

COMMITTEE ON SCIENCE AND TECHNOLOGY U.S. HOUSE OF REPRESENTATIVES

HEARING CHARTER

The Administration's FY2008 Research and Development Budget Proposal

Wednesday, February 14, 2007
10:00am – 12:00pm
2318 Rayburn House Office Building

1. Purpose

On Wednesday, February 14, 2007, the Committee on Science and Technology will hold a hearing to consider the Administration's proposal for Federal research and development funding for Fiscal Year 2008 (FY2008). The Committee will hold another, separate hearing to examine the President's proposed budget for NASA (therefore, only brief analysis is provided for the NASA budget proposal). Subcommittees also will hold additional hearings regarding proposed agency budgets.

2. Witness

Dr. John H. Marburger, III is Director of the Office of Science and Technology Policy (OSTP). The mission of the office is to serve as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government. Dr. Marburger also co-chairs the President's Committee of Advisors on Science and Technology (PCAST) and supports the President's National Science and Technology Council (NSTC).

3. Overview

The President released his proposed FY2008 budget on February 5. The budget proposes \$143 billion in Federal research and development (R&D) funding, a 1.4 percent increase over the anticipated FY2007 level¹. 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 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.

¹ Unless otherwise noted, FY2007 figures are based on the House-passed version of H.J. Res 20

However, outside of the ACI programs, research and development for many agencies and programs would be cut compared to the FY2007 level. For example, the following reductions are proposed in the FY2008 budget:

- DOE Energy R&D (excluding Office of Science) - \$133 million or 9.2 percent;
- National Institutes of Health - \$325 million or 1.1 percent;
- Department of Agriculture R&D - \$245 million or 10.9 percent;
- Department of Homeland Security - \$15 million or 1.6 percent
- Environmental Protection Agency - \$20 million or 3.5 percent
- NOAA - \$57 million or 9.5 percent

If research alone is considered separate from development activities, the President also is proposing significant cuts to many programs. Overall, Federal basic and applied research would be cut by 2 percent compared to FY2007, and in real terms, Federal research would decrease for the 4th year in a row. For example, the FY2008 budget proposes the following reductions in basic and applied research:

- NASA - \$16 million, or 1.1 percent
- National Institutes of Health - \$356 million, or 1.3 percent
- Department of Agriculture - \$206 million or 10.5 percent
- NOAA - \$42 million, or 8.3 percent
- Environmental Protection Agency - \$20 million, or 4.3 percent

In addition, according to an analysis by the American Association for the Advancement of Science (AAAS), Federal research investments also are declining as a share of GDP, while other nations' investments are rising. Federal research investments have failed to match other nations, especially in Asia, government research is climbing dramatically. China and South Korea, for example, have committed to increase government research investments by 10 percent annually.

Below is more detailed analysis of how several agencies and programs within the jurisdiction of the Committee on Science and Technology fared in the President's budget proposal.

4. Selected Agency Analysis

National Aeronautics and Space Administration (NASA)²

The FY2008 budget request for NASA is \$17.3 billion, \$1.1 billion above the level in H.J. Res. 20. However, this increase would mostly fund human space exploration programs, specifically the International Space Station, Crew Launch Vehicle, and Crew Exploration Vehicle.

² Additional information on specific budget increases and decreases, as well as policy issues raised by the FY2008 budget request, will be provided in the hearing charter for the upcoming hearing on NASA's FY2008 budget request.

In the Science account, proposed funding for FY2008 (and through FY2011) would be constrained to grow at 1 percent per year. The impact on specific program areas would vary - for example, funding for Astrophysics (including the Hubble telescope) would decline from \$1.6 billion to \$1.3 billion over the FY2008-11 period, while Earth Science funding would grow slightly between FY2008 and FY2009 and then decline for the rest of the decade to a level of \$1.4 billion in FY2012. Planetary Science would grow from \$1.4 billion in FY2008 to \$1.7 billion in FY2012.

Aeronautics funding would decrease by \$336.4 million from the level of \$890.4 million in FY2007. And, education funding would decline from the FY2007 request level of \$167.4 million to \$149.6 million by FY2012.

Funding for the Exploration initiative would increase from \$3.9 billion in FY2008 to \$9.1 billion in FY2012. Funding on Space Operations (Shuttle, International Space Station, Space Communications, and Launch Services) would decline from a level of \$6.8 billion in FY2008 to a level of \$3.0 billion in FY2012.

Department of Energy

The FY2008 Administration request for the entire Department of Energy is \$24.3 billion. Of that, approximately \$7.5 billion is dedicated to non-defense activities in Science, Energy Efficiency and Renewable Energy, Nuclear Energy, Fossil Energy, and Electricity. The remaining \$16.75 billion is divided between the nuclear weapons mission, environmental cleanup and radioactive waste. Appearing for the first time in the President's budget is the Innovative Technology Loan Guarantee Program created in the Energy Policy Act of 2005. This program would provide loan guarantees for advanced technology projects that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and have a reasonable prospect of repaying the principal and interest on their debt obligations.

Office of Science

As part of the President's American Competitiveness Initiative (ACI), the FY2008 budget request for the DOE Office of Science is \$4.4 billion. This represents an increase of \$602 million, or 15.9 percent over the FY2007 level.

The FY2008 request for Basic Energy Sciences (BES) is \$1.5 billion, an increase of \$301 million or 25 percent more than the FY2007 level. As the largest program within the Office of Science, BES conducts research primarily in the areas of materials sciences and engineering.

The budget would provide \$340 million for the Advanced Scientific and Computing Research (ASCR), an increase of \$106 million or 45 percent over the FY2007 level. This includes funding to continue upgrading the Leadership Class Facility (LCF) at Oak Ridge National Lab, making it the world's largest civilian high performance computing system.

Biological and Environmental Research (BER) would receive \$532 million, an increase of \$70 million or 15 percent over the FY2007 level. In addition to the role of BER in areas such as genomics and climate change research, the FY2008 request supports the startup of three bioenergy research centers to investigate biological processes for developing and deploying large scale, environmentally sound biotechnologies to produce ethanol from cellulosic biomass (plant materials).

The FY 2008 funding request for High Energy Physics (HEP) is \$ 782.2 million, which is \$50 million or 7 percent more than the FY2007 level. This program funds fundamental research in elementary particle physics and accelerator science and technology.

Fusion Energy Sciences (FES) receives \$428 million, a substantial increase (\$143 million or 40 percent) over the FY2007 level. Of this amount, \$160 million would be dedicated to support the U.S. role in the International Thermonuclear Experimental Reactor (ITER). Finally, Nuclear Physics (NP) would receive \$ 471 million, an increase of \$75 million (19 percent) over FY2007.

Energy Efficiency and Renewable Energy (EERE)

The Office of Energy Efficiency and Renewable Energy (EERE) would increase slightly by \$42.6 million (4 percent) compared to FY2007. However, the budget includes large cuts for the National Renewable Energy Laboratory (down 74 percent compared to FY2007); Weatherization and State Energy Programs (down 37 percent); Industrial Technologies Program (down 20 percent); and the Federal Energy Management Program (down 14 percent), as well as the elimination of some renewable energy R&D programs.

Biomass and Biorefinery Systems would receive \$179 million (almost double compared to the FY2007 level). This very large increase is intended to address the President's goal of making cellulosic ethanol cost-competitive by 2012 and also enable a supply of 35 billion gallons of alternative fuels annually in accordance with the Twenty in Ten program – a reduction of US gasoline usage by 20 percent in the next ten years – as outlined in the 2007 State of the Union Address.

Solar energy would receive \$148 million, \$64.6 million or 75 percent more than in FY2007. This level supports the President's Solar America Initiative (SAI), which seeks to make electricity from photovoltaic cells cost competitive by 2015. Wind energy would be slated for \$40 million, approximately level with FY2007 funding. As in the 2007 budget request, the Administration would eliminate R&D in Geothermal power, despite a comprehensive study released in January by the Massachusetts Institute of Technology that found that the large amounts of heat stored in the Earth's crust could supply a substantial portion of the United States' future electricity requirements with minimal environmental impact and probably at competitive prices. Hydropower R&D would also be eliminated.

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. Building Technologies would rise by 25 percent compared to the FY2007 level to \$86.4 million. However, the Industrial Technologies program, which aims to reduce the energy intensity of the U.S. economy by improving the energy efficiency of the nation's industrial sector, would decrease by 20 percent (\$11 million).

Office of Nuclear Energy

Nuclear Energy (NE) 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. GNEP has been very controversial in Congress, with little support in the House where only token funding has been approved. For instance, the Administration requested approximately \$250 million in FY2007 for GNEP (through the Advanced Fuel Cycle Initiative – AFCI). If the CR maintains FY2006 appropriated levels, GNEP will only receive roughly \$80 million for FY2007. Nonetheless, the President's FY2008 request for GNEP is \$395 million.

Chief among the concerns about GNEP is the cost of implementing the program (up to \$40 billion) and then deploying a fleet of the required technologies on a commercial scale (more than \$200 billion), and whether such a program warrants the costs. There are also issues with premature selection of technologies before the completion of a full system-wide analysis of what would be required. Many are concerned that DOE has not adequately demonstrated an ability to carry out large scale construction and operation of such a project without major cost and schedule overruns.

Finally, the Nuclear Power 2010 program also would receive a considerable boost with an FY2008 request of \$114 million, which is more than double the amount FY 07 request. The increase is intended to go to continue activities in new reactor designs and licensing applications with the Nuclear Regulatory Commission to support an industry decision to build a new power plant by 2009.

Fossil R&D

Fossil Energy R&D would receive \$557 million in FY 2008, a 2 percent increase compared to FY2007. Funding increases would go exclusively to coal R&D, including the Clean Coal Power Initiative (which aims to develop technologies that will increase efficiency of coal-fired power plants, reduce mercury and NOx emissions, and improve carbon capture and sequestration) and the FutureGen project to demonstrate near-zero atmospheric emissions electricity production.

The FY2008 budget once again proposes to eliminate all oil and gas R&D, including \$50 million in direct spending (mandated in the Energy Policy Act of 2005) for unconventional onshore and offshore natural gas exploration technologies that would go largely to smaller independent oil and gas producers.

Innovative Technology Loan Guarantee Program (LGP)

The FY 2008 budget proposes \$8.4 million to fund the Office of Loan Guarantees, which will administer the Innovative Technology Loan Guarantee Program (LGP). The program was established in the Energy Policy Act of 2005 to provide loan guarantees for renewable energy, energy efficiency, clean coal, advanced nuclear, and other innovative energy projects. The FY 2008 budget request assumes a loan volume of \$9 billion for such projects. Of this, \$4 billion is set aside for large electric power generation projects such as advanced nuclear and coal gasification with carbon sequestration. An additional \$4 billion is set aside to promote biofuels and clean transportation fuels, and \$1 billion for new technologies in electricity transmission and renewable power systems. The House CR for FY2007 provides \$7 million for the administration of the program.

National Science Foundation

The National Science Foundation is the primary source of federal funding for non-medical basic research conducted at colleges and universities and serves as a catalyst for science, technology, engineering, and mathematics (STEM) education reform at all levels. NSF is one of the research agencies that the President, in his 2006 State of the Union Address, proposed to double over ten years as part of the American Competitive Initiative (ACI).

The FY2007 budget request, which called for a \$439 million (7.9 percent) increase over the FY2006 budget, was the first to reflect the ACI. H.J. Res. 20, the House-passed CR, would fund NSF at \$5.9 billion in FY2007, a \$335 million (6.0 percent) increase from FY2006, but a \$105 million (1.7 percent) decrease from last year's request. Specifically, H. J. Res. 20 appropriates \$4.7 billion for the Research and Related Activities (R&RA) account, and remains silent on the rest of the NSF accounts, signaling a continuation of FY2006 funding levels for those accounts. The FY2008 request of \$6.4 billion is \$513 million (8.7 percent) greater than what is provided for FY2007.

Research and Related Activities (R&RA)

The FY2008 request provides scientific research programs and research facilities (which comprise the R&RA account) with a \$367 million (7.7 percent) increase from FY2007. The increases for scientific research are spread fairly evenly among all fields NSF supports. The largest percentage increases are for the math and physical sciences, computer sciences, and engineering directorates. The (non-medical) biological sciences and the social, behavioral and economic sciences directorates receive smaller increases.

NSF's contribution to the multi-agency National Nanotechnology Initiative increases by \$17 million (4.5 percent), including \$3 million more in support of research on the environmental, health and safety (EHS) aspects of nanotechnology. In particular, support is requested for a new, multidisciplinary center to conduct EHS research and provide the science needed to inform the development of regulations.

Major Research Equipment and Facilities Construction (MREFC)

The MREFC activity funds the construction of large research facilities, such as telescopes and research ships. Funding for the operation and management of these major user facilities is included in the R&RA budget.

The FY2008 request provides an increase of \$54 million (28.2 percent) for MREFC, which will allow for continuation of support for six construction projects and one new start. The new project, which is funded at \$33 million in the first year, will provide for an upgrade to increase the sensitivity of an earth-based observatory for the study of gravitational waves.

Three new projects proposed under last year's request are currently on hold due to funding uncertainties. Under the FY2007 funding levels, NSF would be able to proceed on schedule with the two smaller projects (the National Ecological Observatory Network and Ocean Observatories Initiative), but would have only \$6 million of the \$56 million requested for the Alaska Region Research Vessel (ARRV).

Education and Human Resources (EHR)

EHR includes most of NSF's activities that support K-12 STEM education and the majority of activities that support undergraduate STEM education. EHR also includes most of NSF's graduate fellowship and traineeship programs.

The FY2008 EHR budget request is \$751 million, a \$34 million (4.8 percent) increase from the FY2007 request and a \$53 million (7.5 percent) increase from the FY2007 level. Most of this proposed funding increase goes to increases in graduate research fellowships (+ \$11.2 million) and in activities to broaden participation in STEM fields (+ \$28.6 million). NSF has also launched a concerted effort to evaluate program effectiveness across EHR, and in particular, for its STEM education programs and projects.

Overall funding for K-12 programs in the FY2008 request falls by \$15 million (9 percent) from the FY2007 level, and is flat compared to the President's FY2007 request. In addition, after proposing no new Math and Science Partnership (MSP) grants in the past two budgets, the Administration would make \$30 million available for new grants in FY2008. However, the FY2008 budget request is \$46 million -- the same as the FY2007 budget request and \$17 million less than FY 2006 spending.

Agency Operations and Award Management

This NSF account, previously called Salaries and Expenses, funds the internal operations of NSF. The FY2008 request provides an increase of \$39 million (15.7

percent) above the FY2007 level. NSF is facing the challenge of expanding its workforce to accommodate the demands created by the growing research budgets. H. J. Res. 20 would delay many planned new-hires in addition to planned upgrades of the electronic system used to receive and process grant applications. Most of the \$39 million increase for agency operations and award management in the FY2008 budget request are slated for these two needs.

Department of Homeland Security S&T Directorate

The overall budget for the Department of Homeland Security's Science and Technology (S&T) Directorate is cut by \$174 million or 17.9 percent, and most research divisions would receive cuts in the FY2008 request. This is the second year in a row in which the Administration has proposed budget cuts for the S&T Directorate. The only significant budget increase is for the Office of the Director of Innovation, which oversees the Homeland Security Advanced Research Project Agency (HSARPA), the external research funding arm for DHS. HSARPA funds high risk research and rapid prototyping in the field of homeland security-related technology development. This office increases by 58 percent to nearly \$60 million.

In 2006, Under Secretary for S&T Admiral Jay Cohen realigned the S&T Directorate. The FY2008 budget reflects the new organization, and establishes new Offices for the Director of Transition and Director of Innovation. The research supported by the directorate is divided into three categories: basic research, innovative capabilities (applied), and product transition (development). The FY2008 budget is strongly tilted towards biological and chemical countermeasures research, as in previous years, and this category represents 29 percent of the overall S&T Directorate budget. Whether this balance of priorities matches risk is unclear, and DHS is overdue to submit a report that will make certain that priorities are coordinated with a risk assessment. DHS currently expects to submit this report in February 2007.

In addition, there remains an imbalance between long term and short term research, with the Department showing a strong focus on product development at the expense of longer-term basic research (which accounts for only 10 percent of the FY2008 request). The proposal of the formation of the Office of the Director of Transition, which would be responsible for working with DHS components to speed technology transition, suggests that short term development will become an even greater priority for the S&T Directorate. Additionally, the lack of stability in the reporting structure brought about by the formation of new offices could cause problems for coordinating research and aligning priorities within the Department and the broader federal R&D enterprise.

In particular of note:

- The Chemical and Biological Division would be cut by \$84.6 million, which would be transferred to the Office of Health Affairs for the BioWatch program, the Biological Warning and Incident Characterization (BWIC) system, and the Rapidly Deployable Chemical Detection System. A recent report by the

Department's Inspector General criticized the BioWatch program, specifically for poor management and quality control. This new office is likely a response to a call for stricter management protocols, but it is unclear what real changes will be brought about by its creation.

- Funding for the Explosives Division is reduced by \$41.5 million or 40 percent compared to FY2007. This reduction is partially a result of the completion of the Counter-MANPADS program. If the Counter-MANPADS program is not considered in the budget calculation, the total funding for explosives countermeasures would decrease by \$22.9 million or 26.4 percent.
- Funding for the Infrastructure and Geophysical Division is reduced by \$50.8 million or 68 percent. Funding would be eliminated for two research institutes (including the Southeast Regional Research Initiative at Oak Ridge National Lab and Community Based Critical Infrastructure Protection Institute) and significant cuts would be made to the Regional Technology Integration Initiative.
- Funding for Laboratory Facilities would decrease by \$16.8 million or 16.0 percent from FY2007. The reduction includes a decrease for the Plum Island Animal Disease Center (PIADC) and cuts in construction funding for the National Bio and Agro-Defense Facility (NBAF). These cuts could curtail efforts to prevent an outbreak of costly diseases in livestock, such as Foot and Mouth disease.
- Funding for University Programs is reduced by \$9.9 million (20 percent) compared to FY2007. DHS plans to use the proposed funding to establish four new University Centers of Excellence in spite of the large reduction, thus cutting funding for all current centers. Additional goals for the program in FY2008 include improving the capabilities of Minority Serving Institutions—which are currently underrepresented—to conduct research in homeland security related areas and incorporating Minority Serving Institutions into the University Centers program. Examples of affected university programs include the National Center for Food Protection and Defense, of which the University of Arkansas is a participant.

National Institutes of Standards and Technology (NIST)

The FY2008 budget request for NIST is \$25.2 million (or 4 percent) less than the FY2007 level. As part of the American Competitiveness Initiative (ACI), the Administration proposes increasing the NIST labs account by \$76.3 million (an 18 percent increase) and the construction account by \$35.3 million (a 60 percent increase). However, these proposed increases are more than offset by the Administration's proposal to eliminate the Advanced Technology Program (ATP) and cutting the Manufacturing Extension Program (MEP) by \$58.3 million (a 56 percent cut). Therefore, despite proposed increased for physical sciences research at NIST, once again, no new funds are proposed for the agency.

The FY2007 House-passed CR would fully fund MEP and would provide \$79 million for ATP. With carry-over funds from the prior year, the ATP will be able to make at least \$40 million in new awards in FY2007. However, the CR does not specifically state that ATP must make new awards, and in past years, the Administration has tried to block new awards even though the funds were appropriated.

NIST Labs

The NIST laboratories conduct research supporting U.S. technology infrastructure by developing tools to measure, evaluate and standardize, enabling U.S. companies to innovate and remain competitive. NIST helps U.S. companies, workers, and consumers by ensuring that standards are used to create a level playing field—not a barrier to trade—in the global marketplace. Under the FY2008 budget request, funding for the NIST labs would increase by \$75.7 million or 18 percent, as part of the ACI.

Advanced Technology Program (ATP)

The ATP was created to foster economic growth through the development of innovative technologies. Through private/public partnerships, ATP's early stage investment is accelerating the development of high-risk, broadly enabling technologies and helping bridge the gap between the laboratory and the market place. Through May 2004, ATP co-funded 736 projects with 1,468 participants. Sixty-six percent of ATP projects are led by small businesses, while more than 160 colleges and universities have participated in ATP projects. Benefit-cost studies from approximately 40 projects indicate an 8 to 1 return on investment.

The FY2008 budget proposes to eliminate ATP funding. The Administration justifies the termination of the ATP based on the growth of venture cap funds and other financial services for high-risk technologies, but has not provided documentation for these assertions.

Manufacturing Extension Partnership (MEP)

MEP is a proven public/private partnership in all 50 states and Puerto Rico with the mission of improving the competitiveness of small and medium-sized manufacturers. In FY2005, MEP, a network of 59 centers, assisted more than 16,000 small manufacturers, providing a 10 to 1 return on Federal investment. In a survey of approximately 25 percent of MEP clients, they reported over \$1.3 billion in cost savings directly attributed to the program's assistance as well as creating \$6.3 billion in new or retained sales. The program also helped create/retain more than 53,000 jobs and increased investment by \$2.3 billion returned to the economy.

In the FY2008 budget, the Administration proposes cutting MEP funding by 56 percent to \$46.3 million. The request includes \$11.3 million for overhead and oversight, leaving only \$35 million for actual grants to MEP centers – less than half of what is required to maintain a fully operation national network of MEP centers. (In FY2006, \$92 million in grants were made to MEP Centers.) The Administration justifies the MEP cut by claiming that the program has evolved to where less funding is required, and that MEP

services also are provided by private entities. However, a report by the National Association of Public Administrators concluded that the small manufacturing community is underserved and that MEP does not displace the private sector.

National Oceanic and Atmospheric Administration (NOAA)

The President's FY2008 budget request for the National Oceanic and Atmospheric Administration (NOAA) is \$3.96 billion, 2.7 percent below the FY2006 appropriated funding (which is generally expected to continue with no increases in FY2007).

NOAA's mission includes weather forecasting and climate prediction, and management of fisheries, coastal and ocean resources. In addition, NOAA is responsible for mapping and charting coastal areas and providing other navigation support services through programs of the National Ocean Service. NOAA also conducts research in support of these missions including atmospheric sciences, coastal and oceanic science, climate and air quality research, ecosystem research, and fisheries and marine mammal research. Finally, NOAA also operates a constellation of satellites that monitor and transmit data for weather forecasting, climate prediction, space weather forecasting, and earth and ocean science research.

National Weather Service

The National Weather Service (NWS) is the only office that receives a substantial increase in the President's FY2008 request. The FY2008 request for NWS is 6.5 percent (\$55.3 million) higher than the FY2006 enacted levels.

National Environmental Satellite Data and Information Service (NESDIS)

The President's FY2008 budget request would increase the overall NESDIS budget increased 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 the data received from all of NOAA's weather monitoring equipment – ground-based and space-based. This program provides funding for data processing and analyses at data centers located in Kentucky, North Carolina, Maryland, and West Virginia. This account also supports a number of regional climate centers. The FY2008 request for these accounts is \$20 million below the FY2006 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 FY2006 enacted levels.

NOAA operates two satellite systems that collect data for weather forecasting. The polar satellites (Polar-Orbiting Environmental Satellites -- POES) orbit the earth and provide information for medium to long-range weather forecasts. The geostationary satellites (GOES) 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 through the NPOESS and GOES-R programs, respectively. Because of the long time period required to design and develop new satellite series, the procurement of a new series begins years before the current series has completed its production cycle. Therefore, NOAA's procurement budget in this area includes both funds to complete and launch current weather satellites (POES and GOES) and funds to design and develop the next generation of weather satellites (NPOESS and GOES-R).

The current series of Geostationary Operational Environmental Satellites (GOES-N, O and P) are nearing completion. GOES-N was launched last May. 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, respectively. The request for GOES-R, the new series of geostationary satellites (\$279 million) has been reduced from the original FY2008 estimate (\$532 million) to reflect changes in the program's content (reducing the number of instruments and planned number of satellites) and to provide additional time to re-structure the program.

The current series of Polar-Orbiting Environmental Satellites (POES) is nearing the end of its production cycle. The FY2008 request to complete the current POES series is \$115 million.

The FY2008 request for NPOESS, the new polar satellite series, is \$331 million. This is \$13 million less than planned for in last year's request. The funding will cover the continued development, production and risk reduction activities for the four key instruments to be included on the test satellite, the NPOESS Preparatory Project (NPP), scheduled for launch in 2010. The out-year funding profile for this program will be re-done and the prime contract for managing this program (with Northrup-Grumman) will be re-negotiated later this year.

Oceanic and Atmospheric Research

The office of Oceanic and Atmospheric Research contains over half of the research programs at NOAA. These programs are reduced by nearly \$11 million below the FY2006 enacted levels, approximately a 3 percent reduction. The budget increases funding for Climate Research by \$23 million (13.5 percent). However, most of this increase is in the competitive research program and is accomplished by redirection of funds from Congressionally-mandated projects.

The 2004 report by the U.S. Commission on Ocean Policy recommended that Congress double the Federal ocean and coastal research budget over the next five years. No budget proposal since the report was issued has included substantial increases in ocean research funding at NOAA. The FY2008 budget request is higher than the President's FY2007 request. However, the Administration's budget once again cuts the Ocean, Coastal, and Great Lakes Research account below the FY2006 appropriation from \$127 million to \$105 million, a 17 percent decrease. Sea Grant receives a very

small increase (\$166 thousand), and the Administration requests an increase for Ocean Exploration of about \$14 million.

National Ocean Service

The President's FY2008 request for the National Ocean Service (NOS) would reduce funding for NOS programs by over 20 percent. The largest reductions are in the Ocean Assessment program (\$36 million) and in the Response and Restoration program (\$13 million) of the Ocean Resources, Conservation, and Assessment accounts.

Program Support

The Program Support account includes the NOAA Education Program. Overall, the Program Support account is reduced by about 10 percent as compared to the FY2006 enacted level. Most of this reduction is due to a reduction in the procurement accounts, but the proposed funding for NOAA education programs is also reduced significantly below the \$38 million enacted in FY2006 to a proposed funding level of \$19 million (an \$18 million or 48 percent reduction).