

Proposed U.S. budget cuts target science

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A "Sputnik moment" or a "kaputnik" one for U.S. science? With a federal budget battle showdown under way, science looks like collateral damage, say former federal officials, with proposed cuts to research that they consider severe. At stake, they warn, is the United States' long-term economic growth.

"Some of these are almost punitive cuts for [science](#)," says Raymond Orbach, who headed the Energy Department's science office during the George W. Bush administration. Writing in *Science* magazine this week, Orbach says proposed research cuts "would effectively end America's legendary status as the leader of the worldwide scientific community."

But with the federal budget deficit at \$1.5 trillion this year, House Appropriations Committee chief Hal Rogers, R-Ky., says such cuts "are necessary to show that we are serious about returning our nation to a sustainable financial path."

The House put military, Medicare, Social Security and other mandatory spending off-limits for the cuts, leaving only the "discretionary" one-fifth of the \$3.7 trillion federal budget, which includes science, on the butcher block. Rogers says the proposed cuts target "excessive, unnecessary and wasteful spending."

The dollar figures, in Washington terms, are not that large. The federal government funds more than a third of all research-and-development spending nationwide, which totaled \$398 billion from both public and private sectors in 2008, according to the [National Science Foundation](#). Of that federal spending, about \$30 billion is spent on "basic" research, the undirected scholarship aimed at producing fresh knowledge that has led to technologies ranging from magnetic resonance imaging machines to long-lived laptop batteries to the motors that make automobile power windows work. The House budget proposal cuts about \$4.4 billion from that \$30 billion in basic research.

To some, that's a very important \$4.4 billion, because it cultivates the kind of new technologies that drive economic growth. "We're eating our seed corn. A lot of this looks like mindless cutting," says retired Rep. Sherwood Boehlert, R-N.Y., former head of the House Science Committee.

The budget fight pits a philosophy of cutting spending immediately against support in the last decade for doubling science spending toward reaping economic benefits and meeting challenges to U.S. research from China and India.

"I'm an old-fashioned patriot. I like the U.S. to lead in science and innovation," Boehlert says.

On the other hand, current House Science Committee chief Rep. Ralph Hall, R-Texas, applauded the proposed research cuts as a "first step in cutting spending, putting Americans back to work."

In the past, Republicans have generally backed basic research to help seed private firms' applied research, which is directed at engineering new products, notes former George W. Bush administration science adviser John Marburger III.

Democrats have also supported federal research targeted at specific industries, from semiconductors in the '90s to renewable energy today.

In his State of the Union speech, President Barack Obama said, "this is our generation's Sputnik moment," calling for increased spending on education and science, particularly energy research. In his \$3.7 trillion 2012 federal budget, he proposed:

- Cutting about \$3.3 billion from defense research and development funds, much of it by scrapping the development of an amphibious Marine Corps vehicle.

- Adding \$4 billion to non-defense research - notably, increases of some \$982 million to energy

research to help foster solar cells and other "clean" energy and \$1 billion to the National Institutes of Health.

- Continuing increases that would double the budgets of basic research agencies such as the National Science Foundation and the National Institute of Standards and Technology.

Obama's priorities for fiscal year 2012 stand in contrast to the 2011 House Republican plan passed in February, which cuts less from defense research, about \$1 billion, and more than \$4 billion from non-defense research, targeting energy and climate research. The House plan calls for:

- Cuts of \$873 million from energy research and \$886 million from the 10 national labs that operate the nation's heavy-duty physics facilities.

- Prohibiting the National Oceanic and Atmospheric Administration from funding a Climate Service, part of a \$338 million cut to NOAA research that would track global warming and monitor the Gulf of Mexico's health.

- Cutting funds from all federal science agencies, such as NSF, NIST and the Centers for Disease Control and Prevention.

Budget negotiations with the Democrat-controlled U.S. Senate could still change things. In a Feb. 18 letter, Sen. Dick Durbin, D-Ill., called the science cuts "catastrophic." So with all eyes on efforts to avert a federal shutdown and continue working on a budget, scientists are wondering where all this is headed.

"This is about a lot of people who are scared to death of what appears to be a staggering future indebtedness that needs immediate attention," Marburger says. "The real worry is that the Senate will lose its judgment in the face of all this fear and passion and do something awful - like make the House budget a reality."

The Congressional Budget Office and other economists have long cited an estimate of a 28 percent return on investment for federal research spending. "Well over half of our economic growth in

the last century came from investing in science and technology," Orbach says.

Over the past few decades, industry has moved far from the halcyon days of Bell Labs, inventor of the transistor, when private firms pursued basic research. Although private funding of basic research increased in the last decade, those dollars are dwarfed by federal funding.

Meanwhile, China is opening major research universities - seven announced in the last five years. A 2005 National Research Council report warned that U.S. predominance in science appears to be eroding in the face of competition.

"The House budget bill is a dramatic statement of the Republicans' view of crisis - dramatic because if implemented it would indeed harm the nation, and it certainly would harm science," Marburger says. "It's equivalent to threatening to cut off your arm to get attention."

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