

Overview of the FY 2011 Federal Budget Picture and Summary of the President's FY 2012 Budget Proposal for Science, Research and Education

FY 2011 – Updating a Very Fluid Picture

On February 14, 2011, the White House sent to the Congress the President's detailed budget proposals for FY 2012 which begins on October 1, 2011. Congress' annual review and enactment of the President's budget for FY 2012 moves forward even though they have not yet completed action on the FY 2011 budget.

The FY 2011 federal government budget is currently being supported by a stop-gap funding measure – called a continuing resolution (CR) – which runs out on March 4. By then, the Congress will either enact funding legislation for the balance of this fiscal year or enact another stop-gap funding resolution for some period of time, while the Congress and the White House try to reach an agreement on FY 2011 funding levels.

Working out an agreement between the House, Senate and White House on FY 2011 funding is turning out to be very difficult. The House, now controlled by the Republicans, is calling for reductions in FY 2011 spending that total \$100 billion, as they try to reduce non-security discretionary spending down to the FY 2008 level. Coming so late in the fiscal year, reductions of this magnitude could have devastating consequences for most agencies – including NOAA, DOE, NSF, NIH, USDA, and the Department of Education -- since these cuts would amount to annual reductions of 15 or 20% all coming in the last third or quarter of the fiscal year.

While the House is expected to debate and pass a bill calling for reductions of this magnitude, the Senate is unlikely to support such reductions – and neither will the White House. This sets up a period of protracted negotiations for FY 2011 funding that will probably lead to one or more additional CR's for FY 2011.

FY 2012 – The Debate on National Priorities Continues

But even with FY 2011 budget process unresolved and the budget arrow pointing downward at a rather steep gradient, the FY 2012 process gets underway with the President's budget proposing significant increases for his innovation agenda. The following summary highlights the President's overall budget plan for science, research, technology and education for selected agencies. To the extent possible, the FY 2012 budget plan is compared in this summary with the FY 2010 funding level for two reasons: first, FY 2011 is not yet complete so there is no real FY 2011 baseline to use; and two, for the most part, most agencies and programs in FY 2011 have been operating at something close to the FY 2010 level thus far in FY 2011.

Federal R&D Budget Overview -- The President's 2012 Budget proposes \$147.9 billion for Federal research and development (R&D)—an increase of \$772 million or 0.5 percent. Within that total, the Budget substantially increases nondefense R&D to \$66.8

billion, up \$4.1 billion or 6.5 percent. And it calls for a Federal research portfolio (basic and applied) totaling \$66.1 billion, up \$6.9 billion or 11.6 percent. The President's science and technology budget:

- Maintains a doubling path for the National Science Foundation (NSF), the Department of Energy's (DOE) Office of Science, and the National Institute of Standards and Technology (NIST) laboratories, providing a total of \$13.9 billion, up \$1.5 billion or 12.2 percent.
- Provides priority support for research into and development of clean energy sources, including \$550 million for DOE's Advanced Research Projects Agency Energy (ARPA-E) and sufficient support to double the number of Energy Innovation Hubs from three to six to further catalyze synergies between industry and academia.
- Provides \$3.4 billion for science, technology, engineering and mathematics (STEM) education including a \$100 million down payment on an initiative to prepare 100,000 new and highly effective STEM teachers over the next decade.
- Invests in 21st century infrastructure to keep people, goods, and information on the move and to provide the foundational capacities that foster the growth of new jobs and industries. In particular, the 2012 Budget proposes investments to deploy high-speed wireless Internet to reach at least 98 percent of Americans and enhanced use of spectrum.
- Encourages private sector investment by calling for an expanded, simplified, and permanent extension of the Research and Experimentation Tax Credit to provide certainty that the credit will be there for the duration of entrepreneurs' R&D investments.

National Institutes of Health (NIH) – the President's budget would increase NIH by 2.4% to a total of \$31.8 billion. The request includes one major new program: the proposed National Center for Advancing Translational Sciences, which would "re-engineer the pipeline for diagnostics and therapeutics discovery and development. NCATS would be built in part from a \$485 million clinical research support program at the National Center for Research Resources. NCCR is slated to be abolished. Most NIH institutes would receive raises between 1.6% and 2%. NIH also wants to give graduates and postdocs on training fellowships a 4% increase in their stipends this year. The agency would fund 9158 new research project grants, a drop of 228 from the 2010 level. The average success rate for a submitted application would dip below 21% for the first time, to 19% this year and next.

National Science Foundation (NSF) – Under the President's proposal, NSF would grow by 13% overall to a level of \$7.8 billion. NSF's core research activities would grow by 12.4%. Most directorates at NSF would grow by at least 10% - some, like engineering research would grow by 22%. The one exception is the Mathematical and Physical Sciences directorate which would grow by 6%. Within NSF's major research equipment and facilities construction account, the National Ecological Observatory Network (NEON) is slated to receive nearly \$88 million for construction and acquisition. The Ocean Observing initiative is budgeted at \$102 million. In addition, consistent with a decision made by the National Science Board in December, NSF is terminating its

current support for the development of the Deep Underground Science and Engineering Laboratory. NSF is also reducing its support for and phasing out the Science of Learning Centers program with funding set to decline from \$26 million to \$20 million in FY 2012. NSF's education and human resources directorate – the directorate supporting STEM education at the K-12, undergraduate, and graduate levels would receive a 4.4% increase to a level of \$911 million. NSF's budget proposes to terminate the GK-12 Fellowship program and the National STEM Education Distributed Learning (NSDL) program.

The Office of Science at the Department of Energy (DOE) would grow by almost 11% in the President's plan for FY 2012. DOE, along with NSF and the National Institutes of Standards and Technology, make up the cornerstone of the Administration's innovation and competitiveness agenda. Basic energy sciences, would receive the biggest increase, a 24% boost up to \$1.98 billion, to support research in condensed matter physics, chemistry, and material sciences and to run the program's x-ray synchrotrons, neutron source, and other user facilities. Biological and environmental research (BER) would receive a 22% increase to \$718 million, and advanced scientific computing would also get a 22% increase to \$466 million. DOE's nuclear physics program would get a 16% boost to \$605 million.

In contrast, DOE's high-energy physics program would receive a much smaller increase of 1% increase, to \$797 million including \$15 million to keep alive a project to turn an abandoned gold mine in South Dakota into the Deep Underground Science and Engineering Laboratory (DUSEL.) DUSEL was supposed to be an NSF project until the National Science Board, which sets policy for the agency, turned down a request for additional funding for design work. DOE's fusion energy sciences program would see funding cut by 4% to \$400 million.

The ARPA-E program would be funded at \$550 million to continue support for the promising early-stage research projects that could deliver game-changing clean energy technologies.

National Oceanic and Atmospheric Administration (NOAA) – In the President's budget for FY 2012, the NOAA budget would grow to \$5.5 billion, an increase of nearly \$750 million. A key driver of the NOAA budget is the increase needed for the Joint Polar Satellite System (formerly known as NPOESS) which jumps from \$382 million in FY 2010 to just over \$1 billion in FY 2012.

The NOAA budget also proposes the establishment of a Climate Services (CS) line office by transferring a number of programs and resources from other NOAA line offices including the Office of Oceanic and Atmospheric Research (OAR), the National Weather Service, and the National Environmental Satellite Service. CS is budgeted at \$346 million and includes the transfer of a number of climate-related NOAA labs, cooperative institutes, joint institutes, and the competitive grants program for climate research from OAR.

Remaining in OAR will be a number of oceans, coastal and weather related research programs including the National Sea Grant College program which is slated for level funding at just over \$62 million. The National Weather Service's request is \$988 million – a reduction of nearly \$12 million from the FY 2010 level – with all of this reduction coming out of the procurement account. NWS operations grow by almost \$5 million and will allow NWS to focus on continuing to develop the next generation air transportation system, GPS radiosondes for upper air observations, and continued acquisition of weather and climate supercomputing capabilities.

National Aeronautics and Space Administration (NASA) – The Administration is requesting \$18.7 billion for NASA – this is level with the FY 2010 bottom line. Within this flat funding envelope, NASA science would grow by \$519 million to just over \$5 billion with earth science and planetary science receiving most of the planned growth. NASA education activities decline from \$180 million to \$138 million. According to the Administration, the education reductions “include \$37.5 million in congressionally-directed spending, as well as other lower-priority projects that can no longer be funded in a time of constrained budgetary resources”.

U.S. Geological Survey (USGS) – Unlike other science agencies, the USGS finds its research programs reduced below the FY 2010 level in certain cases. Overall, the USGS budget request is \$1.1 billion, \$6.1 million above the FY 2010 level. Increases are requested for ecosystems, energy, DOI climate science centers, and funding to establish a continuous national land imaging program. But nearly \$90 million is cut from a number of other long standing science programs including USGS earthquake research reduced by almost \$5 million below the FY 2010 level to \$52.3 million, water resources research reduced by \$21 million, and core science programs cut by \$19 million.

Department of Education (ED) – The President's ED budget plan increases the ED budget by 11% to more than \$77 billion. Much of that growth would keep Pell Grants at \$5,500 per year while adjusting the program to eliminate year-round Pell Grants and the in-school interest subsidy for graduate and professional student loans. Other than Pell grants, education funding grows by \$2 billion or 4% with \$500 million more for Title I programs and special education. The Race to the Top program would grow to \$900 million.

The ED budget also provides \$975 million in competitive initiatives to recruit, prepare, reward, and retain effective teachers. Nearly \$27 billion (a 7%) is targeted for the Elementary and Secondary Education Act and will be focused on raising standards, encouraging innovation, and rewarding success, while allowing more flexibility to invest in reform-oriented competitive initiatives. The ED budget provides \$300 million for the Investing in Innovation program to support effective approaches to student learning.

The budget also eliminates some 13 discretionary programs and consolidates 38 different K-12 programs into 11 programs focused on improved outcomes. The

Department's Math and Science Partnership program, which has been funded as a \$180 million stand-alone competitive grants program, is one of the programs being eliminated and merged into a broader program called "Effective Teaching and Learning: Science, Technology, Engineering, and Mathematics."

U.S. Department of Agriculture (USDA) – Overall the budget requests \$24 billion, a reduction of \$3.2 billion. Investments are made in renewable energy and key research areas. Savings are created by reducing direct payments to high-income farmers, refocusing USDA's homeownership programs, and targeting USDA conservation programs. A key research area is funding for the Agriculture and Food Research Initiative to \$325 million and targets increases for research in areas that are key to American leadership: human nutrition and obesity reduction, food safety, sustainable bioenergy, global food security, and climate change.

Institute of Libraries and Museum Services (IMLS) – The Administration has requested \$242.6 million for FY 2012 for IMLS. This is about \$40 million below the FY 2010 level. For IMLS museum programs, the President requested \$32,318,000 for the following grant programs: Museums for America, a program that strengthens museums as active resources for lifelong learning and as community assets; the 21st Century Museum Professionals program, which supports projects that address the preparation of museum professionals for the future by updating and expanding their knowledge and skills; the Conservation Project Support program, which helps museums identify conservation needs and priorities and perform activities to ensure the safekeeping of their collections; National Leadership Grants to support creation of new tools, research, models, services, practices; the Conservation Assessment Program and the Museum Assessment Program are now incorporated under National Leadership Grants; the Native American and Native Hawaiian Museum Services program, which enables Native American tribes, Alaska Native villages or corporations, and organizations that primarily serve Native Hawaiians to benefit their communities and audiences through strengthened museum services; and the Museum Grants for African American History and Culture program, which builds professional capacity in the African American museum community.