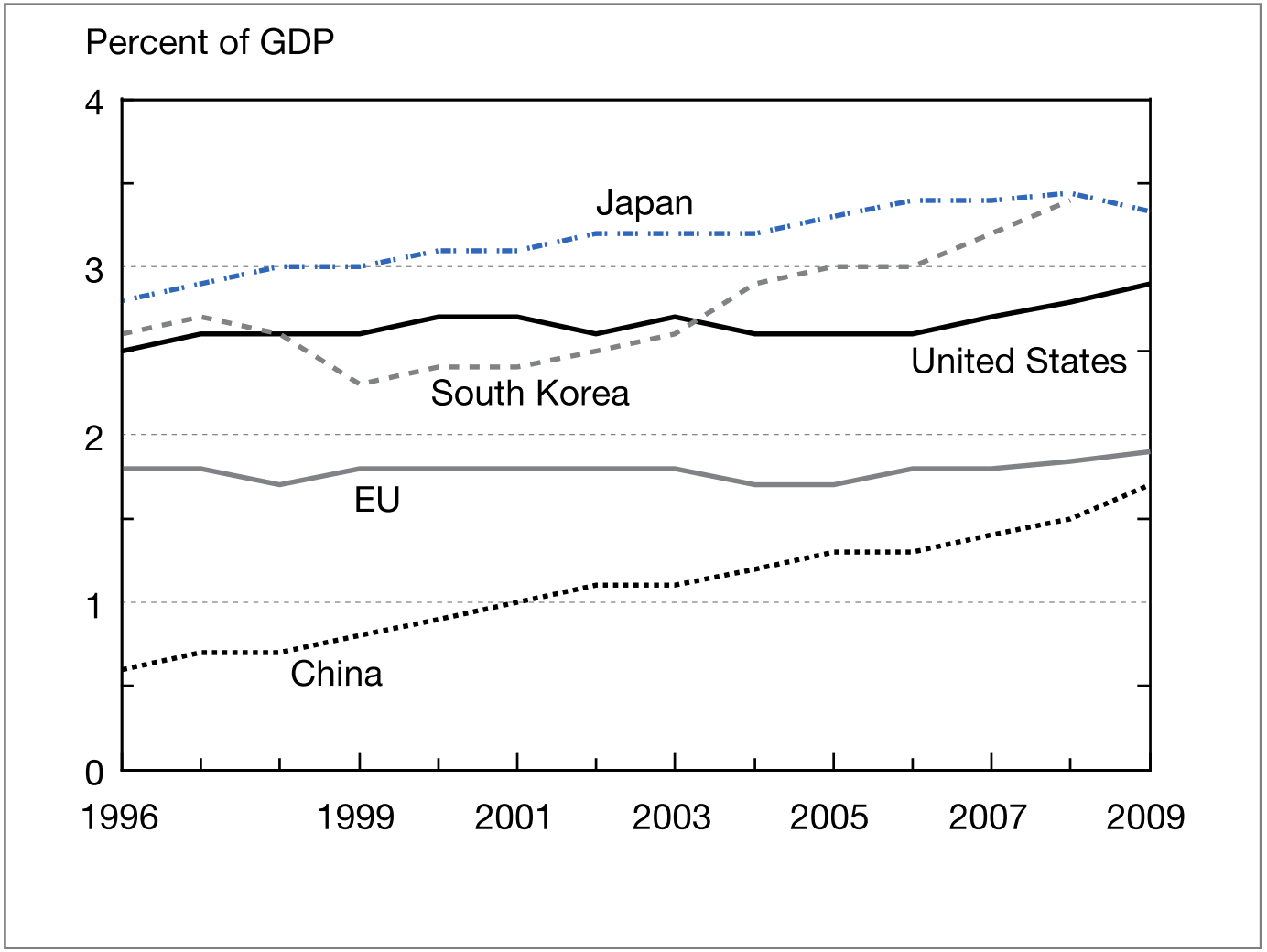
Average annual growth of R&D expenditures for United States, EU, and selected Asian economies: 1996–2007, 2007–08, and 2008–09



EU = European Union

NOTE: 2009 data unavailable for South Korea.

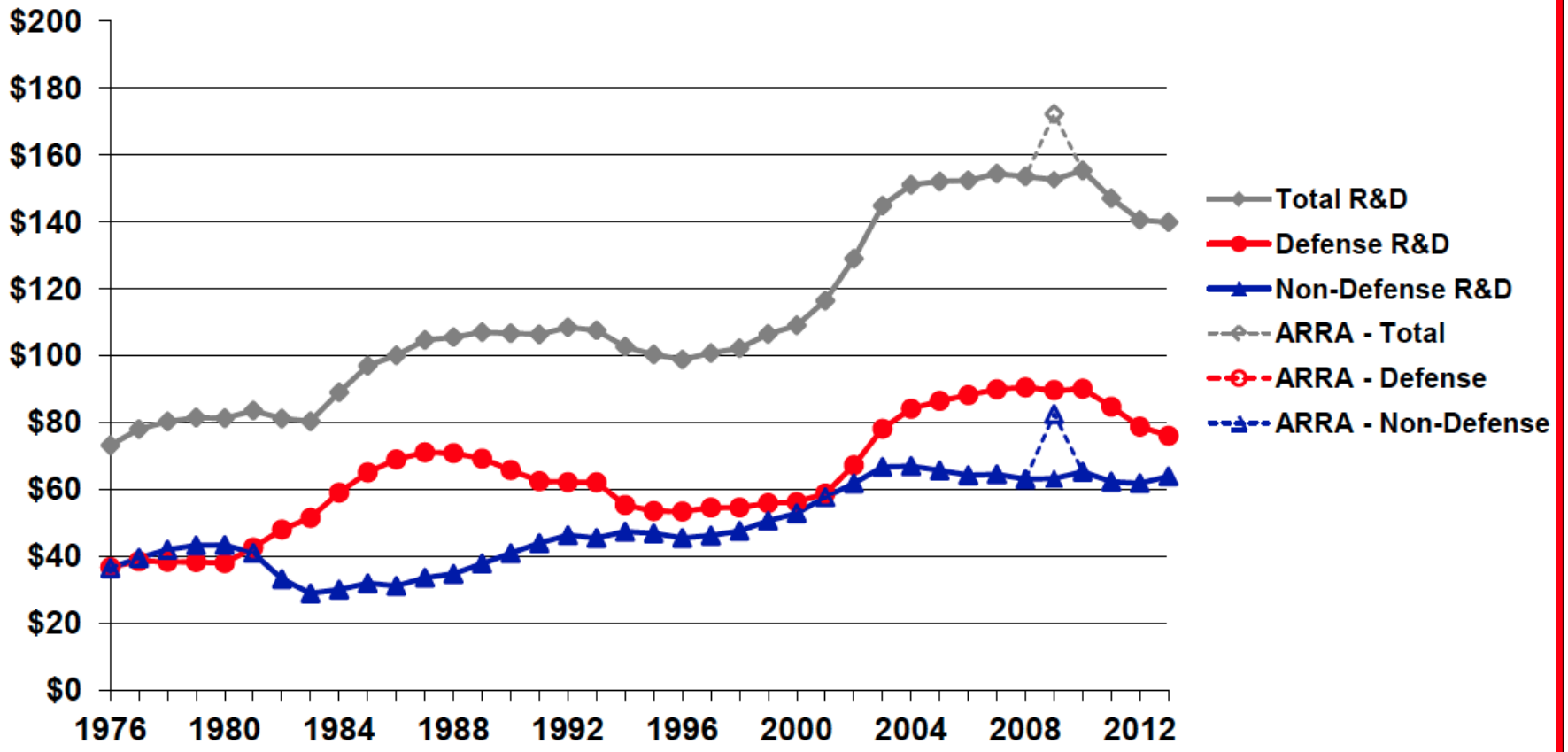
R&D expenditures as a share of economic output of selected regions/countries: 1996–2009



NSF, Science and Engineering Indicators 2010

Trends in Federal R&D, FY 1976-2013

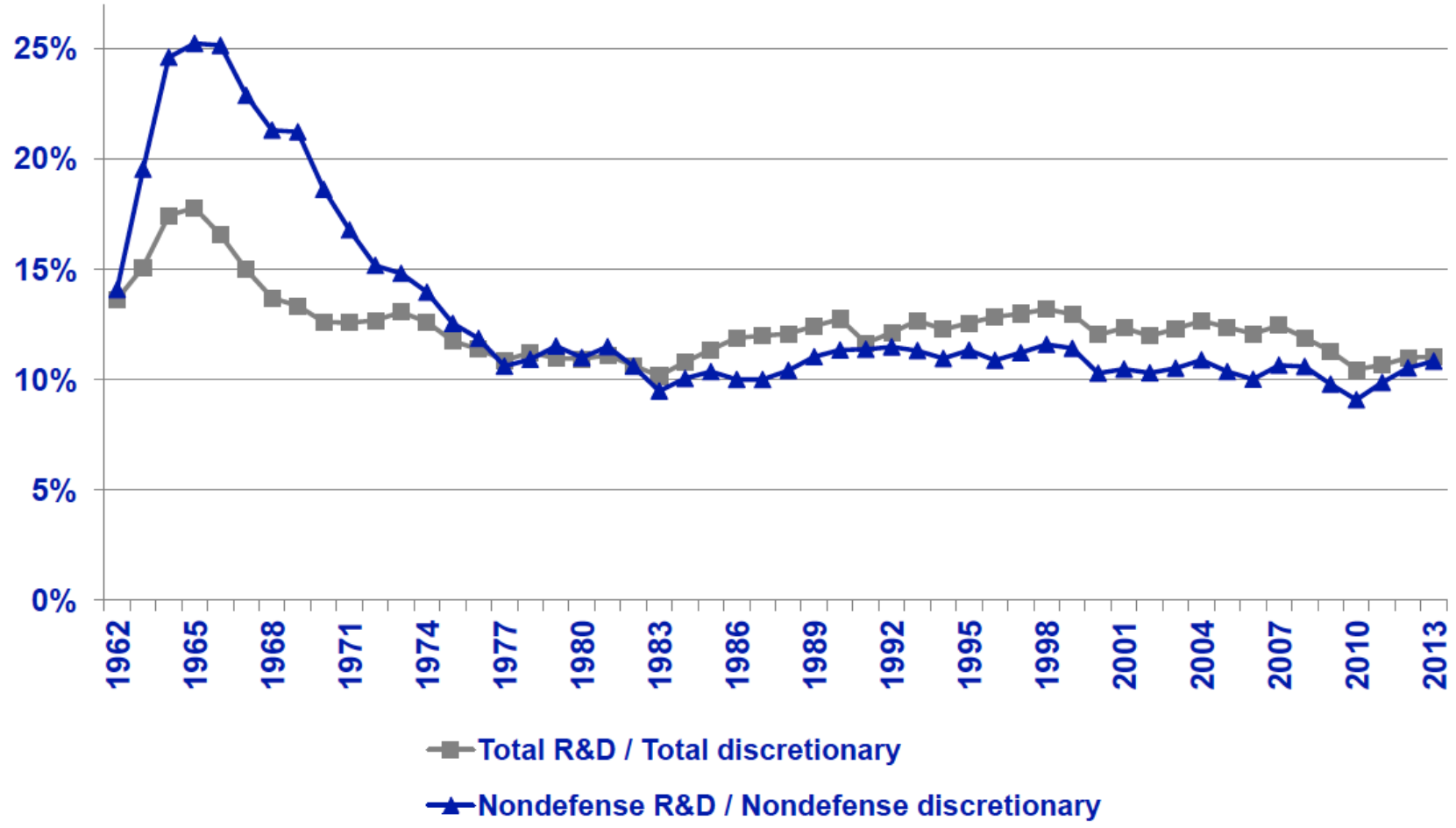
in billions of constant FY 2012 dollars



Source: AAAS *Research and Development* series. FY 2012 figures are estimates; FY 2013 is the President's request. R&D includes conduct of R&D and R&D facilities.

R&D as Percent of Discretionary Spending

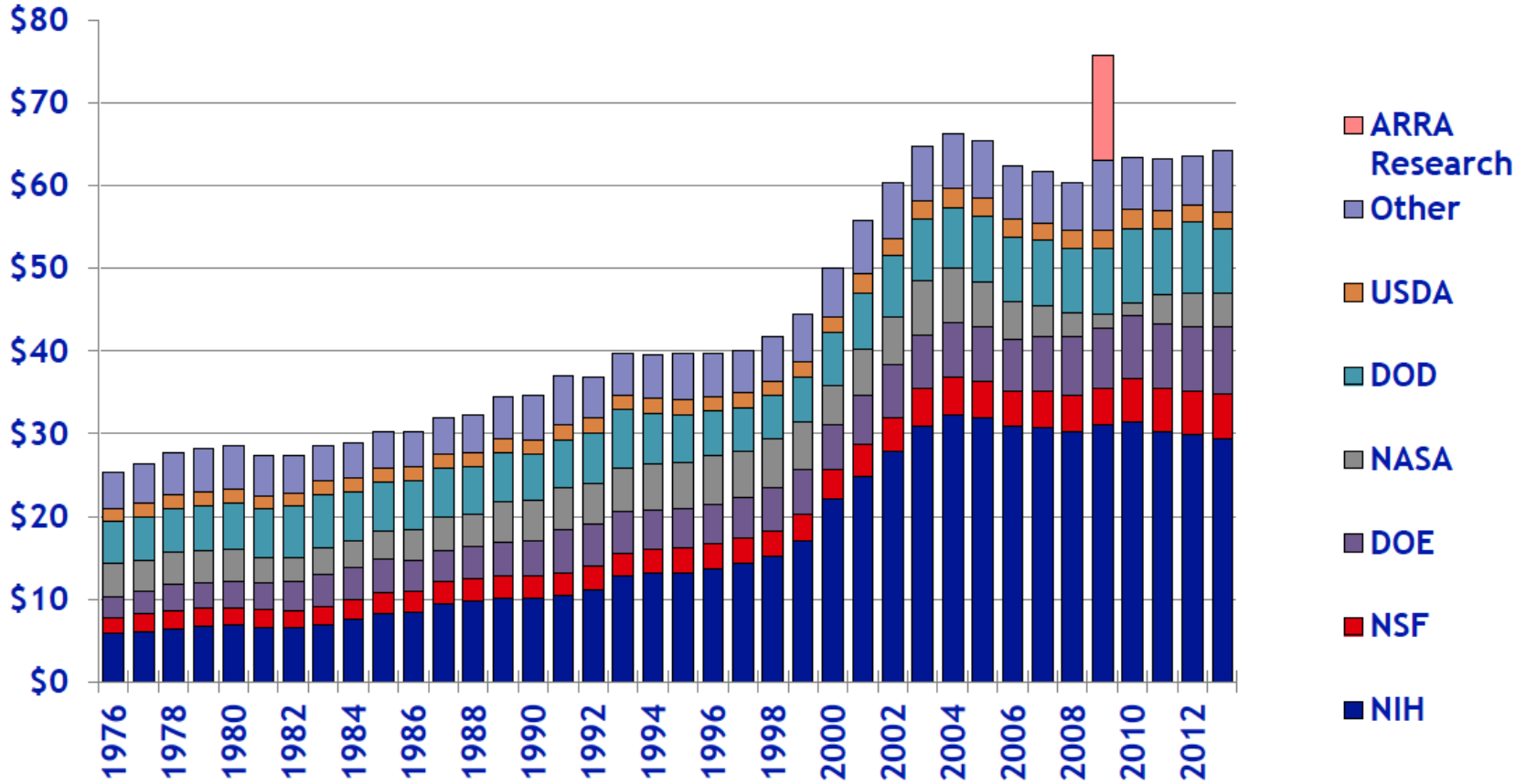
percentage of outlays



Source: *Budget of the U.S. Government FY 2013.*

Trends in Research by Agency, FY 1976-2013

Billions of FY 2012 Dollars



Source: 1976-1994 figures are from the NSF federal funds survey; remainder is from AAAS R&D reports. FY 2012 figures are latest estimates, FY 2013 is the President's budget.

CHART 8

Where does each dollar of federal R&D investment end up?

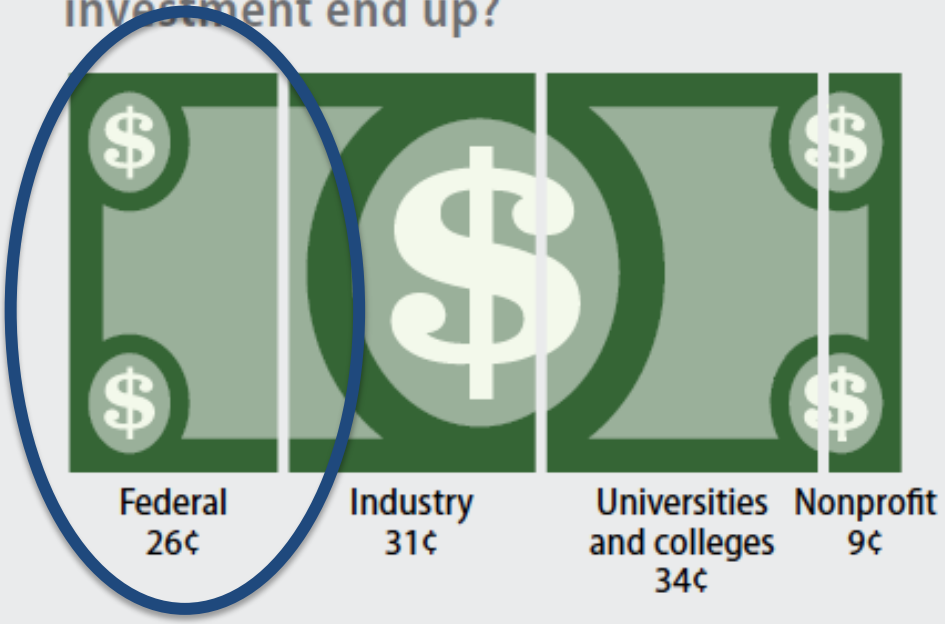
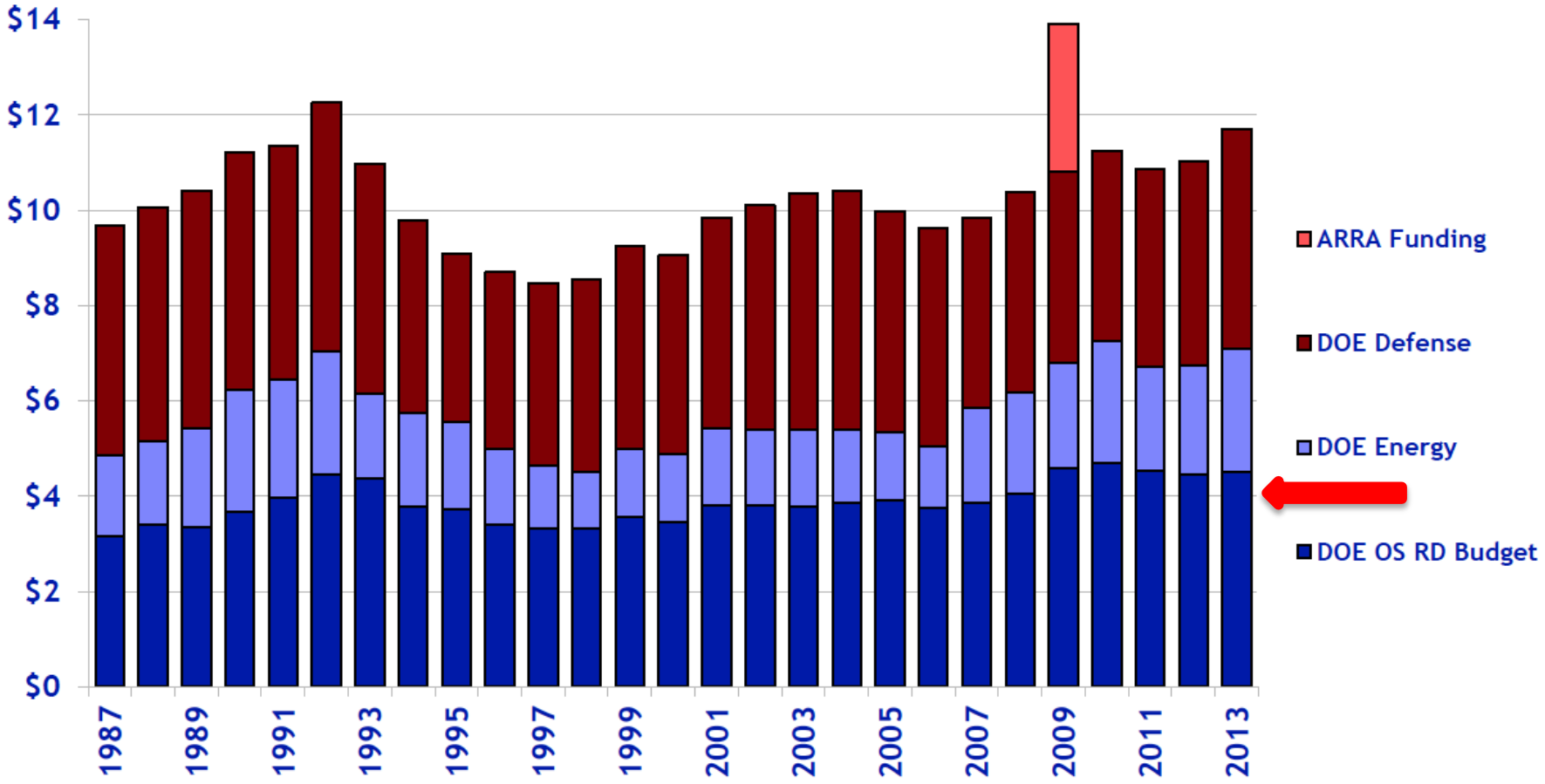


Chart 8 shows where the federal government's investments in research and development go. Only about a quarter of the government's investments in R&D are spent by federal research facilities. Instead, much of it goes to universities and private companies in the form of grants.

Trends in DOE R&D, FY 1987-2013

in billions of constant FY 2012 dollars



Source: *AAAS Report: Research & Development* series, OMB and agency budget documents. FY 2012 is the latest estimate, FY 2013 is the President's request. R&D includes conduct of R&D and R&D facilities.

CQ TODAY ONLINE NEWS – APPROPRIATIONS
Sept. 10, 2012 – 4:12 p.m.

House Plans to Release Continuing Resolution on Monday

By Kerry Young, CQ Staff

House appropriators prepared on Monday to release the draft text of a **six-month stopgap spending bill** that the chamber will vote on this week under an agreement aimed at sidestepping a major showdown immediately before the November elections.

The House is slated to take up the continuing resolution Thursday, and GOP leaders said they were confident the measure could be easily cleared.

"I expect the Senate to pass it as well and not add" potentially controversial riders, House Majority Whip Kevin McCarthy, R-Calif., told reporters.

The CR would reflect the $1.047 trillion cap on the federal government's operating expenses in last year's debt limit law (PL 112-25). **This would be an increase of $4 billion, or less than 1 percent, from the spending level set for last year.**

Some House conservatives have said they would grudgingly accept that increase in order to get a six-month CR. They want to punt final fiscal 2013 spending decisions into next year, betting that they will make gains in the November election.

Lawmakers in both chambers and both parties have said they want to avoid the kinds of showdowns that last year threatened to shut down the government.

oops! SEQUESTRATION – 1/1/13

Budget Control Act of 2011

1. First, it established caps on discretionary spending, achieving approximately $917 billion in savings over 10 years.

2. Second, it established and called for a Joint Select Committee on Deficit Reduction (JSCDR) to produce legislation with at least an additional $1.2 trillion in deficit reduction.

3. Third, it established an automatic sequestration process to force spending reductions in the event the JSCDR did not produce a deficit-reduction bill or Congress refused to pass it. This `sequester' would result in immediate discretionary spending reductions effective January 2, 2013.

IMPACT:

Cuts of 9-10% in R&D budgets = ~$400Million from the DOE Office of Science