# AN OVERVIEW OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND THE ENVIRONMENTAL PROTECTION AGENCY BUDGETS FOR FISCAL YEAR 2013

## HEARING

BEFORE THE

## COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
## HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

TUESDAY, MARCH 6, 2012

**Serial No. 112–67**

Printed for the use of the Committee on Science, Space, and Technology

Available via the World Wide Web: http://science.house.gov

U.S. GOVERNMENT PRINTING OFFICE
73–125PDF WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HON. RALPH M. HALL, Texas, *Chair*

F. JAMES SENSENBRENNER, JR., Wisconsin
LAMAR S. SMITH, Texas
DANA ROHRABACHER, California
ROSCOE G. BARTLETT, Maryland
FRANK D. LUCAS, Oklahoma
JUDY BIGGERT, Illinois
W. TODD AKIN, Missouri
RANDY NEUGEBAUER, Texas
MICHAEL T. McCAUL, Texas
PAUL C. BROUN, Georgia
SANDY ADAMS, Florida
BENJAMIN QUAYLE, Arizona
CHARLES J. "CHUCK" FLEISCHMANN, Tennessee
E. SCOTT RIGELL, Virginia
STEVEN M. PALAZZO, Mississippi
MO BROOKS, Alabama
ANDY HARRIS, Maryland
RANDY HULTGREN, Illinois
CHIP CRAVAACK, Minnesota
LARRY BUCSHON, Indiana
DAN BENISHEK, Michigan
VACANCY

EDDIE BERNICE JOHNSON, Texas
JERRY F. COSTELLO, Illinois
LYNN C. WOOLSEY, California
ZOE LOFGREN, California
BRAD MILLER, North Carolina
DANIEL LIPINSKI, Illinois
DONNA F. EDWARDS, Maryland
MARCIA L. FUDGE, Ohio
BEN R. LUJÁN, New Mexico
PAUL D. TONKO, New York
JERRY McNERNEY, California
JOHN P. SARBANES, Maryland
TERRI A. SEWELL, Alabama
FREDERICA S. WILSON, Florida
HANSEN CLARKE, Michigan
SUZANNE BONAMICI, Oregon
VACANCY

# CONTENTS

**Tuesday, March 6, 2012**

# AN OVERVIEW OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AND THE ENVIRONMENTAL PROTECTION AGENCY BUDGETS FOR FISCAL YEAR 2013

**TUESDAY, MARCH 6, 2012**

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
*Washington, DC.*

The Subcommittee met, pursuant to call, at 2:27 p.m., in Room 2318 of the Rayburn House Office Building, Hon. Andy Harris [Chairman of the Subcommittee] presiding.

Subcommittee on Energy & Environment Hearing

***An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013***

Tuesday, March 6, 2012
2:00 p.m. to 4:00 p.m.
2318 Rayburn House Office Building

Witnesses

**Panel 1**

**The Honorable Jane Lubchenco**, Administrator, National Oceanic and Atmospheric Administration

**Panel 2**

**Mr. Lek Kadeli**, Acting Assistant Administrator, Office of Research and Development, Environmental Protection Agency

**U.S. HOUSE OF REPRESENTATIVES**
**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**

**HEARING CHARTER**

***An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013***

**Tuesday, March 6, 2012**
**2:00 p.m. to 4:00 p.m.**
**2318 Rayburn House Office Building**

**PURPOSE**

On Tuesday, March 6, 2012 at 2:00 p.m. the Subcommittee on Energy and Environment of the House Committee on Science, Space, and Technology will hold a hearing to examine the Administration's Fiscal Year 2013 budget requests for the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency's (EPA) Science and Technology (S&T) Programs.

**WITNESSES**

Panel I
**Dr. Jane Lubchenco,** Administrator, National Oceanic and Atmospheric Administration

Panel II
**Mr. Lek Kadeli,** Acting Assistant Administrator, Office of Research and Development (ORD), U.S. Environmental Protection Agency

**BACKGROUND**

**National Oceanic and Atmospheric Administration**

The President's fiscal year (FY) 2013 budget request for the National Oceanic and Atmospheric Administration (NOAA) is $5.06 billion, a 3.1 percent increase above the FY 2012 levels.

NOAA's core mission and activities include weather forecasting, climate prediction, and management of fisheries, coastal and ocean resources, as well as cross-cutting research to support and advance these operational areas. NOAA carries out this mission through five major line offices:

- National Ocean Service (NOS), responsible for mapping and charting coastal areas and providing other navigation support services.
- National Weather Service (NWS), responsible for weather forecasts and warnings.
- National Environmental Satellite, Data and Information Service (NESDIS), responsible for development and operation of satellites that monitor and transmit data for weather forecasting, climate prediction, space weather forecasting, and earth and ocean science research.
- Office of Oceanic and Atmospheric Research (OAR), responsible for research in support of most NOAA missions including atmospheric, coastal, and oceanic sciences, climate and air quality research, ecosystem research, and fisheries and marine mammal research.
- National Marine Fisheries Service, responsible for stewardship of living marine resources through the conservation, management, and promotion of healthy ecosystems.

Table 1 shows the primary accounts or line offices of the agency's budget. The FY 2013 budget request includes increases above FY 2012 enacted levels for the Office of Oceanic and Atmospheric Research (OAR), the National Environmental Satellite, Data and Information Service (NESDIS) and Program Support (PS).

The Administration's budget proposes to decrease funding for National Ocean Service (NOS), the National Weather Service (NWS), and the National Marine Fisheries Service (NMFS).

**Table 1:** NOAA FY 2012 Budget Request (dollars in millions)

| Account | FY11 Enacted | FY12 Enacted | FY13 Request | FY13 Request versus FY12 Enacted | |
|---|---|---|---|---|---|
| | | | | $ | % |
| **National Ocean Service*** | 550.2 | 490.0 | 478.1 | (11.9) | (2.4) |
| **Oceanic and Atmospheric Research** | 427.0 | 384.7 | 413.8 | 29.1 | 7.6 |
| **National Weather Service** | 976.5 | 991.9 | 972.2 | (19.7) | (2.0) |
| **National Environmental Satellite Data Information Service** | 1,444.1 | 1,877.8 | 2,041.4 | 163.6 | 8.7 |
| **National Marine Fisheries Service**** | 967.5 | 895.0 | 880.3 | (14.7) | (1.6) |
| **Program Support** | 490.2 | 467.1 | 476.8 | 9.7 | 2.1 |
| **Totals:** | **4,596.9** | **4,906.6** | **5,060.5** | **153.9** | **3.1** |

* Jurisdiction of the NOS line office is shared with the Natural Resources Committee.
** NMFS is solely in the jurisdiction of the Natural Resources Committee.

NOTE: As of March 5, 2012, NOAA had not delivered its detailed congressional budget justifications to the Committee. The figures in this charter are taken primarily from the NOAA "Blue Book" chapters of the request. As a result, baseline funding and program percentage increases and decreases are not available for many activities.

***National Weather Service (NWS)***

NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, adjacent waters, and ocean areas, and maintains a national infrastructure of observing systems that gather and process data worldwide from the land, sea, and air.

The FY 2013 request for NWS is $972.2 million, a decrease of $19.7 million, or 2.0 percent, below FY 2012 levels. The Administration is requesting a $36.1 million decrease for the NWS Operations, Research and Facilities (ORF) accounts and $6.3 million increase for the NWS Procurement, Acquisitions and Construction (PAC) accounts.

A substantial amount of the decrease is attributed to the Local Warnings and Forecast account. The Administration is proposing to implement efficiencies by establishing regional Information Technology (IT) collaboration units. According to the budget, these regional support teams would reduce the number of Information Technology Officers (ITO) from 122 (one ITO in every forecast office) to a total of 24 across all NWS regions. With technological improvements such as the Advanced Weather Interactive Processing Systems (AWIPS), NWS hopes to fulfill many of the responsibilities assigned to ITOs remotely.

There are several other programs proposed for elimination or substantial reductions. The Administration is zeroing out funding for the National Air Quality Forecasting Capability (NAQFC). This program provides air quality forecasts for ozone and particulate matter, and is used by the Environmental Protection Agency, State and local agencies to provide air quality health alerts to the public. Despite this reduction of $3.1 million, NWS will maintain the on-demand, operational forecasts for volcanic ash, smoke transport and emergency releases.

The budget request also includes a decrease of $2.4 million for the NOAA Profiler Network program. This program consists of 35 unmanned Doppler Radar sites that provide hourly vertical wind profile data. Although considered cutting edge technology in the late 1980s and early 1990s, these profilers would require substantial investment to upgrade and keep current. NOAA is proposing to retire these sites and develop new technology to generate data similar to the information provided by these profilers.

The FY13 budget request includes a decrease of $4.6 million to terminate partner funding for education and awareness programs to the National Tsunami Hazard Mitigation Program and reduce the operations and maintenance for the Deep-ocean Assessment and Report Tsunamis (DART) buoys. The FY13 budget request includes an increase of $2.4 million for the Tropical Atmosphere Ocean (TAO) Array. The TAO Array is a network of buoys that provide data that directly contributes to the prediction of El Niño and La Niña climate events. El Niño and La Niña events are disruptions of normal ocean-atmosphere systems and can lead to changing weather patterns including shifts in temperature, flooding and drought. The requested increase will go towards additional costs associated with the operations and maintenance of the network and a technology upgrade to the buoys to provide real-time transmission of the data. Another requested increase includes $7.0 million for the NWS Telecommunications Gateway. The gateway is the telecommunications hub for the collection and transmission of data and products, how NWS takes in and distributes the large amount of data generated every day. The request is to support the design and implementation of a new system architecture to support the increasing volume of observational information and weather forecast and warning information.

The budget proposes a decrease of $11 million for the "congressionally directed use of funds for the National Mesonet Network," program intended to integrate commercial and government meteorological data to improve forecasting. The budget notes that this cut is requested because "NWS receives a portion of observations from private sector networks free of charge and incorporates these data into operational weather forecast models. NOAA will collaborate with the private sector to continue such agreements." Despite NOAA's intent to work with the private sector to receive such information free of charge, it is unlikely that this arrangement will continue.

***National Environmental Satellite, Data, and Information Service (NESDIS)***

The President's budget request for the National Environmental Satellite, Data, and Information Service (NESDIS) is $2.041 billion, an 8.7 percent increase over FY 2012 enacted levels. The majority of this request is for procurement and acquisition under two satellite programs, the Joint Polar Satellite System (JPSS)[1] and the Geostationary Operational Environmental Satellite R-Series (GOES-R).

NESDIS Operations, Research and Facilities (ORF) Account

The ORF budget for NESDIS contains programmatic funding for management and processing of data received from all of NOAA's ground- and space-based weather monitoring equipment and is separated into three separate functions: Environmental Satellite Observing Systems; Archive, Access and Assessments; and Data Centers and Information Services. The net requested increase is $8.4 million over the FY2012 appropriation for operations.

The Administration is requesting $9.4 million to process and distribute environmental data from the Suomi NPOESS Preparatory Project (NPP) satellite mission. Suomi NPP is the first of the next generation of polar satellites launched in October 2011. Initially a research satellite intended to be a proof of concept, NPP was re-tasked as an operational satellite as continued delays and problems in the almost 20-year old polar satellite program did not yield a viable replacement for the existing polar satellites currently in orbit.

[1] This program was previously the National Polar-orbiting Operational Environmental Satellite System (NPOESS), a tri-agency program with the National Aeronautical and Space Administration (NASA) and the Department of Defense (DoD). As part of the FY2011 budget request, the Administration split NPOESS into two programs. NOAA and NASA have responsibility for the JPSS program to cover the afternoon satellite orbit. DoD has already canceled its separate polar weather satellite program for the early morning orbit.

NOAA's Data Centers have started to transition from their legacy archive storage systems to new Enterprise Archive system. This will allow data centers to deal with expanding volumes of data from satellites, weather radars, high resolution weather, ocean, and climate models, and other large data sets. The FY13 budget requests an increase of $5.8 million for the National Climatic Data Center to provide operations and maintenance of the Enterprise Archive and Access system and increase communications bandwidth to deliver large volumes of data. To offset this increase, the budget includes a decrease of $3.8 million for the National Oceanographic Data Center. The request also includes a reduction of $2 million for the Climate Database Modernization Program. This program digitizes climate and temperature data currently stored on paper and microfilm. Although paper records will be maintained, they will no longer be made accessible in a digital format. The Administration is also proposing to reduce Regional Climate Centers (RCCs) and the Regional Climate Service Directors (RCSDs) by $1.0 million. These six centers funded in partnership with the States have been providing information and products to governments and private entities for more than two decades. The proposal would have the RCSDs directly manage the NOAA contract for each of the RCCs, thereby reducing management overhead costs.

NESDIS Procurement, Acquisitions, and Construction (PAC) Account

The budget for NESDIS is dominated by acquisitions for NOAA's two weather satellite systems: the Polar-Orbiting Environmental Satellites (POES), which orbit the earth and provide information for medium to long-range weather forecasts; and the geostationary satellites (GOES), which gather data above a fixed position on the earth's surface and provide information for short-range warnings and current weather conditions. To maintain the continuity of weather forecasting data as older satellites retire, a new series of satellites are under development for both systems. The net requested increase is $153.7 million above the FY2012 appropriation for operations.

Increases and decreases in the PAC account reflect different phases of satellite acquisition. For example, there is a proposed increase of $186.4 million above the FY2012 appropriated level for the current series of GOES satellites, GOES-R, due to continued spacecraft and ground system development, and support integration, testing and delivery of the first Flight Units. The funding increase will also allow a scaling up of ground system integration and test activities. Originally scheduled for launch in 2014, GOES-R has been delayed until late-2015, and its projected cost has grown by $4.7 billion from the original estimate of $6.2 billion. The Administration now estimates the cost of the new GOES series at $10.9 billion through 2036.

The PAC account also reflects the $33.5 million requested decrease for the Joint Polar Satellite System (JPSS). The JPSS total request of $916.4 million includes funding for continuing the development of the ground system, spacecraft and instruments for JPSS-1. JPSS evolved from a tri-agency effort to develop a satellite system known as NPOESS[2]. The data and products from polar satellites are considered "mission-critical" for both civilian and military weather forecasting and climatology needs; however, the NPOESS program had major problems throughout its existence. Since 2002, oversight by Congressional committees, Government Accountability Office (GAO) reports, and independent review teams had documented problems with satellite instrumentation, cooperation among the agencies involved, and the program's life-cycle cost. GAO's most recent testimony to the S&T Committee indicated that total cost estimates for the polar satellite program had grown to more than $14 billion. However, NOAA is calculating the total life-cycle costs for JPSS to be $12.9 billion through 2024.

Due in large part to these serious management issues, schedule slips, and cost over-runs, a major restructuring of NPOESS occurred in 2010. The decision dissolved the integrated program into two separate programs: a military program managed by the Department of Defense (DoD), and a civilian program managed by NOAA/NASA. The NOAA/NASA program known as JPSS is responsible for satellites flying in the afternoon orbits while DoD satellites are responsible for the morning orbits. The DoD program, the Defense Weather Satellite System (DWSS) was cancelled in FY 2012. DoD has not announced its plans for replacing DWSS. Whatever the follow-on DoD program will be, it is expected to deliver data to the same NOAA ground system, and NOAA will

[2] NOAA, the National Aeronautics and Space Administration (NASA), and the Department of Defense (DoD) collaborated to develop NPOESS. This tri-agency effort was split into two separate programs in February 2010.

continue to operate all satellites while in orbit[3]. The United States will rely on European satellites for operational weather observations for the remaining late-morning orbit.

In addition to procuring these satellite systems, the Administration's request for JPSS includes $9.5 million to restore high priority climate sensors that were de-manifested from the NPOESS program in 2006 as a result of the Nunn-McCurdy mandated restructuring of the program.

NOAA oversees several satellite systems in addition to GOES and POES. The Deep Space Climate Observatory (DSCOVR), formerly known as Triana, requests $22.9 million, a decrease of $6.9 million, to continue refurbishment of the satellite and develop a Coronal Mass Imager (CME) to maintain continuity of solar wind data used for geomagnetic storm warnings. DSCOVR is a joint program with NASA, and NOAA has partnered with the U.S. Air Force to provide the launch vehicle and services. The JASON satellite series is managed in partnership with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). The JASON-3 satellite FY 2013 budget request is a $10.3 million increase over the FY 2012 level of $20 million to continue the development of this altimetry satellite that will provide data for ocean climatology and hurricane intensity forecasting. The launch of JASON-3 is scheduled for 2014, however, a launch vehicle has not yet been selected.

***Oceanic and Atmospheric Research (OAR)***
The office of Oceanic and Atmospheric Research (OAR) is the primary research arm of NOAA, conducting the scientific research, environmental studies, and technology development necessary to improve NOAA operations. OAR activities are carried out at NOAA and via extramural research activities at 30 National Sea Grant colleges and universities. The Administration's FY2013 budget request for OAR is $413.8 million, a $29.1 million increase above the FY2012 level. The requested increase is primarily for climate research.

Climate Research
The President's FY2013 budget request for climate research at NOAA is for $212.7 million, a $28.2 million increase above FY2012 appropriated levels. The Administration's proposal includes a request for an increase of $0.5 million for the NOAA climate portal. Another requested increase in the FY2013 budget is $1.7 million for the Climate Model Data Archive. This program is intended to develop and implement an archiving capability for next generation climate analyses currently running on supercomputers in NOAA, the National Science Foundation and the Department of Energy.

The Administration is proposing an increase of $8.0 million for Earth System Modeling for Urgent Climate Issues. This request will continue funding for the development of Earth System Models that specifically explore uncertainties in sea-level rise projections, examine the terrestrial carbon cycle and address gaps in the understanding of the Arctic climate system. The FY2013 budget request also includes an increase of $2.6 million to create a permanent ability to produce national and regional climate assessments. The Global Change Research Act of 1990[4] requires a scientific assessment not less than every 4 years.

The FY2013 request includes an increase of $4.6 million for the Global Ocean Observing System (GOOS) to support critical ocean observations and analysis, progress in observational efforts in the Arctic, and develop technology to improve understanding of the deep ocean. Another requested increase includes $1.5 million for the National Integrated Drought Information System (NIDIS). The funding for competitive research grants and contracts will help progress the Regional Drought Early Warning Information System by providing focused drought impacts research.

The Administration requests an increase of $6.5 million for climate science on the global carbon cycle, aerosols and atmospheric chemistry. Funding will support NOAA labs and Cooperative Institutes to advance the understanding of the global carbon cycle and the role of aerosols and greenhouse gases in the global climate

[3] NOAA has been operating the Defense Meteorological Satellites for DoD since May 1998.
[4] P.L. 101-606

system. Finally, the FY2013 budget request includes an increase of $3.1 million for Regional Integrated Sciences and Assessments (RISAs). This funding will support external research teams who work with stakeholders to develop and utilize new information about the impacts of climate on communities, natural and managed resources, infrastructure, transportation and health.

Weather and Air Chemistry Research
The Administration is requesting $69.5 million for weather and air chemistry research. Within this account, the budget highlights an increase of almost $1.0 million for wind boundary layer research. This funding supports improved forecasts of wind at mid-altitudes, at heights where wind turbines are deployed. In particular, the request calls for funding to "deploy regional wind test beds designed to determine the optimal mix of instrumentation needed for wind resource characterization and forecast improvement within the region."

Ocean, Coastal, and Great Lakes Research
The Administration is requesting $108.8 million for FY2013, a $6.8 million decrease below FY2012 appropriated levels. Within this request, the Administration is proposing a $1.7 million decrease for the Great Lakes Environmental Research Laboratory (GLERL). According to the budget, this decrease is possible through realizing efficiencies and relying more on partner agencies such as the Environmental Protection Agency. Another proposal in the FY2013 budget includes a decrease of $1.0 million for aquatic invasive species research and outreach within the NOAA Sea Grant program. NOAA is also proposing to eliminate the National Undersea Research Program (NURP) for a reduction of $3.9 million.

***National Ocean Service (NOS)***
The National Ocean Service (NOS) protects the National Marine Sanctuaries and advocates coastal and ocean stewardship. The NOS also introduced electronic nautical charts that interface with Global Positioning Systems (GPS) to enhance the safety and efficiency of navigation of U.S. waterways. The President's FY 2013 request of $478.1 million would reduce overall funding for NOS programs by $11.9 million, or 2.4 percent, compared to the FY 2012 enacted level.

The Administration proposes a reduction of $2.3 million to eliminate the Navigation Response Team (NRT) program in FY2013. NRT's provide emergency hydrographic survey support to the U.S. Coast Guard, port officials and other first responders following accidents or natural events that create navigation hazards, and help to recommence safe and efficient marine transportation and commerce. The FY2013 budget request includes a $1.2 million increase for the Tide and Current Data Program. This funding will enable the inspection of an additional 60 National Water Level Observation Network (NWLON) Stations per year. This data is critical for navigation safety, oil spill response, National Weather Service storm surge and tsunami warnings, and long-term sea level change planning.

The budget request for the Ocean Assessment Program includes an increase in funding for the Integrated Ocean Observing System (IOOS) regional observations of $6.6 million to develop and improve marine sensors that monitor changing conditions in the oceans, coasts and Great Lakes. The Administration also proposes to reallocate an additional $3.4 million from funds available to the regional association and a cooperative institute specifically for marine sensor development, demonstration, testing and evaluation.

The FY 2013 budget request includes a $1.6 million increase for the National Centers for Coastal Ocean Science (NCCOS), for the competitive research program to focus on harmful algal blooms, hypoxia, and coastal ecosystem research. The NOS Procurement, Acquisition and Construction (PAC) account is also reduced by $8 million. The Administration is not requesting any PAC funding for NOS for FY2013.

***Program Support***
The Program Support line office supports corporate services and agency management. This includes the Under Secretary's office, the office of the Chief Financial Officer, the Program, Planning and Integration Office, and the NOAA Education Program. Overall, the Administration requests an increase in the Program Support account of $9.7 million, for a total of $476.8 million, a 2.1 percent increase over the FY12 enacted level.

**Environmental Protection Agency**

The President's FY 2013 budget request for the Environmental Protection Agency (EPA) is $8.34 billion, a reduction of 1.0 percent below FY 2012 levels. The Committee on Science, Space, and Technology has jurisdiction over the Science and Technology budget listed in Table 2 below.

**Table 2:** EPA FY 2013 Budget Request (dollars in millions)

| Account | FY11 Enacted | FY12 Enacted | FY13 Request | FY13 Request Versus FY11 Enacted | |
|---|---|---|---|---|---|
| | | | | $ | % |
| **Science and Technology** | 813.5 | 793.7 | 807.3 | 13.5 | 1.7 |
| **Office of Research and Development** | 581.7 | 568.0 | 575.6 | 7.6 | 1.3 |
| **Superfund R&D** | 26.8 | 23.0 | 23.2 | 0.2 | 1.0 |

***FY 2013 Science & Technology Account: Office of Research and Development***
The Administration's budget request for S&T is $807.3 million. This includes $575.6 million for the Office of Research and Development (ORD), S&T activities conducted by other program offices (e.g. Office of Air, Office of Water), as well as $23.2 million requested for S&T activities associated with the Superfund program. In the past, the Superfund S&T funds were drawn primarily from the Superfund trust that was funded by the dedicated Superfund tax. Since the expiration of the tax all funds must be appropriated from general revenues.

Approximately 74 percent of S&T funding is for EPA's ORD, which is the primary research arm of the agency. Most of the remaining S&T funds go to the Office of Air and Radiation, and a smaller amount to the Office of Water and to the other program offices.

ORD conducts and sponsors both fundamental research in environmental science and more targeted research to inform EPA's regulatory programs. For example, ORD provides scientific information to support and implement the Clean Water Act. ORD also develops the scientific risk information for the agency's Integrated Risk Information System (IRIS), a database of human health effects of certain chemicals. This program is used by EPA, individual states, and other government agencies to determine hazardous waste site clean-up, drinking water, and other health-based standards. ORD develops the scientific underpinning for EPA's air quality standards in areas such as particulate matter and ozone. ORD also investigates the environmental implications of emerging areas such as nanotechnology and endocrine disruptors.

ORD carries out these responsibilities by conducting intramural research at EPA's laboratories, awarding contracts, and supporting fellowships and research at colleges and universities through the Science to Achieve Results (STAR) grant program. The FY2013 budget request includes $81 million for the STAR grant program, a $5 million increase over FY2012 enacted levels, to invest in the next generation of environmental scientists and to leverage wider scientific community expertise on key issues.

EPA has identified five major goals of the Agency, and presents its budget broken down into funding for each of the five goals.

EPA's first goal is Taking Action on Climate Change and Improving Air Quality. The research program in ORD supporting this goal is the Air, Climate, and Energy Research Program. The Administration's FY2013 budget request for Air, Climate, and Energy is $105.9 million, a $7 million increase above FY2012 enacted levels. Within this program, the Agency plans to develop efficient, high-performing, and cost-effective air quality monitors. The program will also support the improvement of the Community Multiscale Air Quality (CMAQ)

modeling system, a major tool used to determine compliance with the National Ambient Air Quality Standards (NAAQS) levels. Improvements to this model will enhance the ability to accurately model changes in ozone, particulate matter, and hazardous air pollutant concentrations. The FY2013 budget request will also support study of the generation, fate, transport, and chemical transformation of air emission to identify individual and population health risks. The request also includes funding for research on hydraulic fracturing, specifically assessing the potential air, ecosystem and water quality impacts of hydraulic fracturing. This request is $45 million to be split among EPA, the Department of Energy, and the Department of the Interior. EPA's portion of this effort is $14 million, an $8 million increase above its individual hydraulic fracturing study effort undertaken in FY12.

EPA's second goal is Protecting America's Waters. The research program at ORD supporting this goal is the Safe and Sustainable Water Resources research program. The Administration's FY2013 request for this research program is $121.2 million, a $7.7 million increase above FY2012 enacted levels. This program will support research that helps decision-makers identify necessary actions to protect water resources, including information about complex tradeoffs, water contaminants and nutrient management on watershed, regional and national scales. This research will inform the Agency's National Wetlands Condition Report. The Safe and Sustainable Water Resources research program will continue to support the development and implementation of guidance on green infrastructure projects.

EPA's third goal is Clean Up Communities and Advancing Sustainable Development. The research program at ORD supporting this goal is the Sustainable and Healthy Communities Research Program (SHCRP). The Administration's FY2013 request for this research program is $165.7 million, a decrease of $5.0 million below FY2012 enacted levels. This research program uses interactive social media and other means to assist communities and stakeholders in the planning, design, and implementation of data and tools that support sustainable community decisions. This program also conducts research in forecasting and assessing ecological and community health. SHCRP also assesses cutting edge sustainable practices for four community decision areas: waste and materials management; energy and water infrastructure; transportation; and planning and zoning for building and land use.

EPA's fourth goal is Ensuring the Safety of Chemicals and Preventing Pollution. The research program at ORD supporting this goal is the Chemical Safety and Sustainability Research Program (CSSRP). The Administration's FY2013 request for this research program is $94.2 million, an increase of $2.5 million above FY2012 enacted levels. CSSRP support research in developing enhanced chemical screening and testing techniques. This includes efforts to validate and use computational toxicology and high throughput screening methods.

EPA's fifth goal is Enforcing Environmental Laws. There are no research programs that directly support this goal.

**Table 3: EPA** ORD FY 2013 Budget Request (dollars in millions)

| Account | Program/Project | | FY11 Enacted | FY12 Enacted | FY13 Request | FY13 Request vs. FY12 Enacted $ | FY13 Request vs. FY12 Enacted % |
|---|---|---|---|---|---|---|---|
| **Science and Technology** | Congressionally Mandated Projects | | 0.0 | 5.0 | 0.0 | (5.0) | (100.0) |
| | Homeland Security: Preparedness, Response, and Recovery | Total Program | 24.6 | 24.6 | 24.3 | (0.4) | (1.6) |
| | | *Decontamination* | 15.5 | 15.6 | 15.4 | (0.2) | (1.1) |
| | | *Safe Buildings* | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | | *Other Research* | 9.1 | 9.0 | 8.8 | (0.2) | (2.5) |
| | Human Health Risk Assessment | | 43.0 | 39.6 | 40.5 | 1.0 | 2.4 |
| | Research: Air, Climate, and Energy | Total Program | 106.3 | 98.8 | 105.9 | 7.0 | 7.1 |
| | | *Global Change Research* | 20.4 | 18.3 | 20.3 | 2.0 | 11.0 |
| | | *Clean Air Research* | 81.6 | 78.5 | 82.9 | 4.3 | 5.5 |
| | | *Other Research* | 4.2 | 2.0 | 2.8 | 0.7 | 35.1 |
| | Research: Safe and Sustainable Water Resources | Total Program | 117.3 | 113.5 | 121.2 | 7.7 | 6.8 |
| | | *Drinking Water Research* | 50.9 | 50.2 | 51.7 | 1.5 | 2.9 |
| | | *Water Quality Research* | 66.4 | 63.3 | 69.5 | 6.3 | 9.9 |
| | Research: Sustainable and Healthy Communities | Total Program | 173.8 | 170.7 | 165.7 | (5.0) | (2.9) |
| | | *Human Health Research* | 46.4 | 45.3 | 44.5 | (0.8) | (1.8) |
| | | *Ecosystems Research* | 62.3 | 60.8 | 60.2 | (0.6) | (1.0) |
| | | *Other Research* | 65.2 | 64.6 | 61.1 | (3.6) | (5.5) |
| | Research: Chemical Safety and Sustainability | Total Program | 89.2 | 91.7 | 94.2 | 2.5 | 2.7 |
| | | *Endocrine Disruptors Research* | 15.9 | 16.9 | 16.3 | (0.6) | (3.6) |
| | | *Computational Toxicology Research* | 21.1 | 21.2 | 21.3 | 0.1 | 0.4 |
| | | *Other Research* | 52.2 | 53.7 | 56.7 | 3.0 | 5.6 |
| | **S&T Appropriation Total** | | **554.3** | **544.0** | **551.8** | **7.8** | **1.4** |
| LUST* | Research: Sustainable and Healthy Communities | | 0.4 | 0.4 | 0.5 | 0.1 | 23.7 |
| Inland Oil Spills | Research: Sustainable and Healthy Communities | | 0.7 | 0.6 | 0.6 | 0.0 | 0.8 |
| Superfund | Homeland Security: Preparedness, Response, and Recovery | | 2.1 | 2.0 | 2.1 | 0.1 | 7.4 |
| | Human Health Risk Assessment | | 4.0 | 3.3 | 3.3 | 0.0 | (0.6) |
| | Research: Sustainable and Healthy Communities | | 20.6 | 17.7 | 17.8 | 0.1 | 0.7 |
| | **Superfund Appropriation Total** | | **26.8** | **23.0** | **23.2** | **0.2** | **1.1** |
| **Grand Total** | | | **582.2** | **568.0** | **576.1** | **8.2** | **1.4** |

* Leaking Underground Storage Tank Program

Chairman HARRIS. The Subcommittee on Energy and Environment will come to order. Good afternoon. Welcome to today's hearing entitled "An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013." In front of you are the packets containing the written testimony, biographies, and Truth in Testimony Disclosures for today's witness panel. I now recognize myself for five minutes for an opening statement.

I want to welcome everyone to this afternoon's hearing. Unfortunately, I have to begin by expressing a matter of disappointment. The President's budget request for the Federal Government was released more than three weeks ago, but NOAA has still not delivered its budget justification documents to Congress. This Subcommittee oversees NOAA's $5 billion budget and has a responsibility to review and react to the details of the President's budget.

In the absence of budget details, we are simply unable to provide a complete assessment of the request. Last week, the Appropriations Subcommittee on Commerce, Justice, and Science had to cancel its hearing as a result of that delay. We have chosen to go forward with this hearing due to scheduling constraints, but I must impress upon you, Administrator Lubchenco, that this abdication of such a simple responsibility influences the perception on the Hill that the Administration is not being a good steward of taxpayer money.

One of the major themes of the President's fiscal year 2013 budget request has been the need to make tough choices. Only in Washington, as we face an unprecedented fiscal train wreck and continue to be forced to borrow 40 cents on the dollar, can a requested budget increase of 3.1 percent for NOAA and 1.4 percent for EPA be characterized as making tough choices. Even within these requested increases, the Administration is prioritizing its political environmental agendas ahead of the core scientific needs of the Nation.

For NOAA, satellites now comprise 40 percent of the total budget request. This is up from 31 percent just two years ago. While the Committee applauds the successful launch of the Suomi NPP satellite, we continue to have grave concerns with the current trajectory of the Joint Polar Satellite System program. Even NOAA's own optimistic schedule of a launch of the next polar satellite in the early part of 2018—and I say optimistic since it took 18 years to get the first satellite off the ground—still leaves us with an almost certain gap in data availability.

The limited budget information provided to the Committee thus far provides no indication that NOAA has a plan to develop a solution that ensures continual, high-quality data for weather forecasting. The extreme weather events just last week and this week further highlight the importance of this data to saving lives and property. Further, the delays and cost over-runs so systemic to NOAA's satellite programs is forcing significant reductions in the budget for important activities such as oceans, fisheries, and weather.

Another big winner in NOAA's budget request is climate research. In the Office of Oceanic and Atmospheric Research alone, more than $212 million is allotted for climate research, a 15 per-

cent increase above last year, whereas less than $70 million is set aside for research in weather and air chemistry. Taken together with the cuts to the National Weather Service, the budget indicates the Administration has prioritized understanding climate conditions decades from now over predicting weather conditions tomorrow. Given the potential for innovations in weather forecasting to greatly aid the economy and save lives and property, the continued prioritization of climate over weather is highly disappointing and should be rejected by Congress.

The Administration's budget request for science and technology activities at EPA is similarly concerning. In a series of hearings on EPA's research activities, this Subcommittee examined in detail the line between politics and science at the Agency. While Administrator Jackson has stated that "Science is the backbone of everything we do at the EPA," it is a very weak backbone struggling to support the enormous weight of the Administration's regulatory ambitions. The Office of Research and Development represents less than seven percent of the $8.3 billion request for EPA. Instead of conducting fundamental environmental research, the Agency sacrifices sober analysis in favor of the outcome-driven science demanded by the President's anti-energy agenda. All too often, what passes for peer review of Agency science is a rubber stamp by supposedly independent scientific advisors who also happen to be recipients of EPA's largesse.

The President's focus on climate change and the ongoing efforts to find a regulatory angle to restrict the shale gas revolution comes at the expense of worthwhile R&D. EPA is requesting substantial increases for these two areas, including more than $240 million for duplicative climate change activities and $14 million for work on hydraulic fracturing of questionable value.

Following the sloppy and highly questionable actions of the Agency in investigating water concerns in Pavillion, Wyoming, and Dimock, Pennsylvania, and the inability to follow its own peer review guidelines in the endangerment finding on greenhouse gases, I have little confidence in EPA's ability to conduct trusted, quality science in this area, and as such cannot support the significant expansion of hydraulic fracturing research called for in this request.

I want to thank the witnesses for appearing before the Subcommittee, and I look forward to a constructive discussion.

[The prepared statement of Mr. Harris follows:]

PREPARED STATEMENT OF CHAIRMAN ANDY HARRIS,
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT,
U.S. HOUSE COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

I want to welcome everyone to this afternoon's hearing to examine the Administration's fiscal year 2013 budgets for the National Oceanic and Atmospheric Administration and the Environmental Protection Agency.

Unfortunately, I have to begin by expressing my extreme disappointment. The President's budget request for the Federal Government was released more than three weeks ago. However, NOAA has incredibly still not delivered its budget justification documents to Congress. This Subcommittee oversees NOAA's five billion dollar budget and has a responsibility to review and react to the details of the President's request. In the absence of budget details, we are simply unable to provide a complete assessment of the request. Last week, the Appropriations Subcommittee on Commerce, Justice, and Science had to cancel its hearing as a result of NOAA's delays. We have chosen to go forward with this hearing due to scheduling con-

straints, but I must impress upon you, Administrator Lubchenco, that this abdication of such a simple responsibility influences the perception on the Hill that the Administration is not being a good steward of taxpayer money.

One of the major themes of the President's FY 2013 budget request has been the need to make tough choices. Only in Washington, as we face an unprecedented fiscal train wreck and continue to be forced to borrow 40 cents on the dollar, can a requested budget increase of 3.1 percent for NOAA and 1.4 percent for EPA be characterized as making "tough choices." Even within these requested increases, the Administration is prioritizing its political environmental agendas ahead of the core scientific needs of the Nation.

For NOAA, satellites now comprise 40 percent of the total budget request. This is up from 31 percent two years ago. While the Committee applauds the successful launch of the Suomi NPP satellite, we continue to have grave concerns with the current trajectory of the Joint Polar Satellite System program. Even NOAA's own optimistic schedule of a launch of the next polar satellite in the early part of 2018—and I say optimistic since it took 18 years to get the first satellite off the ground—still leaves us with a "almost certain" gap in data availability. The limited budget information provided to the Committee thus far provides no indication that NOAA has a plan to develop a solution that ensures continual, high-quality data for weather forecasting. The extreme weather events just last week further highlight the importance of this data to saving lives and property. Further, the delays and cost overruns so systemic to NOAA's satellite programs are forcing significant reductions in the budget for important activities such as oceans, fisheries, and weather.

Another big winner in NOAA's budget request is climate research. In the Office of Oceanic and Atmospheric Research alone, more than $212.0 million is allotted for climate research—a 15 percent increase above last year—whereas less than $70 million is set aside for research in weather and air chemistry. Taken together with the cuts to the National Weather Service, the budget indicates the Administration has prioritized understanding climate conditions decades from now over predicting weather conditions tomorrow. Given the potential for innovations in weather forecasting to greatly aid the economy and save lives and property, the continued prioritization of climate over weather is highly disappointing and should be rejected by Congress.

The Administration's budget request for science and technology activities at EPA is similarly concerning. In a series of hearings on EPA's research activities, this Subcommittee examined in detail the line between politics and science at the Agency. While Administrator Jackson has stated that "Science is the backbone of everything we do at the EPA," it is a very weak backbone struggling to support the enormous weight of the Administration's regulatory ambitions. The Office of Research and Development represents less than seven percent of the $8.3 billion request for EPA. Instead of conducting fundamental environmental research, the Agency sacrifices sober analysis in favor of the outcome-driven science demanded by the President's anti-energy agenda. All too often, what passes for peer review of Agency science is a rubber stamp by supposedly independent scientific advisors, who also happen to be recipients of EPA's largesse.

The President's focus on climate change and the ongoing effort to find a regulatory angle to restrict the shale gas revolution comes at the expense of worthwhile R&D. EPA is requesting substantial increases for these two areas, including more than $240 million for duplicative climate change activities and $14 million for work on hydraulic fracturing of questionable value. Following the sloppy and highly questionable actions of the Agency in investigating water concerns in Pavillion, Wyoming, and Dimock, Pennsylvania, and the inability to follow its own peer review guidelines in the Endangerment Finding on greenhouse gases, I have little confidence in EPA's ability to conduct trusted, quality science in this area, and as such cannot support the significant expansion of hydraulic fracturing research called for in this request.

I want to thank the witnesses for appearing before the Subcommittee, and I look forward to a constructive discussion.

Chairman HARRIS. The Chair now recognizes Mr. Miller for five minutes for an opening statement.

Mr. MILLER. Thank you, Chairman Harris. I also want to welcome the witnesses today, Dr. Lubchenco from NOAA, and later, Mr. Kadeli from the EPA. I want to thank both of you for being here today.

We are likely to spend much of this hearing discussing two subjects these agencies are now tackling, if subcommittee and committee hearings in this Congress are any indication at least, first, understanding the environmental and human health effects of a massive expansion in oil and gas drilling, principally fracking; and, second, understanding the nature of our changing climate and what effects it will have.

Those are critical research areas that EPA and NOAA are uniquely qualified to undertake. But a discussion limited to hydraulic fracturing and climate change ignores the broad scope of the scientific activities these agencies pursue and the critical role they play in our lives every day.

From forecasting the weather to protecting public health by ensuring cleaner air and water, those roles are too easily disregarded and unfairly demonized at times in the fog of partisan politics. We must not lose sight of the contribution that decades of science and technology research have provided to our economy and public health.

While today we will see areas of agreement and disagreement on the appropriate resources and directions for NOAA and EPA, I think that we should all agree that good policy begins with good science, and that good science is not free.

We must recognize the value of those programs and work together to protect every American's right to cleaner air and water and a healthier environment.

I understand the need to set priorities in times of fiscal restraint as we appear now to be in and commend the Administration for doing that, but there are aspects of each of the budgets that concern me. Despite the challenging economic times, it is unwise to sacrifice the services that the public relies on such as weather forecasting and our warning capabilities, nor should we undermine America's future by failing to invest in the next-generation workforce of scientists. We can be fiscally responsible while still making the necessary investments to keep our country and our environment healthy and the American economy competitive.

It is hard at times to avoid cliches in politics, but I try. There is a phrase that is widely used because it is frequently apt. We are eating our seed corn. That is my great concern about our budget for research.

Dr. Lubchenco and Mr. Kadeli, as you testify today, please explain how the proposed cuts and increases will affect your Agency's ability to protect the health and well-being of our citizens and communities, and how the President's request will move our Nation's science enterprise in the right direction. I look forward to working with you both, with all of you, in the months ahead.

I will support the agencies on a lot of things, but I think you should get your budget justification in, too. Second, I understand the Department of Commerce is now resisting documents I am not sure the Committee still wants on the basis that they are predecisional. I will not support agencies in refusing to release documents based upon exceptions to the requirements of FOIA. The Congress request, it is not pursuant to FOIA. The courts do recognize a limited pre-decisional immunity from production, but it is very limited. If there is any reason for producing it, the Adminis-

tration should produce it. And there is almost always a reason when Congress asks that a document that outlines how the decision—made the decision they made—is a sufficient basis for Congress to ask for it. So I also urge the Administration, EPA, NOAA, Commerce to release documents without regard to whether they are pre-decisional or post-decisional.

And with that, Mr. Chairman, I do yield back.

[The prepared statement of Mr. Miller follows:]

PREPARED STATEMENT OF RANKING MEMBER BRAD MILLER

Thank you, Chairman Harris. I also wish to welcome the witnesses, Dr. Lubchenco from NOAA, and later, Mr. Kadeli here from the EPA. Thank you both for being here today.

We are likely to spend much of this hearing discussing two subjects these agencies are now tackling. First, understanding the environmental and human health effects of a massive expansion in oil and gas drilling; and second, understanding the nature of our changing climate and what effects it will have.

These are critical research areas that EPA and NOAA are uniquely qualified to undertake. However, a discussion limited to hydraulic fracturing and climate change ignores the broad scope of the scientific activities these agencies pursue and the critical role they play in our lives every day.

From forecasting the weather to protecting public health by ensuring cleaner air and water, these roles are too easily disregarded, and unfairly demonized, in the fog of partisan politics. We must not lose sight of the contribution that decades of science and technology research have provided to our economy and public health.

While today we will see areas of agreement and disagreement on the appropriate resources and directions for NOAA and EPA, I think that we should all agreee that good policy begins with good science, and that good science is not free.

We must recognize the value of these programs and work together to protect every American's right to cleaner air and water and a healthier environment.

I understand the need to set priorities in times of fiscal restraint and commend the Administration for doing so; there are aspects of each budget that concern me.

Despite the challenging ecomonic times, it is unwise to sacrifice serivces that the public relies on, such as weather forecasting and warning capabilities. Nor should we undermine America's future by failing to invest in the next-generation workforce of scientists. We can be fiscally responsible while still making the necessary investments to keep our country and environment healither and the American economy competitive.

It is hard to avoid cliches in politics, but I try. There is a phrase that is widely used because it is frequently apt: we are eating our seed corn. That is my great concern about our budget for research.

Dr. Lubchenco and Mr. Kadeli, as you testify today, please explain how the proposed cuts and increases will affect your agencies' ability to protect the health and well-being of our citizens and communities, and how the President's request will move our Nation's science enterprise in the right direction.

I look forward to working with you all in the months ahead. I yield back.

Chairman HARRIS. Thank you very much, Mr. Miller. If there are Members who wish to submit additional opening statements, your statements will be added to the record at this point.

At this time I would like to introduce our witness for the first panel. The Honorable Jane Lubchenco is the Administrator of the National Oceanic and Atmospheric Administration at the Department of Commerce. She is a marine ecologist and environment scientist by training with expertise in oceans, climate change and interactions between the environment and human well-being. She received her M.S. in zoology from the University of Washington and her Ph.D. in ecology from Harvard University.

Thank you for appearing before the Subcommittee today. As you should know, spoken testimony is limited to five minutes, after which the Members of the Committee will have five minutes each

to ask questions, and I now recognize you as our witness for the panel, Dr. Lubchenco.

**STATEMENT OF DR. JANE LUBCHENCO, ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**

Dr. LUBCHENCO. Chairman Harris, Ranking Member Miller, Members of the Committee, thank you for your leadership and your continued support of NOAA. I would like to start by extending NOAA's condolences to the families who lost loved ones in last week's tornados. Our local forecasters in the affected communities know the pain and the long road to recovery these destructive storms create. They also know the resilience of these communities.

As home of the National Weather Service, NOAA is proud to be the Nation's first line of preparedness against severe weather. The March 2 outbreak was classified as a major outbreak. 2012 now ranks in the top five years for the number of tornados from January 1 through March 2 since detailed records began in 1950.

These events highlight the importance of everyone being ready for severe weather. That is why NOAA is making a Weather-Ready Nation a top priority. Last week our forecasters were able to give communities three days to prepare for Friday's storms, and as tornados were bearing down, lifesaving warnings were issued an average of 16 minutes prior to each tornado striking. Our towns will rebuild, and NOAA's National Weather Service will continue to deliver the lifesaving services our Nation relies upon.

I am honored to be here today to discuss the President's fiscal year 2013 budget request. Just as families and businesses have made tough choices with tighter budgets, NOAA has prioritized our activities. We have proposed targeted investments while looking for efficiencies in our operations and in some cases, terminating or severely reducing activities. We have put forward a budget that reflects our dedication to providing some of the most critical lifesaving jobs and job-supporting services that America's businesses, individuals and communities rely upon.

We sincerely apologize for the delay in sending NOAA Congressional justification to Congress. Staff producing the CJ are working hard to complete the product as quickly as possible. As you know, the majority of the CJ lays out the justification for funding changes in the base. The major reason for the delay was that the fiscal year 2012 spend plan was not finalized until a few days ago, which kept the base levels of many programs in flux. Furthermore, adjustments that were made as the fiscal year 2012 spend plan was being finalized also led to late changes in the fiscal year 2013 funding levels. The result was uncertainty surrounding many of the numbers, affecting a large portion of the CJ until very recently. We will deliver the NOAA CJ to you by March 14. We are committing to reviewing the process for the CJs to ensure timely delivery in the future. In the meantime, we hope the budget in brief that was available provided some critical information, and we are happy to provide more briefings now that more information is available.

Turning to the fiscal year 2013 request, our request which totals $5.1 billion is an increase of $153 million, 3.1 percent above the fiscal year 2012. To construct this budget, we sought administrative

savings and made very tough choices to enable our top priorities. NOAA anticipates reaching our fiscal year 2012 target of $68 million in administrative savings. An additional $16 million is targeted for 2013. While we take significant steps to help reduce government spending, key investments are necessary to meet the growing demand for NOAA's science and services.

One of the greatest challenges that NOAA faces is the continuity of our satellite operations. We appreciate the broad, bipartisan Congressional support these programs received last year. Sustained funding for these satellites is important. The JPSS, the Joint Polar Satellite System, and the Geostationary Operational Environmental Satellite-R Series programs are two of our highest priorities. Together they will inform what we need to keep people safe. We have done everything possible to contain costs in these satellite programs. Funding is critical to keep the programs on track and minimize the duration of the expected gap between the recently launched Suomni NPP satellite and JPSS. Without full funding, the risk that there would be a more significant gap increases greatly.

2011 rewrote the record book on extreme weather and provided a sobering reminder of our vulnerability. In response, the National Weather Service launched an initiative called Weather-Ready Nation. The 2013 budget requests $972 million to produce and deliver forecasts and services and improve the economic value of weather, water, and climate information.

Our coastal communities are major contributors to the economy, and our budget supports those in numerous ways. Vibrant coastal communities depend on healthy oceans and thriving maritime commerce. NOAA's request includes $478 million for the National Ocean Service.

In conclusion, I thank you for the opportunity to testify before you today, and I look forward to your questions today as well as continuing discussions as you make decisions on this very important budget. Thank you very much.

[The prepared statement of Dr. Lubchenco follows:]

# PREPARED STATEMENT OF DR. JANE LUBCHENCO, ADMINISTRATOR, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**BEFORE THE**
**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**
**SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**
**U.S. HOUSE OF REPRESENTATIVES**

**March 6, 2012**

Chairman Harris, Ranking Member Miller, and members of the Committee, thank you for your leadership and the continued support you have shown the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA). I am honored to be here as the Under Secretary of Commerce for Oceans and Atmosphere and Administrator for NOAA to discuss the FY 2013 President's Budget. The FY 2013 budget is essential to ensuring that we can meet the Nation's demands for accurate weather prediction today and in the future, safe, navigable waterways, well managed coastal resources, sustainable fisheries, and robust climate analysis and prediction services. To ensure that we can deliver on these core services, we have prioritized our activities, made limited targeted investments, reduced or terminated activities that while important could not be accommodated in the current fiscal environment without threatening our capacity to deliver our core services and sought out administrative efficiencies to ensure that every dollar is maximized.

President Obama has spoken about moving America forward and laying out a blueprint for an economy that is built to last. Secretary Bryson has answered this charge, tasking the Department of Commerce to assist Americans by fostering economic recovery and increasing U.S. competitiveness. As part of the effort, NOAA will strengthen our core foundational programs, such as the Nation's next generation weather satellites; promote sustainable fisheries and the fishing industries; invest in weather and ocean science; and work to sustain coastal resources, communities, and economies. We will work towards a society that is prepared for, and responds to, weather-related events, and we will provide timely access to environmental information from satellites and other scientific technologies.

Just as every citizen depends on NOAA for timely weather information, from the 5-day forecast to life-saving weather alerts, so too do businesses rely on NOAA. NOAA weather services help airlines save millions of dollars and operate safely by avoiding severe weather. Marine shipping companies (transporting 78 percent of the goods into and out of the United States[1]) and

[1] 2003. *U.S. International Trade and Freight Transportation Trends.* May

fishermen (putting healthy seafood on our plates or enjoying a family day out on the water) all trust NOAA's nautical charts and tide and current data to operate safely and efficiently. Farmers rely on our long-range forecasts to decide which crops to plant and when. Coastal communities rely on NOAA's stewardship of fisheries and coastal resources to support local industries, such as tourism and fish processors. The list goes on and on. It is hard to imagine a sector of the economy that does not depend on NOAA in one way or another. We support stewardship that makes economic sense for a healthy environment and economy, and invest in science for today for a better tomorrow.

The FY 2013 President's Budget will:

(1) Provide life-saving and job-supporting services needed to prepare and protect American citizens, communities, businesses and infrastructure;
(2) Provide the core scientific information underlying our mission, and
(3) Invest in the resiliency of our vibrant coastal communities.

The NOAA budget reflects difficult choices and continues our commitment to find efficiencies in our operations while seeking new partnerships.

## FY 2013 BUDGET REQUEST AND FY 2011 HIGHLIGHTS

The NOAA FY 2013 proposed budget totals $5.1 billion, an increase of $153.9 million, or 3.1 percent above FY 2012. NOAA's staff of dedicated professionals, working with extramural researchers, industries, and domestic and international partners, are expanding meteorological prediction capabilities; enhancing our knowledge of climate change; improving coastal resource management; continuing to chart our seas and coasts; and enhancing environmental stewardship. NOAA is committed to understanding and monitoring our oceans and atmosphere, predicting changes in the Earth's environment, and conserving and managing ocean and coastal resources, while making sure that we deliver as economically as possible the highest level of service.

President Obama has called upon the entire federal government to be more efficient and effective. As a result, the Department of Commerce continues to seek ways to improve the efficiency of programs without reducing their effectiveness. Building on NOAA's FY 2012 savings of $67.7 million, an additional $15.8 million in savings is targeted for FY 2013.

NOAA had numerous outstanding accomplishments in FY 2011. NOAA and the Natural Resource Damage co-trustees reached an unprecedented agreement with British Petroleum (BP) to provide $1 billion for early restoration projects in the Gulf of Mexico, as a down payment for economic and ecological recovery from the 2010 Deepwater Horizon oil spill. NOAA put in place annual catch limits and accountability measures for almost all 528 federally-managed fish stocks and complexes, ensuring that the Nation's fisheries are on the long path to sustainability. NOAA skillfully forecasted Hurricane Irene's track with a 48-hour track error of 71 nautical miles – 20 percent better than the 5-year mean of 90 nautical miles. And NOAA's National Weather Service (NWS) forecasters were able to issue warnings well in advance of numerous record-breaking severe weather events, such as 4-month advanced warnings for emergency managers and citizens about severe flooding in the mid-west. These accomplishments set the stage for our FY 2013 request.

The FY 2013 budget request focuses on three core mission areas, beginning with the need for a Weather-Ready Nation.

**Weather-Ready Nation: Communities that are Ready, Responsive, and Resilient**

Record weather and climate disasters occurred in 2011, including extreme drought, heat waves, floods, unprecedented tornado outbreaks, hurricanes, wildfires, a tsunami, and winter storms. Tornadoes, hail, and severe thunderstorms caused an estimated $46.5 billion in economic losses ($25.8 billion in insured losses) in the United States. Sadly, 2011 was the deadliest tornado season since 1936, with 552 direct fatalities.

More and more sectors of the U.S. economy are looking for ways to increase their resilience to severe weather and reduce the potential of significant societal and economic impacts. Even though NOAA was able to provide advanced warning of many severe events this year, the loss of life and property was still too high. To address these issues, NWS launched a new initiative this year called Weather-Ready Nation. NOAA envisions a Weather-Ready Nation as a society that is prepared for, and responds to, weather-related events. The FY 2013 President's Budget supports the highest priority core requirements necessary to address NOAA's Weather-Ready Nation goal, requesting $972.2 million for the NWS. The request allows the NWS to produce and deliver accurate and timely forecasts, provide services in a cost-effective manner, continue to work with communities and emergency managers to reduce weather-related fatalities, and improve the economic value of weather, water, and climate information.

A nationwide survey indicates that 96 percent of the U.S. public obtains, either actively or passively, 301 billion forecasts each year. Based on an average annual household value of $286 placed on weather information, the American public collectively receives $31.5 billion in benefits from forecasts each year.[2]

The FY 2013 budget includes an increase of $7 million to support the critical upgrade and update of the NWS Telecom Gateway, the backbone of NWS's information delivery system, and an increase of $12.4 million for ground system readiness to ensure that the NWS is prepared to ingest data coming from NOAA's new weather satellites. While these increases are required, NWS has developed a new more cost-effective IT service delivery solution for maintaining the IT systems at the 122 Weather Forecast Offices (WFOs). NWS requests a decrease of $9.7 million to consolidate Information Technology Officer positions at each WFO into regional IT collaboration units reducing staffing requirements by 80 percent without affecting the quality of services including warnings and forecasts. Reducing staff is never easy and NOAA is committed to making every effort to reduce staffing through attrition and explore offering buyouts or early retirement.

NOAA's Office of Oceanic and Atmospheric Research (OAR) oversees the scientific investments that ensure NOAA's weather and climate information is state of the art. The FY 2013 request of $413.8 million for OAR focuses on the highest priority and most essential services for building a future Weather-Ready Nation. OAR research continually improves our

[2] J. K. Lazo, R. E. Morss, J. L. Demuth, 300 billion served: sources, perceptions, uses, and values of weather forecasts. *Bulletin of the American Meteorological Society*, 90(6). (June, 2009).

warning systems and predictive capacity with programs such as the on-going development of the next generation of weather radars, Multifunction Phased Array Radar, and hurricane models that are now in operation at the National Hurricane Center. One of the largest investments NOAA is making in FY 2013 is an increase of $28.1 million for a total of $212.7 million in climate research in OAR (A total of $342 million is proposed to support the U.S. Global Change Research Program). These funds—much of which will be competitively awarded to academic institutions-- will improve our understanding of the changing climate system and its impacts through more sophisticated climate modeling, national assessments, external and private-sector partnerships, as well as regional climate information and delivery. Easily accessible and relevant information is required to help communities better prepare for these events and make informed decisions. Within that funding level, continued development and use of state-of-the-art Earth System Models to address urgent climate issues, including sea level rise and Arctic climate change, will be supported by an investment of $8 million, and an increase of $4.6 million in Arctic monitoring and full ocean depth profiling floats will improve seasonal forecasts, as well as our ability to chart ocean and sea ice levels. The OAR request also includes an investment of $855 thousand to support research into wind boundary layers, a fertile area for clean energy generation.

Further support for a Weather-Ready Nation is found in the FY 2013 budget request for NOAA's fleet, with a request of $241.1 million for the Office of Marine and Aviation Operations. These vessels and airplanes are data acquisition platforms crucial to providing scientific observations and maintaining our observing systems. This budget requests an increase of $2.0 million to provide for more flight hours that will be used for hurricane reconnaissance and research missions aimed at improving hurricane intensity forecasts, as well as observations for accurate and reliable winter storm warnings and forecasts, snow pack surveys, and ocean wind data.

NOAA missions, from issuing accurate hurricane warnings to providing timely weather forecasts and accurate seasonal predictions, depend on data from an integrated suite of observing systems. These systems provide a global picture of the atmosphere and oceans, as well as high-definition 3-dimensional views of individual storms. I turn next to a crucial component of the suite - NOAA's geostationary and polar-orbiting satellites.

**Satellites: High-tech Environmental Observations that Help Protect Lives and Property**

One of the greatest challenges facing NOAA today is ensuring continuity of satellite operations. NOAA's satellites provide the data and information for forecasts and warnings that are vital to every citizen. From safe air, land, and marine transportation to emergency rescue missions, Americans rely on satellite observations daily. Timely and accurate information supports the NWS, federal and state agencies, and local emergency management agencies, enabling advance warnings of emerging severe weather such as hurricanes, flash floods, tsunamis, winter storms, and wild fires. Along with the skill of NOAA meteorologists, NOAA's satellites are critical to the success of national forecasts and are the backbone of the global earth observing system and the global weather prediction capability. Satellite observations also assist NOAA's National Ocean Service (NOS) in monitoring coastal ecosystem health, such as coral bleaching, and identifying and monitoring potential maritime hazards from sea ice – key issues addressed in the National Ocean Policy. Although satellites do not observe fish stocks directly, the National

Marine Fisheries Service (NMFS) can utilize satellite measurements such as sea-surface temperature, sea-surface height, ocean color, ocean winds and sea ice to characterize critical habitat that influences marine resources.

The FY 2013 President's Budget Request of $2.0 billion for NOAA's National Environmental Satellite Data and Information Service (NESDIS) supports the highest priority and most essential services for developing, acquiring, and managing satellite and satellite data operations. The Joint Polar Satellite System (JPSS) and the Geostationary Operational Environmental Satellite-R Series (GOES-R) programs are two of NOAA's highest priorities. The FY 2013 request reflects the need for increases within the satellite portfolio necessary to maintain these crucial instruments. This includes a planned increase of $186.4 million for the GOES-R program, as well as an investment of $9.4 million for data processing and distribution for the Suomi-National Polar-orbiting Partnership mission and the same support for the follow-on program, JPSS.

The next generation of GOES-R is expected to be launched by 2015, and will become fully operational by 2017. The increase in FY 2013 President's Budget for GOES-R is necessary to secure the launch vehicle and support further development of the satellite and its instruments. This series of satellites will include upgraded technology, such as an improved Advanced Baseline Imager (ABI), which will provide faster and higher-resolution image scans, covering a larger geographic area. Enhanced ABI capabilities will help decrease forecast error and expand the list of geostationary products NOAA offers. Improved tropical forecasts from GOES-R products are expected to prevent annual losses to the recreational boating industry valued at $31 million in 2015.[3] The new ABI technology will also enhance volcanic ash plume tracking, so pilots can receive advance warning and be routed around the damaging and deadly plumes. The annual net economic benefit to the airline industry from these enhancements is estimated to be $58 million in 2015.[4]

NOAA satellites also help forecast energy demands for communities, largely based on temperature forecasts. GOES-R data will allow for more accurate temperature forecasts, thereby enabling energy providers to better prepare for changes in energy demand. Annual savings for the energy sector are expected to be $256 million in 2015.[5] Finally, improved information from GOES-R will enable researchers and forecasters to produce more accurate forecasts. That, in turn, will result in irrigation water being used more efficiently by farmers. The projected annual net economic benefit for the agricultural sector is valued at $30 million in 2015.[6]

Thanks to the Committee's support, the FY 2012 appropriation provides a foundation for NOAA to make significant progress towards developing the Nation's next generation polar orbiting satellite system, the JPSS, and we understand that the overall cost of this program needs to be contained. The FY 2013 President's Budget proposes to cap the total life cycle cost of JPSS at

---

[3-6] Centrec Consulting Group, LLC. *An Investigation of the Economic and Social Value of Selected NOAA Data and Products for Geostationary Operational Environmental Satellites (GOES).* Report to NOAA's National Climatic Data Center. Savoy, IL. (February 27, 2007; http://www.centrec.com/resources/reports/GOES%20Economic%20Value%20Report.pdf)

$12.9 billion and target a launch date for the second quarter of 2017 to minimize the duration of any gap between the recently launched Suomi NPP satellite and JPSS. However, we are still at significant risk. We are almost certain that a gap in polar observational satellite data will occur from the projected end of life of the current polar mission to the beginning of the operational JPSS mission. The loss of NOAA's polar-orbiting satellite data would result in an immediate degradation to weather forecast models, impacting NOAA's ability to provide advance warnings of severe weather that help to protect lives and property.

NOAA is conducting a comprehensive reevaluation of its space-based observation requirements with a goal to maintain and acquire critical services that meet the Nation's national environmental data needs. NESDIS will continue to pursue collaborative opportunities with other national and international agencies and organizations and partner with industry, academia, and other research and development agencies. These partnerships will bring robust information and service delivery to our customers and invest in effective relationships with stakeholders. In particular, NESDIS will continue participating in global partnerships, such as with the European Organization for the Exploitation of Meteorological Satellites, to help the United States and Europe provide increased capability to monitor global weather and climate.

The third core mission area I wish to highlight grows out of NOAA's services, stewardship, and scientific work to restore vitality to the Nation's coastal population and economy.

**Vibrant Coastal Communities**

The Nation's coastal population is expected to increase by more than 13.6 million by 2020.[7] In addition, over half of the U.S. Gross Domestic Product is generated in coastal counties.[8] To meet the demands of a burgeoning coastal population and a productive economy, NMFS and NOS play critical roles in supporting sustainable resources that in turn support sustainable industries and jobs and also provide services that make businesses more efficient and safe. NMFS serves the Nation through a science-based stewardship of living marine resources, while NOS activities support sound decision-making for human, ecological, and economic health.

The FY 2013 President's Budget reflects some difficult choices. The budget proposes reductions to or closures of programs in order to support core coastal and ocean stewardship programs. Our coastal economies provide the Nation with goods through our ports, food from the sea, and vacation destinations for our families and international travelers. Our coastal communities help make our economy strong. Despite the cuts in this area, NOAA's commitment to providing services that support, protect, and serve our coasts is strong.

The commercial and recreational fishing industries depend on healthy and abundant fish stocks, habitats, and marine ecosystems to provide lasting jobs, food and recreational opportunities. In total, our Nation's fisheries supported 1.5 million full and part-time jobs and contributed $79 billion to GDP, $183 billion in sales in 2010.[9] Further, the jobs supported by the commercial fishing industry

[7] NOAA's State of the Coast, http://stateofthecoast.noaa.gov
[8] State of the U.S. Ocean and Coastal Economies, NOEP 2009

increased from 2009 to 2010 by 16 percent, from 1 million to 1.2 million.[10] Fully rebuilt, U.S. fisheries are anticipated to contribute $92 billion to GDP and support 2 million jobs.[11] Recreational fishing is also an important industry as trip related expenditures contributed $23 billion to GDP, $50 billion in national sales impacts, and supported more than 326,000 full and part-time jobs across the U.S. in 2010.[12] In 2010, an estimated 11 million recreational saltwater anglers took 73 million saltwater fishing trips, spending $4.3 billion on trips and $15 billion on durable fishing equipment, such as rods and reels, boats, second homes and other goods.[13]

NOS products and services, which are derived from surveys and observations, are perhaps the most visible example of NOS support for the American economy and workforce. More than 78 percent of U.S. overseas trade (by volume) and 43.5 percent (by value), including nine million barrels of imported oil daily, transits through our seaports[14]. Port activities alone are responsible for 8.4 million American jobs and nearly $2 trillion in economic output[15]. NOS navigation charts, tide data, and other tools serve as the marine transportation "information infrastructure" that enables marine transportation users to optimize economic opportunity.

NOAA serves as the trustee for thirteen national marine sanctuaries. Across all national marine sanctuaries, about $4 billion is generated annually in local coastal economies from diverse activities which include: commercial and recreational fishing, research, recreation-tourist activities such as whale watching, snorkeling and diving on coral reefs and recreational boating. The National Marine Sanctuaries support about 50,000 jobs in diverse activities ranging from fishing and diving to research and hospitality.[16] A study completed in 2000 estimated that Massachusetts alone accounted for nearly 80 percent of New England whale watching tour totals, generating $31.3 million; virtually all of Massachusetts whale watching occurs in Stellwagen Bank National Marine Sanctuary.[17]

With the FY 2013 budget request of $880.3 million for NMFS, NOAA remains committed to putting America's fishing industry on a sustainable and profitable path through targeted investments in fisheries science, observer, and enforcement programs. Additional targeted funding for NMFS includes increases of $4.3 million to expand stock assessments and $2.3 million for Survey and Monitoring projects. Funds will be targeted at high priority commercially and recreationally valuable stocks, those that limit the catch of these valuable stocks due to high scientific or management uncertainty, and those that were previously experiencing overfishing to verify that overfishing has ended. Funds will be used to improve fishery-independent surveys using advanced sampling technologies such as optical and acoustical methods. The FY 2013 President's Budget includes an increase of $4.2 million for the NMFS National Observer Program. The requested increase will support observing and monitoring for fisheries currently under catch share management and those expected to transition to catch shares in FY2013. This

---

[9,10,12] Fisheries Economics of the United States, 2010 (*forthcoming, not yet published*)

[11] NOAA Fisheries internal analysis based upon NMFS Commercial Fishing and Seafood Industry Input-Output Model (see: https://www.st.nmfs.noaa.gov/apex/f?p=160:1:916796370801116::NO)

[13] Fisheries Economics of the United States, 2010 (*forthcoming, not yet published*)

[14] 2003 Pocket Guide to Transportation Table 5-5, U.S. Department of Transportation

[15] http://www.economics.noaa.gov/

[16] http://sanctuaries.noaa.gov/science/socioeconomic

[17] Hoagland, Porter and Andrew E. Meeks. The Demand for Whale watching at Stellwagen Bank National Marine Sanctuary. Marine Policy Center, Woods Hole Oceanographic Institution, 2000

funding will allow NOAA to provide coverage in approximately 47 fisheries nationwide. Investment in enforcement activities will sustain the hard work to implement reforms following the 2010 Inspector General Report while also maintaining focus on the important work of enforcement. To make these targeted investments, the FY 2013 budget proposes to consolidate and streamline certain activities to reduce costs and decrease or terminate funding for lower priority programs. For example, NOAA's request includes a $5.0M reduction across numerous programs to consolidate and reconfigure NMFS' West Coast regional management offices. Under this proposal, the Southwest and Northwest Regional Offices will be reconfigured into a single West Coast Regional Office. NOAA also proposes to close the James J. Howard Lab at Sandy Hook and the Pacific Environmental Research Lab at Pacific Grove, relocating staff to other facilities. Activities that are supported at these facilities are necessary for the NMFS mission, however it can be conducted more cost-effectively at other NOAA facilities.

In the FY 2013 Budget, NOAA requests $478.1 million for NOS to support the economic sustainability of coastal communities. NOAA has made a few targeted investments in the FY 2013 budget submission for NOS including a $10 million increase to develop and improve marine sensors that will monitor changing conditions in the oceans, coasts, and Great Lakes. This, along with our existing observational capabilities, will enhance our stewardship capabilities across a wide range of objectives outlined in the National Ocean Policy. A $2.0 million increase to expedite the restoration of polluted sites subject to natural resource damage assessments. Some of these cases represent hundreds of millions of dollars in potential settlements. Finally, a $2.0 million investment in extramural research is requested to strengthen our continued focus on harmful algal bloom, hypoxia, and ecosystem research.

NOAA's fleet is crucial to providing scientific platforms in support of NMFS and NOS. An increase of $10.7 million will allow NOAA to perform a Major Repair Period on the *Thomas Jefferson*, NOAA's primary hydrographic survey vessel. Major Repair Periods are critical to ensuring the ongoing health and well-being of NOAA's fleet; without these periodic refurbishments, ships would be taken out of service. Finally, an additional $1.5 million is requested to complete the post-construction evaluation of FSV 6, our newest fisheries survey vessel.

**Conclusion**

Overall, NOAA's FY 2013 Budget Request reflects the commitment that Secretary of Commerce Bryson and I have made to the President to contribute to growing a strong economy that is built to last while being fiscally responsible and helping to reduce the Nation's deficit. As we make tough choices, we remain committed to our core mission because we know that Americans rely upon us each and every day. The resources that are requested in this budget are critical to the ongoing success in creating a Weather-Ready Nation, ensuring access to reliable scientific data, and achieving vibrant coastal communities. I look forward to working with the Members of this Committee and our partners and constituents to achieve the goals I articulated through the implementation of the FY 2013 budget. Thank you for the opportunity to present NOAA's FY 2013 Budget Request. I am happy to respond to any questions from the Committee.

Chairman HARRIS. Thank you, and I want to thank you for your testimony. The round of questionings will begin, and I will recognize myself for five minutes to begin that.

Doctor, your testimony stated that despite the substantial increase in funding for satellites in the budget request that we are almost certain that a gap in polar observational satellite data will occur. I understand that the GAO and the National Academies have actually have even been a little more pessimistic about the length of that gap.

Setting aside any questions about, you know, who is to blame for it, what is NOAA doing to explore alternative means of getting that information? Is there another plan to get that information in the gap?

Dr. LUBCHENCO. Mr. Chairman, we don't believe there are any viable alternative options at this point, which is why we are very aggressively pursuing staying on track and on the budget that is projected. As you know, when I came into this position, there had been a considerable history of budget cost overruns and delays. We made a commitment to turn that around, have restructured this new program, JPSS, and I believe we are on track as long as we obtain the funding that we need this year and next year. And I believe that the success of the programs to date are bearing that out.

Chairman HARRIS. Has NOAA considered conducting an observing system simulation experiment in order to inform the development of future operating systems?

Dr. LUBCHENCO. Mr. Chairman, I am not sure exactly what you are asking.

Chairman HARRIS. OSSE? We will submit it in writing, and you can talk to staff about it then.

Dr. LUBCHENCO. Okay.

Chairman HARRIS. One of the few reductions in your request is to discontinue the National Air Quality Forecasting Capability, which, of course, forecasts ozone and particulate matter levels, and of course, that capability allows EPA and local agencies to issue their air quality health alerts for the public.

Now, the National Weather Service states that this discontinuation was to "fund higher priority items." But the decision seems at odds with what the EPA Administrator has said. Administrator Jackson last year said, "We are actually at a point in many areas of this country where, on a hot summer day, the best advice we can give you is don't go outside. Don't breathe the air. It might kill you." In September, Ms. Jackson stated that, "If we could reduce particulate matter to healthy levels, it would have the same impact as finding a cure for cancer." Obviously it seems like EPA thinks this might be important information. How can you explain the disparity between NOAA and EPA and the priority of developing the ozone and particular matter level warnings?

Dr. LUBCHENCO. Mr. Chairman, I don't think there is any disparity in terms of the importance of measuring particulates and ozone. As we looked at our budget and made decisions, we really focused on areas that were core to our particular mission and areas where we had the greatest immediate responsibility to the citizens of this nation. The ozone and particulate programs have been rel-

atively small and are less core to our immediate mission than are many of our other programs.

Chairman HARRIS. Well, let me move onto that because, you know, a lot of Americans, I think, would say, you know, forecasting the weather, the National Weather Service is important, but the budget actually, a budget that increases by 3.1 percent, actually has a decrease in National Weather Service.

How do you explain and where do you prioritize? I mean, obviously, climate change got a large increase, climate research, Weather Service gets a decrease. Why?

Dr. LUBCHENCO. Mr. Chairman, the ability for us to deliver quality weather forecasts and warnings depends on a variety of activities within NOAA. First and foremost are weather satellites. You see a significant increase in our satellite programs this year, and that is due directly to the importance that those weather satellites play. Over 90 percent of the data that go into our numerical weather models come from satellites.

The decreases that you see in the Weather Service program are ones that we believe represent mostly administrative efficiencies where we can provide the same or better level of service at a lower price, if you will. So overall, we have put saving lives and property at the very, very top level of our budget, and I think that is reflected in the combined satellite and Weather Service line items.

Chairman HARRIS. Just to follow up, why not take it from climate research instead of the Weather Service? I mean, Weather Service gets a hit in funding to fund satellites, but climate research doesn't. I mean, is that the priority of the Administration, that climate research—again, you have testified before. This is looking at decades in the future is more important than looking at a week into the future? I would say some people in the Midwest might disagree with that.

Dr. LUBCHENCO. The investment in understanding how the climate system works influences directly our ability to provide outlooks, for example, with drought, severe weather such as heavy precipitation events, heat waves, those kinds of things. So there is a direct connection between our better understanding of how the climate system works and our ability to deliver information to help communities and people and businesses prepare, even in the months to years ahead, not just decades from now.

Chairman HARRIS. Just a very brief, clarifying point. Wasn't your testimony before the Committee that climate research is looking years ahead? It is not months, not weeks, not days?

Dr. LUBCHENCO. Climate research is designed to help us understand how the climate system works. That helps us understand what will happen months ahead, years ahead and decades ahead, all of those.

Chairman HARRIS. Thank you very much, and I recognize Mr. Miller.

Mr. MILLER. Thank you, Mr. Chairman. Dr. Lubchenco, I also have a question about the polar orbiting satellites, the geostationary satellites, the next generation, because the NPOESS system was one of the most snake-bit projects the Federal Government has ever been involved with. This Committee has had many hearings on polar orbiting satellites, and GAO has taken a great

interest. And they earlier estimated what it would take to complete the JPSS system at a couple billion dollars more than the $12.9 billion that your budget suggests will be sufficient. Lowballed estimates are a problem because it may help get programs through initially, and then it may be that Congress is reluctant to pull the plug on a program once begun, but it leads to undermining confidence by Congress and the Agency, it undermines confidence of the American people if there are cost overruns, and it would be very useful to begin with a pretty realistic estimate.

Why do you believe that the program would cost less than GAO estimated, and will the requested funding level be enough to develop the instruments and to meet the scheduled launch dates?

Dr. LUBCHENCO. Congressman, when I first took this position, I was told in no uncertain terms by Members of Congress that the NPOESS program was a national embarrassment, had been problematic for far too long and absolutely needed to be fixed. And I took that very seriously.

Mr. MILLER. As you should have.

Dr. LUBCHENCO. Which is what led to the significant restructuring of that program. And the creation of the Joint Polar Satellite System is a result of that. It has benefitted from intense internal and external scrutiny. We had the benefit of many outside experts advising us on this, learning from the lessons of NPOESS, and committing to not repeating them.

In constructing our budgets, we have committed to capping the costs of JPSS at this $12.9 billion level. That will indeed entail the loss of some of the sensors that we had originally envisioned to fly on those satellites, but we are in fact committed to staying with that cap. I think that the success that we are having now with the Suomni NPP satellite, the instruments that are on it, our good partnership with NASA in that regard, and all of the activities we have engaged in with the JPSS program to date suggests that, in fact, we have turned this around, we are on track. We will be watching it very closely as I am sure you will be and should be. But I think these satellites are too important to not be on the path to success, and we are committed to that end.

Mr. MILLER. Climate research. I understand that NOAA is involved, should be involved in all aspects of climate research, observations, data management, modeling and those various activities advance what you call the NOAA climate goal. There are other agencies that are also involved in climate research. What is the climate goal and how does that goal benefit the mission of the Agency and the needs of Americans and is that research duplicative of what is going on in other agencies?

Dr. LUBCHENCO. Thank you, sir. Good questions. Within NOAA, there are activities across many different parts of NOAA, what we call line offices, that touch on our climate goal. And so it is appropriate for us to have a mechanism of integrating across the different units within the Agency. That is what the climate goal does. It pulls from the different units and has a more overarching integrated nature. By the same token, there is a mechanism to integrate research across the different federal agencies that are engaged in climate research through the program called the U.S. Global Change Research Program. That is the mechanism by which

we ensure that there is not duplication, that there is coordination, collaboration across the different agencies. So each different agency that does have some element of climate research coordinates through the Global Change Research Program. For example, there are different types of modeling efforts under way that are complementary, and this is a mechanism of keeping each other in formed and making sure that we don't have duplication.

Mr. MILLER. My time has expired.

Chairman HARRIS. Thank you very much. The gentleman from California, Mr. Rohrabacher, is recognized for five minutes.

Mr. ROHRABACHER. Thank you, Mr. Chairman. That is kind of an interesting distinction here that you are making with the climate versus weather. I am sure that there is that delineation that is made in academe as well as in government offices.

The recent Government Accountability Office report found that 40 percent of the weather stations used for the U.S. Historical Climatology Network do no not meet NOAA's own sitting standards which require, for example, that weather monitor stations not be located too close to paid services or in areas that, of course, would interfere with the correct assessment of the temperature, et cetera. The report also found that NOAA does not centrally track whether or not these stations adhere to the actual standards, nor does it have an agency-wide policy regarding these stations. So I guess it is saying that you have 40 percent of the weather stations used for this U.S. Historical Climatology Network don't meet NOAA's own standards, is that correct?

Dr. LUBCHENCO. Congressman, I don't know the actual figure. I can tell you that through time, many stations that were originally put in one place, the circumstances around them have changed, and that when we collate all that information, we take that into account and often make adjustments accordingly. We are in the process of sort of looking across all of those weather stations to make sure that they give us the best kind of information and we are——

Mr. ROHRABACHER. Well, it is pretty hard to adjust something if you don't know what the real recording is. I mean, it is one thing to say where you justify some average of what has happened in the past. That doesn't count if you think there is changes going on.

Now, I understand that there is a request for $28 million to increase climate research. Does any of that money that the $28 million requested would go to perfecting these stations so you will know how to judge the climate by accurate weather assessments?

Dr. LUBCHENCO. Congressman, there are multiple different ways that we take data about temperatures, for example, and those ground stations are one of them. They are complemented by a number of other mechanisms that overlap. So we have satellite information, we have ground-based information, we have tall towers, we have buoys.

And so our information about changes does not rely on any one type of network. It relies on the sum total of those.

The climate research program that is in our budget is focused on not the monitoring per se but understanding the mechanisms, you know, how the Earth system works, what is the role of aerosols,

what is the carbon cycle like, what is the role of black carbon, for example.

Mr. ROHRABACHER. Well, if you have a lot of, I mean, 40 percent of the stations not meeting the standard certainly seems to me that before you want to go into all these other calculations, you are going to want to fix that problem. And I guess what I am hearing is no, you are not going to go after those stations, and that money that has been requested to increase climate research will have to just work around those figures that may or may not be accurate.

Dr. LUBCHENCO. Congressman, let me get back to you with respect to that figure and what we are doing to address that need because I would like to give you accurate information on this.

Mr. ROHRABACHER. It is the Government Accounting Office's——

Dr. LUBCHENCO. I understand.

Mr. ROHRABACHER. Let me just note, in Orange County, where I come from, I grew up there as a boy and my dad was a marine, and we were at El Toro, and all around us were orange groves as far as you could see.

Dr. LUBCHENCO. Right.

Mr. ROHRABACHER. And there were some weather stations there, and I will tell you right now, to think that those weather stations, it is a totally different world now where those weather stations are located. They are located in a bunch of concrete and buildings, and it is a totally different environment. So I think that when we are trying to find out what is accurate in terms of what those instruments are recording, we do have to take into consideration those type changes, and it doesn't look like we have paid enough attention to that. But thank you very much. I will be hopefully getting maybe a couple of paragraphs back from you on how we are handling that.

Dr. LUBCHENCO. I can tell you that we are, in fact, aware of the changes in many of these places, and in some areas, we are creating new stations and having, you know, in areas that are not likely to change through time such as you mentioned. But what the number is and exactly the rate at which we are fixing them, I am happy to get back to you on.

Mr. ROHRABACHER. Thank you very much.

Chairman HARRIS. Thank you very much. The Chair recognizes the gentlelady from California, Ms. Lofgren, for five minutes.

Ms. LOFGREN. Thank you very much, and I am pleased to be here. Some of my questions have already been asked, but I did share with our witness a copy of an editorial that appeared in the *San Jose Mercury News* a couple of weeks ago relating to the tsunami alerts and the proposed $4.6 million that affects the early warning system.

I would like to note that San Jose, which is within my congressional district, is not on the coast, and we would not be impacted by a tsunami in any way. We have even done the modeling. Even on the bay, there is no way that a tsunami could impact us according to the computer modeling. So this is not from a parochial point of view.

But I do have a concern. I have read the analysis that a degradation of this system—which I think inevitably will result, I mean, if we are not able to repair these buoys. Some will go dark and we

will not be able to reach them without the funding. This could have a public safety impact, and obviously you have constraints that were placed upon you. We recognize that. But I am concerned as we think about this tsunami, the devastating tsunami that hit Japan, certainly the possibility of a devastating impact somewhere along the West Coast, whether it is, you know, Washington or L.A., needs to be considered. And I am wondering if this is really something that we want to stick with in terms of reduction. Could you address this subject at all?

Dr. LUBCHENCO. Certainly, and thanks for the questions, Congresswoman. Tsunamis are very, very serious, obviously, and we take our responsibility to warn our citizens very, very seriously.

We saw with both the Chile, and then the Japanese, tsunami how devastating they can be. Our tsunami warning system was active in both of those instances and in fact prevented considerable damage that might otherwise have occurred. For example, both places along the West Coast, Crescent City for example, but also in the Hawaiian Islands and other Pacific places, territories——

Ms. LOFGREN. Santa Cruz?

Dr. LUBCHENCO. And Santa Cruz, absolutely. Santa Cruz was seriously affected. Our warning program before this year had benefit of both appropriated funds as well as funds from the 2005 Deficit Reduction Act. And this year, that act expires. We will no longer have funds from the Warren Act to help supplement our tsunami programs, which is why you see a reduction in this year's program compared to last year.

Nonetheless, we will be able to continue to have two very active tsunami warning centers in Alaska and in Hawaii. The dart buoy systems that give us very important information as the tsunami is moving across the Pacific will remain in place. The decreased funds mean that we will be unable to go out and fix those dart buoys when they become disabled as frequently as we would like to or as frequently as we have to date. So the system will be up there. We just are not able to maintain it at the pace that would be necessary.

Ms. LOFGREN. May I ask you a question, because oftentimes we think about, you know, the West Coast of the United States as being the recipient of a tsunami from the earthquake in Asia. But certainly there is the potential of a very large earthquake, certainly along the State of Washington given historic events. And so actually, the Hawaiian Islands could be at risk as well as the coast along the United States.

Have we thought about the impact of letting these buoys go dark from that kind of an event?

Dr. LUBCHENCO. Absolutely. The dart buoy system was designed to function regardless of where in the Pacific Rim the earthquake was happening. And you are right to focus on Washington but Oregon as well as places where there in fact may be an event. The dart buoys do not enable those warnings to happen. When there is a seismic event, that information is received immediately by our tsunami warning centers, and they send out a model.

Ms. LOFGREN. If I may, I think I misspoke. I am talking about the buoys that aren't working and can't be repaired in a timely fashion.

Dr. LUBCHENCO. Warnings don't depend on those buoys.

Ms. LOFGREN. Okay.

Dr. LUBCHENCO. Warnings happen first, and we are still able to do those. And then the buoy picks up the tsunami as it is moving across the ocean, and that enables us to fine tune the warnings. So if there is a buoy that is out, we will still have a general warning. It won't be as specific as might be useful, but it is not as if we won't have any warning system at all. I agree it would be nice to have all those buoys up and running. We just don't have the money.

Ms. LOFGREN. I would ask unanimous consent to put the editorial in the record and just note that I understand your constraint, but it seems to me not maybe the best place to economize. And if you over-warn, then people don't take it as seriously. And we have seen that in California where people show up to look. And if it were a big event, that would not be a smart thing. If it is targeted, people take it more seriously. I know my time is up.

Chairman HARRIS. Without objection.

Ms. LOFGREN. Thank you very much.

Chairman HARRIS. We will include that in the record.

[The information may be found in Appendix 2.]

Chairman HARRIS. The Chair recognizes the gentleman from California, Mr. McNerney, for five minutes.

Mr. MCNERNEY. Thank you, Mr. Chairman. Dr. Lubchenco, I want to thank you for your testimony, and also for recognizing the disaster that occurred last week in the Midwest. I know a lot of families are going to be grieving a long time about that. Could you elaborate on the importance of the Weather-Ready Nation initiative? Be a little specific here. How is the money going to be used to help warn people of these events?

Dr. LUBCHENCO. Congressman, we have invested a significant amount of research over the years in doing better and better at making more and more accurate forecasts with longer lead times, for example. And we have made some very significant strides in that direction. We will continue to do that as well as have the satellites give us the basic information that allow much of that to happen.

However, many of our warnings often happen, and people don't necessarily know what to do, or they don't know how to interpret the information. And so the Weather-Ready Nation is an initiative to work with local communities, with emergency managers, with social scientists, with others, to help better understand what people hear when they hear a warning, and if they are hearing what we think we are trying to tell them and if they know what to do, to take cover, to be safe. So it is acknowledging the very real human dimension in responding to a weather disaster warning. So we will again on parallel tracks make sure that our satellites are on track to give us the basic information, have our weather forecast disaster warnings as accurate and as good as they can be but also pay attention to increasing the ability of individuals, community leaders, emergency managers in responding appropriately when there is something bad coming.

Mr. MCNERNEY. Thank you. As a mathematician, I strongly understand the importance of STEM education, and I see there is a

reduction in funding for the Office of Education. How do you feel that is going to affect the training of a generation of scientists or potential scientists?

Dr. LUBCHENCO. Congressman, that is one of the most painful parts of this budget for me this year. STEM education is vitally important, and the role that NOAA's education programs have played I think has been outstanding. We simply did not have enough funds to do everything and made saving lives and property and managing fisheries, other really important things, the highest priorities. And what that meant is that there are some very important things we are not able to do, and it is very, very painful for me.

Mr. MCNERNEY. I understand. Another subject that I have personal interest in from my past life is wind energy. I spent a career there, and I see you have $855,000 in the budget for wind boundary research, and that is going to help the industry maybe some day. Could you tell me a little bit about that program and what exactly are they planning to do with that money?

Dr. LUBCHENCO. I can give you a high-level description of it, and if you want more detail, I am happy to provide that as well as a follow up.

Much of the challenge is in understanding what is happening at the level where the turbines are and understanding better the boundary layer conditions and what is happening at different altitudes above the ground and how that changes when you are on a ridge top or a valley is part of the research that is anticipated in this area. So it is understanding better what are the conditions that result in different patterns of wind and to what extent we can predict under certain circumstances what the patterns will be under different circumstances.

Mr. MCNERNEY. So you would be looking at the shear effects?

Dr. LUBCHENCO. Yes, exactly.

Mr. MCNERNEY. And there are a couple of ways to do that. One is to try and map it out by location. Another is to try to understand the sort of atmospheric effects that are happening due to climate situations. Are you focusing on one of those two or both?

Dr. LUBCHENCO. It is a combination of those, but I can't tell you precisely what. You know, we know that any particular place is not static through time. You know, there are very different conditions, if it is an El Nin~o versus a La Nin~a year, it depends on where the jet stream is, it depends on all sorts of other kinds of things, and having a better understanding of what are the circumstances that result in a particular pattern of winds is where we are trying to be.

Mr. MCNERNEY. Okay, thank you. Mr. Chairman, I yield back.

Chairman HARRIS. Thank you very much. The Chair now recognizes the gentleman from New York, Mr. Tonko, for five minutes.

Mr. TONKO. Thank you, Mr. Chair. Dr. Lubchenco, thank you for joining us today and for your testimony. The proposed budget for the National Weather Service has several reductions that are of real concern. This Committee has opposed past attempts to eliminate the Wind Profiler Network. I understand the data from this network are utilized for forecasting tornados. We are experiencing an increase in tornado outbreaks. In fact we witnessed just recently what happened in Tornado Alley as it is often referenced, and I

saw unusual weather elements this past last summer in my own district, in the 21st in New York, which included a tornado in my hometown area.

Why is the Administration proposing to eliminate this network?

Dr. LUBCHENCO. Congressman, it is my understanding that we believe that we can get similar information through other mechanisms and that eliminating these profilers will not impair our ability to forecast the tornados.

Mr. TONKO. It may not limit the ability but are we likely to experience degraded forecast accuracy?

Dr. LUBCHENCO. I don't believe so. Part of what we are doing is focusing on converting our Doppler radar systems into what is called dual polarization radar, and that is giving us very good ability to have more precise information about conditions conducive to tornado formation.

Mr. TONKO. I am also concerned about the proposal to eliminate the information technology officers at each weather forecast office. My understanding is that these professionals serve as both meteorologists and IT specialists and that many forecast offices develop specialized programs tailored to local conditions to improve their forecasting.

How is a central system going to do this effectively?

Dr. LUBCHENCO. We believe that we have had significant improvements in IT technology that will enable us to reduce the number of these IT positions and to fulfill the activities that they supply more regionally as opposed to individual stations, and we believe we can do that without any significant degradation of the services provided.

Mr. TONKO. So has this concept been tested? Are we simply doing the experiment and the implementation simultaneously?

Dr. LUBCHENCO. It is my understanding that it is comparable to an analogous situation that happened earlier on with the Weather Service that was the result again of technology enabling more effective provision of service but at a lower cost. So we are actually learning from that experience and folding that into this design.

Mr. TONKO. You know, this is a public safety issue in my opinion, and your own agency's press release indicated we had another record year for weather-based natural disasters. You made mention of it today in your testimony.

Beyond the IT abilities, are there other bits of rationale for this cut?

Dr. LUBCHENCO. We take the public safety issues extremely seriously. That is really the highest priority that we have for the Weather Service, and we believe that we can achieve administrative efficiencies with this proposal with no threat to public safety, no degradation of the services that are provided. Otherwise, we wouldn't be doing this.

Mr. TONKO. And also, Dr. Lubchenco, does the request for fiscal year 2013 include funding for the Integrated Water Resources Science and Services initiative that NOAA is working on with the Army Corps and USGS?

Dr. LUBCHENCO. Congressman, I don't have that number on the top of my head. I am happy to get it and get back to you on that. You are right, that IRIS program that is a joint one is very impor-

tant to us. It is at a small scale. We think there are a lot of efficiencies in combining with the other agencies, as you and I have discussed, but I don't remember exactly what is in the budget for that. But I will get back to you on that.

Mr. TONKO. Thank you. And as I stated, you know, my district has experienced a lot of impacts from Mother Nature this past summer and fall, including terrible flooding problems last year. And I believe that this program would be very helpful in addressing water resource issues which have got to be a primary focus, I believe, from a federal perspective.

Dr. LUBCHENCO. I agree.

Mr. TONKO. Thank you so much.

Dr. LUBCHENCO. Thank you.

Chairman HARRIS. Thank you very much. Dr. Lubchenco, I thank you very much for your testimony, the Members and their questions, I want to again thank you for your patience while we came back from voting. The Members of the Committee may have additional questions for you, and we ask you to respond to those in writing. The record will remain open for two weeks for additional comments from Members. We are looking for those budget justifications, so don't forget us on that. The witness is excused, and we will move to our second panel with Mr. Lek Kadeli.

Thank you very much for your patience again. We apologize for the delay while we were voting. I want to welcome Mr. Kadeli, who is the Acting Assistant Administrator from the Office of Research and Development at the EPA. He has over 29 years of management experience in both government and the private sector. He joined EPA's Office of Research and Development in 1993 to serve as Chief of Resource Planning and Program Coordination, and in 1998 served as the Acting Deputy Director of ORD's National Exposure Research Laboratory in North Carolina. He previously served as the Acting Assistant Administrator for the Office of Research and Development from January through December of 2009. As our witness should note, spoken testimony is limited to five minutes after which the members of the committee will have five minutes each to ask questions, and I now recognize you for your testimony, Mr. Kadeli.

## STATEMENT OF MR. LEK KADELI, ACTING ASSISTANT ADMINISTRATOR, OFFICE OF RESEARCH AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AGENCY

Mr. KADELI. Thank you, Mr. Chairman. Good afternoon Chairman Harris, Ranking Member Miller and other Members of the Subcommittee. My name is Lek Kadeli, and I am the Acting Assistant Administrator for EPA's Office of Research and Development, and it is my pleasure to be before the Committee to present the President's 2013 request for our budget.

The 2013 research budget demonstrates EPA's commitment to providing the best science and technology for its core mission of protecting human health and the environment for American families while recognizing the challenging realities of this current climate. The fiscal year 2013 budget is the result of EPA's ongoing

efforts to carefully consider potential efficiencies in a responsible manner while supporting innovative approaches that are essential to understanding and addressing environmental challenges and protecting human health.

It has taken a lot of hard work and difficult choices to reach this balanced approach, and while we had to make sacrifices, we have maintained our commitment to the priorities of this Agency and ensuring the protections the American people expect and deserve.

ORD conducts intramural and extramural research across the broad spectrum of disciplines necessary to support the mission of EPA. In addition to the science that we have traditionally pursued, we are investing in research on innovative approaches and technologies along with promoting synergies between environment and public health protection in a context that reflects broader community interests and needs.

I would like to highlight a few examples of the innovative solutions that we are pursuing and that I believe would be of interest to the Committee.

First, EPA is collaborating with the National Institutes of Health and the Food and Drug Administration to bring complementary expertise together to develop faster predictions of how chemicals could impact human health and the environment. The intergovernmental partnership called TOX 21 is using robotically enabled high-speed screening to test the potential toxicity of 10,000 different chemicals. This will help us more efficiently prioritize chemicals for in-depth testing, over time will reduce animal usage in testing and reduce the cost, and most importantly will provide data that will enable us to better predict whether a chemical exposure triggers changes that increase the potential for human health or environmental impacts.

Secondly, we are collaborating with five large U.S. cities, Cincinnati, Dallas, New York, Philadelphia, and San Francisco, to investigate solutions to security issues at water utilities. These cities are evaluating software developed by the Office of Research and Development which is a key component of a contamination warning system that rapidly detects hazardous contaminants in drinking water systems and is a critical technology for the detection of terrorist attacks on drinking water systems.

EPA is also in collaborative efforts with municipalities to improve and achieve more resilient storm water management approaches by sustainably addressing storm water and septic runoff overflows. At a time where we face critical challenges in maintaining and upgrading our existing water and wastewater infrastructure, we need resilient and affordable solutions that meet many objectives at once. For example, we are supporting research and implementation of green infrastructure approaches which provide diverse economic, water quality and community benefits.

EPA's 2013 budget request proposes $807 million for the science and technology account. This request includes $576 million for research, including $81 million in research grants and fellowships that will be awarded to scientists and universities throughout the country to conduct targeted research as part of the Science to Achieve Results program. Building upon ongoing research and collaborating with the Department of Energy and the U.S. Geological

Survey, a total of $14 million is being requested to increase our understanding of the potential impacts of hydraulic fracturing on air quality, water quality, and ecosystems. Six million dollars of the $14 million requested is necessary to complete the commitment to deliver on the fiscal year 2014 report on the potential impacts of hydraulic fracturing on drinking water resources. The report will be peer reviewed by the experts and a range of stakeholders.

In conclusion, we have a strong tradition of scientific excellence at EPA which this budget builds upon. I look forward to working with the Committee to address current and emerging environmental problems and seek innovative solutions that will help our Agency protect the environment and human health. Thank you for the opportunity to appear before the Committee.

[The prepared statement of Mr. Kadeli follows:]

PREPARED STATEMENT OF LEK KADELI,
ACTING ASSISTANT ADMINISTRATOR,
OFFICE OF RESEARCH AND DEVELOPMENT,
ENVIRONMENTAL PROTECTION AGENCY

**HEARING ON**
**The Office of Research and Development FY 2013 President's Budget**
**Before the**
**U.S. HOUSE OF REPRESENTATIVES**
**COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY**
**SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**
**March 6, 2012**

Good morning Chairman Harris, Ranking Member Miller and other members of the Subcommittee. My name is Lek Kadeli, and I am the Acting Assistant Administrator for EPA's Office of Research and Development (ORD). It is a pleasure to be here with you this morning to discuss the President's FY 2013 Budget for EPA's research and development.

The FY 2013 budget demonstrates EPA's commitment to its core mission of protecting human health and the environment for American families while recognizing the challenging realities of the fiscal climate. The FY 2013 budget is the result of EPA's ongoing efforts to carefully consider potential cost savings in a responsible manner while supporting innovative safeguards that are essential to understand and address environmental challenges and protect human health.

It has taken a lot of hard work and difficult choices to reach this balanced approach, and while we had to make sacrifices, we have maintained our

commitment to the priorities of this agency and ensured the protections the American people expect and deserve.

ORD conducts intramural and extramural research across the broad spectrum of disciplines necessary to support the mission of EPA.

In addition to the cutting edge science that we have traditionally pursued, we are investing in research on innovative approaches and technologies along with promoting synergies between environment and public health protection in a context that reflects broader community interests and needs. In 2011, to improve effectiveness and efficiency, the Office embarked on a major effort to strategically align its diverse research portfolio around the central and unifying concept of sustainability. Through direction laid out in ORD's six highly integrated *Strategic Research Action Plans*, we will deliver the science and engineering solutions the Agency--and the nation—need, while advancing the research needed to realize an environment that is not only less polluted, but also healthy, productive, and sustainable.

EPA's six integrated and trans-disciplinary research programs provide an innovative and systematic approach to solving some of the nation's highest-priority environmental challenges. Our six program areas are:

- Air, Climate, and Energy Research
- Safe and Sustainable Water Resources Research
- Chemical Safety and Sustainability Research
- Sustainable and Healthy Communities Research
- Human Health Risk Assessment

- Homeland Security Research

I would like to highlight a few examples of the innovative solutions that we are pursuing and that I believe would be of interest to the Committee.

- First, EPA is collaborating with the National Institutes of Health (NIH), the National Institute of Environmental Health Sciences (NIEHS) and the Food and Drug Administration (FDA) to bring complementary expertise together to develop faster predictions of how chemicals could impact human health and the environment. EPA's contribution to this intergovernmental partnership, TOX 21, is using robotically enabled high-speed screening to test the potential toxicity of 10,000 different chemicals. This will help us more-efficiently prioritize chemicals for in-depth testing, over time will reduce animal usage in testing and reduce the costs, and – most importantly – will provide data that will enable us to better predict whether a chemical exposure triggers changes that increase the potential for human health or environmental impacts.

- We are partnering with five large U.S. cities (Cincinnati, OH; Dallas, TX; New York, NY; Philadelphia, PA; and San Francisco, CA) to investigate solutions to water security issues at water utilities. These cities are evaluating software developed by ORD which is a key component of a contamination warning system that rapidly detects hazardous contaminants in drinking water systems and is a critical technology for the detection of terrorist attacks on drinking water systems.

- EPA is also engaged in collaborative efforts with municipalities to improve and achieve more resilient stormwater management approaches by sustainably addressing stormwater and septic runoff overflows. At a time where we face critical challenges in maintaining and upgrading our existing water and wastewater infrastructure, we need resilient and affordable solutions that meet many objectives at once. For example, we are supporting research and implementation of "green" infrastructure approaches, which provide diverse economic, water quality, and community benefits for communities.

- Lastly, EPA's is helping to develop a multi-agency National Atlas of ecosystems services. This national Atlas will be a resource to states, communities, industry, and the public when assessing site-specific environmental conditions.

**Investing in Cutting Edge Research**

EPA's 2013 budget request makes major investments in its science and technology account of $807 million, or almost 10 percent of EPA's total request. This request includes $576 million for research, including $81 million in research grants and fellowships that will be awarded to scientists and universities throughout the country to conduct targeted research as part of the Science to Achieve Results (STAR), a competitive, independently peer reviewed program. This important research includes children's health, endocrine disruption, innovative water infrastructure approaches, and air monitoring research. Building upon ongoing research and collaborating with the Department of Energy and the U.S. Geological Survey, a total of $14 million is requested to increase our understanding of the potential impacts of

hydraulic fracturing on air quality, water quality, and ecosystems. The EPA also will release an Interim Report on the Impacts of Hydraulic Fracturing on Drinking Water Resources in 2012.

**Conclusion**

In conclusion, we have a strong tradition of scientific excellence in science at EPA, which this budget builds upon. I look forward to working with the Committee to address current and emerging environmental problems and seek innovative solutions that will help our Agency protect the environment and human health. Thank you for the opportunity to appear before you today.

Chairman HARRIS. Thank you very much. I thank you for your testimony, reminding Members of the Committee rules, limit questioning to five minutes. The Chair will at this point open the round of questions. I recognize myself for the first five minutes.

Mr. Kadeli, two weeks ago the President gave a speech on gas prices, certainly foremost on a lot of Americans' minds in which he stated, "I have directed my Administration to look for every single area where we can make an impact and help consumers in the months ahead."

My first question to you is do you, as one of the leaders in an area of the Administration, do you know when you are expected to report back to the President? Was there a report date that the President suggested or is passed down through the Administration? I mean, he said he wants to look in every single area in the months ahead. Is there a report date for this where you can help lower gas prices or make suggestions?

Mr. KADELI. Congressman, Mr. Chairman, I am going to have to respond for the record on that. I don't have the information on that.

Chairman HARRIS. Okay. Thank you very much. In that mind, do you know if the EPA has considered abandoning the Tier 3 rulemaking or greenhouse gas regulations for refining, both of which are entirely optional policies that are guaranteed to raise gasoline prices even higher than they are? I mean, is there any move afoot at the EPA to actually do what the President said in the speech?

Mr. KADELI. Again, I think I will need to provide that response for the record. I will go back to my colleague, the AA for the Office of Air and Radiation, and get a response.

Chairman HARRIS. Thank you. I would appreciate that and would love to know what that deadline is. Now, last week Administrator Jackson claimed that the $45 million multi-agency study, which I think you alluded to in your testimony of air, ecosystem and water quality effects of hydraulic fracturing "really isn't an expansion of the congressionally mandated study." I mean, that is what your administrator said, it really isn't an expansion. But the language in the fiscal year 2010 appropriations report was pretty clear. It urged the Agency to carry out a study of the relationship between hydraulic fracturing and drinking water. So what is the origin of the $45 million effort which, by your own testimony, includes things like air quality? That wasn't part of—and I won't use the word mandate because of course, you know, the budget language of 2010 was no mandate. Instead of asking for that two percent increase and I will just, you know, make a comment, you know, you used the word make sacrifices. Most American families think making sacrifices means you do more with less, not more with more. A budget increase is a budget increase. American families don't think of sacrifices as the government coming back and saying give us more money. That is our sacrifice.

So the Agency doesn't have to do this study. There is no mandate. It not only took the original study. Now it has expanded the study and coming back for even more money. So can you walk us through the origin of why this is now a $45 million effort that has expanded well beyond what even the non-mandatory language of the fiscal year 2010 has called for?

Mr. KADELI. Mr. Chairman, I think we all recognize the importance of this resource for this country, whether from a national security standpoint, whether from an environmental standpoint, whether from an economic standpoint. I myself have traveled to parts of this country, whether Eastern Ohio, Western Pennsylvania, New York, and other parts of the country that have been hit very hard with regard to the economic challenges.

So clearly this offers a lot of opportunity for people in these parts of the country but also offers opportunity for us to address a real need on the energy side of the equation.

When we started down the path of looking at what are some of the questions and uncertainties around hydro fracturing, it was done with the encouragement of Congress, and I recognize report language is perceived in various ways, depending on where you sit. But clearly there are a lot of questions and have been a lot of questions, and as part of our commitment to—and the President himself has said, members of the industry have said, Members of Congress and others have said that it is important to do this right, and I think there are a lot of questions out there that it would be good to bring a lesser degree of uncertainty to addressing those questions.

So that is our intent with the study. That is our intent as we look at a number of questions around, not just the drinking water issues but the water quality issues and potentially air issues. I would also add that there have been concerns raised, and I think at the end of the day, we have a responsibility to the public, to the American people, to address those concerns with the facts as opposed to what sometimes is a lot of energy and passion and emotion around some of these issues.

Chairman HARRIS. You know, I couldn't agree more. Again, I take it that you have agreed I guess with my two main points. One is it is not originally a mandated study because perception aside, we know the budget language is not law. We know it is not binding. We know it doesn't require an appropriation, much less an expenditure and second of all that this really is an expansion and that the expansion is taken not at Congress' determination but internally in the EPA. Someone at the EPA just decided that we are just going to expand the scope of this, and we are just going to increase our budget. We are going to make the sacrifices again, the American people watching, the American people hearing. This is what Washington thinks of as a sacrifice, not what you think of as a sacrifice in your home. They think of a sacrifice as increasing in your budget, and that is not what most Americans think.

Anyway, I would recognize the Ranking Member, Mr. Miller, for five minutes.

Mr. MILLER. Thank you, Mr. Kadeli. This Committee has been interested, and I have been interested personally, in the IRIS program for some time. It is perhaps not the embarrassment the NPOESS satellite system, but it has not been one of our government's more successful programs and it appears in part to be because of an intentional effort to keep it from doing its job, to hobble it in its mission. We obviously need a list, a reliable assessment, of the public health effects of exposure to various chemicals and the IRIS system was producing two assessments a year when 600 new

chemicals are coming on the market every year? And I have been skeptical about some of the calls for more analysis, more reviews as an intentional effort to impose paralysis by analysis, and the program has been entirely too easily influenced in the past. I know that this Administration is trying to improve upon that by the industries that manufacture chemicals and by the industries that use chemicals and by the agencies of the government that use chemicals.

But GAO and the National Academies have also criticized the IRIS program for not having rigorous peer reviews. Many have suggested reforms. Your budget proposal does shift resources to the EPA Science Advisory Board for additional IRIS assessment reviews. How will that money be used? How will you use that money? Will there be rigorous peer reviews as GAO and National Academies have suggested?

Mr. KADELI. Congressman, as a science organization, one of the important ways that we ensure the work we do is of the highest quality and meets the standards that is expected by the President and by the administrator is we invite independent peer review of the work that we are doing. And this is not just unique to our agency but is typical of the scientific culture. It is not only how we get our work done but how we ensure that the American public are getting the best possible work done.

I must say there are times where we have enjoyed the feedback that we have gotten from these independent scientists, and some of the feedback has been challenging. The National Academy, in their review of our formaldehyde assessment, had a number of observations that related to that particular assessment, but we have recognized that the importance of taking that feedback and enhancing the assessments that we do as a result.

I will say the focus of their comments with regard to that particular assessment, particularly as we try to address them in the short term, had to do with the transparency of the data as far as how we captured them in charts, how we captured them in graphs as opposed to being lost in the text, bringing clarity to the important studies that were driving some of the conclusions that were made.

So let me end by saying peer review is important. I actually think that what we do with peer review is of the highest standards, but I also continue to welcome the type of feedback that we get, which is a normal part of our process, to ensure that we are providing quality products.

Mr. MILLER. Earlier in your prepared testimony you spoke of the TOX21 system that you are working with NIH and FDA on to develop a high-speed toxicity testing screening project for 10,000 different chemicals. Can that TOX21 high-speed testing capability help the assessment of chemicals? I am worried about the lack of productivity by the IRIS program with completing so few assessments. I mean, it would be great to produce a perfect assessment, but if there are 600 chemicals coming on the market and getting into widespread use and people are being exposed to those chemicals and we are only producing two assessments a year, even if they are perfect assessments, there is a problem there.

Can the TOX21 system be used within the IRIS program and are some of the chemicals being assessed both by IRIS and by TOX21?

Mr. KADELI. This is one of the exciting areas of work going on in ORD and as we collaborate with other federal agencies, Congressman. Obviously, we have a challenge. If we are doing assessments on a chemical-by-chemical basis, which we are doing, the National Academies did a study a few years ago that was titled Toxicology for the 21st Century where it pointed to a number of advancements that have come about in a number of other industries including the pharmaceutical industries, that provide opportunities for us to apply the lessons learned, the technologies, the incredible increases in computational powers to some of these questions. We have made significant strides, and I would offer a briefing to the committee because of the opportunities that this offers in addressing some of the challenges that we have had historically with the IRIS program and the incredible number of chemicals that the industry continues to develop as part of commerce.

Chairman HARRIS. Thank you very much. I recognize the gentleman from California, Mr. Rohrabacher.

Mr. ROHRABACHER. Thank you very much, Mr. Chairman. I think it behooves all of us when we discuss the EPA and other endeavors of government that combine both government and science that President Eisenhower warned us, very dramatically warned us, of a military-industrial complex which most of us have forgotten the first warning that he gave us right before he warned us of the military-industrial complex. With equal seriousness, President Eisenhower warned us against an unholy alliance between science and government in which science would be mobilized to achieve political ends and thus actually compromise the standards of scientists and compromise the well-being of the American people. We might go back and look at that good farewell address.

And I think that nowhere is that more apparent than perhaps in some of the things that we have been worrying about with the EPA lately and this whole hydro fracturing issue is very much of a concern because we realize that the initiative the EPA is now operating on was not something that actually came internally from the EPA but, correct me if I am wrong, instead Congress—I think it was a time when another party may have dominated the House—tasked the EPA to move forward on this, and perhaps this is the unholy relationship that Eisenhower was warning us against because what we have now is clearly an initiative that you are moving forward with that seems to be totally politicized. And when someone comes before us and basically, when we have analyzed what you and others from the EPA have come here to tell us, Mr. Chairman, it always seems that they are basically saying we are looking for something that we can grab onto with hydraulic fracturing. We are looking for that. We are seeking it out. And just the answer to the Chairman's questions again verified that for me that what we have here is there is no specific evidence that has led to the type of expenditure of limited tax dollars for this project, but instead, the EPA is going out because it has been tasked, I think politically, to achieve this rather than scientifically. And your answer to the Chairman's question did not undo that fear that I had of what was really going on here.

To put it bluntly, I think for political purposes, the EPA is targeting and has been directed to target hydraulic fracturing to put a stop to it because there is a radical element in the environmental community that does not want us to have any more gas or oil energy in this country because they believe that oil and gas creates a carbon footprint which is changing the climate. And so they are going to save the world by preventing America from having any more oil and gas, and the EPA is going to be the vehicle in which they are going to prevent that scenario.

So I just wanted to make sure that was on the record. Now, I would like to ask you specifically this question. Your Scientific Integrity Policy applies to all grantees, the EPA's Scientific Integrity Policy. Peter Glick of the Pacific Institute in California recently admitted that he had falsely impersonated a border member of the Heartland Institute in order to steal budget documents from that institute. Now, I understand that while this individual served as President of the Pacific Institute, that organization received nearly $500,000 in grants from the EPA. How does the new Scientific Integrity Policy address the circumstances associated with Dr. Glick? Does any policy limit any future grants to Glick or to any institute that he is involved in providing leadership?

Mr. KADELI. Congressman, I am not as familiar with the circumstances of the grants, the type of grants, et cetera. I think this is one where I will need to provide your response for the record so I have all the facts correct.

Mr. ROHRABACHER. Well, just for the record, Mr. Chairman, I would hope that this breach of professionalism of Peter Glick and the Pacific Institute is not just swept under the rug like so many of these other violations that we have seen. And quite frankly, and I am sorry this is a political thing, my observation is any time a Republican does anything like this, you know, all of a sudden there is an uproar. But you can have all kinds of emails between people talking about hiding the real facts and trying to prevent other people from actually publishing their findings scientifically which of course violates every scientific principle, and they just get away with it. But I think it is time for us to quit ignoring these violations by radical environmentalists.

Mr. KADELI. Congressman, if you have the specific details, that would be helpful as I go back, sir.

Mr. ROHRABACHER. Thanks so much.

Chairman HARRIS. Thank you very much. The Chair recognizes the gentleman from California, Mr. McNerney, for five minutes.

Mr. MCNERNEY. Thank you, Mr. Chairman. Thank you for your testimony there for my colleague from California.

Mr. Chairman, I would like to bring your attention to the fact that whether the majority party likes it or not, there is a growing public apprehension and alarm with potential negative impacts of hydraulic fracturing. I hear about it all the time. But regardless of whether the alarm is justified or not, the best way to proceed in this situation is to improve transparency, which is what my opinion about this budget is trying to achieve. Let the scientists do their job, and we will most likely benefit both in terms of helping to reduce the public fear and developing additional technologies that

will improve the hydraulic fracturing itself, which everybody wants to see move forward.

But onto the witness, Mr. Kadeli, I see that there is an estuarine ecosystems comp under the budget. Are you familiar with that?

Mr. KADELI. Our communities program has a significant ecosystems research component, and a portion of that addresses various types of waterways, yes.

Mr. MCNERNEY. This is important to me because I have the deltas in my district. Is there any amount that is dedicated to that particular ecosystem?

Mr. KADELI. Sir, I probably would want to get back to you for the record, just so I get that information correctly. I am not aware of that, but I can't say for certain. So let me respond to your question for the record.

Mr. MCNERNEY. Okay. I would like to know that because a lot rides on what understanding there is of water shipments from that particular estuary. So I would appreciate your detailed response on that.

Mr. KADELI. Yes, sir.

Mr. MCNERNEY. You clearly outlined your efforts to improve efficiency in this country, which—efficiency is the low-hanging fruit in terms of energy usage. For every dollar that we spend in increasing efficiency, we get a much better rate of return. Could you elaborate a little bit on what the Department is going to be doing in that regard?

Mr. KADELI. Well, the efficiency that I was speaking to with regard to our request had to do with how we do some of our work. So for example, I shared what we were doing with the program called TOX21, allowing us to take advantage of computational power of robotics that has significantly enhanced the through-put of a number of chemicals that we can run through these many tests and has significantly reduced the costs associated with them.

This is one of those programs, sir, that as you look for places—and I must say, when I visit where we have laboratories and I talk to people, I sometimes introduce myself as being from Washington and being there to help. I suspect you all can understand that sometimes that always doesn't get a welcomed response. But it allows me to talk about the many good things that are going on that their tax dollars are paying for. And this TOX21 program is one of those places where as a result of our—with other federal agencies and industry, there were some significant enhancements that are being made that are going to benefit our ability to understand potential impacts and effects of chemicals.

So significant reductions in costs, significant gains in numbers of chemicals that we can run through a large suite of tests quickly.

Mr. MCNERNEY. Have you been successful so far?

Mr. KADELI. Actually, very successful, and there have been a number of journal articles that have been in the peer review press, and there is more to come, sir.

Mr. MCNERNEY. Thank you. I will yield back.

Chairman HARRIS. Thank you very much. The Chair now recognizes the gentleman from New Mexico, Mr. Luján, for five minutes.

Mr. LUJÁN. Mr. Chairman, thank you very much. Mr. Kadeli, thank you for being here. Last I remembered, basic biology, chem-

istry and science said that my body depends on oxygen to survive as well as being able to get that even through the composition of $H_2O$. It is nicer when there are no other chemicals or elements that are associated with $H_2O$ when you start talking about being able to—the body, and I think this notion of when it became cool not to have clean air or clean water, I just don't understand where that came from or quite honestly why we fight about that here. Those are basic staples that we should be looking at protecting, and at the same time, we could still have a strong economy. So I very much appreciate the R&D aspects of what your responsibilities entail with making sure that we still have access to that important quality when I talk about $H_2O$.

With that being said, Mr. Kadeli, you mentioned in your written testimony that the Office of Research and Development has organized a trans-disciplinary program around safe and sustainable water research. As you know, ensuring the availability of water in the Southwest is challenging, especially in states like New Mexico that experience drought. Water resources become scarce and we have impending problems inherently related to that. In my district, tribal communities continue to struggle for access to clean drinking water, and rural communities face challenges in developing waste water treatment infrastructure.

Can you elaborate a bit on drinking water technologies that you are establishing at ORD and how they might provide safe drinking water to our most rural communities?

Mr. KADELI. Yes, sir. One of the areas of cooperation that is springing out of discussions that we have had with the academic community, with the business community and with state and local government officials and also the federal sector, there is a cluster of activity that is happening around our laboratory in Cincinnati, and it involves Cincinnati, Kentucky, Northern Kentucky and Southern Indiana.

Some of the work that they are doing, for example, is looking at some of the drinking water technologies that can be used for small water systems, and the particular aspect that they are trying to address is energy consumption. Our drinking water and in cleaning drinking water, there is a significant investment of energy that is necessary to do that process. So they are looking at the application of various approaches in technology that can be applied with significant reductions in technology in energy use, with a particular focus on applications toward small systems. Clearly, large cities and jurisdictions have a larger tax base to pay for these enhancements, and one of the areas that we clearly have heard from a number of places is the importance of providing innovative approaches to help address the needs of smaller communities, of rural communities, et cetera.

Mr. LUJÁN. I appreciate that, Mr. Kadeli. There was a project in my district where they asked students where water came from, and most of the students drew pictures of water faucets and hoses and where that water would come out with the wells and whatnot. There was a group of Navajo students that drew pictures of pick-up trucks with water tanks in the back, pictures of their grandparents or their parents carrying water in buckets to their homes. And with the deteriorating system that we have around the coun-

try, it is important that we have places like that right here in America, right here in our backyard, that we need to make sure that we can never forget about.

Related to that, as we talk about areas where there maybe is some infrastructure as well, with the drought that we are experiencing in parts of the country, crumbling infrastructure, I am worried that the intersection of these two problems is a pending catastrophe. What kind of research does EPA conduct to deal with critical issues if we talk about crumbling infrastructure as well as drought?

Mr. KADELI. This is an area where we have seen some significant strides made in leveraging the ecosystems to do one of the jobs that they were created to do. I can remember visiting a Member of Congress in their district, and they proceeded to take about 10 minutes to educate me on the challenges of cities, particularly in dealing with wet water flows and combined sewer overflows and the need to make significant great infrastructure investments.

So after about 10 minutes of greatly impassioned comments directed toward me as a representative of the Federal Government at the time, it actually provided me a great opportunity to talk about some of the green infrastructure work that we were doing that provides lower cost approaches to achieve some of the same effects. And there are also additional ecosystems benefits that occur as a result of taking these types of approaches. But this is one of those places where science and research is playing a significant role so that decision-makers have the information necessary to make decisions on the types of approaches and the more economic and beneficial approaches. That can be taken, complementing the gray infrastructure types of investments that need to be made, too.

Chairman HARRIS. Thank you very much, and I just have a couple very brief questions, and then I will yield an equal amount of time to the Ranking Member's designee.

Mr. Kadeli, Dr. Anastas, when he testified here, said that when you are going forward with the hydro fracturing study that in fact interested parties would be allowed to accompany the testing of the sites and to actually take samples, shadow sampling. But my understanding is since then the EPA may have reversed that position. You know, obviously, reproducibility and transparency is very important. Do you have an objection to that being done while you are undertaking that study?

Mr. KADELI. Congressman, to the best of my knowledge, nothing has changed as far as our collaboration with the companies who are a part of this study. So I am not aware of any changes, but I will go back and ask that question and provide a further response for the record.

Chairman HARRIS. Thank you very much. And as kind of a comment, maybe a question to you, you had suggested that while there are concerns about hydro fracturing and gee, what could the Agency do except study it, why couldn't you have gone out and said, you know, there are 1.2 million applications of hydro fracturing. The only thing it seemed to have done is to have the price of natural gas—while of course the price of gas has doubled under this Administration, the price of natural gas now 1/2 of what it is, and it seems to be safe. Wouldn't that be reason to say, you know, to reas-

sure the American public, actually it has been done 1.2 million times, and it seems like it is pretty safe, instead of kind of setting up what could be characterized as fear mongering to some extent? Wouldn't that have been a reasonable alternative for a scientific agency in retrospect to say, you know, 1.2 million, kind of safe?

Mr. KADELI. Well, sir, we are careful to make definitive statements until we have the information that allows us to make those statements. Again, I will say what I said earlier which is the President, those in industry, those here in Congress, I think there is a place of agreement. This is an important resource. We just want to make sure that it is done right, and at the end of the day, I think that is in everybody's interests, sir.

Chairman HARRIS. And 1.2 million, it seems like it is being done right.

Anyway, I yield two minutes to the Ranking Member.

Mr. MILLER. Thank you, Mr. Chairman. There has been a suggestion for almost a decade now that EPA's research could be more integrated, more coordinated within the EPA if there was a top science official. The National Academy said that the lack of a top science official is a formula for weak scientific performance of the agency, and they and others have suggested that Congress create a new position of Deputy Administrator for Science and Technology with the responsibility of coordinating and overseeing agency-wide scientific policy, peer review, quality assurance. Probably the last thing we need is another position not to be confirmed by the Senate. But does ORD have an opinion on that? Would the head of ORD become an obsolete position if Congress created a deputy at the administrator level, assuming that somebody could actually fill that position as a temporary or as a recess appointment?

Mr. KADELI. Well, sir, I think this is something that has come up. It seems to be a cyclical issue that is raised. It has merit. I believe that the best I can do on a response is offer you something for the record, sir, and that is definitely in more the political realm. So let me some back to you with response for the record, sir.

Mr. MILLER. I will yield back 31 seconds.

Chairman HARRIS. Thank you very much. I want to thank Mr. Kadeli for his valuable testimony and Members for their questions. The Members of the Committee, of course, may have additional questions for you, and we will ask you to respond to those in writing. I will just say that answers from the agency are obviously important to the work, but we still haven't received our QFRs back from the hearing the Subcommittee held on November 17 of last year. So I am going to ask you to kind of commit to us that within the next two weeks you can get those back.

The record will remain open for two weeks for additional comments from Members. The witness is excused, thank you all for coming and the hearing is now adjourned.

[Whereupon, at 3:58 p.m., the Subcommittee was adjourned.]

ANSWERS TO POST-HEARING QUESTIONS

ANSWERS TO POST-HEARING QUESTIONS

*Responses by Dr. Jane Lubchenco, Admistrator,*
*National Oceanic and Atmospheric Administration*

## Questions Submitted by Subcommittee Chairman Andy Harris, Subcommittee on Energy and Environment, and Other Committee Members

**U.S. HOUSE OF REPRESENTATIVES**
**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**
**Subcommittee on Energy & Environment**
**An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013**

**EE1:** The National Weather Service is requesting a $12.4 million increase for "ground system readiness," ensuring that NWS will be prepared to ingest data coming from NOAA's investment in new weather satellites." Will this additional funding help if there is a polar data gap?

**Response:**
This investment will not mitigate the loss of satellite data in the event of a polar-orbiting satellite data gap, but it is critical to processing and using the planned substantial increase in environmental observations, including model and satellite data (including critical data from Suomi NPP, JPSS and GOES-R) that will improve weather warnings and forecasts.

The NOAA Ground Readiness Project funds upgrades in information technology infrastructure needed for adequate processing, delivery and exploitation of new environmental data to National Weather Service (NWS) forecasters. This will ensure we can process and use the substantial increase in environmental observations, model and satellite data.

**EE2**: Does NOAA currently research the relationship between climate change, weather patterns, and the environment? As part of the $213 million requested for climate research, will NOAA develop and use global and regional models that project environmental impacts? If yes, why is this work insufficient for the needs of the Environmental Protection Agency, which is also requesting several million dollars to "use NOAA models as a basis to build models that project environmental impacts"? Did NOAA and EPA discuss the need to duplicate modeling efforts of environmental impacts?

**Response:**
Yes, NOAA does currently conduct research on the relationship between climate change, weather patterns, and the environment.

As indicated in NOAA's Next Generation Strategic Plan, NOAA is working towards improving the scientific understanding of the changing climate system, climate variability, and its impacts. To meet this goal, NOAA maintains and advances its world-class observation, monitoring, research, and modeling efforts. As part of the $213 million requested for climate research in FY 2013, NOAA will develop and use global climate models that provide scenarios about possible future NOAA-relevant environmental impacts such as sea level rise, frequency of extreme precipitation events, acidification of the oceans,

changes in severe weather frequency and intensity, drought, changes in water resources, and biological impacts such as fisheries productivity.

NOAA and the EPA have different missions, and therefore, different requirements for and needs from climate models. NOAA is recognized as a federal leader in climate modeling. NOAA coordinates closely with its Federal agency partners to understand their mission needs and where feasible and appropriate to build those requirements into its climate models. NOAA modeling efforts cannot meet all these demands because of the need to focus on its mission, resource limitations, and the diverse array of other agencies mission-specific requirements. To avoid duplication of efforts, other Federal agencies like the EPA choose to build from the climate modeling efforts of NOAA, or the National Science Foundation, NASA, or the Department of Energy instead of building a complete new set of models. EPA is leveraging existing models developed by NOAA, tailoring them to meet its specific needs, and linking them to EPA models specifically designed to understand impacts on air and water quality.

NOAA, EPA, and other Federal agency partners coordinate with one another on climate science and modeling to avoid duplication of efforts and inefficiencies. One such mechanism is through the U.S. Global Change Research Program, which coordinates and integrates federal research on changes in the global environment and their implications for society.

**EE3:** The FY13 budget contains a life-cycle request for JPSS of $12. 9 billion. This represents the costs for two satellites in one orbit, each with five sensors, and a launch date of no earlier than 2017. The original NPOESS program was estimated to cost $6.5 billion for six satellites in three orbits with 13 instruments and launch before 2013.

**a.** Has NOAA completed a program baseline, as required by Sec. P.L. 110-161, the Consolidated Appropriations Act of 2008? If not, why not, and when will the baseline be completed?

**Response:**
The Life Cycle Cost of $12.9 billion[1] is a revision from the previously submitted Life Cycle Cost of $11.9 billion[2] through FY 2024, and reflects an additional four years of operations. As part of its efforts to ensure that satellite investments generate the best possible value for taxpayers, the Administration is assessing potential cost savings that may reduce the life-cycle costs of its satellite systems, including JPSS.

The FY 2013 President's Budget Request represents the costs through FY 2028 for the JPSS Program which will fly in the afternoon orbit and will include: 4 satellites (2 JPSS satellites and 2 free-flyer satellites), launch services, a fully operational ground system, and operations and sustainment for the 4 satellites as well as the operations for the Suomi NPP satellite. It also provides funding for the JPSS Program to develop and/or provide launch of the Visible/Infrared Imager Radiometer Suite (VIIRS); Cross-track Infrared

[1] Of the $12.9 billion, $4.3 billion was spent through the end of FY 2012.
[2] Of the $11.9 billion, $3.4 billion was spent through the end of FY 2011.

Instrument Sounder (CrIS); Ozone Mapping and Profiler Suite (OMPS)-Nadir; Advanced Technology Microwave Sounder (ATMS); Clouds and Earth's Radiant Energy System (CERES); Total Spectral and Solar Irradiance Sensor (TSIS); Advanced Data Collection System (ADCS); and Search and Rescue Satellite Aided Tracking (SARSAT).

NOAA has not completed the program baseline report and anticipates delivering to the Congress the program baseline report to the pursuant to P.L. 112-55 after the program successfully completes the Key Decision Point-I (KDP-I) milestone. The KDP-I milestone, which is roughly equivalent to the Preliminary Design Review (PDR), as defined in the legislation, is scheduled to occur in the fourth quarter of FY 2013. At KDP-I, JPSS is expected to demonstrate that the preliminary design meets all system requirements with acceptable risk and within the cost and schedule constraints and establishes the basis for proceeding with detailed design. It will also show that the correct design options have been selected, interfaces have been identified, and verification methods have been described.

JPSS has not yet reached the stage in development where a program baseline would be developed or required for any satellite program, neither under the Critical Design Review threshold as required in the FY 2008 law (section 112 of PL 110-161), nor under the amended contract award and Preliminary Design Review threshold in the FY 2012 appropriations act (section 105 of PL 112-55).

Section 112 of P.L. 110-161, as amended by section 105 of P.L. 112-55, requires NOAA to submit a Baseline report for "the program as set following preliminary design review of the space and ground systems." This is pursuant to NASA's Interim Directive 7120-97. NASA Interim Directive 7120-97 is being used in place of NASA Procedural Requirements 7120.5d, dated March 6, 2007, while updates are underway, and represents the standard procedure used by the Government for acquiring a system as complex as JPSS.

Reaching PDR by the fourth quarter of FY 2013 is dependent on receiving timely and full funding as requested in the FY 2013 Budget request ($916.4 million) and future years.

**b.** How much of the life-cycle cost contained in the $12.89 billion estimate is for development as defined by P.L. 110-161?

**Response:**
P.L. 110-161 was amended by the FY 2012 appropriations act (section 105 of PL 112-55). Of the $12.9 billion life-cycle cost, JPSS development costs are approximately $6.7 billion. This is based on the definition of the term "development cost" in section 105 of PL 112-55, which includes the total of all costs, including construction of facilities and civil servant costs, from the period beginning with the approval to proceed to implementation through the achievement of operational readiness, without regard to funding source or management control, for the life of the program.

The scope of the activities included in these development costs includes development costs from approval to operational readiness for five satellites: Suomi NPP (NOAA's portion of the Suomi NPP costs only), JPSS-1, JPSS-2, two Free-Flyers for the SARSAT and A-DCS and TSIS, and the multi-mission Ground System.

**c.** Sec 112(c)(I) requires NOAA to submit a Major Program Annual Report for NOAA's satellite development program with its budget submission. The law states that this shall include a Baseline Report that includes the purpose and key technical characteristics; a life-cycle cost with breakouts for development and reserves; a schedule with key milestones; and plan for mitigating technical, cost, and schedule risks; and the name of the person responsible for making notifications and overseeing the program. Has this report been delivered? If it has not, when will it be delivered?

**Response:**
NOAA is implementing the directives pursuant to section 105 of PL 112-55 which superseded section 112, PL 110-161. As such, JPSS and Jason-3 have not yet reached the threshold (e.g., Preliminary Design Review phase) where a Baseline Report would be developed. For JPSS, PL 110-161, section 112 excluded NPOESS from the requirement to submit an annual report because separate reporting occurred under DoD acquisition authorities and NOAA is including an update of JPSS activities in its reporting requirements pursuant to the FY 2012 appropriations act (PL 112-55, section 105) which superseded PL 110-161). NOAA will develop the JPSS Baseline Report when the program completes PDR in the fourth quarter of FY 2013. GOES-R completed its PDR in May 2012 and a Baseline Report is being prepared for submission to the Congressional Committees.

Additionally, NOAA is developing a report for FY 2014 that provides a status of development of NOAA's satellite acquisition programs in reflecting the FY 2014 Budget request. The report will provide the purpose and key technical characteristics of the particular satellite acquisition program, the plan for mitigating technical, cost, and schedule risks, and the name of the system program director responsible for overseeing the program and making notifications.

**EE4:** The Department of Defense recently cancelled its polar orbiting weather satellite program. What impact will that have on the JPSS program? How can NOAA develop a program without knowing what instruments will fly in the early morning orbit?

**Response:**
Because there were few dependencies between JPSS and the proposed Department of Defense (DoD) Defense Weather Satellite System (DWSS) and JPSS has adjusted its plans in reaction to the cancellation, the lack of DWSS data will have no impact to JPSS. NOAA has been able to make progress and develop JPSS without waiting for DOD to finalize plans for instruments that will fly in the early morning orbit. However, the National Weather Service (NWS) had been interested in using data from the DoD morning orbits as an input in its numerical weather prediction models, with the expectation of improved forecast capability. Specifically, the NWS Space Weather Prediction Center (SWPC) had planned to leverage data from the Space Environmental Monitor-N (SEM-N) instrument that was planned on

DWSS to support NWS operational requirements for space-based observations. In addition, the NWS National Centers for Environmental Prediction (NCEP) planned to use data from the DWSS for its numerical weather prediction models, which was expected to provide improvements in mid- to long-range weather forecasts in addition to those gained with JPSS data.

NOAA will continue to engage with the Department of Defense as they formulate their follow-on polar-orbiting satellite system.

**EE5:** Recent testimony from the Inspector General of NASA to our Investigations and Oversight Subcommittee demonstrated serious concerns about cyber security, including more than 5,000 computer security incidents. Similarly, another report highlighted that NASA's Terra satellite experienced instances of interference apparently consistent with cyber activities against their command and control systems. Considering the similarities between NASA and NOAA satellite missions, and the fact that NASA is developing the JPSS and GOES systems for NOAA, are you concerned with the state of satellite information security? If so, what is NOAA doing differently?

**Response:**
NOAA is vigilant regarding threats posed by both external and internal threats to the security of its satellite systems. We coordinate closely with NASA in sharing threat and security countermeasure information and in ensuring that proper attention is paid to information security throughout the life cycle of the information systems supporting the satellite mission. In this regard, NOAA has focused on the following types of countermeasures for the satellite ground systems:

- Commands are encrypted between the NOAA Ground Systems that support Department of Commerce Primary Mission Essential Functions and the NASA Suomi National Polar-orbiting Partnership (Suomi NPP) satellite to prevent an external entity from intercepting and exploiting the uplink to take over the satellite.
- Commands are authenticated on board the Suomi NPP satellite and only authenticated commands are executed.
- Equipment used to command and control the Suomi NPP satellite is managed by the Joint Polar Satellite System (JPSS) Ground Project; the equipment is inventory-controlled, configuration-controlled and managed on behalf of the Government by the Raytheon contractor.
- This equipment, including the equipment being used at the Suomi NPP data download station, the Svalbard Satellite Station in Svalbard, Norway, is being operated by vetted U.S. Government staff and vetted contractor staff.
- All security controls for the JPSS Ground System, including the equipment located at Svalbard, are being implemented, continuously monitored and assessed as part of the NOAA JPSS authorization boundary.
- Efforts are under way to ensure the JPSS Ground System continues to move toward compliance to Federal IT Security requirements consistent with the National Institute of Standards and Technology (NIST) risk management framework; the JPSS Ground

Project is working to fully achieve this compliance goal by JPSS-1 launch minus 6 months.

- To further protect the integrity and availability of satellite information and NOAA Ground Systems from external human threat sources, NOAA implements the recommendations of the NIST Special Publication 800-82, *Guide to Industrial Control Systems (ICS) Security*. In this regard, multiple layers of defense exist within the NOAA satellite mission networks. Satellite Control systems are logically and/or physically isolated and protected by a diverse series of firewalls and proxies that are monitored, logged, and configured for least-privileged role-based access.

NOAA, NASA and Raytheon have teamed to arrange for the U.S. Air Force to conduct a review of the JPSS Ground System to obtain recommendations regarding security practices and specialized tools for further improvements of the satellite mission security architecture.

With these steps, NOAA is confident that it will be able to protect its satellite systems from cyber security attacks.

**EE 6:** NOAA recently moved its email to the cloud-based Google's Apps for Government. At the time, NOAA was the largest Agency to move to the cloud. In his testimony before our Committee's Investigations and Oversight Subcommittee, the NASA IG indicated that "The need to effectively secure Agency data stored in the cloud has emerged as the major challenge to Federal agencies reaping the substantial benefits of cloud computing offers. In addition, as Federal agencies move more toward cloud computing, it is imperative that Inspectors General across the Government retain access to Agency information maintained by cloud-computing providers."

**a.** What steps is NOAA taking to ensure that agency information remains protected?

**Response:**
NOAA is protecting agency information. NOAA follows the standard risk management processes required by the Federal Information Security Management Act (FISMA), as well as those required by DOC and NOAA policy. As allowed by FISMA, NOAA leveraged the certification and accreditation work done by GSA to make our own risk assessment and authorize the use of Google Apps for Government (GAFG) in NOAA. NOAA's assessment included a separate independent review of the security controls put in place by Google and NOAA's prime contractor.

NOAA Email information is protected utilizing all DOC, NOAA, NIST, and FISMA requirements and practices. Besides being under contract using Federal Acquisition Regulations (FAR) clause 52.239-1, Google Apps for Government (GAFG) is required to use the following Technical Requirements:

- Account Administration:
    - Authorization is administered by NOAA staff. NOAA Email administrators have the ability to Lock accounts quickly, and/or permanently remove an e-mail or document from all internal accounts and from the service provider's systems.

- Authentication services are provided by NOAA via a single sign-on process. The solution integrates with NOAA's Lightweight Directory Access Protocol (LDAP)-based directory services to securely authenticate and authorize users.

- Encryption:
  - Web and client based access is provided over Secure Sockets Layer (SSL)/Transport Layer Security (TLS) sessions meeting FIPS 140-2 standards.
- Filtering:
  - Utilizing spam filtering, anti-virus/anti-malware protection, anti-phishing, and screening of inbound and outbound messages.
  - United States Computer Emergency Readiness Team (US-CERT) reportable security events directly to the NOAA Computer Incident Response Team (N-CIRT) within 15 minutes of detection.
- Blocking:
  - Specific file types, for example [exe, zip, etc.] as well as other variables, such as by subject title, or content.
- Governance:
  - NOAA Email Administrators have means for change control, configuration management, notification and governance processes with regard to proactive and/or requested changes.

**b.** Are all types of information created and transmitted by "Google's Apps for Government" retained as required by Federal law? For instance, are "gchats" retained as records?

**Response:**
Yes, NOAA is following applicable records retention requirements in its implementation of Google Apps for Government (GAFG). With respect to gchat, this form of communication is more akin to a telephone call. In the event a gchat communication needs to be documented as an official record, e.g. policy decision, users must record and retain the information as an official record. GAFG retains all inbound and outbound email messages in a centrally-administered repository to make them available for e-discovery and Freedom of Information Act requests.

**c.** What access does the Department of Commerce Inspector General have to cloud based data? Has their access changed?

**Response:**
The Department of Commerce Inspector General can access all the data within Google using similar processes and procedures to those used for on-premise data today.

**EE7:** As part of the recently-extended payroll tax cut, the Federal Communications Commission will auction off portions of the spectrum. Will this auction have any impacts on NOAA's polar-orbiting and geostationary satellite systems? Are additional costs expected? If so, how much? Will this impact program schedules?

**Response:**

The 1675-1710 MHz band is allocated internationally for weather satellites. This band is desirable because transmissions in that range are not as affected by bad weather as other bands traditionally used for satellite communications.

NOAA currently operates a number of polar-orbiting and geostationary operational environmental satellites in the 1675-1710 MHz range. NOAA and its European mission partner, the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), operate polar satellites using identical direct broadcast imagery systems in the 1695-1710 MHz band. Assets that are currently in orbit cannot be retrofitted to change the transmission frequency. NOAA expects replacement satellites to be launched by 2017 for the Joint Polar satellite System and 2015 for the Geostationary Operational Environmental Satellite-R Series.

In November 2010, the Department of Commerce, through its National Telecommunications and Information Administration (NTIA) and working with other impacted federal agencies, including NOAA, concluded a months-long analysis in response to the President's June 2010 Broadband Initiative. In the report, *Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands (Fast-Track Report),* the Department recommended – and has formally proposed to the Federal Communications Commission – that a 15-megahertz portion of the band, 1695-1710 MHz, be made available for commercial use within five years, in a manner that protects critical government sites via exclusion zones. The exclusion zones would protect key earth station sites, including NOAA's operational facilities, to minimize the likelihood of interference.

NOAA is also participating in an NTIA-led engagement process with industry to develop options for repurposing this spectrum that maximizes its commercial use, while protecting essential NOAA capabilities. This may include more detailed interference modeling, which could allow for smaller exclusion zones, moving downlinks to less populated areas or other options.

NOAA expects additional costs from redesigning observational systems and technical studies related to potential interference issues. NOAA is still evaluating the potential cost impacts. Examples of modifications that would entail additional costs include:

GOES-R: NOAA's next generation geostationary satellite program (GOES-R), which is currently under development for launch mid-decade, redesigned its direct broadcast communications subsystem to move below 1695 MHz to comply with the spectrum sharing regime identified in the *Fast-Track Report*. Changes to current contracts were executed and costs paid using GOES-R Program contingency funds.

Radiosondes: As a result of the GOES-R redesign, NOAA's radiosondes (balloon-borne instruments for atmospheric measurements) require redesign to reduce spectrum usage in time to support the GOES-R redesign. Redesign of NOAA systems attributable to

making the frequency available for auction is expected to be paid for by auction proceeds.

Additionally, NOAA is eligible for funding for certain pre-auction planning costs, consistent with the terms articulated in the Middle Class Tax Relief and Job Creation Act. Funding from the Spectrum Relocation Fund is contingent upon approval by a technical panel created by the Middle Class Tax Relief and Job Creation Act, comprised of representatives of NTIA, OMB and the Federal Communications Commission, of a NOAA transition plan. NTIA is creating the procedures for the panel now and NOAA is working with NTIA to develop its transition plan.

**EE8.** How much money is NOAA requesting to coordinate and carry out Coastal and Marine Spatial Planning activities under the President's National Ocean Policy?

**Response:**
The President's FY 2013 Budget request does not include specified funding for Coastal and Marine Spatial Planning (CMSP) and maintains zero funding for the CMSP budget line. Many of NOAA's existing coastal programs support regional planning efforts by providing data, information, and services at the request of state and local governments pursuant to the authorities in the Coastal Zone Management Act.

**EE9:** In your testimony, as well as in numerous other NOAA documents and an article you wrote in the March 2012 issue of *Physics Today*, you have cited the increased number of "billion dollar weather events" in arguing for increased funding for climate change-related work. NOAA recently had to update its work on this calculation, as the Administration had failed to adjust for inflation. In requesting increased investments to achieve a "weather-ready nation," why do you use a metric of billion dollar weather events instead of lives saved?

**Response:**
As an agency, we have grappled with the viability of a rigorous metric that could identify the number of lives we save from extreme weather. Computing such a metric involves measuring many different variables, including how many people heard the warning, how many took appropriate action, how many people were in the path of the tornado and moved out of the way, etc. It is a prohibitively laborious, expensive, and time-consuming process that requires consistent and quality data. One difficulty is the randomness of tornadoes, and the need for tens of thousands of reliably reported events to provide statistically significant results. In addition, it would be difficult to discern whether related fatalities had effectively received NOAA's warnings. However, even if we could do this, it would not be a metric that measures the accuracy and timeliness of our weather forecasts.

The billion dollar event statistic is used to communicate the long-term change in severe weather events – both in cost and frequency. This is useful for NOAA's weather forecasting and severe storm warnings, as well as the related impact to the economy.

**EE 10.** The FY13 budget request does not mention the President's proposed government reorganization that would move NOAA into the Department of Interior. Why?

**Response:** The FY13 budget does not reflect the proposed consolidations outlined in the President's proposal because the Congress must first act to provide the President with consolidation authority. If Congress provides this authority, the Administration would consult with Members of Congress, the relevant Congressional Committees, agencies, and stakeholders, and prepare a detailed reorganization proposal to submit to Congress.

**EE10a.** Secretary Salazar recently testified that the Interior Department has not studied how to implement this reorganization. Has NOAA examined a potential transition to Interior, or is this election-year posturing on government reform?

**Response:** The President's priority is to first obtain consolidation authority. If Congress grants him that authority, we will consult with Congress, other agencies and stakeholders and develop a detailed proposal for the merger of NOAA and DOI.

**EE11:** It was recently made public that NOAA may have reallocated $50 million – or about 5 percent of the NWS budget – without Congressional approval. I understand an initial review was completed last fall, and a senior-level review was expected to be completed in January. Please provide a detailed update on the status of this review and explain how such a large amount of funding was spent on activities not authorized by Congress without your knowledge. When do you expect it to be completed?

**Response:**

The review has been completed. A detailed summary follows:

The National Weather Service (NWS), a line office of the National Oceanic and Atmospheric Administration (NOAA), violated 31 U.S.C. § 1341(a) by reprogramming funds in fiscal years 2010 and 2011 without providing advance notification to Congress as required by law, thereby incurring obligations in excess of available appropriations. These violations occurred in NOAA's Operations, Research, and Facilities (ORF) and Procurement, Acquisition, and Construction (PAC) accounts, Treasury Account Symbols 13 10/111450, 1311/121450, 1310/111460, and 13 11/12 1460.

During fiscal years 2010 and 2011, NWS's Office of the Chief Financial Officer (OCFO) engaged in practices designed to alleviate shortfalls in the NWS budget. The perceived shortfalls appear to be the result of two causes. First, to pay for the cost of common services across NWS, its OCFO applied an algorithm to assess the costs across the various NWS programs, projects or activities (PPAs) within the ORF and PAC appropriations. However, in formulating this algorithm, OCFO did not assess the full cost of the common services, leaving a budget gap of approximately $10 million in each fiscal year. Moreover, OCFO did not apply the algorithm to all PPAs on a legitimate basis in proportion to the costs reasonably attributable to each PPA. Instead, one ORF PPA, Local Warnings and Forecasts, was charged a set amount. Two others, PAC's Weather & Climate Supercomputing and ORF's Central

Forecast Guidance, were not assessed any costs for common services because the OCFO concluded that doing so would cripple mission performance, necessarily meaning that other PPAs would bear the costs of services related to these two PPAs. Second, NWS had in recent years needed to accommodate increases in labor costs without concomitant increases in budget authority from Congress.

NWS's OCFO handled these perceived shortfalls by using instruments known as "Summary Level Transfers" (SLTs). SLTs are a legitimate tool used to correct errors in how expenses are charged by allowing financial officers the ability to change the accounting codes of past expenses. In this instance, however, OCFO used SLTs to change the accounting codes of expenses appropriately charged to a PPA experiencing a shortfall to instead reflect the cost as an expense of a PPA that OCFO perceived to have more funds than needed. By doing so, additional funds were made available in the original PPA so that it could incur additional expenses. Moreover, the justifications for the movement of such expenses were not contemporaneously documented in a proper manner. As a result, and because SLTs are used to move expenses in batch rather than in relation to individual transactions, we cannot retroactively determine the exact extent to which expenses were moved, and, therefore, reprogrammed, from one PPA to another. Nevertheless, as much as $9.3 million from the Advanced Weather Interactive Processing System (AWIPS) ORF PPA was, in effect, reprogrammed in fiscal year 2010 to cover Local Warnings and Forecasts (LWF) ORF PPA expenses. As much as $5.5 million of AWIPS funds were, in effect, reprogrammed to cover LWF expenses in fiscal year 2011. Moreover, as much as $4.6 million from the Complete and Sustain NOAA Weather Radio PAC PPA was used to cover expenses of the LWF ORF PPA in fiscal year 2011, freeing up funds that were then used to cover expenses related to the Next Generation Weather Radar ORF PPA in the same year.

The use of funds from one ORF PPA to cover expenses attributable to another ORF PPA constitutes a reprogramming of funds. Further, the use of funds from a PAC PPA to cover the expenses of an ORF PPA constitutes a transfer of funds from one appropriation account to another. While the Department had limited authority under section 103 of the Commerce Justice, Science, and Related Appropriations Act of 2010 (Pub. L. No. 111-117, Div. B) to transfer funds from one appropriation account to another, that section requires that any such transfer also be treated as a reprogramming of funds. Section 505 of that Act prohibits the reprogramming of funds of the amount described above absent advance notice being given to the appropriations committees of each house of Congress. No such notice was given in this case.

The Antideficiency Act prohibits agencies from incurring obligations in excess of available appropriations. Under Section 505 of the 2010 appropriations act, reprogrammed funds are not available for any purpose until the requisite notice is provided. Because of this restriction, where, as here, an agency incurs obligations against reprogrammed funds where proper notice was not provided, it has incurred obligations in excess of available appropriations. Moreover, the requirements of Sections 103 and 505 of the 2010 appropriations act were carried forward into fiscal year 2011 through operation of that year's Full-Year Continuing Appropriations Act (Pub. L. No. 112-10, Div. B). Accordingly, by reprogramming funds in

fiscal years 2010 and 2011 without giving proper notice, NWS incurred obligations in excess of available appropriations in violation of the Antideficiency Act.

Unfortunately, NWS's practices continued, in part, because of a lack of internal NOAA and NWS oversight of the NWS OCFO. Specifically, while the NWS Assistant Administrator directly supervised the NWS CFO, the Assistant Administrator had little knowledge of the manner in which NWS's budget was handled. The NWS Deputy Assistant Administrator played no direct role in the CFO's supervision. Meanwhile, the NOAA CFO had no direct supervisory authority over anyone within the NWS, including the NWS CFO.

The Department and NOAA are taking corrective actions to prevent future violations of this nature. Among other things, these corrective actions include conducting a comprehensive review of how SLTs are used across the Department to ensure that there are adequate administrative controls for their use; ensuring the costs of common services are appropriately assessed; changing the supervisory structure of NWS and other NOAA line offices such that line office CFOs are supervised by the NOAA CFO in addition to the line office assistant administrators; and, instituting a training program for key personnel across the Department that addresses core appropriations law concepts, including reprogramming, the Antideficiency Act, and the appropriate use of SLTs.

**EE12:** In the FY 13 budget there is an overall reduction of $39 million for the National Weather Service, $27 million of which comes from reductions in the "local forecast and warnings" line item. Part of this savings comes from eliminating the Information Technology Officer (ITO) position at each of the 122 Weather Forecast Offices, for a cut of $9.74 million. The Weather Service then proposes to replace these local ITOs with 24 regional ITOs.

**a.** Is it inaccurate to say that that these ITOs are vital to maintaining the software that is the backbone of forecast capabilities at each Weather Forecast Office-and that this software currently resides and functions locally at each office, rather than through a central location or interface? Could this feature of the software and forecasting systems cause the "regional" approach to be impractical, insufficient and potentially dangerous?

**Response:**
The Advanced Weather Interactive Processing System (AWIPS) is the backbone of forecast capabilities at Weather Forecast Offices (WFO). When AWIPS was first deployed, this technology was not robust, nor was there technical expertise within local forecast offices to manage the additional information technology (IT) requirements. To meet these challenges, the Information Technology Officer (ITO) position was created in 2001 to provide onsite configuration and upgrade support for AWIPS. Currently, each WFO has one ITO, typically working dayshifts on weekdays.

Remote IT support has become the common practice in both government and industry. Over the past decade, advances in NWS IT have enabled remote support in many cases. For example, the AWIPS Network Control Facility (NCF) has provided a level of remote AWIPS service for more than 10 years. AWIPS II, the next generation of AWIPS currently being

deployed at all NWS offices, has been designed for remote support. Using expanded enterprise IT tools, the AWIPS NCF will streamline its support, improve effectiveness and mitigate the need for onsite configuration. Remote maintenance and support using virtual management tools coupled with configuration standardization, will increase support efficiencies and reduce overall costs.

In addition to the increased remote functionality of AWIPS, NWS would establish Regional IT Collaboration Units (RITCU). Each RITCU would be capable of supporting multiple WFOs from a single location, or multiple locations through remote access capabilities. RITCUs would be fully capable of addressing any local software issue. The AWIPS NCF would continue as a secondary source of support capable of diagnosing and resolving most problems. If the systems go down during severe weather and cannot be remedied remotely in short order, service backup would be implemented. To provide for continuity of operations in the field, long-standing and extensively tested service backup capabilities allow an adjacent WFO to assume the warning and forecast responsibility of a pre-determined, neighboring WFO almost immediately to ensure no service degradation to the public. Testing of backup plans is conducted at least annually in accordance with the NWS operations policy.

With these IT advancements and additional mitigation measures, NWS's ability to issue timely warnings and forecasts will not be impacted by the reduction of the ITOs.

**b.** As of January 2011, NOAA was spending roughly $127 million on 852 contractors for the National Weather Service. It has been reported that the Weather Service currently does not know its exact number of contractors. Why were savings not sought through cutting contractor expenses, instead of cutting positions that are mission critical particularly during extreme weather when forecast software is more likely to face technical difficulties due to high volume usage?

**Response:** In compliance with the Federal Activities Inventory Reform (FAIR) Act, NWS actively tracks its contractor inventory and related costs.

Preservation of core warnings and forecast mission has been the cornerstone of all NWS fiscal decisions. Beginning in Fiscal Year (FY) 2011, NWS began reducing its contractor workforce as part of budget initiatives such as the Advanced Weather Interactive Processing System (AWIPS) and the National Weather Service Telecommunications Gateway (NWSTG), both of which are anticipated to provide improved efficiencies. These contractor reductions will continue in FY 2012 and 2013. Initial contractor reductions focused primarily on administrative support. NWS is currently reducing programmatic and logistical support contractors. Additional contractor cuts other than those identified in FY 2013 would risk core operations such as the National Data Buoy Center repair operations and AWIPS Network Control Facility (NCF). Contractors can contribute expertise and flexibility to meet the changing work demands of NOAA's mission.

**EE 13:** In the Navigation Services line item of the National Ocean Service there is a program reduction of $2.3 million through the elimination of all 6 of the Navigation Response Teams that are listed as responsible for "mapping and charting".

**a.** Please explain exactly what these Navigation Response Teams are designed to do and what their original purpose was.

**Response:**
NOAA's Navigation Response Teams (NRT) provide 24/7 emergency hydrographic survey support to the U.S. Coast Guard, port officials, and other first responders in the wake of accidents and natural events that create navigation hazards which impede safe and efficient marine transportation and commerce. These events may range from Presidentially declared disasters such as major hurricanes to smaller disruptions such as ship groundings. In their routine non-emergency role, the NRTs work with sister maritime agencies and maritime stakeholders to identify local survey requirements and to validate NOAA's nautical charting products.

**b.** What specific capabilities will be lost with the elimination of this position and how will these capabilities be replaced?

**Response:**
With elimination of the six vessels and crews that comprise the Navigation Response Teams (NRT), NOAA's Office of Coast Survey would revise its process for verifying the quality of NOAA nautical charts and other navigation tools. Coast Survey would rely more on user feedback and customer reports of chart problems in order to improve the quality of Electronic Navigational Charts (ENCs) In addition, NOAA will pursue an agreement with FEMA to ensure that technical assistance to assess navigational hazards is available during Presidentially declared disasters.

**c.** If they will not be replaced, how and why does NOAA believe elimination of NRTs is acceptable?

**Response:**
The proposed termination of the NRTs would shift the responsibility for rapid response hydrographic surveys from NOAA to first responders, such as the Coast Guard and FEMA, or to the ports. NOAA would pursue an agreement with FEMA to provide emergency hydrographic support during Presidentially declared disasters.

**EE14:** NOAA's FY 13 request proposes to eliminate funding for the NOAA Wind Profiler Network in the continental U.S. as well as the National Mesonet Network. Please explain the reasons for these funding decisions as well as how these decisions fit with the 2009 National Academy of Sciences report, Observing Weather and Climate from the Ground Up: A Nationwide Network of Networks.

**Response:**

The NOAA Profiler Network (NPN) and the Mesonet are broadly consistent with the spirit and recommendations of *From the Ground Up*, in that they provide the types of observations that augment NWS's ability to detect, forecast, and warn for localized, high-impact weather events. The NPN is used to monitor wind speed and direction patterns at various heights in the atmosphere. Other observing systems, such as the radiosonde data and wind data from the NEXRAD radar network, also provide atmospheric wind profiles. Mesonet data are used in real time by local office forecasters to detect local-scale phenomena and to verify warnings.

The FY 2013 Budget Request preserves the National Weather Service's core warnings and forecast mission. NOAA will continue to use existing observing systems, such as Dual Polarized Next Generation Weather Radar (NEXRAD), radiosondes, and aircraft observations to the fullest extent to mitigate the loss of profiler data. NOAA will continue its current approach to developing a National Mesonet by leveraging existing networks (operated by state and local governments, the private sector, and other federal agencies), when and where available. This leveraging of existing systems is also in the spirit of the *From the Ground Up* report.

**a.** The budget proposes to keep three wind profilers in Alaska to assist with volcanic ash forecasting. In order to maintain these three, NOAA will have to invest in software updates, training of technicians for maintenance purposes, and an active network to manage the data. What is the rationale for not upgrading the wind profilers in the continental U.S. if NOAA is still planning to invest in all the support systems needed?

**Response:**
The cost for complete technology refreshment and required frequency conversion in the continental United States (CONUS) led to the decision to discontinue conversion and refreshment of CONUS wind profilers. Because Alaska is a state with 40 active volcanoes, NOAA decided to maintain the Alaskan profilers due to their important contribution to aviation warnings for volcanic ash and aviation weather forecasting support. In addition, the Alaskan profilers were converted to the acceptable frequency and will undergo technology upgrades. Along with the reduction in the number of wind profilers, NOAA will reduce system support requirements and training requirements.

**b.** What will be the effect of the loss of the profiler data to tornado warning and forecasts? Will there be a degradation of services? What is NOAA doing to replace the data lost through the retirement of these profilers?

**Response:**
Forecasters primarily rely on the NEXRAD radar network for issuing tornado warnings. The deployment of dual-polarization capability into the NEXRAD network has demonstrated the capability to improve tornado detection, which may also improve tornado warnings. Combined with other systems that sample the atmosphere, such as radiosondes, aircraft observations and satellite data, NOAA will be able to mitigate the loss of data from the wind profilers for forecasts of tornados and severe weather. NOAA does not anticipate a

significant impact to its tornado forecast and warning services with the retirement of the wind profilers in the continental U.S.

**EE15:** On page 631 of the NOAA Congressional Justification for the FY 13 budget request, there is an explanation of NCEP Central Operations: NCEP Central Operations (NCO) operates the NOAA Weather and Climate Operational Supercomputer, manages the model production suite upon which all NCEP services are based, the communications linking the several parts of NCEP and NOAA's Climate Service provides operational quality assurance of incoming observation and outgoing products. During your testimony to the full Science, Space, and Technology Committee on June 22, 2011, you assured this Committee that NOAA had not established a Climate Service, it was a proposal included in the FY 12 budget request. Congress ultimately rejected NOAA's proposal for the Climate Service in the FY 12 appropriations bill. If this is the case, why does the Climate Service appear in the Congressional Justifications for the FY 13 budget request?

**Response:**
The National Oceanic and Atmospheric Administration (NOAA) has not established a NOAA Climate Service. The Congressional Justification (CJ) is in error here. This section is a base description of an activity, which is not typically rewritten from year to year, and this required change from the FY 12 submission was clearly missed by editors. The CJ should have read, "…the communications linking the several parts of NCEP and NCO provides operational quality assurance of incoming observations and outgoing products."

**EE16a:** How did you arrive at the $12.9B life-cycle cost of JPSS? Of the $12.9B for JPSS, can you detail the number of satellites and sensors included in that number?

**Response EE16a:**

The FY 2011 President's Budget included a LCC of $11.9 billion, of which $3.4 billion had already been spent through the end of FY 2011. The cost of four more years of operations, from 2024 to 2028, of $1 billion brings the new total to $12.9 billion, including NOAA's contributions to the Suomi NPP instruments which were developed during the NPOESS program. .

The FY 2013 President's Budget Request represents the costs through FY 2028 for the JPSS Program which will fly in the afternoon orbit and will include: 4 satellites (2 JPSS satellites and 2 free-flyer satellites), launch vehicles, a fully operational ground system, and operations and sustainment for the 4 satellites as well as the operations for the Suomi NPP satellite.

It also provides funding for the JPSS Program to develop and/or provide launch of the Visible/Infrared Imager Radiometer Suite (VIIRS); Cross-track Infrared Instrument Sounder (CrIS); Ozone Mapping and Profiler Suite (OMPS)-Nadir; Advanced Technology Microwave Sounder (ATMS); Clouds and Earth's Radiant Energy System (CERES); Total Spectral and Solar Irradiance Sensor (TSIS); Advanced Data Collection System (ADCS); and Search and Rescue Satellite Aided Tracking (SARSAT).

The table below provides a comparison of the main instruments that will fly on the Suomi-NPP, JPSS-1, and JPSS-2 satellites, and the Free Flyer-1 and -2 satellites.

As part of its efforts to ensure that satellite investments generate the best possible value for taxpayers, the Administration is assessing potential cost savings that may reduce the life-cycle costs of its weather satellite systems, including JPSS.

| Mission | Spacecraft bus | Instrument Suite | Launch Schedule |
|---|---|---|---|
| Suomi NPP Launch | Ball bus | ATMS, CrIS, VIIRS, OMPS-Nadir, OMPS-Limb, CERES | October 28, 2011 |
| JPSS-1 Launch | Ball bus (similar to Suomi NPP) | ATMS, CrIS, VIIRS, OMPS-Nadir, CERES | NLT second quarter of FY 2017 |
| JPSS-2 Launch Readiness | TBD | ATMS, CrIS, VIIRS, OMPS-Nadir, OMPS-Limb, CERES | First quarter of FY 2022 |
| Free Flyer-1 Launch Readiness | TBD | SARSAT, A-DCS, TSIS | Second quarter of FY 2017 |
| Free Flyer-2 Launch Readiness | TBD | SARSAT, A-DCS, TSIS | First quarter of FY 2022 |

The Free Flyer-1 and -2 Launch Readiness dates have changed from FY 2016 Q4 to FY 2017 Q2 and from FY 2021 Q3 to FY 2022 Q1, respectively. Each was changed by two quarters to increase the flexibility for contractors to procure these Free Flyer satellites thereby reducing the overall costs to develop them.

The JPSS Program will also leverage data from the Advanced Microwave Scanning Radiometer (AMSR-2) instrument which is flying onboard the Japan Aerospace Exploration Agency (JAXA) Global Change Observation Mission-Water (GCOM-W1) satellite. These data will partially satisfy National Weather Service data requirements precipitation, vapor amounts, wind velocity above the ocean, sea surface temperature, soil moisture, and snow depths that are critical for its weather forecasting mission.

The JPSS Program will also support the Total Solar Irradiance (TSI) Calibration Transfer Experiment (TCTE) mission which will partially mitigate a gap until TSIS is on-orbit.

**EE16b:** How much of the $12.9B is required for climate sensors? Which JPSS sensors are climate sensors and what determines that classification?

**Response EE 16b:**
The FY 2013 President's Budget continues development of the Cloud and Earth Radiant Energy System (CERES) Flight Model-6 for JPSS-1, and the Ozone Mapping and Profiler Suite-Nadir (OMPS-Nadir) for JPSS-1, as well as the Total Spectral and Solar Irradiance Sensor (TSIS) Flight Model-1.

TSIS, CERES, and OMPS were designated as climate sensors at the time of the 2006 Nunn-McCurdy decision to demanifest instruments that did not directly support the weather mission, but supported other NOAA mission areas and programs. In reality, the distinction between "climate" sensors and "weather" sensors is not precise, as some of the instruments in the JPSS program, for example OMPS-Nadir and VIIRS, have multiple applications that span climate, weather, and other environmental monitoring purposes.

Of the $12.9 billion of the JPSS LCC, approximately $321.4 million contains funds to acquire two TSIS instruments which are each designated to fly on a Free Flyer-1 and Free Flyer-2; one CERES and one OMPS-Nadir which will fly on JPSS-1, and a CERES follow-on which will fly on JPSS-2; and the OMPS-Limb which will fly on JPSS-2.

This amount represents the instrument acquisition costs only and does not include estimates for operations and sustainment, science or the ground segment.

In addition, this amount does not include the $162.9 million in costs covered under the "NOAA Restoration of Climate Sensors" budget line through FY 2012, and costs prior to 2006, i.e., the pre-Nunn-McCurdy costs.

TSIS and CERES will continue a long record of solar irradiance and Earth radiation budget, respectively, that have been instrumental in gaining a better understanding of the Earth's climate. OMPS-Limb data are critical to providing greater understanding of the annual size of the Antarctic stratospheric ozone hole, which is directly linked to human health, such as increased incidence of ocular cataracts and skin cancers.

**EE16c: Do all of the sensors fit on the JPSS spacecraft?**

**Response EE16c:**
The JPSS-1 spacecraft cannot accommodate all sensors under development, but can accommodate the majority of them. The following instruments can be accommodated on the JPSS-1 spacecraft bus: the Cross-track Infrared Sounder (CrIS), the Advanced Technology Microwave Sounder (ATMS), the Visible/Infrared Imager/Radiometer Suite (VIIRS), the Ozone Mapping and Profiler Suite-Nadir (OMPS-Nadir) and the Cloud and Earth Radiant Energy System (CERES) instruments, which is the same suite of instruments on the current Suomi-NPP satellite.

Due to the size of the JPSS-1 spacecraft and making needed engineering adjustments from the NPOESS satellite, NOAA cannot accommodate three of the eight JPSS sensors including: the Total Solar and Spectral Irradiance Sensor (TSIS), the Advanced Data Collection System (ADCS), and the Search and Rescue Satellite Aided Tracking (SARSAT) instruments on the JPSS-1 spacecraft bus. In addition, the Department of Defense decision to terminate DWSS eliminated any opportunity to accommodate these sensors on DWSS. The JPSS program has evaluated multiple options to fly the sensors (e.g., accommodation on other planned NASA and NOAA satellites, hosting on commercial spacecraft, launch of

dedicated small satellites, etc.) and determined that a dedicated spacecraft to host all three instruments, launched as a separate free-flyer, called Free Flyer-1, was the best way forward.

At the time of the FY 13 budget submission, the driving concern for these three sensors was the risk to the continuity of total solar irradiance data due to the March 2011 loss of the NASA Glory Mission which carried a Total Irradiance Monitor (TIM) instrument onboard. To mitigate this significant risk to TSI measurement continuity, the JPSS Program is leveraging a gap mitigation strategy with NASA and the Air Force, called the Total Solar Irradiance Calibration Transfer Experiment (TCTE).

TCTE is intended to bridge the TSI data gap from the current NASA Solar Radiation and Climate Experiment (SORCE) mission to the TSIS-1 instrument that is being developed. TCTE will utilize TSI measurements provided by a NASA-owned TIM instrument that will fly on the Air Force Space Test Program (STPSat-3) satellite, scheduled for launch in middle of calendar year 2013. As of September 7th, TCTE has successfully completed environmental testing and has been shipped to Ball Aerospace, who is building STPSAT-3 for the Air Force, where is will be integrated onto the STPSat-3 satellite.

The plan for Free Flyer-1 fits within the JPSS FY 2013 President's Budget Request profile and lifecycle cost and does not impact JPSS-1 development.

**EE17:** Given the tight budgets and the need to minimize risk on space programs, especially the Nation's weather program, it seems that building the same spacecraft and sensors for JPSS would be the lowest risk approach. Can you describe the differences between NPP and JPSS-1; JPSS-1 and JPSS-2, since there isn't any planned new development on JPSS-2?

**Response:**
The table below provides a comparison of the main instruments that will fly on the Suomi-NPP, JPSS-1, and JPSS-2 satellites, and the Free Flyer-1 and -2 satellites.

| Mission | Spacecraft bus | Instrument Suite | Launch Schedule |
|---|---|---|---|
| Suomi NPP Launch | Ball bus | ATMS, CrIS, VIIRS, OMPS-Nadir, OMPS-Limb, CERES | October 28, 2011 |
| JPSS-1 Launch | Ball bus (similar to Suomi NPP) | ATMS, CrIS, VIIRS, OMPS-Nadir, CERES | NLT second quarter of FY 2017 |
| JPSS-2 Launch Readiness | TBD | ATMS, CrIS, VIIRS, OMPS-Nadir, OMPS-Limb, CERES | First quarter of FY 2022 |
| Free Flyer-1 Launch Readiness | TBD | SARSAT, A-DCS, TSIS | Fourth quarter of FY 2016 |
| Free Flyer-2 Launch Readiness | TBD | SARSAT, A-DCS, TSIS | Third quarter of FY 2021 |

The Free Flyer-1 and -2 Launch Readiness dates have changed from FY 2016 Q4 to FY 2017 Q2 and from FY 2021 Q3 to FY 2022 Q1, respectively. Each was changed by two quarters to

increase the flexibility for contractors to procure these Free Flyer satellites thereby reducing the overall costs to develop them.

In general, building duplicate copies of the spacecraft and instruments is a method used that provides the lowest risk approach to delivering a satellite. This is based on the engineering lessons learned by launching and completing calibration and validation (cal/val) with the instruments on the first satellite. In order to minimize the potential observational gaps in the polar orbit, the Administration chose to sole-source the JPSS-1 spacecraft to match the Suomi NPP spacecraft, leveraged investments and progress made under NPOESS, and utilized existing instrument contracts to build the JPSS-1 satellite.

NOAA is committed to delivering the capabilities above within the $12.9 billion Life Cycle Cost. Additionally, the Administration is assessing potential cost savings that may reduce the life-cycle costs of its weather satellite systems, including JPSS.

**EE18:** Since NOAA has already decided on the JPSS-2 instruments and NASA has announced its intention to sole source them, JPSS-2 will essentially be the third build of those sensors and spacecraft. What are the expectations for cost savings on JPSS-2?

**Response:**
While accurate cost savings for sole-sourcing instruments for JPSS-2 are not yet available, the Administration expects to realize efficiency improvements realized from building previous copies, and avoid costs associated with:

a) non-recurring engineering associated with designing new instruments impacting cost and schedule (sole-sourcing the instruments allows the Government to fully realize the investment already made in the instruments for Suomi NPP and JPSS-1);
b) inefficiencies associated with ramping up a new vendor to build the instruments;
c) changes to the ground system and algorithm development to calibrate and process data from the new instruments; and,
d) changes to users' ground equipment to fully exploit data from new instruments.

**EE19:** Using a block-buy procurement with fixed price contracts would result in greater efficiencies, lower costs, and reduced risks. Has NOAA explored this possibility for JPSS as was done in the highly successful POES and DMSP Programs?

**Response:**
The Administration supports cost-effective acquisition strategies and is actively exploring block-buy procurement which would result in greater efficiencies, lower costs and reduced risks. To fully exploit block-buys, the Government would need to provide funding up front to purchase components together.

NOAA's historical practice had been to purchase satellites in blocks as a means to achieve relatively low per unit cost per satellite and a steady supply of satellites to avoid data gaps. With the most expensive unit being the first one, NOAA has realized savings with block buys over the life of its geostationary and polar-orbiting satellite programs based on acquisition of

subsequent units. There are pros and cons to this approach since, with stable requirements and stable funding, block buys allow for acquisition stability. NOAA K-N is an example of a block buy of four satellites. A fifth satellite, NOAA N-Prime, was added to the block at Congressional direction. These satellites represented 1990s technology with little major technological advancement. With this constellation's first launch in 1998, up until the time NOAA-N Prime was launched in 2009, NOAA always had a subsequent satellite built and ready for launch in the event of a launch failure. Since February 2009, NOAA has not been able to support this failure risk management strategy for JPSS.

The potential block buy plans for JPSS are a hybrid of what had been planned. Instead of a block buy of instruments and spacecraft buses, as originally envisioned in the NPOESS program, the Government is buying similar spacecraft buses for Suomi NPP and JPSS-1 and could buy multiple copies of some of the critical instruments (VIIRS, CrIS, ATMS).

**EE20:** Dr. Lubchenco, I understand and am sympathetic to the economic constraints we are all challenged with today. And I understand NOAA had to make some difficult choices and tough cuts. However, I do not understand cuts to activities and programs that are essential to the protection of life and property. This budget request terminates the National Mesonet Network, which is important to many of our local and regional weather offices for its contributions to our timely warning system necessary to protect the American public. Please explain how the National Weather Service plans to operate without the data of these mesonets? Isn't it the case in several recent severe weather events around the country, that the mesonet data has been vital to enhancing lead warning times and expanding real-time monitoring?

**Response:** While mesonet data are valuable, NEXRAD Doppler radar continues to be the most critical asset supporting the severe weather warnings capability. The deployment of dual-polarization capability into the NEXRAD network has demonstrated the capability to detect different precipitation types, including hail, snow, and rain, which would obviate the need for certain types of mesonet data. Also, reports from spotters and the burgeoning communication via social media are providing other effective avenues for NWS to keep apprised of and verify local conditions, especially during active severe weather.

In 2010 NOAA submitted to Congress a report entitled "*A Plan for the Operation of the National Mesonet.*" This report provided a plan for the operation of the National Mesonet, as well as integration of mesonet data into NWS field offices, weather models, and with other NWS programs. NWS plans to convene a group to implement the Congressional directive included in the FY 2012 Appropriations Act that encouraged NOAA to convene a peer-reviewed study to create a national mesonet program plan within NOAA with recommendations for implementation as appropriate. This activity will permit NWS to update the Plan that was provided to Congress in 2010, taking into account new partnerships and new technologies that could be part of the broader Mesonet mix.

NOAA will continue its current approach to developing a National Mesonet by leveraging existing networks (operated by state and local governments, the private sector, and other federal agencies), when and where available.

**EE21:** This budget proposes to cut the National Weather Service operations budget, particularly the local warnings and forecast line item. This will result in reduction in the tsunami preparedness program, elimination of air quality forecasts, retirement of wind profilers used in tornado warnings, and most significantly elimination of at least 122 Information Technology Officers located at each of the forecast offices. It is my understanding that these positions are emergency/essential employees that maintain the forecasting software which resides on each office's computers. In addition, most of these employees are trained as meteorologists and assist the office's operations during severe weather. Please explain this decision and what the Administration plans to do, **not only** about the reduction in forecasting capabilities, but more importantly about the employees' positions?

**Response:** Preservation of the core warnings and forecast mission has been the cornerstone of all NWS fiscal decisions. Reductions were made where there was minimal impact to NOAA's life- and property-saving forecast and warning mission. For example, the lower data availability of the DART network would not impact issuing of warnings; however, warnings may extend to a larger area than necessary and for a longer time. Also, air quality forecasting funding will sustain on-demand dispersion forecasts of volcanic ash that support the aviation industry, transport of smoke, and forecast of emergency releases.

The Information Technology Officer (ITO) position was created in 2001 to provide onsite configuration and upgrade support for AWIPS. Currently, each WFO has one ITO, typically working dayshifts on weekdays.

Remote IT support has become the common practice in both government and industry. Over the past decade, advances in NWS IT have enabled remote support in many cases. For example, the AWIPS Network Control Facility (NCF) has provided a level of remote AWIPS service for more than 10 years. AWIPS II, the next generation of AWIPS currently being deployed at all NWS offices, has been fully designed for remote support. Using expanded enterprise IT tools, the AWIPS NCF would streamline its support, improve effectiveness and mitigate the need for onsite configuration. In addition, remote maintenance and support using virtual management tools coupled with configuration standardization, would increase support efficiencies and reduce overall costs.

In addition to the increased remote functionality of AWIPS, NWS would establish Regional IT Collaboration Units (RITCU). Each RITCU would be capable of supporting multiple WFOs from a single location, or multiple locations through remote access capabilities. RITCUs would be fully capable of addressing any local software issue. The AWIPS NCF would continue as a secondary source of support capable of diagnosing and resolving most problems. In addition, robust, long-standing service backup capabilities allow an adjacent office to assume warning and forecast responsibility almost immediately. If the systems go down during severe weather and cannot be remedied remotely in short order, service backup would be implemented. To provide for continuity of operations in the field, long-standing and extensively tested service backup capabilities allow an adjacent WFO to assume the warning and forecast responsibility of a pre-determined, neighboring WFO almost

immediately to ensure no service degradation to the public. Testing of backup plans is conducted at least annually in accordance with the NWS operations policy.

With these IT advancements and additional mitigation measures, NWS's ability to issue timely warnings and forecasts would not be impacted by the reduction of the ITOs.

Many current ITOs qualify for other NWS positions, such as Senior Meteorologists or Electronics Systems Analysts. In addition, NWS has submitted to NOAA a request for authority to offer early out and voluntary separation incentives for interested, qualifying employees. NWS recognizes that any reductions in staff affect our employees and their families. NWS would make every effort to reduce ITO staffing through attrition, and the Agency would work diligently to mitigate any impact to our affected employees.

**EE 22:** The NOAA budget request proposes an increase of $29 million within the Office of Oceanic and Atmospheric Research (OAR) for climate research. OAR is the research enterprise of NOAA's basic and innovative research.

**a.** Please explain why climate research is a priority for NOAA's research strategy and mission to protect lives and property? Does this funding increase shift OAR resources from its current basic and innovative science-driven capacity to climate research?

**Response:**
In FY2013, NOAA requests an increase of $28.2 million, for a total of $212.7 million, for Climate Research in OAR. This increase will restore funding for applied climate research and improved climate predictability, which improves NOAA's ability to provide research in support of the nation's decision makers for topics such as El Niño prediction, seasonal temperature/precipitation forecasts, changes in atmospheric composition, and other climate impacts. Additionally, funding will support the development of an operational NOAA Climate Portal as well as funding for Climate Model Data Archives. This will result in an increase in public online access to NOAA's climate data, information, and services and support an operational archive and access capability for the next generation, high-resolution weather and climate reanalysis datasets.

Climate research is a priority for NOAA's research strategy and mission because the American public is increasingly concerned about the growing frequency and intensity of drought, floods, and other extreme events. OAR continues to be a global leader in innovative and science-driven climate research to improve the understanding of the changing climate system and its potential impacts on extreme events, which requires advancing mission-critical climate modeling, national assessments, external and private-sector partnerships, as well as regional climate information and delivery. Easily accessible and relevant information is required to help communities better prepare for these events and make informed decisions. In addition, water resource and emergency managers require improved seasonal and sub-seasonal forecasts for optimum efficiency and preparedness.

**EE23:** This budget request proposes to terminate the funding for National Air Quality Forecasting Capability (NAQFC). This program provides air quality forecasts for ozone and

particulate matter, and the models are used by the Environmental Protection Agency, State, and local agencies to provide air quality health alerts to the public. If the EPA utilizes this forecasting capability to provide air quality alerts to the public, how will the termination of this program affect these alerts? How will we acquire these air quality data?

**Response:** NOAA's National Air Quality Forecast Capability provides air quality information to state and local agencies which then provide air quality forecasts and alerts to the public. NWS currently produces ozone guidance to state and local officials. Termination of this program means state and local air quality forecasters will no longer be able to base air quality forecasts and alerts on NOAA's air quality ozone predictive guidance. State and local forecasters will continue to have access to observations of past and current air quality compiled by the EPA on AIRNow. The state and local air quality forecasters can use these observations, together with statistical techniques based on past conditions, to issue air quality forecasts and alerts.

**EE 24:** NOAA requests a decrease that will terminate the Navigation Response Team program that provides mapping and charting and support to the U.S. Coast Guard and first responders during accidents or natural events that potentially impede the safety of marine transportation. Without the Navigation Response Teams, who will do this charting and mapping and provide this necessary support to first responders?

**Response:** With the termination of the NRTs, the responsibility for rapid response hydrographic surveys would shift from NOAA to first responders, such as the Coast Guard and FEMA, or to the ports.

**EE 25:** Funding for marine sanctuary programming is pennies on the dollar compared to the massive satellite budget. How can you justify the lack of commitment to our sanctuaries? How can NOAA afford new or expanding sanctuaries under this budget?

**Response:** NOAA recognizes that the satellite program comprises a high percentage of the NOAA budget. However, NOAA's polar satellites are critical to the nation's weather forecasting capabilities and contribute to multiple NOAA missions. NOAA remains committed to Marine Sanctuaries operations, but has no immediate plans to designate new sanctuaries. However, it is possible for NOAA to afford to expand a sanctuary within existing resources, because sanctuary expansion does not necessarily require significant increases in operations and maintenance expenses and in some instances can have minimal costs associated with implementation. Sanctuary boundary expansions do typically require an environmental impact statement (EIS) for the expanded area under consideration. As part of these EIS analyses, NOAA's Office of National Marine Sanctuaries weighs the costs of implementing a boundary expansion against the value of increased resource conservation and economic benefits to the regional communities.

**EE 26:** I have two sanctuaries in my District. Through the management plan process, it could be -- anywhere from five-fifteen years to expand their boundaries. How can we make this process move more quickly while still having the necessary review and input?

**Response:** A typical sanctuary expansion involves a timeframe of between two to four years, depending upon the size of the area, the complexity of the issues related to ongoing uses, and the objectives for managing the area. In addition to the National Marine Sanctuaries Act, the National Environmental Policy Act and Administrative Procedures Act drive the process and requirements for NOAA-initiated boundary expansions. Sanctuary boundary expansions typically require an environmental impact statement and a revision of the sanctuary's designation document. Both of these documents are published in the Federal Register and are reviewed through an extensive public process with associated commenting periods. A legislated expansion by an act of the Congress, as opposed to one implemented through administrative rulemaking, typically does not provide for environmental review or public comment.

**EE 27:** With so much of NOAA funding being directed away from core responsibilities (like marine sanctuary construction costs) to satellite programs, how can we fulfill our commitment to protecting our oceans from pollution, climate change, and mismanagement? President Obama has set out "all of the above" energy agenda. How will NOAA keep sanctuaries and nearby areas safe from oil drilling?

**Response:** NOAA recognizes that the satellite program comprises a high percentage of the NOAA budget. However, NOAA's polar satellites are critical to the nation's infrastructure and economy. They ensure the safety and viability of the $700 billion maritime commerce sector and the aviation transportation sector. They allow coastal managers to safely evacuate millions of residents during hurricane seasons and give our farmers the long-term weather information they need to know when and what to grow. Also, they provide our military and homeland security leaders with critical information to ensure homeland security and safely deploy troops overseas.

NOAA is still very much committed to protecting our oceans from pollution and climate change. Specifically, NOAA has two roles in the context of spill preparedness, prevention and response—that of providing scientific and technical expertise and that of natural resource trustee for coastal and marine trust resources including national marine sanctuaries. Both aspects of the agency's expertise are critical in protecting the socio-economic and environmental health of the Nation's coastal and marine communities. Marine protected areas, such as national marine sanctuaries and marine national monuments, are high priorities for protection during a spill response and in the management of activities in a region that may predicate a spill. Active engagement with the energy industry is routine for sites in the system with representation on Sanctuary Advisory Councils and in other for a related to sanctuary management and ocean use planning.

NOAA's Office of Response and Restoration provides NOAA's science-based guidance to Federal, State, and local agencies across the country, including national marine sanctuary superintendents during oil and chemical spills, vessel groundings, search and rescue efforts, national security events, and other emergencies. NOAA has developed preparedness and response tools such as the Environmental Response Management Application (ERMA®) that are critical in facilitating NOAA's ability to recommend appropriate prevention and cleanup technologies to minimize the environmental and economic impacts to trust resources such as

sanctuaries. ERMA was designated as the federal response "common operating picture" by the U.S. Coast Guard Federal-On-Scene-Coordinator during the Deepwater Horizon oil spill in 2010, demonstrating its utility to responders. ERMA is developed on a region-by-region basis. This application currently exists for the Gulf of Mexico and other regions in various stages of development

Should a spill occur and impact NOAA trust resources in sanctuaries, Natural Resource Damage Assessment (NRDA) activities under both the Oil Pollution Act and the National Marine Sanctuary Act will be initiated. NRDAs, undertaken by Federal, State, and Tribal trustees, determine the amount of injury to trust natural resources that must be restored and are the underpinning for litigation against the responsible party for monetary damages to be used for restoration of the injured resources to baseline condition.

*Responses by Mr. Lek Kadeli, Acting Assistant Administrator, Office of Research and Development, Environmental Protection Agency*

## Questions Submitted by Subcommittee Chairman Andy Harris, Subcommittee on Energy and Environment, and Other Committee Members

**An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013**
**March 6, 2012**

Mr. Kadeli

1. There were several questions asked at the hearing which you committed to respond to in writing. They are available in the transcript and summarized and expanded upon below.

Please provide a thorough response to each.

a. As part of President Obama's statement that he has directed his "Administration to look for every single area where we can make an impact and help consumers" with gas prices, what date did the White House direct the EPA to report back by? Please also summarize the EPA's recommended actions in support of the President's directive to identify ways to lower gas prices.

**RESPONSE:**

In the last few years, the EPA has issued several regulations that will save consumers money at the pump and keep more of the money we spend on fuel in the United States. New car and light truck owners are already saving money at the pump as a result of the EPA's and NHTSA's first ever joint standards to increase the fuel efficiency of cars and light trucks for model years 2012-2016, and thereby also cut greenhouse gas emissions. Over the lifetime of MY 2012-2016 vehicles, the combined EPA and NHTSA standards are projected to save 1.8 billion barrels of oil,[1] more oil than we imported from OPEC countries last year.[2]

[1] See 75 Fed. Reg. 25328 (May 7, 2010).

These standards will save consumers and small businesses money by reducing their gasoline usage. Consumers buying MY 2016 vehicles would have average net savings of $3,000 over the life of the vehicle – the $4,000 in projected fuel savings over the lifetime of the vehicle more than offset the projected $950 increase in the initial cost of a new MY 2016 vehicle. After only three years of use, U.S. consumers who purchase MY 2012-2016 vehicles outright are projected to save enough in lower fuel costs to offset the increase in vehicle costs. U.S. consumers who use a 5-year loan to purchase a vehicle will also save. The projected monthly fuel savings exceed the projected increased loan payments necessary to cover the increased cost of the vehicle, which means that consumers start saving in their very first month of ownership.[3]

Even greater savings are in store for consumers in the future. On November 16, 2011, at the direction of the President, and with the support of auto manufacturers,[4] and the State of California, EPA and NHTSA issued their joint proposal to extend this National Program of greenhouse gas and fuel economy standards to MY 2017-2025 cars and light trucks. The proposal would require vehicle manufacturers to meet an estimated CO2 standard of 163 grams of CO2 per mile on an average fleet-wide basis in 2025, equivalent to 54.5 miles per gallon if all of those improvements are made with fuel economy-improving technologies. Over the lifetime of the MY 2017-2025 vehicles, the proposed standards would save 4 billion barrels of oil (above the billions of barrels in additional savings from the 2016 standards that carry into these model years as well). This is approximately the same amount of oil imported by the United States from all foreign sources last year alone.[5] Net lifetime savings for vehicle owners of a MY 2025 vehicle are estimated to be $3,000 - $4,400.

Further, starting with MY 2014, new medium and large truck and bus owners will also begin saving on fuel costs. In August, 2011, the EPA and NHTSA announced the first ever joint greenhouse gas and fuel efficiency standards for trucks and buses. This program has support from the trucking industry, including engine and truck manufacturers, the American Trucking Associations, the State of California, and leaders from the environmental community. In addition to improving energy and national security, this program will benefit consumers and

---

[2] EIA data on U.S. Imports by Country of Origin 3/19/2012
http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_EPP0_im0_mbbl_a.htm

[3] See 75 Fed. Reg. 25519-25520 (May 7, 2010).

[4] The letters of support from these organizations can be found at
www.epa.gov/otaq/climate/regulations.htm

[5] EIA data on U.S. Imports by Country of Origin 3/19/2012
http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_EPP0_im0_mbbl_a.htm

businesses, reduce harmful air pollution, lower costs for transporting goods, and spur job growth and innovation in the clean energy technology sector.

The joint EPA and NHTSA standards are estimated to save about 530 million barrels of oil over the life of MY 2014-2018 vehicles. The reduced fuel use will provide an estimated $50 billion in fuel savings to vehicle owners, or $42 billion in net savings when considering technology costs.[6] A long haul trucker is projected to save a net of $73,000 over the life of a MY 2018 truck. Using technologies commercially available today, the majority of vehicles will see a payback period of about one year; others will see payback periods of up to two years.

The EPA's renewable fuels program, established by Congress, helps keep money spent on fuel in the United States. On March 26, 2010, the EPA completed regulations to implement the RFS program required under EISA in 2007. We estimate the RFS program, when fully implemented in 2022, would displace about 13.6 billion gallons of petroleum-based gasoline and diesel fuel, which represents about seven percent of expected annual gasoline and diesel consumption in 2022. We also estimate that the fully implemented program would decrease oil import expenditures by $41.5 billion and result in additional energy security benefits of $2.6 billion.

Additionally, in July 2011, the EPA proposed that certain requirements for Stage II gasoline vapor recovery at service stations be waived as of June 30, 2013. This proposed rule is consistent with the Obama administration's initiative to review outdated rules and update them to ensure that they are still achieving the environmental benefits that they were intended to achieve. This proposed waiver will allow many areas now requiring Stage II equipment at service stations to remove, or decommission their Stage II systems and eliminate certain expenses associated with operating those systems. Operating conventional gasoline dispensing equipment is estimated to provide an annual financial benefit of about $2,700 per year compared to maintaining a Stage II vapor recovery system. The EPA has estimated the national cost savings for this proposed rule to be over $88 million annually.

b. Has the EPA considered abandoning its Tier III of refining greenhouse gas regulations in order to comply with the President's directive? If not, why not, given that the regulations are expected to increase prices?

[6] See 76 Fed. Reg. 57106 (September 15, 2011).

**RESPONSE:**

The EPA is developing, but has not yet proposed, the Tier 3 motor vehicle emission and fuel standards, which are needed to help improve air quality in areas not in attainment of the ambient air quality standards. This draft rule would reduce motor vehicle emissions and help state and local areas attain and maintain the existing health-based air quality standards in a cost-effective and timely way. Lower sulfur gasoline is necessary to operate the pollution control equipment to achieve these Tier 3 vehicle standards. In addition, the EPA has heard from auto manufacturers that reducing sulfur in gasoline helps make feasible certain lower cost technologies for improving fuel economy. Improvements in fuel economy reduce gasoline consumption and save consumers money.

We understand that even minimal increases in the cost of gasoline are of importance to the American public. That is why the EPA conducted extensive refinery modeling to understand the cost of further reducing the sulfur content of gasoline. As with lead, sulfur in fuel impairs the functioning of emission control equipment. We estimate the costs of sulfur requirements in the draft Tier 3 rule to be approximately one penny per gallon in 2017, an estimate that is supported by a study by MathPro, a consulting firm that prepared the analysis for the International Council on Clean Transportation.[7] A subsequent analysis performed by Baker & O'Brien for the American Petroleum Institute suggests that the costs for Tier 3 sulfur control could be slightly higher - as high as two cents per gallon on average.[8] However, that study was also recently criticized by a study by Navigant Economics for the Emission Control Technology Association, which reviewed both the Mathpro and Baker & O'Brien studies. It concluded that the difference in costs between the studies was entirely explained by capital cost assumptions that were exaggerated in the Baker & O'Brien study beyond industry norms. The Navigant study went on to conclude that the cost to refiners would be about one cent per gallon, that these costs are unlikely to be passed on to consumers in the form of higher gas prices based on their review of prior gasoline sulfur standards, and that the cost to refiners will be outweighed by the health benefits of cleaner air.[9]

---

[7] See http://www.theicct.org/sites/default/files/publications/ICCT04_Tier3_Report_Final_v4_All.pdf

[8] See http://www.bakerobrien.com/documents/Letter%20API%20Report%20-%20New%20Format%20-%20Sept%202011.pdf

[9] See http://www.navigant economics.com/docs/061212%20Economic%20Analysis%20of%20the%20Implications%20of%20Tier%203%20Sulfur%20Reduction%20Final_embargoed%20copy.pdf

c. Has EPA taken any steps to prevent interested parties from accompanying the testing of sites and taking shadow sampling as part of the Office of Research and Development's broader study of hydraulic fracturing?

**RESPONSE:**

The EPA has not taken any steps to prevent states or affected parties from accompanying the testing of sites and taking shadow sampling as part of the Office of Research and Development's broader study of hydraulic fracturing. The EPA has shared all logistical and technical information necessary to enable interested parties, such as specific industry and state representatives, to conduct shadow sampling when EPA scientists are in the field.

d. How does the EPA's new Scientific Integrity Policy address the circumstances associated with Peter Gleick or the Pacific Institute, which has received significant funding from the EPA? Does the policy limit any future grants to Gleick or any institute that he is involved in providing leadership?

**RESPONSE:**

As of February 2012, all Agency employees, including scientists, managers, and political appointees, are required to follow the new Scientific Integrity Policy when engaging in, supervising, managing, or influencing scientific activities; communicating information in an official capacity about Agency scientific activities; and utilizing scientific information in making Agency policy or management decisions.

This Policy builds upon existing Agency and government-wide policies and guidance documents, enhancing the EPA's overall commitment to scientific integrity. It is intended to guide Agency activities in an area that is already subject to a number of rules and policies for various purposes. When there is overlap with other applicable rules and guidance, this policy is not intended to preempt other authorities, but instead to work in conjunction with and supplement them. While the EPA has long been committed to scientific integrity, this policy is intended to further improve the internal management and operation of the Agency.

The Policy focuses on scientific integrity. All contractors, grantees, collaborators and student volunteers of the Agency who engage in scientific activities are expected to uphold the standards established by this policy and may be required to do so as part of their respective agreements with the EPA.

A number of grants were awarded to the Pacific Institute for Studies in Development from 2001 to 2005. There are no current grants with that organization.

several major Agency regulations. Despite the fact that the EPA funded these studies that were cited as supporting all health claims made in the $11 billion "Utility MACT" regulation, the Agency has not provided this data. Additionally, the President's Science Advisor promised a Member of this Committee that he would expedite access to this data.

a. Please detail EPA actions to make this data available, and provide a timeline as to when Members of this Committee will be provided this critical underlying data?

**RESPONSE:**

On November 30, 2011, Gina McCarthy, Assistant Administrator, Office of Air and Radiation, responded to several questions regarding the EPA's Cross-State Air Pollution Rule (CSAPR). With regard to the Committee's request regarding the availability of data and analyses from five epidemiological studies, Ms. McCarthy's letter stated that we would take action under 2 CFR 215.36 to request the information produced with EPA funds, to the extent that this information remains available.

Two of these studies were used in the benefits analyses – ACS Cancer Prevention Study II (Pope et al., 2002) and Harvard Six Cities Study (Laden et al., 2006). On January 9, 2012, the EPA sent letters to New York University and Harvard University requesting any research data relating to these two articles that were produced with EPA grant funds. We have received responses from these two universities and are reviewing these data to ensure the proper treatment of any personally identifiable information or other sensitive information. We anticipate sharing the data with the Committee shortly.

b. Do you support agencies making all data used to justify regulations publicly available?

**RESPONSE:**

The EPA relies on sound, peer-reviewed science to serve as the foundation for credible decision-making to support the Agency's mission to protect human health and the environment. As the EPA Administrator Lisa Jackson has repeatedly articulated, the Agency is committed to conducting analyses in a transparent and open way to inform and involve the scientific community and the public.

4. As part of the request for an increase of nearly $33 million for climate change activities at the EPA, the President requests more than $3 million for the EPA to "support research on the

relationship between climate change, weather patterns, and the environment," "improve global, regional, and local models," and "use the NASA and the NOAA models as a basis to build models that project environmental impacts."

a. NOAA's budget request includes over $200 million for climate research, including tens . of millions for what they call their "world class climate and earth system models for use in predicting and projecting climate variability and change." Why are NOAA's modeling efforts are insufficient for the EPA's needs and how is EPA's proposed spending in this area distinct from NOAA's?

**RESPONSE:**

Because EPA models do not predict or project climate variability and change, NOAA's modeling research is critical to EPA's ability to evaluate the potential impacts of climate change on air quality and water quality at regional and urban scales. EPA's environmental modeling researchers work closely with NOAA to ensure proper use of NOAA results. EPA scientists also provide NOAA modelers with important feedbacks from local-scale and regional-scale processes, which can impact NOAA's modeling of global-to-regional scale processes involving atmospheric composition and chemistry, and climate processes.. This collaboration enables each agency to develop modeling systems that address the different missions of the two agencies, while maintaining scientific consistency across modeling efforts and, ultimately, improving the results of both organizations.

EPA's atmospheric modeling efforts focus on formation and transport of air pollutants at spatial scales from *neighborhoods* to *multi-state regions*. The Community Multi-scale Air Quality (CMAQ) model includes substantially more air emission data than the NOAA models. CMAQ includes detail on the location, size, and hourly air emissions. CMAQ also includes more detailed information about the chemical processes involved in pollutant formation than the NOAA models. Furthermore, the CMAQ model has more detailed treatments for atmospheric chemistry and interactions among aerosols, clouds, precipitation, and radiation. EPA's CMAQ includes the functions necessary to better assess the impacts of climate change and anthropogenic emissions on human health.

EPA is collaborating with NOAA to link our *regional-scale* CMAQ model to their *global-scale* model. Combining these models will allow us to understand when proposed air pollution regulations improve ambient air quality in urban areas, thereby helping protect human health. Similarly, EPA's hydrological models focus on much smaller scales and include expanded chemical and biological process details. By combining EPA's and NOAA's models, we can better understand the impacts to water quality at local and regional scales.

b. Specifically, NOAA's Geophysical Fluid Dynamics Laboratory uses a variety of climate models and claims it has "improved projection capabilities for ecosystems, climate, atmospheric composition, air quality, and coastal pollution." This laboratory has traditionally been funded at nearly $20 million a year. Why is NOAA's program insufficient for EPA's needs and how is EPA's proposed spending in this area distinct. from NOAA's program?

**RESPONSE:**

EPA's models help address the air pollutant formation and atmospheric transport processes and responses of watersheds and ecosystems, on regional to local scales which NOAA's models do not. The EPA models include the time periods and distances necessary to inform effective air quality management strategies by state and local governments. NOAA's climate models complement EPA's models and provide crucial inputs (such as characterizing larger-scale atmospheric composition and climate features) for the EPA air and water quality models used by states and localities. In particular, NOAA's models provide guidance regarding possible future climatic conditions (including variations) that can strongly influence air pollutant concentrations, water flows, and ecosystem health. By linking EPA's and NOAA's models, EPA can better examine weather conditions conducive to pollutant formation and accumulation including extreme conditions. Therefore, information from both NOAA's and EPA's modeling efforts can collectively ensure that communities and states are able to develop environmental management approaches that maintain and improve environmental quality today and into the future.

NOAA's models are designed to enhance understanding of atmospheric, oceanic, and climate processes, advance the scientific knowledge of climate variability and change on global-to-regional scales, and improve NOAA's prediction capability, not to provide the data needed to inform development of air quality strategies. Air quality and management strategies are developed at the county level and over time-periods as small as one hour. As a contrast to NOAA models, EPA models focus on critical air formation and maintenance processes on the regional-to-local scales, which provide data essential for communities to develop air quality compliance and management strategies.

5. How much money is the President requesting for the Integrated Risk Information System in FY2013, and how many assessments will the Agency complete if it receives those funds? How much funding has EPA designated to fully implement the recommendations outlined by the NAS in chapter 7 of the formaldehyde report?

**RESPONSE:**

The EPA's President's Budget Request for IRIS research includes $19.6 million in FY 2013. This funding supports science for assessments at all stages of draft development, peer review and completion. The number of projected completions in FY2013 is nine. The IRIS programs resources have been dedicated to implementing the NAS recommendations to the fullest extent possible.

6. The Consolidated Appropriations Act of 2012 that was signed into law on December 23, 2011 included a provision that stated: "The Agency shall issue a progress report to House and Senate Committees on Appropriations and relevant Congressional authorizing committees no later than March 1, 2012, describing its implementation of the National Research Council's Chapter 7 recommendations for ongoing and new assessments."

Since this Committee is one of the relevant authorizing Committees and we have not seen a copy of this progress report, I assume it has not been delivered to Congress. Please provide an explanation as to why this report is late and when it will be delivered.

**RESPONSE:**

The IRIS Progress Report was delivered to Congress on April 20, 2012, and was made publically available on June 5.

7. Your office recently announced that it would delay its IRIS assessment for hexavalent chromium in order to incorporate "recently and soon to be completed peer-reviewed primary research on the chemical." Can you assure this Committee that it will not discount any of this new research based upon its funding source?

**RESPONSE:**

Based on the advice of the external peer review panel, which met in May 2011 to review the draft IRIS assessment for hexavalent chromium (oral exposure only), EPA will consider the results of recently and soon to be completed peer-reviewed original primary research related to the health effects of hexavalent chromium that has been published since the release of the draft assessment for external peer review. All relevant peer-reviewed original primary research, regardless of the funding source, that is completed and published by June 2012 will be considered, and its strengths and weaknesses will be uniformly evaluated, as EPA revises the draft assessment.

8. The President is requesting $1.8 million for biofuels research on the potential impacts to human health and ecosystems for 2nd generation biofuels like cellulosic ethanol to support requirements from the Energy Independence and Security Act of 2007.

a. EPA is expected to release its so-called "Tier 3" regulations in the near-future; despite-the fact that the Agency has failed to provide Congress with the anti-backsliding study required to demonstrate the need for this regulation. This study was due 18 months after the 2007 energy law was enacted, and the Agency has failed to produce anything. Since EPA has failed to complete this statutorily required report on regulatory biofuels research, why should Congress increase funding for this additional project? When will EPA release this anti-backsliding analysis? Will it be subjected to peer review as a "Highly Influential Scientific Assessment"?

**RESPONSE:**

The pending Tier 3 proposal is independent of the anti-backsliding study required by sections 211(q) and 211(v) of the Clean Air Act. The rule is focused on vehicle emissions standards in response to our obligations and authority under Clean Air Act section 202(a) and the fuel necessary to enable them under section 211(c). In contrast, the anti-backsliding study will examine the broader issues related to impacts of renewable fuels, and it is required as a prerequisite to regulations under section 211(v). That study will not affect any decisions about the impact of gasoline sulfur on vehicle emissions and the air quality benefits of reduced motor vehicle emissions. We are not promulgating standards under section 211(v) in the Tier 3 rulemaking.

The anti-backsliding study is Influential Scientific Information (ISI), and we are engaging in peer review consistent with the OMB "Final Information Quality Bulletin for Peer Review." Specifically, the technical reports on the new vehicle emissions data are being externally peer reviewed, and the air quality modeling is being conducted using peer-reviewed emissions and air quality models.

b. Considering the National Academy of Sciences' recent conclusions that future cellulosic ethanol production requirements cannot be achieved, why is this research necessary?

**RESPONSE:**

EPA's budget request for biofuels research seeks funds for work that will provide a better understanding of the environmental impacts of cellulosic biofuels. Even though the NAS study

showed that under the current technology, cellulosic feedstock is not likely to achieve the 16 billion gallons called for in EISA 2007, cellulosic biofuels will still be an important source of biofuels and thus we need to better understand their environmental impacts.

9. The Safe Drinking Water Act mandates that the EPA ensure that the "best available science" be applied in setting maximum contaminant levels (MCLs). On February 2, 2011, U.S. EPA issued a Final Regulatory Determination on Perchlorate, announcing the agency's intent to set an MCL for that contaminant. What specific steps are being taken by the agency to obtain the best possible scientific information in this rulemaking?

**RESPONSE:**

The EPA is committed to using the best available peer reviewed science and data collected by accepted methods to inform the development of a proposed drinking water standard for perchlorate. EPA continues to collect the available scientific studies on perchlorate health effects, treatment and occurrence in drinking water by reviewing the published literature. We also have coordinated with colleagues in state drinking water agencies and the Department of Health and Human Services.

a. What peer-reviewed studies, if any, has the agency received, in the time since the regulatory determination, that it considers relevant in establishing the "best available science."?

**RESPONSE:**

The EPA is still collecting and evaluating perchlorate studies to inform decision making for the proposed national primary drinking water rule. Since EPA published the preliminary regulatory determination in October, 2008 and the supplemental request for comment in August, 2009, the Agency has identified a number of studies on perchlorate that may be relevant including:

- Blount, B.C., K.U. Alwis, R.B. Jain, B.L. Solomon, J.C. Morrow, and W.A. Jackson. 2010. Perchlorate, nitrate, and iodide intake through tap water. Environ. Sci. Technol. 44(24):9564-9570.
- Borjan, M., S. Marcella, B. Blount, M. Greenberg, J.J. Zhang, E. Murphy, L. Valentin-Blasini, and M. Robinson. 2011. Perchlorate exposure in lactating women in an urban community in New Jersey. Sci. Total Environ. 409(3):460-464.
- Cao, Y., B.C. Blount, L. Valentin-Blasini, J.C. Bernbaum, T.M. Phillips, and W.J. Rogan. 2010. Goitrogenic anions, thyroid stimulating hormone, and thyroid hormone in infants. Environ. Health Perspect.118:1332-1337.

- English, P., B. Blount, M. Wong, L. Copan, L. Olmedo, S. Patton, R. Haas, R. Atencio, J. Xu, and L. Valentin-Blasini. 2011. Direct measurement of perchlorate exposure biomarkers in a highly exposed population: a pilot study. PLoS One. 6(3):e17015.

- Huber, D.R., B.C. Blount, D.T. Mage, F.J. Letkiewicz, A. Kumar, and R.H. Allen. 2011. Estimating perchlorate exposure from food and tap water based on U.S. biomonitoring and occurrence data. J. Expo. Sci. Environ. Epidemiol. 21(4):395-407.

- Impellitteri, C.A., J.P. Saxe, E.C. Schmitt, and K.R. Young. 2011. A Survey on the Temporal

and Spatial Distribution of Perchlorate in the Potomac River. *Journal of Environmental Monitoring.* 13(2277-2283).

- Kalkhoff, S.J., S.J. Stetson, K.D. Lund, R.B. Wanty, and G.L. Linder. 2010. *Perchlorate data for streams and ground water in selected areas of the United States, 2004.* U.S. Geological Survey Data Series 495, 43 p. with appendix. Available on the Internet at: http://pubs.usgs.gov/ds/495/.

- Mendez, W., E. Dederick, and J. Cohen. 2010. Drinking water contribution to aggregate perchlorate intake of reproductive-age women in the United States estimated by dietary intake simulation and analysis of urinary excretion data. J. Expo. Sci. Environ. Epidemiol. 20(3):288-297.

- Pearce, E.N, J.H. Lazarus, P.P.A. Smyth, X. He, D. Dall'Amico, A.B. Parkes, R. Burns, D.F. Smith, A. Maina, J.P. Bestwick, M. Jooman, A. M. Leung, and L.E. Braverman. 2010.

- Perchlorate and thiocyanate exposure and thyroid function in first-trimester pregnant women. J. Clin. Endocrinol. Metab. 95(7):3207-3215.

- Steinmaus, C., M.D. Miller, and A.H. Smith. 2010. Perchlorate in drinking water during pregnancy and neonatal thyroid hormone levels in California. J. Occup. Environ. Med. 52(12):1217-1524.

- United States Government Accountability Office (USGAO). 2010. *PERCHLORATE: Occurrence Is Widespread but at Varying Levels; Federal Agencies Have Taken Some Actions to Respond to and Lessen Releases.* Report to the Ranking Member, Committee on Environment and Public Works, U.S. Senate. GAO-10-769. August 2010. Available on the Internet at: http://www.gao.gov/new.items/d10769.pdf.

- Valentin-Blasini, L., B.C. Blount, S. Otero-Santos, Y. Cao, J.C. Bernbaum, and W.J. Rogan. 2011. Perchlorate exposure and dose estimates in infants. Environ. Sci. Technol. 45(9):4127-4132.

- Woodruff, T.J., A.R. Zota, and J.M. Schwartz. 2011. Environmental chemicals in pregnant women in the United States: NHANES 2003-2004. Environ. Health Perspect. 119(6):878-885.


b. Given the notably large number of peer reviewed studies available on health effects of perchlorate and a National Academy of Science panel report, how will the agency involve scientists outside the agency to achieve the statutory standard, the "best available science"?

**RESPONSE:**

The EPA has requested input from the Science Advisory Board (SAB) in accordance with the Safe Drinking Water Act. EPA announced in a *Federal Register* Notice (76 FR 78256-78257) published on December 16, 2011 that it was forming the SAB panel to review the agency's approaches for deriving a maximum contaminant level goal (MCLG) for perchlorate. To form the panel, EPA sought public nominations of nationally recognized and qualified experts in one or more of the following areas; drinking water, public health, epidemiology, toxicology, endocrinology, physiologically based pharmacokinetic models, health implications of perchlorate ingestion, and experience in developing health based goals for contaminants.

c. The term "best available science" also includes the notion of what is feasible and achievable. Would you please furnish the subcommittee with your schedule milestones for obtaining outside input on economics and cost, pursuant to the Health Risk Reduction and Cost Analysis (HRRCA) provisions of the Safe Drinking Water Act?

**RESPONSE:**

The EPA will publish and seek public comment on the Health Risk Reduction and Cost Analysis when we propose the national primary drinking water regulation for perchlorate by February 2013.

10. Please provide the Subcommittee a list of all Office of Research and Development grants that have gone to individuals or institutions outside the United States (including names, amounts, and program areas). Please also include a similar summary of funding awarded to U.S. based entities that is spent outside the United States.

**RESPONSE:**

EPA's research programs are supporting very few assistance agreements to institutions outside of the United States. The great majority of research grants support work at institutions in the United States, some of which use a small portion of these funds for international activities. Most of these international activities involve researchers from institutions in the United States traveling to meetings and conferences abroad to present the results of research conducted in this country.

The table below identifies the EPA Office of Research and Development's research grant funds awarded during FY 2008 – FY 2011 that recipients were allowed to spend overseas.

Funds awarded to institutions based outside the United States are listed before fund awarded to U.S. based entities for spending outside the United States.

| Research Grants Provided to U.S. Institutions Participating in International Activities | Program Area | Grant Number | Portion of Funding Budgeted for International Activities |
|---|---|---|---|
| **Awards to Foreign Institutions and International Organizations:** | | | |
| FINATEC/Universidade of Brasilia (Brazil) | CR | 831062 | $49,472 |
| Marshal Aid Commemoration Commission (U.K.) | R | 833720 | $108,000 |
| **Awards to US Institutions that Include International Activities:** | | | |
| Appalachian State University | SU | 83368301 | $7,500 |
| Appalachian State University | SU | 83392101 | $3,295 |
| Board of Trustees University of Illinois | SU | 83368201 | $15,000 |
| Clemson University | SU | 83351201 | $6,300 |
| Fort Lewis College | SU | 83392001 | $3,000 |
| Gonzaga University | SU | 83392201 | $3,920 |
| Illinois Institute of Technology | SU | 83354901 | $5,565 |
| James Madison University | SU | 83350701 | $5,524 |
| John Brown University | SU | 83354401 | $3,500 |
| Lafayette College | SU | 83394101 | $8,050 |
| Lehigh University | SU | 83375901 | $2,600 |
| Lehigh University | SU | 83394301 | $825 |
| Marquette University | SU | 83354301 | $4,800 |
| Northwestern University | SU | 83375801 | $12,760 |
| Ohio State University Research Foundation | SU | 83350801 | $3,000 |
| Regents of the University of Michigan | RD | 83374001 | $2,000 |
| Stanford University | SU | 83391201 | $4,300 |
| The Cooper Union for the Adv. of Science & Art | SU | 83353801 | $2,250 |
| The Cooper Union for the Adv. of Science & Art | SU | 83355101 | $2,250 |
| The Johns Hopkins University | SU | 83390501 | $6,000 |
| The Regents of the University of Michigan | SU | 83390901 | $400 |
| University of California - Los Angeles | RD | 83362901 | $3,055 |
| University of Cincinnati | SU | 83394201 | $4,000 |
| University of Delaware | RD | 83322101 | $3,000 |
| University of Iowa | SU | 83401301 | $10,000 |
| William Marsh Rice University | SU | 83354701 | $2,000 |

| | | | |
|---|---|---|---|
| Woods Hole Oceanographic Institution | RD | 83382801 | $3,660 |
| | | | $1,329,320 |
| **Awards to Foreign Institutions and International Organizations:** | | | |
| Bourgas University (Bulgaria) | CR | 831995 | $54,000 |
| World Health Organization (Switzerland) | CR | 834102 | $155,000 |
| World Health Organization (Switzerland) | CR | 834102 | $209,300 |
| World Health Organization (Switzerland) | CR | 834063 | $190,000 |
| World Health Organization (Switzerland) | CR | 834063 | $600,000 |
| **Awards to US Institutions that Include International Activities:** | | | |
| Alaska Native Tribal Health Consortium | RD | 83370501 | $7,116 |
| AZ Board of Regents - Univ. of Arizona | SU | 83436801 | $25,400 |
| Board of Regents University of NE - Lincoln | RD | 83406501 | $11,500 |
| Board of Trustees University of Illinois | SU | 83439701 | $4,000 |
| Columbia University | SU | 83430201 | $7,000 |
| Massachusetts Institute of Technology | SU | 83436701 | $21,000 |
| Ohio State University Research Foundation | SU | 83433901 | $4,180 |
| The Pennsylvania State University | SU | 83432701 | $500 |
| The Regents of the University of CA - Berkeley | SU | 83401701 | $27,548 |
| The Regents of the University of CA - LA | SU | 83429901 | $2,400 |
| University of Iowa | RD | 83386501 | $5,948 |
| Wellesley College | SU | 83429201 | $4,428 |
| | | | $540,543 |
| **Awards to Foreign Institutions and International Organizations:** | | | |
| Marshal Aid Commemoration Commission (U.K.) | X3 | 833720 | $111,120 |
| World Health Organization (Switzerland) | CR | 834012 | $105,000 |
| World Health Organization (Switzerland) | CR | 834063 | $155,000 |
| **Awards to US Institutions that Include International Activities:** | | | |
| Battelle Memorial Institute | CR | 83274201 | $9,250 |
| Princeton University | RD | 83438501 | $22,440 |
| Texas Tech University | RD | 83333902 | $19,000 |
| The Regents of the University of CA - Berkeley | RD | 83451101 | $34,869 |
| University of California - Berkeley | RD | 83451301 | $14,709 |
| University of Iowa | RD | 83386501 | $24,000 |
| University of KY Research Foundation | RD | 83377201 | $2,268 |
| University of KY Research Foundation | RD | 83457401 | $28,000 |
| UT Health Science Center at Houston | RD | 83458101 | $5,887 |
| William Marsh Rice University | RD | 83457501 | $9,000 |
| | | | $844,985 |

| Awards to Foreign Institutions and International Organizations: | | | |
|---|---|---|---|
| Marshal Aid Commemoration Commission (U.K.) | | | $205,888 |
| World Health Organization (Switzerland) | | | $210,000 |
| World Health Organization (Switzerland) | | | $105,000 |
| World Health Organization (Switzerland) | | | $230,000 |
| **Awards to US Institutions that Include International Activities:** | | | |
| American Association for the Advancement of Science | X3 | 83459201 | $10,250 |
| Emory University | RD | 83479901 | $1,500 |
| Harvard School of Public Health | RD | 83479801 | $10,394 |
| President and Fellows of Harvard College | RD | 83489401 | $3,760 |
| Regents of the University of Michigan | RD | 83486001 | $4,000 |
| The Regents of the University of CA - Berkeley | RD | 83451101 | $34,869 |
| University of Connecticut - All Campuses | RD | 83487201 | $1,500 |
| University of KY Research Foundation | RD | 83377201 | $4,886 |
| University of Pittsburgh | RD | 83457601 | $3,462 |
| University of Southern California | RD | 83469302 | $15,000 |
| University of Washington | RD | 83479601 | $4,476 |

| Program Area: | Codes |
|---|---|
| - EPA Consolidated Research | CR, R |
| - Science to Achieve Results (STAR) | RD |
| - National Student Design Competition for Sustainability (P3) | SU |
| - Surveys, Studies, Investigations and Special Purpose Grants | X3 |

11. Does the EPA believe it's important to prioritize chemicals for assessment under the Toxic Substances Control Act? What is EPA doing right now to make sure it's focusing its efforts on priority chemicals? What are EPA's longer term plans to prioritize chemicals? Does EPA intend to conduct a screening-level prioritization review for all chemicals in U.S. commerce?

**RESPONSE:**

In September 2011, the EPA conducted a stakeholder dialogue to gather stakeholder input on proposed criteria and data resources to be used for identifying chemicals for further assessment. The EPA refined the criteria to reflect stakeholder input and, on March 1, 2012, identified a work plan of 83 chemicals for further assessment under the Toxic Substances Control Act (TSCA). EPA selected seven of those chemicals for risk assessments beginning in FY 2012. EPA also recently selected 18 chemicals it plans to assess in FY 2013 and FY 2014. In FY 2013, the agency will engage stakeholders on issues related to longer-term efforts to collect data and screen additional chemicals for future review. The EPA posted a Methods Document describing the criteria and process the agency used to identify the TSCA Work Plan Chemicals to its website on March 1, 2012 (http://www.epa.gov/oppt/existingchemicals/pubs/wpmethods.pdf).

12. Has EPA budgeted additional dollars for its chemical "Action Plans" in 2013? Please explain what is the intention of the agency regarding action plans? Are they continuing, abandoned for something different? Please explain. Will EPA issue any new action plans in 2013? Please explain.

**RESPONSE:**

The EPA intends to use the TSCA Work Plan of March 1, 2012, described above, to help focus and direct the activities of its Existing Chemicals Program over the next several years. The EPA has selected seven of the 83 chemicals identified in the Work Plan for risk assessment during FY 2012 and 18 of the Work Plan chemicals for assessment in FY 2013 and FY 2014. The agency will conduct risk assessments on these chemicals and will pursue risk reduction measures if needed, based on the results of those risk assessments.

We will implement the Action Plans issued in 2009 through 2011, but use the Work Plan to inform our work on additional chemicals going forward.

The EPA continues to screen and identify chemicals for risk assessment and will pursue data collection and risk reduction actions as warranted by the results of those screening and assessment activities.

13. EPA's Office of Research and Development has indicated its intent to hold a workshop on including Weight of Evidence (WoE) considerations into IRIS assessments consistent with the recommendations of Chapter 7 of the National Academy of Sciences' report on formaldehyde. We understand that the NAS has offered to convene this workshop. In this regard, would your agency be amenable to working with NAS on convening this workshop?

**RESPONSE:**

At this time, EPA has a WOE workshop under development to discuss approaches to WoE characterization. The goal of the workshop will be to identify the various approaches that are currently in use and compare their strengths and limitations. The workshop will include scientists with expertise in the classification of chemicals for various health effects. The workshop will be open to the public, with opportunity for written and oral comments. EPA will publicly announce details about the workshop to be held in 2012 in a Federal Register Notice and on the IRIS website (www.epa.gov/iris).

In April 2012, EPA contracted to work with the NAS on weight of evidence considerations. The project information and scope is available on the NAS website ( http://www8.nationalacademies.org/cp/projectview.aspx?key=49458 ). The project is expected to have a duration of 24 months.

14. When reviewing the newly developed screening battery of test methods for EPA's Endocrine Disruptor Screening Program (EDSP), EPA's Science Advisory Board recommended that, after the initial round of screening is completed, the Agency should analyze the results to determine how well each of the 11 screening methods has performed, have this analysis undergo scientific peer review, and then make any changes needed in the screening battery before pushing on to screening additional substances.

Given that the EDSP screening costs can be more than half a million dollars per substance, and hat the results of the first round of screening from EPA's issuance of 67 test orders in 2009 nd early 2010 will be completed by August or September, do you plan to follow the SAB ecommendation in early FY 2013 before issuing additional endocrine screening test orders? If not, why not?

**RESPONSE:**

n accordance with FFDCA section 408(p), the agency will continue to require the best vailable validated scientific methods when issuing additional Tier 1 screening orders. The gency intends to follow the Science Advisory Board's recommendation to convene a panel of ndependent scientists to review all the screening data for 50-100 compounds, with an eye owards revising the process and eliminating those methods that don't work."(U.S. EPA Report,

Joint Subcommittee of the Science Advisory Board and Scientific Advisory Panel, *Review of the EPAh Proposed Environmental Endocrine Disruptor Screening Program*, July 1999). To that end, the agency plans to conduct a thorough scientific review of the Tier 1 assay results, the individual assays and the collective Tier 1 battery performances. The EPA's comprehensive scientific evaluation of the Tier 1 screening assays will occur in the Fall of 2012, and will include external scientific peer review by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Scientific Advisory Panel (SAP) in Fall of 2013.

We will continue to balance the advice of our scientific advisors and peer reviewers with the statutory mandate to test compounds for endocrine disruption. It is our intention to fully utilize recommendations received from the SAB and FIFRA SAP to guide our implementation of the EDSP.

**U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE, SPACE, ANDTECHNOLOGY**
**Subcommittee on Energy & Environment**

**Hearing Questions for the Record**
**The Honorable Randy Neugebauer**

**An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013**
**March 6, 2012**

Mr. Kadeli

1. With the EPA's Tier 3 regulations expected to cause gasoline prices to increase by up to 25 cents, and with the Administration claiming that it is doing everything it can to alleviate the stress of high gasoline prices that affect millions of American families, has the EPA considered delaying or cancelling those regulations? Is there anything else that the EPA is doing that would reduce gas prices, rather than increase them?

**RESPONSE:**

We understand that even minimal increases in the cost of gasoline are of importance to the American public. That is why EPA conducted extensive refinery modeling to understand the cost of further reducing the sulfur content of gasoline. As with lead, sulfur in fuel impairs the functioning of emission control equipment. We estimate the costs of sulfur requirements in the draft Tier 3 rule to be approximately one penny per gallon in 2017, an estimate that is supported by a study by MathPro, a consulting firm that prepared the analysis for the International Council on Clean Transportation.[10] A subsequent analysis performed by Baker & O'Brien for the American Petroleum Institute suggests that the costs for Tier 3 sulfur control could be slightly higher - as high as two cents per gallon on average.[11] However, that study was also recently criticized by a study by Navigant Economics for the Emission Control Technology Association, which reviewed both the Mathpro and Baker & O'Brien studies. It concluded that thedifference in costs between the studies was entirely explained by capital cost assumptions that were exaggerated in the Baker & O'Brien study beyond industry norms. The

[10] See http://www.theicct.org/sites/default/files/publications/ICCT04_Tier3_Report_Final_v4_All.pdf

[11] See http://www.bakerobrien.com/documents/Letter%20API%20Report%20-%20New%20Format%20-%20Sept%202011.pdf

Navigant study went on to conclude that the cost to refiners would be about one cent per gallon, that these costs are unlikely to be passed on to consumers in the form of higher gas prices based on their review of prior gasoline sulfur standards, and that the cost to refiners will be outweighed by the health benefits of cleaner air.[12]

In the last few years, EPA has issued several regulations that will save consumers money at the pump and keep more of the money we spend on fuel in the United States. New car and light truck owners are already saving money at the pump as a result of EPA's and NHTSA's first ever joint standards increase the fuel efficiency of cars and light trucks for model years 2012-2016. Over the lifetime of MY 2012-2016 vehicles, the combined EPA and NHTSA standards are projected to save 1.8 billion barrels of oil,[13] more oil than we imported from OPEC countries last year.[14]

These standards will save consumers and small businesses money by reducing their gasoline usage. Consumers buying MY 2016 vehicles would have average net savings of $3,000 over the life of the vehicle – the $4,000 in projected fuel savings over the lifetime of the vehicle more than offset the projected $950 increase in the initial cost of a new MY 2016 vehicle. After only three years of use, U.S. consumers who purchase MY 2012-2016 vehicles outright are projected to save enough in lower fuel costs to offset the increase in vehicle costs. U.S. consumers who use a 5-year loan to purchase a vehicle will also save. The projected monthly fuel savings exceed the projected increased loan payments necessary to cover the increased cost of the vehicle, which means that consumers start saving in their very first month of ownership.[15]

Even greater savings are in store for consumers in the future. On November 16, 2011, at the direction of the President, and with the support of auto manufacturers,[16] and the State of California, EPA and NHTSA issued their joint proposal to extend this National Program of

---

[12] See http://www.navigantеconomics.com/docs/061212%20Economic%20Analysis%20of%20the%20Implications%20of%20Tier%203%20Sulfur%20Reduction%20Final_embargoed%20copy.pdf

[13] See 75 Fed. Reg. 25328 (May 7, 2010).

[14] EIA data on U.S. Imports by Country of Origin 3/19/2012
http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_EPP0_im0_mbbl_a.htm

[15] See 75 Fed. Reg. 25519-25520 (May 7, 2010).

[16] The letters of support from these organizations can be found at www.epa.gov/otaq/climate/regulations.htm

greenhouse gas and fuel economy standards to MY 2017-2025 cars and light trucks. The proposal would require vehicle manufacturers to meet an estimated CO2 standard of 163 grams of CO2 per mile on an average fleet-wide basis in 2025, equivalent to 54.5 miles per gallon if all of those improvements are made with fuel economy-improving technologies. Over the lifetime of the MY 2017-2025 vehicles, the proposed standards would save 4 billion barrels of oil (above the billions of barrels in additional savings from the 2016 standards that carry into these model years as well). This is approximately the same amount of oil imported by the United States from all foreign sources last year alone.[17] Net lifetime savings for vehicle owners of a MY 2025 vehicle are estimated to be $3,000 - $4,400.

Further, starting with MY 2014, new medium and large truck and bus owners will also begin saving on fuel costs. In August, 2011, EPA and NHTSA announced the first ever joint greenhouse gas and fuel efficiency standards for trucks and buses. This program has support from the trucking industry, including engine and truck manufacturers, the American Trucking Association, the State of California, and leaders from the environmental community. In addition to improving energy and national security, this program will benefit consumers and businesses, reduce harmful air pollution, lower costs for transporting goods, and spur job growth and innovation in the clean energy technology sector.

The joint EPA and NHTSA standards are estimated to save about 530 million barrels of oil over the life of MY 2014-2018 vehicles. The reduced fuel use will provide an estimated $50 billion in fuel savings to vehicle owners, or $42 billion in net savings when considering technology costs.[18] A long haul trucker is projected to save a net of $73,000 over the life of a MY 2018 truck. Using technologies commercially available today, the majority of vehicles will see a payback period of about one year; others will see payback periods of up to two years.

EPA's renewable fuels program, established by Congress, helps keep money spent on fuel in the United States. On March 26, 2010, EPA completed regulations to implement the RFS program required under EISA in 2007. We estimate the RFS program, when fully implemented in 2022, would displace about 13.6 billion gallons of petroleum-based gasoline and diesel fuel, which represents about 7 percent of expected annual gasoline and diesel consumption in 2022.

---

[17] EIA data on U.S. Imports by Country of Origin 3/19/2012
http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_EPP0_im0_mbbl_a.htm

[18] See 76 Fed. Reg. 57106 (September 15, 2011).

We also estimate that the fully implemented program would decrease oil import expenditures by $41.5 billion and result in additional energy security benefits of $2.6 billion.

2. Could you describe current EPA efforts to ensure that there is no overlap of activities between your Office of Research and Development and other agencies? If and when you do discover duplicative programs, what procedures do you then follow to eliminate or consolidate those activities?

**RESPONSE:**

EPA coordinates its research activities with other agencies in a variety of ways including by forming Federal partnerships. As an example, The Toxicity Testing in the 21st Century (Tox21) partnership is pooling federal resources and expertise from EPA, National Institutes of Environmental Health Sciences, National Institutes of Health, and the Food and Drug Administration to use robotics technology to screen thousands of chemicals for potential toxicity, use screening data to predict the potential toxicity of chemicals and develop a cost-effective approach for prioritizing the thousands of chemicals that need toxicity testing.

Further, EPA is an active participant in the National Science and Technology Council (NSTC) and its five primary committees. This Cabinet-level Council is the principal means within the executive branch to coordinate S&T policy across the federal R&D enterprise. Each of these committees oversees subcommittees and working groups focused on different aspects of S&T. NSTC prepares R&D strategies that are coordinated across federal agencies to form investment packages aimed at accomplishing multiple national goals. NSTC coordinates federal R&D budgets to recognize shared priorities, reduce redundancies, promote joint programs, and create efficiencies.

EPA also participates in interagency workgroups on a wide variety of topics to discuss and plan research so as to maximize effective use of resources and avoid duplication. Many of our research projects are complimentary to those of other agencies with each focusing on their respective areas of expertise.

**U.S. HOUSE OF REPRESENTATIVES**
**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**
**Subcommittee on Energy & Environment**

**Hearing Questions for the Record**
**The Honorable Brad Miller**

**An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013**
**March 6, 2012**

Mr. Kadeli

1. In the past few months as this Committee has examined the EPA research enterprise, we have heard suggestions on how to make the EPA research enterprise more efficient, transparent, or even more credible. One suggestion spoken of for nearly a decade could potentially create a more integrated science environment within the EPA, which is to create a top science official. The National Academy of Sciences stated in a report that "the lack of a top science official is a formula for weak scientific performance in the agency".

Therefore, it has been suggested that Congress create a new position of Deputy Administrator for Science and Technology with responsibility of coordinating and overseeing agency-wide scientific policy, peer review, and quality assurance.

a. Please explain the Office of Research and Development's view on this proposal and provide the pros and cons of creating this position?

**RESPONSE:**

In response to a GAO recommendation, EPA has expanded the authority and responsibility of the Science Advisor to coordinate, oversee, and make recommendations to the Administrator regarding major scientific activities throughout the Agency, including the work of all program, regional, and ORD laboratories.

b. Please also comment on whether you believe a Deputy at the Administrator level would make the Head of ORD an obsolete position? And in your opinion, is it reasonable for this position or person to be able to handle the responsibility of overseeing all of the EPA's research?

**RESPONSE:**

If Congress created a Deputy Administrator for Science and Technology, an Assistant Administrator for the Office of Research and Development would still be needed. Currently ORD provides the research to support EPA's mission to protect human health and the environment. However, science and technology development occurs across EPA's Programs and Regions. Thus, a Deputy Administrator for Science and Technology would have much broader, cross-Agency responsibilities for science and technology activities and direction, including research.

2. The budget proposal includes an increase of $2 million in the Safe and Sustainable Water Resources program for the support of a Center for Innovative Estuarine Approaches to protect estuarine ecosystems. Is this a new center? How does this work differ from what NOAA is already doing?

**RESPONSE:**

The request for $2 million to support the Southeastern New England Program for Innovative Estuarine Approaches is building on efforts currently underway as a part of the Safe and Sustainable Water Resources research program. EPA's research differs from NOAA's research because of its regional sustainability (environment, economy, and society) focus. This EPA program will convene a public-private collaboration, with the purpose of developing a stakeholder driven systems approach to sustainably restore the coastal watersheds and estuaries of the southeastern New England region. . NOAA's National Estuarine Research Reserve Science Collaborative engages private and public entities to conduct collaborative research and develop innovative solutions; however, the research is conducted in research reserves and is focused on the ecological impacts of land use change, pollution, and habitat degradation on estuarine and coastal communities. This EPA program will serve as a test bed for solving similar problems in other areas of the country. EPA will coordinate with NOAA's Restoration Center and the National Estuarine Research Reserve Science Collaborative, particularly the Prudence Island and Waquit Bay Reserves located in this region on this important research.

3. The NOAA budget request proposes to terminate the funding for National Air Quality Forecasting Capability (NAQFC). This program provides air quality forecasts for ozone and particulate matter, and the models are used by the Environmental Protection Agency, State; and local agencies to provide air quality health alerts to the public. If the EPA utilizes this forecasting capability to provide air quality alerts to the public, how will the termination of this program affect these alerts? How will EPA acquire these air quality data?

**RESPONSE:**

OMB consulted EPA during the FY13 budget development process in an effort to determine the impact of NOAA's decision to discontinue the Air Quality Forecasting Capability (AQFC) on EPA's public air quality information programs, such as the AirNow.gov website. As the

budget reduction became more likely, EPA was also informed by NOAA staff involved in the AQFC project.

While EPA supports the scientific value of a national air quality model, in practice, forecasting is carried out by trained meteorologists at the state and local level. Those meteorologists consult NOAA's AQFC as part of their forecast development, but most do not rely solely upon it. The value of the AQFC is in its ability to provide a national, gridded dataset; however, EPA does not rely upon the AQFC to issue air quality forecasts.

EPA's AirNow program collects and distributes forecasts from across the nation. Those forecasts are developed and entered by state and local air quality forecasters. In the absence of the AQFC, forecasts will continue in this manner. However, because the AQFC is a national gridded product, it was able to provide forecasts for remote and rural areas, and other areas without monitors. The elimination of the AQFC would result in no forecasts in these areas.

If NOAA discontinues the AQFC, EPA's AirNow program will continue to collect and distribute forecasts from state, local, and tribal agencies that choose to issue them. While those agencies will no longer have the AQFC to consult as guidance, the AirNow program will work with forecasters to ensure they are aware of other tools and products for use in developing air quality forecasts.

**U.S. HOUSE OF REPRESENTATIVES**

**COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**
**Subcommittee on Energy & Environment**
**Hearing Questions for the Record**
**The Honorable Jerry McNerney**

**An Overview of the National Oceanic and Atmospheric Administration and the Environmental Protection Agency Budgets for Fiscal Year 2013**
**March 6, 2012**

Mr. Kadeli

1. The budget proposal includes an increase of $2 million in the Safe and Sustainable Water Resources program for the support of a Center for Innovative Estuarine Approaches to protect estuarine ecosystems. Can you describe how support for this Center might relate to EPA's work in the Sacramento-San Joaquin Delta area of California? Would the Center be active in this region? How so?

**RESPONSE:**

The Southern New England Program for Innovative Estuarine Approaches is public-private collaboration, enabling a stakeholder driven systems approach to achieving the protection of coastal watersheds and the restoration of impaired watersheds. Although the program will not be directly related to EPA's work in the Sacramento-San Joaquin Delta, the goal of the program is to develop approaches and technologies that can be used in other coastal watersheds through the nation.

# Appendix 2

## Additional Material for the Record

## MERCURY NEWS EDITORIAL: "DON'T REDUCE TSUNAMI ALERTS"

Mercury News Editorial

Posted: 02/28/2012 04:56:48 PM PST
Updated: 02/29/2012 05:50:52 AM PST

Related Stories

- Feb 27:
- White House proposes to cut tsunami warning system

When Congress passed the bill authorizing a tsunami warning system in 2005, every senator from California, Oregon, Washington, Alaska and Hawaii signed on. It was one of the few times Sens. Ted Stevens, R-Alaska, and Barbara Boxer, D-Calif., agreed on something.

This is a $4.6 million cut in a $3.8 trillion federal budget. Eliminating it is like cutting the cost of a car by leaving out the speedometer and the warning lights in the dashboard. Someday, somebody is going to pay a steep price, probably in lives.

Sen. Daniel Inouye, D-Hawaii, on Wednesday pledged to fight to restore the Obama administration's proposed cut. Boxer and Sen. Dianne Feinstein should join him.

The warning system was created after the 2004 Indian Ocean tsunami killed more than 225,000 people. Only a year ago, surging waves from the Japanese earthquake smashed the California coast, causing $58 million in damage in Santa Cruz and Crescent City. Nobody wants to find out what an unannounced tsunami might do to America's shores.

The tsunami warning system is a network of 39 buoys along the Atlantic and Pacific coasts, as the Mercury News' Paul Rogers reported Tuesday. Each costs about $400,000. The buoys are tethered to the ocean floor and can measure, to the centimeter, the size, direction and arrival time of tidal waves three minutes after any significant change in water pressure. But 10 of the buoys are not working, and the proposed cut means others will not be repaired if they go offline.

Every year, there are 150 earthquakes magnitude 6.0 or higher. Surely the Obama administration can find $4.6 million, pennies in a trillions of dollars budget, to keep Americans safe from the next inevitable tsunami.

○