

2014 U.S. BUDGET

Wild Cards Remain After Proposed Reshuffle of STEM Education

Most people agree that the U.S. government could do a better job of managing the \$3 billion being spent by a dozen federal agencies on science education, public understanding of science, and the training of future scientists and engineers. But few are lining up behind a White House plan to accomplish that goal.

In a move that surprised science educators, legislators, and even many federal education officials, President Barack Obama included a radical realignment of STEM (science, technology, engineering, and mathematics) education programs in the 2014 budget request that he submitted last week to Congress (see p. 257). He proposed eliminating dozens of programs at agencies—notably at NASA, the National Institutes of Health (NIH), and the National Oceanic and Atmospheric Administration (NOAA)—in which STEM education is an add-on to their primary missions. At the same time, his budget designates three agencies to shoulder the load in four priority areas—the Department of Education in precollege science and math education, the National Science Foundation in both undergraduate and graduate STEM training, and the Smithsonian Institution in STEM activities outside the regular classroom.

The realignment will “substantially decrease the fragmentation of STEM programs,” says John Holdren, the president’s science adviser and director of the White

House Office of Science and Technology Policy (OSTP). The General Accountability Office, a congressional watchdog agency, has found that 83% of STEM education pro-



grams “overlapped to some degree ... [by] offer[ing] similar services to similar target groups ... to achieve similar objectives,” and many Republican legislators assert that federal STEM education programs are poorly managed and even redundant.

Under the proposed reshuffling, some 78 programs with an overall budget of \$176 million would be eliminated. But offi-

cial at the White House Office of Management and Budget (OMB), which developed the proposal, declined to explain what criteria were used in swinging the ax. And those cuts won’t result in overall savings. Instead, the president’s budget calls for a \$195 million jump in funding on STEM education over 2012, with the Education Department receiving an additional \$285 million, NSF enjoying an \$89 million boost, and the Smithsonian getting \$25 million to join the roster of federal STEM education agencies.

Many science educators say that the proposed cuts would scrap effective programs just as the country needs to be doing more. “The SEPA [Science Education Partnership Award] program is the face of NIH to the country,” says a grantee on one of the programs facing the chopping block. “It’s a vehicle for telling the public how NIH is translating science into practice,” says the grantee, who requested anonymity.

Conservatives are unhappy with the proposal’s bottom line. “The president’s proposal includes a reduction or reorganization of 114 of the 226 federal STEM programs, but then requests almost 7% in additional funding for the remaining 112 programs,” says Representative Larry Bucshon (R-IN), chair of the research subcommittee of the House of Representatives science committee. “I have yet to see sufficient justification for this additional funding.”

Even ardent backers of STEM education are wary of what the president has proposed. “The consolidation is not straightforward and not without possible consequences,” said a spokesperson for Representative Eddie

Here’s looking at you, kid



A 15-year satellite soap opera may have reached its final scene. The administration has requested \$33.6 million to finish refurbishing and launch the Deep Space Climate Observatory (DSCOVR), a satellite proposed by then-Vice

President Al Gore in 1998. It was supposed to launch in 2001 and beam back climate data and pictures of the Earth from a point 1.5 million kilometers away (*Science*, 20 March 1998, p. 1845). But critics saw the satellite, then called Triana, as a political stunt, and the George W. Bush administration parked it in a warehouse. The Obama administration revived the mission in 2010 and now wants to give \$9.9 million to NASA and \$23.7 million to the National Oceanic and Atmospheric Administration to get DSCOVR launched in November 2014.

Cosmic movie ready to roll



Astronomers will be thrilled that the National Science Foundation (NSF) has requested \$27.5 million to begin construction of the Large Synoptic Survey Telescope (LSST), the community’s top choice for ground-based

facilities in its 2010 decadal survey. Sitting atop Cerro Pachón in Chile, the 8.4-meter scope would use a 3 gigapixel camera to map an entire hemisphere of the sky once every 4 days. The result will be an unprecedented 3D movie of the cosmos and the mapping of some 10 billion galaxies. DOE has proposed spending \$22 million from its high-energy physics program to continue building the camera. (Overall, the program would get a boost of 5.7%.) Organizers hope to complete work on the telescope in 2021, using \$466 million from NSF and \$173 million from DOE.

A compromise for fusion



The 10.6% boost for the U.S. Department of Energy’s (DOE’s) Office of Science would allow the agency to pay the country’s share of the international fusion experiment ITER, under construction in France, without gutting

fusion research at home. Funding for fusion research would climb more than 20% to \$458 million, of which \$225 million would go to building parts for ITER. But DOE would limit annual ITER contributions to that amount for the duration of construction, says Edmund Synakowski, DOE’s associate director for fusion energy sciences. That move would prevent ITER from consuming the entire fusion budget, although it would increase the total amount the United States will pay for its share of ITER. DOE still plans to shut down a tokamak at the Massachusetts Institute of Technology.

Bernice Johnson (D-TX), the top Democrat on the science committee. “Agencies have unique mission and workforce needs and expertise that can’t easily be replicated by other agencies. Until she sees the details, she can’t judge what makes sense.”

Johnson isn’t the only one who’s confused. Federal officials, who learned about the plan during negotiations with OMB on their 2014 budget requests, say they still have a lot of questions. “The proposal has just been released and we are awaiting details,” says Lawrence Tabak, principal deputy director at NIH. “We’re in a funding pause for new applications.” Grantees, however, say they were told last week in a conference call that NIH intends to shutter its Office of Science Education and shift responsibility for STEM education activities to individual institutes and centers.

The announcement troubles Carl Wieman, who until last June oversaw federal STEM education programs as assistant OSTP director for science (see p. 292). An interagency committee has spent 4 years working on a strategic plan to consolidate and coordinate existing STEM education programs and beef up assessment, he notes. Its vision, long overdue, is now expected to be unveiled next month. By circumventing that process, Wieman says, OMB “is throwing a stick of dynamite into the room. It screws up the whole process.”

Steve Robinson of the White House Domestic Policy Council disagrees. He says the realignment is actually “one step in

achieving those goals, by realigning efforts and redirecting resources around more clearly defined priorities and enabling rigorous evaluation.”

While the dust settles, the three lead agencies are hoping that Congress will bless



Some lose. NASA's Charles Bolden and NIH's Francis Collins would see education programs shrink.

their plans to expand existing programs. The Smithsonian wants to apply its windfall to its newly named Center for Learning and Digital Access, which offers easy access to Smithsonian documents, photos, podcasts, videos, and other materials aligned with state standards in STEM fields and will eventually include materials from other agencies. The Department of Education wants to launch a \$150 million competitive grants program to help local school districts prepare high school graduates for STEM majors and careers and plans to create a STEM office that would work with other federal science agencies.

NSF hopes to grow its prestigious graduate research fellowships program from 2000 new fellows a year to 2700. Some of the fellows would have a chance to develop “special knowledge or skills” in collaboration with mission agencies, says Joan Ferrini-Mundy, the head of NSF’s education directorate. “The big picture is that some programs from other agencies are winding down,” she says. “And as we ramp up our undergrad and graduate programs, we’ll be talking to those agencies about access to their assets and facilities.”

The White House has not spelled out how such transfers would occur. Although funding for NASA’s STEM education activities would drop from \$170 million to \$109 million under the realignment, for example, NASA will continue to offer internships for undergraduates as well as funding students at colleges and universities with large minority populations. Likewise, NSF would retain its informal science education and K–12 programs.

Outside observers think it is unlikely that Congress will agree to anything as radical as what the White House has proposed. And mission agencies aren’t eager to give up what they have been doing. “We have the capability to play in all four priority areas,” notes Leland Melvin, head of NASA’s Office of Education, “as well as world-renowned scientists and facilities that nobody else has. NASA will continue in 2013 to do what we’ve been doing, and we’ll see what happens after Congress has a chance to weigh in. It’s a process.”

—JEFFREY MERVIS

Biodefense on the farm



The Obama administration has decided to move ahead with a controversial agro-defense laboratory planned for Manhattan, Kansas. It has requested \$714 million to enable the Department of Homeland Security (DHS) to build the \$1.2 billion National Bio and Agro-Defense Facility (NBAF), a high-security laboratory that would study diseases that threaten humans and livestock. NBAF is supposed to replace the Plum Island Animal Disease Center in New York. Just last year, the White House omitted NBAF funds in light of safety and budget concerns, as well as opposition from members of Congress. But some supportive outside reviews appear to have helped revive NBAF for 2014. Fierce opposition in Congress remains, however, with Representative Tim Bishop (D-NY) vowing to kill what he calls a “billion-dollar boondoggle.”

Giving a lift to science



The president’s 2014 request confirms that the U.S. Geological Survey (USGS) has moved up in the scientific pecking order. After years of 1% and 2% proposed bumps, in 2013 the administration asked for a 3% boost. That increase didn’t happen, as the agency suffered the same 5% cut from sequestration as its peers. But this year the president came back with a plan for a 15.2% hike over current levels, to \$1.17 billion. Marcia McNutt, who stepped down in February as USGS director and who in June becomes editor-in-chief of *Science*, says the recent budget jumps reflect the survey’s shift in status from a subsidiary of the Department of the Interior to a full-fledged science agency advancing the administration’s science priorities. One of those priorities is climate change research, which is slated for a 22% increase to \$72 million.

Chewing over a big request



The White House has doubled down on its support for competitively awarded, peer-reviewed funding for research. Last year, it asked for a 23% boost to the Agriculture and Food Research Initiative (AFRI) while holding level its requests for other research at the U.S. Department of Agriculture. That request was rejected, but this year it is seeking a 44% boost over current levels, to \$383 million. Karl Glasener, who directs science policy for the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, says a 2012 report by the President’s Council of Advisors on Science and Technology helped make the case. Congressional approval is another matter, but Glasener is optimistic: “Congress too seems increasingly sold on competitive funding mechanism in general and for AFRI specifically.”