

## VIEWS AND ESTIMATES COMMITTEE ON SCIENCE AND TECHNOLOGY FISCAL YEAR 2008

The President's FY2008 budget proposes \$143 billion in Federal research and development (R&D) funding, a 1.4 percent increase over the FY2007 level. The budget proposes increases for research programs within the American Competitiveness Initiative (ACI), as well as human space exploration, but proposes decreases in much of the remaining non-defense Federal research and development portfolio. The Committee, like the Congress, is very concerned about our country's budget deficit and its impact on our economic strength. However, the Committee also urges the Budget Committee to recognize the contributions and benefits that research and development and science and technology investments have for our country's economic competitiveness, energy security, education standards, job growth, and environmental health.

The President's FY2008 budget would provide \$11.4 billion for research within programs that are part of the ACI—the National Science Foundation, Department of Energy Office of Science, and National Institutes of Standards and Technology lab research and construction accounts. However, the Committee notes with concern that outside of the ACI programs, research and development for many agencies and programs would be cut compared to the FY2007 level. For example, according to the American Association for the Advancement of Science (AAAS), the FY2008 budget would reduce R&D funding for Department of Energy Applied programs (excluding Office of Science) by \$133 million or 9.2 percent; the Department of Homeland Security by \$15 million or 1.6 percent; the Environmental Protection Agency by \$20 million or 3.5 percent; and the National Oceanic and Atmospheric Administration by \$57 million or 9.5 percent. In addition, proposed funding for most agencies and programs (including NASA, the National Science Foundation, and the Department of Energy) is well below levels authorized in legislation passed by the Congress and signed into law by the President.

This year, the Committee plans to move legislation to refocus our country's science and technology priorities by:

- Enacting key recommendations of the National Academy of Sciences *Rising Above the Gathering Storm* report on U.S. competitiveness;
- Promoting a clean, affordable, reliable, and diverse energy supply based on the best and most efficient technologies;
- Ensuring that NASA priorities are balanced and adequately leverage expertise in aeronautics, science, and human space flight and exploration programs;
- Evaluating the Department of Homeland Security's research and development programs to ensure they are based on rigorous risk analysis of threats to our nation; and
- Moving beyond the basic questions of climate science and seeking to address specific regional and economic sector vulnerabilities.

The following is a more detailed analysis of the Committee's budget priorities, by subcommittee and agency.

## **SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**

### **Department Of Energy**

The Committee has jurisdiction over all Department of Energy civilian national laboratories, civilian energy research, development and demonstration programs, and activities related to the commercial application of energy technologies.

The Committee recognizes that there are many worthy programs at the Department of Energy and believes that the country will best be able to meet its energy goals by balancing long term basic energy research with short term research, development, demonstration, and commercial application of energy technologies and by not presuming technology "winners" and "losers".

### Office of Science

Basic energy research plays an important role in enhancing the nation's competitiveness, and the Committee believes the FY2008 budget request for the DOE Office of Science of \$4.4 billion is a step forward in responding to near-term needs in this field. The request represents an increase of approximately \$600 million, or 16 percent over the appropriated FY2007 level. However, it is important to note that the request falls \$189 million short of the amount authorized in the Energy Policy Act of 2005 (P.L. 109-58).

The Office of Science has maintained a long-standing role as steward of large world class scientific user facilities. However the Committee is concerned that construction and operation of facilities comes at the expense of actual funding for research in these facilities. This can be especially detrimental in the case of construction overruns or miscalculated operational costs of very large facilities, some of which carry multi-billion dollar price tags. The committee notes with pleasure that the Spallation Neutron Source (SNS) at Oak Ridge National Lab will open on time and within the scope of the budget. As the Department moves forward with plans for additional large scientific facilities it is important to demonstrate that lessons have been learned from successes such as the SNS. However it is equally important to closely examine cases such as the Superconducting Super Collider, which ultimately failed to be completed because of multi-billion dollar cost overruns and lack of political support. Early and comprehensive consultation with contractors and component manufacturers might have provided more realistic cost estimates. The Committee will find it difficult to support construction of such large facilities if demonstrable measures are not taken to assure due diligence in the areas of cost estimates and design.

Within the Office of Science, the Biological and Environmental Research (BER) program receives a 15 percent increase over the FY2007 appropriated level, with a large portion

of overall funding supporting the startup of three bioenergy research centers for investigating cellulosic biomass as an energy feedstock. The Committee notes that the Department's original plan included only two centers and roughly a third of the funding. As the Department moves forward it should ensure that each center maintains distinct research capabilities, and not duplicate research being done by industry or within other Department of Energy programs or labs.

In addition, the Committee is pleased to see the request provide \$340 million for the Advanced Scientific and Computing Research (ASCR), an increase 45 percent over the FY2007 level. This would allow for the continued upgrading of the Leadership Class Facility (LCF) to peta-scale operations, making it the world's largest civilian high performance computing system. Awareness of the role computational sciences can play in advancing U.S. industrial and scientific competitiveness is increasing rapidly, and the Committee urges the Department to continue awarding substantial amounts of run-time to private industry and universities to enhance that role.

#### Applied Energy Programs

The Committee is pleased to see the Administration's increased attention to a number of R&D programs within the Office of Energy Efficiency and Renewable Energy (EERE). However, increases in some renewable and efficiency R&D programs are mostly offset by considerable reductions to other important R&D programs, as well as programs to deploy existing and new technologies, including the Weatherization Assistance Program, Industrial Technologies Program, and Federal Energy Management Program.

For example, as in the FY2007 budget request, the Administration would eliminate R&D in geothermal power, despite the fact that untapped geothermal sources could address a significant portion of our country's energy demand and do so in a reliable and clean manner. A comprehensive study by the Massachusetts Institute of Technology released in January 2007 found that enough geothermal resources exist to supply 10 percent of the United States' future electricity requirements with minimal environmental impact and likely at competitive prices. Further, geothermal energy technologies are not fully mature and could benefit from further technology development and demonstrations.

If the country continues moving toward greater use of biofuels, the Committee believes it will be important to increase investment in Biomass and Biorefinery Systems programs at DOE. Under the President's budget, these programs would receive funding at a level almost double compared to FY2007. However, the FY2008 request for Vehicle Technologies R&D, which includes funding to spur the development of technologies for plug-in hybrid vehicles, would be reduced by \$6.4 million or 4 percent. The Committee finds that an overall cut in this program is unwise given that the responsibility for decreasing the nation's dependence on oil from unstable or hostile regimes rests largely in programs to improve advanced vehicle technologies.

Nuclear Energy receives \$568 million for research and development, with a large portion of that dedicated to the Global Nuclear Energy Partnership (GNEP). For the

Nuclear office, this represents an increase of \$220 million, or 64 percent over the FY2007 request, and \$347 million (157 percent) above the FY2006 Congressionally appropriated amount.

The Administration unveiled the Global Nuclear Energy Partnership (GNEP) in 2006 as a plan to develop advanced, proliferation-resistant nuclear fuel cycle technologies that would maximize the energy extracted from nuclear fuels and minimize nuclear waste. The Committee notes, however, that GNEP has not had widespread support in Congress. In FY2007, the Administration requested approximately \$250 million, but approximately \$80 million was appropriated. Nonetheless, the Administration's FY2008 request for GNEP is \$395 million.

Chief among the Committee's concerns about GNEP is the cost of implementing the program (up to \$40 billion) and deploying a fleet of the required technologies on a commercial scale (more than \$200 billion). The Committee is also concerned with what appears to be a premature selection of technologies before the completion of a full system-wide analysis of the technologies required. DOE has a poor track record for carrying out large scale construction and operation of such projects without major cost and schedule overruns, and the Department has not responded in a way to allay these concerns with regard to GNEP. For these reasons and others, the Committee remains skeptical whether the very substantial increases for GNEP are warranted at this time.

Given our country's abundant domestic coal resources, the Committee believes that clean coal technologies should be part of the debate about providing a clean, reliable, efficient, and affordable energy supply. The Committee supports increases for the Fossil Energy office to investigate and develop clean coal and carbon capture and sequestration technologies, including the Clean Coal Power Initiative and the FutureGen project. However, given the continued high price of oil and natural gas, the Committee is disappointed that the FY2008 budget once again proposes to eliminate all oil and gas R&D, including \$50 million authorized in the Energy Policy Act of 2005 (P.L. 109-58) for unconventional onshore and offshore natural gas exploration technologies that would go largely to small, independent oil and gas producers.

The FY2008 budget proposes \$8.4 million to fund the Office of Loan Guarantees, which will administer the Innovative Technology Loan Guarantee Program (LGP), also established in the Energy Policy Act of 2005 (P.L. 109-58). The request assumes a loan volume of \$9 billion for large electric power generation projects such as advanced nuclear and coal gasification with carbon sequestration, programs that promote biofuels and clean transportation fuels, and new technologies in electricity transmission and renewable power systems. The Committee supports the LPG as a tool to help commercialize technologies that will result in significant reductions in carbon emissions. However, given the Department's poor track record with loan guarantees, in order to minimize liability for the Federal government (and consequently, taxpayers), the Committee strongly urges DOE to act in a timely manner to develop regulations for the program that have been fully vetted in a public, merit-based prioritization process.

Advanced Research Projects Agency for Energy (ARPA-E)

Finally, the Committee believes that many R&D programs within DOE are often not well-suited to respond to the rapidly changing world of energy technology development, and greater collaboration with U.S. industry and academia could reap unprecedented benefits in this field. Therefore, the Committee intends to move legislation that establishes within the Department a new research and technology development agency known as the Advanced Research Projects Agency for Energy, or ARPA-E. The 2005 report by the National Academy of Sciences entitled *Rising Above the Gathering Storm* recommended establishing ARPA-E to coordinate high-risk, high-payoff energy technology research and development that private industry is not likely to pursue on its own. ARPA-E would be modeled on the successful DARPA program within the Department of Defense. Given the scale of the energy challenges facing our nation, ARPA-E would only be effective if funded at levels that allow for potentially transformational energy research.

**National Oceanic and Atmospheric Administration**

The President's FY 2008 budget request for the National Oceanic and Atmospheric Administration (NOAA) is \$3.96 billion, 2.7 percent below the FY2007 appropriated funding. The President's budget requests for NOAA routinely exclude funding for a wide array of Congressionally-mandated projects, and some of this funding is re-directed to Presidential priorities. However, in FY2008, much of this funding is simply cut from the NOAA budget resulting in a lower funding request for NOAA.

National Weather Service

The National Weather Service (NWS) is the only line office that receives an increase in the President's FY2008 request for NOAA. The FY2008 request for NWS is 6.5 percent higher than the 2006 enacted levels. The increase for the Tsunami Warning Network (\$17.2 million) includes funds to repair one of the weather data buoys that add to the enhanced real-time hurricane observations and storm monitoring as well as complete the 39 DART buoy network system.

The completion of the Tsunami detection network expands NWS's operational capabilities. However, the Committee is concerned that this is the only area where the Administration proposes to make an investment in improved forecasting to protect life and property. Further, the Committee is concerned that this increase may not be sufficient to fully cover all operational and maintenance requirements for current weather forecasting equipment, especially if the country experiences a year with high frequency of severe weather events and hurricanes that result in damage or loss to weather monitoring and forecasting equipment. The Committee believes that this level of funding will not enable NWS to move new monitoring and forecasting equipment from research to fully operational mode.

National Environmental Satellite Data and Information Service (NESDIS)

The President's FY2008 budget request would increase the overall budget for the National Environmental Satellite Data and Information Service (NESDIS) by 3 percent (\$26 million). The budget for NESDIS is dominated by the procurement, acquisitions,

and construction (PAC) accounts for the polar and geostationary satellite systems. The Operations, Research and Facilities (ORF) account for NESDIS contains the programmatic funding for management, processing, analyzing, and archiving data received from all of NOAA's weather monitoring equipment – ground-based and space-based. This account also supports a number of regional climate centers. The Committee notes with concern that the FY2008 request for these accounts is \$20 million below the FY2007 enacted levels.

The FY2008 request also eliminates \$4 million in funding for NOAA-NASA Partnerships to facilitate the transfer of research to operations. The Data Centers and Information Services accounts are reduced by \$18 million from the FY2007 enacted levels. While funding for these programs is small relative to the procurement of satellite systems, funding for data analyses, processing, management, and archiving is essential to obtain value from the large investments made in the satellites that gather and transmit data to support weather forecasting and climate prediction.

NOAA operates two satellite systems that collect data for weather forecasting. The polar satellites orbit the earth and provide information for medium to long-range weather forecasts. The geostationary satellites gather data above a fixed position on the earth's surface and provide information for short-range warnings and current weather conditions. Both of these systems are scheduled for replacement, and both new satellite series must be launched by 2014.

Based on investigation by the Committee and others, the polar satellite program has been found to have experienced serious problems including equipment damage, cost overruns, technical difficulties in development of new sensors, and poor management. The planned request for the last satellite in the current polar series POES in FY2008 was \$62 million. However, the actual FY2008 request is \$43 million above the original estimate. According to the Administration, the extra funds would cover rebuilding costs and storage costs for the N-Prime satellite damaged at the factory in 2003, support for testing of a European satellite, installation of NOAA instrumentation on a European satellite, and to restore N-Prime funding that was re-directed to POES-N due to an unplanned delay in the launch of the POES-N satellite.

The Committee is very concerned that the procurement program for the new series of polar satellites, the National Polar-Orbiting Operational Environmental Satellite System (NPOESS), is now projected to cost in excess of \$4 billion above the original estimated cost, and that the FY2008 budget request does not reflect the increased cost of this program. This satellite series was also supposed to provide continuity for a number of measurements required for the nation's earth sciences program. However, the Committee is concerned that neither the NOAA budget nor the NASA budget includes any funding to restore capabilities of the instrumentation eliminated from the NPOESS program in the restructuring of this program. As reported to the Committee, most recently in February of this year, climate change is occurring, and it may have a significant impact on weather and climate patterns across the nation. At a time when our country needs additional information to prepare for and mitigate the impacts of

climate change, we have no identified funding to sustain the basic monitoring system that now provides this critical information.

The current series of Geostationary Operational Environmental Satellites (GOES-N, O and P) are nearing completion. GOES-N was launched in May 2006, and the FY2008 request of \$80.4 million will support the continued development, procurement and launch of the remaining GOES satellites scheduled for April 2007 and October 2008. The Committee learned in 2006 that the estimate for the new GOES series of satellites – GOES-R – was projected to be \$5 billion higher than the original estimate. NOAA is now restructuring and designing this program to achieve cost reductions, but the cost savings again will be achieved by reducing the number of satellites in the series as well as reducing the capabilities of the satellites. The Committee continues to have serious concerns about the development of these new satellite series both in terms of meeting our need for continuity of weather and climate data and in terms of the present and future impacts on the NOAA budget.

#### Oceanic and Atmospheric Research

The office of Oceanic and Atmospheric Research contains over half of the research programs at NOAA. The President's FY2008 budget reduces funding for this research by nearly \$11 million (3 percent) below the FY2007 enacted levels. The President's FY2008 budget increases funding for Climate Research by \$23 million (13.5 percent), most of this increase is accomplished by redirection of funds from Congressionally-mandated projects.

The Presidential-appointed U.S. Commission on Ocean Policy released a report in 2004 (*An Ocean Blueprint for the 21st Century*) recommending doubling the Federal ocean and coastal research budget over the next five years. However, no Presidential budget proposal since the report was issued has included substantial increases in ocean research funding at NOAA.

#### **Environmental Protection Agency**

The FY2008 budget request for the Environmental Protection Agency (EPA) is \$7.2 billion, \$800 million less than the FY2007 appropriation. The FY2008 budget proposal for EPA's Science and Technology programs is \$781 million. This includes \$754 million in the Science and Technology program account plus a transfer of \$26 million from the Superfund account to support Superfund-related research. However, starting with the FY2007 budget request, the Administration instituted an accounting change and transferred the cost of operations and maintenance of all S & T facilities from the Environmental Program and Management account to the S & T account. When this transfer is accounted for, the actual FY2008 S & T program request is reduced by \$65 million to \$716 million, an \$81 million reduction below FY2007 enacted funding levels.

The Committee notes that EPA's Science Advisory Board reviews EPA's Science and Technology budget request each year, and since FY2005, the Board's reports have indicated concerns about the erosion of EPA's budget for S & T. The Board's review of the FY2007 budget proposal stated: "The erosion of research and development remains

a serious impediment to the Agency's ability to meet its mission of protecting human health and the environment through science-based initiatives. This fall-off in the development of scientific knowledge will increasingly have international competitiveness dimensions as we lag our competitors in developing new technologies using new approaches. It is the opinion of the Board that EPA's research and development resources are grossly inadequate to address the scientific complexities of the nation's environmental protection needs" (EPA-SAB-ADV-06-003). The Committee agrees that our country must have a more robust investment in environmental research and development if we are to maintain a healthy environment and a healthy economy.

## SUBCOMMITTEE ON RESEARCH AND SCIENCE EDUCATION

### **National Science Foundation (NSF)**

NSF is the primary source of federal funding for non-biomedical research conducted at colleges and universities, including 86 percent of funding for computer sciences, 77 percent of funding for mathematical sciences, 54 percent of funding for environmental sciences, 46 percent of funding for engineering, 40 percent of funding for the physical sciences, and 52 percent of funding for social and behavioral sciences. In addition, since its founding in 1950, NSF has maintained effective programs for improving science, technology, engineering and mathematics (STEM) education at all levels. NSF's funding of basic research across nearly all fields of science and engineering and its education programs to prepare the next generation of scientists and engineers, as well as to increase the scientific and technical literacy of all Americans, provide the underpinnings for assuring future U.S. economic competitiveness and national security.

NSF continues to receive high marks for the effective management of its programs. The agency received its ninth consecutive "clean" opinion from an independent audit of its financial statements, with no material weaknesses reported. In addition, NSF is among a handful of agencies that have maintained "Green" successful ratings in four or more of the President's Management Agenda initiatives, and all NSF programs evaluated to date by the Office of Management and Budget's Program Assessment Rating Tool (PART) are among the 15 percent government-wide that have received the highest rating.

Because of NSF's key roles in science and engineering research and education, there have been many calls to double the NSF budget. The President's American Competitiveness Agenda announced last year also proposes to double the NSF budget over ten years. The President's FY2008 budget request would provide the second installment for achieving the Administration's goal by providing \$6.4 billion for NSF, which is \$409 million, or 6.8 percent above the FY2007 request, and \$513 million, or 8.7 percent above the FY2007 continuing resolution. However, funding proposed in FY2008 would still fall far below the level authorized by the National Science Foundation Authorization Act of 2002 (P.L. 107-368).



While the Committee welcomes the Administration's proposal to increase NSF funding, the proposal falls short by failing to include growth for the NSF K-12 STEM education programs. In fact, from FY2004 through FY2007, funding for the NSF K-12 STEM education programs has fallen by 47 percent. Under the FY2008 request, K-12 STEM education funding would remain flat. The Committee believes resources devoted to this area are inadequate in light of the importance of ensuring a well educated STEM workforce.

Since 1950, NSF has been tasked with strengthening STEM education at all levels, and NSF's education programs are unique in their peer review processes, their linkage to higher education, and their resulting capacity to develop new and improved educational materials and assessments, create better teacher training techniques, and move promising ideas from research to practice. To take advantage of the expertise and experience of NSF in STEM education, the Committee intends to move legislation this year to implement several initiatives developed during the previous Congress that will modify and enlarge existing NSF programs focused on teacher training and in-service teacher professional development. These provisions arose from the recommendations of a recent report of the National Academy of Sciences, *Rising Above the Gathering Storm*.

The NAS report, prepared by a panel of distinguished scientists, engineers and educators from academia and industry, recommended a series of action items that the panel found to be keys for ensuring the nation's economic competitiveness in the 21<sup>st</sup> century. The first and highest priority action item of the report is to increase substantially the number of STEM teachers who are well grounded in their subjects and skilled in pedagogical techniques for teaching science and math. This is the centerpiece provision of H.R. 362, 10,000 Teachers, 10 Million Minds Science and Math Scholarship Act, which the Committee will take up early this year and which is one of several legislative measures to advance competitiveness and innovation that are expected to be considered by the full House of Representatives.

The Committee recommends that the NSF Education and Human Resources Directorate receive additional funding to expand and revise the NSF Robert Noyce Teacher Scholarship program, which will support efforts by colleges and universities to improve the education of STEM teachers and will provide scholarships for science, math, or engineering students who enter the program, take courses needed to become certified as teachers, and agree to teach for two years for each year of scholarship support.

## SUBCOMMITTEE ON SPACE AND AERONAUTICS

### **National Aeronautics and Space Administration (NASA)**

NASA's FY2008 budget request is \$17.3 billion, approximately \$690 million less than the amount stipulated for FY2008 in the FY2005 five-year budget plan that accompanied the President's Vision for Space Exploration (VSE). That shortfall

replicates the practice in each of the previous two years - in FY2006 the Administration's request was \$546 million less than pledged in the President's VSE five-year budget plan; in FY2007, the request was \$1.02 billion less. The Committee is very concerned about the cumulative effects of these budgetary shortfalls, which, coupled with the Office of Management and Budget under-budgeting for the costs of Space Shuttle and the International Space Station (ISS) in that same five-year budget plan, create strains and stresses that are visible in all of the agency's programs.

The Committee notes with concern that the FY2008 budget request for the Exploration Initiative does not adequately account for what will be needed in FY2008 to keep the Constellation program—which funds development of the Orion Crew Exploration Vehicle (CEV) and Ares Crew Launch Vehicle (CLV)—on track to be operational in 2014. The FY2007 budget request shifted almost \$7 billion to the Constellation program relative to the previous year's five-year budget plan, but the result of that action has been a "hollowing out" of much of the rest of the Exploration Initiative, including cuts to exploration-related technology R&D and to ISS research funding. And, in spite of the \$7 billion infusion into Constellation, the operational date for the CEV remains at 2014. Moreover, all of NASA's human space flight programs have been given funding "challenges" in the budget request which will force the agency to make additional cuts to pay for needed replacement spacecraft for its TDRSS data relay satellite system and for crew-cargo support of the ISS.

The Committee also continues to be concerned about proposed funding for Aeronautics programs. In the FY2008 budget request, Aeronautics remains at a level that is less than a third of the funding provided in 1994—and significantly lower than the FY2001 budget level. As a result, many aviation experts are worried about NASA's ability to continue supporting critical interagency research goals in air traffic management and aviation safety. NASA is a major participant in the interagency initiative to develop the next generation air traffic management system, and its R&D will be critically important to that effort. The interagency initiative assumes NASA will be given the resources necessary to carry out its R&D tasks.

In addition, the reductions in NASA's aeronautics budget have led to a situation where all but a small fraction of NASA's aeronautics funding is dedicated to in-house activities, with little money available to support R&D conducted in partnership with universities and industry. The Committee notes that this is likely to result in a diminution of new and innovative research concepts from academia as well as a reduction in the relevance of NASA's research to the needs of the aviation industry.

The Committee also is aware that NASA's science programs are facing significant stresses. Roughly \$4 billion was removed from the five-year budget plan for NASA's science programs over the last two years, resulting in significant disruptions. The FY2008 budget request and its five-year run-out for the Earth Sciences program contain insufficient funds to undertake the missions recommended in the recently released National Academy of Sciences decadal strategy for Earth science research and applications. Even currently planned missions continue to suffer delays. The Global

Precipitation Measurement (GPM) mission, originally scheduled for a 2007 launch, will now not fly before 2013. A similar situation can be seen in NASA's astrophysics program, which is projected to face a decline in funding of \$300 million between FY2008 and 2011. Finally, funding for NASA's education programs is projected to decline over the next five years from the FY2007 request level.

The Committee believes that NASA's space and aeronautics programs represent some of the nation's most rigorous R&D initiatives. As such, they can inspire our young people, advance our understanding of the universe as well as our home planet Earth, and they can generate technological advances that will benefit both our quality of life and our economic competitiveness. That will only be possible with a balanced NASA program of science, aeronautics, and human space flight and exploration. If NASA is to be successful in carrying out the tasks it has been given by the White House and Congress, it is going to need resources commensurate with those tasks. Thus, the Committee believes that NASA should receive funding in FY2008 closer to the level authorized in the NASA Authorization Act of 2005 (P.L. 109-155) than to the level contained in the President's FY2008 budget request.

#### **Federal Aviation Administration (FAA)**

The FY2008 budget request for the Federal Aviation Administration's R&D programs contains a modest increase, with the projection of additional increases over the next five years. The Committee believes that the need for such R&D expenditures is clear, given the important role FAA R&D will play in promoting aviation safety and increased air transportation capacity and efficiency, as well as enabling informed international agreements on noise, emissions, and other environmental issues. For example, the FAA is the lead agency in the interagency effort to develop the next generation air traffic management system, and the success of that initiative will be dependent on the FAA receiving the resources needed to develop and implement the components of the next generation system. The Committee believes that FAA's R&D programs should receive no less than the President's FY2008 budget request, and consideration should be given to augmenting the request if additional funds are available.

## **SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION**

#### **National Institute of Standards and Technology (NIST)**

The National Institute of Standards and Technology (NIST) is the nation's oldest Federal laboratory, with a mission to use measurement science, standards, and technology to enhance economic competitiveness and public safety. NIST's wide range of high-quality programs in support of U.S. industry puts it in an excellent position to play a key role in advancing American innovation and competitiveness.

The Committee notes that Congress has long been a supporter of the NIST lab programs, whose budget has increased by 130 percent in the past 15 years. Congress also has recognized the value of NIST's extramural programs by providing funding to

maintain the existing national network of Manufacturing Extension Partnership (MEP) centers and a viable Advanced Technology Program (ATP).

The Administration's FY2008 budget request proposes a 4 percent cut for NIST, compared to the FY2007 appropriations level. The Committee feels this is the wrong decision for an agency with such a direct impact on the public welfare and economic competitiveness. While the President's American Competitiveness Initiative (ACI) proposes doubling the NIST lab accounts, it does so at the expense of the ATP and MEP. The President proposes to cut the MEP by 56 percent and to eliminate the ATP altogether.

The Committee believes that the public's investment in NIST has paid significant dividends to the nation, and that overall NIST funding should be put on a path to double over the next ten years. However, what is needed is a balanced approach, which includes funding for the ATP, MEP, NIST labs, and construction, particularly at the Boulder, CO campus. The Committee believes that the Administration's repeated efforts to eliminate the ATP and dramatically reduce funding for the MEP are misguided. Both programs are proven public/private partnerships that have delivered significant returns on investment. For example, a recent survey of just a quarter of MEP clients reported over \$1.3 billion in cost savings directly attributed to the program's assistance as well as the creation of \$6.3 billion in new or retained sales and more than 53,000 jobs. Congress has expressed its strong support for these programs on multiple occasions, and the Committee will continue to support them.

### **Department of Transportation**

The Committee oversees surface transportation research and development (R&D) activities at the Department of Transportation (DOT). These activities are managed by several administrations within DOT, including the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The Research and Innovative Technology Administration (RITA) is responsible for coordinating research portfolios across the Department. The Bureau of Transportation Statistics (BTS) is also a component of RITA.

While the Administration requested a \$4.3 million increase over the FY2007 appropriated funding level of \$7.7 million for RITA, the Committee is concerned that the requested increase will not support the emerging research priorities identified by the recently released Transportation Research, Development and Technology Strategic Plan. Less than 10 percent of the total requested funding for RITA will go towards supporting R&D, and less than half of the requested funding will support coordination of DOT research activities. Five million dollars, an amount totaling more than the requested increase, is proposed for a nationwide global positioning system (GPS) system that will be developed on behalf of the U.S. Coast Guard (USCG), which is part of the Department of Homeland Security (DHS). While the Committee understands the need for technological expertise in developing important global positioning capabilities, important priorities identified in the strategic plan are left unfunded in this request. The Committee has not seen any justification for requiring RITA to perform this R&D, which

may be more appropriately housed in the U.S. Coast Guard. The Committee believes more emphasis should be given to research coordination that supports energy efficiency, congestion reduction, and safety as emphasized in the RITA strategic plan.

In addition to those research priorities identified by RITA, the Committee urges that current research into intelligent transportation systems, materials technology, and other fields be leveraged to support enhanced mobility and energy efficiency. FTA's Research and University Research Centers account supports research and development related to public transit, training programs, and university research. The Committee is pleased that FTA's multi-year research program plan includes improving the accessibility of transit and improving safety and security while considering the needs of the mobility-impaired population. The Committee is concerned that FTA will be limited in its ability to carry out needed research under the proposed FY2008 budget, however, which is cut by 6 percent compared to FY2007. The Committee recommends that funding for Research and University Research Centers be increased to the level authorized in SAFETEA-LU (P.L. 109-59).

#### **Department of Homeland Security**

The Committee oversees the R&D activities of the Department of Homeland Security, which are primarily housed in the Science and Technology (S&T) Directorate and the Domestic Nuclear Detection Office (DNDO). The Committee is pleased that the Administration requested a 17 percent increase in funding for DNDO, but is concerned that the requested funding for the S&T Directorate is cut by over \$90 million (9.4 percent) from FY2007. The requested cut to R&D activities within the S&T Directorate severely hampers the Department's ability to prevent or mitigate the effects of natural and manmade disasters through the use of advanced technology.

The Committee remains concerned that DHS lacks balance between long and short term research and between its various R&D missions. While the Committee is pleased that the proportion of requested funding designated for basic research has more than doubled from approximately 5 percent in FY2007 to approximately 13 percent in FY2008, the Department's R&D portfolio (including both S&T and DNDO) remains strongly weighted towards end-stage technology development with little focus on basic research. Moreover, the proposed cuts to the University Centers of Excellence program will further reduce the Department's investment in basic research. This funding also will be further diluted by the Administration's proposal to create additional Centers. In addition, the Committee is concerned that funding for emergent and prototypical technologies also remains low. Emphasizing short term research makes the Department significantly less agile and responsive, and locks the country into a single technological response to emerging and future threats.

In addition, DHS is not properly balancing its research portfolio among R&D divisions. The Department's highest priorities in the FY2008 budget request are nuclear detection and biological research. Although these may be important areas for research, the Committee has yet to see any formal risk assessment justifying this prioritization. The Committee is concerned that DHS is not making the necessary investments in

explosives detection, cyber security, infrastructure protection, and border security technologies. A formal risk assessment and strategic plan is essential to ensure that the Department's resources are able to address both short- and long-term risks to the Nation, and DHS is overdue in submitting a report that will make certain that priorities are coordinated with a risk assessment. In addition, homeland security-related research is supported by a number of agencies, including the National Institute of Standards and Technology (NIST), the National Science Foundation (NSF), the Department of Energy (DOE) and others. The Committee is concerned that DHS has not leveraged these resources to their maximum benefit.

Finally, while the Department has a plan to improve responsiveness to customers, the Committee is concerned that research supported by S&T and DNDO ignores the needs of state and local government officials. Recent technologies developed and tested by the Department, including the counter-MANPADS system and nuclear material detection technology, have been unattractive to state and local users because of their high purchase and maintenance costs. The Committee strongly recommends a formal structure for processing the requests of and comments from state and local governments to ensure that technology coming out of DHS meets their performance and cost needs.

#### **The United States Fire Administration**

The U.S. Fire Administration (USFA), now part of DHS, was created in 1974 to aid localities in reducing the loss of life and property from fires and related emergencies. The FY2008 budget request for USFA is \$43.3 million, a 7.5 percent decrease over the FY2007 enacted level. This is well below the level authorized (\$68.8 million) in the United States Fire Administration Reauthorization and Firefighting Research Coordination Law (P.L. 108-169).

The Assistance to Firefighters Grants program provides direct assistance to local fire departments for training, purchase of equipment, and other purposes. The FY2008 budget request is \$300 million for the fire grant program. This is a \$362 million cut from the FY2007 enacted level (a reduction of 55 percent), and \$700 million less than is authorized P.L. 108-375, which included the Assistance to Firefighters Grant program reauthorization. In addition, the Administration has requested no funds for the Staffing for Adequate Fire and Emergency Response (SAFER) Program, which awards grants to fire departments for the purpose of hiring new firefighters. SAFER (P.L. 108-360) is authorized at \$1.13 billion in FY2008 and received an appropriation of \$109 million in FY2007. The Committee believes that both these important programs should receive higher funding, and that the Administration does not recognize the effectiveness and importance of these programs.

#### **National Earthquake Hazards Reduction Program (NEHRP)**

The National Earthquake Hazards Reduction Program (NEHRP) is an interagency program that Congress created in 1977 and reauthorized in 2004 in the National Earthquake Hazards Reduction Program Reauthorization Act (P.L. 108-360). It includes NSF, NIST, the Federal Emergency Management Agency (FEMA), and the

U.S. Geological Survey (USGS), and aims to reduce the loss of life and property from earthquakes by improving emergency response, increasing understanding of earthquake risks, and improving earthquake engineering.

Funding for this program is authorized through FY2009 at the following levels: FEMA, \$23 million; NIST \$13.3 million; NSF \$41.52 million; and USGS \$87.4 million. The complete NEHRP budget request for FY2008 is not yet available; however, past Administration requests for this program have been lower than the amounts authorized. The Committee believes that, given the potential for catastrophic damage from earthquakes in this country, the NEHRP program should be adequately funded.

**National Windstorm Impact Reduction Program (NWIRP)**

The National Windstorm Impact Reduction Program (NWIRP) was authorized in 2004 (also in P.L. 108-360) as an interagency effort geared towards improving scientific understanding of wind hazards and developing cost-effective measures to reduce the impact of wind hazards on lives and property through atmospheric research, code development, and creation of risk assessment tools. The participating agencies include NSF, NIST, FEMA, and NOAA.

Funding explicitly designated for NWIRP is not included in any of the participating agencies' budget requests for FY2008, in spite of funding authorization totaling \$25 million: \$9.4 million for FEMA, \$9.4 million for NSF, \$4 million for NIST, and \$2.2 million for NOAA. The Committee believes that coordination and funding of NWIRP is critically necessary to save lives and reduce the economic costs of windstorms, which average \$1.1 billion annually.

Bart Gordon

B. Z. Bunt

Nick Thompson

Dan Zycki

Jiffels

Charles Glavin

Jay McHugh

Mike Ren

Paul Hill

Charles H. Wilson

Mark Udall

Pat Hill

Michael Urbino

Russ Carnall

Eddie Bernice Johnson

Ben Chandler

Jim Halbe

[Redacted signature]

Harry E. White

Shelue Horley

Steven A. Rothman

Lyons Woodson

Paul E. Kanjassi

Jimmy Costello



## List of Signatures

Representative Bart Gordon  
Representative Brian Baird  
Representative Nick Lampson  
Representative Daniel Lipinski  
Representative Gabrielle Giffords  
Representative Charlie Melancon  
Representative Jerry McNerney  
Representative Mike Ross  
Representative Baron P. Hill  
Representative Charles A. Wilson  
Representative Mark Udall  
Representative Brad Miller  
Representative Michael M. Honda  
Representative Russ Carnahan  
Representative Eddie Bernice Johnson  
Representative Ben Chandler  
Representative Jim Matheson  
Representative David Wu  
Representative Harry E. Mitchell  
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SUBCOMMITTEE ON RAILROADS

COMMITTEE ON SCIENCE AND TECHNOLOGY

SUBCOMMITTEE ON RESEARCH AND  
SCIENCE EDUCATION  
SUBCOMMITTEE ON INVESTIGATION AND  
OVERSIGHT

*Eddie Bernice Johnson*

**Congress of the United States**

**30th District, Texas**

CHAIR, TEXAS DEMOCRATIC DELEGATION

CONGRESSIONAL BLACK CAUCUS

CHAIR, 107<sup>th</sup> CONGRESS

## SCIENCE FUNCTION 250 FUNDING – FY08

In addition to the Views and Estimates provided by the Committee on Science and Technology, I would like the following programs at National Science Foundation to receive, at least, the following budget authorizations listed. The amount provided represents be how much I would like to be ADDED to the President's FY08 budget request. Rational is provided below.

### PLUS-UP

#### FUNCTION 250: GENERAL SCIENCE, SPACE, AND TECHNOLOGY

NSF: Louis Stokes Alliances for Minority Participation (LSAMP)	+ \$2.6 million (6.5% increase)
NSF: Minority Post-Docs	+ \$162,000 (6.5% increase)
Historically-Black Colleges and Universities-Undergraduate	+\$7.5 million (25% increase)
Noyce Scholarships	+\$648,000 (6.5% increase)

### RATIONALE

#### NSF: Louis Stokes Alliances for Minority Participation (LSAMP)

The LSAMP Program aims to increase the quality and quantity of students successfully completing science, technology, engineering and math (STEM) baccalaureate degree programs, and increasing the number of students interested in and qualified for graduate students. Though the FY08 NSF Budget Request to Congress lists this program as a priority funding area, the President's request of \$40 million is flat-lined from the FY07 request. A \$2.6 million increase is a modest 6.48 percent increase, double the rate of inflation.

#### NSF: Minority Post-Docs

The Directorate for Biological Sciences (BIO) at NSF offers two funding opportunities under this solicitation 1) Research Initiation Grants (RIG) and 2) Career Advancement Awards (CAA), with the goal of broadening the participation of scientists from groups underrepresented in the biological sciences in the U.S. Awards made by NSF must be

framed in such a way that they can be categorized as basic biology. NSF targets its awards to young investigators. For many young investigators, the research pipeline begins with an NSF award, followed by grants from NIH. The current FY08 request is flat-lined from FY07 numbers. The budget recommendation is an increase of 6.48 percent, double the rate of inflation.

#### Historically-Black Colleges and Universities-Undergraduate

The HBCU-UP program provides awards to enhance the quality of undergraduate science, technology, engineering, and mathematics (STEM) education and research at Historically Black Colleges and Universities (HBCUs); it is a critical tool to broaden participation in the Nation's STEM workforce. Support is available for Implementation Projects, Planning Grants, Education Research Projects, and Targeted Infusion Projects. Currently, the FY08 request is flat-lined; an increase of \$7.5 million represents a 25 percent increase request.

#### Noyce Scholarships

Strong math and science K-12 education is a key ingredient for encouraging minority participation in STEM fields. The Robert Noyce Scholarship program seeks to encourage talented science, technology, engineering, and mathematics majors and professionals to become K-12 mathematics and science teachers. The program provides funds to institutions of higher education to support scholarships, stipends, and programs for students who commit to teaching in high-need K-12 school districts. I recommend expansion and revision of the NSF Robert Noyce Teacher Scholarship program, which will support efforts by colleges and universities to improve the education of STEM teachers and will provide scholarships for science, math, or engineering students who enter the program, take courses needed to become certified as teachers, and agree to teach for two years for each year of scholarship support. The President's FY08 request flat-lines the program. A modest 6.48 percent (double the rate of inflation) increase of \$648,000 is requested.

In summary, these items at the National Science Foundation are key to our national competitiveness and to promoting diversity in our science, technology, engineering and mathematics workforce. NSF has a record of strong performance, and as a senior member of the Committee on Science and Technology, I will continue to advocate for appropriate authorization increases in programs important to diversifying our science and technology workforce. Thank you for considering my request.

Sincerely,



Eddie Bernice Johnson  
Member of Congress